passion
for precision

fraisa

Carbide drills | Thread cutting tools

SUPRADRILL® U
CARBIDE DRILLS

- Universal machining of various types of steel. Safe, reliable drilling processes in steel and stainless steel
- Comprehensive range for a broad spectrum of drilling applications. Basic range consists of 3xd IKZ, 5xd IKZ and 5xd without IKZ
- Nano-U^2 high-performance coating: the outstanding performance coating for all-purpose drilling in steel
- Greater process security, longer tool life and reduced production costs. Thanks to our in-house developed coating concepts and dimension-specific cutting edge design

SUPRADRILL® U

THREAD MILLING

- High degree of process reliability when milling female threads, with milling depths of up to 3xd
- Comprehensive range of thread milling cutters and thread whirlers for the efficient cutting of M, MF, G, UNC, UNF, NPT and NPTF threads
- Low tool costs thanks to universal deployment in a wide variety of materials and with the same pitch
- No jamming of the chips in the thread thanks to their short length. Cutting speed and feed rate can be selected independently of each other

THREAD MILLING

Xtap THREAD CUTTING TOOLS

- Lower tool costs thanks to universal tap known as “Xtap” for high-performance machining in steel and stainless steel
- High process reliability with low torque and long tool life in through-hole and blind-hole machining applications
- Wide range of applications and large selection of application data available to ensure perfect results
- AlCrTiN hard coating
  Greater flexibility by using one tool to machine medium-strength and stainless steel

Xtap

Replaces edition 2022

fraisa.com

Carbide drills

Drilling tools for steel, aluminium, stainless steel, titanium

Center drills, Countersinks

11 – 131

Thread cutting tools

Thread Milling
M / MF / G / UNC / UNF / UN / NPT / NPTF

133 – 183

TM

Metric coarse thread
M / MJ

185 – 285

M

Metric fine thread MF
Whitworth pipe thread cylindrical G
Unified thread UNC
Metric coarse thread for inserts EG M

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MF
G
UN
EG

Cold Forming
M / MF / EG M

327 – 343

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INDEX

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Drilling tools for steel, aluminium, stainless steel and titanium

Spiral flute drills

5xd

N° B62015 / B63015	**Supradrill® U**	**HM MG10**		**Rm** <850-1100	**Inox** Stainless		17
N° B62014 / B63014	**Supradrill® U**	**HM MG10**		**Rm** <850-1100			35
N° B72015	**XDrill®**	**HM MGX**		**Rm** <850-1500			45

3xd

N° B62011 / B63011	**Supradrill® U**	**HM MG10**		**Rm** <850-1100	**Inox** Stainless		61
N° B72011	**XDrill®**	**HM MGX**		**Rm** <850-1500			65
N° B52112	**Supradrill® H**	**HM XA**		**HRC** 48- >60			75

8xd

N° B72020	**XDrill®**	**HM MGX**		**Rm** <850-1300			87
N° B52020 / B53020	**Supradrill® N**	**HM MG10**		**Rm** <850-1100			97

Drilling tools for steel, aluminium, stainless steel and titanium

Deep hole drills

15xd

N° B52915

HM MGD²

Rm <850-1100

101

20xd

N° B52920

HM MGD²

Rm <850-1100

103

25xd

N° B52925

HM MGD²

Rm <850-1100

105

30xd

N° B52930

HM MGD²

Rm <850-1100

107

Drilling tools for steel, aluminium, stainless steel and titanium

Micro drills

5xd

N° B57014 **Microdrill NX**

HM MG10 | Rm <850-1100 | 109

N° B57015 **Microdrill NX**

HM MG10 | Rm <850-1100 | Inox Stainless | 115

8xd

N° B57020 **Microdrill NX**

HM MG10 | Rm <850-1100 | 119

Step drills

3xd, for core drill sizes for taps

N° B52801

HM | Rm <850-1100 | 123

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Center drills, Countersinks

Center drills

N° B92040

HM MG10	90°	Rm <850-1100			125

N° B92020

HM MG10	120°	Rm <850-1100			127

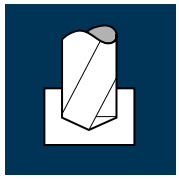
N° B92008

HM MG10	144°	Rm <850-1100			129

Countersinks

N° B92310

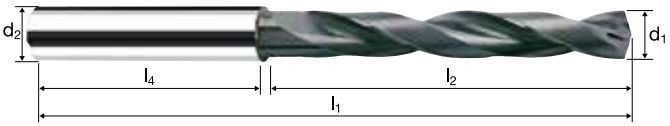
HSS	90°	Rm <850-1100			131

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	2.50	140	0.0600	17825	1070	5.2
		2.60	140	0.0600	17140	1028	5.5
		2.80	140	0.0650	15915	1035	6.4
		2.90	140	0.0700	15365	1076	7.1
		3.00	170	0.0800	18040	1443	10.2
		3.30	170	0.0850	16400	1394	11.9
		3.50	170	0.0900	15460	1391	13.4
		3.70	170	0.0950	14625	1389	14.9
		3.80	170	0.1000	14240	1424	16.1
	Steel 500 - 850 N/mm²	2.50	110	0.0600	14005	840	4.1
		2.60	110	0.0600	13465	808	4.3
		2.80	110	0.0650	12505	813	5.0
		2.90	110	0.0700	12075	845	5.6
		3.00	130	0.0800	13795	1104	7.8
		3.30	130	0.0850	12540	1066	9.1
		3.50	130	0.0900	11825	1064	10.2
		3.70	130	0.0950	11185	1063	11.4
		3.80	130	0.1000	10890	1089	12.4
	Steel 850 - 1100 N/mm²	2.50	80	0.0450	10185	458	2.2
		2.60	80	0.0450	9795	441	2.3
		2.80	80	0.0500	9095	455	2.8
		2.90	80	0.0500	8780	439	2.9
		3.00	110	0.0600	11670	700	4.9
		3.30	110	0.0650	10610	690	5.9
		3.50	110	0.0700	10005	700	6.7
		3.70	110	0.0750	9465	710	7.6
		3.80	110	0.0750	9215	691	7.8
	Steel 1100 - 1300 N/mm²	2.50	55	0.0400	7005	280	1.4
		2.60	55	0.0400	6735	269	1.4
		2.80	55	0.0400	6255	250	1.5
		2.90	55	0.0450	6035	272	1.8
		3.00	70	0.0500	7425	371	2.6
		3.30	70	0.0550	6750	371	3.2
		3.50	70	0.0600	6365	382	3.7
		3.70	70	0.0600	6020	361	3.9
		3.80	70	0.0650	5865	381	4.3
	Steel 1300 - 1500 N/mm²	2.50	25	0.0250	3185	80	0.4
		2.60	25	0.0250	3060	77	0.4
		2.80	25	0.0300	2840	85	0.5
		2.90	25	0.0300	2745	82	0.5
		3.00	40	0.0400	4245	170	1.2
		3.30	40	0.0450	3860	174	1.5
		3.50	40	0.0450	3640	164	1.6
		3.70	40	0.0500	3440	172	1.8
		3.80	40	0.0500	3350	168	1.9
	Stainless steel [Cr-Ni/1.4301]	3.00	60	0.0450	6365	286	2.0
		3.30	60	0.0500	5785	289	2.5
		3.50	60	0.0550	5455	300	2.9
		3.70	60	0.0550	5160	284	3.1
		3.80	60	0.0600	5025	302	3.4
	Cast iron (lamellar / spheroidal)	2.50	160	0.0650	20370	1324	6.5
		2.60	160	0.0650	19590	1273	6.8
		2.80	160	0.0700	18190	1273	7.8
		2.90	160	0.0750	17560	1317	8.7
		3.00	220	0.0850	23345	1984	14.0
		3.30	220	0.0950	21220	2016	17.2
		3.50	220	0.1000	20010	2001	19.3
		3.70	220	0.1050	18925	1987	21.4
		3.80	220	0.1100	18430	2027	23.0
	Wrought aluminium alloys Si < 6% hardened	2.50	220	0.0500	28010	1401	6.9
		2.60	220	0.0500	26935	1347	7.2
		2.80	220	0.0550	25010	1376	8.5
		2.90	220	0.0600	24150	1449	9.6
		3.00	250	0.0650	26525	1724	12.2
		3.30	250	0.0750	24115	1809	15.5
		3.50	250	0.0800	22735	1819	17.5
		3.70	250	0.0800	21505	1720	18.5
		3.80	250	0.0850	20940	1780	20.2

Spiral flute drills Supradrill® U

5xd

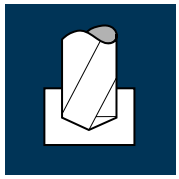
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **0250**

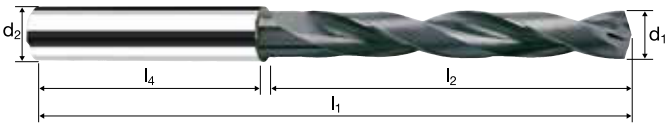
Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
0250*	2.50	6.0	66.0	28.0	36	20.8		●	
0255*	2.55	6.0	66.0	28.0	36	20.7		●	
0260*	2.60	6.0	66.0	28.0	36	20.6		●	
0265*	2.65	6.0	66.0	28.0	36	20.6		●	
0270*	2.70	6.0	66.0	28.0	36	20.6		●	
0280*	2.80	6.0	66.0	28.0	36	20.4		●	
0285*	2.85	6.0	66.0	28.0	36	20.4		●	
0290*	2.90	6.0	66.0	28.0	36	20.4		●	
0295*	2.95	6.0	66.0	28.0	36	20.3		●	
0300	3.00	6.0	66.0	28.0	36	20.2		●	
0305	3.05	6.0	66.0	28.0	36	20.2		●	
0310	3.10	6.0	66.0	28.0	36	20.2		●	
0315	3.15	6.0	66.0	28.0	36	20.1		●	
0320	3.20	6.0	66.0	28.0	36	20.0		●	
0330	3.30	6.0	66.0	28.0	36	20.0		●	
0340	3.40	6.0	66.0	28.0	36	19.8		●	
0350	3.50	6.0	66.0	28.0	36	19.8		●	
0360	3.60	6.0	66.0	28.0	36	19.6		●	
0370	3.70	6.0	66.0	28.0	36	19.6		●	
0375	3.75	6.0	66.0	28.0	36	19.5		●	
0380	3.80	6.0	74.0	36.0	36	27.4		●	
0385	3.85	6.0	74.0	36.0	36	27.3		●	
	* without internal cooling								

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	4.00	170	0.1050	13530	1421	17.9
		4.20	170	0.1100	12885	1417	19.6
		4.40	170	0.1150	12300	1415	21.5
		4.50	170	0.1200	12025	1443	22.9
		4.80	170	0.1250	11275	1409	25.5
		5.00	170	0.1300	10825	1407	27.6
		5.20	170	0.1350	10405	1405	29.8
		5.30	170	0.1400	10210	1429	31.5
		5.50	170	0.1450	9840	1427	33.9
	Steel 500 - 850 N/mm²	4.00	130	0.1050	10345	1086	13.6
		4.20	130	0.1100	9850	1084	15.0
		4.40	130	0.1150	9405	1082	16.4
		4.50	130	0.1200	9195	1103	17.5
		4.80	130	0.1250	8620	1078	19.5
		5.00	130	0.1300	8275	1076	21.1
		5.20	130	0.1350	7960	1075	22.8
		5.30	130	0.1400	7810	1093	24.1
		5.50	130	0.1450	7525	1091	25.9
	Steel 850 - 1100 N/mm²	4.00	110	0.0800	8755	700	8.8
		4.20	110	0.0850	8335	709	9.8
		4.40	110	0.0900	7960	716	10.9
		4.50	110	0.0900	7780	700	11.1
		4.80	110	0.0950	7295	693	12.5
		5.00	110	0.1000	7005	701	13.8
		5.20	110	0.1050	6735	707	15.0
		5.30	110	0.1050	6605	694	15.3
		5.50	110	0.1100	6365	700	16.6
	Steel 1100 - 1300 N/mm²	4.00	70	0.0650	5570	362	4.6
		4.20	70	0.0700	5305	371	5.1
		4.40	70	0.0750	5065	380	5.8
		4.50	70	0.0750	4950	371	5.9
		4.80	70	0.0800	4640	371	6.7
		5.00	70	0.0850	4455	379	7.4
		5.20	70	0.0850	4285	364	7.7
		5.30	70	0.0900	4205	379	8.4
		5.50	70	0.0900	4050	365	8.7
	Steel 1300 - 1500 N/mm²	4.00	40	0.0550	3185	175	2.2
		4.20	40	0.0550	3030	167	2.3
		4.40	40	0.0600	2895	174	2.6
		4.50	40	0.0600	2830	170	2.7
		4.80	40	0.0650	2655	173	3.1
		5.00	40	0.0650	2545	165	3.2
		5.20	40	0.0700	2450	172	3.6
		5.30	40	0.0700	2400	168	3.7
		5.50	40	0.0750	2315	174	4.1
	Stainless steel [Cr-Ni/1.4301]	4.00	60	0.0600	4775	287	3.6
		4.20	60	0.0650	4545	295	4.1
		4.40	60	0.0700	4340	304	4.6
		4.50	60	0.0700	4245	297	4.7
		4.80	60	0.0750	3980	299	5.4
		5.00	60	0.0750	3820	287	5.6
		5.20	60	0.0800	3675	294	6.2
		5.30	60	0.0800	3605	288	6.4
		5.50	60	0.0850	3470	295	7.0
	Cast iron (lamellar / spheroidal)	4.00	220	0.1150	17505	2013	25.3
		4.20	220	0.1200	16675	2001	27.7
		4.40	220	0.1250	15915	1989	30.2
		4.50	220	0.1300	15560	2023	32.2
		4.80	220	0.1350	14590	1970	35.6
		5.00	220	0.1450	14005	2031	39.9
		5.20	220	0.1500	13465	2020	42.9
		5.30	220	0.1500	13215	1982	43.7
		5.50	220	0.1550	12730	1973	46.9
	Wrought aluminium alloys Si < 6% hardened	4.00	250	0.0900	19895	1791	22.5
		4.20	250	0.0950	18945	1800	24.9
		4.40	250	0.1000	18085	1809	27.5
		4.50	250	0.1000	17685	1769	28.1
		4.80	250	0.1050	16580	1741	31.5
		5.00	250	0.1100	15915	1751	34.4
		5.20	250	0.1150	15305	1760	37.4
		5.30	250	0.1200	15015	1802	39.8
		5.50	250	0.1200	14470	1736	41.3

Spiral flute drills Supradrill® U

5xd

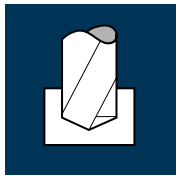
HM MG10



Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B62015** ø-Code **0390**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
0390	3.90	6.0	74.0	36.0	36	27.4		●	
0400	4.00	6.0	74.0	36.0	36	26.9		●	
0410	4.10	6.0	74.0	36.0	36	26.9		●	
0420	4.20	6.0	74.0	36.0	36	26.8		●	
0430	4.30	6.0	74.0	36.0	36	26.8		●	
0440	4.40	6.0	74.0	36.0	36	26.6		●	
0445	4.45	6.0	74.0	36.0	36	26.6		●	
0450	4.50	6.0	74.0	36.0	36	26.6		●	
0460	4.60	6.0	74.0	36.0	36	26.5		●	
0465	4.65	6.0	74.0	36.0	36	26.5		●	
0470	4.70	6.0	74.0	36.0	36	26.5		●	
0480	4.80	6.0	82.0	44.0	36	34.4		●	
0490	4.90	6.0	82.0	44.0	36	34.4		●	
0495	4.95	6.0	82.0	44.0	36	34.3		●	
0500	5.00	6.0	82.0	44.0	36	34.8		●	
0505	5.05	6.0	82.0	44.0	36	34.7		●	
0510	5.10	6.0	82.0	44.0	36	34.7		●	
0520	5.20	6.0	82.0	44.0	36	34.6		●	
0525	5.25	6.0	82.0	44.0	36	34.6		●	
0530	5.30	6.0	82.0	44.0	36	34.6		●	
0540	5.40	6.0	82.0	44.0	36	34.5		●	
0550	5.50	6.0	82.0	44.0	36	34.5		●	
0555	5.55	6.0	82.0	44.0	36	34.4		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	5.60	170	0.1450	9665	1401	34.5
		5.80	170	0.1550	9330	1446	38.2
		6.00	170	0.1600	9020	1443	40.8
		6.20	170	0.1650	8730	1441	43.5
		6.50	170	0.1700	8325	1415	47.0
		6.80	170	0.1800	7960	1433	52.0
		7.00	170	0.1850	7730	1430	55.0
		7.20	170	0.1900	7515	1428	58.1
		7.40	170	0.1950	7315	1426	61.3
	Steel 500 - 850 N/mm²	5.60	130	0.1450	7390	1072	26.4
		5.80	130	0.1550	7135	1106	29.2
		6.00	130	0.1600	6895	1103	31.2
		6.20	130	0.1650	6675	1101	33.3
		6.50	130	0.1700	6365	1082	35.9
		6.80	130	0.1800	6085	1095	39.8
		7.00	130	0.1850	5910	1093	42.1
		7.20	130	0.1900	5745	1092	44.4
		7.40	130	0.1950	5590	1090	46.9
	Steel 850 - 1100 N/mm²	5.60	110	0.1100	6255	688	16.9
		5.80	110	0.1150	6035	694	18.3
		6.00	110	0.1200	5835	700	19.8
		6.20	110	0.1250	5645	706	21.3
		6.50	110	0.1300	5385	700	23.2
		6.80	110	0.1350	5150	695	25.3
		7.00	110	0.1400	5000	700	26.9
		7.20	110	0.1450	4865	705	28.7
		7.40	110	0.1500	4730	710	30.5
	Steel 1100 - 1300 N/mm²	5.60	70	0.0950	3980	378	9.3
		5.80	70	0.0950	3840	365	9.6
		6.00	70	0.1000	3715	372	10.5
		6.20	70	0.1050	3595	378	11.4
		6.50	70	0.1100	3430	377	12.5
		6.80	70	0.1150	3275	377	13.7
		7.00	70	0.1150	3185	366	14.1
		7.20	70	0.1200	3095	371	15.1
		7.40	70	0.1250	3010	376	16.2
	Steel 1300 - 1500 N/mm²	5.60	40	0.0750	2275	171	4.2
		5.80	40	0.0750	2195	165	4.3
		6.00	40	0.0800	2120	170	4.8
		6.20	40	0.0850	2055	175	5.3
		6.50	40	0.0850	1960	167	5.5
		6.80	40	0.0900	1870	168	6.1
		7.00	40	0.0950	1820	173	6.7
		7.20	40	0.0950	1770	168	6.8
		7.40	40	0.1000	1720	172	7.4
	Stainless steel [Cr-Ni/1.4301]	5.60	60	0.0850	3410	290	7.1
		5.80	60	0.0900	3295	297	7.8
		6.00	60	0.0900	3185	287	8.1
		6.20	60	0.0950	3080	293	8.8
		6.50	60	0.1000	2940	294	9.8
		6.80	60	0.1050	2810	295	10.7
		7.00	60	0.1100	2730	300	11.6
		7.20	60	0.1100	2655	292	11.9
		7.40	60	0.1150	2580	297	12.8
	Cast iron (lamellar / spheroidal)	5.60	220	0.1600	12505	2001	49.3
		5.80	220	0.1650	12075	1992	52.6
		6.00	220	0.1700	11670	1984	56.1
		6.20	220	0.1750	11295	1977	59.7
		6.50	220	0.1850	10775	1993	66.1
		6.80	220	0.1950	10300	2009	72.9
		7.00	220	0.2000	10005	2001	77.0
		7.20	220	0.2050	9725	1994	81.2
		7.40	220	0.2100	9465	1988	85.5
	Wrought aluminium alloys Si < 6% hardened	5.60	250	0.1250	14210	1776	43.8
		5.80	250	0.1300	13720	1784	47.1
		6.00	250	0.1350	13265	1791	50.6
		6.20	250	0.1400	12835	1797	54.2
		6.50	250	0.1450	12245	1776	58.9
		6.80	250	0.1500	11705	1756	63.8
		7.00	250	0.1550	11370	1762	67.8
		7.20	250	0.1600	11050	1768	72.0
		7.40	250	0.1650	10755	1775	76.3

Spiral flute drills Supradrill® U

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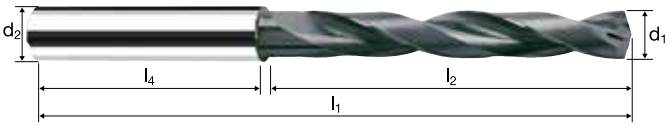
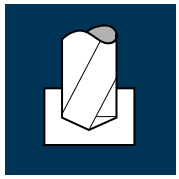
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **0560**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
0560	5.60	6.0	82.0	44.0	36	34.4		●	
0565	5.65	6.0	82.0	44.0	36	34.4		●	
0570	5.70	6.0	82.0	44.0	36	34.4		●	
0575	5.75	6.0	82.0	44.0	36	34.5		●	
0580	5.80	6.0	82.0	44.0	36	34.5		●	
0590	5.90	6.0	82.0	44.0	36	34.5		●	
0600	6.00	6.0	82.0	44.0	36	34.5		●	
0610	6.10	8.0	91.0	53.0	36	41.4		●	
0620	6.20	8.0	91.0	53.0	36	41.2		●	
0630	6.30	8.0	91.0	53.0	36	41.2		●	
0640	6.40	8.0	91.0	53.0	36	41.1		●	
0650	6.50	8.0	91.0	53.0	36	41.1		●	
0660	6.60	8.0	91.0	53.0	36	41.0		●	
0670	6.70	8.0	91.0	53.0	36	41.0		●	
0680	6.80	8.0	91.0	53.0	36	40.9		●	
0690	6.90	8.0	91.0	53.0	36	40.9		●	
0700	7.00	8.0	91.0	53.0	36	40.7		●	
0710	7.10	8.0	91.0	53.0	36	40.7		●	
0720	7.20	8.0	91.0	53.0	36	40.6		●	
0725	7.25	8.0	91.0	53.0	36	40.6		●	
0730	7.30	8.0	91.0	53.0	36	40.6		●	
0740	7.40	8.0	91.0	53.0	36	40.5		●	
0745	7.45	8.0	91.0	53.0	36	40.4		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	7.50	170	0.1950	7215	1407	62.2
		7.60	170	0.2000	7120	1424	64.6
		7.80	170	0.2050	6940	1423	68.0
		8.00	170	0.2100	6765	1421	71.4
		8.20	170	0.2150	6600	1419	74.9
		8.50	170	0.2250	6365	1432	81.3
		8.80	170	0.2300	6150	1415	86.0
		9.00	170	0.2350	6015	1414	89.9
		9.20	170	0.2400	5880	1411	93.8
	Steel 500 - 850 N/mm²	7.50	130	0.1950	5515	1075	47.5
		7.60	130	0.2000	5445	1089	49.4
		7.80	130	0.2050	5305	1088	52.0
		8.00	130	0.2100	5175	1087	54.6
		8.20	130	0.2150	5045	1085	57.3
		8.50	130	0.2250	4870	1096	62.2
		8.80	130	0.2300	4700	1081	65.7
		9.00	130	0.2350	4600	1081	68.8
		9.20	130	0.2400	4500	1080	71.8
	Steel 850 - 1100 N/mm²	7.50	110	0.1500	4670	701	30.9
		7.60	110	0.1500	4605	691	31.3
		7.80	110	0.1550	4490	696	33.3
		8.00	110	0.1600	4375	700	35.2
		8.20	110	0.1650	4270	705	37.2
		8.50	110	0.1700	4120	700	39.7
		8.80	110	0.1750	3980	697	42.4
		9.00	110	0.1800	3890	700	44.5
		9.20	110	0.1850	3805	704	46.8
	Steel 1100 - 1300 N/mm²	7.50	70	0.1250	2970	371	16.4
		7.60	70	0.1250	2930	366	16.6
		7.80	70	0.1300	2855	371	17.7
		8.00	70	0.1350	2785	376	18.9
		8.20	70	0.1350	2715	367	19.4
		8.50	70	0.1400	2620	367	20.8
		8.80	70	0.1450	2530	367	22.3
		9.00	70	0.1500	2475	371	23.6
		9.20	70	0.1550	2420	375	24.9
	Steel 1300 - 1500 N/mm²	7.50	40	0.1000	1700	170	7.5
		7.60	40	0.1000	1675	168	7.6
		7.80	40	0.1050	1630	171	8.2
		8.00	40	0.1050	1590	167	8.4
		8.20	40	0.1100	1555	171	9.0
		8.50	40	0.1150	1500	173	9.8
		8.80	40	0.1150	1445	166	10.1
		9.00	40	0.1200	1415	170	10.8
		9.20	40	0.1250	1385	173	11.5
	Stainless steel [Cr-Ni/1.4301]	7.50	60	0.1150	2545	293	12.9
		7.60	60	0.1150	2515	289	13.1
		7.80	60	0.1200	2450	294	14.0
		8.00	60	0.1250	2385	298	15.0
		8.20	60	0.1250	2330	291	15.4
		8.50	60	0.1300	2245	292	16.6
		8.80	60	0.1350	2170	293	17.8
		9.00	60	0.1400	2120	297	18.9
		9.20	60	0.1400	2075	291	19.3
	Cast iron (lamellar / spheroidal)	7.50	220	0.2150	9335	2007	88.7
		7.60	220	0.2150	9215	1981	89.9
		7.80	220	0.2250	8980	2021	96.5
		8.00	220	0.2300	8755	2014	101.2
		8.20	220	0.2350	8540	2007	106.0
		8.50	220	0.2450	8240	2019	114.6
		8.80	220	0.2500	7960	1990	121.0
		9.00	220	0.2550	7780	1984	126.2
		9.20	220	0.2650	7610	2017	134.1
	Wrought aluminium alloys Si < 6% hardened	7.50	250	0.1650	10610	1751	77.3
		7.60	250	0.1700	10470	1780	80.7
		7.80	250	0.1750	10200	1785	85.3
		8.00	250	0.1800	9945	1790	90.0
		8.20	250	0.1800	9705	1747	92.3
		8.50	250	0.1900	9360	1778	100.9
		8.80	250	0.1950	9045	1764	107.3
		9.00	250	0.2000	8840	1768	112.5
		9.20	250	0.2050	8650	1773	117.9

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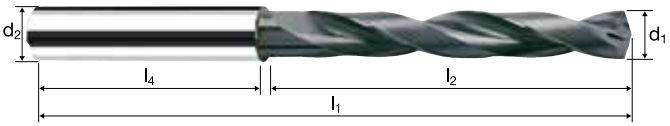
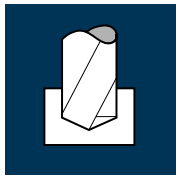


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **0750**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
0750	7.50	8.0	91.0	53.0	36	40.5		●	
0755	7.55	8.0	91.0	53.0	36	40.4		●	
0760	7.60	8.0	91.0	53.0	36	40.4		●	
0765	7.65	8.0	91.0	53.0	36	40.4		●	
0770	7.70	8.0	91.0	53.0	36	40.4		●	
0780	7.80	8.0	91.0	53.0	36	40.4		●	
0790	7.90	8.0	91.0	53.0	36	40.4		●	
0800	8.00	8.0	91.0	53.0	36	40.4		●	
0810	8.10	10.0	103.0	61.0	40	46.3		●	
0820	8.20	10.0	103.0	61.0	40	46.2		●	
0830	8.30	10.0	103.0	61.0	40	46.2		●	
0840	8.40	10.0	103.0	61.0	40	46.1		●	
0850	8.50	10.0	103.0	61.0	40	46.1		●	
0860	8.60	10.0	103.0	61.0	40	46.0		●	
0870	8.70	10.0	103.0	61.0	40	46.0		●	
0875	8.75	10.0	103.0	61.0	40	45.9		●	
0880	8.80	10.0	103.0	61.0	40	45.9		●	
0885	8.85	10.0	103.0	61.0	40	45.8		●	
0890	8.90	10.0	103.0	61.0	40	45.8		●	
0900	9.00	10.0	103.0	61.0	40	45.7		●	
0910	9.10	10.0	103.0	61.0	40	45.7		●	
0920	9.20	10.0	103.0	61.0	40	45.6		●	
0925	9.25	10.0	103.0	61.0	40	45.5		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	9.40	170	0.2450	5755	1410	97.9
		9.50	170	0.2500	5695	1424	100.9
		9.60	170	0.2550	5635	1437	104.0
		9.80	170	0.2600	5520	1435	108.3
		10.00	170	0.2650	5410	1434	112.6
		10.20	170	0.2700	5305	1432	117.0
		10.50	170	0.2750	5155	1418	122.8
		10.80	170	0.2850	5010	1428	130.8
		11.00	170	0.2900	4920	1427	135.6
	Steel 500 - 850 N/mm²	9.40	130	0.2450	4400	1078	74.8
		9.50	130	0.2500	4355	1089	77.2
		9.60	130	0.2550	4310	1099	79.6
		9.80	130	0.2600	4220	1097	82.8
		10.00	130	0.2650	4140	1097	86.2
		10.20	130	0.2700	4055	1095	89.5
		10.50	130	0.2750	3940	1084	93.8
		10.80	130	0.2850	3830	1092	100.0
		11.00	130	0.2900	3760	1090	103.6
	Steel 850 - 1100 N/mm²	9.40	110	0.1900	3725	708	49.1
		9.50	110	0.1900	3685	700	49.6
		9.60	110	0.1900	3645	693	50.1
		9.80	110	0.1950	3575	697	52.6
		10.00	110	0.2000	3500	700	55.0
		10.20	110	0.2050	3435	704	57.5
		10.50	110	0.2100	3335	700	60.6
		10.80	110	0.2150	3240	697	63.8
		11.00	110	0.2200	3185	701	66.6
	Steel 1100 - 1300 N/mm²	9.40	70	0.1550	2370	367	25.5
		9.50	70	0.1600	2345	375	26.6
		9.60	70	0.1600	2320	371	26.9
		9.80	70	0.1650	2275	375	28.3
		10.00	70	0.1650	2230	368	28.9
		10.20	70	0.1700	2185	372	30.4
		10.50	70	0.1750	2120	371	32.1
		10.80	70	0.1800	2065	372	34.1
		11.00	70	0.1850	2025	375	35.6
	Steel 1300 - 1500 N/mm²	9.40	40	0.1250	1355	169	11.8
		9.50	40	0.1250	1340	168	11.9
		9.60	40	0.1300	1325	172	12.5
		9.80	40	0.1300	1300	169	12.7
		10.00	40	0.1350	1275	172	13.5
		10.20	40	0.1350	1250	169	13.8
		10.50	40	0.1400	1215	170	14.7
		10.80	40	0.1450	1180	171	15.7
		11.00	40	0.1450	1155	168	15.9
	Stainless steel [Cr-Ni/1.4301]	9.40	60	0.1450	2030	294	20.4
		9.50	60	0.1450	2010	292	20.7
		9.60	60	0.1500	1990	299	21.6
		9.80	60	0.1500	1950	293	22.1
		10.00	60	0.1550	1910	296	23.3
		10.20	60	0.1550	1870	290	23.7
		10.50	60	0.1600	1820	291	25.2
		10.80	60	0.1650	1770	292	26.8
		11.00	60	0.1700	1735	295	28.0
	Cast iron (lamellar / spheroidal)	9.40	220	0.2700	7450	2012	139.6
		9.50	220	0.2700	7370	1990	141.0
		9.60	220	0.2750	7295	2006	145.2
		9.80	220	0.2800	7145	2001	150.9
		10.00	220	0.2850	7005	1996	156.8
		10.20	220	0.2900	6865	1991	162.7
		10.50	220	0.3000	6670	2001	173.3
		10.80	220	0.3100	6485	2010	184.2
		11.00	220	0.3150	6365	2005	190.5
	Wrought aluminium alloys Si < 6% hardened	9.40	250	0.2100	8465	1778	123.4
		9.50	250	0.2100	8375	1759	124.7
		9.60	250	0.2150	8290	1782	129.0
		9.80	250	0.2200	8120	1786	134.7
		10.00	250	0.2200	7960	1751	137.5
		10.20	250	0.2250	7800	1755	143.4
		10.50	250	0.2350	7580	1781	154.2
		10.80	250	0.2400	7370	1769	162.0
		11.00	250	0.2450	7235	1773	168.5

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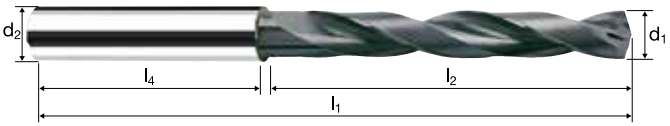
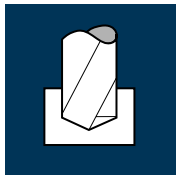
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **0930**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
0930	9.30	10.0	103.0	61.0	40	45.6		●	
0940	9.40	10.0	103.0	61.0	40	45.5		●	
0950	9.50	10.0	103.0	61.0	40	45.5		●	
0955	9.55	10.0	103.0	61.0	40	45.4		●	
0960	9.60	10.0	103.0	61.0	40	45.4		●	
0965	9.65	10.0	103.0	61.0	40	45.3		●	
0970	9.70	10.0	103.0	61.0	40	45.4		●	
0980	9.80	10.0	103.0	61.0	40	45.3		●	
0990	9.90	10.0	103.0	61.0	40	45.4		●	
1000	10.00	10.0	103.0	61.0	40	45.4		●	
1010	10.10	12.0	118.0	71.0	45	53.3		●	
1020	10.20	12.0	118.0	71.0	45	53.2		●	
1030	10.30	12.0	118.0	71.0	45	53.2		●	
1040	10.40	12.0	118.0	71.0	45	53.1		●	
1050	10.50	12.0	118.0	71.0	45	53.1		●	
1060	10.60	12.0	118.0	71.0	45	53.0		●	
1070	10.70	12.0	118.0	71.0	45	52.9		●	
1080	10.80	12.0	118.0	71.0	45	52.8		●	
1090	10.90	12.0	118.0	71.0	45	52.8		●	
1100	11.00	12.0	118.0	71.0	45	52.7		●	
1110	11.10	12.0	118.0	71.0	45	52.7		●	
1120	11.20	12.0	118.0	71.0	45	52.6		●	
1130	11.30	12.0	118.0	71.0	45	52.6		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	11.50	170	0.3050	4705	1435	149.1
		11.80	170	0.3100	4585	1421	155.4
		12.00	170	0.3150	4510	1421	160.7
		12.20	170	0.3200	4435	1419	165.9
		12.50	170	0.3300	4330	1429	175.4
		12.80	170	0.3350	4230	1417	182.4
		13.00	170	0.3400	4165	1416	188.0
		13.20	170	0.3450	4100	1415	193.6
		13.50	170	0.3550	4010	1424	203.8
	Steel 500 - 850 N/mm²	11.50	130	0.3050	3600	1098	114.0
		11.80	130	0.3100	3505	1087	118.8
		12.00	130	0.3150	3450	1087	122.9
		12.20	130	0.3200	3390	1085	126.8
		12.50	130	0.3300	3310	1092	134.0
		12.80	130	0.3350	3235	1084	139.5
		13.00	130	0.3400	3185	1083	143.7
		13.20	130	0.3450	3135	1082	148.0
		13.50	130	0.3550	3065	1088	155.7
	Steel 850 - 1100 N/mm²	11.50	110	0.2300	3045	700	72.7
		11.80	110	0.2350	2965	697	76.2
		12.00	110	0.2400	2920	701	79.3
		12.20	110	0.2450	2870	703	82.2
		12.50	110	0.2500	2800	700	85.9
		12.80	110	0.2550	2735	697	89.7
		13.00	110	0.2600	2695	701	93.0
		13.20	110	0.2650	2655	704	96.3
		13.50	110	0.2700	2595	701	100.3
	Steel 1100 - 1300 N/mm²	11.50	70	0.1900	1940	369	38.3
		11.80	70	0.1950	1890	369	40.3
		12.00	70	0.2000	1855	371	42.0
		12.20	70	0.2050	1825	374	43.7
		12.50	70	0.2100	1785	375	46.0
		12.80	70	0.2150	1740	374	48.1
		13.00	70	0.2150	1715	369	48.9
		13.20	70	0.2200	1690	372	50.9
		13.50	70	0.2250	1650	371	53.1
	Steel 1300 - 1500 N/mm²	11.50	40	0.1550	1105	171	17.8
		11.80	40	0.1550	1080	167	18.3
		12.00	40	0.1600	1060	170	19.2
		12.20	40	0.1650	1045	172	20.2
		12.50	40	0.1650	1020	168	20.7
		12.80	40	0.1700	995	169	21.8
		13.00	40	0.1750	980	172	22.8
		13.20	40	0.1750	965	169	23.1
		13.50	40	0.1800	945	170	24.3
	Stainless steel [Cr-Ni/1.4301]	11.50	60	0.1750	1660	291	30.2
		11.80	60	0.1800	1620	292	31.9
		12.00	60	0.1850	1590	294	33.3
		12.20	60	0.1900	1565	297	34.8
		12.50	60	0.1900	1530	291	35.7
		12.80	60	0.1950	1490	291	37.4
		13.00	60	0.2000	1470	294	39.0
		13.20	60	0.2050	1445	296	40.5
		13.50	60	0.2100	1415	297	42.5
	Cast iron (lamellar / spheroidal)	11.50	220	0.3300	6090	2010	208.7
		11.80	220	0.3350	5935	1988	217.4
		12.00	220	0.3450	5835	2013	227.7
		12.20	220	0.3500	5740	2009	234.8
		12.50	220	0.3550	5600	1988	244.0
		12.80	220	0.3650	5470	1997	256.9
		13.00	220	0.3700	5385	1993	264.5
		13.20	220	0.3750	5305	1989	272.2
		13.50	220	0.3850	5185	1996	285.7
	Wrought aluminium alloys Si < 6% hardened	11.50	250	0.2550	6920	1765	183.3
		11.80	250	0.2600	6745	1754	191.8
		12.00	250	0.2650	6630	1757	198.7
		12.20	250	0.2700	6525	1762	206.0
		12.50	250	0.2800	6365	1782	218.7
		12.80	250	0.2850	6215	1771	227.9
		13.00	250	0.2900	6120	1775	235.6
		13.20	250	0.2950	6030	1779	243.4
		13.50	250	0.3000	5895	1769	253.1

Spiral flute drills Supradrill® U

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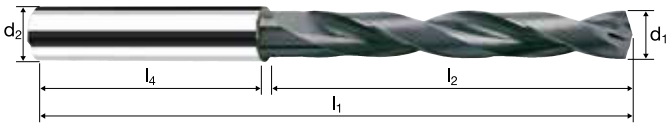
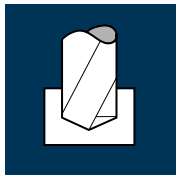
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **1140**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62015	B63015
1140	11.40	12.0	118.0	71.0	45	52.5		●
1150	11.50	12.0	118.0	71.0	45	52.4		●
1160	11.60	12.0	118.0	71.0	45	52.4		●
1170	11.70	12.0	118.0	71.0	45	52.4		●
1180	11.80	12.0	118.0	71.0	45	52.3		●
1190	11.90	12.0	118.0	71.0	45	52.4		●
1200	12.00	12.0	118.0	71.0	45	52.3		●
1210	12.10	14.0	124.0	77.0	45	56.3		●
1220	12.20	14.0	124.0	77.0	45	56.2		●
1230	12.30	14.0	124.0	77.0	45	56.2		●
1240	12.40	14.0	124.0	77.0	45	56.1		●
1250	12.50	14.0	124.0	77.0	45	56.1		●
1260	12.60	14.0	124.0	77.0	45	56.0		●
1270	12.70	14.0	124.0	77.0	45	55.9		●
1280	12.80	14.0	124.0	77.0	45	55.8		●
1290	12.90	14.0	124.0	77.0	45	55.8		●
1300	13.00	14.0	124.0	77.0	45	55.7		●
1310	13.10	14.0	124.0	77.0	45	55.7		●
1320	13.20	14.0	124.0	77.0	45	55.6		●
1330	13.30	14.0	124.0	77.0	45	55.6		●
1340	13.40	14.0	124.0	77.0	45	55.4		●
1350	13.50	14.0	124.0	77.0	45	55.4		●
1360	13.60	14.0	124.0	77.0	45	55.3		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	13.80	170	0.3650	3920	1431	214.0
		14.00	170	0.3700	3865	1430	220.1
		14.20	170	0.3750	3810	1429	226.3
		14.50	170	0.3800	3730	1417	234.1
		14.80	170	0.3900	3655	1426	245.2
		15.00	170	0.3950	3610	1426	252.0
		15.20	170	0.4000	3560	1424	258.4
		15.50	170	0.4100	3490	1431	270.0
		15.80	170	0.4150	3425	1421	278.7
	Steel 500 - 850 N/mm²	13.80	130	0.3650	3000	1095	163.8
		14.00	130	0.3700	2955	1093	168.3
		14.20	130	0.3750	2915	1093	173.1
		14.50	130	0.3800	2855	1085	179.1
		14.80	130	0.3900	2795	1090	187.5
		15.00	130	0.3950	2760	1090	192.7
		15.20	130	0.4000	2720	1088	197.4
		15.50	130	0.4100	2670	1095	206.6
		15.80	130	0.4150	2620	1087	213.2
	Steel 850 - 1100 N/mm²	13.80	110	0.2750	2535	697	104.3
		14.00	110	0.2800	2500	700	107.8
		14.20	110	0.2850	2465	703	111.3
		14.50	110	0.2900	2415	700	115.7
		14.80	110	0.2950	2365	698	120.0
		15.00	110	0.3000	2335	701	123.8
		15.20	110	0.3050	2305	703	127.6
		15.50	110	0.3100	2260	701	132.2
		15.80	110	0.3150	2215	698	136.8
	Steel 1100 - 1300 N/mm²	13.80	70	0.2300	1615	372	55.6
		14.00	70	0.2350	1590	374	57.5
		14.20	70	0.2350	1570	369	58.4
		14.50	70	0.2400	1535	368	60.8
		14.80	70	0.2450	1505	369	63.4
		15.00	70	0.2500	1485	371	65.6
		15.20	70	0.2550	1465	374	67.8
		15.50	70	0.2600	1440	374	70.6
		15.80	70	0.2650	1410	374	73.3
	Steel 1300 - 1500 N/mm²	13.80	40	0.1850	925	171	25.6
		14.00	40	0.1850	910	168	25.9
		14.20	40	0.1900	895	170	26.9
		14.50	40	0.1950	880	172	28.3
		14.80	40	0.1950	860	168	28.9
		15.00	40	0.2000	850	170	30.0
		15.20	40	0.2050	840	172	31.2
		15.50	40	0.2050	820	168	31.7
		15.80	40	0.2100	805	169	33.2
	Stainless steel [Cr-Ni/1.4301]	13.80	60	0.2100	1385	291	43.5
		14.00	60	0.2150	1365	294	45.2
		14.20	60	0.2200	1345	296	46.9
		14.50	60	0.2250	1315	296	48.9
		14.80	60	0.2300	1290	297	51.0
		15.00	60	0.2300	1275	293	51.8
		15.20	60	0.2350	1255	295	53.5
		15.50	60	0.2400	1230	295	55.7
		15.80	60	0.2450	1210	297	58.1
	Cast iron (lamellar / spheroidal)	13.80	220	0.3950	5075	2005	299.8
		14.00	220	0.4000	5000	2000	307.9
		14.20	220	0.4050	4930	1997	316.2
		14.50	220	0.4150	4830	2005	331.0
		14.80	220	0.4250	4730	2010	345.8
		15.00	220	0.4300	4670	2008	354.9
		15.20	220	0.4350	4605	2003	363.5
		15.50	220	0.4450	4520	2011	379.5
		15.80	220	0.4500	4430	1994	390.9
	Wrought aluminium alloys Si < 6% hardened	13.80	250	0.3050	5765	1758	263.0
		14.00	250	0.3100	5685	1762	271.3
		14.20	250	0.3150	5605	1766	279.6
		14.50	250	0.3200	5490	1757	290.1
		14.80	250	0.3300	5375	1774	305.2
		15.00	250	0.3350	5305	1777	314.1
		15.20	250	0.3400	5235	1780	323.0
		15.50	250	0.3450	5135	1772	334.3
		15.80	250	0.3500	5035	1762	345.5

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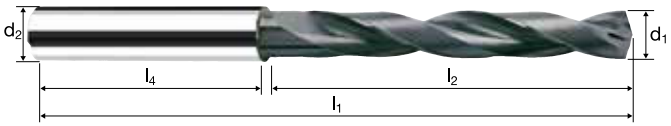
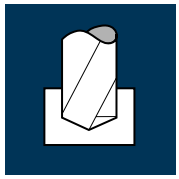


Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500				**Inox** Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **1370**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
1370	13.70	14.0	124.0	77.0	45	55.4			●
1380	13.80	14.0	124.0	77.0	45	55.3			●
1390	13.90	14.0	124.0	77.0	45	55.3			●
1400	14.00	14.0	124.0	77.0	45	55.3			●
1410	14.10	16.0	133.0	83.0	48	59.3			●
1420	14.20	16.0	133.0	83.0	48	59.2			●
1430	14.30	16.0	133.0	83.0	48	59.2			●
1440	14.40	16.0	133.0	83.0	48	59.1			●
1450	14.50	16.0	133.0	83.0	48	59.1			●
1460	14.60	16.0	133.0	83.0	48	58.9			●
1470	14.70	16.0	133.0	83.0	48	58.9			●
1480	14.80	16.0	133.0	83.0	48	58.8			●
1490	14.90	16.0	133.0	83.0	48	58.8			●
1500	15.00	16.0	133.0	83.0	48	58.7			●
1510	15.10	16.0	133.0	83.0	48	58.7			●
1520	15.20	16.0	133.0	83.0	48	58.6			●
1530	15.30	16.0	133.0	83.0	48	58.5			●
1540	15.40	16.0	133.0	83.0	48	58.4			●
1550	15.50	16.0	133.0	83.0	48	58.4			●
1560	15.60	16.0	133.0	83.0	48	58.3			●
1570	15.70	16.0	133.0	83.0	48	58.3			●
1580	15.80	16.0	133.0	83.0	48	58.3			●
1590	15.90	16.0	133.0	83.0	48	58.3			●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	16.00	170	0.4200	3380	1420	285.4
		16.20	170	0.4250	3340	1420	292.6
		16.50	170	0.4350	3280	1427	305.1
		16.80	170	0.4400	3220	1417	314.1
		17.00	170	0.4450	3185	1417	321.7
		17.20	170	0.4550	3145	1431	332.5
		17.50	170	0.4600	3090	1421	341.9
		17.80	170	0.4700	3040	1429	355.6
		18.00	170	0.4750	3005	1427	363.2
	Steel 500 - 850 N/mm²	16.00	130	0.4200	2585	1086	218.3
		16.20	130	0.4250	2555	1086	223.8
		16.50	130	0.4350	2510	1092	233.5
		16.80	130	0.4400	2465	1085	240.4
		17.00	130	0.4450	2435	1084	246.0
		17.20	130	0.4550	2405	1094	254.3
		17.50	130	0.4600	2365	1088	261.7
		17.80	130	0.4700	2325	1093	271.9
		18.00	130	0.4750	2300	1093	278.0
	Steel 850 - 1100 N/mm²	16.00	110	0.3200	2190	701	140.9
		16.20	110	0.3250	2160	702	144.7
		16.50	110	0.3300	2120	700	149.6
		16.80	110	0.3350	2085	699	154.8
		17.00	110	0.3400	2060	700	159.0
		17.20	110	0.3450	2035	702	163.1
		17.50	110	0.3500	2000	700	168.4
		17.80	110	0.3550	1965	698	173.6
		18.00	110	0.3600	1945	700	178.2
	Steel 1100 - 1300 N/mm²	16.00	70	0.2650	1395	370	74.3
		16.20	70	0.2700	1375	371	76.5
		16.50	70	0.2750	1350	371	79.4
		16.80	70	0.2800	1325	371	82.2
		17.00	70	0.2850	1310	373	84.8
		17.20	70	0.2850	1295	369	85.8
		17.50	70	0.2900	1275	370	88.9
		17.80	70	0.2950	1250	369	91.8
		18.00	70	0.3000	1240	372	94.7
	Steel 1300 - 1500 N/mm²	16.00	40	0.2150	795	171	34.4
		16.20	40	0.2150	785	169	34.8
		16.50	40	0.2200	770	169	36.2
		16.80	40	0.2250	760	171	37.9
		17.00	40	0.2250	750	169	38.3
		17.20	40	0.2300	740	170	39.5
		17.50	40	0.2350	730	172	41.3
		17.80	40	0.2350	715	168	41.8
		18.00	40	0.2400	705	169	43.1
	Stainless steel [Cr-Ni/1.4301]	16.00	60	0.2450	1195	293	58.9
		16.20	60	0.2500	1180	295	60.8
		16.50	60	0.2550	1155	295	63.0
		16.80	60	0.2600	1135	295	65.4
		17.00	60	0.2600	1125	293	66.4
		17.20	60	0.2650	1110	294	68.4
		17.50	60	0.2700	1090	294	70.8
		17.80	60	0.2750	1075	296	73.6
		18.00	60	0.2750	1060	292	74.2
	Cast iron (lamellar / spheroidal)	16.00	220	0.4550	4375	1991	400.2
		16.20	220	0.4650	4325	2011	414.5
		16.50	220	0.4700	4245	1995	426.6
		16.80	220	0.4800	4170	2002	443.7
		17.00	220	0.4850	4120	1998	453.6
		17.20	220	0.4900	4070	1994	463.4
		17.50	220	0.5000	4000	2000	481.1
		17.80	220	0.5100	3935	2007	499.4
		18.00	220	0.5150	3890	2003	509.8
	Wrought aluminium alloys Si < 6% hardened	16.00	250	0.3550	4975	1766	355.1
		16.20	250	0.3600	4910	1768	364.3
		16.50	250	0.3650	4825	1761	376.6
		16.80	250	0.3750	4735	1776	393.6
		17.00	250	0.3800	4680	1778	403.7
		17.20	250	0.3800	4625	1758	408.4
		17.50	250	0.3900	4545	1773	426.4
		17.80	250	0.3950	4470	1766	439.4
		18.00	250	0.4000	4420	1768	449.9

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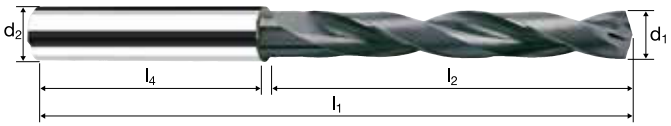
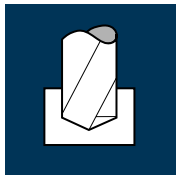
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **1600**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62015	B63015
1600	16.00	16.0	133.0	83.0	48	58.3		●
1610	16.10	18.0	143.0	93.0	48	66.3		●
1620	16.20	18.0	143.0	93.0	48	66.2		●
1630	16.30	18.0	143.0	93.0	48	66.2		●
1640	16.40	18.0	143.0	93.0	48	66.1		●
1650	16.50	18.0	143.0	93.0	48	66.0		●
1660	16.60	18.0	143.0	93.0	48	65.9		●
1670	16.70	18.0	143.0	93.0	48	65.9		●
1680	16.80	18.0	143.0	93.0	48	65.8		●
1690	16.90	18.0	143.0	93.0	48	65.8		●
1700	17.00	18.0	143.0	93.0	48	65.7		●
1710	17.10	18.0	143.0	93.0	48	65.7		●
1720	17.20	18.0	143.0	93.0	48	65.5		●
1730	17.30	18.0	143.0	93.0	48	65.5		●
1740	17.40	18.0	143.0	93.0	48	65.4		●
1750	17.50	18.0	143.0	93.0	48	65.4		●
1760	17.60	18.0	143.0	93.0	48	65.3		●
1770	17.70	18.0	143.0	93.0	48	65.3		●
1780	17.80	18.0	143.0	93.0	48	65.2		●
1790	17.90	18.0	143.0	93.0	48	65.3		●
1800	18.00	18.0	143.0	93.0	48	65.3		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	18.50	170	0.4850	2925	1419	381.3
		18.70	170	0.4900	2895	1419	389.6
		19.00	170	0.5000	2850	1425	404.0
		19.20	170	0.5050	2820	1424	412.3
		19.30	170	0.5100	2805	1431	418.5
		19.50	170	0.5150	2775	1429	426.8
		19.70	170	0.5200	2745	1427	435.1
		19.80	170	0.5200	2735	1422	437.9
		20.00	170	0.5250	2705	1420	446.1
	Steel 500 - 850 N/mm²	18.50	130	0.4850	2235	1084	291.4
		18.70	130	0.4900	2215	1085	298.1
		19.00	130	0.5000	2180	1090	309.0
		19.20	130	0.5050	2155	1088	315.1
		19.30	130	0.5100	2145	1094	320.1
		19.50	130	0.5150	2120	1092	326.1
		19.70	130	0.5200	2100	1092	332.8
		19.80	130	0.5200	2090	1087	334.6
		20.00	130	0.5250	2070	1087	341.4
	Steel 850 - 1100 N/mm²	18.50	110	0.3700	1895	701	188.5
		18.70	110	0.3750	1870	701	192.6
		19.00	110	0.3800	1845	701	198.8
		19.20	110	0.3850	1825	703	203.4
		19.30	110	0.3850	1815	699	204.4
		19.50	110	0.3900	1795	700	209.1
		19.70	110	0.3950	1775	701	213.7
		19.80	110	0.3950	1770	699	215.3
		20.00	110	0.4000	1750	700	219.9
	Steel 1100 - 1300 N/mm²	18.50	70	0.3100	1205	374	100.4
		18.70	70	0.3100	1190	369	101.3
		19.00	70	0.3150	1175	370	104.9
		19.20	70	0.3200	1160	371	107.5
		19.30	70	0.3200	1155	370	108.1
		19.50	70	0.3250	1145	372	111.1
		19.70	70	0.3300	1130	373	113.7
		19.80	70	0.3300	1125	371	114.3
		20.00	70	0.3350	1115	374	117.3
	Steel 1300 - 1500 N/mm²	18.50	40	0.2450	690	169	45.5
		18.70	40	0.2500	680	170	46.7
		19.00	40	0.2550	670	171	48.5
		19.20	40	0.2550	665	170	49.1
		19.30	40	0.2550	660	168	49.2
		19.50	40	0.2600	655	170	50.9
		19.70	40	0.2650	645	171	52.1
		19.80	40	0.2650	645	171	52.6
		20.00	40	0.2650	635	168	52.9
	Stainless steel [Cr-Ni/1.4301]	18.50	60	0.2850	1030	294	78.9
		18.70	60	0.2900	1020	296	81.2
		19.00	60	0.2900	1005	292	82.6
		19.20	60	0.2950	995	294	85.0
		19.30	60	0.2950	990	292	85.5
		19.50	60	0.3000	980	294	87.8
		19.70	60	0.3050	970	296	90.2
		19.80	60	0.3050	965	294	90.6
		20.00	60	0.3100	955	296	93.0
	Cast iron (lamellar / spheroidal)	18.50	220	0.5300	3785	2006	539.2
		18.70	220	0.5350	3745	2004	550.3
		19.00	220	0.5450	3685	2008	569.4
		19.20	220	0.5500	3645	2005	580.4
		19.30	220	0.5500	3630	1997	584.1
		19.50	220	0.5550	3590	1993	595.1
		19.70	220	0.5650	3555	2009	612.2
		19.80	220	0.5650	3535	1997	615.0
		20.00	220	0.5700	3500	1995	626.7
	Wrought aluminium alloys Si < 6% hardened	18.50	250	0.4100	4300	1763	473.9
		18.70	250	0.4150	4255	1766	485.0
		19.00	250	0.4200	4190	1760	499.0
		19.20	250	0.4250	4145	1762	510.0
		19.30	250	0.4300	4125	1774	518.9
		19.50	250	0.4350	4080	1775	530.0
		19.70	250	0.4400	4040	1778	541.8
		19.80	250	0.4400	4020	1769	544.6
		20.00	250	0.4450	3980	1771	556.4

Spiral flute drills Supradrill® U

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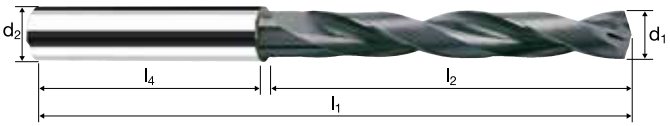
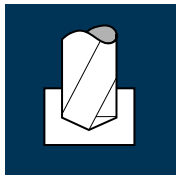
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62015** ø-Code **1850**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62015	B63015
1850	18.50	20.0	153.0	101.0	50	71.0			●
1870	18.70	20.0	153.0	101.0	50	70.9			●
1900	19.00	20.0	153.0	101.0	50	70.7			●
1910	19.10	20.0	153.0	101.0	50	70.6			●
1920	19.20	20.0	153.0	101.0	50	70.5			●
1930	19.30	20.0	153.0	101.0	50	70.5			●
1950	19.50	20.0	153.0	101.0	50	70.4			●
1970	19.70	20.0	153.0	101.0	50	70.3			●
1980	19.80	20.0	153.0	101.0	50	70.2			●
2000	20.00	20.0	153.0	101.0	50	70.2			●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	2.50	140	0.0600	17825	1070	5.2
		2.70	140	0.0650	16505	1073	6.1
		2.90	140	0.0700	15365	1076	7.1
		3.00	140	0.0700	14855	1040	7.4
		3.30	140	0.0800	13505	1080	9.2
		3.50	140	0.0850	12730	1082	10.4
		3.80	140	0.0900	11725	1055	12.0
		4.00	140	0.0950	11140	1058	13.3
		4.20	140	0.1000	10610	1061	14.7
	Steel 500 - 850 N/mm²	2.50	110	0.0600	14005	840	4.1
		2.70	110	0.0650	12970	843	4.8
		2.90	110	0.0700	12075	845	5.6
		3.00	110	0.0700	11670	817	5.8
		3.30	110	0.0800	10610	849	7.3
		3.50	110	0.0850	10005	850	8.2
		3.80	110	0.0900	9215	829	9.4
		4.00	110	0.0950	8755	832	10.5
		4.20	110	0.1000	8335	834	11.5
	Steel 850 - 1100 N/mm²	2.50	80	0.0450	10185	458	2.2
		2.70	80	0.0500	9430	472	2.7
		2.90	80	0.0500	8780	439	2.9
		3.00	80	0.0550	8490	467	3.3
		3.30	80	0.0600	7715	463	4.0
		3.50	80	0.0650	7275	473	4.5
		3.80	80	0.0700	6700	469	5.3
		4.00	80	0.0700	6365	446	5.6
		4.20	80	0.0750	6065	455	6.3
	Steel 1100 - 1300 N/mm²	2.50	55	0.0400	7005	280	1.4
		2.70	55	0.0400	6485	259	1.5
		2.90	55	0.0450	6035	272	1.8
		3.00	55	0.0450	5835	263	1.9
		3.30	55	0.0500	5305	265	2.3
		3.50	55	0.0550	5000	275	2.6
		3.80	55	0.0550	4605	253	2.9
		4.00	55	0.0600	4375	263	3.3
		4.20	55	0.0650	4170	271	3.8
	Steel 1300 - 1500 N/mm²	2.50	25	0.0250	3185	80	0.4
		2.70	25	0.0250	2945	74	0.4
		2.90	25	0.0300	2745	82	0.5
		3.00	25	0.0300	2655	80	0.6
		3.30	25	0.0350	2410	84	0.7
		3.50	25	0.0350	2275	80	0.8
		3.80	25	0.0400	2095	84	1.0
		4.00	25	0.0400	1990	80	1.0
		4.20	25	0.0400	1895	76	1.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	2.50	50	0.0300	6365	191	0.9
		2.70	50	0.0350	5895	206	1.2
		2.90	50	0.0350	5490	192	1.3
		3.00	50	0.0400	5305	212	1.5
		3.30	50	0.0400	4825	193	1.7
		3.50	50	0.0450	4545	205	2.0
		3.80	50	0.0500	4190	210	2.4
		4.00	50	0.0500	3980	199	2.5
		4.20	50	0.0550	3790	209	2.9
	Cast iron (lamellar / spheroidal)	2.50	160	0.0650	20370	1324	6.5
		2.70	160	0.0700	18865	1321	7.6
		2.90	160	0.0750	17560	1317	8.7
		3.00	160	0.0750	16975	1273	9.0
		3.30	160	0.0850	15435	1312	11.2
		3.50	160	0.0900	14550	1310	12.6
		3.80	160	0.1000	13405	1341	15.2
		4.00	160	0.1050	12730	1337	16.8
		4.20	160	0.1100	12125	1334	18.5
	Wrought aluminium alloys Si < 6% hardened	2.50	220	0.0500	28010	1401	6.9
		2.70	220	0.0550	25935	1426	8.2
		2.90	220	0.0600	24150	1449	9.6
		3.00	220	0.0600	23345	1401	9.9
		3.30	220	0.0650	21220	1379	11.8
		3.50	220	0.0700	20010	1401	13.5
		3.80	220	0.0750	18430	1382	15.7
		4.00	220	0.0800	17505	1400	17.6
		4.20	220	0.0850	16675	1417	19.6

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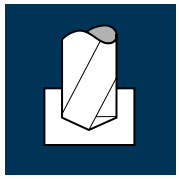
HM MG10

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B62014** ø-Code **0250**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62014	B63014
0250	2.50	6.0	66.0	28.0	36	20.8		●
0255	2.55	6.0	66.0	28.0	36	20.7		●
0260	2.60	6.0	66.0	28.0	36	20.6		●
0265	2.65	6.0	66.0	28.0	36	20.6		●
0270	2.70	6.0	66.0	28.0	36	20.6		●
0280	2.80	6.0	66.0	28.0	36	20.4		●
0285	2.85	6.0	66.0	28.0	36	20.4		●
0290	2.90	6.0	66.0	28.0	36	20.4		●
0295	2.95	6.0	66.0	28.0	36	20.3		●
0300	3.00	6.0	66.0	28.0	36	20.2		●
0310	3.10	6.0	66.0	28.0	36	20.2		●
0320	3.20	6.0	66.0	28.0	36	20.0		●
0330	3.30	6.0	66.0	28.0	36	20.0		●
0340	3.40	6.0	66.0	28.0	36	19.8		●
0350	3.50	6.0	66.0	28.0	36	19.8		●
0360	3.60	6.0	66.0	28.0	36	19.6		●
0370	3.70	6.0	66.0	28.0	36	19.6		●
0380	3.80	6.0	74.0	36.0	36	27.4		●
0390	3.90	6.0	74.0	36.0	36	27.4		●
0400	4.00	6.0	74.0	36.0	36	26.9		●
0410	4.10	6.0	74.0	36.0	36	26.9		●
0420	4.20	6.0	74.0	36.0	36	26.8		●
0430	4.30	6.0	74.0	36.0	36	26.8		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	4.50	140	0.1050	9905	1040	16.5
		4.80	140	0.1150	9285	1068	19.3
		5.00	140	0.1200	8915	1070	21.0
		5.10	140	0.1200	8740	1049	21.4
		5.50	140	0.1300	8100	1053	25.0
		5.80	140	0.1350	7685	1038	27.4
		6.00	140	0.1400	7425	1040	29.4
		6.10	140	0.1450	7305	1059	31.0
		6.50	140	0.1550	6855	1063	35.3
	Steel 500 - 850 N/mm²	4.50	110	0.1050	7780	817	13.0
		4.80	110	0.1150	7295	839	15.2
		5.00	110	0.1200	7005	841	16.5
		5.10	110	0.1200	6865	824	16.8
		5.50	110	0.1300	6365	828	19.7
		5.80	110	0.1350	6035	815	21.5
		6.00	110	0.1400	5835	817	23.1
		6.10	110	0.1450	5740	832	24.3
		6.50	110	0.1550	5385	835	27.7
	Steel 850 - 1100 N/mm²	4.50	80	0.0800	5660	453	7.2
		4.80	80	0.0850	5305	451	8.2
		5.00	80	0.0900	5095	459	9.0
		5.10	80	0.0900	4995	450	9.2
		5.50	80	0.1000	4630	463	11.0
		5.80	80	0.1050	4390	461	12.2
		6.00	80	0.1100	4245	467	13.2
		6.10	80	0.1100	4175	459	13.4
		6.50	80	0.1150	3920	451	15.0
	Steel 1100 - 1300 N/mm²	4.50	55	0.0700	3890	272	4.3
		4.80	55	0.0700	3645	255	4.6
		5.00	55	0.0750	3500	263	5.2
		5.10	55	0.0750	3435	258	5.3
		5.50	55	0.0850	3185	271	6.4
		5.80	55	0.0850	3020	257	6.8
		6.00	55	0.0900	2920	263	7.4
		6.10	55	0.0900	2870	258	7.5
		6.50	55	0.1000	2695	270	8.9
	Steel 1300 - 1500 N/mm²	4.50	25	0.0450	1770	80	1.3
		4.80	25	0.0500	1660	83	1.5
		5.00	25	0.0500	1590	80	1.6
		5.10	25	0.0500	1560	78	1.6
		5.50	25	0.0550	1445	80	1.9
		5.80	25	0.0600	1370	82	2.2
		6.00	25	0.0600	1325	80	2.2
		6.10	25	0.0600	1305	78	2.3
		6.50	25	0.0650	1225	80	2.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.50	50	0.0600	3535	212	3.4
		4.80	50	0.0600	3315	199	3.6
		5.00	50	0.0650	3185	207	4.1
		5.10	50	0.0650	3120	203	4.1
		5.50	50	0.0700	2895	203	4.8
		5.80	50	0.0750	2745	206	5.4
		6.00	50	0.0750	2655	199	5.6
		6.10	50	0.0800	2610	209	6.1
		6.50	50	0.0850	2450	208	6.9
	Cast iron (lamellar / spheroidal)	4.50	160	0.1150	11320	1302	20.7
		4.80	160	0.1250	10610	1326	24.0
		5.00	160	0.1300	10185	1324	26.0
		5.10	160	0.1300	9985	1298	26.5
		5.50	160	0.1400	9260	1296	30.8
		5.80	160	0.1500	8780	1317	34.8
		6.00	160	0.1550	8490	1316	37.2
		6.10	160	0.1550	8350	1294	37.8
		6.50	160	0.1650	7835	1293	42.9
	Wrought aluminium alloys Si < 6% hardened	4.50	220	0.0900	15560	1400	22.3
		4.80	220	0.0950	14590	1386	25.1
		5.00	220	0.1000	14005	1401	27.5
		5.10	220	0.1000	13730	1373	28.0
		5.50	220	0.1100	12730	1400	33.3
		5.80	220	0.1150	12075	1389	36.7
		6.00	220	0.1200	11670	1400	39.6
		6.10	220	0.1200	11480	1378	40.3
		6.50	220	0.1300	10775	1401	46.5

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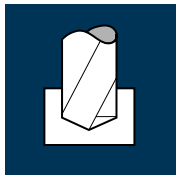
HM MG10

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G) Aluminium

Example:
Order-N°. Article-N°. **B62014** ø-Code **0440**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62014	B63014
0440	4.40	6.0	74.0	36.0	36	26.6		●	
0450	4.50	6.0	74.0	36.0	36	26.6		●	
0460	4.60	6.0	74.0	36.0	36	26.5		●	
0470	4.70	6.0	74.0	36.0	36	26.5		●	
0480	4.80	6.0	82.0	44.0	36	34.4		●	
0490	4.90	6.0	82.0	44.0	36	34.4		●	
0500	5.00	6.0	82.0	44.0	36	34.8		●	
0510	5.10	6.0	82.0	44.0	36	34.7		●	
0520	5.20	6.0	82.0	44.0	36	34.6		●	
0530	5.30	6.0	82.0	44.0	36	34.6		●	
0540	5.40	6.0	82.0	44.0	36	34.5		●	
0550	5.50	6.0	82.0	44.0	36	34.5		●	
0560	5.60	6.0	82.0	44.0	36	34.4		●	
0570	5.70	6.0	82.0	44.0	36	34.4		●	
0580	5.80	6.0	82.0	44.0	36	34.4		●	
0590	5.90	6.0	82.0	44.0	36	34.5		●	
0600	6.00	6.0	82.0	44.0	36	34.5		●	
0610	6.10	8.0	91.0	53.0	36	41.4		●	
0620	6.20	8.0	91.0	53.0	36	41.2		●	
0630	6.30	8.0	91.0	53.0	36	41.2		●	
0640	6.40	8.0	91.0	53.0	36	41.1		●	
0650	6.50	8.0	91.0	53.0	36	41.1		●	
0660	6.60	8.0	91.0	53.0	36	41.0		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	6.80	140	0.1600	6555	1049	38.1
		6.90	140	0.1650	6460	1066	39.9
		7.00	140	0.1650	6365	1050	40.4
		7.50	140	0.1800	5940	1069	47.2
		7.80	140	0.1850	5715	1057	50.5
		8.00	140	0.1900	5570	1058	53.2
		8.20	140	0.1950	5435	1060	56.0
		8.50	140	0.2000	5245	1049	59.5
		8.60	140	0.2050	5180	1062	61.7
	Steel 500 - 850 N/mm²	6.80	110	0.1600	5150	824	29.9
		6.90	110	0.1650	5075	837	31.3
		7.00	110	0.1650	5000	825	31.7
		7.50	110	0.1800	4670	841	37.1
		7.80	110	0.1850	4490	831	39.7
		8.00	110	0.1900	4375	831	41.8
		8.20	110	0.1950	4270	833	44.0
		8.50	110	0.2000	4120	824	46.8
		8.60	110	0.2050	4070	834	48.5
	Steel 850 - 1100 N/mm²	6.80	80	0.1200	3745	449	16.3
		6.90	80	0.1250	3690	461	17.2
		7.00	80	0.1250	3640	455	17.5
		7.50	80	0.1350	3395	458	20.2
		7.80	80	0.1400	3265	457	21.8
		8.00	80	0.1450	3185	462	23.2
		8.20	80	0.1500	3105	466	24.6
		8.50	80	0.1550	2995	464	26.3
		8.60	80	0.1550	2960	459	26.7
	Steel 1100 - 1300 N/mm²	6.80	55	0.1000	2575	258	9.4
		6.90	55	0.1050	2535	266	10.0
		7.00	55	0.1050	2500	263	10.1
		7.50	55	0.1150	2335	269	11.9
		7.80	55	0.1150	2245	258	12.3
		8.00	55	0.1200	2190	263	13.2
		8.20	55	0.1250	2135	267	14.1
		8.50	55	0.1300	2060	268	15.2
		8.60	55	0.1300	2035	265	15.4
	Steel 1300 - 1500 N/mm²	6.80	25	0.0700	1170	82	3.0
		6.90	25	0.0700	1155	81	3.0
		7.00	25	0.0700	1135	80	3.1
		7.50	25	0.0750	1060	80	3.5
		7.80	25	0.0800	1020	82	3.9
		8.00	25	0.0800	995	80	4.0
		8.20	25	0.0800	970	78	4.1
		8.50	25	0.0850	935	80	4.5
		8.60	25	0.0850	925	79	4.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.80	50	0.0850	2340	199	7.2
		6.90	50	0.0900	2305	208	7.8
		7.00	50	0.0900	2275	205	7.9
		7.50	50	0.0950	2120	201	8.9
		7.80	50	0.1000	2040	204	9.7
		8.00	50	0.1050	1990	209	10.5
		8.20	50	0.1050	1940	204	10.8
		8.50	50	0.1100	1870	206	11.7
		8.60	50	0.1100	1850	204	11.8
	Cast iron (lamellar / spheroidal)	6.80	160	0.1750	7490	1311	47.6
		6.90	160	0.1750	7380	1292	48.3
		7.00	160	0.1800	7275	1310	50.4
		7.50	160	0.1950	6790	1324	58.5
		7.80	160	0.2000	6530	1306	62.4
		8.00	160	0.2050	6365	1305	65.6
		8.20	160	0.2100	6210	1304	68.9
		8.50	160	0.2200	5990	1318	74.8
		8.60	160	0.2200	5920	1302	75.7
	Wrought aluminium alloys Si < 6% hardened	6.80	220	0.1350	10300	1391	50.5
		6.90	220	0.1400	10150	1421	53.1
		7.00	220	0.1400	10005	1401	53.9
		7.50	220	0.1500	9335	1400	61.9
		7.80	220	0.1550	8980	1392	66.5
		8.00	220	0.1600	8755	1401	70.4
		8.20	220	0.1650	8540	1409	74.4
		8.50	220	0.1700	8240	1401	79.5
		8.60	220	0.1700	8145	1385	80.4

Spiral flute drills Supradrill® U

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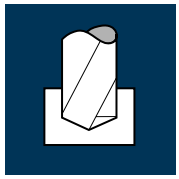
HM MG10

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62014** ø-Code **0670**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62014	B63014
0670	6.70	8.0	91.0	53.0	36	41.0		●	
0680	6.80	8.0	91.0	53.0	36	40.9		●	
0690	6.90	8.0	91.0	53.0	36	40.9		●	
0700	7.00	8.0	91.0	53.0	36	40.7		●	
0710	7.10	8.0	91.0	53.0	36	40.7		●	
0720	7.20	8.0	91.0	53.0	36	40.6		●	
0730	7.30	8.0	91.0	53.0	36	40.6		●	
0740	7.40	8.0	91.0	53.0	36	40.5		●	
0750	7.50	8.0	91.0	53.0	36	40.5		●	
0760	7.60	8.0	91.0	53.0	36	40.4		●	
0770	7.70	8.0	91.0	53.0	36	40.4		●	
0780	7.80	8.0	91.0	53.0	36	40.4		●	
0790	7.90	8.0	91.0	53.0	36	40.4		●	
0800	8.00	8.0	91.0	53.0	36	40.4		●	
0810	8.10	10.0	103.0	61.0	40	46.3		●	
0820	8.20	10.0	103.0	61.0	40	46.2		●	
0830	8.30	10.0	103.0	61.0	40	46.2		●	
0840	8.40	10.0	103.0	61.0	40	46.1		●	
0850	8.50	10.0	103.0	61.0	40	46.1		●	
0860	8.60	10.0	103.0	61.0	40	46.0		●	
0870	8.70	10.0	103.0	61.0	40	46.0		●	
0880	8.80	10.0	103.0	61.0	40	45.9		●	
0890	8.90	10.0	103.0	61.0	40	45.8		●	

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	9.00	140	0.2150	4950	1064	67.7
		9.50	140	0.2250	4690	1055	74.8
		9.80	140	0.2300	4545	1045	78.9
		10.00	140	0.2350	4455	1047	82.2
		10.20	140	0.2400	4370	1049	85.7
		10.40	140	0.2450	4285	1050	89.2
		10.50	140	0.2500	4245	1061	91.9
		10.80	140	0.2550	4125	1052	96.4
		11.00	140	0.2600	4050	1053	100.1
	Steel 500 - 850 N/mm²	9.00	110	0.2150	3890	836	53.2
		9.50	110	0.2250	3685	829	58.8
		9.80	110	0.2300	3575	822	62.0
		10.00	110	0.2350	3500	823	64.6
		10.20	110	0.2400	3435	824	67.4
		10.40	110	0.2450	3365	824	70.0
		10.50	110	0.2500	3335	834	72.2
		10.80	110	0.2550	3240	826	75.7
		11.00	110	0.2600	3185	828	78.7
	Steel 850 - 1100 N/mm²	9.00	80	0.1600	2830	453	28.8
		9.50	80	0.1700	2680	456	32.3
		9.80	80	0.1750	2600	455	34.3
		10.00	80	0.1800	2545	458	36.0
		10.20	80	0.1850	2495	462	37.7
		10.40	80	0.1850	2450	453	38.5
		10.50	80	0.1900	2425	461	39.9
		10.80	80	0.1950	2360	460	42.2
		11.00	80	0.2000	2315	463	44.0
	Steel 1100 - 1300 N/mm²	9.00	55	0.1350	1945	263	16.7
		9.50	55	0.1450	1845	268	19.0
		9.80	55	0.1450	1785	259	19.5
		10.00	55	0.1500	1750	263	20.6
		10.20	55	0.1550	1715	266	21.7
		10.40	55	0.1550	1685	261	22.2
		10.50	55	0.1600	1665	266	23.1
		10.80	55	0.1600	1620	259	23.7
		11.00	55	0.1650	1590	262	24.9
	Steel 1300 - 1500 N/mm²	9.00	25	0.0900	885	80	5.1
		9.50	25	0.0950	840	80	5.7
		9.80	25	0.1000	810	81	6.1
		10.00	25	0.1000	795	80	6.2
		10.20	25	0.1000	780	78	6.4
		10.40	25	0.1050	765	80	6.8
		10.50	25	0.1050	760	80	6.9
		10.80	25	0.1100	735	81	7.4
		11.00	25	0.1100	725	80	7.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	9.00	50	0.1150	1770	204	13.0
		9.50	50	0.1200	1675	201	14.2
		9.80	50	0.1250	1625	203	15.3
		10.00	50	0.1300	1590	207	16.2
		10.20	50	0.1300	1560	203	16.6
		10.40	50	0.1350	1530	207	17.6
		10.50	50	0.1350	1515	205	17.7
		10.80	50	0.1400	1475	207	18.9
		11.00	50	0.1400	1445	202	19.2
	Cast iron (lamellar / spheroidal)	9.00	160	0.2300	5660	1302	82.8
		9.50	160	0.2450	5360	1313	93.1
		9.80	160	0.2500	5195	1299	98.0
		10.00	160	0.2550	5095	1299	102.0
		10.20	160	0.2600	4995	1299	106.1
		10.40	160	0.2650	4895	1297	110.2
		10.50	160	0.2700	4850	1310	113.4
		10.80	160	0.2800	4715	1320	120.9
		11.00	160	0.2850	4630	1320	125.4
	Wrought aluminium alloys Si < 6% hardened	9.00	220	0.1800	7780	1400	89.1
		9.50	220	0.1900	7370	1400	99.3
		9.80	220	0.1950	7145	1393	105.1
		10.00	220	0.2000	7005	1401	110.0
		10.20	220	0.2050	6865	1407	115.0
		10.40	220	0.2100	6735	1414	120.2
		10.50	220	0.2100	6670	1401	121.3
		10.80	220	0.2150	6485	1394	127.7
		11.00	220	0.2200	6365	1400	133.1

Spiral flute drills Supradrill® U

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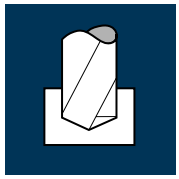
HM MG10

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B62014** ø-Code **0900**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62014	B63014
0900	9.00	10.0	103.0	61.0	40	45.7		●
0910	9.10	10.0	103.0	61.0	40	45.7		●
0920	9.20	10.0	103.0	61.0	40	45.6		●
0930	9.30	10.0	103.0	61.0	40	45.6		●
0940	9.40	10.0	103.0	61.0	40	45.5		●
0950	9.50	10.0	103.0	61.0	40	45.5		●
0960	9.60	10.0	103.0	61.0	40	45.4		●
0970	9.70	10.0	103.0	61.0	40	45.4		●
0980	9.80	10.0	103.0	61.0	40	45.3		●
0990	9.90	10.0	103.0	61.0	40	45.4		●
1000	10.00	10.0	103.0	61.0	40	45.4		●
1010	10.10	12.0	118.0	71.0	45	53.3		●
1020	10.20	12.0	118.0	71.0	45	53.2		●
1030	10.30	12.0	118.0	71.0	45	53.2		●
1040	10.40	12.0	118.0	71.0	45	53.1		●
1050	10.50	12.0	118.0	71.0	45	53.1		●
1060	10.60	12.0	118.0	71.0	45	53.0		●
1070	10.70	12.0	118.0	71.0	45	52.9		●
1080	10.80	12.0	118.0	71.0	45	52.8		●
1090	10.90	12.0	118.0	71.0	45	52.8		●
1100	11.00	12.0	118.0	71.0	45	52.7		●
1110	11.10	12.0	118.0	71.0	45	52.7		●
1120	11.20	12.0	118.0	71.0	45	52.6		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	11.50	140	0.2700	3875	1046	108.7
		11.70	140	0.2750	3810	1048	112.7
		12.00	140	0.2850	3715	1059	119.7
		12.50	140	0.2950	3565	1052	129.1
		13.00	140	0.3100	3430	1063	141.1
		14.00	140	0.3300	3185	1051	161.8
		15.00	140	0.3550	2970	1054	186.3
		15.50	140	0.3650	2875	1049	198.0
		16.00	140	0.3800	2785	1058	212.8
	Steel 500 - 850 N/mm²	11.50	110	0.2700	3045	822	85.4
		11.70	110	0.2750	2995	824	88.5
		12.00	110	0.2850	2920	832	94.1
		12.50	110	0.2950	2800	826	101.4
		13.00	110	0.3100	2695	836	110.9
		14.00	110	0.3300	2500	825	127.0
		15.00	110	0.3550	2335	829	146.5
		15.50	110	0.3650	2260	825	155.7
		16.00	110	0.3800	2190	832	167.3
	Steel 850 - 1100 N/mm²	11.50	80	0.2050	2215	454	47.2
		11.70	80	0.2100	2175	457	49.1
		12.00	80	0.2150	2120	456	51.5
		12.50	80	0.2250	2035	458	56.2
		13.00	80	0.2350	1960	461	61.1
		14.00	80	0.2500	1820	455	70.0
		15.00	80	0.2700	1700	459	81.1
		15.50	80	0.2800	1645	461	86.9
		16.00	80	0.2900	1590	461	92.7
	Steel 1100 - 1300 N/mm²	11.50	55	0.1750	1520	266	27.6
		11.70	55	0.1750	1495	262	28.1
		12.00	55	0.1800	1460	263	29.7
		12.50	55	0.1900	1400	266	32.6
		13.00	55	0.1950	1345	262	34.8
		14.00	55	0.2100	1250	263	40.4
		15.00	55	0.2250	1165	262	46.3
		15.50	55	0.2350	1130	266	50.1
		16.00	55	0.2400	1095	263	52.8
	Steel 1300 - 1500 N/mm²	11.50	25	0.1150	690	79	8.2
		11.70	25	0.1150	680	78	8.4
		12.00	25	0.1200	665	80	9.0
		12.50	25	0.1250	635	79	9.7
		13.00	25	0.1300	610	79	10.5
		14.00	25	0.1400	570	80	12.3
		15.00	25	0.1500	530	80	14.0
		15.50	25	0.1550	515	80	15.1
		16.00	25	0.1600	495	79	15.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	11.50	50	0.1500	1385	208	21.6
		11.70	50	0.1500	1360	204	21.9
		12.00	50	0.1550	1325	205	23.2
		12.50	50	0.1600	1275	204	25.0
		13.00	50	0.1650	1225	202	26.8
		14.00	50	0.1800	1135	204	31.4
		15.00	50	0.1950	1060	207	36.5
		15.50	50	0.2000	1025	205	38.7
		16.00	50	0.2050	995	204	41.0
	Cast iron (lamellar / spheroidal)	11.50	160	0.2950	4430	1307	135.7
		11.70	160	0.3000	4355	1307	140.5
		12.00	160	0.3100	4245	1316	148.8
		12.50	160	0.3200	4075	1304	160.0
		13.00	160	0.3350	3920	1313	174.3
		14.00	160	0.3600	3640	1310	201.7
		15.00	160	0.3850	3395	1307	231.0
		15.50	160	0.4000	3285	1314	247.9
		16.00	160	0.4100	3185	1306	262.6
	Wrought aluminium alloys Si < 6% hardened	11.50	220	0.2300	6090	1401	145.5
		11.70	220	0.2350	5985	1407	151.2
		12.00	220	0.2400	5835	1400	158.4
		12.50	220	0.2500	5600	1400	171.8
		13.00	220	0.2600	5385	1400	185.8
		14.00	220	0.2800	5000	1400	215.5
		15.00	220	0.3000	4670	1401	247.6
		15.50	220	0.3100	4520	1401	264.4
		16.00	220	0.3200	4375	1400	281.5

Spiral flute drills Supradrill® U

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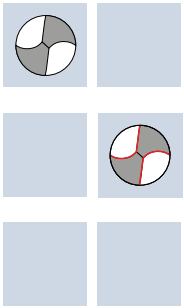
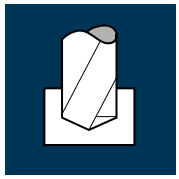
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62014** ø-Code **1130**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62014	B63014
1130	11.30	12.0	118.0	71.0	45	52.6		●
1140	11.40	12.0	118.0	71.0	45	52.5		●
1150	11.50	12.0	118.0	71.0	45	52.4		●
1160	11.60	12.0	118.0	71.0	45	52.4		●
1170	11.70	12.0	118.0	71.0	45	52.4		●
1180	11.80	12.0	118.0	71.0	45	52.3		●
1190	11.90	12.0	118.0	71.0	45	52.4		●
1200	12.00	12.0	118.0	71.0	45	52.3		●
1250	12.50	14.0	124.0	77.0	45	56.1		●
1280	12.80	14.0	124.0	77.0	45	55.8		●
1300	13.00	14.0	124.0	77.0	45	55.7		●
1350	13.50	14.0	124.0	77.0	45	55.4		●
1380	13.80	14.0	124.0	77.0	45	55.3		●
1400	14.00	14.0	124.0	77.0	45	55.3		●
1450	14.50	16.0	133.0	83.0	48	59.1		●
1480	14.80	16.0	133.0	83.0	48	58.8		●
1500	15.00	16.0	133.0	83.0	48	58.7		●
1550	15.50	16.0	133.0	83.0	48	58.4		●
1580	15.80	16.0	133.0	83.0	48	58.3		●
1600	16.00	16.0	133.0	83.0	48	58.3		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	180	0.1350	19100	2579	18.2
		3.30	180	0.1450	17360	2517	21.5
		3.50	180	0.1550	16370	2537	24.4
		3.80	180	0.1700	15080	2564	29.1
		4.00	180	0.1850	14325	2650	33.3
		4.20	180	0.2000	13640	2728	37.8
		4.50	180	0.2300	12730	2928	46.6
		4.80	180	0.2450	11935	2924	52.9
		5.00	180	0.2550	11460	2922	57.4
	Steel 500 - 850 N/mm²	3.00	160	0.1150	16975	1952	13.8
		3.30	160	0.1250	15435	1929	16.5
		3.50	160	0.1350	14550	1964	18.9
		3.80	160	0.1450	13405	1944	22.0
		4.00	160	0.1600	12730	2037	25.6
		4.20	160	0.1700	12125	2061	28.6
		4.50	160	0.1950	11320	2207	35.1
		4.80	160	0.2100	10610	2228	40.3
		5.00	160	0.2150	10185	2190	43.0
	Steel 850 - 1100 N/mm²	3.00	140	0.1050	14855	1560	11.0
		3.30	140	0.1150	13505	1553	13.3
		3.50	140	0.1250	12730	1591	15.3
		3.80	140	0.1350	11725	1583	18.0
		4.00	140	0.1450	11140	1615	20.3
		4.20	140	0.1550	10610	1645	22.8
		4.50	140	0.1800	9905	1783	28.4
		4.80	140	0.1900	9285	1764	31.9
		5.00	140	0.2000	8915	1783	35.0
	Steel 1100 - 1300 N/mm²	3.00	100	0.0800	10610	849	6.0
		3.30	100	0.0900	9645	868	7.4
		3.50	100	0.0950	9095	864	8.3
		3.80	100	0.1000	8375	838	9.5
		4.00	100	0.1100	7960	876	11.0
		4.20	100	0.1200	7580	910	12.6
		4.50	100	0.1350	7075	955	15.2
		4.80	100	0.1450	6630	961	17.4
		5.00	100	0.1500	6365	955	18.7
	Steel 1300 - 1500 N/mm²	3.00	55	0.0600	5835	350	2.5
		3.30	55	0.0700	5305	371	3.2
		3.50	55	0.0700	5000	350	3.4
		3.80	55	0.0800	4605	368	4.2
		4.00	55	0.0850	4375	372	4.7
		4.20	55	0.0900	4170	375	5.2
		4.50	55	0.1050	3890	409	6.5
		4.80	55	0.1100	3645	401	7.3
		5.00	55	0.1150	3500	403	7.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	70	0.0600	7425	446	3.1
		3.30	70	0.0700	6750	473	4.0
		3.50	70	0.0700	6365	446	4.3
		3.80	70	0.0800	5865	469	5.3
		4.00	70	0.0850	5570	474	6.0
		4.20	70	0.0900	5305	478	6.6
		4.50	70	0.1050	4950	520	8.3
		4.80	70	0.1100	4640	510	9.2
		5.00	70	0.1150	4455	512	10.1
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	40	0.0600	4245	255	1.8
		3.30	40	0.0700	3860	270	2.3
		3.50	40	0.0700	3640	255	2.5
		3.80	40	0.0800	3350	268	3.0
		4.00	40	0.0850	3185	271	3.4
		4.20	40	0.0900	3030	273	3.8
		4.50	40	0.1050	2830	297	4.7
		4.80	40	0.1100	2655	292	5.3
		5.00	40	0.1150	2545	293	5.7
	Cast iron (lamellar / spheroidal)	3.00	240	0.1200	25465	3056	21.6
		3.30	240	0.1350	23150	3125	26.7
		3.50	240	0.1400	21825	3056	29.4
		3.80	240	0.1550	20105	3116	35.3
		4.00	240	0.1650	19100	3152	39.6
		4.20	240	0.1800	18190	3274	45.4
		4.50	240	0.2050	16975	3480	55.3
		4.80	240	0.2200	15915	3501	63.4
		5.00	240	0.2300	15280	3514	69.0

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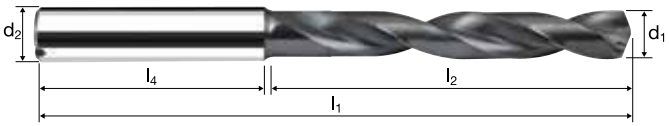
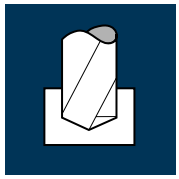


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **0300**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
0300	3.00	6.0	66.0	28.0	36	20.2	●
0310	3.10	6.0	66.0	28.0	36	20.2	●
0320	3.20	6.0	66.0	28.0	36	20.0	●
0330	3.30	6.0	66.0	28.0	36	20.0	●
0340	3.40	6.0	66.0	28.0	36	19.8	●
0350	3.50	6.0	66.0	28.0	36	19.8	●
0360	3.60	6.0	66.0	28.0	36	19.6	●
0370	3.70	6.0	66.0	28.0	36	19.6	●
0380	3.80	6.0	74.0	36.0	36	27.4	●
0390	3.90	6.0	74.0	36.0	36	27.3	●
0400	4.00	6.0	74.0	36.0	36	26.9	●
0410	4.10	6.0	74.0	36.0	36	26.8	●
0420	4.20	6.0	74.0	36.0	36	26.7	●
0430	4.30	6.0	74.0	36.0	36	26.7	●
0440	4.40	6.0	74.0	36.0	36	26.6	●
0450	4.50	6.0	74.0	36.0	36	26.6	●
0460	4.60	6.0	74.0	36.0	36	26.5	●
0470	4.70	6.0	74.0	36.0	36	26.5	●
0480	4.80	6.0	82.0	44.0	36	34.3	●
0490	4.90	6.0	82.0	44.0	36	34.3	●
0500	5.00	6.0	82.0	44.0	36	34.7	●
0510	5.10	6.0	82.0	44.0	36	34.7	●
0520	5.20	6.0	82.0	44.0	36	34.6	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	5.50	180	0.2800	10415	2916	69.3
		5.80	180	0.2950	9880	2915	77.0
		6.00	180	0.3150	9550	3008	85.1
		6.20	180	0.3350	9240	3095	93.5
		6.50	180	0.3500	8815	3085	102.4
		6.80	180	0.3650	8425	3075	111.7
		7.00	180	0.3800	8185	3110	119.7
		7.20	180	0.3900	7960	3104	126.4
		7.50	180	0.4050	7640	3094	136.7
	Steel 500 - 850 N/mm²	5.50	160	0.2400	9260	2222	52.8
		5.80	160	0.2500	8780	2195	58.0
		6.00	160	0.2700	8490	2292	64.8
		6.20	160	0.2850	8215	2341	70.7
		6.50	160	0.3000	7835	2351	78.0
		6.80	160	0.3150	7490	2359	85.7
		7.00	160	0.3250	7275	2364	91.0
		7.20	160	0.3350	7075	2370	96.5
		7.50	160	0.3450	6790	2343	103.5
	Steel 850 - 1100 N/mm²	5.50	140	0.2200	8100	1782	42.3
		5.80	140	0.2300	7685	1768	46.7
		6.00	140	0.2500	7425	1856	52.5
		6.20	140	0.2650	7190	1905	57.5
		6.50	140	0.2750	6855	1885	62.6
		6.80	140	0.2900	6555	1901	69.0
		7.00	140	0.3000	6365	1910	73.5
		7.20	140	0.3050	6190	1888	76.9
		7.50	140	0.3200	5940	1901	84.0
	Steel 1100 - 1300 N/mm²	5.50	100	0.1650	5785	955	22.7
		5.80	100	0.1750	5490	961	25.4
		6.00	100	0.1900	5305	1008	28.5
		6.20	100	0.2000	5135	1027	31.0
		6.50	100	0.2100	4895	1028	34.1
		6.80	100	0.2200	4680	1030	37.4
		7.00	100	0.2250	4545	1023	39.4
		7.20	100	0.2350	4420	1039	42.3
		7.50	100	0.2450	4245	1040	45.9
	Steel 1300 - 1500 N/mm²	5.50	55	0.1300	3185	414	9.8
		5.80	55	0.1350	3020	408	10.8
		6.00	55	0.1450	2920	423	12.0
		6.20	55	0.1550	2825	438	13.2
		6.50	55	0.1600	2695	431	14.3
		6.80	55	0.1700	2575	438	15.9
		7.00	55	0.1750	2500	438	16.8
		7.20	55	0.1800	2430	437	17.8
		7.50	55	0.1850	2335	432	19.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	5.50	70	0.1300	4050	527	12.5
		5.80	70	0.1350	3840	518	13.7
		6.00	70	0.1450	3715	539	15.2
		6.20	70	0.1550	3595	557	16.8
		6.50	70	0.1600	3430	549	18.2
		6.80	70	0.1700	3275	557	20.2
		7.00	70	0.1750	3185	557	21.5
		7.20	70	0.1800	3095	557	22.7
		7.50	70	0.1850	2970	550	24.3
	Titanium alloys > 300 HB [Ti6Al4V]	5.50	40	0.1300	2315	301	7.2
		5.80	40	0.1350	2195	296	7.8
		6.00	40	0.1450	2120	307	8.7
		6.20	40	0.1550	2055	319	9.6
		6.50	40	0.1600	1960	314	10.4
		6.80	40	0.1700	1870	318	11.5
		7.00	40	0.1750	1820	319	12.3
		7.20	40	0.1800	1770	319	13.0
		7.50	40	0.1850	1700	315	13.9
	Cast iron (lamellar / spheroidal)	5.50	240	0.2550	13890	3542	84.2
		5.80	240	0.2650	13170	3490	92.2
		6.00	240	0.2850	12730	3628	102.6
		6.20	240	0.3050	12320	3758	113.4
		6.50	240	0.3200	11755	3762	124.8
		6.80	240	0.3350	11235	3764	136.7
		7.00	240	0.3450	10915	3766	144.9
		7.20	240	0.3550	10610	3767	153.4
		7.50	240	0.3700	10185	3769	166.5

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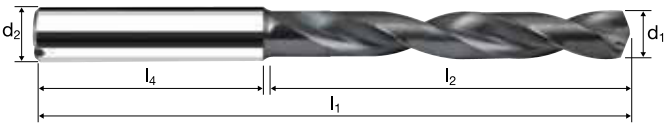
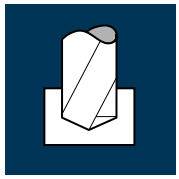


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **0530**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
0530	5.30	6.0	82.0	44.0	36	34.6	●
0540	5.40	6.0	82.0	44.0	36	34.5	●
0550	5.50	6.0	82.0	44.0	36	34.4	●
0560	5.60	6.0	82.0	44.0	36	34.3	●
0570	5.70	6.0	82.0	44.0	36	34.4	●
0580	5.80	6.0	82.0	44.0	36	34.3	●
0590	5.90	6.0	82.0	44.0	36	34.3	●
0600	6.00	6.0	82.0	44.0	36	34.3	●
0610	6.10	8.0	91.0	53.0	36	41.3	●
0620	6.20	8.0	91.0	53.0	36	41.2	●
0630	6.30	8.0	91.0	53.0	36	41.2	●
0640	6.40	8.0	91.0	53.0	36	41.1	●
0650	6.50	8.0	91.0	53.0	36	41.0	●
0660	6.60	8.0	91.0	53.0	36	40.9	●
0670	6.70	8.0	91.0	53.0	36	40.9	●
0680	6.80	8.0	91.0	53.0	36	40.8	●
0690	6.90	8.0	91.0	53.0	36	40.8	●
0700	7.00	8.0	91.0	53.0	36	40.7	●
0710	7.10	8.0	91.0	53.0	36	40.7	●
0720	7.20	8.0	91.0	53.0	36	40.6	●
0730	7.30	8.0	91.0	53.0	36	40.5	●
0740	7.40	8.0	91.0	53.0	36	40.4	●
0750	7.50	8.0	91.0	53.0	36	40.4	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	7.60	180	0.4100	7540	3091	140.2
		8.00	180	0.4300	7160	3079	154.8
		8.20	180	0.4450	6985	3108	164.1
		8.50	180	0.4600	6740	3100	175.9
		8.80	180	0.4750	6510	3092	188.1
		9.00	180	0.4850	6365	3087	196.4
		9.20	180	0.4950	6230	3084	205.0
		9.50	180	0.5150	6030	3106	220.1
		9.80	180	0.5300	5845	3098	233.7
	Steel 500 - 850 N/mm²	7.60	160	0.3500	6700	2345	106.4
		8.00	160	0.3700	6365	2355	118.4
		8.20	160	0.3800	6210	2360	124.6
		8.50	160	0.3950	5990	2366	134.3
		8.80	160	0.4050	5785	2343	142.5
		9.00	160	0.4150	5660	2349	149.4
		9.20	160	0.4250	5535	2352	156.4
		9.50	160	0.4400	5360	2358	167.2
		9.80	160	0.4550	5195	2364	178.3
	Steel 850 - 1100 N/mm²	7.60	140	0.3250	5865	1906	86.5
		8.00	140	0.3400	5570	1894	95.2
		8.20	140	0.3500	5435	1902	100.5
		8.50	140	0.3600	5245	1888	107.1
		8.80	140	0.3750	5065	1899	115.5
		9.00	140	0.3850	4950	1906	121.2
		9.20	140	0.3900	4845	1890	125.6
		9.50	140	0.4050	4690	1900	134.6
		9.80	140	0.4200	4545	1909	144.0
	Steel 1100 - 1300 N/mm²	7.60	100	0.2450	4190	1027	46.6
		8.00	100	0.2600	3980	1035	52.0
		8.20	100	0.2650	3880	1028	54.3
		8.50	100	0.2750	3745	1030	58.4
		8.80	100	0.2850	3615	1030	62.7
		9.00	100	0.2900	3535	1025	65.2
		9.20	100	0.3000	3460	1038	69.0
		9.50	100	0.3100	3350	1039	73.6
		9.80	100	0.3200	3250	1040	78.4
	Steel 1300 - 1500 N/mm²	7.60	55	0.1900	2305	438	19.9
		8.00	55	0.2000	2190	438	22.0
		8.20	55	0.2050	2135	438	23.1
		8.50	55	0.2100	2060	433	24.5
		8.80	55	0.2200	1990	438	26.6
		9.00	55	0.2250	1945	438	27.8
		9.20	55	0.2300	1905	438	29.1
		9.50	55	0.2350	1845	434	30.7
		9.80	55	0.2450	1785	437	33.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	7.60	70	0.1900	2930	557	25.3
		8.00	70	0.2000	2785	557	28.0
		8.20	70	0.2050	2715	557	29.4
		8.50	70	0.2100	2620	550	31.2
		8.80	70	0.2200	2530	557	33.9
		9.00	70	0.2250	2475	557	35.4
		9.20	70	0.2300	2420	557	37.0
		9.50	70	0.2350	2345	551	39.1
		9.80	70	0.2450	2275	557	42.0
	Titanium alloys > 300 HB [Ti6Al4V]	7.60	40	0.1900	1675	318	14.4
		8.00	40	0.2000	1590	318	16.0
		8.20	40	0.2050	1555	319	16.8
		8.50	40	0.2100	1500	315	17.9
		8.80	40	0.2200	1445	318	19.3
		9.00	40	0.2250	1415	318	20.3
		9.20	40	0.2300	1385	319	21.2
		9.50	40	0.2350	1340	315	22.3
		9.80	40	0.2450	1300	319	24.0
	Cast iron (lamellar / spheroidal)	7.60	240	0.3750	10050	3769	171.0
		8.00	240	0.3950	9550	3772	189.6
		8.20	240	0.4050	9315	3773	199.2
		8.50	240	0.4150	8990	3731	211.7
		8.80	240	0.4300	8680	3732	227.0
		9.00	240	0.4400	8490	3736	237.6
		9.20	240	0.4500	8305	3737	248.4
		9.50	240	0.4650	8040	3739	265.0
		9.80	240	0.4800	7795	3742	282.2

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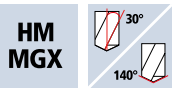
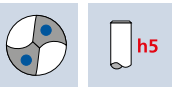
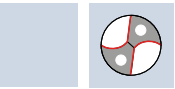
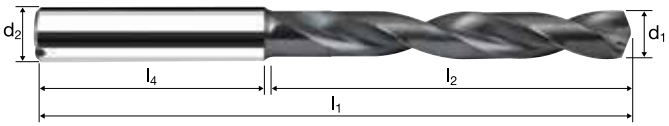




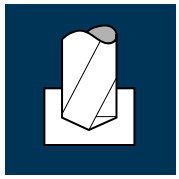




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **0760**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		DURO-X B72015
0760	7.60	8.0	91.0	53.0	36	40.3		●
0770	7.70	8.0	91.0	53.0	36	40.3		●
0780	7.80	8.0	91.0	53.0	36	40.3		●
0790	7.90	8.0	91.0	53.0	36	40.3		●
0800	8.00	8.0	91.0	53.0	36	40.3		●
0810	8.10	10.0	103.0	61.0	40	46.3		●
0820	8.20	10.0	103.0	61.0	40	46.2		●
0830	8.30	10.0	103.0	61.0	40	46.2		●
0840	8.40	10.0	103.0	61.0	40	46.0		●
0850	8.50	10.0	103.0	61.0	40	46.0		●
0860	8.60	10.0	103.0	61.0	40	45.9		●
0870	8.70	10.0	103.0	61.0	40	45.9		●
0880	8.80	10.0	103.0	61.0	40	45.8		●
0890	8.90	10.0	103.0	61.0	40	45.8		●
0900	9.00	10.0	103.0	61.0	40	45.7		●
0910	9.10	10.0	103.0	61.0	40	45.6		●
0920	9.20	10.0	103.0	61.0	40	45.5		●
0930	9.30	10.0	103.0	61.0	40	45.5		●
0940	9.40	10.0	103.0	61.0	40	45.4		●
0950	9.50	10.0	103.0	61.0	40	45.4		●
0960	9.60	10.0	103.0	61.0	40	45.3		●
0970	9.70	10.0	103.0	61.0	40	45.3		●
0980	9.80	10.0	103.0	61.0	40	45.2		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	10.00	180	0.5400	5730	3094	243.0
		10.20	180	0.5450	5615	3060	250.1
		10.50	180	0.5650	5455	3082	266.9
		10.80	180	0.5750	5305	3050	279.4
		11.00	180	0.5850	5210	3048	289.7
		11.20	180	0.5850	5115	2992	294.8
		11.50	180	0.5900	4980	2938	305.2
		11.80	180	0.6000	4855	2913	318.6
		12.00	180	0.6100	4775	2913	329.4
	Steel 500 - 850 N/mm²	10.00	160	0.4650	5095	2369	186.1
		10.20	160	0.4700	4995	2348	191.8
		10.50	160	0.4850	4850	2352	203.7
		10.80	160	0.4950	4715	2334	213.8
		11.00	160	0.5000	4630	2315	220.0
		11.20	160	0.5000	4545	2273	223.9
		11.50	160	0.5050	4430	2237	232.4
		11.80	160	0.5100	4315	2201	240.7
		12.00	160	0.5200	4245	2207	249.7
	Steel 850 - 1100 N/mm²	10.00	140	0.4250	4455	1893	148.7
		10.20	140	0.4300	4370	1879	153.5
		10.50	140	0.4450	4245	1889	163.6
		10.80	140	0.4550	4125	1877	171.9
		11.00	140	0.4600	4050	1863	177.0
		11.20	140	0.4650	3980	1851	182.3
		11.50	140	0.4650	3875	1802	187.2
		11.80	140	0.4700	3775	1774	194.0
		12.00	140	0.4800	3715	1783	201.7
	Steel 1100 - 1300 N/mm²	10.00	100	0.3250	3185	1035	81.3
		10.20	100	0.3300	3120	1030	84.1
		10.50	100	0.3400	3030	1030	89.2
		10.80	100	0.3450	2945	1016	93.1
		11.00	100	0.3500	2895	1013	96.3
		11.20	100	0.3500	2840	994	97.9
		11.50	100	0.3550	2770	983	102.1
		11.80	100	0.3600	2700	972	106.3
		12.00	100	0.3650	2655	969	109.6
	Steel 1300 - 1500 N/mm²	10.00	55	0.2500	1750	438	34.4
		10.20	55	0.2550	1715	437	35.7
		10.50	55	0.2600	1665	433	37.5
		10.80	55	0.2650	1620	429	39.3
		11.00	55	0.2700	1590	429	40.8
		11.20	55	0.2700	1565	423	41.6
		11.50	55	0.2700	1520	410	42.6
		11.80	55	0.2750	1485	408	44.7
		12.00	55	0.2800	1460	409	46.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	70	0.2500	2230	558	43.8
		10.20	70	0.2550	2185	557	45.5
		10.50	70	0.2600	2120	551	47.7
		10.80	70	0.2650	2065	547	50.1
		11.00	70	0.2700	2025	547	52.0
		11.20	70	0.2700	1990	537	52.9
		11.50	70	0.2700	1940	524	54.4
		11.80	70	0.2750	1890	520	56.8
		12.00	70	0.2800	1855	519	58.7
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	40	0.2500	1275	319	25.0
		10.20	40	0.2550	1250	319	26.1
		10.50	40	0.2600	1215	316	27.4
		10.80	40	0.2650	1180	313	28.6
		11.00	40	0.2700	1155	312	29.6
		11.20	40	0.2700	1135	307	30.2
		11.50	40	0.2700	1105	298	31.0
		11.80	40	0.2750	1080	297	32.5
		12.00	40	0.2800	1060	297	33.6
	Cast iron (lamellar / spheroidal)	10.00	240	0.4900	7640	3744	294.0
		10.20	240	0.5000	7490	3745	306.0
		10.50	240	0.5100	7275	3710	321.3
		10.80	240	0.5250	7075	3714	340.3
		11.00	240	0.5300	6945	3681	349.8
		11.20	240	0.5350	6820	3649	359.5
		11.50	240	0.5350	6645	3555	369.3
		11.80	240	0.5450	6475	3529	385.9
		12.00	240	0.5550	6365	3533	399.5

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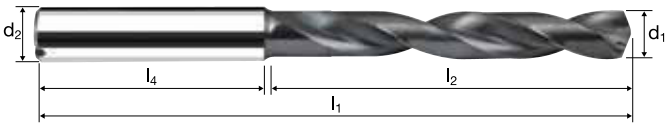
5xd

HM MGX

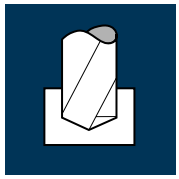
h5



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **0990**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
0990	9.90	10.0	103.0	61.0	40	45.3	●
1000	10.00	10.0	103.0	61.0	40	45.2	●
1010	10.10	12.0	118.0	71.0	45	53.2	●
1020	10.20	12.0	118.0	71.0	45	53.1	●
1030	10.30	12.0	118.0	71.0	45	53.1	●
1040	10.40	12.0	118.0	71.0	45	53.0	●
1050	10.50	12.0	118.0	71.0	45	53.0	●
1060	10.60	12.0	118.0	71.0	45	52.9	●
1070	10.70	12.0	118.0	71.0	45	52.9	●
1080	10.80	12.0	118.0	71.0	45	52.8	●
1090	10.90	12.0	118.0	71.0	45	52.7	●
1100	11.00	12.0	118.0	71.0	45	52.6	●
1110	11.10	12.0	118.0	71.0	45	52.6	●
1120	11.20	12.0	118.0	71.0	45	52.5	●
1130	11.30	12.0	118.0	71.0	45	52.5	●
1140	11.40	12.0	118.0	71.0	45	52.4	●
1150	11.50	12.0	118.0	71.0	45	52.4	●
1160	11.60	12.0	118.0	71.0	45	52.3	●
1170	11.70	12.0	118.0	71.0	45	52.3	●
1180	11.80	12.0	118.0	71.0	45	52.2	●
1190	11.90	12.0	118.0	71.0	45	52.2	●
1200	12.00	12.0	118.0	71.0	45	52.2	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	12.20	180	0.6200	4695	2911	340.3
		12.50	180	0.6350	4585	2912	357.3
		12.60	180	0.6400	4545	2909	362.7
		12.80	180	0.6500	4475	2909	374.3
		13.00	180	0.6600	4405	2907	385.9
		13.20	180	0.6700	4340	2908	397.9
		13.50	180	0.6750	4245	2865	410.1
		13.80	180	0.6750	4150	2801	419.0
		14.00	180	0.6800	4095	2785	428.7
	Steel 500 - 850 N/mm²	12.20	160	0.5300	4175	2213	258.7
		12.50	160	0.5450	4075	2221	272.5
		12.60	160	0.5450	4040	2202	274.5
		12.80	160	0.5550	3980	2209	284.2
		13.00	160	0.5650	3920	2215	294.0
		13.20	160	0.5750	3860	2220	303.7
		13.50	160	0.5800	3775	2190	313.4
		13.80	160	0.5800	3690	2140	320.1
		14.00	160	0.5850	3640	2129	327.8
	Steel 850 - 1100 N/mm²	12.20	140	0.4900	3655	1791	209.4
		12.50	140	0.5000	3565	1783	218.7
		12.60	140	0.5050	3535	1785	222.6
		12.80	140	0.5100	3480	1775	228.4
		13.00	140	0.5200	3430	1784	236.7
		13.20	140	0.5300	3375	1789	244.8
		13.50	140	0.5350	3300	1766	252.7
		13.80	140	0.5350	3230	1728	258.5
		14.00	140	0.5400	3185	1720	264.8
	Steel 1100 - 1300 N/mm²	12.20	100	0.3700	2610	966	112.9
		12.50	100	0.3800	2545	967	118.7
		12.60	100	0.3850	2525	972	121.2
		12.80	100	0.3900	2485	969	124.7
		13.00	100	0.3950	2450	968	128.5
		13.20	100	0.4000	2410	964	131.9
		13.50	100	0.4050	2360	956	136.8
		13.80	100	0.4050	2305	934	139.6
		14.00	100	0.4100	2275	933	143.6
	Steel 1300 - 1500 N/mm²	12.20	55	0.2850	1435	409	47.8
		12.50	55	0.2900	1400	406	49.8
		12.60	55	0.2950	1390	410	51.1
		12.80	55	0.3000	1370	411	52.9
		13.00	55	0.3050	1345	410	54.4
		13.20	55	0.3100	1325	411	56.2
		13.50	55	0.3100	1295	402	57.5
		13.80	55	0.3100	1270	394	58.9
		14.00	55	0.3150	1250	394	60.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	12.20	70	0.2850	1825	520	60.8
		12.50	70	0.2900	1785	518	63.5
		12.60	70	0.2950	1770	522	65.1
		12.80	70	0.3000	1740	522	67.2
		13.00	70	0.3050	1715	523	69.4
		13.20	70	0.3100	1690	524	71.7
		13.50	70	0.3100	1650	512	73.2
		13.80	70	0.3100	1615	501	74.9
		14.00	70	0.3150	1590	501	77.1
	Titanium alloys > 300 HB [Ti6Al4V]	12.20	40	0.2850	1045	298	34.8
		12.50	40	0.2900	1020	296	36.3
		12.60	40	0.2950	1010	298	37.2
		12.80	40	0.3000	995	299	38.4
		13.00	40	0.3050	980	299	39.7
		13.20	40	0.3100	965	299	40.9
		13.50	40	0.3100	945	293	41.9
		13.80	40	0.3100	925	287	42.9
		14.00	40	0.3150	910	287	44.1
	Cast iron (lamellar / spheroidal)	12.20	240	0.5600	6260	3506	409.8
		12.50	240	0.5750	6110	3513	431.1
		12.60	240	0.5800	6065	3518	438.6
		12.80	240	0.5900	5970	3522	453.2
		13.00	240	0.6000	5875	3525	467.9
		13.20	240	0.6100	5785	3529	482.9
		13.50	240	0.6150	5660	3481	498.3
		13.80	240	0.6150	5535	3404	509.1
		14.00	240	0.6200	5455	3382	520.6

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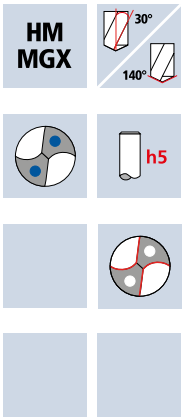
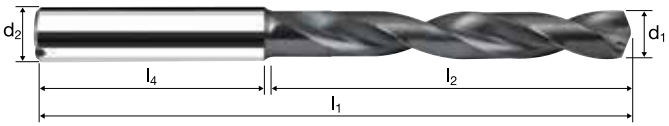
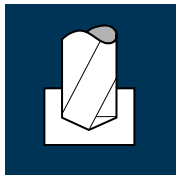




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **1210**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
1210	12.10	14.0	124.0	77.0	45	56.2	●
1220	12.20	14.0	124.0	77.0	45	56.1	●
1230	12.30	14.0	124.0	77.0	45	56.1	●
1240	12.40	14.0	124.0	77.0	45	56.0	●
1250	12.50	14.0	124.0	77.0	45	56.0	●
1260	12.60	14.0	124.0	77.0	45	55.9	●
1270	12.70	14.0	124.0	77.0	45	55.8	●
1280	12.80	14.0	124.0	77.0	45	55.7	●
1290	12.90	14.0	124.0	77.0	45	55.7	●
1300	13.00	14.0	124.0	77.0	45	55.6	●
1310	13.10	14.0	124.0	77.0	45	55.6	●
1320	13.20	14.0	124.0	77.0	45	55.5	●
1330	13.30	14.0	124.0	77.0	45	55.5	●
1340	13.40	14.0	124.0	77.0	45	55.4	●
1350	13.50	14.0	124.0	77.0	45	55.3	●
1360	13.60	14.0	124.0	77.0	45	55.2	●
1370	13.70	14.0	124.0	77.0	45	55.2	●
1380	13.80	14.0	124.0	77.0	45	55.1	●
1390	13.90	14.0	124.0	77.0	45	55.2	●
1400	14.00	14.0	124.0	77.0	45	55.1	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	14.20	180	0.6850	4035	2764	437.7
		14.50	180	0.6900	3950	2726	450.1
		14.80	180	0.7000	3870	2709	466.0
		15.00	180	0.7100	3820	2712	479.3
		15.20	180	0.7200	3770	2714	492.6
		15.50	180	0.7250	3695	2679	505.5
		15.70	180	0.7250	3650	2646	512.3
		15.80	180	0.7300	3625	2646	518.9
		16.00	180	0.7350	3580	2631	529.1
	Steel 500 - 850 N/mm²	14.20	160	0.5900	3585	2115	335.0
		14.50	160	0.5900	3510	2071	342.0
		14.80	160	0.6000	3440	2064	355.1
		15.00	160	0.6100	3395	2071	366.0
		15.20	160	0.6150	3350	2060	373.9
		15.50	160	0.6200	3285	2037	384.3
		15.70	160	0.6250	3245	2028	392.6
		15.80	160	0.6250	3225	2016	395.2
		16.00	160	0.6300	3185	2007	403.5
	Steel 850 - 1100 N/mm²	14.20	140	0.5400	3140	1696	268.5
		14.50	140	0.5450	3075	1676	276.7
		14.80	140	0.5550	3010	1671	287.4
		15.00	140	0.5600	2970	1663	293.9
		15.20	140	0.5700	2930	1670	303.1
		15.50	140	0.5700	2875	1639	309.2
		15.70	140	0.5750	2840	1633	316.1
		15.80	140	0.5800	2820	1636	320.7
		16.00	140	0.5800	2785	1615	324.8
	Steel 1100 - 1300 N/mm²	14.20	100	0.4100	2240	918	145.4
		14.50	100	0.4150	2195	911	150.4
		14.80	100	0.4200	2150	903	155.3
		15.00	100	0.4250	2120	901	159.2
		15.20	100	0.4300	2095	901	163.5
		15.50	100	0.4350	2055	894	168.7
		15.70	100	0.4350	2025	881	170.5
		15.80	100	0.4400	2015	887	173.8
		16.00	100	0.4400	1990	876	176.0
	Steel 1300 - 1500 N/mm²	14.20	55	0.3150	1235	389	61.6
		14.50	55	0.3200	1205	386	63.7
		14.80	55	0.3250	1185	385	66.3
		15.00	55	0.3300	1165	385	67.9
		15.20	55	0.3300	1150	380	68.9
		15.50	55	0.3350	1130	379	71.4
		15.70	55	0.3350	1115	374	72.3
		15.80	55	0.3400	1110	377	74.0
		16.00	55	0.3400	1095	372	74.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	14.20	70	0.3150	1570	495	78.3
		14.50	70	0.3200	1535	491	81.1
		14.80	70	0.3250	1505	489	84.1
		15.00	70	0.3300	1485	490	86.6
		15.20	70	0.3300	1465	484	87.7
		15.50	70	0.3350	1440	482	91.0
		15.70	70	0.3350	1420	476	92.1
		15.80	70	0.3400	1410	479	94.0
		16.00	70	0.3400	1395	474	95.4
	Titanium alloys > 300 HB [Ti6Al4V]	14.20	40	0.3150	895	282	44.6
		14.50	40	0.3200	880	282	46.5
		14.80	40	0.3250	860	280	48.1
		15.00	40	0.3300	850	281	49.6
		15.20	40	0.3300	840	277	50.3
		15.50	40	0.3350	820	275	51.8
		15.70	40	0.3350	810	271	52.5
		15.80	40	0.3400	805	274	53.7
		16.00	40	0.3400	795	270	54.3
	Cast iron (lamellar / spheroidal)	14.20	240	0.6250	5380	3363	532.5
		14.50	240	0.6300	5270	3320	548.2
		14.80	240	0.6350	5160	3277	563.7
		15.00	240	0.6450	5095	3286	580.7
		15.20	240	0.6550	5025	3291	597.3
		15.50	240	0.6600	4930	3254	614.0
		15.70	240	0.6600	4865	3211	621.6
		15.80	240	0.6650	4835	3215	630.4
		16.00	240	0.6700	4775	3199	643.3

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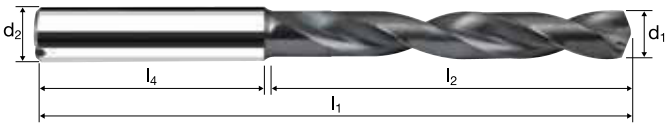
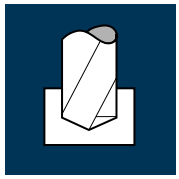


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **1410**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
1410	14.10	16.0	133.0	83.0	48	59.2	●
1420	14.20	16.0	133.0	83.0	48	59.1	●
1430	14.30	16.0	133.0	83.0	48	59.1	●
1440	14.40	16.0	133.0	83.0	48	59.0	●
1450	14.50	16.0	133.0	83.0	48	59.0	●
1460	14.60	16.0	133.0	83.0	48	58.8	●
1470	14.70	16.0	133.0	83.0	48	58.8	●
1480	14.80	16.0	133.0	83.0	48	58.7	●
1490	14.90	16.0	133.0	83.0	48	58.7	●
1500	15.00	16.0	133.0	83.0	48	58.6	●
1510	15.10	16.0	133.0	83.0	48	58.6	●
1520	15.20	16.0	133.0	83.0	48	58.5	●
1530	15.30	16.0	133.0	83.0	48	58.5	●
1540	15.40	16.0	133.0	83.0	48	58.3	●
1550	15.50	16.0	133.0	83.0	48	58.3	●
1560	15.60	16.0	133.0	83.0	48	58.2	●
1570	15.70	16.0	133.0	83.0	48	58.2	●
1580	15.80	16.0	133.0	83.0	48	58.1	●
1590	15.90	16.0	133.0	83.0	48	58.1	●
1600	16.00	16.0	133.0	83.0	48	58.1	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 500 N/mm²	16.20	180	0.7400	3535	2616	539.2
		16.40	180	0.7500	3495	2621	553.7
		16.50	180	0.7550	3470	2620	560.2
		16.80	180	0.7550	3410	2575	570.7
		17.00	180	0.7600	3370	2561	581.3
		17.20	180	0.7650	3330	2548	591.9
		17.50	180	0.7700	3275	2522	606.6
		17.70	180	0.7750	3235	2507	616.9
		18.00	180	0.7800	3185	2484	632.2
	Steel 500 - 850 N/mm²	16.20	160	0.6350	3145	1997	411.6
		16.40	160	0.6400	3105	1987	419.8
		16.50	160	0.6450	3085	1990	425.5
		16.80	160	0.6500	3030	1970	436.6
		17.00	160	0.6500	2995	1947	441.9
		17.20	160	0.6550	2960	1939	450.5
		17.50	160	0.6600	2910	1921	462.0
		17.70	160	0.6600	2875	1898	466.9
		18.00	160	0.6700	2830	1896	482.5
	Steel 850 - 1100 N/mm²	16.20	140	0.5850	2750	1609	331.6
		16.40	140	0.5900	2715	1602	338.4
		16.50	140	0.5950	2700	1607	343.5
		16.80	140	0.5950	2655	1580	350.2
		17.00	140	0.6000	2620	1572	356.8
		17.20	140	0.6000	2590	1554	361.1
		17.50	140	0.6100	2545	1553	373.4
		17.70	140	0.6100	2520	1537	378.2
		18.00	140	0.6150	2475	1522	387.3
	Steel 1100 - 1300 N/mm²	16.20	100	0.4450	1965	874	180.2
		16.40	100	0.4500	1940	873	184.4
		16.50	100	0.4500	1930	869	185.7
		16.80	100	0.4550	1895	862	191.1
		17.00	100	0.4550	1870	851	193.1
		17.20	100	0.4600	1850	851	197.7
		17.50	100	0.4600	1820	837	201.4
		17.70	100	0.4650	1800	837	206.0
		18.00	100	0.4700	1770	832	211.7
	Steel 1300 - 1500 N/mm²	16.20	55	0.3400	1080	367	75.7
		16.40	55	0.3450	1070	369	78.0
		16.50	55	0.3500	1060	371	79.3
		16.80	55	0.3500	1040	364	80.7
		17.00	55	0.3500	1030	361	81.8
		17.20	55	0.3500	1020	357	82.9
		17.50	55	0.3550	1000	355	85.4
		17.70	55	0.3550	990	352	86.5
		18.00	55	0.3600	975	351	89.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	16.20	70	0.3400	1375	468	96.4
		16.40	70	0.3450	1360	469	99.1
		16.50	70	0.3500	1350	473	101.0
		16.80	70	0.3500	1325	464	102.8
		17.00	70	0.3500	1310	459	104.1
		17.20	70	0.3500	1295	453	105.3
		17.50	70	0.3550	1275	453	108.9
		17.70	70	0.3550	1260	447	110.1
		18.00	70	0.3600	1240	446	113.6
	Titanium alloys > 300 HB [Ti6Al4V]	16.20	40	0.3400	785	267	55.0
		16.40	40	0.3450	775	267	56.5
		16.50	40	0.3500	770	270	57.6
		16.80	40	0.3500	760	266	59.0
		17.00	40	0.3500	750	263	59.6
		17.20	40	0.3500	740	259	60.2
		17.50	40	0.3550	730	259	62.3
		17.70	40	0.3550	720	256	62.9
		18.00	40	0.3600	705	254	64.6
	Cast iron (lamellar / spheroidal)	16.20	240	0.6750	4715	3183	656.0
		16.40	240	0.6800	4660	3169	669.4
		16.50	240	0.6850	4630	3172	678.2
		16.80	240	0.6850	4545	3113	690.1
		17.00	240	0.6900	4495	3102	704.0
		17.20	240	0.6950	4440	3086	717.0
		17.50	240	0.7000	4365	3056	734.9
		17.70	240	0.7050	4315	3042	748.5
		18.00	240	0.7100	4245	3014	767.0

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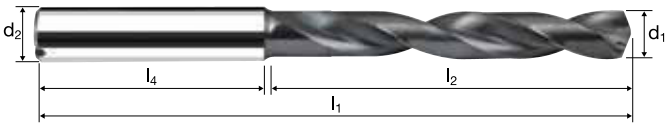
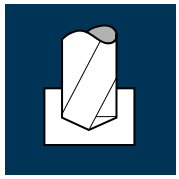


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **1610**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
1610	16.10	18.0	143.0	93.0	48	66.2	●
1620	16.20	18.0	143.0	93.0	48	66.1	●
1630	16.30	18.0	143.0	93.0	48	66.1	●
1640	16.40	18.0	143.0	93.0	48	65.9	●
1650	16.50	18.0	143.0	93.0	48	65.9	●
1660	16.60	18.0	143.0	93.0	48	65.8	●
1670	16.70	18.0	143.0	93.0	48	65.8	●
1680	16.80	18.0	143.0	93.0	48	65.7	●
1690	16.90	18.0	143.0	93.0	48	65.7	●
1700	17.00	18.0	143.0	93.0	48	65.6	●
1710	17.10	18.0	143.0	93.0	48	65.5	●
1720	17.20	18.0	143.0	93.0	48	65.4	●
1730	17.30	18.0	143.0	93.0	48	65.4	●
1740	17.40	18.0	143.0	93.0	48	65.3	●
1750	17.50	18.0	143.0	93.0	48	65.3	●
1760	17.60	18.0	143.0	93.0	48	65.2	●
1770	17.70	18.0	143.0	93.0	48	65.2	●
1780	17.80	18.0	143.0	93.0	48	65.1	●
1790	17.90	18.0	143.0	93.0	48	65.1	●
1800	18.00	18.0	143.0	93.0	48	65.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	18.50	180	0.7850	3095	2430	653.1
		18.70	180	0.7850	3065	2406	660.8
		19.00	180	0.7900	3015	2382	675.3
		19.20	180	0.7950	2985	2373	687.1
		19.30	180	0.8000	2970	2376	695.1
		19.50	180	0.8050	2940	2367	706.8
		19.70	180	0.8100	2910	2357	718.5
		19.80	180	0.8100	2895	2345	722.0
		20.00	180	0.8200	2865	2349	738.1
	Steel 500 - 850 N/mm²	18.50	160	0.6700	2755	1846	496.2
		18.70	160	0.6750	2725	1839	505.2
		19.00	160	0.6800	2680	1822	516.7
		19.20	160	0.6800	2655	1805	522.7
		19.30	160	0.6850	2640	1808	529.1
		19.50	160	0.6900	2610	1801	537.8
		19.70	160	0.6900	2585	1784	543.7
		19.80	160	0.6950	2570	1786	550.0
		20.00	160	0.7050	2545	1794	563.7
	Steel 850 - 1100 N/mm²	18.50	140	0.6200	2410	1494	401.6
		18.70	140	0.6200	2385	1479	406.1
		19.00	140	0.6250	2345	1466	415.5
		19.20	140	0.6250	2320	1450	419.8
		19.30	140	0.6300	2310	1455	425.8
		19.50	140	0.6350	2285	1451	433.3
		19.70	140	0.6400	2260	1446	440.9
		19.80	140	0.6400	2250	1440	443.4
		20.00	140	0.6450	2230	1438	451.9
	Steel 1100 - 1300 N/mm²	18.50	100	0.4700	1720	808	217.3
		18.70	100	0.4700	1700	799	219.4
		19.00	100	0.4750	1675	796	225.6
		19.20	100	0.4750	1660	789	228.3
		19.30	100	0.4800	1650	792	231.7
		19.50	100	0.4850	1630	791	236.1
		19.70	100	0.4850	1615	783	238.8
		19.80	100	0.4850	1610	781	240.4
		20.00	100	0.4900	1590	779	244.8
	Steel 1300 - 1500 N/mm²	18.50	55	0.3600	945	340	91.4
		18.70	55	0.3600	935	337	92.4
		19.00	55	0.3650	920	336	95.2
		19.20	55	0.3650	910	332	96.2
		19.30	55	0.3700	905	335	98.0
		19.50	55	0.3700	900	333	99.4
		19.70	55	0.3750	890	334	101.7
		19.80	55	0.3750	885	332	102.2
		20.00	55	0.3800	875	333	104.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	18.50	70	0.3600	1205	434	116.6
		18.70	70	0.3600	1190	428	117.7
		19.00	70	0.3650	1175	429	121.6
		19.20	70	0.3650	1160	423	122.6
		19.30	70	0.3700	1155	427	125.0
		19.50	70	0.3700	1145	424	126.5
		19.70	70	0.3750	1130	424	129.2
		19.80	70	0.3750	1125	422	129.9
		20.00	70	0.3800	1115	424	133.1
	Titanium alloys > 300 HB [Ti6Al4V]	18.50	40	0.3600	690	248	66.8
		18.70	40	0.3600	680	245	67.2
		19.00	40	0.3650	670	245	69.4
		19.20	40	0.3650	665	243	70.3
		19.30	40	0.3700	660	244	71.4
		19.50	40	0.3700	655	242	72.4
		19.70	40	0.3750	645	242	73.7
		19.80	40	0.3750	645	242	74.5
		20.00	40	0.3800	635	241	75.8
	Cast iron (lamellar / spheroidal)	18.50	240	0.7100	4130	2932	788.2
		18.70	240	0.7150	4085	2921	802.2
		19.00	240	0.7200	4020	2894	820.6
		19.20	240	0.7200	3980	2866	829.7
		19.30	240	0.7250	3960	2871	839.9
		19.50	240	0.7350	3920	2881	860.5
		19.70	240	0.7350	3880	2852	869.2
		19.80	240	0.7400	3860	2856	879.5
		20.00	240	0.7450	3820	2846	894.1

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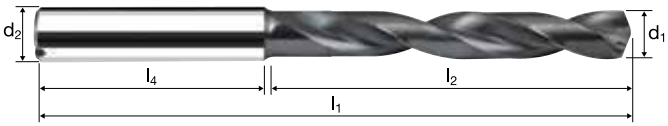
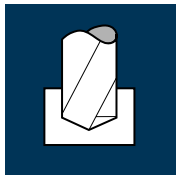


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72015** ø-Code **1850**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72015
1850	18.50	20.0	153.0	101.0	50	70.9	●
1870	18.70	20.0	153.0	101.0	50	70.8	●
1900	19.00	20.0	153.0	101.0	50	70.5	●
1910	19.10	20.0	153.0	101.0	50	70.5	●
1920	19.20	20.0	153.0	101.0	50	70.4	●
1930	19.30	20.0	153.0	101.0	50	70.4	●
1950	19.50	20.0	153.0	101.0	50	70.3	●
1970	19.70	20.0	153.0	101.0	50	70.2	●
1980	19.80	20.0	153.0	101.0	50	70.1	●
2000	20.00	20.0	153.0	101.0	50	70.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	170	0.0850	18040	1533	10.8
		3.30	170	0.0950	16400	1558	13.3
		3.50	170	0.1000	15460	1546	14.9
		4.00	170	0.1150	13530	1556	19.6
		4.20	170	0.1200	12885	1546	21.4
		5.00	170	0.1450	10825	1570	30.8
		6.00	170	0.1700	9020	1533	43.4
		6.80	170	0.1950	7960	1552	56.4
		8.50	170	0.2450	6365	1559	88.5
	Steel 500 - 850 N/mm²	3.00	130	0.0850	13795	1173	8.3
		3.30	130	0.0950	12540	1191	10.2
		3.50	130	0.1000	11825	1183	11.4
		4.00	130	0.1150	10345	1190	15.0
		4.20	130	0.1200	9850	1182	16.4
		5.00	130	0.1450	8275	1200	23.6
		6.00	130	0.1700	6895	1172	33.1
		6.80	130	0.1950	6085	1187	43.1
		8.50	130	0.2450	4870	1193	67.7
	Steel 850 - 1100 N/mm²	3.00	110	0.0650	11670	759	5.4
		3.30	110	0.0750	10610	796	6.8
		3.50	110	0.0800	10005	800	7.7
		4.00	110	0.0900	8755	788	9.9
		4.20	110	0.0950	8335	792	11.0
		5.00	110	0.1100	7005	771	15.1
		6.00	110	0.1350	5835	788	22.3
		6.80	110	0.1500	5150	773	28.1
		8.50	110	0.1900	4120	783	44.4
	Steel 1100 - 1300 N/mm²	3.00	70	0.0550	7425	408	2.9
		3.30	70	0.0600	6750	405	3.5
		3.50	70	0.0600	6365	382	3.7
		4.00	70	0.0700	5570	390	4.9
		4.20	70	0.0750	5305	398	5.5
		5.00	70	0.0900	4455	401	7.9
		6.00	70	0.1050	3715	390	11.0
		6.80	70	0.1200	3275	393	14.3
		8.50	70	0.1500	2620	393	22.3
	Steel 1300 - 1500 N/mm²	3.00	40	0.0450	4245	191	1.4
		3.30	40	0.0450	3860	174	1.5
		3.50	40	0.0500	3640	182	1.8
		4.00	40	0.0550	3185	175	2.2
		4.20	40	0.0600	3030	182	2.5
		5.00	40	0.0700	2545	178	3.5
		6.00	40	0.0850	2120	180	5.1
		6.80	40	0.0950	1870	178	6.5
		8.50	40	0.1200	1500	180	10.2
	Stainless steel [Cr-Ni/1.4301]	3.00	60	0.0450	6365	286	2.0
		3.30	60	0.0500	5785	289	2.5
		3.50	60	0.0500	5455	273	2.6
		4.00	60	0.0600	4775	287	3.6
		4.20	60	0.0650	4545	295	4.1
		5.00	60	0.0750	3820	287	5.6
		6.00	60	0.0900	3185	287	8.1
		6.80	60	0.1000	2810	281	10.2
		8.50	60	0.1250	2245	281	15.9
	Cast iron (lamellar / spheroidal)	3.00	220	0.0950	23345	2218	15.7
		3.30	220	0.1050	21220	2228	19.1
		3.50	220	0.1100	20010	2201	21.2
		4.00	220	0.1250	17505	2188	27.5
		4.20	220	0.1300	16675	2168	30.0
		5.00	220	0.1550	14005	2171	42.6
		6.00	220	0.1900	11670	2217	62.7
		6.80	220	0.2150	10300	2215	80.4
		8.50	220	0.2650	8240	2184	123.9
	Wrought aluminium alloys Si < 6% hardened	3.00	250	0.0850	26525	2255	15.9
		3.30	250	0.0950	24115	2291	19.6
		3.50	250	0.1000	22735	2274	21.9
		4.00	250	0.1150	19895	2288	28.8
		4.20	250	0.1200	18945	2273	31.5
		5.00	250	0.1450	15915	2308	45.3
		6.00	250	0.1700	13265	2255	63.8
		6.80	250	0.1950	11705	2283	82.9
		8.50	250	0.2450	9360	2293	130.1

Spiral flute drills Supradrill® U

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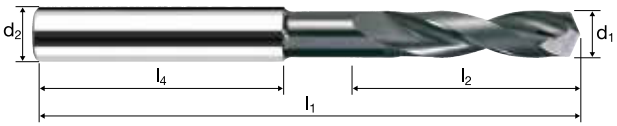
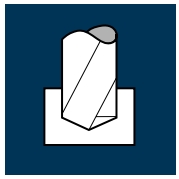
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B62011** ø-Code **0300**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		NANO-U² B62011	B63011
0300	3.00	6.0	62.0	20.0	36	16.2			●
0330	3.30	6.0	62.0	20.0	36	16.0			●
0340	3.40	6.0	62.0	20.0	36	15.8			●
0350	3.50	6.0	62.0	20.0	36	15.8			●
0370	3.70	6.0	62.0	20.0	36	15.6			●
0380	3.80	6.0	66.0	24.0	36	19.4			●
0400	4.00	6.0	66.0	24.0	36	18.9			●
0420	4.20	6.0	66.0	24.0	36	18.8			●
0450	4.50	6.0	66.0	24.0	36	18.6			●
0480	4.80	6.0	66.0	28.0	36	18.4			●
0500	5.00	6.0	66.0	28.0	36	18.8			●
0550	5.50	6.0	66.0	28.0	36	18.5			●
0580	5.80	6.0	66.0	28.0	36	18.4			●
0600	6.00	6.0	66.0	28.0	36	18.6			●
0650	6.50	8.0	79.0	34.0	36	29.1			●
0680	6.80	8.0	79.0	34.0	36	28.9			●
0700	7.00	8.0	79.0	34.0	36	28.8			●
0750	7.50	8.0	79.0	41.0	36	28.5			●
0780	7.80	8.0	79.0	41.0	36	28.4			●
0800	8.00	8.0	79.0	41.0	36	28.5			●
0850	8.50	10.0	89.0	47.0	40	32.1			●
0880	8.80	10.0	89.0	47.0	40	31.9			●
0900	9.00	10.0	89.0	47.0	40	31.7			●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	10.00	170	0.2850	5410	1542	121.1
		10.20	170	0.2900	5305	1539	125.7
		11.00	170	0.3150	4920	1550	147.3
		12.00	170	0.3450	4510	1556	176.0
		13.00	170	0.3700	4165	1541	204.6
		14.00	170	0.4000	3865	1546	238.0
		15.00	170	0.4300	3610	1552	274.3
		15.50	170	0.4450	3490	1553	293.1
		16.00	170	0.4550	3380	1538	309.2
	Steel 500 - 850 N/mm²	10.00	130	0.2850	4140	1180	92.7
		10.20	130	0.2900	4055	1176	96.1
		11.00	130	0.3150	3760	1184	112.6
		12.00	130	0.3450	3450	1190	134.6
		13.00	130	0.3700	3185	1179	156.4
		14.00	130	0.4000	2955	1182	182.0
		15.00	130	0.4300	2760	1187	209.7
		15.50	130	0.4450	2670	1188	224.2
		16.00	130	0.4550	2585	1176	236.5
	Steel 850 - 1100 N/mm²	10.00	110	0.2200	3500	770	60.5
		10.20	110	0.2250	3435	773	63.2
		11.00	110	0.2450	3185	780	74.2
		12.00	110	0.2650	2920	774	87.5
		13.00	110	0.2900	2695	782	103.7
		14.00	110	0.3100	2500	775	119.3
		15.00	110	0.3350	2335	782	138.2
		15.50	110	0.3450	2260	780	147.1
		16.00	110	0.3550	2190	778	156.3
	Steel 1100 - 1300 N/mm²	10.00	70	0.1750	2230	390	30.7
		10.20	70	0.1800	2185	393	32.1
		11.00	70	0.1950	2025	395	37.5
		12.00	70	0.2100	1855	390	44.1
		13.00	70	0.2300	1715	395	52.4
		14.00	70	0.2450	1590	390	60.0
		15.00	70	0.2650	1485	394	69.5
		15.50	70	0.2700	1440	389	73.4
		16.00	70	0.2800	1395	391	78.5
	Steel 1300 - 1500 N/mm²	10.00	40	0.1450	1275	185	14.5
		10.20	40	0.1450	1250	181	14.8
		11.00	40	0.1550	1155	179	17.0
		12.00	40	0.1700	1060	180	20.4
		13.00	40	0.1850	980	181	24.1
		14.00	40	0.2000	910	182	28.0
		15.00	40	0.2150	850	183	32.3
		15.50	40	0.2200	820	180	34.0
		16.00	40	0.2300	795	183	36.8
	Stainless steel [Cr-Ni/1.4301]	10.00	60	0.1500	1910	287	22.5
		10.20	60	0.1500	1870	281	22.9
		11.00	60	0.1650	1735	286	27.2
		12.00	60	0.1800	1590	286	32.4
		13.00	60	0.1950	1470	287	38.1
		14.00	60	0.2100	1365	287	44.1
		15.00	60	0.2250	1275	287	50.7
		15.50	60	0.2300	1230	283	53.4
		16.00	60	0.2400	1195	287	57.7
	Cast iron (lamellar / spheroidal)	10.00	220	0.3150	7005	2207	173.3
		10.20	220	0.3200	6865	2197	179.5
		11.00	220	0.3450	6365	2196	208.7
		12.00	220	0.3750	5835	2188	247.5
		13.00	220	0.4050	5385	2181	289.5
		14.00	220	0.4400	5000	2200	338.7
		15.00	220	0.4700	4670	2195	387.9
		15.50	220	0.4850	4520	2192	413.7
		16.00	220	0.5000	4375	2188	439.8
	Wrought aluminium alloys Si < 6% hardened	10.00	250	0.2850	7960	2269	178.2
		10.20	250	0.2900	7800	2262	184.8
		11.00	250	0.3150	7235	2279	216.6
		12.00	250	0.3450	6630	2287	258.7
		13.00	250	0.3700	6120	2264	300.6
		14.00	250	0.4000	5685	2274	350.1
		15.00	250	0.4300	5305	2281	403.1
		15.50	250	0.4450	5135	2285	431.2
		16.00	250	0.4550	4975	2264	455.1

Spiral flute drills Supradrill® U

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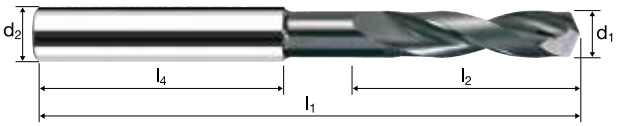
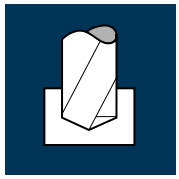
HM MG10



Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **GG(G)** **Aluminium**

Example: **Order-N°.** Article-N°. **B62011** ø-Code **0950**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	NANO-U² B62011	B63011
0950	9.50	10.0	89.0	47.0	40	31.5		●
0980	9.80	10.0	89.0	47.0	40	31.4		●
1000	10.00	10.0	89.0	47.0	40	31.5		●
1020	10.20	12.0	102.0	55.0	45	37.2		●
1050	10.50	12.0	102.0	55.0	45	37.1		●
1080	10.80	12.0	102.0	55.0	45	36.9		●
1100	11.00	12.0	102.0	55.0	45	36.7		●
1150	11.50	12.0	102.0	55.0	45	36.5		●
1180	11.80	12.0	102.0	55.0	45	36.3		●
1200	12.00	12.0	102.0	55.0	45	36.4		●
1250	12.50	14.0	107.0	60.0	45	39.1		●
1280	12.80	14.0	107.0	60.0	45	38.9		●
1300	13.00	14.0	107.0	60.0	45	38.7		●
1350	13.50	14.0	107.0	60.0	45	38.5		●
1380	13.80	14.0	107.0	60.0	45	38.3		●
1400	14.00	14.0	107.0	60.0	45	38.4		●
1450	14.50	16.0	115.0	65.0	48	41.1		●
1480	14.80	16.0	115.0	65.0	48	40.8		●
1500	15.00	16.0	115.0	65.0	48	40.7		●
1550	15.50	16.0	115.0	65.0	48	40.5		●
1580	15.80	16.0	115.0	65.0	48	40.3		●
1600	16.00	16.0	115.0	65.0	48	40.4		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	180	0.1400	19100	2674	18.9
		3.30	180	0.1550	17360	2691	23.0
		3.50	180	0.1650	16370	2701	26.0
		3.80	180	0.1750	15080	2639	29.9
		4.00	180	0.1950	14325	2793	35.1
		4.20	180	0.2100	13640	2864	39.7
		4.50	180	0.2400	12730	3055	48.6
		4.80	180	0.2550	11935	3043	55.1
		5.00	180	0.2650	11460	3037	59.6
	Steel 500 - 850 N/mm²	3.00	160	0.1200	16975	2037	14.4
		3.30	160	0.1300	15435	2007	17.2
		3.50	160	0.1400	14550	2037	19.6
		3.80	160	0.1500	13405	2011	22.8
		4.00	160	0.1650	12730	2101	26.4
		4.20	160	0.1800	12125	2183	30.2
		4.50	160	0.2050	11320	2321	36.9
		4.80	160	0.2200	10610	2334	42.2
		5.00	160	0.2300	10185	2343	46.0
	Steel 850 - 1100 N/mm²	3.00	140	0.1100	14855	1634	11.6
		3.30	140	0.1200	13505	1621	13.9
		3.50	140	0.1300	12730	1655	15.9
		3.80	140	0.1400	11725	1642	18.6
		4.00	140	0.1550	11140	1727	21.7
		4.20	140	0.1650	10610	1751	24.3
		4.50	140	0.1900	9905	1882	29.9
		4.80	140	0.2000	9285	1857	33.6
		5.00	140	0.2100	8915	1872	36.8
	Steel 1100 - 1300 N/mm²	3.00	100	0.0850	10610	902	6.4
		3.30	100	0.0900	9645	868	7.4
		3.50	100	0.1000	9095	910	8.8
		3.80	100	0.1050	8375	879	10.0
		4.00	100	0.1150	7960	915	11.5
		4.20	100	0.1250	7580	948	13.1
		4.50	100	0.1450	7075	1026	16.3
		4.80	100	0.1550	6630	1028	18.6
		5.00	100	0.1600	6365	1018	20.0
	Steel 1300 - 1500 N/mm²	3.00	55	0.0650	5835	379	2.7
		3.30	55	0.0700	5305	371	3.2
		3.50	55	0.0750	5000	375	3.6
		3.80	55	0.0800	4605	368	4.2
		4.00	55	0.0900	4375	394	4.9
		4.20	55	0.0950	4170	396	5.5
		4.50	55	0.1100	3890	428	6.8
		4.80	55	0.1200	3645	437	7.9
		5.00	55	0.1250	3500	438	8.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	70	0.0650	7425	483	3.4
		3.30	70	0.0700	6750	473	4.0
		3.50	70	0.0750	6365	477	4.6
		3.80	70	0.0800	5865	469	5.3
		4.00	70	0.0900	5570	501	6.3
		4.20	70	0.0950	5305	504	7.0
		4.50	70	0.1100	4950	545	8.7
		4.80	70	0.1200	4640	557	10.1
		5.00	70	0.1250	4455	557	10.9
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	40	0.0650	4245	276	2.0
		3.30	40	0.0700	3860	270	2.3
		3.50	40	0.0750	3640	273	2.6
		3.80	40	0.0800	3350	268	3.0
		4.00	40	0.0900	3185	287	3.6
		4.20	40	0.0950	3030	288	4.0
		4.50	40	0.1100	2830	311	5.0
		4.80	40	0.1200	2655	319	5.8
		5.00	40	0.1250	2545	318	6.2
	Cast iron (lamellar / spheroidal)	3.00	240	0.1250	25465	3183	22.5
		3.30	240	0.1400	23150	3241	27.7
		3.50	240	0.1500	21825	3274	31.5
		3.80	240	0.1600	20105	3217	36.5
		4.00	240	0.1750	19100	3343	42.0
		4.20	240	0.1900	18190	3456	47.9
		4.50	240	0.2200	16975	3735	59.4
		4.80	240	0.2350	15915	3740	67.7
		5.00	240	0.2400	15280	3667	72.0

Spiral flute drills XDrill®

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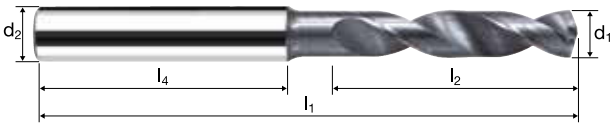
HM MGX

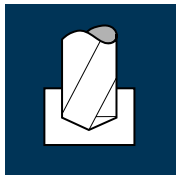
h5



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72011** ø-Code **0300**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		DURO-X B72011
0300	3.00	6.0	62.0	20.0	36	16.2		●
0310	3.10	6.0	62.0	20.0	36	16.2		●
0320	3.20	6.0	62.0	20.0	36	16.0		●
0330	3.30	6.0	62.0	20.0	36	16.0		●
0340	3.40	6.0	62.0	20.0	36	15.8		●
0350	3.50	6.0	62.0	20.0	36	15.8		●
0360	3.60	6.0	62.0	20.0	36	15.6		●
0370	3.70	6.0	62.0	20.0	36	15.6		●
0380	3.80	6.0	66.0	24.0	36	19.4		●
0390	3.90	6.0	66.0	24.0	36	19.4		●
0400	4.00	6.0	66.0	24.0	36	18.9		●
0410	4.10	6.0	66.0	24.0	36	18.9		●
0420	4.20	6.0	66.0	24.0	36	18.8		●
0430	4.30	6.0	66.0	24.0	36	18.7		●
0440	4.40	6.0	66.0	24.0	36	18.6		●
0450	4.50	6.0	66.0	24.0	36	18.6		●
0460	4.60	6.0	66.0	24.0	36	18.5		●
0470	4.70	6.0	66.0	24.0	36	18.5		●
0480	4.80	6.0	66.0	28.0	36	18.4		●
0490	4.90	6.0	66.0	28.0	36	18.4		●
0500	5.00	6.0	66.0	28.0	36	18.7		●
0510	5.10	6.0	66.0	28.0	36	18.7		●
0520	5.20	6.0	66.0	28.0	36	18.6		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	5.50	180	0.2950	10415	3072	73.0
		5.80	180	0.3100	9880	3063	80.9
		6.00	180	0.3300	9550	3152	89.1
		6.20	180	0.3500	9240	3234	97.6
		6.50	180	0.3700	8815	3262	108.2
		6.80	180	0.3850	8425	3244	117.8
		7.00	180	0.3950	8185	3233	124.4
		7.20	180	0.4100	7960	3264	132.9
		7.50	180	0.4250	7640	3247	143.4
	Steel 500 - 850 N/mm²	5.50	160	0.2500	9260	2315	55.0
		5.80	160	0.2650	8780	2327	61.5
		6.00	160	0.2850	8490	2420	68.4
		6.20	160	0.3000	8215	2465	74.4
		6.50	160	0.3150	7835	2468	81.9
		6.80	160	0.3300	7490	2472	89.8
		7.00	160	0.3400	7275	2474	95.2
		7.20	160	0.3500	7075	2476	100.8
		7.50	160	0.3650	6790	2478	109.5
	Steel 850 - 1100 N/mm²	5.50	140	0.2300	8100	1863	44.3
		5.80	140	0.2450	7685	1883	49.7
		6.00	140	0.2600	7425	1931	54.6
		6.20	140	0.2750	7190	1977	59.7
		6.50	140	0.2900	6855	1988	66.0
		6.80	140	0.3050	6555	1999	72.6
		7.00	140	0.3150	6365	2005	77.2
		7.20	140	0.3200	6190	1981	80.6
		7.50	140	0.3350	5940	1990	87.9
	Steel 1100 - 1300 N/mm²	5.50	100	0.1750	5785	1012	24.1
		5.80	100	0.1850	5490	1016	26.8
		6.00	100	0.2000	5305	1061	30.0
		6.20	100	0.2100	5135	1078	32.6
		6.50	100	0.2200	4895	1077	35.7
		6.80	100	0.2300	4680	1076	39.1
		7.00	100	0.2400	4545	1091	42.0
		7.20	100	0.2450	4420	1083	44.1
		7.50	100	0.2550	4245	1083	47.8
	Steel 1300 - 1500 N/mm²	5.50	55	0.1350	3185	430	10.2
		5.80	55	0.1450	3020	438	11.6
		6.00	55	0.1500	2920	438	12.4
		6.20	55	0.1600	2825	452	13.6
		6.50	55	0.1700	2695	458	15.2
		6.80	55	0.1800	2575	464	16.8
		7.00	55	0.1850	2500	463	17.8
		7.20	55	0.1900	2430	462	18.8
		7.50	55	0.1950	2335	455	20.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	5.50	70	0.1350	4050	547	13.0
		5.80	70	0.1450	3840	557	14.7
		6.00	70	0.1500	3715	557	15.8
		6.20	70	0.1600	3595	575	17.4
		6.50	70	0.1700	3430	583	19.3
		6.80	70	0.1800	3275	590	21.4
		7.00	70	0.1850	3185	589	22.7
		7.20	70	0.1900	3095	588	23.9
		7.50	70	0.1950	2970	579	25.6
	Titanium alloys > 300 HB [Ti6Al4V]	5.50	40	0.1350	2315	313	7.4
		5.80	40	0.1450	2195	318	8.4
		6.00	40	0.1500	2120	318	9.0
		6.20	40	0.1600	2055	329	9.9
		6.50	40	0.1700	1960	333	11.1
		6.80	40	0.1800	1870	337	12.2
		7.00	40	0.1850	1820	337	13.0
		7.20	40	0.1900	1770	336	13.7
		7.50	40	0.1950	1700	332	14.6
	Cast iron (lamellar / spheroidal)	5.50	240	0.2650	13890	3681	87.5
		5.80	240	0.2800	13170	3688	97.4
		6.00	240	0.3000	12730	3819	108.0
		6.20	240	0.3200	12320	3942	119.0
		6.50	240	0.3350	11755	3938	130.7
		6.80	240	0.3500	11235	3932	142.8
		7.00	240	0.3600	10915	3929	151.2
		7.20	240	0.3700	10610	3926	159.8
		7.50	240	0.3850	10185	3921	173.2

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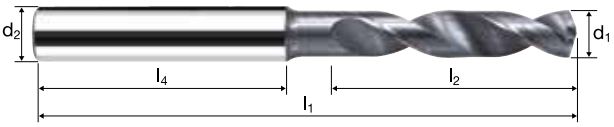
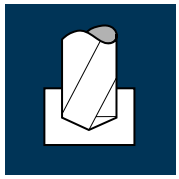


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72011** ø-Code **0530**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72011
0530	5.30	6.0	66.0	28.0	36	18.6	●
0540	5.40	6.0	66.0	28.0	36	18.5	●
0550	5.50	6.0	66.0	28.0	36	18.5	●
0560	5.60	6.0	66.0	28.0	36	18.4	●
0570	5.70	6.0	66.0	28.0	36	18.4	●
0580	5.80	6.0	66.0	28.0	36	18.4	●
0590	5.90	6.0	66.0	28.0	36	18.4	●
0600	6.00	6.0	66.0	28.0	36	18.5	●
0610	6.10	8.0	79.0	34.0	36	29.3	●
0620	6.20	8.0	79.0	34.0	36	29.2	●
0630	6.30	8.0	79.0	34.0	36	29.2	●
0640	6.40	8.0	79.0	34.0	36	29.1	●
0650	6.50	8.0	79.0	34.0	36	29.1	●
0660	6.60	8.0	79.0	34.0	36	29.0	●
0670	6.70	8.0	79.0	34.0	36	29.0	●
0680	6.80	8.0	79.0	34.0	36	28.8	●
0690	6.90	8.0	79.0	34.0	36	28.8	●
0700	7.00	8.0	79.0	34.0	36	28.7	●
0710	7.10	8.0	79.0	41.0	36	28.7	●
0720	7.20	8.0	79.0	41.0	36	28.6	●
0730	7.30	8.0	79.0	41.0	36	28.6	●
0740	7.40	8.0	79.0	41.0	36	28.5	●
0750	7.50	8.0	79.0	41.0	36	28.5	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	7.60	180	0.4300	7540	3242	147.1
		8.00	180	0.4550	7160	3258	163.8
		8.20	180	0.4650	6985	3248	171.5
		8.50	180	0.4800	6740	3235	183.6
		8.80	180	0.5000	6510	3255	198.0
		9.00	180	0.5100	6365	3246	206.5
		9.20	180	0.5200	6230	3240	215.4
		9.50	180	0.5400	6030	3256	230.8
		9.80	180	0.5550	5845	3244	244.7
	Steel 500 - 850 N/mm²	7.60	160	0.3700	6700	2479	112.5
		8.00	160	0.3900	6365	2482	124.8
		8.20	160	0.4000	6210	2484	131.2
		8.50	160	0.4150	5990	2486	141.1
		8.80	160	0.4250	5785	2459	149.5
		9.00	160	0.4350	5660	2462	156.6
		9.20	160	0.4450	5535	2463	163.7
		9.50	160	0.4600	5360	2466	174.8
		9.80	160	0.4750	5195	2468	186.1
	Steel 850 - 1100 N/mm²	7.60	140	0.3400	5865	1994	90.5
		8.00	140	0.3600	5570	2005	100.8
		8.20	140	0.3650	5435	1984	104.8
		8.50	140	0.3800	5245	1993	113.1
		8.80	140	0.3950	5065	2001	121.7
		9.00	140	0.4050	4950	2005	127.5
		9.20	140	0.4100	4845	1987	132.1
		9.50	140	0.4250	4690	1993	141.3
		9.80	140	0.4400	4545	2000	150.8
	Steel 1100 - 1300 N/mm²	7.60	100	0.2600	4190	1089	49.4
		8.00	100	0.2700	3980	1075	54.0
		8.20	100	0.2800	3880	1086	57.4
		8.50	100	0.2900	3745	1086	61.6
		8.80	100	0.3000	3615	1085	66.0
		9.00	100	0.3050	3535	1078	68.6
		9.20	100	0.3150	3460	1090	72.5
		9.50	100	0.3250	3350	1089	77.2
		9.80	100	0.3350	3250	1089	82.1
	Steel 1300 - 1500 N/mm²	7.60	55	0.2000	2305	461	20.9
		8.00	55	0.2100	2190	460	23.1
		8.20	55	0.2150	2135	459	24.2
		8.50	55	0.2200	2060	453	25.7
		8.80	55	0.2300	1990	458	27.8
		9.00	55	0.2350	1945	457	29.1
		9.20	55	0.2400	1905	457	30.4
		9.50	55	0.2500	1845	461	32.7
		9.80	55	0.2550	1785	455	34.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	7.60	70	0.2000	2930	586	26.6
		8.00	70	0.2100	2785	585	29.4
		8.20	70	0.2150	2715	584	30.8
		8.50	70	0.2200	2620	576	32.7
		8.80	70	0.2300	2530	582	35.4
		9.00	70	0.2350	2475	582	37.0
		9.20	70	0.2400	2420	581	38.6
		9.50	70	0.2500	2345	586	41.6
		9.80	70	0.2550	2275	580	43.8
	Titanium alloys > 300 HB [Ti6Al4V]	7.60	40	0.2000	1675	335	15.2
		8.00	40	0.2100	1590	334	16.8
		8.20	40	0.2150	1555	334	17.7
		8.50	40	0.2200	1500	330	18.7
		8.80	40	0.2300	1445	332	20.2
		9.00	40	0.2350	1415	333	21.2
		9.20	40	0.2400	1385	332	22.1
		9.50	40	0.2500	1340	335	23.7
		9.80	40	0.2550	1300	332	25.0
	Cast iron (lamellar / spheroidal)	7.60	240	0.3900	10050	3920	177.8
		8.00	240	0.4100	9550	3916	196.8
		8.20	240	0.4200	9315	3912	206.6
		8.50	240	0.4400	8990	3956	224.5
		8.80	240	0.4550	8680	3949	240.2
		9.00	240	0.4650	8490	3948	251.2
		9.20	240	0.4750	8305	3945	262.2
		9.50	240	0.4900	8040	3940	279.2
		9.80	240	0.5050	7795	3937	296.9

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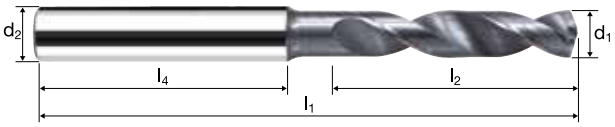
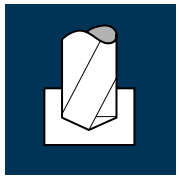


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72011** ø-Code **0760**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}		DURO-X B72011
0760	7.60	8.0	79.0	41.0	36	28.4		●
0770	7.70	8.0	79.0	41.0	36	28.4		●
0780	7.80	8.0	79.0	41.0	36	28.3		●
0790	7.90	8.0	79.0	41.0	36	28.4		●
0800	8.00	8.0	79.0	41.0	36	28.4		●
0810	8.10	10.0	89.0	47.0	40	32.3		●
0820	8.20	10.0	89.0	47.0	40	32.2		●
0830	8.30	10.0	89.0	47.0	40	32.2		●
0840	8.40	10.0	89.0	47.0	40	32.1		●
0850	8.50	10.0	89.0	47.0	40	32.1		●
0860	8.60	10.0	89.0	47.0	40	31.9		●
0870	8.70	10.0	89.0	47.0	40	31.9		●
0880	8.80	10.0	89.0	47.0	40	31.8		●
0890	8.90	10.0	89.0	47.0	40	31.8		●
0900	9.00	10.0	89.0	47.0	40	31.7		●
0910	9.10	10.0	89.0	47.0	40	31.7		●
0920	9.20	10.0	89.0	47.0	40	31.6		●
0930	9.30	10.0	89.0	47.0	40	31.6		●
0940	9.40	10.0	89.0	47.0	40	31.4		●
0950	9.50	10.0	89.0	47.0	40	31.4		●
0960	9.60	10.0	89.0	47.0	40	31.3		●
0970	9.70	10.0	89.0	47.0	40	31.3		●
0980	9.80	10.0	89.0	47.0	40	31.3		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 500 N/mm²	10.00	180	0.5650	5730	3238	254.3
		10.20	180	0.5750	5615	3229	263.8
		10.50	180	0.5900	5455	3219	278.7
		10.80	180	0.6050	5305	3210	294.0
		11.00	180	0.6100	5210	3178	302.0
		11.20	180	0.6150	5115	3146	309.9
		11.50	180	0.6200	4980	3088	320.7
		11.80	180	0.6300	4855	3059	334.5
		12.00	180	0.6400	4775	3056	345.6
	Steel 500 - 850 N/mm²	10.00	160	0.4850	5095	2471	194.1
		10.20	160	0.4950	4995	2473	202.0
		10.50	160	0.5050	4850	2449	212.1
		10.80	160	0.5200	4715	2452	224.6
		11.00	160	0.5250	4630	2431	231.0
		11.20	160	0.5300	4545	2409	237.3
		11.50	160	0.5300	4430	2348	243.9
		11.80	160	0.5400	4315	2330	254.8
		12.00	160	0.5500	4245	2335	264.1
	Steel 850 - 1100 N/mm²	10.00	140	0.4450	4455	1983	155.7
		10.20	140	0.4550	4370	1988	162.5
		10.50	140	0.4650	4245	1974	170.9
		10.80	140	0.4750	4125	1959	179.5
		11.00	140	0.4850	4050	1964	186.7
		11.20	140	0.4850	3980	1930	190.2
		11.50	140	0.4900	3875	1899	197.2
		11.80	140	0.4950	3775	1869	204.3
		12.00	140	0.5050	3715	1876	212.2
	Steel 1100 - 1300 N/mm²	10.00	100	0.3400	3185	1083	85.1
		10.20	100	0.3450	3120	1076	88.0
		10.50	100	0.3550	3030	1076	93.1
		10.80	100	0.3650	2945	1075	98.5
		11.00	100	0.3650	2895	1057	100.4
		11.20	100	0.3700	2840	1051	103.5
		11.50	100	0.3750	2770	1039	107.9
		11.80	100	0.3800	2700	1026	112.2
		12.00	100	0.3850	2655	1022	115.6
	Steel 1300 - 1500 N/mm²	10.00	55	0.2600	1750	455	35.7
		10.20	55	0.2650	1715	455	37.1
		10.50	55	0.2750	1665	458	39.6
		10.80	55	0.2800	1620	454	41.6
		11.00	55	0.2850	1590	453	43.1
		11.20	55	0.2850	1565	446	43.9
		11.50	55	0.2850	1520	433	45.0
		11.80	55	0.2900	1485	431	47.1
		12.00	55	0.2950	1460	431	48.7
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	70	0.2600	2230	580	45.5
		10.20	70	0.2650	2185	579	47.3
		10.50	70	0.2750	2120	583	50.5
		10.80	70	0.2800	2065	578	53.0
		11.00	70	0.2850	2025	577	54.8
		11.20	70	0.2850	1990	567	55.9
		11.50	70	0.2850	1940	553	57.4
		11.80	70	0.2900	1890	548	59.9
		12.00	70	0.2950	1855	547	61.9
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	40	0.2600	1275	332	26.0
		10.20	40	0.2650	1250	331	27.1
		10.50	40	0.2750	1215	334	28.9
		10.80	40	0.2800	1180	330	30.3
		11.00	40	0.2850	1155	329	31.3
		11.20	40	0.2850	1135	324	31.9
		11.50	40	0.2850	1105	315	32.7
		11.80	40	0.2900	1080	313	34.3
		12.00	40	0.2950	1060	313	35.4
	Cast iron (lamellar / spheroidal)	10.00	240	0.5150	7640	3935	309.0
		10.20	240	0.5200	7490	3895	318.3
		10.50	240	0.5400	7275	3929	340.2
		10.80	240	0.5500	7075	3891	356.5
		11.00	240	0.5550	6945	3855	366.3
		11.20	240	0.5600	6820	3819	376.3
		11.50	240	0.5650	6645	3754	390.0
		11.80	240	0.5700	6475	3691	403.6
		12.00	240	0.5800	6365	3692	417.5

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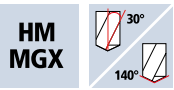
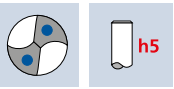
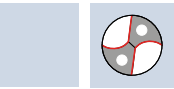
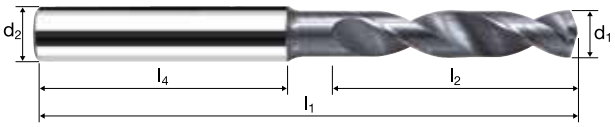




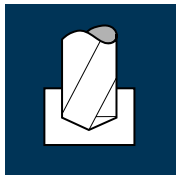




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72011** ø-Code **0990**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72011
0990	9.90	10.0	89.0	47.0	40	31.3	●
1000	10.00	10.0	89.0	47.0	40	31.3	●
1010	10.10	12.0	102.0	55.0	45	37.3	●
1020	10.20	12.0	102.0	55.0	45	37.2	●
1030	10.30	12.0	102.0	55.0	45	37.2	●
1040	10.40	12.0	102.0	55.0	45	37.1	●
1050	10.50	12.0	102.0	55.0	45	37.0	●
1060	10.60	12.0	102.0	55.0	45	36.9	●
1070	10.70	12.0	102.0	55.0	45	36.9	●
1080	10.80	12.0	102.0	55.0	45	36.8	●
1090	10.90	12.0	102.0	55.0	45	36.8	●
1100	11.00	12.0	102.0	55.0	45	36.7	●
1110	11.10	12.0	102.0	55.0	45	36.7	●
1120	11.20	12.0	102.0	55.0	45	36.5	●
1130	11.30	12.0	102.0	55.0	45	36.5	●
1140	11.40	12.0	102.0	55.0	45	36.4	●
1150	11.50	12.0	102.0	55.0	45	36.4	●
1160	11.60	12.0	102.0	55.0	45	36.3	●
1170	11.70	12.0	102.0	55.0	45	36.3	●
1180	11.80	12.0	102.0	55.0	45	36.2	●
1190	11.90	12.0	102.0	55.0	45	36.3	●
1200	12.00	12.0	102.0	55.0	45	36.3	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	12.50	180	0.6650	4585	3049	374.2
		13.00	180	0.6950	4405	3062	406.4
		13.50	180	0.7050	4245	2993	428.4
		14.00	180	0.7150	4095	2928	450.7
		14.50	180	0.7250	3950	2864	472.9
		15.00	180	0.7450	3820	2846	502.9
		15.50	180	0.7600	3695	2808	529.9
		15.80	180	0.7700	3625	2791	547.3
		16.00	180	0.7750	3580	2775	557.8
	Steel 500 - 850 N/mm²	12.50	160	0.5700	4075	2323	285.1
		13.00	160	0.5950	3920	2332	309.6
		13.50	160	0.6050	3775	2284	326.9
		14.00	160	0.6100	3640	2220	341.8
		14.50	160	0.6200	3510	2176	359.4
		15.00	160	0.6400	3395	2173	384.0
		15.50	160	0.6500	3285	2135	402.9
		15.80	160	0.6600	3225	2129	417.3
		16.00	160	0.6650	3185	2118	425.8
	Steel 850 - 1100 N/mm²	12.50	140	0.5250	3565	1872	229.7
		13.00	140	0.5450	3430	1869	248.1
		13.50	140	0.5550	3300	1832	262.2
		14.00	140	0.5650	3185	1800	277.0
		14.50	140	0.5700	3075	1753	289.4
		15.00	140	0.5900	2970	1752	309.7
		15.50	140	0.6000	2875	1725	325.5
		15.80	140	0.6050	2820	1706	334.5
		16.00	140	0.6100	2785	1699	341.6
	Steel 1100 - 1300 N/mm²	12.50	100	0.4000	2545	1018	124.9
		13.00	100	0.4150	2450	1017	135.0
		13.50	100	0.4200	2360	991	141.9
		14.00	100	0.4300	2275	978	150.6
		14.50	100	0.4350	2195	955	157.7
		15.00	100	0.4450	2120	943	166.7
		15.50	100	0.4550	2055	935	176.4
		15.80	100	0.4600	2015	927	181.7
		16.00	100	0.4650	1990	925	186.1
	Steel 1300 - 1500 N/mm²	12.50	55	0.3100	1400	434	53.3
		13.00	55	0.3200	1345	430	57.1
		13.50	55	0.3250	1295	421	60.2
		14.00	55	0.3300	1250	413	63.5
		14.50	55	0.3350	1205	404	66.7
		15.00	55	0.3450	1165	402	71.0
		15.50	55	0.3500	1130	396	74.6
		15.80	55	0.3550	1110	394	77.3
		16.00	55	0.3550	1095	389	78.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	12.50	70	0.3100	1785	553	67.9
		13.00	70	0.3200	1715	549	72.8
		13.50	70	0.3250	1650	536	76.8
		14.00	70	0.3300	1590	525	80.8
		14.50	70	0.3350	1535	514	84.9
		15.00	70	0.3450	1485	512	90.5
		15.50	70	0.3500	1440	504	95.1
		15.80	70	0.3550	1410	501	98.2
		16.00	70	0.3550	1395	495	99.6
	Titanium alloys > 300 HB [Ti6Al4V]	12.50	40	0.3100	1020	316	38.8
		13.00	40	0.3200	980	314	41.6
		13.50	40	0.3250	945	307	44.0
		14.00	40	0.3300	910	300	46.2
		14.50	40	0.3350	880	295	48.7
		15.00	40	0.3450	850	293	51.8
		15.50	40	0.3500	820	287	54.2
		15.80	40	0.3550	805	286	56.0
		16.00	40	0.3550	795	282	56.7
	Cast iron (lamellar / spheroidal)	12.50	240	0.6050	6110	3697	453.6
		13.00	240	0.6300	5875	3701	491.3
		13.50	240	0.6400	5660	3622	518.5
		14.00	240	0.6500	5455	3546	545.8
		14.50	240	0.6600	5270	3478	574.4
		15.00	240	0.6750	5095	3439	607.7
		15.50	240	0.6900	4930	3402	641.9
		15.80	240	0.7000	4835	3385	663.6
		16.00	240	0.7050	4775	3366	676.9

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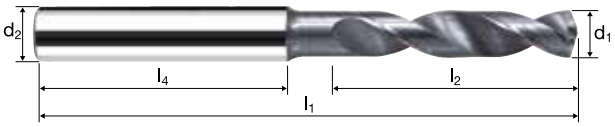
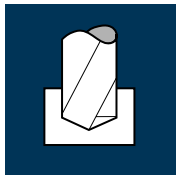
HM MGX



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72011** ø-Code **1250**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72011
1250	12.50	14.0	107.0	60.0	45	39.0	●
1280	12.80	14.0	107.0	60.0	45	38.8	●
1300	13.00	14.0	107.0	60.0	45	38.7	●
1350	13.50	14.0	107.0	60.0	45	38.4	●
1380	13.80	14.0	107.0	60.0	45	38.2	●
1400	14.00	14.0	107.0	60.0	45	38.2	●
1450	14.50	16.0	115.0	65.0	48	41.0	●
1480	14.80	16.0	115.0	65.0	48	40.8	●
1500	15.00	16.0	115.0	65.0	48	40.6	●
1550	15.50	16.0	115.0	65.0	48	40.4	●
1580	15.80	16.0	115.0	65.0	48	40.2	●
1600	16.00	16.0	115.0	65.0	48	40.2	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	2.55	35	0.0490	4370	214	1.1
		2.80	35	0.0520	3980	207	1.3
		3.00	35	0.0540	3715	201	1.4
		3.30	35	0.0580	3375	196	1.7
		3.60	35	0.0610	3095	189	1.9
		4.00	35	0.0650	2785	181	2.3
		4.30	35	0.0690	2590	179	2.6
		4.50	35	0.0710	2475	176	2.8
		4.65	35	0.0720	2395	172	2.9
	Hardened tool steel 48 - 52 HRC	2.55	30	0.0490	3745	184	0.9
		2.80	30	0.0520	3410	177	1.1
		3.00	30	0.0540	3185	172	1.2
		3.30	30	0.0580	2895	168	1.4
		3.60	30	0.0610	2655	162	1.6
		4.00	30	0.0650	2385	155	1.9
		4.30	30	0.0690	2220	153	2.2
		4.50	30	0.0710	2120	151	2.4
		4.65	30	0.0720	2055	148	2.5
	Hardened tool steel 52 - 56 HRC	2.55	30	0.0490	3745	184	0.9
		2.80	30	0.0520	3410	177	1.1
		3.00	30	0.0540	3185	172	1.2
		3.30	30	0.0580	2895	168	1.4
		3.60	30	0.0610	2655	162	1.6
		4.00	30	0.0650	2385	155	1.9
		4.30	30	0.0690	2220	153	2.2
		4.50	30	0.0710	2120	151	2.4
		4.65	30	0.0720	2055	148	2.5
	Hardened tool steel 56 - 60 HRC	2.55	25	0.0320	3120	100	0.5
		2.80	25	0.0340	2840	97	0.6
		3.00	25	0.0350	2655	93	0.7
		3.30	25	0.0370	2410	89	0.8
		3.60	25	0.0400	2210	88	0.9
		4.00	25	0.0430	1990	86	1.1
		4.30	25	0.0450	1850	83	1.2
		4.50	25	0.0460	1770	81	1.3
		4.65	25	0.0470	1710	80	1.4
	Hardened tool steel > 60 HRC	2.55	20	0.0270	2495	67	0.3
		2.80	20	0.0290	2275	66	0.4
		3.00	20	0.0300	2120	64	0.4
		3.30	20	0.0320	1930	62	0.5
		3.60	20	0.0340	1770	60	0.6
		4.00	20	0.0360	1590	57	0.7
		4.30	20	0.0380	1480	56	0.8
		4.50	20	0.0390	1415	55	0.9
		4.65	20	0.0400	1370	55	0.9

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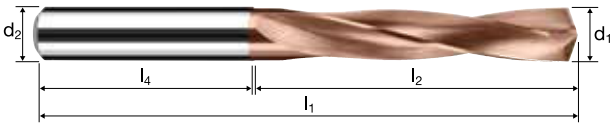
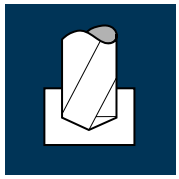


HRC 48-56 | **HRC 56-60** | **HRC > 60**

Example: **Order-N°.** Article-N°. **B52112** ø-Code **0255**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-VD B52112
0255	2.55	6.0	62.0	20.0	36	14.0	●
0260	2.60	6.0	62.0	20.0	36	14.0	●
0270	2.70	6.0	62.0	20.0	36	14.0	●
0280	2.80	6.0	62.0	20.0	36	14.0	●
0290	2.90	6.0	62.0	20.0	36	14.0	●
0300	3.00	6.0	62.0	20.0	36	14.0	●
0310	3.10	6.0	62.0	20.0	36	14.0	●
0320	3.20	6.0	62.0	20.0	36	14.0	●
0330	3.30	6.0	62.0	20.0	36	14.0	●
0340	3.40	6.0	62.0	20.0	36	14.0	●
0350	3.50	6.0	62.0	20.0	36	14.0	●
0360	3.60	6.0	62.0	20.0	36	14.0	●
0370	3.70	6.0	62.0	20.0	36	14.0	●
0380	3.80	6.0	66.0	24.0	36	17.0	●
0390	3.90	6.0	66.0	24.0	36	17.0	●
0400	4.00	6.0	66.0	24.0	36	17.0	●
0410	4.10	6.0	66.0	24.0	36	17.0	●
0420	4.20	6.0	66.0	24.0	36	17.0	●
0430	4.30	6.0	66.0	24.0	36	17.0	●
0440	4.40	6.0	66.0	24.0	36	17.0	●
0450	4.50	6.0	66.0	24.0	36	17.0	●
0460	4.60	6.0	66.0	24.0	36	17.0	●
0465	4.65	6.0	66.0	24.0	36	17.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	4.80	35	0.0740	2320	172	3.1
		5.00	35	0.0760	2230	170	3.3
		5.20	35	0.0780	2140	167	3.5
		5.50	35	0.0810	2025	164	3.9
		5.70	35	0.0840	1955	164	4.2
		6.00	35	0.0870	1855	161	4.6
		6.30	35	0.0900	1770	159	5.0
		6.50	35	0.0920	1715	158	5.2
		6.80	35	0.0950	1640	156	5.7
	Hardened tool steel 48 - 52 HRC	4.80	30	0.0740	1990	147	2.7
		5.00	30	0.0760	1910	145	2.9
		5.20	30	0.0780	1835	143	3.0
		5.50	30	0.0810	1735	141	3.3
		5.70	30	0.0840	1675	141	3.6
		6.00	30	0.0870	1590	138	3.9
		6.30	30	0.0900	1515	136	4.3
		6.50	30	0.0920	1470	135	4.5
		6.80	30	0.0950	1405	134	4.8
	Hardened tool steel 52 - 56 HRC	4.80	30	0.0740	1990	147	2.7
		5.00	30	0.0760	1910	145	2.9
		5.20	30	0.0780	1835	143	3.0
		5.50	30	0.0810	1735	141	3.3
		5.70	30	0.0840	1675	141	3.6
		6.00	30	0.0870	1590	138	3.9
		6.30	30	0.0900	1515	136	4.3
		6.50	30	0.0920	1470	135	4.5
		6.80	30	0.0950	1405	134	4.8
	Hardened tool steel 56 - 60 HRC	4.80	25	0.0480	1660	80	1.4
		5.00	25	0.0500	1590	80	1.6
		5.20	25	0.0510	1530	78	1.7
		5.50	25	0.0530	1445	77	1.8
		5.70	25	0.0540	1395	75	1.9
		6.00	25	0.0560	1325	74	2.1
		6.30	25	0.0580	1265	73	2.3
		6.50	25	0.0600	1225	74	2.4
		6.80	25	0.0620	1170	73	2.6
	Hardened tool steel > 60 HRC	4.80	20	0.0410	1325	54	1.0
		5.00	20	0.0420	1275	54	1.1
		5.20	20	0.0430	1225	53	1.1
		5.50	20	0.0450	1155	52	1.2
		5.70	20	0.0460	1115	51	1.3
		6.00	20	0.0480	1060	51	1.4
		6.30	20	0.0490	1010	50	1.5
		6.50	20	0.0500	980	49	1.6
		6.80	20	0.0520	935	49	1.8

Spiral flute drills Supradrill® H

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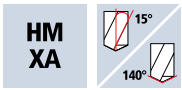
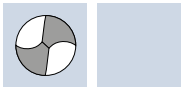
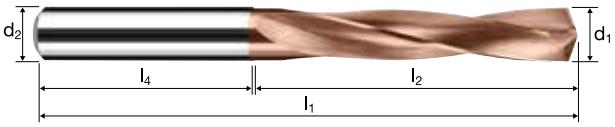


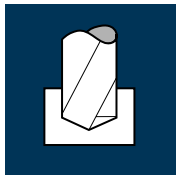




HRC 48-56 | HRC 56-60 | HRC > 60

Example: **Order-N°.** Article-N°. **B52112** ø-Code **0470**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-VD B52112
0470	4.70	6.0	66.0	24.0	36	17.0	●
0480	4.80	6.0	66.0	28.0	36	20.0	●
0490	4.90	6.0	66.0	28.0	36	20.0	●
0500	5.00	6.0	66.0	28.0	36	20.0	●
0510	5.10	6.0	66.0	28.0	36	20.0	●
0520	5.20	6.0	66.0	28.0	36	20.0	●
0530	5.30	6.0	66.0	28.0	36	20.0	●
0540	5.40	6.0	66.0	28.0	36	20.0	●
0550	5.50	6.0	66.0	28.0	36	20.0	●
0555	5.55	6.0	66.0	28.0	36	20.0	●
0560	5.60	6.0	66.0	28.0	36	20.0	●
0570	5.70	6.0	66.0	28.0	36	20.0	●
0580	5.80	6.0	66.0	28.0	36	20.0	●
0590	5.90	6.0	66.0	28.0	36	20.0	●
0600	6.00	6.0	66.0	28.0	36	20.0	●
0610	6.10	8.0	79.0	34.0	36	24.0	●
0620	6.20	8.0	79.0	34.0	36	24.0	●
0630	6.30	8.0	79.0	34.0	36	24.0	●
0640	6.40	8.0	79.0	34.0	36	24.0	●
0650	6.50	8.0	79.0	34.0	36	24.0	●
0660	6.60	8.0	79.0	34.0	36	24.0	●
0670	6.70	8.0	79.0	34.0	36	24.0	●
0680	6.80	8.0	79.0	34.0	36	24.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	6.90	35	0.0960	1615	155	5.8
		7.10	35	0.0980	1570	154	6.1
		7.40	35	0.1000	1505	151	6.5
		7.70	35	0.1030	1445	149	6.9
		8.00	35	0.1060	1395	148	7.4
		8.30	35	0.1090	1340	146	7.9
		8.60	35	0.1120	1295	145	8.4
		8.90	35	0.1140	1250	143	8.9
		9.10	35	0.1160	1225	142	9.2
	Hardened tool steel 48 - 52 HRC	6.90	30	0.0960	1385	133	5.0
		7.10	30	0.0980	1345	132	5.2
		7.40	30	0.1000	1290	129	5.5
		7.70	30	0.1030	1240	128	5.9
		8.00	30	0.1060	1195	127	6.4
		8.30	30	0.1090	1150	125	6.8
		8.60	30	0.1120	1110	124	7.2
		8.90	30	0.1140	1075	123	7.6
		9.10	30	0.1160	1050	122	7.9
	Hardened tool steel 52 - 56 HRC	6.90	30	0.0960	1385	133	5.0
		7.10	30	0.0980	1345	132	5.2
		7.40	30	0.1000	1290	129	5.5
		7.70	30	0.1030	1240	128	5.9
		8.00	30	0.1060	1195	127	6.4
		8.30	30	0.1090	1150	125	6.8
		8.60	30	0.1120	1110	124	7.2
		8.90	30	0.1140	1075	123	7.6
		9.10	30	0.1160	1050	122	7.9
	Hardened tool steel 56 - 60 HRC	6.90	25	0.0620	1155	72	2.7
		7.10	25	0.0630	1120	71	2.8
		7.40	25	0.0650	1075	70	3.0
		7.70	25	0.0670	1035	69	3.2
		8.00	25	0.0690	995	69	3.5
		8.30	25	0.0710	960	68	3.7
		8.60	25	0.0730	925	68	3.9
		8.90	25	0.0740	895	66	4.1
		9.10	25	0.0760	875	67	4.3
	Hardened tool steel > 60 HRC	6.90	20	0.0530	925	49	1.8
		7.10	20	0.0540	895	48	1.9
		7.40	20	0.0550	860	47	2.0
		7.70	20	0.0570	825	47	2.2
		8.00	20	0.0580	795	46	2.3
		8.30	20	0.0600	765	46	2.5
		8.60	20	0.0610	740	45	2.6
		8.90	20	0.0630	715	45	2.8
		9.10	20	0.0640	700	45	2.9

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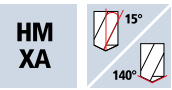
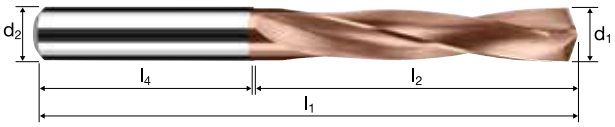
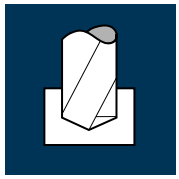




HRC 48-56 | **HRC** 56-60 | **HRC** > 60

Example:
Order-N°. Article-N°. **B52112** ø-Code **0690**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-VD B52112
0690	6.90	8.0	79.0	34.0	36	24.0	●
0700	7.00	8.0	79.0	34.0	36	24.0	●
0710	7.10	8.0	79.0	41.0	36	29.0	●
0720	7.20	8.0	79.0	41.0	36	29.0	●
0730	7.30	8.0	79.0	41.0	36	29.0	●
0740	7.40	8.0	79.0	41.0	36	29.0	●
0750	7.50	8.0	79.0	41.0	36	29.0	●
0760	7.60	8.0	79.0	41.0	36	29.0	●
0770	7.70	8.0	79.0	41.0	36	29.0	●
0780	7.80	8.0	79.0	41.0	36	29.0	●
0790	7.90	8.0	79.0	41.0	36	29.0	●
0800	8.00	8.0	79.0	41.0	36	29.0	●
0810	8.10	10.0	89.0	47.0	40	35.0	●
0820	8.20	10.0	89.0	47.0	40	35.0	●
0830	8.30	10.0	89.0	47.0	40	35.0	●
0840	8.40	10.0	89.0	47.0	40	35.0	●
0850	8.50	10.0	89.0	47.0	40	35.0	●
0860	8.60	10.0	89.0	47.0	40	35.0	●
0870	8.70	10.0	89.0	47.0	40	35.0	●
0880	8.80	10.0	89.0	47.0	40	35.0	●
0890	8.90	10.0	89.0	47.0	40	35.0	●
0900	9.00	10.0	89.0	47.0	40	35.0	●
0910	9.10	10.0	89.0	47.0	40	35.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	9.20	35	0.1170	1210	142	9.4
		9.50	35	0.1200	1175	141	10.0
		9.70	35	0.1220	1150	140	10.4
		10.00	35	0.1240	1115	138	10.9
		10.20	35	0.1260	1090	137	11.2
		10.40	35	0.1280	1070	137	11.6
		10.70	35	0.1300	1040	135	12.2
		11.00	35	0.1330	1015	135	12.8
		11.30	35	0.1350	985	133	13.3
	Hardened tool steel 48 - 52 HRC	9.20	30	0.1170	1040	122	8.1
		9.50	30	0.1200	1005	121	8.5
		9.70	30	0.1220	985	120	8.9
		10.00	30	0.1240	955	118	9.3
		10.20	30	0.1260	935	118	9.6
		10.40	30	0.1280	920	118	10.0
		10.70	30	0.1300	890	116	10.4
		11.00	30	0.1330	870	116	11.0
		11.30	30	0.1350	845	114	11.4
	Hardened tool steel 52 - 56 HRC	9.20	30	0.1170	1040	122	8.1
		9.50	30	0.1200	1005	121	8.5
		9.70	30	0.1220	985	120	8.9
		10.00	30	0.1240	955	118	9.3
		10.20	30	0.1260	935	118	9.6
		10.40	30	0.1280	920	118	10.0
		10.70	30	0.1300	890	116	10.4
		11.00	30	0.1330	870	116	11.0
		11.30	30	0.1350	845	114	11.4
	Hardened tool steel 56 - 60 HRC	9.20	25	0.0760	865	66	4.4
		9.50	25	0.0780	840	66	4.6
		9.70	25	0.0790	820	65	4.8
		10.00	25	0.0810	795	64	5.1
		10.20	25	0.0820	780	64	5.2
		10.40	25	0.0830	765	64	5.4
		10.70	25	0.0850	745	63	5.7
		11.00	25	0.0860	725	62	5.9
		11.30	25	0.0880	705	62	6.2
	Hardened tool steel > 60 HRC	9.20	15	0.0640	520	33	2.2
		9.50	15	0.0660	505	33	2.4
		9.70	15	0.0670	490	33	2.4
		10.00	15	0.0680	475	32	2.5
		10.20	15	0.0690	470	32	2.6
		10.40	15	0.0700	460	32	2.7
		10.70	15	0.0720	445	32	2.9
		11.00	15	0.0730	435	32	3.0
		11.30	15	0.0740	425	32	3.2

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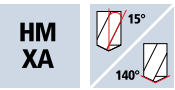
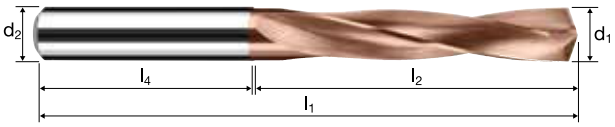
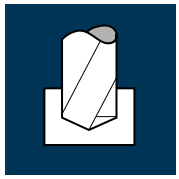




HRC 48-56 | HRC 56-60 | HRC > 60

Example: **Order-N°.** Article-N°. **B52112** ø-Code **0920**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-VD B52112
0920	9.20	10.0	89.0	47.0	40	35.0	●
0930	9.30	10.0	89.0	47.0	40	35.0	●
0940	9.40	10.0	89.0	47.0	40	35.0	●
0950	9.50	10.0	89.0	47.0	40	35.0	●
0960	9.60	10.0	89.0	47.0	40	35.0	●
0970	9.70	10.0	89.0	47.0	40	35.0	●
0980	9.80	10.0	89.0	47.0	40	35.0	●
0990	9.90	10.0	89.0	47.0	40	35.0	●
1000	10.00	10.0	89.0	47.0	40	35.0	●
1010	10.10	12.0	102.0	55.0	45	40.0	●
1020	10.20	12.0	102.0	55.0	45	40.0	●
1030	10.30	12.0	102.0	55.0	45	40.0	●
1040	10.40	12.0	102.0	55.0	45	40.0	●
1050	10.50	12.0	102.0	55.0	45	40.0	●
1060	10.60	12.0	102.0	55.0	45	40.0	●
1070	10.70	12.0	102.0	55.0	45	40.0	●
1080	10.80	12.0	102.0	55.0	45	40.0	●
1090	10.90	12.0	102.0	55.0	45	40.0	●
1100	11.00	12.0	102.0	55.0	45	40.0	●
1110	11.10	12.0	102.0	55.0	45	40.0	●
1120	11.20	12.0	102.0	55.0	45	40.0	●
1130	11.30	12.0	102.0	55.0	45	40.0	●
1140	11.40	12.0	102.0	55.0	45	40.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	11.50	35	0.1370	970	133	13.8
		11.80	35	0.1390	945	131	14.4
		12.00	35	0.1410	930	131	14.8
		12.50	35	0.1440	890	128	15.7
		13.00	35	0.1480	855	127	16.8
		14.00	35	0.1550	795	123	19.0
		14.80	35	0.1610	755	122	20.9
		15.50	35	0.1650	720	119	22.4
		16.50	35	0.1720	675	116	24.8
	Hardened tool steel 48 - 52 HRC	11.50	30	0.1370	830	114	11.8
		11.80	30	0.1390	810	113	12.3
		12.00	30	0.1410	795	112	12.7
		12.50	30	0.1440	765	110	13.5
		13.00	30	0.1480	735	109	14.4
		14.00	30	0.1550	680	105	16.2
		14.80	30	0.1610	645	104	17.9
		15.50	30	0.1650	615	102	19.2
		16.50	30	0.1720	580	100	21.3
	Hardened tool steel 52 - 56 HRC	11.50	30	0.1370	830	114	11.8
		11.80	30	0.1390	810	113	12.3
		12.00	30	0.1410	795	112	12.7
		12.50	30	0.1440	765	110	13.5
		13.00	30	0.1480	735	109	14.4
		14.00	30	0.1550	680	105	16.2
		14.80	30	0.1610	645	104	17.9
		15.50	30	0.1650	615	102	19.2
		16.50	30	0.1720	580	100	21.3
	Hardened tool steel 56 - 60 HRC	11.50	25	0.0890	690	61	6.4
		11.80	25	0.0900	675	61	6.6
		12.00	25	0.0910	665	61	6.8
		12.50	25	0.0940	635	60	7.3
		13.00	25	0.0960	610	59	7.8
		14.00	25	0.1010	570	58	8.9
		14.80	25	0.1050	540	57	9.8
		15.50	25	0.1080	515	56	10.5
		16.50	25	0.1120	480	54	11.5
	Hardened tool steel > 60 HRC	11.50	10	0.0750	275	21	2.1
		11.80	10	0.0760	270	21	2.2
		12.00	10	0.0770	265	20	2.3
		12.50	10	0.0790	255	20	2.5
		13.00	10	0.0820	245	20	2.7
		14.00	10	0.0850	225	19	2.9
		14.80	10	0.0880	215	19	3.3
		15.50	10	0.0910	205	19	3.5
		16.50	10	0.0940	195	18	3.9

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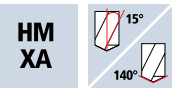
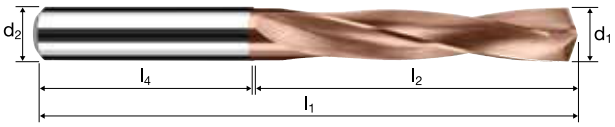
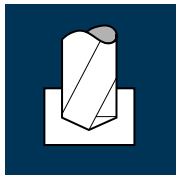




HRC 48-56 | HRC 56-60 | HRC > 60

Example: **Order-N°.** Article-N°. **B52112** ø-Code **1150**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-VD B52112
1150	11.50	12.0	102.0	55.0	45	40.0	●
1160	11.60	12.0	102.0	55.0	45	40.0	●
1170	11.70	12.0	102.0	55.0	45	40.0	●
1180	11.80	12.0	102.0	55.0	45	40.0	●
1190	11.90	12.0	102.0	55.0	45	40.0	●
1200	12.00	12.0	102.0	55.0	45	40.0	●
1220	12.20	14.0	107.0	60.0	45	43.0	●
1250	12.50	14.0	107.0	60.0	45	43.0	●
1280	12.80	14.0	107.0	60.0	45	43.0	●
1300	13.00	14.0	107.0	60.0	45	43.0	●
1350	13.50	14.0	107.0	60.0	45	43.0	●
1380	13.80	14.0	107.0	60.0	45	43.0	●
1400	14.00	14.0	107.0	60.0	45	43.0	●
1420	14.20	16.0	115.0	65.0	48	45.0	●
1450	14.50	16.0	115.0	65.0	48	45.0	●
1480	14.80	16.0	115.0	65.0	48	45.0	●
1500	15.00	16.0	115.0	65.0	48	45.0	●
1520	15.20	16.0	115.0	65.0	48	45.0	●
1550	15.50	16.0	115.0	65.0	48	45.0	●
1580	15.80	16.0	115.0	65.0	48	45.0	●
1600	16.00	16.0	115.0	65.0	48	45.0	●
1650	16.50	18.0	123.0	73.0	48	51.0	●
1680	16.80	18.0	123.0	73.0	48	51.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	17.00	35	0.1750	655	115	26.0
		17.50	35	0.1770	635	112	27.0
		17.80	35	0.1790	625	112	27.8
		18.00	35	0.1800	620	112	28.4
		18.50	35	0.1830	600	110	29.5
		18.80	35	0.1840	595	110	30.4
		19.00	35	0.1850	585	108	30.7
		19.50	35	0.1880	570	107	32.0
		20.00	35	0.1900	555	106	33.1
	Hardened tool steel 48 - 52 HRC	17.00	30	0.1750	560	98	22.2
		17.50	30	0.1770	545	97	23.2
		17.80	30	0.1790	535	96	23.8
		18.00	30	0.1800	530	95	24.3
		18.50	30	0.1830	515	94	25.3
		18.80	30	0.1840	510	94	26.0
		19.00	30	0.1850	505	93	26.5
		19.50	30	0.1880	490	92	27.5
		20.00	30	0.1900	475	90	28.4
	Hardened tool steel 52 - 56 HRC	17.00	30	0.1750	560	98	22.2
		17.50	30	0.1770	545	97	23.2
		17.80	30	0.1790	535	96	23.8
		18.00	30	0.1800	530	95	24.3
		18.50	30	0.1830	515	94	25.3
		18.80	30	0.1840	510	94	26.0
		19.00	30	0.1850	505	93	26.5
		19.50	30	0.1880	490	92	27.5
		20.00	30	0.1900	475	90	28.4
	Hardened tool steel 56 - 60 HRC	17.00	25	0.1130	470	53	12.1
		17.50	25	0.1150	455	52	12.6
		17.80	25	0.1160	445	52	12.8
		18.00	25	0.1170	440	52	13.1
		18.50	25	0.1190	430	51	13.8
		18.80	25	0.1200	425	51	14.2
		19.00	25	0.1210	420	51	14.4
		19.50	25	0.1220	410	50	14.9
		20.00	25	0.1240	400	50	15.6
	Hardened tool steel > 60 HRC	17.00	10	0.0960	185	18	4.0
		17.50	10	0.0980	180	18	4.2
		17.80	10	0.0990	180	18	4.4
		18.00	10	0.0990	175	17	4.4
		18.50	10	0.1010	170	17	4.6
		18.80	10	0.1010	170	17	4.8
		19.00	10	0.1020	170	17	4.9
		19.50	10	0.1030	165	17	5.1
		20.00	10	0.1050	160	17	5.3

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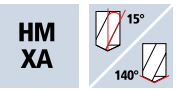
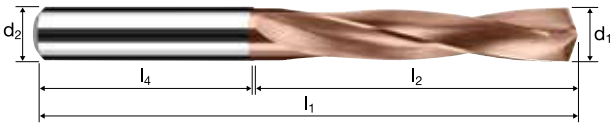


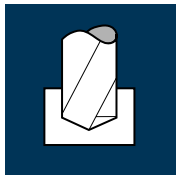


HRC 48-56 | HRC 56-60 | HRC > 60

Example: **Order-N°.** Article-N°. **B52112** ø-Code **1700**

DURO-VD **B52112**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	
1700	17.00	18.0	123.0	73.0	48	51.0	●
1750	17.50	18.0	123.0	73.0	48	51.0	●
1780	17.80	18.0	123.0	73.0	48	51.0	●
1800	18.00	18.0	123.0	73.0	48	51.0	●
1850	18.50	20.0	131.0	79.0	50	55.0	●
1880	18.80	20.0	131.0	79.0	50	55.0	●
1900	19.00	20.0	131.0	79.0	50	55.0	●
1950	19.50	20.0	131.0	79.0	50	55.0	●
1980	19.80	20.0	131.0	79.0	50	55.0	●
2000	20.00	20.0	131.0	79.0	50	55.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	150	0.0800	15915	1273	9.0
		3.30	150	0.0900	14470	1302	11.1
		3.50	150	0.0950	13640	1296	12.5
		3.80	150	0.1050	12565	1319	15.0
		4.00	150	0.1100	11935	1313	16.5
		4.20	150	0.1200	11370	1364	18.9
		4.50	150	0.1400	10610	1485	23.6
		4.80	150	0.1450	9945	1442	26.1
		5.00	150	0.1550	9550	1480	29.1
	Steel 500 - 850 N/mm²	3.00	120	0.0700	12730	891	6.3
		3.30	120	0.0750	11575	868	7.4
		3.50	120	0.0800	10915	873	8.4
		3.80	120	0.0900	10050	905	10.3
		4.00	120	0.0950	9550	907	11.4
		4.20	120	0.1050	9095	955	13.2
		4.50	120	0.1200	8490	1019	16.2
		4.80	120	0.1250	7960	995	18.0
		5.00	120	0.1300	7640	993	19.5
	Steel 850 - 1100 N/mm²	3.00	100	0.0650	10610	690	4.9
		3.30	100	0.0700	9645	675	5.8
		3.50	100	0.0750	9095	682	6.6
		3.80	100	0.0800	8375	670	7.6
		4.00	100	0.0900	7960	716	9.0
		4.20	100	0.0950	7580	720	10.0
		4.50	100	0.1100	7075	778	12.4
		4.80	100	0.1150	6630	763	13.8
		5.00	100	0.1200	6365	764	15.0
	Steel 1100 - 1300 N/mm²	3.00	70	0.0500	7425	371	2.6
		3.30	70	0.0550	6750	371	3.2
		3.50	70	0.0550	6365	350	3.4
		3.80	70	0.0600	5865	352	4.0
		4.00	70	0.0650	5570	362	4.6
		4.20	70	0.0700	5305	371	5.1
		4.50	70	0.0850	4950	421	6.7
		4.80	70	0.0900	4640	418	7.6
		5.00	70	0.0900	4455	401	7.9
	Steel 1300 - 1500 N/mm²	3.00	40	0.0350	4245	149	1.1
		3.30	40	0.0400	3860	154	1.3
		3.50	40	0.0450	3640	164	1.6
		3.80	40	0.0450	3350	151	1.7
		4.00	40	0.0500	3185	159	2.0
		4.20	40	0.0550	3030	167	2.3
		4.50	40	0.0650	2830	184	2.9
		4.80	40	0.0700	2655	186	3.4
		5.00	40	0.0700	2545	178	3.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	60	0.0350	6365	223	1.6
		3.30	60	0.0400	5785	231	2.0
		3.50	60	0.0450	5455	246	2.4
		3.80	60	0.0450	5025	226	2.6
		4.00	60	0.0500	4775	239	3.0
		4.20	60	0.0550	4545	250	3.5
		4.50	60	0.0650	4245	276	4.4
		4.80	60	0.0700	3980	279	5.0
		5.00	60	0.0700	3820	267	5.3
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	35	0.0350	3715	130	0.9
		3.30	35	0.0400	3375	135	1.2
		3.50	35	0.0450	3185	143	1.4
		3.80	35	0.0450	2930	132	1.5
		4.00	35	0.0500	2785	139	1.8
		4.20	35	0.0550	2655	146	2.0
		4.50	35	0.0650	2475	161	2.6
		4.80	35	0.0700	2320	162	2.9
		5.00	35	0.0700	2230	156	3.1
	Cast iron (lamellar / spheroidal)	3.00	220	0.0750	23345	1751	12.4
		3.30	220	0.0800	21220	1698	14.5
		3.50	220	0.0850	20010	1701	16.4
		3.80	220	0.0950	18430	1751	19.9
		4.00	220	0.1000	17505	1751	22.0
		4.20	220	0.1100	16675	1834	25.4
		4.50	220	0.1250	15560	1945	30.9
		4.80	220	0.1350	14590	1970	35.6
		5.00	220	0.1400	14005	1961	38.5

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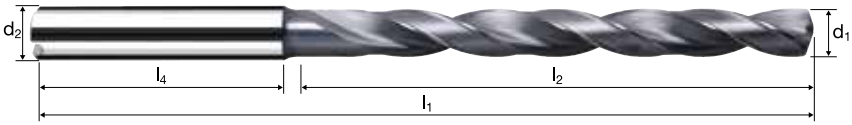
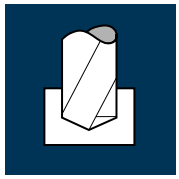


Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G)**

Example: **Order-N°.** Article-N°. **B72020** ø-Code **0300**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72020
0300	3.00	6.0	73.0	34.0	36	27.2	●
0310	3.10	6.0	73.0	34.0	36	27.2	●
0320	3.20	6.0	73.0	34.0	36	27.0	●
0330	3.30	6.0	73.0	34.0	36	27.0	●
0340	3.40	6.0	73.0	34.0	36	26.8	●
0350	3.50	6.0	73.0	34.0	36	26.8	●
0360	3.60	6.0	73.0	34.0	36	26.6	●
0370	3.70	6.0	73.0	34.0	36	26.6	●
0380	3.80	6.0	82.0	43.0	36	35.4	●
0390	3.90	6.0	82.0	43.0	36	35.4	●
0400	4.00	6.0	82.0	43.0	36	34.9	●
0410	4.10	6.0	82.0	43.0	36	34.9	●
0420	4.20	6.0	82.0	43.0	36	34.8	●
0430	4.30	6.0	82.0	43.0	36	34.7	●
0440	4.40	6.0	82.0	43.0	36	34.6	●
0450	4.50	6.0	82.0	43.0	36	34.6	●
0460	4.60	6.0	82.0	43.0	36	34.5	●
0470	4.70	6.0	82.0	43.0	36	34.5	●
0480	4.80	6.0	95.0	56.0	36	47.4	●
0490	4.90	6.0	95.0	56.0	36	47.3	●
0500	5.00	6.0	95.0	56.0	36	47.7	●
0510	5.10	6.0	95.0	56.0	36	47.7	●
0520	5.20	6.0	95.0	56.0	36	47.6	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	5.50	150	0.1700	8680	1476	35.1
		5.80	150	0.1800	8230	1481	39.1
		6.00	150	0.1900	7960	1512	42.8
		6.20	150	0.2050	7700	1579	47.7
		6.50	150	0.2100	7345	1543	51.2
		6.80	150	0.2200	7020	1544	56.1
		7.00	150	0.2300	6820	1569	60.4
		7.20	150	0.2350	6630	1558	63.4
		7.50	150	0.2450	6365	1559	68.9
	Steel 500 - 850 N/mm²	5.50	120	0.1450	6945	1007	23.9
		5.80	120	0.1500	6585	988	26.1
		6.00	120	0.1650	6365	1050	29.7
		6.20	120	0.1750	6160	1078	32.5
		6.50	120	0.1800	5875	1058	35.1
		6.80	120	0.1900	5615	1067	38.7
		7.00	120	0.1950	5455	1064	40.9
		7.20	120	0.2000	5305	1061	43.2
		7.50	120	0.2100	5095	1070	47.3
	Steel 850 - 1100 N/mm²	5.50	100	0.1350	5785	781	18.6
		5.80	100	0.1400	5490	769	20.3
		6.00	100	0.1500	5305	796	22.5
		6.20	100	0.1600	5135	822	24.8
		6.50	100	0.1700	4895	832	27.6
		6.80	100	0.1750	4680	819	29.7
		7.00	100	0.1800	4545	818	31.5
		7.20	100	0.1850	4420	818	33.3
		7.50	100	0.1950	4245	828	36.6
	Steel 1100 - 1300 N/mm²	5.50	70	0.1000	4050	405	9.6
		5.80	70	0.1050	3840	403	10.7
		6.00	70	0.1150	3715	427	12.1
		6.20	70	0.1200	3595	431	13.0
		6.50	70	0.1250	3430	429	14.2
		6.80	70	0.1350	3275	442	16.1
		7.00	70	0.1350	3185	430	16.5
		7.20	70	0.1400	3095	433	17.6
		7.50	70	0.1450	2970	431	19.0
	Steel 1300 - 1500 N/mm²	5.50	40	0.0800	2315	185	4.4
		5.80	40	0.0800	2195	176	4.6
		6.00	40	0.0900	2120	191	5.4
		6.20	40	0.0950	2055	195	5.9
		6.50	40	0.1000	1960	196	6.5
		6.80	40	0.1050	1870	196	7.1
		7.00	40	0.1050	1820	191	7.4
		7.20	40	0.1100	1770	195	7.9
		7.50	40	0.1150	1700	196	8.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	5.50	60	0.0800	3470	278	6.6
		5.80	60	0.0800	3295	264	7.0
		6.00	60	0.0900	3185	287	8.1
		6.20	60	0.0950	3080	293	8.8
		6.50	60	0.1000	2940	294	9.8
		6.80	60	0.1050	2810	295	10.7
		7.00	60	0.1050	2730	287	11.0
		7.20	60	0.1100	2655	292	11.9
		7.50	60	0.1150	2545	293	12.9
	Titanium alloys > 300 HB [Ti6Al4V]	5.50	35	0.0800	2025	162	3.8
		5.80	35	0.0800	1920	154	4.1
		6.00	35	0.0900	1855	167	4.7
		6.20	35	0.0950	1795	171	5.1
		6.50	35	0.1000	1715	172	5.7
		6.80	35	0.1050	1640	172	6.3
		7.00	35	0.1050	1590	167	6.4
		7.20	35	0.1100	1545	170	6.9
		7.50	35	0.1150	1485	171	7.5
	Cast iron (lamellar / spheroidal)	5.50	220	0.1550	12730	1973	46.9
		5.80	220	0.1600	12075	1932	51.0
		6.00	220	0.1750	11670	2042	57.7
		6.20	220	0.1850	11295	2090	63.1
		6.50	220	0.1950	10775	2101	69.7
		6.80	220	0.2000	10300	2060	74.8
		7.00	220	0.2100	10005	2101	80.9
		7.20	220	0.2150	9725	2091	85.1
		7.50	220	0.2250	9335	2100	92.8

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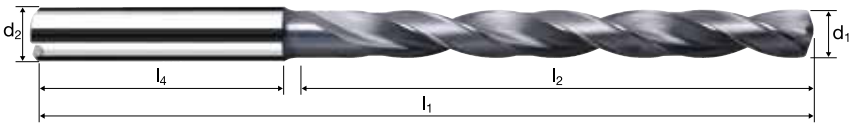
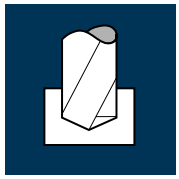


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72020** ø-Code **0530**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72020
0530	5.30	6.0	95.0	56.0	36	47.6	●
0540	5.40	6.0	95.0	56.0	36	47.5	●
0550	5.50	6.0	95.0	56.0	36	47.5	●
0560	5.60	6.0	95.0	56.0	36	47.4	●
0570	5.70	6.0	95.0	56.0	36	47.4	●
0580	5.80	6.0	95.0	56.0	36	47.3	●
0590	5.90	6.0	95.0	56.0	36	47.4	●
0600	6.00	6.0	95.0	56.0	36	47.2	●
0610	6.10	8.0	105.0	66.0	36	55.3	●
0620	6.20	8.0	105.0	66.0	36	55.2	●
0630	6.30	8.0	105.0	66.0	36	55.2	●
0640	6.40	8.0	105.0	66.0	36	55.1	●
0650	6.50	8.0	105.0	66.0	36	55.1	●
0660	6.60	8.0	105.0	66.0	36	55.0	●
0670	6.70	8.0	105.0	66.0	36	55.0	●
0680	6.80	8.0	105.0	66.0	36	54.8	●
0690	6.90	8.0	105.0	66.0	36	54.8	●
0700	7.00	8.0	105.0	66.0	36	54.7	●
0710	7.10	8.0	115.0	76.0	36	64.7	●
0720	7.20	8.0	115.0	76.0	36	64.6	●
0730	7.30	8.0	115.0	76.0	36	64.6	●
0740	7.40	8.0	115.0	76.0	36	64.4	●
0750	7.50	8.0	115.0	76.0	36	64.4	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 500 N/mm²	7.60	150	0.2500	6280	1570	71.2
		8.00	150	0.2600	5970	1552	78.0
		8.20	150	0.2700	5825	1573	83.1
		8.50	150	0.2800	5615	1572	89.2
		8.80	150	0.2850	5425	1546	94.0
		9.00	150	0.2950	5305	1565	99.6
		9.20	150	0.3000	5190	1557	103.5
		9.50	150	0.3100	5025	1558	110.4
		9.80	150	0.3200	4870	1558	117.5
	Steel 500 - 850 N/mm²	7.60	120	0.2150	5025	1080	49.0
		8.00	120	0.2250	4775	1074	54.0
		8.20	120	0.2300	4660	1072	56.6
		8.50	120	0.2400	4495	1079	61.2
		8.80	120	0.2450	4340	1063	64.7
		9.00	120	0.2500	4245	1061	67.5
		9.20	120	0.2600	4150	1079	71.7
		9.50	120	0.2650	4020	1065	75.5
		9.80	120	0.2750	3900	1073	80.9
	Steel 850 - 1100 N/mm²	7.60	100	0.1950	4190	817	37.1
		8.00	100	0.2050	3980	816	41.0
		8.20	100	0.2100	3880	815	43.0
		8.50	100	0.2200	3745	824	46.8
		8.80	100	0.2250	3615	813	49.5
		9.00	100	0.2300	3535	813	51.7
		9.20	100	0.2350	3460	813	54.1
		9.50	100	0.2450	3350	821	58.2
		9.80	100	0.2550	3250	829	62.5
	Steel 1100 - 1300 N/mm²	7.60	70	0.1500	2930	440	19.9
		8.00	70	0.1550	2785	432	21.7
		8.20	70	0.1600	2715	434	22.9
		8.50	70	0.1650	2620	432	24.5
		8.80	70	0.1700	2530	430	26.2
		9.00	70	0.1750	2475	433	27.6
		9.20	70	0.1800	2420	436	29.0
		9.50	70	0.1850	2345	434	30.7
		9.80	70	0.1900	2275	432	32.6
	Steel 1300 - 1500 N/mm²	7.60	40	0.1150	1675	193	8.7
		8.00	40	0.1200	1590	191	9.6
		8.20	40	0.1250	1555	194	10.3
		8.50	40	0.1300	1500	195	11.1
		8.80	40	0.1350	1445	195	11.9
		9.00	40	0.1350	1415	191	12.2
		9.20	40	0.1400	1385	194	12.9
		9.50	40	0.1450	1340	194	13.8
		9.80	40	0.1500	1300	195	14.7
	Cold work tool steel (12% Cr), high alloyed [1.2379]	7.60	60	0.1150	2515	289	13.1
		8.00	60	0.1200	2385	286	14.4
		8.20	60	0.1250	2330	291	15.4
		8.50	60	0.1300	2245	292	16.6
		8.80	60	0.1350	2170	293	17.8
		9.00	60	0.1350	2120	286	18.2
		9.20	60	0.1400	2075	291	19.3
		9.50	60	0.1450	2010	292	20.7
		9.80	60	0.1500	1950	293	22.1
	Titanium alloys > 300 HB [Ti6Al4V]	7.60	35	0.1150	1465	169	7.6
		8.00	35	0.1200	1395	167	8.4
		8.20	35	0.1250	1360	170	9.0
		8.50	35	0.1300	1310	170	9.7
		8.80	35	0.1350	1265	171	10.4
		9.00	35	0.1350	1240	167	10.6
		9.20	35	0.1400	1210	169	11.3
		9.50	35	0.1450	1175	170	12.1
		9.80	35	0.1500	1135	170	12.8
	Cast iron (lamellar / spheroidal)	7.60	220	0.2250	9215	2073	94.1
		8.00	220	0.2400	8755	2101	105.6
		8.20	220	0.2450	8540	2092	110.5
		8.50	220	0.2500	8240	2060	116.9
		8.80	220	0.2600	7960	2070	125.9
		9.00	220	0.2650	7780	2062	131.2
		9.20	220	0.2750	7610	2093	139.1
		9.50	220	0.2800	7370	2064	146.3
		9.80	220	0.2900	7145	2072	156.3

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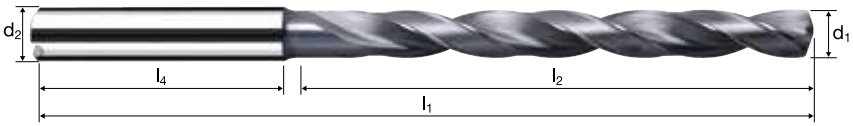
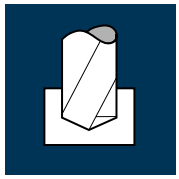


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72020** ø-Code **0760**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72020
0760	7.60	8.0	115.0	76.0	36	64.3	●
0770	7.70	8.0	115.0	76.0	36	64.4	●
0780	7.80	8.0	115.0	76.0	36	64.3	●
0790	7.90	8.0	115.0	76.0	36	64.3	●
0800	8.00	8.0	115.0	76.0	36	64.1	●
0810	8.10	10.0	129.0	86.0	40	72.3	●
0820	8.20	10.0	129.0	86.0	40	72.2	●
0830	8.30	10.0	129.0	86.0	40	72.2	●
0840	8.40	10.0	129.0	86.0	40	72.1	●
0850	8.50	10.0	129.0	86.0	40	72.0	●
0860	8.60	10.0	129.0	86.0	40	71.9	●
0870	8.70	10.0	129.0	86.0	40	71.9	●
0880	8.80	10.0	129.0	86.0	40	71.8	●
0890	8.90	10.0	129.0	86.0	40	71.8	●
0900	9.00	10.0	129.0	86.0	40	71.7	●
0910	9.10	10.0	138.0	95.0	40	80.7	●
0920	9.20	10.0	138.0	95.0	40	80.5	●
0930	9.30	10.0	138.0	95.0	40	80.5	●
0940	9.40	10.0	138.0	95.0	40	80.4	●
0950	9.50	10.0	138.0	95.0	40	80.4	●
0960	9.60	10.0	138.0	95.0	40	80.3	●
0970	9.70	10.0	138.0	95.0	40	80.3	●
0980	9.80	10.0	138.0	95.0	40	80.2	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	10.00	150	0.3250	4775	1552	121.9
		10.20	150	0.3350	4680	1568	128.1
		10.50	150	0.3450	4545	1568	135.8
		10.80	150	0.3500	4420	1547	141.7
		11.00	150	0.3550	4340	1541	146.4
		11.50	150	0.3600	4150	1494	155.2
		11.80	150	0.3600	4045	1456	159.2
		12.00	150	0.3700	3980	1473	166.5
		12.50	150	0.3850	3820	1471	180.5
	Steel 500 - 850 N/mm²	10.00	120	0.2800	3820	1070	84.0
		10.20	120	0.2850	3745	1067	87.2
		10.50	120	0.2950	3640	1074	93.0
		10.80	120	0.3000	3535	1061	97.2
		11.00	120	0.3050	3470	1058	100.6
		11.50	120	0.3100	3320	1029	106.9
		11.80	120	0.3100	3235	1003	109.7
		12.00	120	0.3150	3185	1003	113.5
		12.50	120	0.3300	3055	1008	123.7
	Steel 850 - 1100 N/mm²	10.00	100	0.2600	3185	828	65.0
		10.20	100	0.2650	3120	827	67.6
		10.50	100	0.2700	3030	818	70.8
		10.80	100	0.2750	2945	810	74.2
		11.00	100	0.2800	2895	811	77.0
		11.50	100	0.2850	2770	790	82.0
		11.80	100	0.2850	2700	770	84.2
		12.00	100	0.2900	2655	770	87.1
		12.50	100	0.3050	2545	776	95.3
	Steel 1100 - 1300 N/mm²	10.00	70	0.1950	2230	435	34.2
		10.20	70	0.2000	2185	437	35.7
		10.50	70	0.2050	2120	435	37.6
		10.80	70	0.2100	2065	434	39.7
		11.00	70	0.2150	2025	435	41.4
		11.50	70	0.2150	1940	417	43.3
		11.80	70	0.2150	1890	406	44.4
		12.00	70	0.2200	1855	408	46.2
		12.50	70	0.2300	1785	411	50.4
	Steel 1300 - 1500 N/mm²	10.00	40	0.1500	1275	191	15.0
		10.20	40	0.1550	1250	194	15.8
		10.50	40	0.1600	1215	194	16.8
		10.80	40	0.1600	1180	189	17.3
		11.00	40	0.1650	1155	191	18.1
		11.50	40	0.1650	1105	182	18.9
		11.80	40	0.1650	1080	178	19.5
		12.00	40	0.1700	1060	180	20.4
		12.50	40	0.1750	1020	179	21.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	60	0.1500	1910	287	22.5
		10.20	60	0.1550	1870	290	23.7
		10.50	60	0.1600	1820	291	25.2
		10.80	60	0.1600	1770	283	25.9
		11.00	60	0.1650	1735	286	27.2
		11.50	60	0.1650	1660	274	28.4
		11.80	60	0.1650	1620	267	29.2
		12.00	60	0.1700	1590	270	30.6
		12.50	60	0.1750	1530	268	32.9
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	35	0.1500	1115	167	13.1
		10.20	35	0.1550	1090	169	13.8
		10.50	35	0.1600	1060	170	14.7
		10.80	35	0.1600	1030	165	15.1
		11.00	35	0.1650	1015	168	15.9
		11.50	35	0.1650	970	160	16.6
		11.80	35	0.1650	945	156	17.0
		12.00	35	0.1700	930	158	17.9
		12.50	35	0.1750	890	156	19.1
	Cast iron (lamellar / spheroidal)	10.00	220	0.2950	7005	2067	162.3
		10.20	220	0.3050	6865	2094	171.1
		10.50	220	0.3100	6670	2068	179.0
		10.80	220	0.3150	6485	2043	187.1
		11.00	220	0.3250	6365	2069	196.6
		11.50	220	0.3300	6090	2010	208.7
		11.80	220	0.3300	5935	1959	214.2
		12.00	220	0.3350	5835	1955	221.1
		12.50	220	0.3500	5600	1960	240.5

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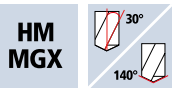
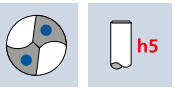
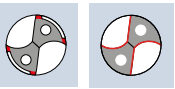
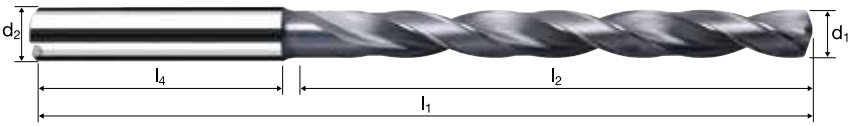
HM MGX





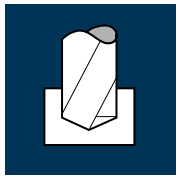




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72020** ø-Code **0990**

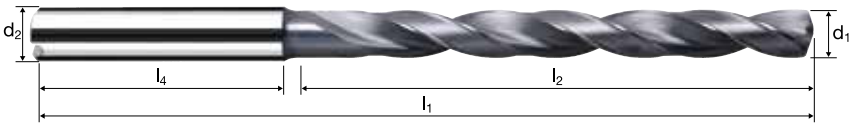
Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72020
0990	9.90	10.0	138.0	95.0	40	80.3	●
1000	10.00	10.0	138.0	95.0	40	80.0	●
1010	10.10	12.0	153.0	105.0	45	88.3	●
1020	10.20	12.0	153.0	105.0	45	88.2	●
1030	10.30	12.0	153.0	105.0	45	88.1	●
1040	10.40	12.0	153.0	105.0	45	88.0	●
1050	10.50	12.0	153.0	105.0	45	88.0	●
1060	10.60	12.0	153.0	105.0	45	87.9	●
1070	10.70	12.0	153.0	105.0	45	87.9	●
1080	10.80	12.0	153.0	105.0	45	87.8	●
1090	10.90	12.0	153.0	105.0	45	87.8	●
1100	11.00	12.0	153.0	105.0	45	87.6	●
1110	11.10	12.0	162.0	114.0	45	96.6	●
1120	11.20	12.0	162.0	114.0	45	96.5	●
1130	11.30	12.0	162.0	114.0	45	96.5	●
1140	11.40	12.0	162.0	114.0	45	96.4	●
1150	11.50	12.0	162.0	114.0	45	96.4	●
1160	11.60	12.0	162.0	114.0	45	96.3	●
1170	11.70	12.0	162.0	114.0	45	96.3	●
1180	11.80	12.0	162.0	114.0	45	96.2	●
1190	11.90	12.0	162.0	114.0	45	96.2	●
1200	12.00	12.0	162.0	114.0	45	95.9	●
1250	12.50	14.0	181.0	133.0	45	113.0	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	12.80	150	0.3950	3730	1473	189.6
		13.00	150	0.4000	3675	1470	195.1
		13.50	150	0.4050	3535	1432	204.9
		14.00	150	0.4100	3410	1398	215.2
		14.50	150	0.4200	3295	1384	228.5
		14.80	150	0.4250	3225	1371	235.8
		15.00	150	0.4300	3185	1370	242.0
		15.50	150	0.4400	3080	1355	255.7
		16.00	150	0.4500	2985	1343	270.1
	Steel 500 - 850 N/mm²	12.80	120	0.3350	2985	1000	128.7
		13.00	120	0.3400	2940	1000	132.7
		13.50	120	0.3450	2830	976	139.8
		14.00	120	0.3500	2730	956	147.1
		14.50	120	0.3600	2635	949	156.6
		14.80	120	0.3650	2580	942	162.0
		15.00	120	0.3700	2545	942	166.4
		15.50	120	0.3750	2465	924	174.4
		16.00	120	0.3850	2385	918	184.6
	Steel 850 - 1100 N/mm²	12.80	100	0.3100	2485	770	99.1
		13.00	100	0.3150	2450	772	102.4
		13.50	100	0.3200	2360	755	108.1
		14.00	100	0.3250	2275	739	113.8
		14.50	100	0.3300	2195	724	119.6
		14.80	100	0.3350	2150	720	123.9
		15.00	100	0.3400	2120	721	127.4
		15.50	100	0.3450	2055	709	133.8
		16.00	100	0.3550	1990	707	142.1
	Steel 1100 - 1300 N/mm²	12.80	70	0.2350	1740	409	52.6
		13.00	70	0.2400	1715	412	54.6
		13.50	70	0.2450	1650	404	57.9
		14.00	70	0.2450	1590	390	60.0
		14.50	70	0.2500	1535	384	63.4
		14.80	70	0.2550	1505	384	66.0
		15.00	70	0.2600	1485	386	68.2
		15.50	70	0.2650	1440	382	72.0
		16.00	70	0.2700	1395	377	75.7
	Steel 1300 - 1500 N/mm²	12.80	40	0.1800	995	179	23.0
		13.00	40	0.1850	980	181	24.1
		13.50	40	0.1850	945	175	25.0
		14.00	40	0.1900	910	173	26.6
		14.50	40	0.1950	880	172	28.3
		14.80	40	0.1950	860	168	28.9
		15.00	40	0.2000	850	170	30.0
		15.50	40	0.2050	820	168	31.7
		16.00	40	0.2050	795	163	32.8
	Cold work tool steel (12% Cr), high alloyed [1.2379]	12.80	60	0.1800	1490	268	34.5
		13.00	60	0.1850	1470	272	36.1
		13.50	60	0.1850	1415	262	37.5
		14.00	60	0.1900	1365	259	39.9
		14.50	60	0.1950	1315	256	42.3
		14.80	60	0.1950	1290	252	43.3
		15.00	60	0.2000	1275	255	45.1
		15.50	60	0.2050	1230	252	47.6
		16.00	60	0.2050	1195	245	49.3
	Titanium alloys > 300 HB [Ti6Al4V]	12.80	35	0.1800	870	157	20.2
		13.00	35	0.1850	855	158	21.0
		13.50	35	0.1850	825	153	21.8
		14.00	35	0.1900	795	151	23.3
		14.50	35	0.1950	770	150	24.8
		14.80	35	0.1950	755	147	25.3
		15.00	35	0.2000	745	149	26.3
		15.50	35	0.2050	720	148	27.9
		16.00	35	0.2050	695	143	28.7
	Cast iron (lamellar / spheroidal)	12.80	220	0.3550	5470	1942	249.9
		13.00	220	0.3600	5385	1939	257.3
		13.50	220	0.3700	5185	1919	274.6
		14.00	220	0.3750	5000	1875	288.6
		14.50	220	0.3800	4830	1835	303.1
		14.80	220	0.3850	4730	1821	313.3
		15.00	220	0.3900	4670	1821	321.9
		15.50	220	0.4000	4520	1808	341.2
		16.00	220	0.4050	4375	1772	356.3

Spiral flute drills XDrill®

8xd

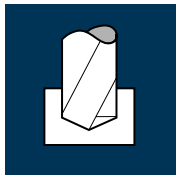
HM MGX



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Article-N°. **B72020** ø-Code **1280**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	l_4	L_{max}	DURO-X B72020
1280	12.80	14.0	181.0	133.0	45	112.7	●
1300	13.00	14.0	181.0	133.0	45	112.6	●
1350	13.50	14.0	181.0	133.0	45	112.3	●
1380	13.80	14.0	181.0	133.0	45	112.1	●
1400	14.00	14.0	181.0	133.0	45	111.9	●
1450	14.50	16.0	203.0	152.0	48	128.9	●
1480	14.80	16.0	203.0	152.0	48	128.7	●
1500	15.00	16.0	203.0	152.0	48	128.6	●
1550	15.50	16.0	203.0	152.0	48	128.3	●
1580	15.80	16.0	203.0	152.0	48	128.1	●
1600	16.00	16.0	203.0	152.0	48	127.8	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	4.00	130	0.0850	10345	879	11.0
		5.00	130	0.1050	8275	869	17.1
		6.00	130	0.1250	6895	862	24.4
		7.00	130	0.1450	5910	857	33.0
		8.00	130	0.1700	5175	880	44.2
		9.00	130	0.1900	4600	874	55.6
		10.00	130	0.2100	4140	869	68.3
		11.00	130	0.2300	3760	865	82.2
		12.00	130	0.2550	3450	880	99.5
	Steel 500 - 850 N/mm²	4.00	100	0.0850	7960	677	8.5
		5.00	100	0.1050	6365	668	13.1
		6.00	100	0.1250	5305	663	18.7
		7.00	100	0.1450	4545	659	25.4
		8.00	100	0.1700	3980	677	34.0
		9.00	100	0.1900	3535	672	42.7
		10.00	100	0.2100	3185	669	52.5
		11.00	100	0.2300	2895	666	63.3
		12.00	100	0.2550	2655	677	76.6
	Steel 850 - 1100 N/mm²	4.00	70	0.0650	5570	362	4.6
		5.00	70	0.0800	4455	356	7.0
		6.00	70	0.0950	3715	353	10.0
		7.00	70	0.1100	3185	350	13.5
		8.00	70	0.1300	2785	362	18.2
		9.00	70	0.1450	2475	359	22.8
		10.00	70	0.1600	2230	357	28.0
		11.00	70	0.1750	2025	354	33.7
		12.00	70	0.1900	1855	353	39.9
	Steel 1100 - 1300 N/mm²	4.00	50	0.0550	3980	219	2.8
		5.00	50	0.0650	3185	207	4.1
		6.00	50	0.0800	2655	212	6.0
		7.00	50	0.0950	2275	216	8.3
		8.00	50	0.1050	1990	209	10.5
		9.00	50	0.1200	1770	212	13.5
		10.00	50	0.1350	1590	215	16.9
		11.00	50	0.1450	1445	210	19.9
		12.00	50	0.1600	1325	212	24.0
	Stainless steel [Cr-Ni/1.4301]	4.00	50	0.0450	3980	179	2.3
		5.00	50	0.0550	3185	175	3.4
		6.00	50	0.0700	2655	186	5.3
		7.00	50	0.0800	2275	182	7.0
		8.00	50	0.0900	1990	179	9.0
		9.00	50	0.1050	1770	186	11.8
		10.00	50	0.1150	1590	183	14.4
		11.00	50	0.1250	1445	181	17.2
		12.00	50	0.1350	1325	179	20.2
	Cast iron (lamellar / spheroidal)	4.00	150	0.0900	11935	1074	13.5
		5.00	150	0.1150	9550	1098	21.6
		6.00	150	0.1350	7960	1075	30.4
		7.00	150	0.1600	6820	1091	42.0
		8.00	150	0.1850	5970	1105	55.5
		9.00	150	0.2050	5305	1088	69.2
		10.00	150	0.2300	4775	1098	86.3
		11.00	150	0.2500	4340	1085	103.1
		12.00	150	0.2750	3980	1095	123.8
	Wrought aluminium alloys Si < 6% hardened	4.00	200	0.0800	15915	1273	16.0
		5.00	200	0.1000	12730	1273	25.0
		6.00	200	0.1200	10610	1273	36.0
		7.00	200	0.1400	9095	1273	49.0
		8.00	200	0.1600	7960	1274	64.0
		9.00	200	0.1800	7075	1274	81.0
		10.00	200	0.2000	6365	1273	100.0
		11.00	200	0.2200	5785	1273	120.9
		12.00	200	0.2400	5305	1273	144.0

Spiral flute drills Supradrill® N

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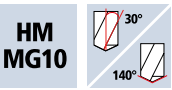
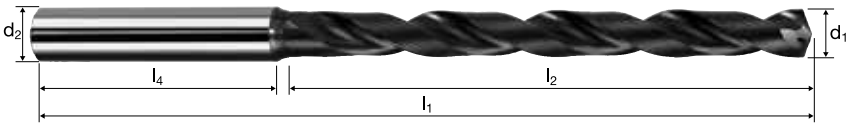
HM MG10

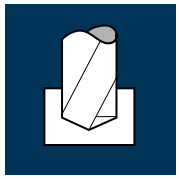




Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example:
Order-N°. Article-N°. **B52020** ø-Code **0400**

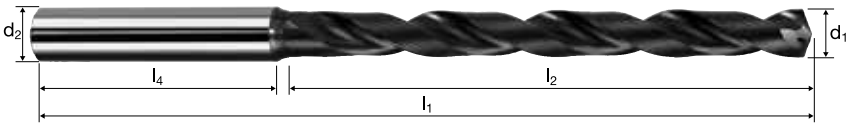
Ø Code	d_1 m7	d_2 h6	l_1	l_2	l_4	L_{max}		DURO-SD
								B52020
								B53020
0400	4.00	6.0	82.0	44.0	36	34.9		●
0420	4.20	6.0	82.0	44.0	36	34.8		●
0450	4.50	6.0	82.0	44.0	36	34.6		●
0480	4.80	6.0	82.0	44.0	36	34.4		●
0500	5.00	6.0	95.0	57.0	36	47.7		●
0550	5.50	6.0	95.0	57.0	36	47.5		●
0580	5.80	6.0	95.0	57.0	36	47.3		●
0600	6.00	6.0	95.0	57.0	36	47.4		●
0650	6.50	8.0	115.0	76.0	36	65.0		●
0680	6.80	8.0	115.0	76.0	36	64.8		●
0700	7.00	8.0	115.0	76.0	36	64.7		●
0750	7.50	8.0	115.0	76.0	36	64.4		●
0780	7.80	8.0	115.0	76.0	36	64.3		●
0800	8.00	8.0	115.0	76.0	36	64.3		●
0850	8.50	10.0	138.0	95.0	40	81.0		●
0900	9.00	10.0	138.0	95.0	40	80.7		●
0950	9.50	10.0	138.0	95.0	40	80.4		●
1000	10.00	10.0	138.0	95.0	40	80.2		●
1050	10.50	12.0	162.0	114.0	45	97.0		●
1100	11.00	12.0	162.0	114.0	45	96.6		●
1150	11.50	12.0	162.0	114.0	45	96.4		●
1200	12.00	12.0	162.0	114.0	45	96.2		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	12.50	130	0.2650	3310	877	107.6
		13.00	130	0.2750	3185	876	116.3
		13.50	130	0.2850	3065	874	125.0
		14.00	130	0.2950	2955	872	134.2
		14.50	130	0.3050	2855	871	143.8
		15.00	130	0.3150	2760	869	153.6
		16.00	130	0.3350	2585	866	174.1
	Steel 500 - 850 N/mm²	12.50	100	0.2650	2545	674	82.8
		13.00	100	0.2750	2450	674	89.4
		13.50	100	0.2850	2360	673	96.3
		14.00	100	0.2950	2275	671	103.3
		14.50	100	0.3050	2195	670	110.6
		15.00	100	0.3150	2120	668	118.0
		16.00	100	0.3350	1990	667	134.0
	Steel 850 - 1100 N/mm²	12.50	70	0.2000	1785	357	43.8
		13.00	70	0.2100	1715	360	47.8
		13.50	70	0.2150	1650	355	50.8
		14.00	70	0.2250	1590	358	55.1
		14.50	70	0.2300	1535	353	58.3
		15.00	70	0.2400	1485	356	63.0
		16.00	70	0.2550	1395	356	71.5
	Steel 1100 - 1300 N/mm²	12.50	50	0.1650	1275	210	25.8
		13.00	50	0.1750	1225	214	28.5
		13.50	50	0.1800	1180	212	30.4
		14.00	50	0.1850	1135	210	32.3
		14.50	50	0.1950	1100	215	35.4
		15.00	50	0.2000	1060	212	37.5
		16.00	50	0.2150	995	214	43.0
	Stainless steel [Cr-Ni/1.4301]	12.50	50	0.1450	1275	185	22.7
		13.00	50	0.1500	1225	184	24.4
		13.50	50	0.1550	1180	183	26.2
		14.00	50	0.1600	1135	182	28.0
		14.50	50	0.1650	1100	182	30.0
		15.00	50	0.1700	1060	180	31.8
		16.00	50	0.1850	995	184	37.0
	Cast iron (lamellar / spheroidal)	12.50	150	0.2850	3820	1089	133.6
		13.00	150	0.2950	3675	1084	143.9
		13.50	150	0.3100	3535	1096	156.9
		14.00	150	0.3200	3410	1091	168.0
		14.50	150	0.3300	3295	1087	179.6
		15.00	150	0.3450	3185	1099	194.2
		16.00	150	0.3650	2985	1090	219.1
	Wrought aluminium alloys Si < 6% hardened	12.50	200	0.2500	5095	1274	156.3
		13.00	200	0.2600	4895	1273	168.9
		13.50	200	0.2700	4715	1273	182.2
		14.00	200	0.2800	4545	1273	195.9
		14.50	200	0.2900	4390	1273	210.2
		15.00	200	0.3000	4245	1274	225.0
		16.00	200	0.3200	3980	1274	256.1

Spiral flute drills Supradrill® N

8xd

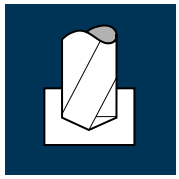
HM MG10



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B52020** ø-Code **1250**

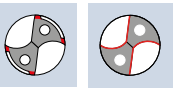
Ø Code	d_1 m7	d_2 h6	l_1	l_2	l_4	L_{max}		DURO-SD B52020	DURO-SD B53020
1250	12.50	14.0	181.0	133.0	45	113.0			●
1300	13.00	14.0	181.0	133.0	45	112.6			●
1350	13.50	14.0	181.0	133.0	45	112.3			●
1400	14.00	14.0	181.0	133.0	45	112.1			●
1450	14.50	16.0	203.0	152.0	48	128.9			●
1500	15.00	16.0	203.0	152.0	48	128.6			●
1600	16.00	16.0	203.0	152.0	48	128.0			●

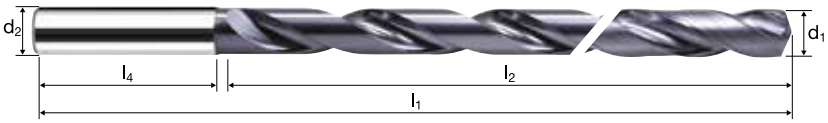
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	100	0.1200	10610	1273	9.0
		4.00	100	0.1200	7960	955	12.0
		5.00	100	0.1200	6365	764	15.0
		6.00	100	0.1500	5305	796	22.5
		8.00	100	0.1500	3980	597	30.0
		10.00	100	0.2000	3185	637	50.0
		12.00	100	0.2000	2655	531	60.1
		14.00	100	0.2400	2275	546	84.1
		16.00	100	0.2400	1990	478	96.0
	Steel 500 - 850 N/mm²	3.00	75	0.1150	7960	915	6.5
		4.00	75	0.1150	5970	687	8.6
		5.00	75	0.1150	4775	549	10.8
		6.00	75	0.1450	3980	577	16.3
		8.00	75	0.1450	2985	433	21.8
		10.00	75	0.1900	2385	453	35.6
		12.00	75	0.1900	1990	378	42.8
		14.00	75	0.2300	1705	392	60.4
		16.00	75	0.2300	1490	343	68.9
	Steel 850 - 1100 N/mm²	3.00	50	0.1000	5305	531	3.7
		4.00	50	0.1000	3980	398	5.0
		5.00	50	0.1000	3185	319	6.3
		6.00	50	0.1400	2655	372	10.5
		8.00	50	0.1400	1990	279	14.0
		10.00	50	0.1800	1590	286	22.5
		12.00	50	0.1800	1325	239	27.0
		14.00	50	0.2200	1135	250	38.4
		16.00	50	0.2200	995	219	44.0
	Steel 1100 - 1300 N/mm²	3.00	35	0.0900	3715	334	2.4
		4.00	35	0.0900	2785	251	3.2
		5.00	35	0.0900	2230	201	3.9
		6.00	35	0.1250	1855	232	6.6
		8.00	35	0.1250	1395	174	8.8
		10.00	35	0.1600	1115	178	14.0
		12.00	35	0.1600	930	149	16.8
		14.00	35	0.2000	795	159	24.5
		16.00	35	0.2000	695	139	27.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	40	0.1000	4245	425	3.0
		4.00	40	0.1000	3185	319	4.0
		5.00	40	0.1000	2545	255	5.0
		6.00	40	0.1400	2120	297	8.4
		8.00	40	0.1400	1590	223	11.2
		10.00	40	0.1800	1275	230	18.0
		12.00	40	0.1800	1060	191	21.6
		14.00	40	0.2200	910	200	30.8
		16.00	40	0.2200	795	175	35.2
	Cast iron (lamellar / spheroidal)	3.00	80	0.1600	8490	1358	9.6
		4.00	80	0.1600	6365	1018	12.8
		5.00	80	0.1600	5095	815	16.0
		6.00	80	0.2100	4245	892	25.2
		8.00	80	0.2100	3185	669	33.6
		10.00	80	0.2600	2545	662	52.0
		12.00	80	0.2600	2120	551	62.3
		14.00	80	0.3200	1820	582	89.7
		16.00	80	0.3200	1590	509	102.3

Deep hole drills

15xd

HM MGD²





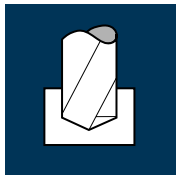
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **GG(G)**

Example: **Order-N°.** Article-N°. **B52915** ø-Code **0300**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-D² B52915
0300	3.00	4.0	90.0	56.0	32	51.5	●
0350	3.50	4.0	100.0	66.0	32	61.0	●
0400	4.00	4.0	100.0	66.0	32	60.0	●
0450	4.50	5.0	110.0	74.0	34	67.5	●
0500	5.00	5.0	120.0	84.0	34	76.5	●
0550	5.50	6.0	130.0	92.0	36	84.0	●
0600	6.00	6.0	140.0	102.0	36	93.0	●
0700	7.00	7.0	155.0	115.0	38	104.5	●
0800	8.00	8.0	175.0	133.0	40	121.0	●
0900	9.00	9.0	190.0	148.0	40	134.5	●
1000	10.00	10.0	210.0	168.0	40	153.0	●
1100	11.00	11.0	230.0	183.0	45	166.5	●
1200	12.00	12.0	250.0	203.0	45	185.0	●
1300	13.00	13.0	265.0	218.0	45	198.5	●
1400	14.00	14.0	285.0	233.0	50	212.0	●
1500	15.00	15.0	305.0	253.0	50	230.5	●
1600	16.00	16.0	320.0	268.0	50	244.0	●

See page «Technical notes regarding use of deep hole drills»

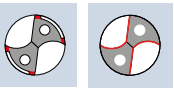
A pilot hole is required!

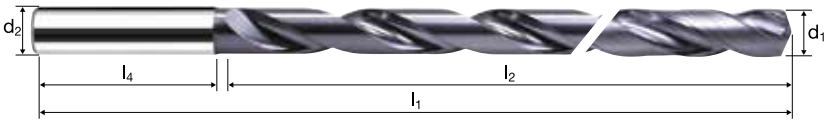
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	100	0.1200	10610	1273	9.0
		4.00	100	0.1200	7960	955	12.0
		5.00	100	0.1200	6365	764	15.0
		6.00	100	0.1500	5305	796	22.5
		8.00	100	0.1500	3980	597	30.0
		10.00	100	0.2000	3185	637	50.0
		12.00	100	0.2000	2655	531	60.1
		14.00	100	0.2400	2275	546	84.1
		16.00	100	0.2400	1990	478	96.0
	Steel 500 - 850 N/mm²	3.00	75	0.1150	7960	915	6.5
		4.00	75	0.1150	5970	687	8.6
		5.00	75	0.1150	4775	549	10.8
		6.00	75	0.1450	3980	577	16.3
		8.00	75	0.1450	2985	433	21.8
		10.00	75	0.1900	2385	453	35.6
		12.00	75	0.1900	1990	378	42.8
		14.00	75	0.2300	1705	392	60.4
		16.00	75	0.2300	1490	343	68.9
	Steel 850 - 1100 N/mm²	3.00	50	0.1000	5305	531	3.7
		4.00	50	0.1000	3980	398	5.0
		5.00	50	0.1000	3185	319	6.3
		6.00	50	0.1400	2655	372	10.5
		8.00	50	0.1400	1990	279	14.0
		10.00	50	0.1800	1590	286	22.5
		12.00	50	0.1800	1325	239	27.0
		14.00	50	0.2200	1135	250	38.4
		16.00	50	0.2200	995	219	44.0
	Steel 1100 - 1300 N/mm²	3.00	35	0.0900	3715	334	2.4
		4.00	35	0.0900	2785	251	3.2
		5.00	35	0.0900	2230	201	3.9
		6.00	35	0.1250	1855	232	6.6
		8.00	35	0.1250	1395	174	8.8
		10.00	35	0.1600	1115	178	14.0
		12.00	35	0.1600	930	149	16.8
		14.00	35	0.2000	795	159	24.5
		16.00	35	0.2000	695	139	27.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	40	0.1000	4245	425	3.0
		4.00	40	0.1000	3185	319	4.0
		5.00	40	0.1000	2545	255	5.0
		6.00	40	0.1400	2120	297	8.4
		8.00	40	0.1400	1590	223	11.2
		10.00	40	0.1800	1275	230	18.0
		12.00	40	0.1800	1060	191	21.6
		14.00	40	0.2200	910	200	30.8
		16.00	40	0.2200	795	175	35.2
	Cast iron (lamellar / spheroidal)	3.00	80	0.1600	8490	1358	9.6
		4.00	80	0.1600	6365	1018	12.8
		5.00	80	0.1600	5095	815	16.0
		6.00	80	0.2100	4245	892	25.2
		8.00	80	0.2100	3185	669	33.6
		10.00	80	0.2600	2545	662	52.0
		12.00	80	0.2600	2120	551	62.3
		14.00	80	0.3200	1820	582	89.7
		16.00	80	0.3200	1590	509	102.3

Deep hole drills

20xd

HM MGD²





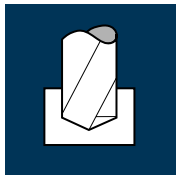
Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Article-N°. **B52920** ø-Code **0300**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-D² B52920
0300	3.00	4.0	110.0	74.0	32	69.5	●
0350	3.50	4.0	120.0	86.0	32	81.0	●
0400	4.00	4.0	120.0	86.0	32	80.0	●
0450	4.50	5.0	135.0	98.0	34	91.5	●
0500	5.00	5.0	145.0	109.0	34	101.5	●
0550	5.50	6.0	160.0	120.0	36	112.0	●
0600	6.00	6.0	170.0	130.0	36	121.0	●
0700	7.00	7.0	190.0	150.0	38	139.5	●
0800	8.00	8.0	215.0	173.0	40	161.0	●
0900	9.00	9.0	240.0	196.0	40	182.5	●
1000	10.00	10.0	260.0	218.0	40	203.0	●
1100	11.00	11.0	285.0	238.0	45	221.5	●
1200	12.00	12.0	305.0	258.0	45	240.0	●
1300	13.00	13.0	330.0	283.0	45	263.5	●
1400	14.00	14.0	355.0	303.0	50	282.0	●
1500	15.00	15.0	375.0	323.0	50	300.5	●
1600	16.00	16.0	400.0	348.0	50	324.0	●

See page «Technical notes regarding use of deep hole drills»

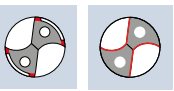
A pilot hole is required!

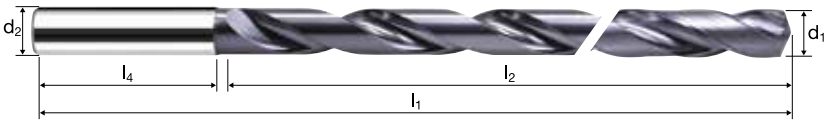
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm^2	3.00	90	0.1200	9550	1146	8.1
		4.00	90	0.1200	7160	859	10.8
		5.00	90	0.1200	5730	688	13.5
		6.00	90	0.1500	4775	716	20.3
		8.00	90	0.1500	3580	537	27.0
		9.00	90	0.2000	3185	637	40.5
		10.00	90	0.2000	2865	573	45.0
		12.00	90	0.2000	2385	477	53.9
		14.00	90	0.2400	2045	491	75.6
	Steel 500 - 850 N/mm^2	3.00	70	0.1150	7425	854	6.0
		4.00	70	0.1150	5570	641	8.1
		5.00	70	0.1150	4455	512	10.1
		6.00	70	0.1450	3715	539	15.2
		8.00	70	0.1450	2785	404	20.3
		9.00	70	0.1900	2475	470	29.9
		10.00	70	0.1900	2230	424	33.3
		12.00	70	0.1900	1855	353	39.9
		14.00	70	0.2300	1590	366	56.3
	Steel 850 - 1100 N/mm^2	3.00	45	0.1000	4775	478	3.4
		4.00	45	0.1000	3580	358	4.5
		5.00	45	0.1000	2865	287	5.6
		6.00	45	0.1400	2385	334	9.4
		8.00	45	0.1400	1790	251	12.6
		9.00	45	0.1800	1590	286	18.2
		10.00	45	0.1800	1430	257	20.2
		12.00	45	0.1800	1195	215	24.3
		14.00	45	0.2200	1025	226	34.7
	Steel 1100 - 1300 N/mm^2	3.00	30	0.0900	3185	287	2.0
		4.00	30	0.0900	2385	215	2.7
		5.00	30	0.0900	1910	172	3.4
		6.00	30	0.1250	1590	199	5.6
		8.00	30	0.1250	1195	149	7.5
		9.00	30	0.1600	1060	170	10.8
		10.00	30	0.1600	955	153	12.0
		12.00	30	0.1600	795	127	14.4
		14.00	30	0.2000	680	136	20.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	35	0.1000	3715	372	2.6
		4.00	35	0.1000	2785	279	3.5
		5.00	35	0.1000	2230	223	4.4
		6.00	35	0.1400	1855	260	7.3
		8.00	35	0.1400	1395	195	9.8
		9.00	35	0.1800	1240	223	14.2
		10.00	35	0.1800	1115	201	15.8
		12.00	35	0.1800	930	167	18.9
		14.00	35	0.2200	795	175	26.9
	Cast iron (lamellar / spheroidal)	3.00	70	0.1600	7425	1188	8.4
		4.00	70	0.1600	5570	891	11.2
		5.00	70	0.1600	4455	713	14.0
		6.00	70	0.2100	3715	780	22.1
		8.00	70	0.2100	2785	585	29.4
		9.00	70	0.2600	2475	644	40.9
		10.00	70	0.2600	2230	580	45.5
		12.00	70	0.2600	1855	482	54.5
		14.00	70	0.3200	1590	509	78.3

Deep hole drills

25xd

HM MGD²





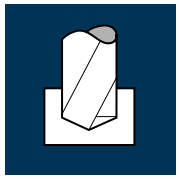
Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Article-N°. **B52925** ø-Code **0300**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-D² **B52925**
0300	3.00	4.0	125.0	91.0	32	86.5	●
0350	3.50	4.0	140.0	106.0	32	101.0	●
0400	4.00	4.0	140.0	106.0	32	100.0	●
0450	4.50	5.0	155.0	119.0	34	112.5	●
0500	5.00	5.0	170.0	134.0	34	126.5	●
0550	5.50	6.0	185.0	147.0	36	139.0	●
0600	6.00	6.0	200.0	160.0	36	151.0	●
0700	7.00	7.0	225.0	185.0	38	174.5	●
0800	8.00	8.0	255.0	213.0	40	201.0	●
0900	9.00	9.0	280.0	238.0	40	224.5	●
1000	10.00	10.0	310.0	268.0	40	253.0	●
1100	11.00	11.0	340.0	293.0	45	276.5	●
1200	12.00	12.0	365.0	318.0	45	300.0	●
1300	13.00	13.0	390.0	343.0	45	323.5	●
1400	14.00	14.0	425.0	373.0	50	352.0	●

See page «Technical notes regarding use of deep hole drills»

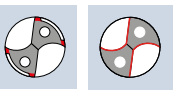
A pilot hole is required!

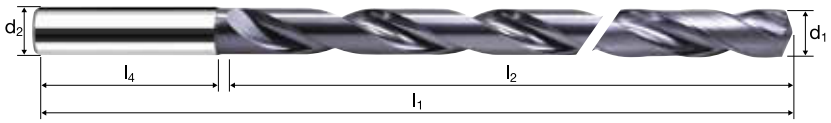
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	3.00	90	0.1200	9550	1146	8.1
		4.00	90	0.1200	7160	859	10.8
		5.00	90	0.1200	5730	688	13.5
		6.00	90	0.1500	4775	716	20.3
		7.00	90	0.1500	4095	614	23.6
		8.00	90	0.1500	3580	537	27.0
		9.00	90	0.2000	3185	637	40.5
		10.00	90	0.2000	2865	573	45.0
		12.00	90	0.2000	2385	477	53.9
	Steel 500 - 850 N/mm²	3.00	70	0.1150	7425	854	6.0
		4.00	70	0.1150	5570	641	8.1
		5.00	70	0.1150	4455	512	10.1
		6.00	70	0.1450	3715	539	15.2
		7.00	70	0.1450	3185	462	17.8
		8.00	70	0.1450	2785	404	20.3
		9.00	70	0.1900	2475	470	29.9
		10.00	70	0.1900	2230	424	33.3
		12.00	70	0.1900	1855	353	39.9
	Steel 850 - 1100 N/mm²	3.00	45	0.1000	4775	478	3.4
		4.00	45	0.1000	3580	358	4.5
		5.00	45	0.1000	2865	287	5.6
		6.00	45	0.1400	2385	334	9.4
		7.00	45	0.1400	2045	286	11.0
		8.00	45	0.1400	1790	251	12.6
		9.00	45	0.1800	1590	286	18.2
		10.00	45	0.1800	1430	257	20.2
		12.00	45	0.1800	1195	215	24.3
	Steel 1100 - 1300 N/mm²	3.00	30	0.0900	3185	287	2.0
		4.00	30	0.0900	2385	215	2.7
		5.00	30	0.0900	1910	172	3.4
		6.00	30	0.1250	1590	199	5.6
		7.00	30	0.1250	1365	171	6.6
		8.00	30	0.1250	1195	149	7.5
		9.00	30	0.1600	1060	170	10.8
		10.00	30	0.1600	955	153	12.0
		12.00	30	0.1600	795	127	14.4
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	35	0.1000	3715	372	2.6
		4.00	35	0.1000	2785	279	3.5
		5.00	35	0.1000	2230	223	4.4
		6.00	35	0.1400	1855	260	7.3
		7.00	35	0.1400	1590	223	8.6
		8.00	35	0.1400	1395	195	9.8
		9.00	35	0.1800	1240	223	14.2
		10.00	35	0.1800	1115	201	15.8
		12.00	35	0.1800	930	167	18.9
	Cast iron (lamellar / spheroidal)	3.00	70	0.1600	7425	1188	8.4
		4.00	70	0.1600	5570	891	11.2
		5.00	70	0.1600	4455	713	14.0
		6.00	70	0.2100	3715	780	22.1
		7.00	70	0.2100	3185	669	25.7
		8.00	70	0.2100	2785	585	29.4
		9.00	70	0.2600	2475	644	40.9
		10.00	70	0.2600	2230	580	45.5
		12.00	70	0.2600	1855	482	54.5

Deep hole drills

30xd

HM MGD²





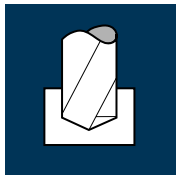
Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example:
Order-N°. Article-N°. **B52930** ø-Code **0300**

Ø Code	d_1 h7	d_2 h6	l_1	l_2	l_4	L_{max}	DURO-D² **B52930**
0300	3.00	4.0	145.0	110.0	32	105.5	●
0350	3.50	4.0	160.0	126.0	32	121.0	●
0400	4.00	4.0	160.0	126.0	32	120.0	●
0450	4.50	5.0	180.0	144.0	34	137.5	●
0500	5.00	5.0	195.0	159.0	34	151.5	●
0550	5.50	6.0	210.0	172.0	36	164.0	●
0600	6.00	6.0	230.0	192.0	36	183.0	●
0700	7.00	7.0	260.0	220.0	38	209.5	●
0800	8.00	8.0	295.0	253.0	40	241.0	●
0900	9.00	9.0	325.0	283.0	40	269.5	●
1000	10.00	10.0	360.0	318.0	40	303.0	●
1100	11.00	11.0	400.0	353.0	45	336.5	●
1200	12.00	12.0	430.0	383.0	45	365.0	●

See page «Technical notes regarding use of deep hole drills»

A pilot hole is required!

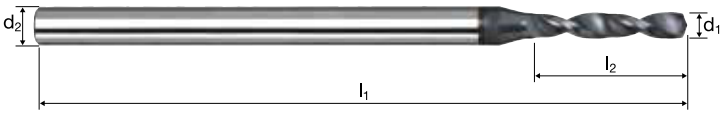
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel < 500 N/mm²	0.20	100	0.0040	60000	240	7.5
		0.30	100	0.0060	60000	360	25.5
		0.40	100	0.0080	60000	480	60.5
		0.50	100	0.0100	60000	600	118.0
		0.60	100	0.0120	53050	637	180.0
		0.70	100	0.0140	45475	637	245.0
		0.80	100	0.0160	39790	637	320.0
		0.90	100	0.0180	35370	637	405.0
		1.00	100	0.0200	31830	637	500.0
	Steel 500 - 850 N/mm²	0.20	80	0.0040	60000	240	7.5
		0.30	80	0.0070	60000	420	29.5
		0.40	80	0.0090	60000	540	68.0
		0.50	80	0.0110	50930	560	110.0
		0.60	80	0.0130	42440	552	156.0
		0.70	80	0.0160	36380	582	224.0
		0.80	80	0.0180	31830	573	288.0
		0.90	80	0.0200	28295	566	360.0
		1.00	80	0.0220	25465	560	440.0
	Steel 850 - 1100 N/mm²	0.20	40	0.0030	60000	180	5.5
		0.30	40	0.0050	42440	212	15.0
		0.40	40	0.0060	31830	191	24.0
		0.50	40	0.0080	25465	204	40.0
		0.60	40	0.0090	21220	191	54.0
		0.70	40	0.0110	18190	200	77.0
		0.80	40	0.0120	15915	191	96.0
		0.90	40	0.0140	14145	198	126.0
		1.00	40	0.0150	12730	191	150.0
	Steel 1100 - 1300 N/mm²	0.20	50	0.0040	60000	240	7.5
		0.30	50	0.0050	53050	265	19.0
		0.40	50	0.0070	39790	279	35.0
		0.50	50	0.0090	31830	287	56.5
		0.60	50	0.0110	26525	292	82.5
		0.70	50	0.0130	22735	296	114.0
		0.80	35	0.0100	13925	139	70.0
		0.90	35	0.0110	12380	136	86.5
		1.00	35	0.0120	11140	134	105.0
	Stainless steel [Cr-Ni/1.4301]	0.80	30	0.0120	11935	143	72.0
		0.90	30	0.0140	10610	149	94.5
		1.00	30	0.0150	9550	143	112.5
	Cast iron (lamellar / spheroidal)	0.20	130	0.0040	60000	240	7.5
		0.30	130	0.0070	60000	420	29.5
		0.40	130	0.0090	60000	540	68.0
		0.50	130	0.0110	60000	660	129.5
		0.60	130	0.0130	60000	780	220.5
		0.70	130	0.0160	59115	946	364.0
		0.80	130	0.0180	51725	931	468.0
		0.90	130	0.0200	45980	920	585.0
		1.00	130	0.0220	41380	910	715.0
	Wrought aluminium alloys Si < 6% hardened	0.20	160	0.0040	60000	240	7.5
		0.30	160	0.0070	60000	420	29.5
		0.40	160	0.0090	60000	540	68.0
		0.50	160	0.0110	60000	660	129.5
		0.60	160	0.0130	60000	780	220.5
		0.70	160	0.0160	60000	960	369.5
		0.80	160	0.0180	60000	1080	543.0
		0.90	160	0.0200	56590	1132	720.0
		1.00	160	0.0220	50930	1121	880.0

Micro drills Microdrill NX

5xd

HM MG10

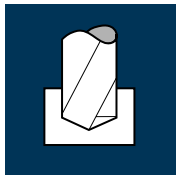
h5



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B57014** ø-Code **0020**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}		DURO-SD B57014
0020	0.20	3.0	42.0	1.3	1.0		●
0025	0.25	3.0	42.0	1.6	1.2		●
0030	0.30	3.0	42.0	2.0	1.6		●
0035	0.35	3.0	42.0	2.3	1.8		●
0040	0.40	3.0	42.0	2.6	2.0		●
0045	0.45	3.0	42.0	2.9	2.2		●
0050	0.50	3.0	42.0	3.3	2.6		●
0055	0.55	3.0	42.0	3.6	2.8		●
0060	0.60	3.0	42.0	3.9	3.0		●
0065	0.65	3.0	42.0	4.2	3.2		●
0070	0.70	3.0	42.0	4.6	3.6		●
0075	0.75	3.0	42.0	4.9	3.8		●
0080	0.80	3.0	42.0	5.2	4.0		●
0085	0.85	3.0	42.0	5.5	4.2		●
0087	0.87	3.0	42.0	5.7	4.4		●
0090	0.90	3.0	42.0	5.9	4.6		●
0095	0.95	3.0	42.0	6.2	4.8		●
0100	1.00	3.0	42.0	6.5	5.0		●
0105	1.05	3.0	42.0	6.8	5.2		●
0107	1.07	3.0	42.0	7.0	5.4		●

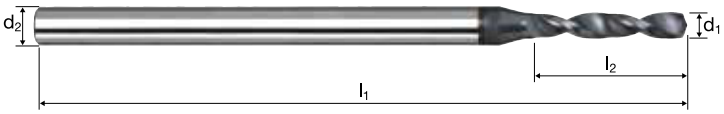
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	1.10	100	0.0220	28935	637	0.6
		1.20	100	0.0240	26525	637	0.7
		1.30	100	0.0260	24485	637	0.8
		1.40	100	0.0280	22735	637	1.0
		1.50	100	0.0300	21220	637	1.1
		1.60	100	0.0320	19895	637	1.3
		1.70	100	0.0340	18725	637	1.4
		1.80	100	0.0360	17685	637	1.6
		1.90	100	0.0380	16755	637	1.8
	Steel 500 - 850 N/mm²	1.10	80	0.0240	23150	556	0.5
		1.20	80	0.0270	21220	573	0.6
		1.30	80	0.0290	19590	568	0.8
		1.40	80	0.0310	18190	564	0.9
		1.50	80	0.0330	16975	560	1.0
		1.60	80	0.0360	15915	573	1.2
		1.70	80	0.0380	14980	569	1.3
		1.80	80	0.0400	14145	566	1.4
		1.90	80	0.0420	13405	563	1.6
	Steel 850 - 1100 N/mm²	1.10	40	0.0170	11575	197	0.2
		1.20	40	0.0180	10610	191	0.2
		1.30	40	0.0200	9795	196	0.3
		1.40	40	0.0220	9095	200	0.3
		1.50	40	0.0230	8490	195	0.3
		1.60	40	0.0250	7960	199	0.4
		1.70	40	0.0260	7490	195	0.4
		1.80	40	0.0280	7075	198	0.5
		1.90	40	0.0290	6700	194	0.6
	Steel 1100 - 1300 N/mm²	1.10	35	0.0140	10130	142	0.1
		1.20	35	0.0140	9285	130	0.1
		1.30	35	0.0160	8570	137	0.2
		1.40	35	0.0180	7960	143	0.2
		1.50	35	0.0180	7425	134	0.2
		1.60	35	0.0200	6965	139	0.3
		1.70	35	0.0210	6555	138	0.3
		1.80	35	0.0220	6190	136	0.3
		1.90	35	0.0230	5865	135	0.4
	Stainless steel [Cr-Ni/1.4301]	1.10	30	0.0170	8680	148	0.1
		1.20	30	0.0180	7960	143	0.2
		1.30	30	0.0200	7345	147	0.2
		1.40	30	0.0220	6820	150	0.2
		1.50	30	0.0230	6365	146	0.3
		1.60	30	0.0250	5970	149	0.3
		1.70	30	0.0260	5615	146	0.3
		1.80	30	0.0280	5305	149	0.4
		1.90	30	0.0290	5025	146	0.4
	Cast iron (lamellar / spheroidal)	1.10	130	0.0240	37620	903	0.9
		1.20	130	0.0270	34485	931	1.1
		1.30	130	0.0290	31830	923	1.2
		1.40	130	0.0310	29555	916	1.4
		1.50	130	0.0330	27585	910	1.6
		1.60	130	0.0360	25865	931	1.9
		1.70	130	0.0380	24340	925	2.1
		1.80	130	0.0400	22990	920	2.3
		1.90	130	0.0420	21780	915	2.6
	Wrought aluminium alloys Si < 6% hardened	1.10	160	0.0240	46300	1111	1.1
		1.20	160	0.0270	42440	1146	1.3
		1.30	160	0.0290	39175	1136	1.5
		1.40	160	0.0310	36380	1128	1.7
		1.50	160	0.0330	33955	1121	2.0
		1.60	160	0.0360	31830	1146	2.3
		1.70	160	0.0380	29960	1139	2.6
		1.80	160	0.0400	28295	1132	2.9
		1.90	160	0.0420	26805	1126	3.2

Micro drills Microdrill NX

5xd

HM MG10

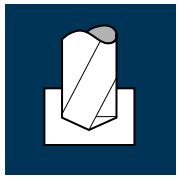
h5



Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B57014** ø-Code **0110**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}	DURO-SD B57014
0110	1.10	3.0	42.0	7.2	5.6	●
0115	1.15	3.0	42.0	7.5	5.8	●
0120	1.20	3.0	42.0	7.8	6.0	●
0125	1.25	3.0	42.0	8.1	6.2	●
0130	1.30	3.0	42.0	8.5	6.6	●
0135	1.35	3.0	42.0	8.8	6.8	●
0140	1.40	3.0	42.0	9.1	7.0	●
0142	1.42	3.0	42.0	9.2	7.1	●
0145	1.45	3.0	42.0	9.4	7.2	●
0150	1.50	3.0	42.0	9.8	7.6	●
0155	1.55	3.0	42.0	10.1	7.8	●
0160	1.60	3.0	42.0	10.4	8.0	●
0162	1.62	3.0	42.0	10.5	8.1	●
0165	1.65	3.0	42.0	10.7	8.2	●
0170	1.70	3.0	42.0	11.1	8.6	●
0175	1.75	3.0	42.0	11.4	8.8	●
0180	1.80	3.0	42.0	11.7	9.0	●
0185	1.85	3.0	50.0	12.0	9.2	●
0190	1.90	3.0	50.0	12.4	9.6	●
0195	1.95	3.0	50.0	12.7	9.8	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	2.00	100	0.0400	15915	637	2.0
		2.10	100	0.0420	15160	637	2.2
		2.20	100	0.0440	14470	637	2.4
		2.35	100	0.0470	13545	637	2.8
		2.50	100	0.0500	12730	637	3.1
		2.60	100	0.0520	12245	637	3.4
		2.75	100	0.0550	11575	637	3.8
		2.85	100	0.0570	11170	637	4.1
		2.95	100	0.0590	10790	637	4.4
	Steel 500 - 850 N/mm²	2.00	80	0.0440	12730	560	1.8
		2.10	80	0.0470	12125	570	2.0
		2.20	80	0.0490	11575	567	2.2
		2.35	80	0.0520	10835	563	2.4
		2.50	80	0.0560	10185	570	2.8
		2.60	80	0.0580	9795	568	3.0
		2.75	80	0.0610	9260	565	3.4
		2.85	80	0.0630	8935	563	3.6
		2.95	80	0.0660	8630	570	3.9
	Steel 850 - 1100 N/mm²	2.00	40	0.0310	6365	197	0.6
		2.10	40	0.0320	6065	194	0.7
		2.20	40	0.0340	5785	197	0.7
		2.35	40	0.0360	5420	195	0.8
		2.50	40	0.0380	5095	194	1.0
		2.60	40	0.0400	4895	196	1.0
		2.75	40	0.0420	4630	195	1.2
		2.85	40	0.0440	4470	197	1.3
		2.95	40	0.0450	4315	194	1.3
	Steel 1100 - 1300 N/mm²	2.00	35	0.0250	5570	139	0.4
		2.10	35	0.0260	5305	138	0.5
		2.20	35	0.0270	5065	137	0.5
		2.35	35	0.0290	4740	138	0.6
		2.50	35	0.0300	4455	134	0.7
		2.60	35	0.0320	4285	137	0.7
		2.75	35	0.0340	4050	138	0.8
		2.85	35	0.0350	3910	137	0.9
		2.95	35	0.0360	3775	136	0.9
	Stainless steel [Cr-Ni/1.4301]	2.00	30	0.0310	4775	148	0.5
		2.10	30	0.0320	4545	145	0.5
		2.20	30	0.0340	4340	148	0.6
		2.35	30	0.0360	4065	146	0.6
		2.50	30	0.0380	3820	145	0.7
		2.60	30	0.0400	3675	147	0.8
		2.75	30	0.0420	3470	146	0.9
		2.85	30	0.0440	3350	147	0.9
		2.95	30	0.0450	3235	146	1.0
	Cast iron (lamellar / spheroidal)	2.00	130	0.0440	20690	910	2.9
		2.10	130	0.0470	19705	926	3.2
		2.20	130	0.0490	18810	922	3.5
		2.35	130	0.0520	17610	916	4.0
		2.50	130	0.0560	16550	927	4.5
		2.60	130	0.0580	15915	923	4.9
		2.75	130	0.0610	15045	918	5.5
		2.85	130	0.0630	14520	915	5.8
		2.95	130	0.0660	14025	926	6.3
	Wrought aluminium alloys Si < 6% hardened	2.00	160	0.0440	25465	1121	3.5
		2.10	160	0.0470	24250	1140	3.9
		2.20	160	0.0490	23150	1134	4.3
		2.35	160	0.0520	21670	1127	4.9
		2.50	160	0.0560	20370	1141	5.6
		2.60	160	0.0580	19590	1136	6.0
		2.75	160	0.0610	18520	1130	6.7
		2.85	160	0.0630	17870	1126	7.2
		2.95	160	0.0660	17265	1140	7.8

Micro drills Microdrill NX

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HM MG10

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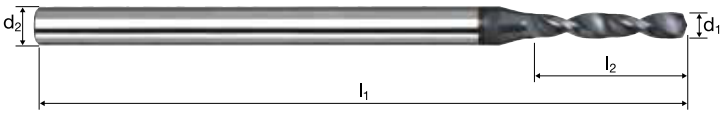
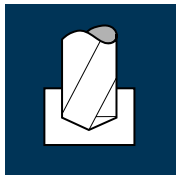


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B57014** ø-Code **0200**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}	DURO-SD B57014
0200	2.00	3.0	50.0	13.0	10.0	●
0205	2.05	3.0	50.0	13.3	10.2	●
0210	2.10	3.0	50.0	13.7	10.6	●
0215	2.15	3.0	50.0	14.0	10.8	●
0220	2.20	3.0	50.0	14.3	11.0	●
0225	2.25	3.0	50.0	14.6	11.2	●
0230	2.30	3.0	50.0	15.0	11.6	●
0235	2.35	3.0	50.0	15.3	11.8	●
0240	2.40	3.0	50.0	15.6	12.0	●
0245	2.45	3.0	50.0	15.9	12.2	●
0250	2.50	3.0	50.0	16.3	12.6	●
0255	2.55	3.0	50.0	16.6	12.8	●
0260	2.60	3.0	50.0	16.9	13.0	●
0265	2.65	3.0	50.0	17.2	13.2	●
0270	2.70	3.0	50.0	17.6	13.6	●
0275	2.75	3.0	50.0	17.9	13.8	●
0280	2.80	3.0	50.0	18.2	14.0	●
0285	2.85	3.0	50.0	18.5	14.2	●
0290	2.90	3.0	50.0	18.9	14.6	●
0295	2.95	3.0	50.0	19.2	14.8	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	0.80	160	0.0180	60000	1080	0.5
		0.90	160	0.0200	56590	1132	0.7
		1.00	160	0.0220	50930	1121	0.9
		1.10	160	0.0240	46300	1111	1.1
		1.25	160	0.0280	40745	1141	1.4
		1.40	160	0.0320	36380	1164	1.8
		1.50	160	0.0340	33955	1155	2.0
		1.65	160	0.0390	30865	1204	2.6
		1.80	160	0.0440	28295	1245	3.2
	Steel 500 - 850 N/mm²	0.80	120	0.0180	47745	859	0.4
		0.90	120	0.0200	42440	849	0.5
		1.00	120	0.0220	38195	840	0.7
		1.10	120	0.0240	34725	833	0.8
		1.25	120	0.0280	30560	856	1.1
		1.40	120	0.0320	27285	873	1.3
		1.50	120	0.0340	25465	866	1.5
		1.65	120	0.0390	23150	903	1.9
		1.80	120	0.0440	21220	934	2.4
	Steel 850 - 1100 N/mm²	0.80	100	0.0180	39790	716	0.4
		0.90	100	0.0200	35370	707	0.5
		1.00	100	0.0220	31830	700	0.6
		1.10	100	0.0240	28935	694	0.7
		1.25	100	0.0280	25465	713	0.9
		1.40	100	0.0320	22735	728	1.1
		1.50	100	0.0340	21220	722	1.3
		1.65	100	0.0390	19290	752	1.6
		1.80	100	0.0440	17685	778	2.0
	Stainless steel [Cr-Ni-Mo-.../1.4571]	0.80	70	0.0140	27850	390	0.2
		0.90	70	0.0160	24755	396	0.3
		1.00	70	0.0180	22280	401	0.3
		1.10	70	0.0200	20255	405	0.4
		1.25	70	0.0230	17825	410	0.5
		1.40	70	0.0260	15915	414	0.6
		1.50	70	0.0290	14855	431	0.8
		1.65	70	0.0320	13505	432	0.9
		1.80	70	0.0360	12380	446	1.1
	Cast iron (lamellar / spheroidal)	0.80	200	0.0210	60000	1260	0.6
		0.90	200	0.0230	60000	1380	0.9
		1.00	200	0.0260	60000	1560	1.2
		1.10	200	0.0280	57875	1621	1.5
		1.25	200	0.0330	50930	1681	2.1
		1.40	200	0.0370	45475	1683	2.6
		1.50	200	0.0410	42440	1740	3.1
		1.65	200	0.0450	38585	1736	3.7
		1.80	200	0.0500	35370	1769	4.5
	Wrought aluminium alloys Si < 6% hardened	0.80	250	0.0210	60000	1260	0.6
		0.90	250	0.0230	60000	1380	0.9
		1.00	250	0.0260	60000	1560	1.2
		1.10	250	0.0280	60000	1680	1.6
		1.25	250	0.0330	60000	1980	2.4
		1.40	250	0.0370	56840	2103	3.2
		1.50	250	0.0410	53050	2175	3.8
		1.65	250	0.0450	48230	2170	4.6
		1.80	250	0.0500	44210	2211	5.6

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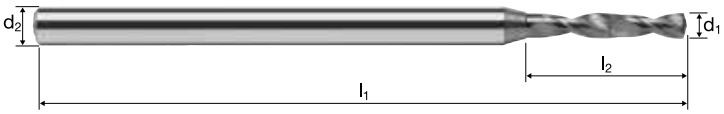
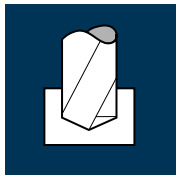


Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B57015** ø-Code **0080**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}	DURO-SD B57015
0080	0.80	3.0	46.0	5.2	4.0	●
0085	0.85	3.0	46.0	5.5	4.2	●
0090	0.90	3.0	46.0	5.9	4.6	●
0095	0.95	3.0	46.0	6.2	4.8	●
0100	1.00	3.0	48.0	6.5	5.0	●
0105	1.05	3.0	48.0	6.8	5.2	●
0110	1.10	3.0	48.0	7.2	5.6	●
0115	1.15	3.0	48.0	7.5	5.8	●
0120	1.20	3.0	48.0	7.8	6.0	●
0125	1.25	3.0	48.0	8.1	6.2	●
0130	1.30	3.0	48.0	8.5	6.6	●
0135	1.35	3.0	48.0	8.8	6.8	●
0140	1.40	3.0	50.0	9.1	7.0	●
0145	1.45	3.0	50.0	9.4	7.2	●
0150	1.50	3.0	50.0	9.8	7.6	●
0155	1.55	3.0	50.0	10.1	7.8	●
0160	1.60	3.0	50.0	10.4	8.0	●
0165	1.65	3.0	50.0	10.7	8.2	●
0170	1.70	3.0	52.0	11.1	8.6	●
0175	1.75	3.0	52.0	11.4	8.8	●
0180	1.80	3.0	52.0	11.7	9.0	●
0185	1.85	3.0	52.0	12.0	9.2	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	2.00	160	0.0490	25465	1248	3.9
		2.10	160	0.0510	24250	1237	4.3
		2.20	160	0.0540	23150	1250	4.8
		2.35	160	0.0590	21670	1279	5.5
		2.50	160	0.0640	20370	1304	6.4
		2.60	160	0.0670	19590	1313	7.0
		2.75	160	0.0720	18520	1333	7.9
		2.85	160	0.0750	17870	1340	8.6
		2.95	160	0.0800	17265	1381	9.4
	Steel 500 - 850 N/mm²	2.00	120	0.0490	19100	936	2.9
		2.10	120	0.0510	18190	928	3.2
		2.20	120	0.0540	17360	937	3.6
		2.35	120	0.0590	16255	959	4.2
		2.50	120	0.0640	15280	978	4.8
		2.60	120	0.0670	14690	984	5.2
		2.75	120	0.0720	13890	1000	5.9
		2.85	120	0.0750	13405	1005	6.4
		2.95	120	0.0800	12950	1036	7.1
	Steel 850 - 1100 N/mm²	2.00	100	0.0490	15915	780	2.4
		2.10	100	0.0510	15160	773	2.7
		2.20	100	0.0540	14470	781	3.0
		2.35	100	0.0590	13545	799	3.5
		2.50	100	0.0640	12730	815	4.0
		2.60	100	0.0670	12245	820	4.4
		2.75	100	0.0720	11575	833	5.0
		2.85	100	0.0750	11170	838	5.3
		2.95	100	0.0800	10790	863	5.9
	Stainless steel [Cr-Ni-Mo-.../1.4571]	2.00	70	0.0450	11140	501	1.6
		2.10	70	0.0480	10610	509	1.8
		2.20	70	0.0500	10130	507	1.9
		2.35	70	0.0550	9480	521	2.3
		2.50	70	0.0580	8915	517	2.5
		2.60	70	0.0620	8570	531	2.8
		2.75	70	0.0670	8100	543	3.2
		2.85	70	0.0710	7820	555	3.5
		2.95	70	0.0740	7555	559	3.8
	Cast iron (lamellar / spheroidal)	2.00	200	0.0570	31830	1814	5.7
		2.10	200	0.0600	30315	1819	6.3
		2.20	200	0.0630	28935	1823	6.9
		2.35	200	0.0690	27090	1869	8.1
		2.50	200	0.0740	25465	1884	9.3
		2.60	200	0.0790	24485	1934	10.3
		2.75	200	0.0830	23150	1922	11.4
		2.85	200	0.0860	22340	1921	12.3
		2.95	200	0.0890	21580	1921	13.1
	Wrought aluminium alloys Si < 6% hardened	2.00	250	0.0570	39790	2268	7.1
		2.10	250	0.0600	37895	2274	7.9
		2.20	250	0.0630	36170	2279	8.7
		2.35	250	0.0690	33865	2337	10.1
		2.50	250	0.0740	31830	2355	11.6
		2.60	250	0.0790	30605	2418	12.8
		2.75	250	0.0830	28935	2402	14.3
		2.85	250	0.0860	27920	2401	15.3
		2.95	250	0.0890	26975	2401	16.4

Micro drills Microdrill NX

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HM MG10

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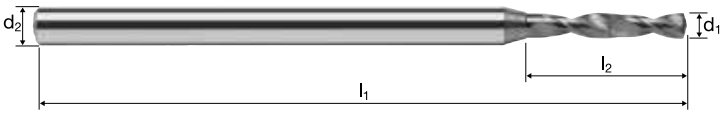
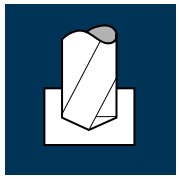


Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B57015** ø-Code **0190**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}	DURO-SD B57015
0190	1.90	3.0	52.0	12.4	9.6	●
0195	1.95	3.0	52.0	12.7	9.8	●
0200	2.00	3.0	56.0	13.0	10.0	●
0205	2.05	3.0	56.0	13.3	10.2	●
0210	2.10	3.0	56.0	13.7	10.6	●
0215	2.15	3.0	56.0	14.0	10.8	●
0220	2.20	3.0	56.0	14.3	11.0	●
0225	2.25	3.0	56.0	14.6	11.2	●
0230	2.30	3.0	56.0	15.0	11.6	●
0235	2.35	3.0	56.0	15.3	11.8	●
0240	2.40	3.0	56.0	15.6	12.0	●
0245	2.45	3.0	56.0	15.9	12.2	●
0250	2.50	3.0	56.0	16.3	12.6	●
0255	2.55	3.0	60.0	16.6	12.8	●
0260	2.60	3.0	60.0	16.9	13.0	●
0265	2.65	3.0	60.0	17.2	13.2	●
0270	2.70	3.0	60.0	17.6	13.6	●
0275	2.75	3.0	60.0	17.9	13.8	●
0280	2.80	3.0	60.0	18.2	14.0	●
0285	2.85	3.0	60.0	18.5	14.2	●
0290	2.90	3.0	60.0	18.9	14.6	●
0295	2.95	3.0	60.0	19.2	14.8	●

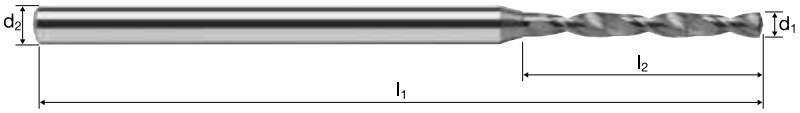
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	0.80	140	0.0140	55705	780	0.4
		0.90	140	0.0160	49515	792	0.5
		1.00	140	0.0180	44565	802	0.6
		1.10	140	0.0190	40510	770	0.7
		1.25	140	0.0230	35650	820	1.0
		1.40	140	0.0260	31830	828	1.3
		1.50	140	0.0280	29710	832	1.5
		1.65	140	0.0320	27010	864	1.8
		1.80	140	0.0350	24755	866	2.2
	Steel 500 - 850 N/mm²	0.80	100	0.0140	39790	557	0.3
		0.90	100	0.0160	35370	566	0.4
		1.00	100	0.0180	31830	573	0.4
		1.10	100	0.0190	28935	550	0.5
		1.25	100	0.0230	25465	586	0.7
		1.40	100	0.0260	22735	591	0.9
		1.50	100	0.0280	21220	594	1.1
		1.65	100	0.0320	19290	617	1.3
		1.80	100	0.0350	17685	619	1.6
	Steel 850 - 1100 N/mm²	0.80	80	0.0140	31830	446	0.2
		0.90	80	0.0160	28295	453	0.3
		1.00	80	0.0180	25465	458	0.4
		1.10	80	0.0190	23150	440	0.4
		1.25	80	0.0230	20370	469	0.6
		1.40	80	0.0260	18190	473	0.7
		1.50	80	0.0280	16975	475	0.8
		1.65	80	0.0320	15435	494	1.1
		1.80	80	0.0350	14145	495	1.3
	Stainless steel [Cr-Ni-Mo-.../1.4571]	0.80	60	0.0120	23875	287	0.1
		0.90	60	0.0130	21220	276	0.2
		1.00	60	0.0140	19100	267	0.2
		1.10	60	0.0160	17360	278	0.3
		1.25	60	0.0180	15280	275	0.3
		1.40	60	0.0210	13640	286	0.4
		1.50	60	0.0230	12730	293	0.5
		1.65	60	0.0260	11575	301	0.6
		1.80	60	0.0290	10610	308	0.8
	Cast iron (lamellar / spheroidal)	0.80	150	0.0160	59685	955	0.5
		0.90	150	0.0190	53050	1008	0.6
		1.00	150	0.0210	47745	1003	0.8
		1.10	150	0.0230	43405	998	0.9
		1.25	150	0.0260	38195	993	1.2
		1.40	150	0.0300	34105	1023	1.6
		1.50	150	0.0320	31830	1019	1.8
		1.65	150	0.0360	28935	1042	2.2
		1.80	150	0.0400	26525	1061	2.7
	Wrought aluminium alloys Si < 6% hardened	0.80	200	0.0160	60000	960	0.5
		0.90	200	0.0190	60000	1140	0.7
		1.00	200	0.0210	60000	1260	1.0
		1.10	200	0.0230	57875	1331	1.3
		1.25	200	0.0260	50930	1324	1.6
		1.40	200	0.0300	45475	1364	2.1
		1.50	200	0.0320	42440	1358	2.4
		1.65	200	0.0360	38585	1389	3.0
		1.80	200	0.0400	35370	1415	3.6

Micro drills Microdrill NX

8xd

HM MG10

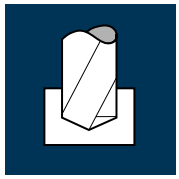
h5



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B57020** ø-Code **0080**

Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}		DURO-SD B57020
0080	0.80	3.0	46.0	7.6	6.4		●
0085	0.85	3.0	46.0	8.1	6.8		●
0090	0.90	3.0	46.0	8.5	7.2		●
0095	0.95	3.0	46.0	9.0	7.6		●
0100	1.00	3.0	48.0	9.5	8.0		●
0105	1.05	3.0	48.0	10.0	8.4		●
0110	1.10	3.0	48.0	10.4	8.8		●
0115	1.15	3.0	48.0	10.9	9.2		●
0120	1.20	3.0	48.0	11.4	9.6		●
0125	1.25	3.0	48.0	11.9	10.0		●
0130	1.30	3.0	48.0	12.3	10.4		●
0135	1.35	3.0	48.0	12.8	10.8		●
0140	1.40	3.0	50.0	13.3	11.2		●
0145	1.45	3.0	50.0	13.8	11.6		●
0150	1.50	3.0	50.0	14.2	12.0		●
0155	1.55	3.0	50.0	14.7	12.4		●
0160	1.60	3.0	50.0	15.2	12.8		●
0165	1.65	3.0	50.0	15.7	13.2		●
0170	1.70	3.0	52.0	16.1	13.6		●
0175	1.75	3.0	52.0	16.6	14.0		●
0180	1.80	3.0	52.0	17.1	14.4		●
0185	1.85	3.0	52.0	17.6	14.8		●

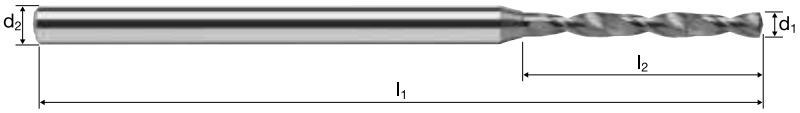
Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 500 N/mm²	2.00	140	0.0390	22280	869	2.7
		2.10	140	0.0410	21220	870	3.0
		2.20	140	0.0430	20255	871	3.3
		2.35	140	0.0470	18965	891	3.9
		2.50	140	0.0510	17825	909	4.5
		2.60	140	0.0530	17140	908	4.8
		2.75	140	0.0580	16205	940	5.6
		2.85	140	0.0600	15635	938	6.0
		2.95	140	0.0640	15105	967	6.6
	Steel 500 - 850 N/mm²	2.00	100	0.0390	15915	621	2.0
		2.10	100	0.0410	15160	622	2.2
		2.20	100	0.0430	14470	622	2.4
		2.35	100	0.0470	13545	637	2.8
		2.50	100	0.0510	12730	649	3.2
		2.60	100	0.0530	12245	649	3.4
		2.75	100	0.0580	11575	671	4.0
		2.85	100	0.0600	11170	670	4.3
		2.95	100	0.0640	10790	691	4.7
	Steel 850 - 1100 N/mm²	2.00	80	0.0390	12730	497	1.6
		2.10	80	0.0410	12125	497	1.7
		2.20	80	0.0430	11575	498	1.9
		2.35	80	0.0470	10835	509	2.2
		2.50	80	0.0510	10185	519	2.5
		2.60	80	0.0530	9795	519	2.8
		2.75	80	0.0580	9260	537	3.2
		2.85	80	0.0600	8935	536	3.4
		2.95	80	0.0640	8630	552	3.8
	Stainless steel [Cr-Ni-Mo-.../1.4571]	2.00	60	0.0360	9550	344	1.1
		2.10	60	0.0380	9095	346	1.2
		2.20	60	0.0400	8680	347	1.3
		2.35	60	0.0440	8125	358	1.6
		2.50	60	0.0470	7640	359	1.8
		2.60	60	0.0500	7345	367	2.0
		2.75	60	0.0540	6945	375	2.2
		2.85	60	0.0570	6700	382	2.4
		2.95	60	0.0590	6475	382	2.6
	Cast iron (lamellar / spheroidal)	2.00	150	0.0460	23875	1098	3.5
		2.10	150	0.0480	22735	1091	3.8
		2.20	150	0.0500	21705	1085	4.1
		2.35	150	0.0550	20320	1118	4.8
		2.50	150	0.0590	19100	1127	5.5
		2.60	150	0.0630	18365	1157	6.1
		2.75	150	0.0670	17360	1163	6.9
		2.85	150	0.0690	16755	1156	7.4
		2.95	150	0.0720	16185	1165	8.0
	Wrought aluminium alloys Si < 6% hardened	2.00	200	0.0460	31830	1464	4.6
		2.10	200	0.0480	30315	1455	5.0
		2.20	200	0.0500	28935	1447	5.5
		2.35	200	0.0550	27090	1490	6.5
		2.50	200	0.0590	25465	1502	7.4
		2.60	200	0.0630	24485	1543	8.2
		2.75	200	0.0670	23150	1551	9.2
		2.85	200	0.0690	22340	1542	9.8
		2.95	200	0.0720	21580	1554	10.6

Micro drills Microdrill NX

8xd

HM MG10

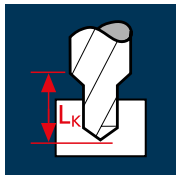
h5



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example: **Order-N°.** Article-N°. **B57020** ø-Code **0190**

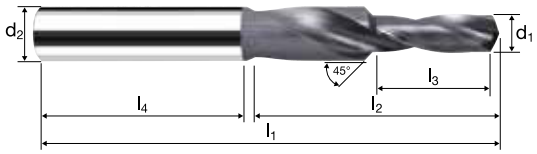
Ø Code	d_1 m7	d_2 h5	l_1	l_2	L_{max}		DURO-SD B57020
0190	1.90	3.0	52.0	18.0	15.2		●
0195	1.95	3.0	52.0	18.5	15.6		●
0200	2.00	3.0	56.0	19.0	16.0		●
0205	2.05	3.0	56.0	19.5	16.4		●
0210	2.10	3.0	56.0	20.0	16.9		●
0215	2.15	3.0	56.0	20.4	17.2		●
0220	2.20	3.0	56.0	20.9	17.6		●
0225	2.25	3.0	56.0	21.4	18.0		●
0230	2.30	3.0	56.0	21.9	18.5		●
0235	2.35	3.0	56.0	22.3	18.8		●
0240	2.40	3.0	56.0	22.8	19.2		●
0245	2.45	3.0	56.0	23.3	19.6		●
0250	2.50	3.0	56.0	23.8	20.1		●
0255	2.55	3.0	60.0	24.2	20.4		●
0260	2.60	3.0	60.0	24.7	20.8		●
0265	2.65	3.0	60.0	25.2	21.2		●
0270	2.70	3.0	60.0	25.7	21.7		●
0275	2.75	3.0	60.0	26.1	22.0		●
0280	2.80	3.0	60.0	26.6	22.4		●
0285	2.85	3.0	60.0	27.1	22.8		●
0290	2.90	3.0	60.0	27.6	23.3		●
0295	2.95	3.0	60.0	28.0	23.6		●

Application	Material	d_1 [mm]	d	v_c [m/min]	f [mm]	LK [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 500 N/mm²	2.50	M 3	110	0.0450	9.6	14005	630	3.1
		3.30	M 4	110	0.0550	12.5	10610	584	5.0
		4.20	M 5	110	0.0700	14.9	8335	584	8.1
		5.00	M 6	110	0.0850	18.1	7005	595	11.7
		6.80	M 8	110	0.1150	23.0	5150	592	21.5
		8.50	M 10	110	0.1450	28.0	4120	597	33.9
		10.20	M 12	110	0.1700	33.1	3435	584	47.7
		14.00	M 16	110	0.2300	42.4	2500	575	88.5
	Steel 500 - 850 N/mm²	2.50	M 3	80	0.0450	9.6	10185	458	2.2
		3.30	M 4	80	0.0550	12.5	7715	424	3.6
		4.20	M 5	80	0.0700	14.9	6065	425	5.9
		5.00	M 6	80	0.0850	18.1	5095	433	8.5
		6.80	M 8	80	0.1150	23.0	3745	431	15.6
		8.50	M 10	80	0.1450	28.0	2995	434	24.6
		10.20	M 12	80	0.1700	33.1	2495	424	34.7
		14.00	M 16	80	0.2300	42.4	1820	419	64.4
	Steel 850 - 1100 N/mm²	2.50	M 3	55	0.0400	9.6	7005	280	1.4
		3.30	M 4	55	0.0500	12.5	5305	265	2.3
		4.20	M 5	55	0.0650	14.9	4170	271	3.8
		5.00	M 6	55	0.0750	18.1	3500	263	5.2
		6.80	M 8	55	0.1000	23.0	2575	258	9.4
		8.50	M 10	55	0.1250	28.0	2060	258	14.6
		10.20	M 12	55	0.1500	33.1	1715	257	21.0
		14.00	M 16	55	0.2000	42.4	1250	250	38.5
	Cast iron (lamellar / spheroidal)	2.50	M 3	160	0.0800	9.6	20370	1630	8.0
		3.30	M 4	160	0.1050	12.5	15435	1621	13.9
		4.20	M 5	160	0.1300	14.9	12125	1576	21.8
		5.00	M 6	160	0.1600	18.1	10185	1630	32.0
		6.80	M 8	160	0.2100	23.0	7490	1573	57.1
		8.50	M 10	160	0.2650	28.0	5990	1587	90.1
		10.20	M 12	160	0.3150	33.1	4995	1573	128.6
		14.00	M 16	160	0.4200	42.4	3640	1529	235.3
	Wrought aluminium alloys Si < 6% hardened	2.50	M 3	200	0.0800	9.6	25465	2037	10.0
		3.30	M 4	200	0.1050	12.5	19290	2026	17.3
		4.20	M 5	200	0.1300	14.9	15160	1971	27.3
		5.00	M 6	200	0.1600	18.1	12730	2037	40.0
		6.80	M 8	200	0.2100	23.0	9360	1966	71.4
		8.50	M 10	200	0.2650	28.0	7490	1985	112.6
		10.20	M 12	200	0.3150	33.1	6240	1966	160.6
		14.00	M 16	200	0.4200	42.4	4545	1909	293.9

Step drills

3xd, for core drill sizes for taps

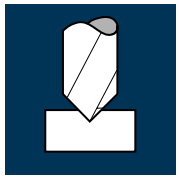
HM



Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G) Aluminium

Example:
Order-N°. Article-N°. **B52801** ø-Code **0250**

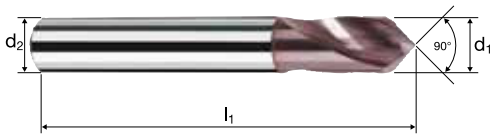
Ø Code	d	d_1 m7	d_2 h6	l_1	l_2	l_3	l_4	DURO-D² B52801
0250	M 3	2.50	6.0	62.0	20.0	8.8	36	●
0330	M 4	3.30	6.0	62.0	24.0	11.4	36	●
0420	M 5	4.20	6.0	66.0	28.0	13.6	36	●
0500	M 6	5.00	8.0	79.0	34.0	16.5	36	●
0680	M 8	6.80	10.0	89.0	47.0	21.0	40	●
0850	M 10	8.50	12.0	102.0	55.0	25.5	45	●
1020	M 12	10.20	14.0	107.0	60.0	30.0	45	●
1400	M 16	14.00	18.0	123.0	73.0	38.5	48	●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 500 N/mm²	3.00	160	0.0700	16975	1188
		4.00	160	0.0950	12730	1209
		5.00	160	0.1200	10185	1222
		6.00	160	0.1450	8490	1231
		8.00	160	0.1900	6365	1209
		10.00	160	0.2400	5095	1223
		12.00	160	0.2850	4245	1210
		16.00	160	0.3800	3185	1210
	Steel 500 - 850 N/mm²	3.00	120	0.0700	12730	891
		4.00	120	0.0950	9550	907
		5.00	120	0.1200	7640	917
		6.00	120	0.1450	6365	923
		8.00	120	0.1900	4775	907
		10.00	120	0.2400	3820	917
		12.00	120	0.2850	3185	908
		16.00	120	0.3800	2385	906
	Steel 850 - 1100 N/mm²	3.00	90	0.0300	9550	287
		4.00	90	0.0400	7160	286
		5.00	90	0.0500	5730	287
		6.00	90	0.0600	4775	287
		8.00	90	0.0800	3580	286
		10.00	90	0.0950	2865	272
		12.00	90	0.1150	2385	274
		16.00	90	0.1550	1790	278
	Steel 1100 - 1300 N/mm²	3.00	60	0.0250	6365	159
		4.00	60	0.0350	4775	167
		5.00	60	0.0400	3820	153
		6.00	60	0.0500	3185	159
		8.00	60	0.0650	2385	155
		10.00	60	0.0800	1910	153
		12.00	60	0.0950	1590	151
		16.00	60	0.1300	1195	155
	Steel 1300 - 1500 N/mm²	3.00	30	0.0250	3185	80
		4.00	30	0.0350	2385	84
		5.00	30	0.0400	1910	76
		6.00	30	0.0500	1590	80
		8.00	30	0.0650	1195	78
		10.00	30	0.0800	955	76
		12.00	30	0.0950	795	76
		16.00	30	0.1300	595	77
	Stainless steel [Cr-Ni/1.4301]	3.00	60	0.0150	6365	96
		4.00	60	0.0200	4775	96
		5.00	60	0.0250	3820	96
		6.00	60	0.0300	3185	96
		8.00	60	0.0400	2385	95
		10.00	60	0.0450	1910	86
		12.00	60	0.0600	1590	95
		16.00	60	0.0750	1195	90
	Cast iron (lamellar / spheroidal)	3.00	180	0.0800	19100	1528
		4.00	180	0.1050	14325	1504
		5.00	180	0.1300	11460	1490
		6.00	180	0.1600	9550	1528
		8.00	180	0.2100	7160	1504
		10.00	180	0.2650	5730	1519
		12.00	180	0.3150	4775	1504
		16.00	180	0.4200	3580	1504
	Wrought aluminium alloys Si < 6% hardened	3.00	220	0.0800	23345	1868
		4.00	220	0.1050	17505	1838
		5.00	220	0.1300	14005	1821
		6.00	220	0.1600	11670	1867
		8.00	220	0.2100	8755	1839
		10.00	220	0.2650	7005	1856
		12.00	220	0.3150	5835	1838
		16.00	220	0.4200	4375	1838

Center drills

90°

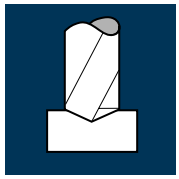
HM
MG10



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example:
Order-N°. Article-N°. **B92040** ø-Code **0300**

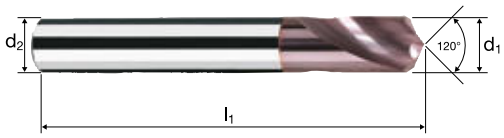
Ø Code	d_1 h6	d_2 h6	l_1		U-4XD B92040
0300	3.00	3.0	50.0		●
0400	4.00	4.0	50.0		●
0500	5.00	5.0	50.0		●
0600	6.00	6.0	57.0		●
0800	8.00	8.0	63.0		●
1000	10.00	10.0	72.0		●
1200	12.00	12.0	83.0		●
1600	16.00	16.0	92.0		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 500 N/mm²	3.00	160	0.0700	16975	1188
		4.00	160	0.0950	12730	1209
		5.00	160	0.1200	10185	1222
		6.00	160	0.1450	8490	1231
		8.00	160	0.1900	6365	1209
		10.00	160	0.2400	5095	1223
		12.00	160	0.2850	4245	1210
		16.00	160	0.3800	3185	1210
	Steel 500 - 850 N/mm²	3.00	120	0.0700	12730	891
		4.00	120	0.0950	9550	907
		5.00	120	0.1200	7640	917
		6.00	120	0.1450	6365	923
		8.00	120	0.1900	4775	907
		10.00	120	0.2400	3820	917
		12.00	120	0.2850	3185	908
		16.00	120	0.3800	2385	906
	Steel 850 - 1100 N/mm²	3.00	90	0.0600	9550	573
		4.00	90	0.0750	7160	537
		5.00	90	0.0950	5730	544
		6.00	90	0.1150	4775	549
		8.00	90	0.1550	3580	555
		10.00	90	0.1900	2865	544
		12.00	90	0.2300	2385	549
		16.00	90	0.3100	1790	555
	Steel 1100 - 1300 N/mm²	3.00	60	0.0500	6365	318
		4.00	60	0.0650	4775	310
		5.00	60	0.0800	3820	306
		6.00	60	0.0950	3185	303
		8.00	60	0.1250	2385	298
		10.00	60	0.1600	1910	306
		12.00	60	0.1900	1590	302
		16.00	60	0.2550	1195	305
	Steel 1300 - 1500 N/mm²	3.00	30	0.0500	3185	159
		4.00	30	0.0650	2385	155
		5.00	30	0.0800	1910	153
		6.00	30	0.0950	1590	151
		8.00	30	0.1250	1195	149
		10.00	30	0.1600	955	153
		12.00	30	0.1900	795	151
		16.00	30	0.2550	595	152
	Stainless steel [Cr-Ni/1.4301]	3.00	60	0.0400	6365	255
		4.00	60	0.0550	4775	263
		5.00	60	0.0700	3820	267
		6.00	60	0.0800	3185	255
		8.00	60	0.1100	2385	262
		10.00	60	0.1350	1910	258
		12.00	60	0.1650	1590	262
		16.00	60	0.2200	1195	263
	Cast iron (lamellar / spheroidal)	3.00	180	0.0800	19100	1528
		4.00	180	0.1050	14325	1504
		5.00	180	0.1300	11460	1490
		6.00	180	0.1600	9550	1528
		8.00	180	0.2100	7160	1504
		10.00	180	0.2650	5730	1519
		12.00	180	0.3150	4775	1504
		16.00	180	0.4200	3580	1504
	Wrought aluminium alloys Si < 6% hardened	3.00	220	0.0800	23345	1868
		4.00	220	0.1050	17505	1838
		5.00	220	0.1300	14005	1821
		6.00	220	0.1600	11670	1867
		8.00	220	0.2100	8755	1839
		10.00	220	0.2650	7005	1856
		12.00	220	0.3150	5835	1838
		16.00	220	0.4200	4375	1838

Center drills

120°

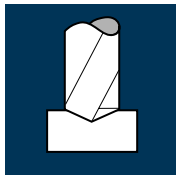
HM
MG10



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example:
Order-N°. Article-N°. **B92020** ø-Code **0300**

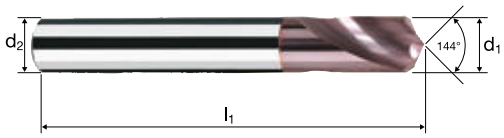
Ø Code	d_1 h6	d_2 h6	l_1		U-4XD B92020
0300	3.00	3.0	50.0		●
0400	4.00	4.0	50.0		●
0500	5.00	5.0	50.0		●
0600	6.00	6.0	57.0		●
0800	8.00	8.0	63.0		●
1000	10.00	10.0	72.0		●
1200	12.00	12.0	83.0		●
1600	16.00	16.0	92.0		●

Application	Material	d_1 [mm]	v_c [m/min]	f [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 500 N/mm²	3.00	160	0.0700	16975	1188
		4.00	160	0.0950	12730	1209
		5.00	160	0.1200	10185	1222
		6.00	160	0.1450	8490	1231
		8.00	160	0.1900	6365	1209
		10.00	160	0.2400	5095	1223
		12.00	160	0.2850	4245	1210
		16.00	160	0.3800	3185	1210
	Steel 500 - 850 N/mm²	3.00	120	0.0700	12730	891
		4.00	120	0.0950	9550	907
		5.00	120	0.1200	7640	917
		6.00	120	0.1450	6365	923
		8.00	120	0.1900	4775	907
		10.00	120	0.2400	3820	917
		12.00	120	0.2850	3185	908
		16.00	120	0.3800	2385	906
	Steel 850 - 1100 N/mm²	3.00	90	0.0600	9550	573
		4.00	90	0.0750	7160	537
		5.00	90	0.0950	5730	544
		6.00	90	0.1150	4775	549
		8.00	90	0.1550	3580	555
		10.00	90	0.1900	2865	544
		12.00	90	0.2300	2385	549
		16.00	90	0.3100	1790	555
	Steel 1100 - 1300 N/mm²	3.00	60	0.0500	6365	318
		4.00	60	0.0650	4775	310
		5.00	60	0.0800	3820	306
		6.00	60	0.0950	3185	303
		8.00	60	0.1250	2385	298
		10.00	60	0.1600	1910	306
		12.00	60	0.1900	1590	302
		16.00	60	0.2550	1195	305
	Steel 1300 - 1500 N/mm²	3.00	30	0.0500	3185	159
		4.00	30	0.0650	2385	155
		5.00	30	0.0800	1910	153
		6.00	30	0.0950	1590	151
		8.00	30	0.1250	1195	149
		10.00	30	0.1600	955	153
		12.00	30	0.1900	795	151
		16.00	30	0.2550	595	152
	Stainless steel [Cr-Ni/1.4301]	3.00	60	0.0400	6365	255
		4.00	60	0.0550	4775	263
		5.00	60	0.0700	3820	267
		6.00	60	0.0800	3185	255
		8.00	60	0.1100	2385	262
		10.00	60	0.1350	1910	258
		12.00	60	0.1650	1590	262
		16.00	60	0.2200	1195	263
	Cast iron (lamellar / spheroidal)	3.00	180	0.0800	19100	1528
		4.00	180	0.1050	14325	1504
		5.00	180	0.1300	11460	1490
		6.00	180	0.1600	9550	1528
		8.00	180	0.2100	7160	1504
		10.00	180	0.2650	5730	1519
		12.00	180	0.3150	4775	1504
		16.00	180	0.4200	3580	1504
	Wrought aluminium alloys Si < 6% hardened	3.00	220	0.0800	23345	1868
		4.00	220	0.1050	17505	1838
		5.00	220	0.1300	14005	1821
		6.00	220	0.1600	11670	1867
		8.00	220	0.2100	8755	1839
		10.00	220	0.2650	7005	1856
		12.00	220	0.3150	5835	1838
		16.00	220	0.4200	4375	1838

Center drills

144°

HM
MG10



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless		GG(G) Aluminium

Example:
Order-N°. Article-N°. **B92008** ø-Code **0300**

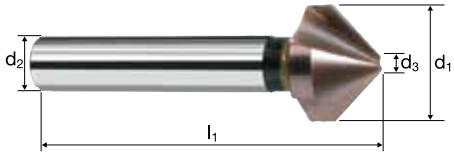
Ø Code	d_1 h6	d_2 h6	l_1		U-4XD B92008
0300	3.00	3.0	50.0		●
0400	4.00	4.0	50.0		●
0500	5.00	5.0	50.0		●
0600	6.00	6.0	57.0		●
0800	8.00	8.0	63.0		●
1000	10.00	10.0	72.0		●
1200	12.00	12.0	83.0		●
1600	16.00	16.0	92.0		●

passion
for precision
fraisa

Rose countersinks

90°

HSS



Rm < 850 | **Rm** 850-1100 | **Inox** Stainless | **GG(G) Aluminium**

Example: **Order-N°.** Article-N°. **B92310** ø-Code **0530**

Ø Code	d_1 z9	d_2 h9	d_3	l_1	z	U-4XD B92310
0530	5.30	4.0	1.5	40.0	3	●
0580	5.80	5.0	1.5	45.0	3	●
0630	6.30	5.0	1.5	45.0	3	●
0730	7.30	6.0	1.8	50.0	3	●
0830	8.30	6.0	2.0	50.0	3	●
0940	9.40	6.0	2.2	50.0	3	●
1040	10.40	6.0	2.5	50.0	3	●
1150	11.50	8.0	2.8	56.0	3	●
1240	12.40	8.0	2.8	56.0	3	●
1340	13.40	8.0	2.9	56.0	3	●
1500	15.00	10.0	3.2	60.0	3	●
1650	16.50	10.0	3.2	60.0	3	●
1900	19.00	10.0	3.5	63.0	3	●
2050	20.50	10.0	3.5	63.0	3	●
2500	25.00	10.0	3.8	67.0	3	●
3100	31.00	12.0	4.2	71.0	3	●
9999	**Assortment of rose countersinks containing:**					●
	1 Stk. ø 6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5					

passion
for precision
fraisa

Thread milling cutters M / MF / G / UNC / UNF / UN / NPT / NPTF

Thread whirler

N° EH27500

N° EH27502

N° EI27504

N° EH27540

N° EH27560

M	**3xd**		**Rm** <850-1500	**Inox Ti Ni**	139
M	**3xd**		**Rm** <850-1500	**Inox Ti Ni**	141
M	**3xd**		**HRC** 48- >60		143
G	**3xd**		**Rm** <850-1500	**Inox Ti Ni**	145
UN	**3xd**		**Rm** <850-1500	**Inox** Stainless	147

TM

Thread milling cutters M / MF / G / UNC / UNF / UN / NPT / NPTF

Thread milling cutters

N° EH20300 / EH20306

N° EH20320 / EH20326

N° EH20340

N° EH20360

N° EH20370

N° EH20380

N° EH20390

M	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	149
MF	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	151
G	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	153
UNC	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	155
UNF	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	157
NPT			**Rm** <850-1500	**Al / Cu GG(G)**	159
NPTF			**Rm** <850-1500	**Al / Cu GG(G)**	161

Thread milling cutters M / MF / G / UNC / UNF / UN / NPT / NPTF

Thread milling cutters with 45° chamfer

N° EH24300

N° EH24320

N° EH24340

N° EH24360

N° EH24370

N° EH24200

N° EH24220

M	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	163
MF	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	165
G	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	167
UNC	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	169
UNF	**2xd**		**Rm** <850-1500	**Al / Cu GG(G)**	171
M	**1.5xd**		**HRC** < 56	**Al / Cu GG(G)**	173
MF	**1.5xd**		**Rm** <850-1500	**Al / Cu GG(G)**	175

Thread milling cutters M / MF / G / UNC / UNF / UN / NPT / NPTF

Drill / thread milling cutters with 45° chamfer

N° E22300

M	**2xd**		**Al** Aluminium Cast	**GG(G)** Cast iron	177

N° E22200

M	**1.5xd**		**Al** Aluminium Cast	**GG(G)** Cast iron	179

Thread milling cutters M / MF / G / UNC / UNF / UN / NPT / NPTF

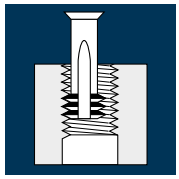
Multi-range thread milling cutters

N° EH26020

N° EH26040

M			**Rm** <850-1500	**Al / Cu GG(G)**	181
G			**Rm** <850-1500	**Al / Cu GG(G)**	183

TM

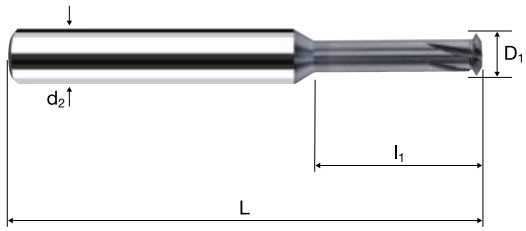
Application	Material	M	D_1 [mm]	P max.	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 1.4 - M 1.8	1.05	0.35	3	80	0.0100	24250	250	728
		M 2 - M 2.4	1.50	0.40	3	80	0.0100	16975	127	509
		M 2.5 - M 3	2.00	0.50	4	80	0.0200	12730	339	1018
		M 3.5 - M 4.5	2.80	0.75	4	80	0.0200	9095	275	728
		M 5 - M 7	4.00	1.00	4	80	0.0250	6365	212	637
		M 8 - M 10	6.40	1.50	5	80	0.0350	3980	251	697
	Steel 1300 - 1500 N/mm²	M 1.4 - M 1.8	1.05	0.35	3	45	0.0100	13640	141	409
		M 2 - M 2.4	1.50	0.40	3	45	0.0100	9550	72	287
		M 2.5 - M 3	2.00	0.50	4	45	0.0200	7160	191	573
		M 3.5 - M 4.5	2.80	0.75	4	45	0.0200	5115	155	409
		M 5 - M 7	4.00	1.00	4	45	0.0300	3580	143	430
		M 8 - M 10	6.40	1.50	5	45	0.0300	2240	121	336
	Stainless steel [Cr-Ni/1.4301]	M 1.4 - M 1.8	1.05	0.35	3	55	0.0100	16675	172	500
		M 2 - M 2.4	1.50	0.40	3	55	0.0100	11670	88	350
		M 2.5 - M 3	2.00	0.50	4	55	0.0200	8755	233	700
		M 3.5 - M 4.5	2.80	0.75	4	55	0.0250	6255	236	626
		M 5 - M 7	4.00	1.00	4	55	0.0300	4375	175	525
		M 8 - M 10	6.40	1.50	5	55	0.0300	2735	148	410
	Nickel base alloys hardened	M 1.4 - M 1.8	1.05	0.35	3	30	0.0100	9095	94	273
		M 2 - M 2.4	1.50	0.40	3	30	0.0100	6365	48	191
		M 2.5 - M 3	2.00	0.50	4	30	0.0100	4775	64	191
		M 3.5 - M 4.5	2.80	0.75	4	30	0.0150	3410	77	205
		M 5 - M 7	4.00	1.00	4	30	0.0200	2385	64	191
		M 8 - M 10	6.40	1.50	5	30	0.0300	1490	80	224
	Wrought aluminium alloys Si < 6% hardened	M 1.4 - M 1.8	1.05	0.35	3	150	0.0200	45475	938	2729
		M 2 - M 2.4	1.50	0.40	3	150	0.0200	31830	477	1910
		M 2.5 - M 3	2.00	0.50	4	150	0.0300	23875	955	2865
		M 3.5 - M 4.5	2.80	0.75	4	150	0.0350	17050	902	2387
		M 5 - M 7	4.00	1.00	4	150	0.0400	11935	637	1910
		M 8 - M 10	6.40	1.50	5	150	0.0500	7460	671	1865
	Cast iron (lamellar / spheroidal)	M 1.4 - M 1.8	1.05	0.35	3	120	0.0100	36380	375	1091
		M 2 - M 2.4	1.50	0.40	3	120	0.0100	25465	191	764
		M 2.5 - M 3	2.00	0.50	4	120	0.0200	19100	509	1528
		M 3.5 - M 4.5	2.80	0.75	4	120	0.0250	13640	515	1364
		M 5 - M 7	4.00	1.00	4	120	0.0300	9550	382	1146
		M 8 - M 10	6.40	1.50	5	120	0.0400	5970	430	1194
	Unalloyed copper	M 1.4 - M 1.8	1.05	0.35	3	130	0.0100	39410	406	1182
		M 2 - M 2.4	1.50	0.40	3	130	0.0100	27585	207	828
		M 2.5 - M 3	2.00	0.50	4	130	0.0200	20690	552	1655
		M 3.5 - M 4.5	2.80	0.75	4	130	0.0250	14780	558	1478
		M 5 - M 7	4.00	1.00	4	130	0.0300	10345	414	1241
		M 8 - M 10	6.40	1.50	5	130	0.0400	6465	465	1293
	Titanium alloys > 300 HB [Ti6Al4V]	M 1.4 - M 1.8	1.05	0.35	3	40	0.0100	12125	125	364
		M 2 - M 2.4	1.50	0.40	3	40	0.0100	8490	64	255
		M 2.5 - M 3	2.00	0.50	4	40	0.0100	6365	85	255
		M 3.5 - M 4.5	2.80	0.75	4	40	0.0150	4545	103	273
		M 5 - M 7	4.00	1.00	4	40	0.0200	3185	85	255
		M 8 - M 10	6.40	1.50	5	40	0.0300	1990	107	299

Thread whirler

3xd

M

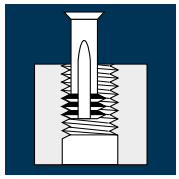
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Aluminium/Copper GG(G) Nickel-Alloys

Example: **Order-N°.** Article-N°. **EH27500** ø-Code **020**

Ø Code	d	P max.	L	l_1	d_2 h6	D1	Rk 6H			TiCN EH27500
020	M 1.4 - M 1.8	0.35	39	3.8	3.0	1.05	0.500	3	1	●
034	M 2 - M 2.4	0.40	39	7.0	3.0	1.50	0.720	3	1	●
040	M 2.5 - M 3	0.50	39	9.0	3.0	2.00	0.970	4	1	●
056	M 3.5 - M 4.5	0.75	58	14.0	6.0	2.80	1.370	4	1	●
084	M 5 - M 7	1.00	58	19.0	6.0	4.00	1.970	4	1	●
160	M 8 - M 10	1.50	64	24.0	8.0	6.40	3.140	5	1	●

Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 2	1.55	0.40	4	80	0.0100	16430	148	657
		M 3	2.40	0.50	4	80	0.0200	10610	170	849
		M 4	3.20	0.70	4	80	0.0200	7960	127	637
		M 5	4.00	0.80	4	80	0.0250	6365	127	637
		M 6	4.80	1.00	4	80	0.0300	5305	127	637
		M 8	5.95	1.25	4	80	0.0350	4280	154	599
		M 10	7.80	1.50	4	80	0.0500	3265	144	653
		M 12	9.00	1.75	4	80	0.0550	2830	156	623
		M 16	11.80	2.00	5	80	0.0600	2160	170	648
	Steel 1300 - 1500 N/mm²	M 2	1.55	0.40	4	45	0.0100	9240	83	370
		M 3	2.40	0.50	4	45	0.0200	5970	96	478
		M 4	3.20	0.70	4	45	0.0250	4475	90	448
		M 5	4.00	0.80	4	45	0.0300	3580	86	430
		M 6	4.80	1.00	4	45	0.0300	2985	72	358
		M 8	5.95	1.25	4	45	0.0300	2405	74	289
		M 10	7.80	1.50	4	45	0.0400	1835	65	294
		M 12	9.00	1.75	4	45	0.0500	1590	80	318
		M 16	11.80	2.00	5	45	0.0550	1215	88	334
	Stainless steel [Cr-Ni/1.4301]	M 2	1.55	0.40	4	55	0.0100	11295	102	452
		M 3	2.40	0.50	4	55	0.0200	7295	117	584
		M 4	3.20	0.70	4	55	0.0250	5470	109	547
		M 5	4.00	0.80	4	55	0.0300	4375	105	525
		M 6	4.80	1.00	4	55	0.0300	3645	87	437
		M 8	5.95	1.25	4	55	0.0300	2940	90	353
		M 10	7.80	1.50	4	55	0.0350	2245	69	314
		M 12	9.00	1.75	4	55	0.0500	1945	97	389
		M 16	11.80	2.00	5	55	0.0550	1485	107	408
	Nickel base alloys hardened	M 2	1.55	0.40	4	30	0.0100	6160	55	246
		M 3	2.40	0.50	4	30	0.0100	3980	32	159
		M 4	3.20	0.70	4	30	0.0150	2985	36	179
		M 5	4.00	0.80	4	30	0.0200	2385	38	191
		M 6	4.80	1.00	4	30	0.0250	1990	40	199
		M 8	5.95	1.25	4	30	0.0300	1605	49	193
		M 10	7.80	1.50	4	30	0.0350	1225	38	172
		M 12	9.00	1.75	4	30	0.0400	1060	42	170
		M 16	11.80	2.00	5	30	0.0450	810	48	182
	Wrought aluminium alloys Si < 6% hardened	M 2	1.55	0.40	4	150	0.0200	30805	554	2464
		M 3	2.40	0.50	4	150	0.0300	19895	477	2387
		M 4	3.20	0.70	4	150	0.0350	14920	418	2089
		M 5	4.00	0.80	4	150	0.0400	11935	382	1910
		M 6	4.80	1.00	4	150	0.0450	9945	358	1790
		M 8	5.95	1.25	4	150	0.0500	8025	411	1605
		M 10	7.80	1.50	4	150	0.0550	6120	296	1346
		M 12	9.00	1.75	4	150	0.0650	5305	345	1379
		M 16	11.80	2.00	5	150	0.0750	4045	398	1517
	Cast iron (lamellar / spheroidal)	M 2	1.55	0.40	4	120	0.0100	24645	222	986
		M 3	2.40	0.50	4	120	0.0200	15915	255	1273
		M 4	3.20	0.70	4	120	0.0250	11935	239	1194
		M 5	4.00	0.80	4	120	0.0300	9550	229	1146
		M 6	4.80	1.00	4	120	0.0350	7960	223	1114
		M 8	5.95	1.25	4	120	0.0400	6420	263	1027
		M 10	7.80	1.50	4	120	0.0500	4895	215	979
		M 12	9.00	1.75	4	120	0.0600	4245	255	1019
		M 16	11.80	2.00	5	120	0.0700	3235	297	1132
	Unalloyed copper	M 2	1.55	0.40	4	130	0.0100	26695	240	1068
		M 3	2.40	0.50	4	130	0.0200	17240	276	1379
		M 4	3.20	0.70	4	130	0.0250	12930	259	1293
		M 5	4.00	0.80	4	130	0.0300	10345	248	1241
		M 6	4.80	1.00	4	130	0.0350	8620	241	1207
		M 8	5.95	1.25	4	130	0.0400	6955	285	1113
		M 10	7.80	1.50	4	130	0.0450	5305	210	955
		M 12	9.00	1.75	4	130	0.0550	4600	253	1012
		M 16	11.80	2.00	5	130	0.0600	3505	276	1052
	Titanium alloys > 300 HB [Ti6Al4V]	M 2	1.55	0.40	4	40	0.0100	8215	74	329
		M 3	2.40	0.50	4	40	0.0100	5305	42	212
		M 4	3.20	0.70	4	40	0.0150	3980	48	239
		M 5	4.00	0.80	4	40	0.0200	3185	51	255
		M 6	4.80	1.00	4	40	0.0250	2655	53	266
		M 8	5.95	1.25	4	40	0.0300	2140	66	257
		M 10	7.80	1.50	4	40	0.0350	1630	50	228
		M 12	9.00	1.75	4	40	0.0400	1415	57	226
		M 16	11.80	2.00	5	40	0.0450	1080	64	243

Thread whirler

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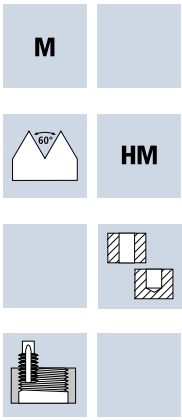
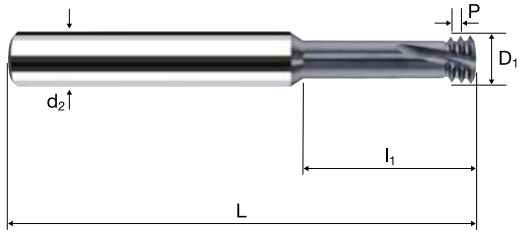
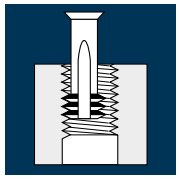




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Aluminium/Copper GG(G) Nickel-Alloys

Example: **Order-N°.** Article-N°. **EH27502** ø-Code **022**

Ø Code	d	P	L	l_1	d_2 h6	D1	Rk 6H			TiCN EH27502
022	M 1.6	0.35	39	4.8	3.0	1.20	0.570	3	3	●
026	M 1.8	0.35	39	5.4	3.0	1.40	0.670	3	3	●
034	M 2	0.40	39	6.0	3.0	1.55	0.750	4	3	●
040	M 2.5	0.45	39	7.5	3.0	1.95	0.950	4	3	●
044	M 3	0.50	58	9.5	6.0	2.40	1.170	4	3	●
056	M 3.5	0.60	58	11.0	6.0	2.80	1.370	4	3	●
058	M 4	0.70	58	12.5	6.0	3.20	1.570	4	3	●
084	M 5	0.80	58	16.0	6.0	4.00	1.970	4	3	●
088	M 6	1.00	58	20.0	6.0	4.80	2.370	4	3	●
160	M 8	1.25	58	24.0	6.0	5.95	2.950	4	3	●
174	M 10	1.50	73	33.0	8.0	7.80	3.840	4	3	●
240	M 12	1.75	84	38.0	10.0	9.00	4.440	4	3	●
246	M 16	2.00	84	35.0	12.0	11.80	5.840	5	3	●

Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Hardened tool steel 48 - 52 HRC	M 2	1.55	0.40	4	45	0.0100	9240	83	370
		M 2.5	1.95	0.45	4	45	0.0100	7345	65	294
		M 3	2.35	0.50	4	45	0.0100	6095	53	244
		M 4	3.10	0.70	4	45	0.0150	4620	62	277
		M 5	3.80	0.80	4	45	0.0200	3770	72	302
		M 6	4.80	1.00	4	45	0.0250	2985	60	299
		M 8	5.95	1.25	4	45	0.0300	2405	74	289
		M 10	7.80	1.50	4	45	0.0350	1835	57	257
		M 12	9.00	1.75	5	45	0.0400	1590	80	318
	Hardened tool steel 52 - 56 HRC	M 2	1.55	0.40	4	45	0.0100	9240	83	370
		M 2.5	1.95	0.45	4	45	0.0100	7345	65	294
		M 3	2.35	0.50	4	45	0.0100	6095	53	244
		M 4	3.10	0.70	4	45	0.0150	4620	62	277
		M 5	3.80	0.80	4	45	0.0200	3770	72	302
		M 6	4.80	1.00	4	45	0.0250	2985	60	299
		M 8	5.95	1.25	4	45	0.0300	2405	74	289
		M 10	7.80	1.50	4	45	0.0350	1835	57	257
		M 12	9.00	1.75	5	45	0.0400	1590	80	318
	Hardened tool steel 56 - 60 HRC	M 2	1.55	0.40	4	40	0.0100	8215	74	329
		M 2.5	1.95	0.45	4	40	0.0100	6530	57	261
		M 3	2.35	0.50	4	40	0.0100	5420	47	217
		M 4	3.10	0.70	4	40	0.0150	4105	55	246
		M 5	3.80	0.80	4	40	0.0200	3350	64	268
		M 6	4.80	1.00	4	40	0.0250	2655	53	266
		M 8	5.95	1.25	4	40	0.0300	2140	66	257
		M 10	7.80	1.50	4	40	0.0350	1630	50	228
		M 12	9.00	1.75	5	40	0.0400	1415	71	283
	Hardened tool steel > 60 HRC	M 2	1.55	0.40	4	35	0.0100	7190	65	288
		M 2.5	1.95	0.45	4	35	0.0100	5715	50	229
		M 3	2.35	0.50	4	35	0.0100	4740	41	190
		M 4	3.10	0.70	4	35	0.0150	3595	49	216
		M 5	3.80	0.80	4	35	0.0200	2930	56	234
		M 6	4.80	1.00	4	35	0.0250	2320	46	232
		M 8	5.95	1.25	4	35	0.0300	1870	58	224
		M 10	7.80	1.50	4	35	0.0350	1430	44	200
		M 12	9.00	1.75	5	35	0.0400	1240	62	248

Thread whirler

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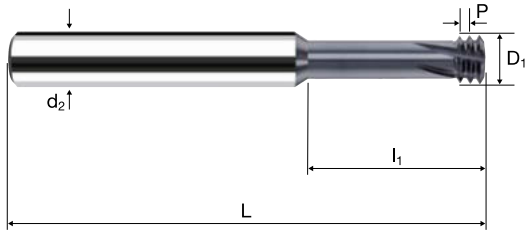
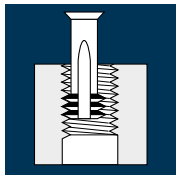


Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60

Example: **Order-N°.** Article-N°. **EI27504** ø-Code **034**

Ø Code	d	P	L	l_1	d_2 h6	D1	Rk 6H			INTEGRAL
										EI27504
034	M 2	0.40	39	6.0	3.0	1.55	0.750	4	3	●
040	M 2.5	0.45	39	7.5	3.0	1.95	0.950	4	3	●
044	M 3	0.50	58	9.5	6.0	2.35	1.150	4	3	●
058	M 4	0.70	58	12.5	6.0	3.10	1.520	4	3	●
084	M 5	0.80	58	16.0	6.0	3.80	1.870	4	3	●
088	M 6	1.00	58	20.0	6.0	4.80	2.370	4	3	●
160	M 8	1.25	58	24.0	6.0	5.95	2.950	4	3	●
174	M 10	1.50	64	23.0	8.0	7.80	3.840	4	3	●
240	M 12	1.75	73	26.0	10.0	9.00	4.440	5	3	●

Application	Material	G	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	G 1/8	6.20	28.0	4	80	0.0350	4105	208	575
		G 3/8	9.95	19.0	4	80	0.0600	2560	248	614
		G 7/8	11.95	14.0	4	80	0.0600	2130	309	511
		G 2"	15.95	11.0	5	80	0.0650	1595	380	518
	Steel 1300 - 1500 N/mm²	G 1/8	6.20	28.0	4	45	0.0300	2310	101	277
		G 3/8	9.95	19.0	4	45	0.0550	1440	128	317
		G 7/8	11.95	14.0	4	45	0.0600	1200	174	288
		G 2"	15.95	11.0	5	45	0.0650	900	214	293
	Stainless steel [Cr-Ni/1.4301]	G 1/8	6.20	28.0	4	55	0.0300	2825	123	339
		G 3/8	9.95	19.0	4	55	0.0550	1760	156	387
		G 7/8	11.95	14.0	4	55	0.0600	1465	212	352
		G 2"	15.95	11.0	5	55	0.0650	1100	262	358
	Nickel base alloys hardened	G 1/8	6.20	28.0	4	30	0.0300	1540	67	185
		G 3/8	9.95	19.0	4	30	0.0400	960	62	154
		G 7/8	11.95	14.0	4	30	0.0500	800	97	160
		G 2"	15.95	11.0	5	30	0.0600	600	132	180
	Wrought aluminium alloys Si < 6% hardened	G 1/8	6.20	28.0	4	150	0.0500	7700	559	1540
		G 3/8	9.95	19.0	4	150	0.0700	4800	541	1344
		G 7/8	11.95	14.0	4	150	0.0800	3995	773	1278
		G 2"	15.95	11.0	5	150	0.0900	2995	987	1348
	Cast iron (lamellar / spheroidal)	G 1/8	6.20	28.0	4	120	0.0400	6160	357	986
		G 3/8	9.95	19.0	4	120	0.0650	3840	402	998
		G 7/8	11.95	14.0	4	120	0.0700	3195	541	895
		G 2"	15.95	11.0	5	120	0.0900	2395	789	1078
	Unalloyed copper	G 1/8	6.20	28.0	4	130	0.0400	6675	387	1068
		G 3/8	9.95	19.0	4	130	0.0600	4160	402	998
		G 7/8	11.95	14.0	4	130	0.0650	3465	544	901
		G 2"	15.95	11.0	5	130	0.0750	2595	713	973
	Titanium alloys > 300 HB [Ti6Al4V]	G 1/8	6.20	28.0	4	40	0.0300	2055	89	247
		G 3/8	9.95	19.0	4	40	0.0400	1280	83	205
		G 7/8	11.95	14.0	4	40	0.0500	1065	129	213
		G 2"	15.95	11.0	5	40	0.0600	800	176	240

Thread whirler

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G

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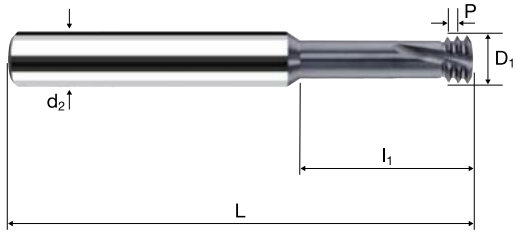
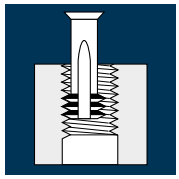


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Aluminium/Copper GG(G) Nickel-Alloys

Example: **Order-N°.** Article-N°. **EH27540** ø-Code **550**

Ø Code	d	P(TPI)	L	l_1	d_2 h6	D1	Rk			TiCN EH27540
550	G 1/8	28.0	64	19.5	8.0	6.20	3.070	4	3	●
552	G 3/8	19.0	73	25.0	10.0	9.95	4.920	4	3	●
554	G 7/8	14.0	84	37.0	12.0	11.95	5.920	4	3	●
558	G 2''	11.0	105	44.0	16.0	15.95	7.930	5	3	●

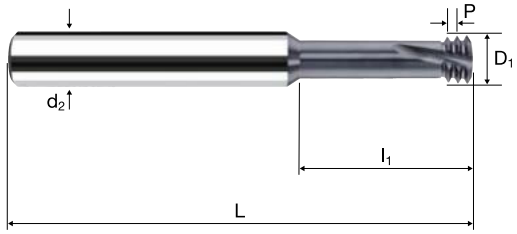
Application	Material	UN	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	UNC Nr.1 UNF Nr.2	1.40	64.0	3	90	0.0100	20465	150	614
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	90	0.0200	15080	295	1206
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	90	0.0200	11695	214	936
		UNC Nr.8	3.20	32.0	4	90	0.0200	8950	166	716
		UNC Nr.10-12	3.50	24.0	4	90	0.0250	8185	225	819
		UNC 1/4	4.75	20.0	4	90	0.0300	6030	182	724
		UNF 7/16	8.00	20.0	4	90	0.0500	3580	201	716
		UNF 5/8	12.00	18.0	4	90	0.0600	2385	140	572
		UNC 3/8	6.70	16.0	4	90	0.0450	4275	228	770
	Steel 850 - 1100 N/mm²	UNC Nr.1 UNF Nr.2	1.40	64.0	3	80	0.0100	18190	134	546
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	80	0.0200	13405	262	1072
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	80	0.0200	10395	190	832
		UNC Nr.8	3.20	32.0	4	80	0.0200	7960	148	637
		UNC Nr.10-12	3.50	24.0	4	80	0.0250	7275	200	728
		UNC 1/4	4.75	20.0	4	80	0.0300	5360	162	643
		UNF 7/16	8.00	20.0	4	80	0.0500	3185	178	637
		UNF 5/8	12.00	18.0	4	80	0.0600	2120	124	509
		UNC 3/8	6.70	16.0	4	80	0.0450	3800	203	684
	Steel 1100 - 1300 N/mm²	UNC Nr.1 UNF Nr.2	1.40	64.0	3	60	0.0100	13640	100	409
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	60	0.0200	10050	197	804
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	60	0.0200	7795	142	624
		UNC Nr.8	3.20	32.0	4	60	0.0250	5970	138	597
		UNC Nr.10-12	3.50	24.0	4	60	0.0250	5455	150	546
		UNC 1/4	4.75	20.0	4	60	0.0300	4020	122	482
		UNF 7/16	8.00	20.0	4	60	0.0400	2385	107	382
		UNF 5/8	12.00	18.0	4	60	0.0600	1590	93	382
		UNC 3/8	6.70	16.0	4	60	0.0350	2850	118	399
	Steel 1300 - 1500 N/mm²	UNC Nr.1 UNF Nr.2	1.40	64.0	3	45	0.0100	10230	75	307
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	45	0.0200	7540	148	603
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	45	0.0200	5845	107	468
		UNC Nr.8	3.20	32.0	4	45	0.0250	4475	104	448
		UNC Nr.10-12	3.50	24.0	4	45	0.0250	4095	113	410
		UNC 1/4	4.75	20.0	4	45	0.0300	3015	91	362
		UNF 7/16	8.00	20.0	4	45	0.0400	1790	80	286
		UNF 5/8	12.00	18.0	4	45	0.0600	1195	70	287
		UNC 3/8	6.70	16.0	4	45	0.0350	2140	89	300
	Wrought aluminium alloys Si < 6% hardened	UNC Nr.1 UNF Nr.2	1.40	64.0	3	150	0.0200	34105	501	2046
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	150	0.0300	25130	737	3016
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	150	0.0300	19490	534	2339
		UNC Nr.8	3.20	32.0	4	150	0.0350	14920	484	2089
		UNC Nr.10-12	3.50	24.0	4	150	0.0400	13640	600	2182
		UNC 1/4	4.75	20.0	4	150	0.0450	10050	456	1809
		UNF 7/16	8.00	20.0	4	150	0.0600	5970	401	1433
		UNF 5/8	12.00	18.0	4	150	0.0800	3980	311	1274
		UNC 3/8	6.70	16.0	4	150	0.0550	7125	465	1568
	Cast iron (lamellar / spheroidal)	UNC Nr.1 UNF Nr.2	1.40	64.0	3	120	0.0100	27285	200	819
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	120	0.0200	20105	393	1608
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	120	0.0200	15590	285	1247
		UNC Nr.8	3.20	32.0	4	120	0.0250	11935	277	1194
		UNC Nr.10-12	3.50	24.0	4	120	0.0250	10915	300	1092
		UNC 1/4	4.75	20.0	4	120	0.0350	8040	284	1126
		UNF 7/16	8.00	20.0	4	120	0.0500	4775	267	955
		UNF 5/8	12.00	18.0	4	120	0.0700	3185	218	892
		UNC 3/8	6.70	16.0	4	120	0.0450	5700	304	1026
	Unalloyed copper	UNC Nr.1 UNF Nr.2	1.40	64.0	3	130	0.0100	29555	217	887
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	130	0.0100	21780	213	871
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	130	0.0200	16890	309	1351
		UNC Nr.8	3.20	32.0	4	130	0.0250	12930	300	1293
		UNC Nr.10-12	3.50	24.0	4	130	0.0250	11825	325	1183
		UNC 1/4	4.75	20.0	4	130	0.0350	8710	307	1219
		UNF 7/16	8.00	20.0	4	130	0.0500	5175	290	1035
		UNF 5/8	12.00	18.0	4	130	0.0650	3450	219	897
		UNC 3/8	6.70	16.0	4	130	0.0400	6175	293	988
	Stainless steel [Cr-Ni/1.4301]	UNC Nr.1 UNF Nr.2	1.40	64.0	3	55	0.0100	12505	92	375
		UNC Nr.3 UNF Nr.4	1.90	48.0	4	55	0.0200	9215	180	737
		UNC Nr.5 UNF Nr.6	2.45	40.0	4	55	0.0200	7145	131	572
		UNC Nr.8	3.20	32.0	4	55	0.0250	5470	127	547
		UNC Nr.10-12	3.50	24.0	4	55	0.0250	5000	137	500
		UNC 1/4	4.75	20.0	4	55	0.0300	3685	111	442
		UNF 7/16	8.00	20.0	4	55	0.0400	2190	98	350
		UNF 5/8	12.00	18.0	4	55	0.0600	1460	86	350
		UNC 3/8	6.70	16.0	4	55	0.0350	2615	109	366

Thread whirler

3xd

UN

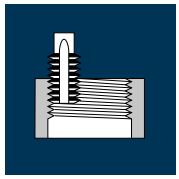
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		Aluminium / Copper GG(G)

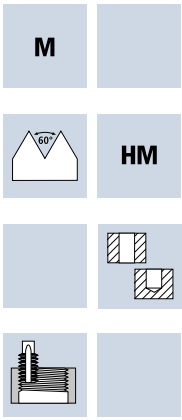
Example: **Order-N°.** Article-N°. **EH27560** ø-Code **750**

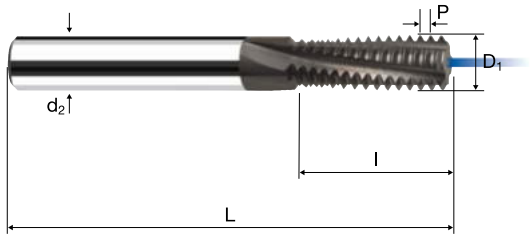
Ø Code	d	P(TPI)	L	l_1	d_2 h6	D1	Rk 2B			TiCN EH27560
750	UNF Nr.1	72.0	39	5.8	3.0	1.45	0.700	3	3	●
751	UNC Nr.1 UNF Nr.2	64.0	39	6.0	3.0	1.40	0.670	3	3	●
752	UNC Nr.2 UNF Nr.3	56.0	39	7.0	3.0	1.65	0.800	4	3	●
753	UNC Nr.3 UNF Nr.4	48.0	39	8.0	3.0	1.90	0.920	4	3	●
755	UNC Nr.4	40.0	58	9.0	6.0	2.10	1.020	4	3	●
756	UNC Nr.5 UNF Nr.6	40.0	58	10.0	6.0	2.45	1.200	4	3	●
757	UNF Nr.8	36.0	58	12.0	6.0	3.30	1.620	4	3	●
758	UNC Nr.6	32.0	58	11.0	6.0	2.55	1.250	4	3	●
759	UNC Nr.8	32.0	58	13.0	6.0	3.20	1.570	4	3	●
760	UNF Nr.10	32.0	58	15.0	6.0	3.70	1.820	4	3	●
761	UNF Nr.12	28.0	58	16.0	6.0	4.20	2.070	4	3	●
762	UNF 1/4	28.0	58	19.6	6.0	5.00	2.470	4	3	●
763	UNC Nr.10-12	24.0	58	16.0	6.0	3.50	1.720	4	3	●
764	UNF 5/16-3/8	24.0	64	24.0	8.0	6.60	3.270	4	3	●
765	UNC 1/4	20.0	58	20.0	6.0	4.75	2.320	4	3	●
766	UNF 7/16	20.0	64	34.6	8.0	8.00	3.940	4	3	●
767	UNC 5/16	18.0	58	23.0	6.0	6.00	2.940	4	3	●
768	UNF 5/8	18.0	84	35.0	12.0	12.00	5.940	4	3	●
769	UNC 3/8	16.0	64	25.0	8.0	6.70	3.290	4	3	●
770	UNC 7/16	14.0	64	25.0	8.0	7.70	3.790	4	3	●

Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	M 3	2.30	0.50	3	90	0.0160	12455	139	598
		M 4	3.00	0.70	3	90	0.0160	9550	115	458
		M 5	4.00	0.80	3	90	0.0200	7160	86	430
		M 6	4.80	1.00	3	90	0.0240	5970	86	430
		M 8	6.40	1.25	3	90	0.0280	4475	75	376
		M 10	7.95	1.50	3	90	0.0400	3605	89	433
		M 12	9.95	1.75	4	90	0.0480	2880	94	553
		M 14	11.20	2.00	4	90	0.0480	2560	98	492
		M 16	12.80	2.00	4	90	0.0480	2240	86	430
	Steel 850 - 1100 N/mm²	M 3	2.30	0.50	3	80	0.0160	11070	124	531
		M 4	3.00	0.70	3	80	0.0160	8490	102	408
		M 5	4.00	0.80	3	80	0.0200	6365	76	382
		M 6	4.80	1.00	3	80	0.0240	5305	76	382
		M 8	6.40	1.25	3	80	0.0280	3980	67	334
		M 10	7.95	1.50	3	80	0.0400	3205	79	385
		M 12	9.95	1.75	4	80	0.0480	2560	84	492
		M 14	11.20	2.00	4	80	0.0480	2275	87	437
		M 16	12.80	2.00	4	80	0.0480	1990	76	382
	Steel 1100 - 1300 N/mm²	M 3	2.30	0.50	3	60	0.0160	8305	93	399
		M 4	3.00	0.70	3	60	0.0160	6365	76	306
		M 5	4.00	0.80	3	60	0.0200	4775	57	287
		M 6	4.80	1.00	3	60	0.0200	3980	48	239
		M 8	6.40	1.25	3	60	0.0240	2985	43	215
		M 10	7.95	1.50	3	60	0.0320	2400	47	230
		M 12	9.95	1.75	4	60	0.0440	1920	58	338
		M 14	11.20	2.00	4	60	0.0440	1705	60	300
		M 16	12.80	2.00	4	60	0.0480	1490	57	286
	Steel 1300 - 1500 N/mm²	M 3	2.30	0.50	3	45	0.0080	6230	35	150
		M 4	3.00	0.70	3	45	0.0120	4775	43	172
		M 5	4.00	0.80	3	45	0.0160	3580	34	172
		M 6	4.80	1.00	3	45	0.0200	2985	36	179
		M 8	6.40	1.25	3	45	0.0240	2240	32	161
		M 10	7.95	1.50	3	45	0.0280	1800	31	151
		M 12	9.95	1.75	4	45	0.0360	1440	35	207
		M 14	11.20	2.00	4	45	0.0360	1280	37	184
		M 16	12.80	2.00	4	45	0.0400	1120	36	179
	Wrought aluminium alloys Si < 6% hardened	M 3	2.30	0.50	3	150	0.0240	20760	349	1495
		M 4	3.00	0.70	3	150	0.0280	15915	334	1337
		M 5	4.00	0.80	3	150	0.0320	11935	229	1146
		M 6	4.80	1.00	3	150	0.0360	9945	215	1074
		M 8	6.40	1.25	3	150	0.0400	7460	179	895
		M 10	7.95	1.50	3	150	0.0480	6005	177	865
		M 12	9.95	1.75	4	150	0.0560	4800	184	1075
		M 14	11.20	2.00	4	150	0.0560	4265	191	955
		M 16	12.80	2.00	4	150	0.0640	3730	191	955
	Cast iron (lamellar / spheroidal)	M 3	2.30	0.50	3	120	0.0160	16605	186	797
		M 4	3.00	0.70	3	120	0.0200	12730	191	764
		M 5	4.00	0.80	3	120	0.0240	9550	138	688
		M 6	4.80	1.00	3	120	0.0280	7960	134	669
		M 8	6.40	1.25	3	120	0.0320	5970	115	573
		M 10	7.95	1.50	3	120	0.0400	4805	118	577
		M 12	9.95	1.75	4	120	0.0520	3840	136	799
		M 14	11.20	2.00	4	120	0.0520	3410	142	709
		M 16	12.80	2.00	4	120	0.0560	2985	134	669
	Unalloyed copper	M 3	2.30	0.50	3	130	0.0160	17990	201	864
		M 4	3.00	0.70	3	130	0.0200	13795	207	828
		M 5	4.00	0.80	3	130	0.0240	10345	149	745
		M 6	4.80	1.00	3	130	0.0280	8620	145	724
		M 8	6.40	1.25	3	130	0.0320	6465	124	621
		M 10	7.95	1.50	3	130	0.0400	5205	128	625
		M 12	9.95	1.75	4	130	0.0520	4160	148	865
		M 14	11.20	2.00	4	130	0.0520	3695	154	769
		M 16	12.80	2.00	4	130	0.0560	3235	145	725
	Stainless steel [Cr-Ni/1.4301]	M 3	2.30	0.50	3	55	0.0160	7610	85	365
		M 4	3.00	0.70	3	55	0.0200	5835	88	350
		M 5	4.00	0.80	3	55	0.0240	4375	63	315
		M 6	4.80	1.00	3	55	0.0240	3645	52	262
		M 8	6.40	1.25	3	55	0.0240	2735	39	197
		M 10	7.95	1.50	3	55	0.0320	2200	43	211
		M 12	9.95	1.75	4	55	0.0440	1760	53	310
		M 14	11.20	2.00	4	55	0.0440	1565	55	275
		M 16	12.80	2.00	4	55	0.0480	1370	53	263

Thread milling cutters

2xd, Incool



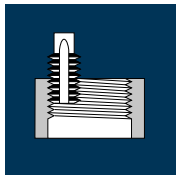


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. ø-Code **EH20300 044**

Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH20300	TiCN EH20306
044*	M 3	0.50	40	6.80	4.0	2.30	1.120	3		●
058	M 4	0.70	48	8.80	6.0	3.00	1.470	3		●
084	M 5	0.80	54	10.80	6.0	4.00	1.970	3		●
088	M 6	1.00	54	13.50	6.0	4.80	2.370	3		●
160	M 8	1.25	62	18.10	8.0	6.40	3.170	3		●
174	M 10	1.50	74	21.80	10.0	7.95	3.920	3		●
240	M 12	1.75	74	25.40	10.0	9.95	4.920	4		●
244	M 14	2.00	90	31.00	12.0	11.20	5.540	4		●
246	M 16	2.00	90	35.00	14.0	12.80	6.340	4		●
314	M 20	2.50	102	41.30	16.0	14.95	7.430	4		●

* without clamping flat only, without Incool

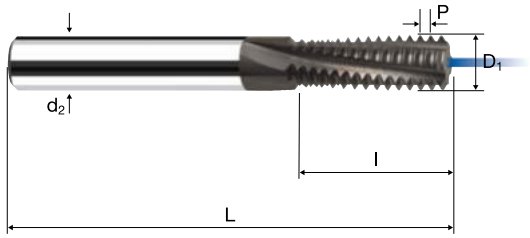
Application	Material	MF	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	M 8	6.40	1.00	3	90	0.0280	4475	75	376
		M 10	7.95	1.00	3	90	0.0400	3605	89	433
		M 10	7.95	1.25	3	90	0.0400	3605	89	433
		M 12	9.95	1.50	4	90	0.0480	2880	94	553
		M 14	11.20	1.50	4	90	0.0480	2560	98	492
		M 16	12.80	1.50	4	90	0.0480	2240	86	430
		M 20	14.95	1.50	4	90	0.0520	1915	101	398
	Steel 850 - 1100 N/mm²	M 8	6.40	1.00	3	80	0.0280	3980	67	334
		M 10	7.95	1.00	3	80	0.0400	3205	79	385
		M 10	7.95	1.25	3	80	0.0400	3205	79	385
		M 12	9.95	1.50	4	80	0.0480	2560	84	492
		M 14	11.20	1.50	4	80	0.0480	2275	87	437
		M 16	12.80	1.50	4	80	0.0480	1990	76	382
		M 20	14.95	1.50	4	80	0.0520	1705	90	355
	Steel 1100 - 1300 N/mm²	M 8	6.40	1.00	3	60	0.0240	2985	43	215
		M 10	7.95	1.00	3	60	0.0320	2400	47	230
		M 10	7.95	1.25	3	60	0.0320	2400	47	230
		M 12	9.95	1.50	4	60	0.0440	1920	58	338
		M 14	11.20	1.50	4	60	0.0440	1705	60	300
		M 16	12.80	1.50	4	60	0.0480	1490	57	286
		M 20	14.95	1.50	4	60	0.0480	1275	62	245
	Steel 1300 - 1500 N/mm²	M 8	6.40	1.00	3	45	0.0240	2240	32	161
		M 10	7.95	1.00	3	45	0.0320	1800	35	173
		M 10	7.95	1.25	3	45	0.0320	1800	35	173
		M 12	9.95	1.50	4	45	0.0440	1440	43	253
		M 14	11.20	1.50	4	45	0.0440	1280	45	225
		M 16	12.80	1.50	4	45	0.0480	1120	43	215
		M 20	14.95	1.50	4	45	0.0480	960	47	184
	Wrought aluminium alloys Si < 6% hardened	M 8	6.40	1.00	3	150	0.0400	7460	179	895
		M 10	7.95	1.00	3	150	0.0480	6005	177	865
		M 10	7.95	1.25	3	150	0.0480	6005	177	865
		M 12	9.95	1.50	4	150	0.0560	4800	184	1075
		M 14	11.20	1.50	4	150	0.0560	4265	191	955
		M 16	12.80	1.50	4	150	0.0640	3730	191	955
		M 20	14.95	1.50	4	150	0.0680	3195	219	869
	Cast iron (lamellar / spheroidal)	M 8	6.40	1.00	3	120	0.0320	5970	115	573
		M 10	7.95	1.00	3	120	0.0400	4805	118	577
		M 10	7.95	1.25	3	120	0.0400	4805	118	577
		M 12	9.95	1.50	4	120	0.0520	3840	136	799
		M 14	11.20	1.50	4	120	0.0520	3410	142	709
		M 16	12.80	1.50	4	120	0.0560	2985	134	669
		M 20	14.95	1.50	4	120	0.0640	2555	165	654
	Unalloyed copper	M 8	6.40	1.00	3	130	0.0320	6465	124	621
		M 10	7.95	1.00	3	130	0.0400	5205	128	625
		M 10	7.95	1.25	3	130	0.0400	5205	128	625
		M 12	9.95	1.50	4	130	0.0520	4160	148	865
		M 14	11.20	1.50	4	130	0.0520	3695	154	769
		M 16	12.80	1.50	4	130	0.0560	3235	145	725
		M 20	14.95	1.50	4	130	0.0640	2770	179	709
	Stainless steel [Cr-Ni/1.4301]	M 8	6.40	1.00	3	55	0.0240	2735	39	197
		M 10	7.95	1.00	3	55	0.0320	2200	43	211
		M 10	7.95	1.25	3	55	0.0320	2200	43	211
		M 12	9.95	1.50	4	55	0.0440	1760	53	310
		M 14	11.20	1.50	4	55	0.0440	1565	55	275
		M 16	12.80	1.50	4	55	0.0480	1370	53	263
		M 20	14.95	1.50	4	55	0.0520	1170	61	243

Thread milling cutters

2xd, Incool

MF

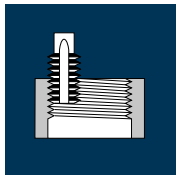
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20320** ø-Code **090**

Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH20320	TiCN EH20326
090	M 8	1.00	62	17.50	8.0	6.40	3.170	3		●
092	M 10	1.00	74	21.50	10.0	7.95	3.950	3		●
162	M 10	1.25	74	21.90	10.0	7.95	3.950	3		●
176	M 12	1.50	74	26.30	10.0	9.95	4.920	4		●
178	M 14	1.50	90	30.80	12.0	11.20	5.540	4		●
180	M 16	1.50	90	33.80	14.0	12.80	6.340	4		●
184	M 20	1.50	102	42.80	16.0	14.95	7.420	4		●

Application	Material	G	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	G 1/8	7.95	28.0	3	90	0.0400	3605	79	433
		G 1/4	10.50	19.0	4	90	0.0480	2730	106	524
		G 3/8	13.60	19.0	4	90	0.0520	2105	80	438
	Steel 850 - 1100 N/mm²	G 1/8	7.95	28.0	3	80	0.0400	3205	70	385
		G 1/4	10.50	19.0	4	80	0.0480	2425	94	466
		G 3/8	13.60	19.0	4	80	0.0520	1870	71	389
	Steel 1100 - 1300 N/mm²	G 1/8	7.95	28.0	3	60	0.0320	2400	42	230
		G 1/4	10.50	19.0	4	60	0.0440	1820	65	320
		G 3/8	13.60	19.0	4	60	0.5200	1405	537	2922
	Steel 1300 - 1500 N/mm²	G 1/8	7.95	28.0	3	45	0.0320	1800	32	173
		G 1/4	10.50	19.0	4	45	0.0440	1365	49	240
		G 3/8	13.60	19.0	4	45	0.0520	1055	40	219
	Wrought aluminium alloys Si < 6% hardened	G 1/8	7.95	28.0	3	150	0.0480	6005	158	865
		G 1/4	10.50	19.0	4	150	0.0560	4545	206	1018
		G 3/8	13.60	19.0	4	150	0.0680	3510	175	955
	Cast iron (lamellar / spheroidal)	G 1/8	7.95	28.0	3	120	0.0400	4805	105	577
		G 1/4	10.50	19.0	4	120	0.0520	3640	153	757
		G 3/8	13.60	19.0	4	120	0.0640	2810	132	719
	Unalloyed copper	G 1/8	7.95	28.0	3	130	0.0400	5205	114	625
		G 1/4	10.50	19.0	4	130	0.0520	3940	165	820
		G 3/8	13.60	19.0	4	130	0.0640	3045	143	780
	Stainless steel [Cr-Ni/1.4301]	G 1/8	7.95	28.0	3	55	0.0320	2200	39	211
		G 1/4	10.50	19.0	4	55	0.0440	1665	59	293
		G 3/8	13.60	19.0	4	55	0.0520	1285	49	267

Thread milling cutters

2xd, Incool

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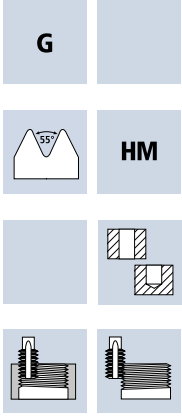
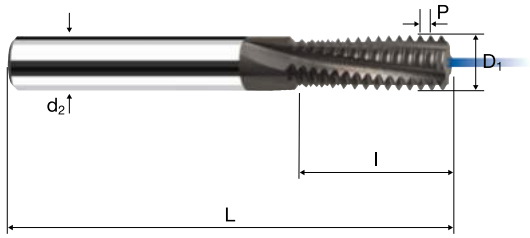
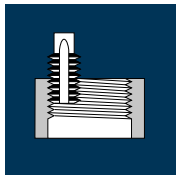




Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20340** ø-Code **551**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk		TiCN
									EH20340
551	G 1/8	28.0	64	21.30	8.0	7.95	3.950	3	●
552	G 1/4	19.0	90	28.70	12.0	10.50	5.190	4	●
553	G 3/8	19.0	90	35.40	14.0	13.60	6.740	4	●

Application	Material	UNC	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	Nr.10	3.40	24.0	3	90	0.0160	8425	119	404
		Nr.12	4.10	24.0	3	90	0.0200	6985	106	419
		1/4	4.70	20.0	3	90	0.0240	6095	114	439
		5/16	6.10	18.0	3	90	0.0280	4695	91	394
		3/8	7.60	16.0	3	90	0.0360	3770	82	407
		7/16	9.00	14.0	3	90	0.0440	3185	80	420
		1/2	9.95	13.0	4	90	0.0480	2880	120	553
		9/16	11.40	12.0	4	90	0.0480	2515	98	483
		5/8	12.70	11.0	4	90	0.0480	2255	87	433
	Steel 850 - 1100 N/mm²	Nr.10	3.40	24.0	3	80	0.0160	7490	106	360
		Nr.12	4.10	24.0	3	80	0.0200	6210	94	373
		1/4	4.70	20.0	3	80	0.0240	5420	101	390
		5/16	6.10	18.0	3	80	0.0280	4175	81	351
		3/8	7.60	16.0	3	80	0.0360	3350	73	362
		7/16	9.00	14.0	3	80	0.0440	2830	71	374
		1/2	9.95	13.0	4	80	0.0480	2560	106	492
		9/16	11.40	12.0	4	80	0.0480	2235	87	429
		5/8	12.70	11.0	4	80	0.0480	2005	77	385
	Steel 1100 - 1300 N/mm²	Nr.10	3.40	24.0	3	60	0.0160	5615	80	270
		Nr.12	4.10	24.0	3	60	0.0200	4660	71	280
		1/4	4.70	20.0	3	60	0.0240	4065	76	293
		5/16	6.10	18.0	3	60	0.0240	3130	52	225
		3/8	7.60	16.0	3	60	0.0320	2515	49	241
		7/16	9.00	14.0	3	60	0.0400	2120	48	254
		1/2	9.95	13.0	4	60	0.0440	1920	73	338
		9/16	11.40	12.0	4	60	0.0440	1675	60	295
		5/8	12.70	11.0	4	60	0.0480	1505	58	289
	Steel 1300 - 1500 N/mm²	Nr.10	3.40	24.0	3	45	0.0160	4215	60	202
		Nr.12	4.10	24.0	3	45	0.0200	3495	53	210
		1/4	4.70	20.0	3	45	0.0240	3050	57	220
		5/16	6.10	18.0	3	45	0.0240	2350	39	169
		3/8	7.60	16.0	3	45	0.0320	1885	37	181
		7/16	9.00	14.0	3	45	0.0400	1590	36	191
		1/2	9.95	13.0	4	45	0.0440	1440	55	253
		9/16	11.40	12.0	4	45	0.0440	1255	45	221
		5/8	12.70	11.0	4	45	0.0480	1130	43	217
	Wrought aluminium alloys Si < 6% hardened	Nr.10	3.40	24.0	3	150	0.0280	14045	349	1180
		Nr.12	4.10	24.0	3	150	0.0320	11645	282	1118
		1/4	4.70	20.0	3	150	0.0360	10160	285	1097
		5/16	6.10	18.0	3	150	0.0400	7825	217	939
		3/8	7.60	16.0	3	150	0.0440	6280	168	829
		7/16	9.00	14.0	3	150	0.0520	5305	157	828
		1/2	9.95	13.0	4	150	0.0560	4800	233	1075
		9/16	11.40	12.0	4	150	0.0560	4190	190	939
		5/8	12.70	11.0	4	150	0.0640	3760	193	963
	Cast iron (lamellar / spheroidal)	Nr.10	3.40	24.0	3	120	0.0200	11235	199	674
		Nr.12	4.10	24.0	3	120	0.0240	9315	169	671
		1/4	4.70	20.0	3	120	0.0280	8125	177	683
		5/16	6.10	18.0	3	120	0.0320	6260	139	601
		3/8	7.60	16.0	3	120	0.0360	5025	110	543
		7/16	9.00	14.0	3	120	0.0480	4245	116	611
		1/2	9.95	13.0	4	120	0.0520	3840	173	799
		9/16	11.40	12.0	4	120	0.0520	3350	141	697
		5/8	12.70	11.0	4	120	0.0560	3010	135	674
	Unalloyed copper	Nr.10	3.40	24.0	3	130	0.0200	12170	216	730
		Nr.12	4.10	24.0	3	130	0.0240	10095	184	727
		1/4	4.70	20.0	3	130	0.0280	8805	192	740
		5/16	6.10	18.0	3	130	0.0320	6785	151	651
		3/8	7.60	16.0	3	130	0.0360	5445	119	588
		7/16	9.00	14.0	3	130	0.0480	4600	126	662
		1/2	9.95	13.0	4	130	0.0520	4160	187	865
		9/16	11.40	12.0	4	130	0.0520	3630	153	755
		5/8	12.70	11.0	4	130	0.0560	3260	146	730
	Stainless steel [Cr-Ni/1.4301]	Nr.10	3.40	24.0	3	55	0.0200	5150	91	309
		Nr.12	4.10	24.0	3	55	0.0240	4270	78	307
		1/4	4.70	20.0	3	55	0.0240	3725	70	268
		5/16	6.10	18.0	3	55	0.0240	2870	48	207
		3/8	7.60	16.0	3	55	0.0280	2305	39	194
		7/16	9.00	14.0	3	55	0.0400	1945	44	233
		1/2	9.95	13.0	4	55	0.0440	1760	67	310
		9/16	11.40	12.0	4	55	0.0440	1535	55	270
		5/8	12.70	11.0	4	55	0.0480	1380	53	265

Thread milling cutters

2xd, Incool

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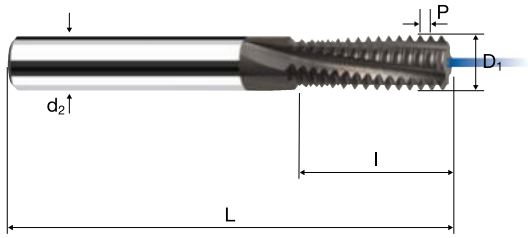
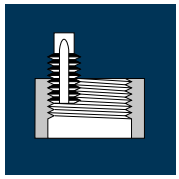


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20360** ø-Code **707**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk 2B		TiCN EH20360
707	Nr.10	24.0	54	11.10	6.0	3.40	1.670	3	●
708	Nr.12	24.0	54	12.20	6.0	4.10	2.020	3	●
709	1/4	20.0	54	14.60	6.0	4.70	2.290	3	●
710	5/16	18.0	64	17.60	8.0	6.10	2.990	3	●
711	3/8	16.0	64	21.40	8.0	7.60	3.740	3	●
712	7/16	14.0	74	24.50	10.0	9.00	4.440	3	●
713	1/2	13.0	74	28.30	10.0	9.95	4.920	4	●
714	9/16	12.0	90	30.70	12.0	11.40	5.650	4	●
715	5/8	11.0	90	35.80	14.0	12.70	6.300	4	●

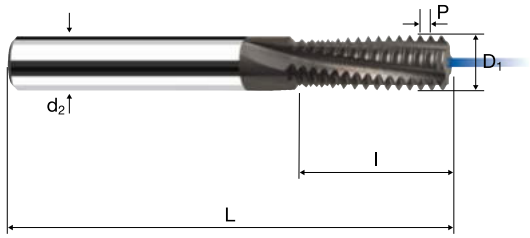
Application	Material	UNF	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	Nr.10	3.80	32.0	3	90	0.0200	7540	96	452
		Nr.12	4.30	28.0	3	90	0.0200	6660	86	400
		1/4	5.10	28.0	3	90	0.0240	5615	80	404
		5/16	6.30	24.0	3	90	0.0280	4545	79	382
		3/8	7.80	24.0	3	90	0.0400	3675	80	441
		7/16	9.40	20.0	3	90	0.0440	3050	62	403
		1/2	9.95	20.0	4	90	0.0480	2880	120	553
		9/16	11.40	18.0	4	90	0.0480	2515	98	483
		5/8	12.70	18.0	4	90	0.0480	2255	87	433
	Steel 850 - 1100 N/mm²	Nr.10	3.80	32.0	3	80	0.0200	6700	85	402
		Nr.12	4.30	28.0	3	80	0.0200	5920	77	355
		1/4	5.10	28.0	3	80	0.0240	4995	71	360
		5/16	6.30	24.0	3	80	0.0280	4040	70	339
		3/8	7.80	24.0	3	80	0.0400	3265	71	392
		7/16	9.40	20.0	3	80	0.0440	2710	55	358
		1/2	9.95	20.0	4	80	0.0480	2560	106	492
		9/16	11.40	18.0	4	80	0.0480	2235	87	429
		5/8	12.70	18.0	4	80	0.0480	2005	77	385
	Steel 1100 - 1300 N/mm²	Nr.10	3.80	32.0	3	60	0.0200	5025	64	302
		Nr.12	4.30	28.0	3	60	0.0200	4440	58	266
		1/4	5.10	28.0	3	60	0.0240	3745	53	270
		5/16	6.30	24.0	3	60	0.0240	3030	45	218
		3/8	7.80	24.0	3	60	0.0320	2450	43	235
		7/16	9.40	20.0	3	60	0.0400	2030	38	244
		1/2	9.95	20.0	4	60	0.0440	1920	73	338
		9/16	11.40	18.0	4	60	0.0440	1675	60	295
		5/8	12.70	18.0	4	60	0.0480	1505	58	289
	Steel 1300 - 1500 N/mm²	Nr.10	3.80	32.0	3	45	0.0200	3770	48	226
		Nr.12	4.30	28.0	3	45	0.0200	3330	43	200
		1/4	5.10	28.0	3	45	0.0240	2810	40	202
		5/16	6.30	24.0	3	45	0.0240	2275	34	164
		3/8	7.80	24.0	3	45	0.0320	1835	32	176
		7/16	9.40	20.0	3	45	0.0400	1525	28	183
		1/2	9.95	20.0	4	45	0.0440	1440	55	253
		9/16	11.40	18.0	4	45	0.0440	1255	45	221
		5/8	12.70	18.0	4	45	0.0480	1130	43	217
	Wrought aluminium alloys Si < 6% hardened	Nr.10	3.80	32.0	3	150	0.0320	12565	256	1206
		Nr.12	4.30	28.0	3	150	0.0320	11105	230	1066
		1/4	5.10	28.0	3	150	0.0360	9360	199	1011
		5/16	6.30	24.0	3	150	0.0400	7580	188	910
		3/8	7.80	24.0	3	150	0.0480	6120	160	881
		7/16	9.40	20.0	3	150	0.0520	5080	122	793
		1/2	9.95	20.0	4	150	0.0560	4800	233	1075
		9/16	11.40	18.0	4	150	0.0560	4190	190	939
		5/8	12.70	18.0	4	150	0.0640	3760	193	963
	Cast iron (lamellar / spheroidal)	Nr.10	3.80	32.0	3	120	0.0240	10050	154	724
		Nr.12	4.30	28.0	3	120	0.0240	8885	138	640
		1/4	5.10	28.0	3	120	0.0280	7490	124	629
		5/16	6.30	24.0	3	120	0.0320	6065	120	582
		3/8	7.80	24.0	3	120	0.0400	4895	106	587
		7/16	9.40	20.0	3	120	0.0480	4065	90	585
		1/2	9.95	20.0	4	120	0.0520	3840	173	799
		9/16	11.40	18.0	4	120	0.0520	3350	141	697
		5/8	12.70	18.0	4	120	0.0560	3010	135	674
	Unalloyed copper	Nr.10	3.80	32.0	3	130	0.0240	10890	167	784
		Nr.12	4.30	28.0	3	130	0.0240	9625	150	693
		1/4	5.10	28.0	3	130	0.0280	8115	134	682
		5/16	6.30	24.0	3	130	0.0320	6570	130	631
		3/8	7.80	24.0	3	130	0.0400	5305	115	637
		7/16	9.40	20.0	3	130	0.0480	4400	98	634
		1/2	9.95	20.0	4	130	0.0520	4160	187	865
		9/16	11.40	18.0	4	130	0.0520	3630	153	755
		5/8	12.70	18.0	4	130	0.0560	3260	146	730
	Stainless steel [Cr-Ni/1.4301]	Nr.10	3.80	32.0	3	55	0.0240	4605	70	332
		Nr.12	4.30	28.0	3	55	0.0240	4070	63	293
		1/4	5.10	28.0	3	55	0.0240	3435	49	247
		5/16	6.30	24.0	3	55	0.0240	2780	41	200
		3/8	7.80	24.0	3	55	0.0320	2245	39	216
		7/16	9.40	20.0	3	55	0.0400	1860	34	223
		1/2	9.95	20.0	4	55	0.0440	1760	67	310
		9/16	11.40	18.0	4	55	0.0440	1535	55	270
		5/8	12.70	18.0	4	55	0.0480	1380	53	265

Thread milling cutters

2xd, Incool

UNF

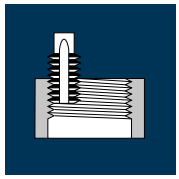
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20370** ø-Code **758**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk 2B		TiCN EH20370
758	Nr.10	32.0	54	11.50	6.0	3.80	1.870	3	●
759	Nr.12	28.0	54	12.20	6.0	4.30	2.120	3	●
760	1/4	28.0	54	14.10	6.0	5.10	2.520	3	●
761	5/16	24.0	64	17.50	8.0	6.30	3.120	3	●
762	3/8	24.0	64	20.60	8.0	7.80	3.870	3	●
763	7/16	20.0	74	24.80	10.0	9.40	4.640	3	●
764	1/2	20.0	74	27.30	10.0	9.95	4.920	4	●
765	9/16	18.0	90	30.30	12.0	11.40	5.640	4	●
766	5/8	18.0	90	33.20	14.0	12.70	6.290	4	●

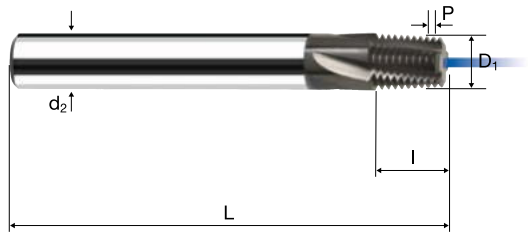
Application	Material	NPT	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	1/16	5.90	27.0	3	90	0.0240	4855	98	350
		1/8	7.30	27.0	3	90	0.0360	3925	133	424
		1/4	9.95	18.0	4	90	0.0440	2880	150	507
		3/8	12.50	18.0	4	90	0.0480	2290	127	440
		≥1/2	14.50	14.0	5	90	0.0520	1975	174	514
		≥1	18.50	11.5	5	90	0.0560	1550	199	434
	Steel 850 - 1100 N/mm²	1/16	5.90	27.0	3	80	0.0240	4315	87	311
		1/8	7.30	27.0	3	80	0.0360	3490	118	377
		1/4	9.95	18.0	4	80	0.0440	2560	134	451
		3/8	12.50	18.0	4	80	0.0480	2035	113	391
		≥1/2	14.50	14.0	5	80	0.0520	1755	154	456
		≥1	18.50	11.5	5	80	0.0560	1375	177	385
	Steel 1100 - 1300 N/mm²	1/16	5.90	27.0	3	60	0.0240	3235	65	233
		1/8	7.30	27.0	3	60	0.0280	2615	69	220
		1/4	9.95	18.0	4	60	0.0400	1920	91	307
		3/8	12.50	18.0	4	60	0.0480	1530	85	294
		≥1/2	14.50	14.0	5	60	0.0520	1315	116	342
		≥1	18.50	11.5	5	60	0.0560	1030	132	288
	Steel 1300 - 1500 N/mm²	1/16	5.90	27.0	3	45	0.0240	2430	49	175
		1/8	7.30	27.0	3	45	0.0280	1960	51	165
		1/4	9.95	18.0	4	45	0.0400	1440	68	230
		3/8	12.50	18.0	4	45	0.0480	1145	63	220
		≥1/2	14.50	14.0	5	45	0.0520	990	87	257
		≥1	18.50	11.5	5	45	0.0560	775	100	217
	Wrought aluminium alloys Si < 6% hardened	1/16	5.90	27.0	3	150	0.0360	8095	244	874
		1/8	7.30	27.0	3	150	0.0440	6540	270	863
		1/4	9.95	18.0	4	150	0.0520	4800	296	998
		3/8	12.50	18.0	4	150	0.0640	3820	282	978
		≥1/2	14.50	14.0	5	150	0.0680	3295	379	1120
		≥1	18.50	11.5	5	150	0.0800	2580	473	1032
	Cast iron (lamellar / spheroidal)	1/16	5.90	27.0	3	120	0.0280	6475	152	544
		1/8	7.30	27.0	3	120	0.0360	5230	177	565
		1/4	9.95	18.0	4	120	0.0480	3840	218	737
		3/8	12.50	18.0	4	120	0.0560	3055	197	684
		≥1/2	14.50	14.0	5	120	0.0640	2635	285	843
		≥1	18.50	11.5	5	120	0.0800	2065	379	826
	Unalloyed copper	1/16	5.90	27.0	3	130	0.0280	7015	165	589
		1/8	7.30	27.0	3	130	0.0360	5670	191	612
		1/4	9.95	18.0	4	130	0.0480	4160	237	799
		3/8	12.50	18.0	4	130	0.0560	3310	214	741
		≥1/2	14.50	14.0	5	130	0.0640	2855	309	914
		≥1	18.50	11.5	5	130	0.0800	2235	410	894
	Stainless steel [Cr-Ni/1.4301]	1/16	5.90	27.0	3	55	0.0240	2965	60	214
		1/8	7.30	27.0	3	55	0.0280	2400	63	202
		1/4	9.95	18.0	4	55	0.0400	1760	83	282
		3/8	12.50	18.0	4	55	0.0480	1400	78	269
		≥1/2	14.50	14.0	5	55	0.0520	1205	106	313
		≥1	18.50	11.5	5	55	0.0560	945	121	265

Thread milling cutters

Incool

NPT

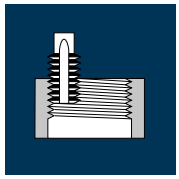
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20380** ø-Code **840**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk		TiCN
									EH20380
840	1/16	27.0	54	9.90	8.0	5.90	2.920	3	●
841	1/8	27.0	64	9.90	8.0	7.30	3.620	3	●
842	1/4	18.0	72	19.00	12.0	9.95	4.920	4	●
843	3/8	18.0	80	14.80	14.0	12.50	6.190	4	●
844	≥1/2	14.0	90	19.05	16.0	14.50	7.190	5	●
846	≥1	11.5	90	23.19	20.0	18.50	9.200	5	●

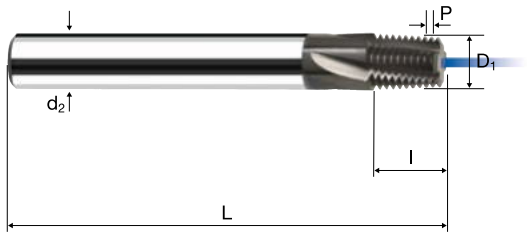
Application	Material	NPTF	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel < 850 N/mm²	1/16	5.90	27.0	3	90	0.0240	4855	98	350
		1/8	7.30	27.0	3	90	0.0360	3925	133	424
		1/4	9.95	18.0	4	90	0.0440	2880	150	507
		3/8	12.50	18.0	4	90	0.0480	2290	127	440
		≥1/2	14.50	14.0	5	90	0.0520	1975	174	514
		≥1	18.50	11.5	5	90	0.0560	1550	199	434
	Steel 850 - 1100 N/mm²	1/16	5.90	27.0	3	80	0.0240	4315	87	311
		1/8	7.30	27.0	3	80	0.0360	3490	118	377
		1/4	9.95	18.0	4	80	0.0440	2560	134	451
		3/8	12.50	18.0	4	80	0.0480	2035	113	391
		≥1/2	14.50	14.0	5	80	0.0520	1755	154	456
		≥1	18.50	11.5	5	80	0.0560	1375	177	385
	Steel 1100 - 1300 N/mm²	1/16	5.90	27.0	3	60	0.0240	3235	65	233
		1/8	7.30	27.0	3	60	0.0280	2615	69	220
		1/4	9.95	18.0	4	60	0.0400	1920	91	307
		3/8	12.50	18.0	4	60	0.0480	1530	85	294
		≥1/2	14.50	14.0	5	60	0.0520	1315	116	342
		≥1	18.50	11.5	5	60	0.0560	1030	132	288
	Steel 1300 - 1500 N/mm²	1/16	5.90	27.0	3	45	0.0240	2430	49	175
		1/8	7.30	27.0	3	45	0.0280	1960	51	165
		1/4	9.95	18.0	4	45	0.0400	1440	68	230
		3/8	12.50	18.0	4	45	0.0480	1145	63	220
		≥1/2	14.50	14.0	5	45	0.0520	990	87	257
		≥1	18.50	11.5	5	45	0.0560	775	100	217
	Wrought aluminium alloys Si < 6% hardened	1/16	5.90	27.0	3	150	0.0360	8095	244	874
		1/8	7.30	27.0	3	150	0.0440	6540	270	863
		1/4	9.95	18.0	4	150	0.0520	4800	296	998
		3/8	12.50	18.0	4	150	0.0640	3820	282	978
		≥1/2	14.50	14.0	5	150	0.0680	3295	379	1120
		≥1	18.50	11.5	5	150	0.0800	2580	473	1032
	Cast iron (lamellar / spheroidal)	1/16	5.90	27.0	3	120	0.0280	6475	152	544
		1/8	7.30	27.0	3	120	0.0360	5230	177	565
		1/4	9.95	18.0	4	120	0.0480	3840	218	737
		3/8	12.50	18.0	4	120	0.0560	3055	197	684
		≥1/2	14.50	14.0	5	120	0.0640	2635	285	843
		≥1	18.50	11.5	5	120	0.0800	2065	379	826
	Unalloyed copper	1/16	5.90	27.0	3	130	0.0280	7015	165	589
		1/8	7.30	27.0	3	130	0.0360	5670	191	612
		1/4	9.95	18.0	4	130	0.0480	4160	237	799
		3/8	12.50	18.0	4	130	0.0560	3310	214	741
		≥1/2	14.50	14.0	5	130	0.0640	2855	309	914
		≥1	18.50	11.5	5	130	0.0800	2235	410	894
	Stainless steel [Cr-Ni/1.4301]	1/16	5.90	27.0	3	55	0.0240	2965	60	214
		1/8	7.30	27.0	3	55	0.0280	2400	63	202
		1/4	9.95	18.0	4	55	0.0400	1760	83	282
		3/8	12.50	18.0	4	55	0.0480	1400	78	269
		≥1/2	14.50	14.0	5	55	0.0520	1205	106	313
		≥1	18.50	11.5	5	55	0.0560	945	121	265

Thread milling cutters

Incool

NPTF

HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH20390** ø-Code **840**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk		TiCN
									EH20390
840	1/16	27.0	54	9.90	8.0	5.90	2.920	3	●
841	1/8	27.0	64	9.90	8.0	7.30	3.620	3	●
842	1/4	18.0	72	19.00	12.0	9.95	4.920	4	●
843	3/8	18.0	80	14.80	14.0	12.50	6.190	4	●
844	≥1/2	14.0	90	19.05	16.0	14.50	7.190	5	●
846	≥1	11.5	90	23.19	20.0	18.50	9.200	5	●

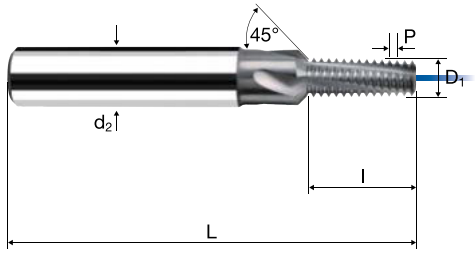
Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 3	2.30	0.50	3	80	0.0055	7.2	11070	43	183
		M 4	3.00	0.70	3	80	0.0070	9.4	8490	45	178
		M 5	4.00	0.80	3	80	0.0090	11.4	6365	34	172
		M 6	4.80	1.00	3	80	0.0110	14.3	5305	35	175
		M 8	6.40	1.25	3	80	0.0145	19.1	3980	35	173
		M 10	7.95	1.50	4	80	0.0180	23.1	3205	47	231
		M 12	9.95	1.75	4	80	0.0225	26.7	2560	39	230
		M 16	12.80	2.00	4	80	0.0290	37.0	1990	46	231
	Steel 1300 - 1500 N/mm²	M 3	2.30	0.50	3	50	0.0045	7.2	6920	22	93
		M 4	3.00	0.70	3	50	0.0060	9.4	5305	24	96
		M 5	4.00	0.80	3	50	0.0080	11.4	3980	19	96
		M 6	4.80	1.00	3	50	0.0095	14.3	3315	19	95
		M 8	6.40	1.25	3	50	0.0125	19.1	2485	19	93
		M 10	7.95	1.50	4	50	0.0160	23.1	2000	26	128
		M 12	9.95	1.75	4	50	0.0200	26.7	1600	22	128
		M 16	12.80	2.00	4	50	0.0255	37.0	1245	25	127
	Hardened tool steel 48 - 52 HRC	M 3	2.30	0.50	3	30	0.0035	7.2	4150	10	44
		M 4	3.00	0.70	3	30	0.0045	9.4	3185	11	43
		M 5	4.00	0.80	3	30	0.0060	11.4	2385	9	43
		M 6	4.80	1.00	3	30	0.0070	14.3	1990	8	42
		M 8	6.40	1.25	3	30	0.0095	19.1	1490	9	43
		M 10	7.95	1.50	4	30	0.0120	23.1	1200	12	58
		M 12	9.95	1.75	4	30	0.0150	26.7	960	10	58
		M 16	12.80	2.00	4	30	0.0195	37.0	745	12	58
	Stainless steel [Cr-Ni/1.4301]	M 3	2.30	0.50	3	50	0.0035	7.2	6920	17	73
		M 4	3.00	0.70	3	50	0.0045	9.4	5305	18	72
		M 5	4.00	0.80	3	50	0.0060	11.4	3980	14	72
		M 6	4.80	1.00	3	50	0.0070	14.3	3315	14	70
		M 8	6.40	1.25	3	50	0.0095	19.1	2485	14	71
		M 10	7.95	1.50	4	50	0.0120	23.1	2000	20	96
		M 12	9.95	1.75	4	50	0.0150	26.7	1600	16	96
		M 16	12.80	2.00	4	50	0.0195	37.0	1245	19	97
	Cast iron (lamellar / spheroidal)	M 3	2.30	0.50	3	120	0.0055	7.2	16605	64	274
		M 4	3.00	0.70	3	120	0.0070	9.4	12730	67	267
		M 5	4.00	0.80	3	120	0.0090	11.4	9550	52	258
		M 6	4.80	1.00	3	120	0.0110	14.3	7960	53	263
		M 8	6.40	1.25	3	120	0.0145	19.1	5970	52	260
		M 10	7.95	1.50	4	120	0.0180	23.1	4805	71	346
		M 12	9.95	1.75	4	120	0.0225	26.7	3840	59	346
		M 16	12.80	2.00	4	120	0.0290	37.0	2985	69	346
	Wrought aluminium alloys Si < 6% hardened	M 3	2.30	0.50	3	150	0.0070	7.2	20760	102	436
		M 4	3.00	0.70	3	150	0.0095	9.4	15915	113	454
		M 5	4.00	0.80	3	150	0.0125	11.4	11935	90	448
		M 6	4.80	1.00	3	150	0.0155	14.3	9945	92	462
		M 8	6.40	1.25	3	150	0.0205	19.1	7460	92	459
		M 10	7.95	1.50	4	150	0.0250	23.1	6005	123	601
		M 12	9.95	1.75	4	150	0.0315	26.7	4800	103	605
		M 16	12.80	2.00	4	150	0.0405	37.0	3730	121	604
	Cast aluminium	M 3	2.30	0.50	3	200	0.0070	7.2	27680	136	581
		M 4	3.00	0.70	3	200	0.0095	9.4	21220	151	605
		M 5	4.00	0.80	3	200	0.0125	11.4	15915	119	597
		M 6	4.80	1.00	3	200	0.0155	14.3	13265	123	617
		M 8	6.40	1.25	3	200	0.0205	19.1	9945	122	612
		M 10	7.95	1.50	4	200	0.0250	23.1	8010	164	801
		M 12	9.95	1.75	4	200	0.0315	26.7	6400	138	806
		M 16	12.80	2.00	4	200	0.0405	37.0	4975	161	806
	Titanium alloys > 300 HB [Ti6Al4V]	M 3	2.30	0.50	3	40	0.0035	7.2	5535	14	58
		M 4	3.00	0.70	3	40	0.0045	9.4	4245	14	57
		M 5	4.00	0.80	3	40	0.0060	11.4	3185	11	57
		M 6	4.80	1.00	3	40	0.0070	14.3	2655	11	56
		M 8	6.40	1.25	3	40	0.0095	19.1	1990	11	57
		M 10	7.95	1.50	4	40	0.0120	23.1	1600	16	77
		M 12	9.95	1.75	4	40	0.0150	26.7	1280	13	77
		M 16	12.80	2.00	4	40	0.0195	37.0	995	16	78

Thread milling cutters

2xd, chamfer 45°, Incool

M

HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24300** ø-Code **044**

Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH24300
044*	M 3	0.50	48	6.80	6.0	2.30	1.125	3	●
058	M 4	0.70	48	8.80	6.0	3.00	1.465	3	●
084	M 5	0.80	54	10.80	6.0	4.00	1.960	3	●
088	M 6	1.00	62	13.50	8.0	4.80	2.350	3	●
160	M 8	1.25	74	18.10	10.0	6.40	3.138	3	●
174	M 10	1.50	80	21.80	12.0	7.95	3.900	4	●
240	M 12	1.75	90	25.40	14.0	9.95	4.887	4	●
246	M 16	2.00	102	35.00	18.0	12.80	6.300	4	●

* without internal cooling

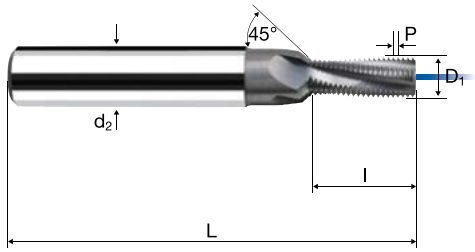
Application	Material	MF	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 4	3.00	0.50	3	80	0.0070	9.4	8490	45	178
		M 5	4.00	0.50	3	80	0.0090	11.4	6365	34	172
		M 6	4.80	0.50	3	80	0.0110	13.6	5305	35	175
		M 6	4.80	0.75	3	80	0.0110	13.9	5305	35	175
		M 8	6.40	0.75	3	80	0.0145	17.9	3980	35	173
		M 8	6.40	1.00	3	80	0.0145	18.5	3980	35	173
		M 10	7.95	1.00	4	80	0.0180	22.8	3205	47	231
		M 10	7.95	1.25	4	80	0.0180	23.2	3205	47	231
		M 12	9.95	1.00	4	80	0.0225	26.8	2560	39	230
	Steel 850 - 1100 N/mm²	M 12	9.95	1.50	4	80	0.0225	27.6	2560	39	230
		M 14	11.20	1.50	4	80	0.0250	32.6	2275	46	228
		M 16	12.80	1.50	4	80	0.0290	35.8	1990	46	231
	Steel 1300 - 1500 N/mm²	M 4	3.00	0.50	3	50	0.0060	9.4	5305	24	96
		M 5	4.00	0.50	3	50	0.0080	11.4	3980	19	96
		M 6	4.80	0.50	3	50	0.0095	13.6	3315	19	95
		M 6	4.80	0.75	3	50	0.0095	13.9	3315	19	95
		M 8	6.40	0.75	3	50	0.0125	17.9	2485	19	93
		M 8	6.40	1.00	3	50	0.0125	18.5	2485	19	93
		M 10	7.95	1.00	4	50	0.0160	22.8	2000	26	128
		M 10	7.95	1.25	4	50	0.0160	23.2	2000	26	128
		M 12	9.95	1.00	4	50	0.0200	26.8	1600	22	128
	Steel 1300 - 1500 N/mm²	M 12	9.95	1.50	4	50	0.0200	27.6	1600	22	128
		M 14	11.20	1.50	4	50	0.0225	32.6	1420	26	128
		M 16	12.80	1.50	4	50	0.0255	35.8	1245	25	127
	Wrought aluminium alloys Si < 6% hardened	M 4	3.00	0.50	3	150	0.0095	9.4	15915	113	454
		M 5	4.00	0.50	3	150	0.0125	11.4	11935	90	448
		M 6	4.80	0.50	3	150	0.0155	13.6	9945	92	462
		M 6	4.80	0.75	3	150	0.0155	13.9	9945	92	462
		M 8	6.40	0.75	3	150	0.0205	17.9	7460	92	459
		M 8	6.40	1.00	3	150	0.0205	18.5	7460	92	459
		M 10	7.95	1.00	4	150	0.0250	22.8	6005	123	601
		M 10	7.95	1.25	4	150	0.0250	23.2	6005	123	601
		M 12	9.95	1.00	4	150	0.0315	26.8	4800	103	605
	Wrought aluminium alloys Si < 6% hardened	M 12	9.95	1.50	4	150	0.0315	27.6	4800	103	605
		M 14	11.20	1.50	4	150	0.0355	32.6	4265	121	606
		M 16	12.80	1.50	4	150	0.0405	35.8	3730	121	604
	Cast iron (lamellar / spheroidal)	M 4	3.00	0.50	3	120	0.0070	9.4	12730	67	267
		M 5	4.00	0.50	3	120	0.0090	11.4	9550	52	258
		M 6	4.80	0.50	3	120	0.0110	13.6	7960	53	263
		M 6	4.80	0.75	3	120	0.0110	13.9	7960	53	263
		M 8	6.40	0.75	3	120	0.0145	17.9	5970	52	260
		M 8	6.40	1.00	3	120	0.0145	18.5	5970	52	260
		M 10	7.95	1.00	4	120	0.0180	22.8	4805	71	346
		M 10	7.95	1.25	4	120	0.0180	23.2	4805	71	346
		M 12	9.95	1.00	4	120	0.0225	26.8	3840	59	346
	Cast iron (lamellar / spheroidal)	M 12	9.95	1.50	4	120	0.0225	27.6	3840	59	346
		M 14	11.20	1.50	4	120	0.0250	32.6	3410	68	341
		M 16	12.80	1.50	4	120	0.0290	35.8	2985	69	346

Thread milling cutters

2xd, chamfer 45°, Incool

MF

HM



TM

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

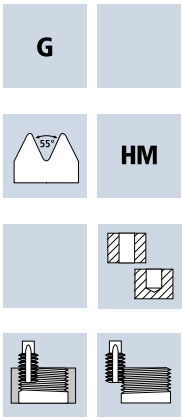
Example: **Order-N°.** Article-N°. **EH24320** ø-Code **046**

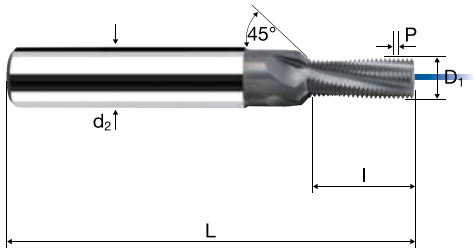
Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH24320
046	M 4	0.50	48	8.80	6.0	3.00	1.475	3	●
048	M 5	0.50	54	10.80	6.0	4.00	1.975	3	●
050	M 6	0.50	62	12.80	8.0	4.80	2.375	3	●
064	M 6	0.75	62	13.10	8.0	4.80	2.363	3	●
066	M 8	0.75	74	16.90	10.0	6.40	3.163	3	●
090	M 8	1.00	74	17.50	10.0	6.40	3.150	3	●
092	M 10	1.00	80	21.50	12.0	7.95	3.925	4	●
162	M 10	1.25	80	21.90	12.0	7.95	3.913	4	●
094	M 12	1.00	90	25.50	14.0	9.95	4.925	4	●
176	M 12	1.50	90	26.30	14.0	9.95	4.900	4	●
178	M 14	1.50	102	30.80	16.0	11.20	5.525	4	●
180	M 16	1.50	102	33.80	18.0	12.80	6.325	4	●

Application	Material	G	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	G 1/8	7.95	28.0	4	80	0.0180	22.4	3205	42	231
		G 1/4	9.95	19.0	4	80	0.0240	30.4	2560	60	246
		G 3/8	13.60	19.0	4	80	0.0310	37.3	1870	43	232
	Steel 1300 - 1500 N/mm²	G 1/8	7.95	28.0	4	50	0.0160	22.4	2000	23	128
		G 1/4	9.95	19.0	4	50	0.0210	30.4	1600	33	134
		G 3/8	13.60	19.0	4	50	0.0275	37.3	1170	24	129
	Hardened tool steel 48 - 52 HRC	G 1/8	7.95	28.0	4	30	0.0120	22.4	1200	11	58
		G 1/4	9.95	19.0	4	30	0.0160	30.4	960	15	61
		G 3/8	13.60	19.0	4	30	0.0205	37.3	700	11	57
	Stainless steel [Cr-Ni/1.4301]	G 1/8	7.95	28.0	4	50	0.0120	22.4	2000	18	96
		G 1/4	9.95	19.0	4	50	0.0160	30.4	1600	25	102
		G 3/8	13.60	19.0	4	50	0.0205	37.3	1170	18	96
	Cast iron (lamellar / spheroidal)	G 1/8	7.95	28.0	4	120	0.0180	22.4	4805	63	346
		G 1/4	9.95	19.0	4	120	0.0240	30.4	3840	90	369
		G 3/8	13.60	19.0	4	120	0.0310	37.3	2810	64	348
	Wrought aluminium alloys Si < 6% hardened	G 1/8	7.95	28.0	4	150	0.0250	22.4	6005	110	601
		G 1/4	9.95	19.0	4	150	0.0335	30.4	4800	157	643
		G 3/8	13.60	19.0	4	150	0.0430	37.3	3510	111	604
	Cast aluminium	G 1/8	7.95	28.0	4	200	0.0250	22.4	8010	146	801
		G 1/4	9.95	19.0	4	200	0.0335	30.4	6400	209	858
		G 3/8	13.60	19.0	4	200	0.0430	37.3	4680	148	805
	Titanium alloys > 300 HB [Ti6Al4V]	G 1/8	7.95	28.0	4	40	0.0120	22.4	1600	14	77
		G 1/4	9.95	19.0	4	40	0.0160	30.4	1280	20	82
		G 3/8	13.60	19.0	4	40	0.0205	37.3	935	14	77

Thread milling cutters

2xd, chamfer 45°, Incool





Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24340** ø-Code **551**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk		TiCN
									EH24340
551	G 1/8	28.0	80	21.30	12.0	7.95	3.930	4	●
552	G 1/4	19.0	90	28.70	14.0	9.95	5.183	4	●
553	G 3/8	19.0	102	35.40	18.0	13.60	6.733	4	●

Application	Material	UNC	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	1/4	4.80	20.0	3	80	0.0110	15.5	5305	43	175
		5/16	5.95	18.0	3	80	0.0135	18.8	4280	43	173
		3/8	7.10	16.0	4	80	0.0160	22.9	3585	58	229
		7/16	7.95	14.0	4	80	0.0180	26.4	3205	66	231
		1/2	9.95	13.0	4	80	0.0225	30.0	2560	50	230
	Steel 1300 - 1500 N/mm²	1/4	4.80	20.0	3	50	0.0095	15.5	3315	23	95
		5/16	5.95	18.0	3	50	0.0120	18.8	2675	24	96
		3/8	7.10	16.0	4	50	0.0145	22.9	2240	33	130
		7/16	7.95	14.0	4	50	0.0160	26.4	2000	36	128
		1/2	9.95	13.0	4	50	0.0200	30.0	1600	28	128
	Hardened tool steel 48 - 52 HRC	1/4	4.80	20.0	3	30	0.0075	15.5	1990	11	45
		5/16	5.95	18.0	3	30	0.0090	18.8	1605	11	43
		3/8	7.10	16.0	4	30	0.0110	22.9	1345	15	59
		7/16	7.95	14.0	4	30	0.0120	26.4	1200	16	58
		1/2	9.95	13.0	4	30	0.0150	30.0	960	12	58
	Stainless steel [Cr-Ni/1.4301]	1/4	4.80	20.0	3	50	0.0075	15.5	3315	18	75
		5/16	5.95	18.0	3	50	0.0090	18.8	2675	18	72
		3/8	7.10	16.0	4	50	0.0110	22.9	2240	25	99
		7/16	7.95	14.0	4	50	0.0120	26.4	2000	27	96
		1/2	9.95	13.0	4	50	0.0150	30.0	1600	21	96
	Cast iron (lamellar / spheroidal)	1/4	4.80	20.0	3	120	0.0110	15.5	7960	64	263
		5/16	5.95	18.0	3	120	0.0135	18.8	6420	65	260
		3/8	7.10	16.0	4	120	0.0160	22.9	5380	88	344
		7/16	7.95	14.0	4	120	0.0180	26.4	4805	98	346
		1/2	9.95	13.0	4	120	0.0225	30.0	3840	75	346
	Wrought aluminium alloys Si < 6% hardened	1/4	4.80	20.0	3	150	0.0150	15.5	9945	109	448
		5/16	5.95	18.0	3	150	0.0190	18.8	8025	115	457
		3/8	7.10	16.0	4	150	0.0225	22.9	6725	154	605
		7/16	7.95	14.0	4	150	0.0250	26.4	6005	171	601
		1/2	9.95	13.0	4	150	0.0315	30.0	4800	131	605
	Cast aluminium	1/4	4.80	20.0	3	200	0.0150	15.5	13265	146	597
		5/16	5.95	18.0	3	200	0.0190	18.8	10700	153	610
		3/8	7.10	16.0	4	200	0.0225	22.9	8965	205	807
		7/16	7.95	14.0	4	200	0.0250	26.4	8010	228	801
		1/2	9.95	13.0	4	200	0.0315	30.0	6400	175	806
	Titanium alloys > 300 HB [Ti6Al4V]	1/4	4.80	20.0	3	40	0.0075	15.5	2655	15	60
		5/16	5.95	18.0	3	40	0.0090	18.8	2140	14	58
		3/8	7.10	16.0	4	40	0.0110	22.9	1795	20	79
		7/16	7.95	14.0	4	40	0.0120	26.4	1600	22	77
		1/2	9.95	13.0	4	40	0.0150	30.0	1280	17	77

Thread milling cutters

2xd, chamfer 45°, Incool

UNC

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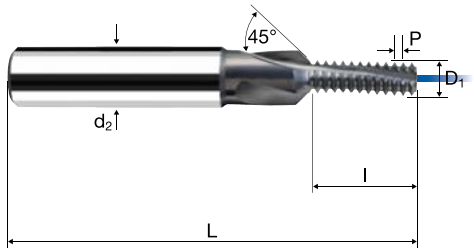


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24360** ø-Code **709**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk 2B		TiCN
									EH24360
709	**1/4**	**20.0**	62	14.60	8.0	4.80	2.337	3	●
710	**5/16**	**18.0**	74	17.60	10.0	5.95	2.904	3	●
711	**3/8**	**16.0**	80	21.40	12.0	7.10	3.471	4	●
712	**7/16**	**14.0**	80	24.50	12.0	7.95	3.884	4	●
713	**1/2**	**13.0**	90	28.30	14.0	9.95	4.877	4	●

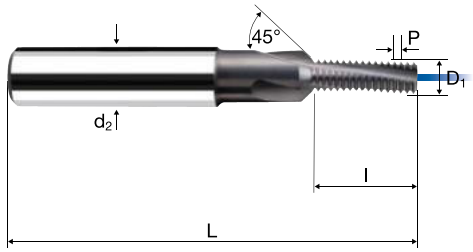
Application	Material	UNF	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	1/4	4.80	28.0	3	80	0.0110	15.0	5305	43	175
		5/16	5.95	24.0	3	80	0.0135	18.7	4280	43	173
		3/8	7.95	24.0	4	80	0.0180	21.6	3205	38	231
		7/16	7.95	20.0	4	80	0.0180	26.7	3205	66	231
		1/2	9.95	20.0	4	80	0.0225	29.0	2560	50	230
	Steel 1300 - 1500 N/mm²	1/4	4.80	28.0	3	50	0.0095	15.0	3315	23	95
		5/16	5.95	24.0	3	50	0.0120	18.7	2675	24	96
		3/8	7.95	24.0	4	50	0.0160	21.6	2000	21	128
		7/16	7.95	20.0	4	50	0.0160	26.7	2000	36	128
		1/2	9.95	20.0	4	50	0.0200	29.0	1600	28	128
	Hardened tool steel 48 - 52 HRC	1/4	4.80	28.0	3	30	0.0075	15.0	1990	11	45
		5/16	5.95	24.0	3	30	0.0090	18.7	1605	11	43
		3/8	7.95	24.0	4	30	0.0120	21.6	1200	10	58
		7/16	7.95	20.0	4	30	0.0120	26.7	1200	16	58
		1/2	9.95	20.0	4	30	0.0150	29.0	960	12	58
	Stainless steel [Cr-Ni/1.4301]	1/4	4.80	28.0	3	50	0.0075	15.0	3315	18	75
		5/16	5.95	24.0	3	50	0.0090	18.7	2675	18	72
		3/8	7.95	24.0	4	50	0.0120	21.6	2000	16	96
		7/16	7.95	20.0	4	50	0.0120	26.7	2000	27	96
		1/2	9.95	20.0	4	50	0.0150	29.0	1600	21	96
	Cast iron (lamellar / spheroidal)	1/4	4.80	28.0	3	120	0.0110	15.0	7960	64	263
		5/16	5.95	24.0	3	120	0.0135	18.7	6420	65	260
		3/8	7.95	24.0	4	120	0.0180	21.6	4805	57	346
		7/16	7.95	20.0	4	120	0.0180	26.7	4805	98	346
		1/2	9.95	20.0	4	120	0.0225	29.0	3840	75	346
	Wrought aluminium alloys Si < 6% hardened	1/4	4.80	28.0	3	150	0.0150	15.0	9945	109	448
		5/16	5.95	24.0	3	150	0.0190	18.7	8025	115	457
		3/8	7.95	24.0	4	150	0.0250	21.6	6005	99	601
		7/16	7.95	20.0	4	150	0.0250	26.7	6005	171	601
		1/2	9.95	20.0	4	150	0.0315	29.0	4800	131	605
	Cast aluminium	1/4	4.80	28.0	3	200	0.0150	15.0	13265	146	597
		5/16	5.95	24.0	3	200	0.0190	18.7	10700	153	610
		3/8	7.95	24.0	4	200	0.0250	21.6	8010	132	801
		7/16	7.95	20.0	4	200	0.0250	26.7	8010	228	801
		1/2	9.95	20.0	4	200	0.0315	29.0	6400	175	806
	Titanium alloys > 300 HB [Ti6Al4V]	1/4	4.80	28.0	3	40	0.0075	15.0	2655	15	60
		5/16	5.95	24.0	3	40	0.0090	18.7	2140	14	58
		3/8	7.95	24.0	4	40	0.0120	21.6	1600	13	77
		7/16	7.95	20.0	4	40	0.0120	26.7	1600	22	77
		1/2	9.95	20.0	4	40	0.0150	29.0	1280	17	77

Thread milling cutters

2xd, chamfer 45°, Incool

UNF

HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24370** ø-Code **760**

Ø Code	d	P(TPI)	L	l	d_2 h6	D1	Rk 2B		TiCN
									EH24370
760	**1/4**	**28.0**	62	14.10	8.0	4.80	2.355	3	●
761	**5/16**	**24.0**	74	17.50	10.0	5.95	2.922	3	●
762	**3/8**	**24.0**	80	20.60	12.0	7.95	3.922	4	●
763	**7/16**	**20.0**	80	24.80	12.0	7.95	3.912	4	●
764	**1/2**	**20.0**	90	27.30	14.0	9.95	4.911	4	●

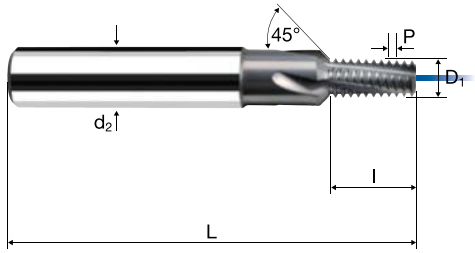
Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 3	2.30	0.50	3	80	0.0060	5.7	11070	47	199
		M 4	3.00	0.70	3	80	0.0075	8.0	8490	48	191
		M 5	4.00	0.80	3	80	0.0100	9.8	6365	38	191
		M 6	4.80	1.00	3	80	0.0120	11.3	5305	38	191
		M 8	6.40	1.25	3	80	0.0160	14.1	3980	38	191
		M 10	7.95	1.50	4	80	0.0200	18.6	3205	53	256
		M 12	9.95	1.75	4	80	0.0250	21.4	2560	44	256
		M 16	12.80	2.00	4	80	0.0320	29.0	1990	51	255
	Steel 1300 - 1500 N/mm²	M 3	2.30	0.50	3	50	0.0050	5.7	6920	24	104
		M 4	3.00	0.70	3	50	0.0065	8.0	5305	26	103
		M 5	4.00	0.80	3	50	0.0090	9.8	3980	22	108
		M 6	4.80	1.00	3	50	0.0105	11.3	3315	21	104
		M 8	6.40	1.25	3	50	0.0140	14.1	2485	21	104
		M 10	7.95	1.50	4	50	0.0175	18.6	2000	29	140
		M 12	9.95	1.75	4	50	0.0220	21.4	1600	24	141
		M 16	12.80	2.00	4	50	0.0285	29.0	1245	28	142
	Hardened tool steel 48 - 52 HRC	M 3	2.30	0.50	3	30	0.0040	5.7	4150	12	50
		M 4	3.00	0.70	3	30	0.0050	8.0	3185	12	48
		M 5	4.00	0.80	3	30	0.0065	9.8	2385	9	47
		M 6	4.80	1.00	3	30	0.0080	11.3	1990	10	48
		M 8	6.40	1.25	3	30	0.0105	14.1	1490	9	47
		M 10	7.95	1.50	4	30	0.0135	18.6	1200	13	65
		M 12	9.95	1.75	4	30	0.0165	21.4	960	11	63
		M 16	12.80	2.00	4	30	0.0215	29.0	745	13	64
	Stainless steel [Cr-Ni/1.4301]	M 3	2.30	0.50	3	50	0.0040	5.7	6920	19	83
		M 4	3.00	0.70	3	50	0.0050	8.0	5305	20	80
		M 5	4.00	0.80	3	50	0.0065	9.8	3980	16	78
		M 6	4.80	1.00	3	50	0.0080	11.3	3315	16	80
		M 8	6.40	1.25	3	50	0.0105	14.1	2485	16	78
		M 10	7.95	1.50	4	50	0.0135	18.6	2000	22	108
		M 12	9.95	1.75	4	50	0.0165	21.4	1600	18	106
		M 16	12.80	2.00	4	50	0.0215	29.0	1245	21	107
	Cast iron (lamellar / spheroidal)	M 3	2.30	0.50	3	120	0.0060	5.7	16605	70	299
		M 4	3.00	0.70	3	120	0.0075	8.0	12730	72	286
		M 5	4.00	0.80	3	120	0.0100	9.8	9550	57	287
		M 6	4.80	1.00	3	120	0.0120	11.3	7960	57	287
		M 8	6.40	1.25	3	120	0.0160	14.1	5970	57	287
		M 10	7.95	1.50	4	120	0.0200	18.6	4805	79	384
		M 12	9.95	1.75	4	120	0.0250	21.4	3840	66	384
		M 16	12.80	2.00	4	120	0.0320	29.0	2985	76	382
	Wrought aluminium alloys Si < 6% hardened	M 3	2.30	0.50	3	150	0.0080	5.7	20760	116	498
		M 4	3.00	0.70	3	150	0.0105	8.0	15915	125	501
		M 5	4.00	0.80	3	150	0.0140	9.8	11935	100	501
		M 6	4.80	1.00	3	150	0.0170	11.3	9945	101	507
		M 8	6.40	1.25	3	150	0.0225	14.1	7460	101	504
		M 10	7.95	1.50	4	150	0.0280	18.6	6005	138	673
		M 12	9.95	1.75	4	150	0.0350	21.4	4800	115	672
		M 16	12.80	2.00	4	150	0.0450	29.0	3730	134	671
	Cast aluminium	M 3	2.30	0.50	3	200	0.0080	5.7	27680	155	664
		M 4	3.00	0.70	3	200	0.0105	8.0	21220	167	668
		M 5	4.00	0.80	3	200	0.0140	9.8	15915	134	668
		M 6	4.80	1.00	3	200	0.0170	11.3	13265	135	677
		M 8	6.40	1.25	3	200	0.0225	14.1	9945	134	671
		M 10	7.95	1.50	4	200	0.0280	18.6	8010	184	897
		M 12	9.95	1.75	4	200	0.0350	21.4	6400	153	896
		M 16	12.80	2.00	4	200	0.0450	29.0	4975	179	896
	Titanium alloys > 300 HB [Ti6Al4V]	M 3	2.30	0.50	3	40	0.0040	5.7	5535	15	66
		M 4	3.00	0.70	3	40	0.0050	8.0	4245	16	64
		M 5	4.00	0.80	3	40	0.0065	9.8	3185	12	62
		M 6	4.80	1.00	3	40	0.0080	11.3	2655	13	64
		M 8	6.40	1.25	3	40	0.0105	14.1	1990	13	63
		M 10	7.95	1.50	4	40	0.0135	18.6	1600	18	86
		M 12	9.95	1.75	4	40	0.0165	21.4	1280	14	85
		M 16	12.80	2.00	4	40	0.0215	29.0	995	17	86

Thread milling cutters

1.5xd, chamfer 45°, Incool

M

HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24200** ø-Code **044**

Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH24200
044*	M 3	0.50	48	5.30	6.0	2.30	1.125	3	●
058	M 4	0.70	48	7.40	6.0	3.00	1.465	3	●
084	M 5	0.80	54	9.20	6.0	4.00	1.960	3	●
088	M 6	1.00	62	10.50	8.0	4.80	2.350	3	●
160	M 8	1.25	74	13.10	10.0	6.40	3.138	3	●
174	M 10	1.50	80	17.30	12.0	7.95	3.900	4	●
240	M 12	1.75	90	20.10	14.0	9.95	4.887	4	●
246	M 16	2.00	102	27.00	18.0	12.80	6.300	4	●

* without internal cooling

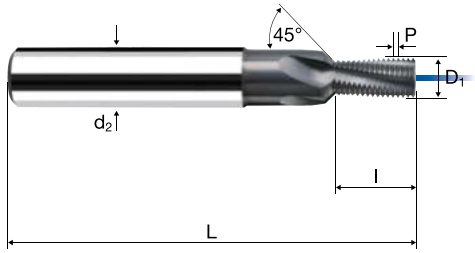
Application	Material	MF	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	L_K [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	M 4	3.00	0.50	3	80	0.0075	7.9	8490	48	191
		M 5	4.00	0.50	3	80	0.0100	9.4	6365	38	191
		M 6	4.80	0.50	3	80	0.0120	10.6	5305	38	191
		M 6	4.80	0.75	3	80	0.0120	10.8	5305	38	191
		M 8	6.40	0.75	3	80	0.0160	14.1	3980	38	191
		M 8	6.40	1.00	3	80	0.0160	14.5	3980	38	191
		M 10	7.95	1.00	4	80	0.0200	17.8	3205	53	256
		M 10	7.95	1.25	4	80	0.0200	18.2	3205	53	256
		M 12	9.95	1.00	4	80	0.0250	20.8	2560	44	256
	Steel 850 - 1100 N/mm²	M 12	9.95	1.50	4	80	0.0250	21.6	2560	44	256
		M 14	11.20	1.50	4	80	0.0280	25.1	2275	51	255
		M 16	12.80	1.50	4	80	0.0320	28.3	1990	51	255
	Steel 1300 - 1500 N/mm²	M 4	3.00	0.50	3	50	0.0065	7.9	5305	26	103
		M 5	4.00	0.50	3	50	0.0090	9.4	3980	22	108
		M 6	4.80	0.50	3	50	0.0105	10.6	3315	21	104
		M 6	4.80	0.75	3	50	0.0105	10.8	3315	21	104
		M 8	6.40	0.75	3	50	0.0140	14.1	2485	21	104
		M 8	6.40	1.00	3	50	0.0140	14.5	2485	21	104
		M 10	7.95	1.00	4	50	0.0175	17.8	2000	29	140
		M 10	7.95	1.25	4	50	0.0175	18.2	2000	29	140
		M 12	9.95	1.00	4	50	0.0220	20.8	1600	24	141
	Steel 1300 - 1500 N/mm²	M 12	9.95	1.50	4	50	0.0220	21.6	1600	24	141
		M 14	11.20	1.50	4	50	0.0250	25.1	1420	28	142
		M 16	12.80	1.50	4	50	0.0285	28.3	1245	28	142
	Wrought aluminium alloys Si < 6% hardened	M 4	3.00	0.50	3	150	0.0105	7.9	15915	125	501
		M 5	4.00	0.50	3	150	0.0140	9.4	11935	100	501
		M 6	4.80	0.50	3	150	0.0170	10.6	9945	101	507
		M 6	4.80	0.75	3	150	0.0170	10.8	9945	101	507
		M 8	6.40	0.75	3	150	0.0225	14.1	7460	101	504
		M 8	6.40	1.00	3	150	0.0225	14.5	7460	101	504
		M 10	7.95	1.00	4	150	0.0280	17.8	6005	138	673
		M 10	7.95	1.25	4	150	0.0280	18.2	6005	138	673
		M 12	9.95	1.00	4	150	0.0350	20.8	4800	115	672
	Wrought aluminium alloys Si < 6% hardened	M 12	9.95	1.50	4	150	0.0350	21.6	4800	115	672
		M 14	11.20	1.50	4	150	0.0395	25.1	4265	135	674
		M 16	12.80	1.50	4	150	0.0450	28.3	3730	134	671
	Cast iron (lamellar / spheroidal)	M 4	3.00	0.50	3	120	0.0075	7.9	12730	72	286
		M 5	4.00	0.50	3	120	0.0100	9.4	9550	57	287
		M 6	4.80	0.50	3	120	0.0120	10.6	7960	57	287
		M 6	4.80	0.75	3	120	0.0120	10.8	7960	57	287
		M 8	6.40	0.75	3	120	0.0160	14.1	5970	57	287
		M 8	6.40	1.00	3	120	0.0160	14.5	5970	57	287
		M 10	7.95	1.00	4	120	0.0200	17.8	4805	79	384
		M 10	7.95	1.25	4	120	0.0200	18.2	4805	79	384
		M 12	9.95	1.00	4	120	0.0250	20.8	3840	66	384
	Cast iron (lamellar / spheroidal)	M 12	9.95	1.50	4	120	0.0250	21.6	3840	66	384
		M 14	11.20	1.50	4	120	0.0280	25.1	3410	76	382
		M 16	12.80	1.50	4	120	0.0320	28.3	2985	76	382

Thread milling cutters

1.5xd, chamfer 45°, Incool

MF

HM

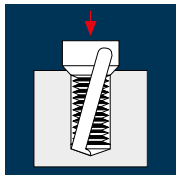


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH24220** ø-Code **046**

Ø Code	d	P	L	l	d_2 h6	D1	Rk 6H		TiCN EH24220
046	M 4	0.50	48	7.30	6.0	3.00	1.475	3	●
048	M 5	0.50	54	8.80	6.0	4.00	1.975	3	●
050	M 6	0.50	62	9.80	8.0	4.80	2.375	3	●
064	M 6	0.75	62	10.10	8.0	4.80	2.363	3	●
066	M 8	0.75	74	13.10	10.0	6.40	3.163	3	●
090	M 8	1.00	74	13.50	10.0	6.40	3.150	3	●
092	M 10	1.00	80	16.50	12.0	7.95	3.925	4	●
162	M 10	1.25	80	16.90	12.0	7.95	3.913	4	●
094	M 12	1.00	90	19.50	14.0	9.95	4.925	4	●
176	M 12	1.50	90	20.30	14.0	9.95	4.900	4	●
178	M 14	1.50	102	23.30	16.0	11.20	5.525	4	●
180	M 16	1.50	102	26.30	18.0	12.80	6.325	4	●

Application



Material

Cast iron (lamellar / spheroidal)

M	d_1 [mm]	v_c [m/min]	f [mm]	L_K [mm]	n [min^{-1}]	v_f [mm/min]
M 4	3.30	100	0.0500	9.5	9645	482
M 5	4.20	100	0.0650	11.8	7580	493
M 6	5.00	100	0.0750	14.7	6365	477
M 8	6.80	100	0.1000	19.7	4680	468
M 10	8.50	100	0.1250	23.8	3745	468
M 12	10.20	100	0.1500	27.4	3120	468
M 16	14.00	100	0.2100	37.8	2275	478

Cast aluminium

M	d_1 [mm]	v_c [m/min]	f [mm]	L_K [mm]	n [min^{-1}]	v_f [mm/min]
M 4	3.30	250	0.0600	9.5	24115	1447
M 5	4.20	250	0.0750	11.8	18945	1421
M 6	5.00	250	0.0900	14.7	15915	1432
M 8	6.80	250	0.1200	19.7	11705	1405
M 10	8.50	250	0.1500	23.8	9360	1404
M 12	10.20	250	0.1800	27.4	7800	1404
M 16	14.00	250	0.2500	37.8	5685	1421

Wrought aluminium alloys Si < 6% hardened

M	d_1 [mm]	v_c [m/min]	f [mm]	L_K [mm]	n [min^{-1}]	v_f [mm/min]
M 4	3.30	200	0.0600	9.5	19290	1157
M 5	4.20	200	0.0750	11.8	15160	1137
M 6	5.00	200	0.0900	14.7	12730	1146
M 8	6.80	200	0.1200	19.7	9360	1123
M 10	8.50	200	0.1500	23.8	7490	1124
M 12	10.20	200	0.1800	27.4	6240	1123
M 16	14.00	200	0.2500	37.8	4545	1136

Short-chipping brass [CuZn]

M	d_1 [mm]	v_c [m/min]	f [mm]	L_K [mm]	n [min^{-1}]	v_f [mm/min]
M 4	3.30	250	0.0600	9.5	24115	1447
M 5	4.20	250	0.0750	11.8	18945	1421
M 6	5.00	250	0.0900	14.7	15915	1432
M 8	6.80	250	0.1200	19.7	11705	1405
M 10	8.50	250	0.1500	23.8	9360	1404
M 12	10.20	250	0.1800	27.4	7800	1404
M 16	14.00	250	0.2500	37.8	5685	1421

Application

Material

Cast iron (lamellar / spheroidal)

M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
M 4	3.20	0.70	2	100	0.0200	9945	80	398
M 5	4.00	0.80	2	100	0.0250	7960	80	398
M 6	4.75	1.00	2	100	0.0300	6700	84	402
M 8	6.35	1.25	2	100	0.0400	5015	83	401
M 10	7.95	1.50	2	100	0.0550	4005	90	441
M 12	9.95	1.75	2	100	0.0650	3200	71	416
M 16	13.20	2.00	2	100	0.0900	2410	76	434

Cast aluminium

M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
M 4	3.20	0.70	2	250	0.0250	24870	249	1244
M 5	4.00	0.80	2	250	0.0300	19895	239	1194
M 6	4.75	1.00	2	250	0.0350	16755	244	1173
M 8	6.35	1.25	2	250	0.0500	12530	258	1253
M 10	7.95	1.50	2	250	0.0600	10010	246	1201
M 12	9.95	1.75	2	250	0.0750	8000	205	1200
M 16	13.20	2.00	2	250	0.1000	6030	211	1206

Wrought aluminium alloys Si < 6% hardened

M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
M 4	3.20	0.70	2	200	0.0250	19895	199	995
M 5	4.00	0.80	2	200	0.0300	15915	191	955
M 6	4.75	1.00	2	200	0.0350	13405	196	938
M 8	6.35	1.25	2	200	0.0500	10025	207	1003
M 10	7.95	1.50	2	200	0.0600	8010	197	961
M 12	9.95	1.75	2	200	0.0750	6400	164	960
M 16	13.20	2.00	2	200	0.1000	4825	169	965

Short-chipping brass [CuZn]

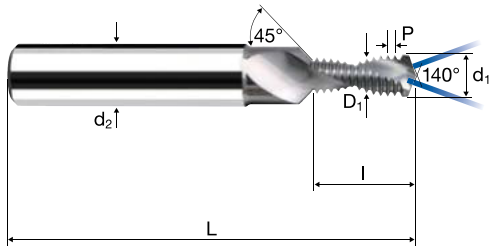
M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} [mm/min]	v_f [mm/min]
M 4	3.20	0.70	2	250	0.0250	24870	249	1244
M 5	4.00	0.80	2	250	0.0300	19895	239	1194
M 6	4.75	1.00	2	250	0.0350	16755	244	1173
M 8	6.35	1.25	2	250	0.0500	12530	258	1253
M 10	7.95	1.50	2	250	0.0600	10010	246	1201
M 12	9.95	1.75	2	250	0.0750	8000	205	1200
M 16	13.20	2.00	2	250	0.1000	6030	211	1206

Drill/thread milling cutters

2xd, chamfer 45°, Incool

M

HM

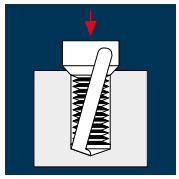


				Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	GG(G) CuZn Brass

Example: **Order-N°.** Article-N°. **EH22300** ø-Code **058**

											E22300	TiCN EH22300
Ø Code	d	P		L	l	d_2 h6	d_1	D1	Rk 6H			
058	M 4	0.70		48	9.00	6.0	3.30	3.20	1.560	2	●	●
084	M 5	0.80		54	11.20	6.0	4.20	4.00	1.950	2	●	●
088	M 6	1.00		62	13.90	8.0	5.00	4.75	2.315	2	●	●
160	M 8	1.25		74	18.70	10.0	6.80	6.35	3.095	2	●	●
174	M 10	1.50		80	22.50	12.0	8.50	7.95	3.875	2	●	●
240	M 12	1.75		90	26.10	14.0	10.20	9.95	4.855	2	●	●
246	M 16	2.00		102	36.00	18.0	14.00	13.20	6.440	2	●	●

Application



Material

M	d_1 [mm]	v_c [m/min]	f [mm]	L_K [mm]	n [min⁻¹]	v_f [mm/min]
Cast iron (lamellar / spheroidal)						
M 4	3.30	100	0.0500	7.4	9645	482
M 5	4.20	100	0.0650	9.4	7580	493
M 6	5.00	100	0.0750	11.7	6365	477
M 8	6.80	100	0.1000	14.7	4680	468
M 10	8.50	100	0.1250	19.3	3745	468
M 12	10.20	100	0.1500	22.2	3120	468
M 16	14.00	100	0.2100	27.8	2275	478
Cast aluminium						
M 4	3.30	250	0.0600	7.4	24115	1447
M 5	4.20	250	0.0750	9.4	18945	1421
M 6	5.00	250	0.0900	11.7	15915	1432
M 8	6.80	250	0.1200	14.7	11705	1405
M 10	8.50	250	0.1500	19.3	9360	1404
M 12	10.20	250	0.1800	22.2	7800	1404
M 16	14.00	250	0.2500	27.8	5685	1421
Wrought aluminium alloys Si < 6% hardened						
M 4	3.30	200	0.0600	7.4	19290	1157
M 5	4.20	200	0.0750	9.4	15160	1137
M 6	5.00	200	0.0900	11.7	12730	1146
M 8	6.80	200	0.1200	14.7	9360	1123
M 10	8.50	200	0.1500	19.3	7490	1124
M 12	10.20	200	0.1800	22.2	6240	1123
M 16	14.00	200	0.2500	27.8	4545	1136
Short-chipping brass [CuZn]						
M 4	3.30	250	0.0600	7.4	24115	1447
M 5	4.20	250	0.0750	9.4	18945	1421
M 6	5.00	250	0.0900	11.7	15915	1432
M 8	6.80	250	0.1200	14.7	11705	1405
M 10	8.50	250	0.1500	19.3	9360	1404
M 12	10.20	250	0.1800	22.2	7800	1404
M 16	14.00	250	0.2500	27.8	5685	1421

Application

Material

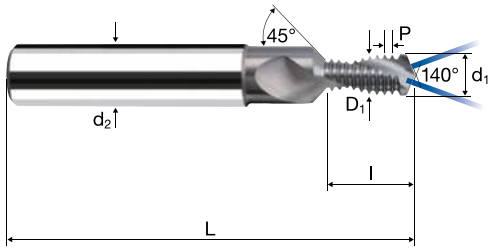
M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min⁻¹]	v_{fc} [mm/min]	v_f [mm/min]
Cast iron (lamellar / spheroidal)								
M 4	3.20	0.70	2	100	0.0250	9945	99	497
M 5	4.00	0.80	2	100	0.0300	7960	96	478
M 6	4.75	1.00	2	100	0.0350	6700	98	469
M 8	6.35	1.25	2	100	0.0500	5015	103	502
M 10	7.95	1.50	2	100	0.0600	4005	99	481
M 12	9.95	1.75	2	100	0.0750	3200	82	480
M 16	13.20	2.00	2	100	0.1000	2410	84	482
Cast aluminium								
M 4	3.20	0.70	2	250	0.0300	24870	298	1492
M 5	4.00	0.80	2	250	0.0350	19895	279	1393
M 6	4.75	1.00	2	250	0.0450	16755	314	1508
M 8	6.35	1.25	2	250	0.0600	12530	310	1504
M 10	7.95	1.50	2	250	0.0700	10010	287	1401
M 12	9.95	1.75	2	250	0.0900	8000	246	1440
M 16	13.20	2.00	2	250	0.1200	6030	253	1447
Wrought aluminium alloys Si < 6% hardened								
M 4	3.20	0.70	2	200	0.0300	19895	239	1194
M 5	4.00	0.80	2	200	0.0350	15915	223	1114
M 6	4.75	1.00	2	200	0.0450	13405	251	1207
M 8	6.35	1.25	2	200	0.0600	10025	248	1203
M 10	7.95	1.50	2	200	0.0700	8010	230	1121
M 12	9.95	1.75	2	200	0.0900	6400	197	1152
M 16	13.20	2.00	2	200	0.1200	4825	203	1158
Short-chipping brass [CuZn]								
M 4	3.20	0.70	2	250	0.0300	24870	298	1492
M 5	4.00	0.80	2	250	0.0350	19895	279	1393
M 6	4.75	1.00	2	250	0.0450	16755	314	1508
M 8	6.35	1.25	2	250	0.0600	12530	310	1504
M 10	7.95	1.50	2	250	0.0700	10010	287	1401
M 12	9.95	1.75	2	250	0.0900	8000	246	1440
M 16	13.20	2.00	2	250	0.1200	6030	253	1447

Drill/thread milling cutters

1.5xd, chamfer 45°, Incool

M

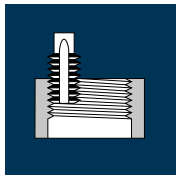
HM



Al Aluminium Alloy | **Al Aluminium Cast** | Cu Copper | Plastic Thermo-plast | **GG(G) CuZn Brass**

Example: **Order-N°.** Article-N°. **EH22200** ø-Code **058**

Ø Code	d	P	L	l	d_2 h6	d_1	D1	Rk 6H		E22200	EH22200 (TiCN)
058	M 4	0.70	48	6.90	6.0	3.30	3.20	1.560	2	●	●
084	M 5	0.80	54	8.80	6.0	4.20	4.00	1.950	2	●	●
088	M 6	1.00	62	10.90	8.0	5.00	4.75	2.315	2	●	●
160	M 8	1.25	74	13.70	10.0	6.80	6.35	3.095	2	●	●
174	M 10	1.50	80	18.00	12.0	8.50	7.95	3.875	2	●	●
240	M 12	1.75	90	20.90	14.0	10.20	9.95	4.855	2	●	●
246	M 16	2.00	102	26.00	18.0	14.00	13.20	6.440	2	●	●

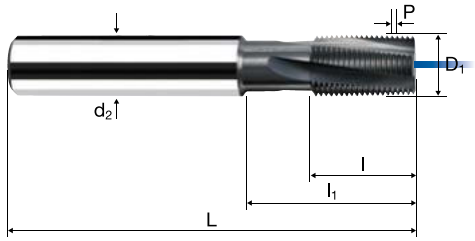
Application	Material	M	D_1 [mm]	P [mm]	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} d/D_1 3/2	v_{fc} d/D_1 2/1	v_{fc} d/D_1 3/1	v_{fc} d/D_1 4/1	v_{fc} d/D_1 5/1	v_f [mm/min]
	Steel 850 - 1100 N/mm²	≥ M14	9.95	1.00	4	80	0.0250	2560	85	128	171	192	205	256
		≥ M14	9.95	1.25	4	80	0.0250	2560	85	128	171	192	205	256
		≥ M14	9.95	1.50	4	80	0.0250	2560	85	128	171	192	205	256
		≥ M18	11.95	1.00	4	80	0.0300	2130	85	128	170	192	204	256
		≥ M18	11.95	1.50	4	80	0.0300	2130	85	128	170	192	204	256
		≥ M24	15.95	1.00	5	80	0.0400	1595	106	160	213	239	255	319
		≥ M24	15.95	1.50	5	80	0.0400	1595	106	160	213	239	255	319
		≥ M30	19.95	1.50	5	80	0.0500	1275	106	159	213	239	255	319
		≥ M30	19.95	2.00	5	80	0.0500	1275	106	159	213	239	255	319
	Steel 1300 - 1500 N/mm²	≥ M14	9.95	1.00	4	50	0.0200	1600	43	64	85	96	102	128
		≥ M14	9.95	1.25	4	50	0.0200	1600	43	64	85	96	102	128
		≥ M14	9.95	1.50	4	50	0.0200	1600	43	64	85	96	102	128
		≥ M18	11.95	1.00	4	50	0.0240	1330	43	64	85	96	102	128
		≥ M18	11.95	1.50	4	50	0.0240	1330	43	64	85	96	102	128
		≥ M24	15.95	1.00	5	50	0.0320	1000	53	80	107	120	128	160
		≥ M24	15.95	1.50	5	50	0.0320	1000	53	80	107	120	128	160
		≥ M30	19.95	1.50	5	50	0.0400	800	53	80	107	120	128	160
		≥ M30	19.95	2.00	5	50	0.0400	800	53	80	107	120	128	160
	Hardened tool steel 48 - 52 HRC	≥ M14	9.95	1.00	4	30	0.0165	960	21	32	42	48	51	63
		≥ M14	9.95	1.25	4	30	0.0165	960	21	32	42	48	51	63
		≥ M14	9.95	1.50	4	30	0.0165	960	21	32	42	48	51	63
		≥ M18	11.95	1.00	4	30	0.0200	800	21	32	43	48	51	64
		≥ M18	11.95	1.50	4	30	0.0200	800	21	32	43	48	51	64
		≥ M24	15.95	1.00	5	30	0.0265	600	27	40	53	60	64	80
		≥ M24	15.95	1.50	5	30	0.0265	600	27	40	53	60	64	80
		≥ M30	19.95	1.50	5	30	0.0335	480	27	40	54	60	64	80
		≥ M30	19.95	2.00	5	30	0.0335	480	27	40	54	60	64	80
	Stainless steel [Cr-Ni/1.4301]	≥ M14	9.95	1.00	4	45	0.0200	1440	38	58	77	86	92	115
		≥ M14	9.95	1.25	4	45	0.0200	1440	38	58	77	86	92	115
		≥ M14	9.95	1.50	4	45	0.0200	1440	38	58	77	86	92	115
		≥ M18	11.95	1.00	4	45	0.0240	1200	38	58	77	86	92	115
		≥ M18	11.95	1.50	4	45	0.0240	1200	38	58	77	86	92	115
		≥ M24	15.95	1.00	5	45	0.0320	900	48	72	96	108	115	144
		≥ M24	15.95	1.50	5	45	0.0320	900	48	72	96	108	115	144
		≥ M30	19.95	1.50	5	45	0.0400	720	48	72	96	108	115	144
		≥ M30	19.95	2.00	5	45	0.0400	720	48	72	96	108	115	144
	Cast iron (lamellar / spheroidal)	≥ M14	9.95	1.00	4	120	0.0250	3840	128	192	256	288	307	384
		≥ M14	9.95	1.25	4	120	0.0250	3840	128	192	256	288	307	384
		≥ M14	9.95	1.50	4	120	0.0250	3840	128	192	256	288	307	384
		≥ M18	11.95	1.00	4	120	0.0300	3195	128	192	256	288	307	383
		≥ M18	11.95	1.50	4	120	0.0300	3195	128	192	256	288	307	383
		≥ M24	15.95	1.00	5	120	0.0400	2395	160	240	319	359	383	479
		≥ M24	15.95	1.50	5	120	0.0400	2395	160	240	319	359	383	479
		≥ M30	19.95	1.50	5	120	0.0500	1915	160	239	319	359	383	479
		≥ M30	19.95	2.00	5	120	0.0500	1915	160	239	319	359	383	479
	Wrought aluminium alloys Si < 6% hardened	≥ M14	9.95	1.00	4	150	0.0285	4800	182	274	365	410	438	547
		≥ M14	9.95	1.25	4	150	0.0285	4800	182	274	365	410	438	547
		≥ M14	9.95	1.50	4	150	0.0285	4800	182	274	365	410	438	547
		≥ M18	11.95	1.00	4	150	0.0340	3995	181	272	362	407	435	543
		≥ M18	11.95	1.50	4	150	0.0340	3995	181	272	362	407	435	543
		≥ M24	15.95	1.00	5	150	0.0455	2995	227	341	454	511	545	681
		≥ M24	15.95	1.50	5	150	0.0455	2995	227	341	454	511	545	681
		≥ M30	19.95	1.50	5	150	0.0570	2395	228	341	455	512	546	683
		≥ M30	19.95	2.00	5	150	0.0570	2395	228	341	455	512	546	683
	Cast aluminium	≥ M14	9.95	1.00	4	200	0.0285	6400	243	365	486	547	584	730
		≥ M14	9.95	1.25	4	200	0.0285	6400	243	365	486	547	584	730
		≥ M14	9.95	1.50	4	200	0.0285	6400	243	365	486	547	584	730
		≥ M18	11.95	1.00	4	200	0.0340	5325	241	362	483	543	579	724
		≥ M18	11.95	1.50	4	200	0.0340	5325	241	362	483	543	579	724
		≥ M24	15.95	1.00	5	200	0.0455	3990	303	454	605	681	726	908
		≥ M24	15.95	1.50	5	200	0.0455	3990	303	454	605	681	726	908
		≥ M30	19.95	1.50	5	200	0.0570	3190	303	455	606	682	727	909
		≥ M30	19.95	2.00	5	200	0.0570	3190	303	455	606	682	727	909
	Titanium alloys > 300 HB [Ti6Al4V]	≥ M14	9.95	1.00	4	35	0.0200	1120	30	45	60	67	72	90
		≥ M14	9.95	1.25	4	35	0.0200	1120	30	45	60	67	72	90
		≥ M14	9.95	1.50	4	35	0.0200	1120	30	45	60	67	72	90
		≥ M18	11.95	1.00	4	35	0.0240	930	30	45	60	67	71	89
		≥ M18	11.95	1.50	4	35	0.0240	930	30	45	60	67	71	89
		≥ M24	15.95	1.00	5	35	0.0320	700	37	56	75	84	90	112
		≥ M24	15.95	1.50	5	35	0.0320	700	37	56	75	84	90	112
		≥ M30	19.95	1.50	5	35	0.0400	560	37	56	75	84	90	112
		≥ M30	19.95	2.00	5	35	0.0400	560	37	56	75	84	90	112

Multi-range thread milling cutters

Incool

M

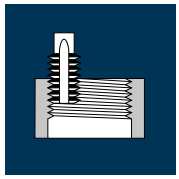
HM



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

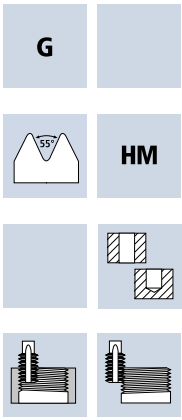
Example: **Order-N°.** Article-N°. **EH26020** ø-Code **096**

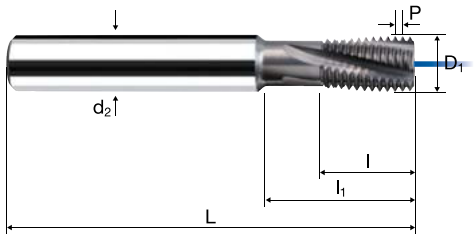
Ø Code	d min.	P	L	l	l_1	d_2 h6	D1		TiCN EH26020
096	14	1.00	70	16.00	25.0	10.0	9.95	4	●
166	14	1.25	70	16.00	25.0	10.0	9.95	4	●
178	14	1.50	70	16.00	25.0	10.0	9.95	4	●
100	18	1.00	80	20.00	31.0	12.0	11.95	4	●
182	18	1.50	80	20.00	31.0	12.0	11.95	4	●
106	24	1.00	90	25.00	40.0	16.0	15.95	5	●
188	24	1.50	90	25.00	40.0	16.0	15.95	5	●
254	24	2.00	90	25.00	40.0	16.0	15.95	5	●
194	30	1.50	105	33.00	50.0	20.0	19.95	5	●
260	30	2.00	105	33.00	50.0	20.0	19.95	5	●

Application	Material	G	D_1 [mm]	P(TPI)	z	v_c [m/min]	f_z [mm]	n [min^{-1}]	v_{fc} d/D_1 3/2	v_{fc} d/D_1 2/1	v_{fc} d/D_1 3/1	v_{fc} d/D_1 4/1	v_{fc} d/D_1 5/1	v_f [mm/min]
	Steel 850 - 1100 N/mm²	G1/4	9.95	19.0	4	80	0.0250	2560	85	128	171	192	205	256
		G1/2	15.95	14.0	5	80	0.0400	1595	106	160	213	239	255	319
		G1“	19.95	11.0	5	80	0.0500	1275	106	159	213	239	255	319
	Steel 1300 - 1500 N/mm²	G1/4	9.95	19.0	4	50	0.0200	1600	43	64	85	96	102	128
		G1/2	15.95	14.0	5	50	0.0320	1000	53	80	107	120	128	160
		G1“	19.95	11.0	5	50	0.0400	800	53	80	107	120	128	160
	Hardened tool steel 48 - 52 HRC	G1/4	9.95	19.0	4	30	0.0165	960	21	32	42	48	51	63
		G1/2	15.95	14.0	5	30	0.0265	600	27	40	53	60	64	80
		G1“	19.95	11.0	5	30	0.0335	480	27	40	54	60	64	80
	Stainless steel [Cr-Ni/1.4301]	G1/4	9.95	19.0	4	45	0.0200	1440	38	58	77	86	92	115
		G1/2	15.95	14.0	5	45	0.0320	900	48	72	96	108	115	144
		G1“	19.95	11.0	5	45	0.0400	720	48	72	96	108	115	144
	Cast iron (lamellar / spheroidal)	G1/4	9.95	19.0	4	120	0.0250	3840	128	192	256	288	307	384
		G1/2	15.95	14.0	5	120	0.0400	2395	160	240	319	359	383	479
		G1“	19.95	11.0	5	120	0.0500	1915	160	239	319	359	383	479
	Wrought aluminium alloys Si < 6% hardened	G1/4	9.95	19.0	4	150	0.0285	4800	182	274	365	410	438	547
		G1/2	15.95	14.0	5	150	0.0455	2995	227	341	454	511	545	681
		G1“	19.95	11.0	5	150	0.0570	2395	228	341	455	512	546	683
	Cast aluminium	G1/4	9.95	19.0	4	200	0.0285	6400	243	365	486	547	584	730
		G1/2	15.95	14.0	5	200	0.0455	3990	303	454	605	681	726	908
		G1“	19.95	11.0	5	200	0.0570	3190	303	455	606	682	727	909
	Titanium alloys > 300 HB [Ti6Al4V]	G1/4	9.95	19.0	4	35	0.0200	1120	30	45	60	67	72	90
		G1/2	15.95	14.0	5	35	0.0320	700	37	56	75	84	90	112
		G1“	19.95	11.0	5	35	0.0400	560	37	56	75	84	90	112

Multi-range thread milling cutters

Incool





Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	Aluminium / Copper GG(G)

Example: **Order-N°.** Article-N°. **EH26040** ø-Code **552**

Ø Code	d min.	P(TPI)	L	l	l_1	d_2 h6	D1		TiCN EH26040
552	**1/4**	**19.0**	70	16.00	25.0	10.0	9.95	4	●
554	**1/2**	**14.0**	90	25.00	40.0	16.0	15.95	5	●
558	**1''**	**11.0**	105	33.00	50.0	20.0	19.95	5	●

passion
for precision
fraisa

Metric coarse thread M

Tolerance ISO 2 (6H)

N° EC10540 / EC10541	**Xtap**	P	HSS PM/F		Rm 850-1100	Inox Stainless	191
N° EC10550 / EC10551	**Xtap**	P	HSS PM/F		Rm 850-1100	Inox Stainless	193
N° EH0100 / EH0101		08	HSS PM/F		Rm <850		195
N° EH10310 / EH10311	**s-tap**	08	HSS-E Co5		Rm <850		197
N° EH0580 / EH0581	**x-tap**	11	HSS PM/F		Rm 850-1100		199
N° EH0590	**x-tap-R**	11	HSS PM/F		Rm 850-1500		201
N° EH0591	**x-tap-R**	11	HSS PM/F		Rm 850-1500		203
N° EH0512 / EH0513		15	HSS PM/F		Rm 1100-1500		205
N° EH0595 / EH0596	**h-tap**	15	HSS PM/F		Rm 1100-1500		207
N° EH6900 / EH6901	**durotap H**	60	HM MG10		HRC 48- >60		209
N° ET0580 / ET0581	**x-tap**	In	HSS PM/F		Inox Stainless		211
N° ET0590	**x-tap-R**	In	HSS PM/F		Inox Stainless		213
N° ET0591	**x-tap-R**	In	HSS PM/F		Inox Stainless		215
N° EH0600 / EH0601	**c-tap**	GG	HSS PM/F		GG(G) Cast iron		217
N° EH0620 / EH0621	**c-tap**	GG	HSS PM/F		GG(G) Cast iron		219
N° EH6500	**durotap GG-R**	GG	HM MG10		GG(G) Cast iron		221

M

Metric coarse thread M

Tolerance ISO 2 (6H)

N° EH6501	**durotap GG-R**	GG	HM MG10		GG(G) Cast iron		223
N° EH6550 / EH6551	**durotap GG**	GG	HM MG10		GG(G) Cast iron		225
N° EI0020 / EI0021		Al	HSS PM/F		Al Aluminium Alloy	Cu Copper	227
N° EI0050 / EI0051		Al	HSS PM/F		Al Aluminium Alloy	Cu Copper	229
N° EH6300	**durotap A-R**	Al	HM MG10		Al Aluminium Cast		231
N° EH6301	**durotap A-R**	Al	HM MG10		Al Aluminium Cast		233
N° EH6350 / EH6351	**durotap A**	Al	HM MG10		Al Aluminium Cast		235
N° ET0705 / ET0706	**titap**	Ti	HSS PM/F		Ti Titanium		237
N° ET0755 / ET0756	**titap**	Ti	HSS PM/F		Ti Titanium		241
N° E0598	**n-tap**	Ni	HSS PM/F		Ni Nickel Alloy		243
N° EH0109	**polytap-R**	R	HSS PM/F		Rm <850-1100	Inox Stainless	245
N° EH0110	**polytap-R**	R	HSS PM/F		Rm <850-1100	Inox Stainless	247
N° EH0229	**polytap-R**	R	HSS PM/F		Rm <850-1100	Inox Stainless	249
N° EH0230	**polytap-R**	R	HSS PM/F		Rm <850-1100	Inox Stainless	251

Metric coarse thread M

Tolerance ISO 2 (6H)

N° E10800 / E10801

u-tap | U | HSS-E Co5 | Rm <850 | 253

N° E10820 / E10821

u-tap | U | HSS-E Co5 | Rm <850 | 257

Tolerance ISO 2 (6H) extra long

N° E10340

U | HSS PM/F | Rm <850 | 261

N° E10350

U | HSS PM/F | Rm <850 | 263

Tolerance ISO 2 (6H) LH

N° E10122 / E10123

U | HSS-E Co5 | Rm <850 | 265

N° E10222 / E10223

U | HSS-E Co5 | Rm <850 | 267

M

Metric coarse thread M

Tolerance ISO 2 +0.1

N° E10118 / E10119

N° E10220 / E10221

	U	HSS-E Co5		Rm <850		269
	U	HSS-E Co5		Rm <850		271

Tolerance ISO 3 (6G)

N° EH0504 / EH0505

N° EH0572 / EH0573

x-tap	11	HSS PM/F		Rm 850-1100		273
x-tap	11	HSS PM/F		Rm 850-1100		275

Tolerance ISO 1 (4H)

N° E10110

N° E10214

	U	HSS-E Co5		Rm <850		277
	U	HSS-E Co5		Rm <850		279

Metric coarse thread M / MJ

Tolerance 7G

N° E10114 / E10115

N° E10218 / E10219

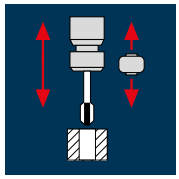
U	HSS-E Co5		Rm <850		281
U	HSS-E Co5		Rm <850		283

MJ Tolerance 4H

N° E0599

Ni	HSS PM/F		Ni Nickel Alloy		285

M

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	26	4140	1656	22	3500	1400	18	2865	1146
		M 2.5	2.500	0.45	26	3310	1490	22	2800	1260	18	2290	1031
		M 3	3.000	0.50	26	2760	1380	22	2335	1168	18	1910	955
		M 4	4.000	0.70	26	2070	1449	22	1750	1225	18	1430	1001
		M 5	5.000	0.80	26	1655	1324	22	1400	1120	18	1145	916
		M 6	6.000	1.00	26	1380	1380	22	1165	1165	18	955	955
		M 8	8.000	1.25	26	1035	1294	22	875	1094	18	715	894
		M 10	10.000	1.50	26	830	1245	22	700	1050	18	575	863
		M 12	12.000	1.75	26	690	1208	22	585	1024	18	475	831
	Steel 500 - 850 N/mm²	M 14	14.000	2.00	26	590	1180	22	500	1000	18	410	820
		M 16	16.000	2.00	26	515	1030	22	440	880	18	360	720
		M 18	18.000	2.50	26	460	1150	22	390	975	18	320	800
		M 20	20.000	2.50	26	415	1038	22	350	875	18	285	713
		M 22	22.000	2.50	26	375	938	22	320	800	18	260	650
		M 24	24.000	3.00	26	345	1035	22	290	870	18	240	720
	Steel 850 - 1100 N/mm²	M 2	2.000	0.40	22	3500	1400	18	2865	1146	14	2230	892
		M 2.5	2.500	0.45	22	2800	1260	18	2290	1031	14	1785	803
		M 3	3.000	0.50	22	2335	1168	18	1910	955	14	1485	743
		M 4	4.000	0.70	22	1750	1225	18	1430	1001	14	1115	781
		M 5	5.000	0.80	22	1400	1120	18	1145	916	14	890	712
		M 6	6.000	1.00	22	1165	1165	18	955	955	14	745	745
		M 8	8.000	1.25	22	875	1094	18	715	894	14	555	694
		M 10	10.000	1.50	22	700	1050	18	575	863	14	445	668
		M 12	12.000	1.75	22	585	1024	18	475	831	14	370	648
	Steel 850 - 1100 N/mm²	M 14	14.000	2.00	22	500	1000	18	410	820	14	320	640
		M 16	16.000	2.00	22	440	880	18	360	720	14	280	560
		M 18	18.000	2.50	22	390	975	18	320	800	14	250	625
		M 20	20.000	2.50	22	350	875	18	285	713	14	225	563
		M 22	22.000	2.50	22	320	800	18	260	650	14	205	513
		M 24	24.000	3.00	22	290	870	18	240	720	14	185	555
	Stainless steel ferritc/martensitic	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
		M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
	Stainless steel ferritc/martensitic	M 14	14.000	2.00	14	320	640	12	275	550	10	225	450
		M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 18	18.000	2.50	14	250	625	12	210	525	10	175	438
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 22	22.000	2.50	14	205	513	12	175	438	10	145	363
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 3	3.000	0.50	8	850	425	6	635	318	5	530	265
		M 4	4.000	0.70	8	635	445	6	475	333	5	400	280
		M 5	5.000	0.80	8	510	408	6	380	304	5	320	256
		M 6	6.000	1.00	8	425	425	6	320	320	5	265	265
		M 8	8.000	1.25	8	320	400	6	240	300	5	200	250
		M 10	10.000	1.50	8	255	383	6	190	285	5	160	240
		M 12	12.000	1.75	8	210	368	6	160	280	5	135	236
	Stainless steel [Cr-Ni/1.4301]	M 14	14.000	2.00	8	180	360	6	135	270	5	115	230
		M 16	16.000	2.00	8	160	320	6	120	240	5	100	200
		M 18	18.000	2.50	8	140	350	6	105	263	5	90	225
		M 20	20.000	2.50	8	125	313	6	95	238	5	80	200
		M 22	22.000	2.50	8	115	288	6	85	213	5	70	175
		M 24	24.000	3.00	8	105	315	6	80	240	5	65	195

Taps Xtap

P

M

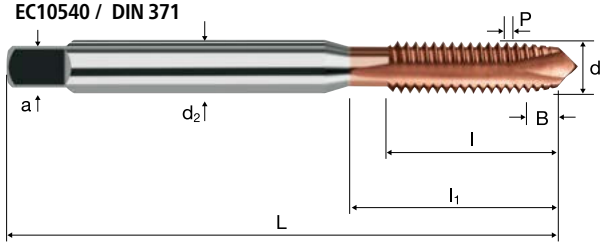
ISO 2 (6H)

HSS PM/F

DIN 371/376

Form B

EC10540 / DIN 371



EC10541 / DIN 376

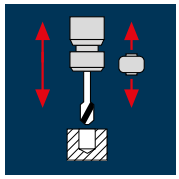
Rm < 850 | **Rm 850-1100** | Inox Stainless

Example: **Order-N°.** Article-N°. **EC10540** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			AlCrTiN EC10540
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.60	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.05	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	8.50	●

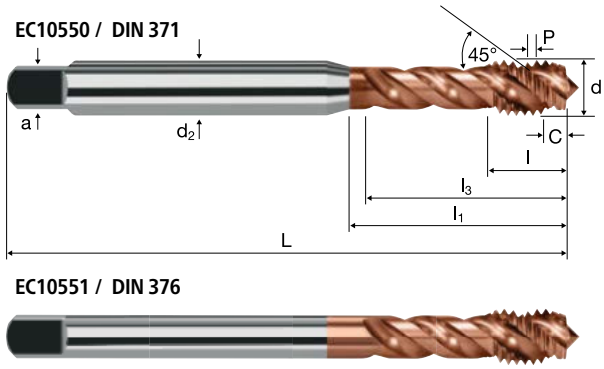
Example: **Order-N°.** Article-N°. **EC10541** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			AlCrTiN EC10541
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.00	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.00	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	4	19.50	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	21.00	●

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 2.5 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	32	5095	2038	28	4455	1782	22	3500	1400
		M 2.5	2.500	0.45	32	4075	1834	28	3565	1604	22	2800	1260
		M 3	3.000	0.50	32	3395	1698	28	2970	1485	22	2335	1168
		M 4	4.000	0.70	32	2545	1782	28	2230	1561	22	1750	1225
		M 5	5.000	0.80	32	2035	1628	28	1785	1428	22	1400	1120
		M 6	6.000	1.00	32	1700	1700	28	1485	1485	22	1165	1165
		M 8	8.000	1.25	32	1275	1594	28	1115	1394	22	875	1094
		M 10	10.000	1.50	32	1020	1530	28	890	1335	22	700	1050
		M 10	10.000	1.50	32	1020	1530	28	890	1335	22	700	1050
	Steel 500 - 850 N/mm²	M 12	12.000	1.75	32	850	1488	28	745	1304	22	585	1024
		M 14	14.000	2.00	32	730	1460	28	635	1270	22	500	1000
		M 16	16.000	2.00	32	635	1270	28	555	1110	22	440	880
		M 18	18.000	2.50	32	565	1413	28	495	1238	22	390	975
		M 20	20.000	2.50	32	510	1275	28	445	1113	22	350	875
		M 22	22.000	2.50	32	465	1163	28	405	1013	22	320	800
		M 24	24.000	3.00	32	425	1275	28	370	1110	22	290	870
	Steel 850 - 1100 N/mm²	M 2	2.000	0.40	20	3185	1274	16	2545	1018	10	1590	636
		M 2.5	2.500	0.45	20	2545	1145	16	2035	916	10	1275	574
		M 3	3.000	0.50	20	2120	1060	16	1700	850	10	1060	530
		M 4	4.000	0.70	20	1590	1113	16	1275	893	10	795	557
		M 5	5.000	0.80	20	1275	1020	16	1020	816	10	635	508
		M 6	6.000	1.00	20	1060	1060	16	850	850	10	530	530
		M 8	8.000	1.25	20	795	994	16	635	794	10	400	500
		M 10	10.000	1.50	20	635	953	16	510	765	10	320	480
		M 10	10.000	1.50	20	635	953	16	510	765	10	320	480
	Steel 850 - 1100 N/mm²	M 12	12.000	1.75	20	530	928	16	425	744	10	265	464
		M 14	14.000	2.00	20	455	910	16	365	730	10	225	450
		M 16	16.000	2.00	20	400	800	16	320	640	10	200	400
		M 18	18.000	2.50	20	355	888	16	285	713	10	175	438
		M 20	20.000	2.50	20	320	800	16	255	638	10	160	400
		M 22	22.000	2.50	20	290	725	16	230	575	10	145	363
		M 24	24.000	3.00	20	265	795	16	210	630	10	135	405
	Stainless steel ferritc/martensitic	M 2	2.000	0.40	10	1590	636	8	1275	510	6	955	382
		M 2.5	2.500	0.45	10	1275	574	8	1020	459	6	765	344
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
	Stainless steel ferritc/martensitic	M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
		M 14	14.000	2.00	10	225	450	8	180	360	6	135	270
		M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 18	18.000	2.50	10	175	438	8	140	350	6	105	263
		M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 22	22.000	2.50	10	145	363	8	115	288	6	85	213
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	5	795	318	4	635	254	3	475	190
		M 2.5	2.500	0.45	5	635	286	4	510	230	3	380	171
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
		M 14	14.000	2.00	5	115	230	4	90	180	3	70	140
		M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 18	18.000	2.50	5	90	225	4	70	175	3	55	138
		M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 22	22.000	2.50	5	70	175	4	60	150	3	45	113
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps Xtap

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	X · P Form C



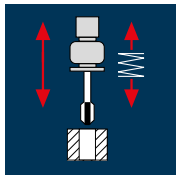
Rm < 850	Rm 850-1100						Inox Stainless		

Example: **Order-N°.** Article-N°. **EC10550** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			AlCrTiN EC10550
034	M 2	0.40	45	8.00	12.5	10.5	2.8	2.1	3	1.60	●
040	M 2.5	0.45	50	9.00	15.0	13.0	2.8	2.1	3	2.05	●
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	6.80	●
173	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	8.50	●
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	4	8.50	●

Example: **Order-N°.** Article-N°. **EC10551** ø-Code **240**

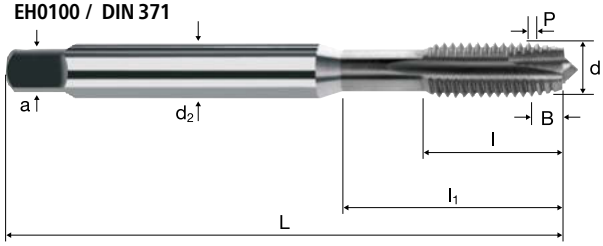
Ø Code	d	P	L	l	l_1	l_3	d_2	a			AlCrTiN EC10551
240	M 12	1.75	110	14.00	50.0	48.0	9.0	7.0	4	10.20	●
244	M 14	2.00	110	16.00	58.0	56.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	16.00	58.0	56.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	20.00	65.0	63.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	20.00	72.0	70.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	20.00	72.0	70.0	18.0	14.5	5	19.50	●
320	M 24	3.00	160	24.00	74.0	72.0	18.0	14.5	5	21.00	●

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	28	4455	1782	23	3660	1464	18	2865	1146
		M 2.5	2.500	0.45	28	3565	1604	23	2930	1319	18	2290	1031
		M 3	3.000	0.50	28	2970	1485	23	2440	1220	18	1910	955
		M 4	4.000	0.70	28	2230	1561	23	1830	1281	18	1430	1001
		M 5	5.000	0.80	28	1785	1428	23	1465	1172	18	1145	916
		M 6	6.000	1.00	28	1485	1485	23	1220	1220	18	955	955
		M 8	8.000	1.25	28	1115	1394	23	915	1144	18	715	894
		M 10	10.000	1.50	28	890	1335	23	730	1095	18	575	863
		M 12	12.000	1.75	28	745	1304	23	610	1068	18	475	831
	Steel < 500 N/mm²	M 14	14.000	2.00	28	635	1270	23	525	1050	18	410	820
		M 16	16.000	2.00	28	555	1110	23	460	920	18	360	720
		M 18	18.000	2.50	28	495	1238	23	405	1013	18	320	800
		M 20	20.000	2.50	28	445	1113	23	365	913	18	285	713
		M 22	22.000	2.50	28	405	1013	23	335	838	18	260	650
		M 24	24.000	3.00	28	370	1110	23	305	915	18	240	720
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	25	3980	1592	20	3185	1274	15	2385	954
		M 2.5	2.500	0.45	25	3185	1433	20	2545	1145	15	1910	860
		M 3	3.000	0.50	25	2655	1328	20	2120	1060	15	1590	795
		M 4	4.000	0.70	25	1990	1393	20	1590	1113	15	1195	837
		M 5	5.000	0.80	25	1590	1272	20	1275	1020	15	955	764
		M 6	6.000	1.00	25	1325	1325	20	1060	1060	15	795	795
		M 8	8.000	1.25	25	995	1244	20	795	994	15	595	744
		M 10	10.000	1.50	25	795	1193	20	635	953	15	475	713
		M 12	12.000	1.75	25	665	1164	20	530	928	15	400	700
	Steel 500 - 850 N/mm²	M 14	14.000	2.00	25	570	1140	20	455	910	15	340	680
		M 16	16.000	2.00	25	495	990	20	400	800	15	300	600
		M 18	18.000	2.50	25	440	1100	20	355	888	15	265	663
		M 20	20.000	2.50	25	400	1000	20	320	800	15	240	600
		M 22	22.000	2.50	25	360	900	20	290	725	15	215	538
		M 24	24.000	3.00	25	330	990	20	265	795	15	200	600

Taps

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	Form B

EH0100 / DIN 371



EH0101 / DIN 376

Rm < 850	Rm 850-1100								

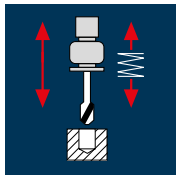
Example: **Order-N°.** Article-N°. **EH0100** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0100
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.60	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.05	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **EH0101** ø-Code **240**

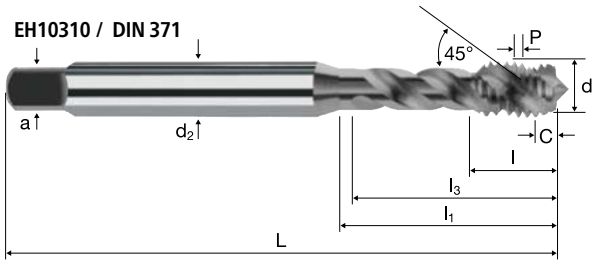
Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0101
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.00	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.00	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	4	19.50	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	21.00	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	25	3980	1592	20	3185	1274	18	2865	1146
		M 2.5	2.500	0.45	25	3185	1433	20	2545	1145	18	2290	1031
		M 3	3.000	0.50	25	2655	1328	20	2120	1060	18	1910	955
		M 4	4.000	0.70	25	1990	1393	20	1590	1113	18	1430	1001
		M 5	5.000	0.80	25	1590	1272	20	1275	1020	18	1145	916
		M 6	6.000	1.00	25	1325	1325	20	1060	1060	18	955	955
		M 8	8.000	1.25	25	995	1244	20	795	994	18	715	894
		M 10	10.000	1.50	25	795	1193	20	635	953	18	575	863
		M 12	12.000	1.75	25	665	1164	20	530	928	18	475	831
	Steel < 500 N/mm²	M 14	14.000	2.00	25	570	1140	20	455	910	18	410	820
		M 16	16.000	2.00	25	495	990	20	400	800	18	360	720
		M 18	18.000	2.50	25	440	1100	20	355	888	18	320	800
		M 20	20.000	2.50	25	400	1000	20	320	800	18	285	713
		M 22	22.000	2.50	25	360	900	20	290	725	18	260	650
		M 24	24.000	3.00	25	330	990	20	265	795	18	240	720
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	16	2545	1018	14	2230	892	12	1910	764
		M 2.5	2.500	0.45	16	2035	916	14	1785	803	12	1530	689
		M 3	3.000	0.50	16	1700	850	14	1485	743	12	1275	638
		M 4	4.000	0.70	16	1275	893	14	1115	781	12	955	669
		M 5	5.000	0.80	16	1020	816	14	890	712	12	765	612
		M 6	6.000	1.00	16	850	850	14	745	745	12	635	635
		M 8	8.000	1.25	16	635	794	14	555	694	12	475	594
		M 10	10.000	1.50	16	510	765	14	445	668	12	380	570
		M 12	12.000	1.75	16	425	744	14	370	648	12	320	560
	Steel 500 - 850 N/mm²	M 14	14.000	2.00	16	365	730	14	320	640	12	275	550
		M 16	16.000	2.00	16	320	640	14	280	560	12	240	480
		M 18	18.000	2.50	16	285	713	14	250	625	12	210	525
		M 20	20.000	2.50	16	255	638	14	225	563	12	190	475
		M 22	22.000	2.50	16	230	575	14	205	513	12	175	438
		M 24	24.000	3.00	16	210	630	14	185	555	12	160	480
	Cast iron GG	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
		M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
	Cast iron GG	M 14	14.000	2.00	14	320	640	12	275	550	10	225	450
		M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 18	18.000	2.50	14	250	625	12	210	525	10	175	438
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 22	22.000	2.50	14	205	513	12	175	438	10	145	363
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 3	3.000	0.50	3	320	160	2	210	105	2	210	105
		M 4	4.000	0.70	3	240	168	2	160	112	2	160	112
		M 5	5.000	0.80	3	190	152	2	125	100	2	125	100
		M 6	6.000	1.00	3	160	160	2	105	105	2	105	105
		M 8	8.000	1.25	3	120	150	2	80	100	2	80	100
		M 10	10.000	1.50	3	95	143	2	65	98	2	65	98
		M 12	12.000	1.75	3	80	140	2	55	96	2	55	96
	Stainless steel [Cr-Ni/1.4301]	M 14	14.000	2.00	3	70	140	2	45	90	2	45	90
		M 16	16.000	2.00	3	60	120	2	40	80	2	40	80
		M 18	18.000	2.50	3	55	138	2	35	88	2	35	88
		M 20	20.000	2.50	3	50	125	2	30	75	2	30	75
		M 22	22.000	2.50	3	45	113	2	30	75	2	30	75
		M 24	24.000	3.00	3	40	120	2	25	75	2	25	75

Taps s-tap

M	ISO 2 (6H)
60°	HSS-E Co5
DIN 371/376	
	Form C



Rm < 850	Rm 850-1100						Inox Stainless		GG(G)

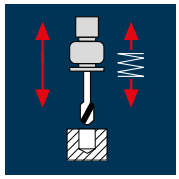
Example: **Order-N°.** Article-N°. **EH10310** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH10310
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	1.60	●
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	2.05	●
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **EH10311** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH10311
240	M 12	1.75	110	14.00	50.0	48.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	16.00	58.0	56.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	16.00	58.0	56.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	20.00	65.0	63.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	20.00	72.0	70.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	20.00	72.0	70.0	18.0	14.5	4	19.50	●
320	M 24	3.00	160	24.00	74.0	72.0	18.0	14.5	4	21.00	●

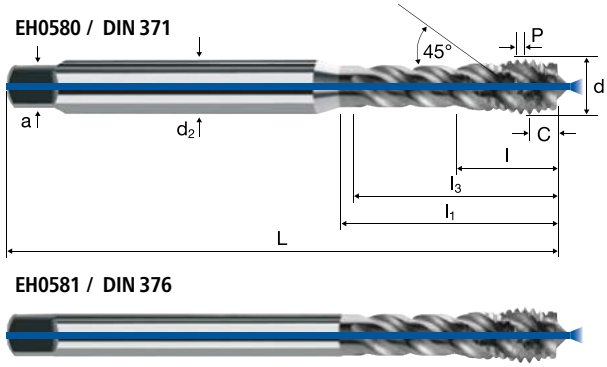
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 4	4.000	0.70	32	2545	1782	28	2230	1561	22	1750	1225
		M 5	5.000	0.80	32	2035	1628	28	1785	1428	22	1400	1120
		M 6	6.000	1.00	32	1700	1700	28	1485	1485	22	1165	1165
		M 8	8.000	1.25	32	1275	1594	28	1115	1394	22	875	1094
		M 10	10.000	1.50	32	1020	1530	28	890	1335	22	700	1050
		M 12	12.000	1.75	32	850	1488	28	745	1304	22	585	1024
		M 14	14.000	2.00	32	730	1460	28	635	1270	22	500	1000
		M 16	16.000	2.00	32	635	1270	28	555	1110	22	440	880
		M 18	18.000	2.50	32	565	1413	28	495	1238	22	390	975
	Steel 500 - 850 N/mm²	M 20	20.000	2.50	32	510	1275	28	445	1113	22	350	875
		M 22	22.000	2.50	32	465	1163	28	405	1013	22	320	800
		M 24	24.000	3.00	32	425	1275	28	370	1110	22	290	870
	Steel 850 - 1100 N/mm²	M 4	4.000	0.70	20	1590	1113	16	1275	893	10	795	557
		M 5	5.000	0.80	20	1275	1020	16	1020	816	10	635	508
		M 6	6.000	1.00	20	1060	1060	16	850	850	10	530	530
		M 8	8.000	1.25	20	795	994	16	635	794	10	400	500
		M 10	10.000	1.50	20	635	953	16	510	765	10	320	480
		M 12	12.000	1.75	20	530	928	16	425	744	10	265	464
		M 14	14.000	2.00	20	455	910	16	365	730	10	225	450
		M 16	16.000	2.00	20	400	800	16	320	640	10	200	400
		M 18	18.000	2.50	20	355	888	16	285	713	10	175	438
	Steel 850 - 1100 N/mm²	M 20	20.000	2.50	20	320	800	16	255	638	10	160	400
		M 22	22.000	2.50	20	290	725	16	230	575	10	145	363
		M 24	24.000	3.00	20	265	795	16	210	630	10	135	405

Taps x-tap

Incool

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	Form C



Rm < 850	Rm 850-1100								

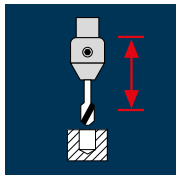
Example: **Order-N°.** Article-N°. **EH0580** ø-Code **058**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH0580
058	M 4	0.70	63	7.00	-	19.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	8.00	-	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	10.00	-	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	4	8.50	●

Example: **Order-N°.** Article-N°. **EH0581** ø-Code **240**

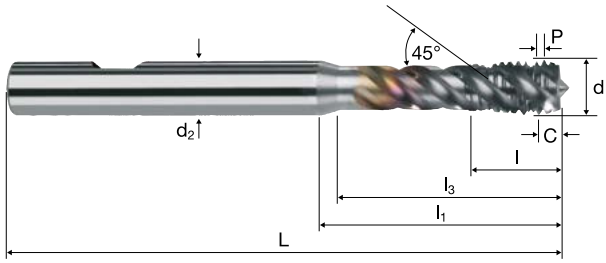
Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH0581
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	4	10.20	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	25.00	65.0	63.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	25.00	72.0	70.0	18.0	14.5	5	19.50	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	5	21.00	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Steel 500 - 850 N/mm²	M 3	3.000	0.50	34	3610	30	3185	24	2545
		M 4	4.000	0.70	34	2705	30	2385	24	1910
		M 5	5.000	0.80	34	2165	30	1910	24	1530
		M 6	6.000	1.00	34	1805	30	1590	24	1275
		M 8	8.000	1.25	34	1355	30	1195	24	955
		M 10	10.000	1.50	34	1080	30	955	24	765
		M 12	12.000	1.75	34	900	30	795	24	635
		M 14	14.000	2.00	34	775	30	680	24	545
		M 16	16.000	2.00	34	675	30	595	24	475
	Steel 500 - 850 N/mm²	M 18	18.000	2.50	34	600	30	530	24	425
		M 20	20.000	2.50	34	540	30	475	24	380
		M 22	22.000	2.50	34	490	30	435	24	345
		M 24	24.000	3.00	34	450	30	400	24	320
	Steel 850 - 1100 N/mm²	M 3	3.000	0.50	22	2335	18	1910	12	1275
		M 4	4.000	0.70	22	1750	18	1430	12	955
		M 5	5.000	0.80	22	1400	18	1145	12	765
		M 6	6.000	1.00	22	1165	18	955	12	635
		M 8	8.000	1.25	22	875	18	715	12	475
		M 10	10.000	1.50	22	700	18	575	12	380
		M 12	12.000	1.75	22	585	18	475	12	320
		M 14	14.000	2.00	22	500	18	410	12	275
		M 16	16.000	2.00	22	440	18	360	12	240
	Steel 850 - 1100 N/mm²	M 18	18.000	2.50	22	390	18	320	12	210
		M 20	20.000	2.50	22	350	18	285	12	190
		M 22	22.000	2.50	22	320	18	260	12	175
		M 24	24.000	3.00	22	290	18	240	12	160

Taps x-tap-R

M	ISO 2 (6H)
60°	HSS PM/F
HSS PM/F	
	X · P Form C

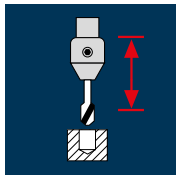


Rm < 850	Rm 850-1100								

Example: **Order-N°.** Article-N°. **EH0590** ø-Code **044**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH0590
044	M 3	0.50	63	5.00	-	16.0	6.0	3	2.50	●
058	M 4	0.70	66	7.00	-	19.0	6.0	3	3.30	●
084	M 5	0.80	70	8.00	-	23.0	6.0	3	4.20	●
088	M 6	1.00	80	10.00	-	28.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	4	8.50	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	4	10.20	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.00	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.00	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.50	●
316	M 22	2.50	140	25.00	64.0	62.0	20.0	5	19.50	●
320	M 24	3.00	160	30.00	74.0	72.0	20.0	5	21.00	●

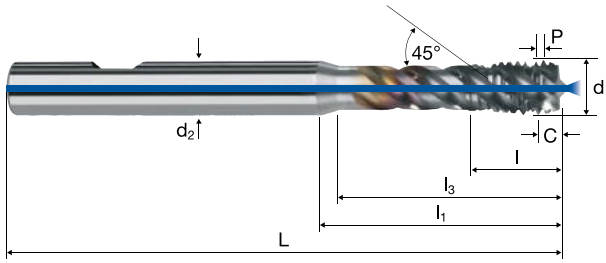
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Steel 500 - 850 N/mm²	M 4	4.000	0.70	28	2230	24	1910	18	1430
		M 5	5.000	0.80	28	1785	24	1530	18	1145
		M 6	6.000	1.00	28	1485	24	1275	18	955
		M 8	8.000	1.25	28	1115	24	955	18	715
		M 10	10.000	1.50	28	890	24	765	18	575
		M 12	12.000	1.75	28	745	24	635	18	475
		M 14	14.000	2.00	28	635	24	545	18	410
		M 16	16.000	2.00	28	555	24	475	18	360
		M 18	18.000	2.50	28	495	24	425	18	320
	Steel 500 - 850 N/mm²	M 20	20.000	2.50	28	445	24	380	18	285
		M 22	22.000	2.50	28	405	24	345	18	260
		M 24	24.000	3.00	28	370	24	320	18	240
	Steel 850 - 1100 N/mm²	M 4	4.000	0.70	22	1750	18	1430	12	955
		M 5	5.000	0.80	22	1400	18	1145	12	765
		M 6	6.000	1.00	22	1165	18	955	12	635
		M 8	8.000	1.25	22	875	18	715	12	475
		M 10	10.000	1.50	22	700	18	575	12	380
		M 12	12.000	1.75	22	585	18	475	12	320
		M 14	14.000	2.00	22	500	18	410	12	275
		M 16	16.000	2.00	22	440	18	360	12	240
		M 18	18.000	2.50	22	390	18	320	12	210
	Steel 850 - 1100 N/mm²	M 20	20.000	2.50	22	350	18	285	12	190
		M 22	22.000	2.50	22	320	18	260	12	175
		M 24	24.000	3.00	22	290	18	240	12	160

Taps x-tap-R

Incool

M	ISO 2 (6H)
60°	HSS PM/F
HSS PM/F	
	X · P Form C

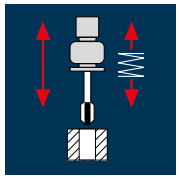


Rm < 850	Rm 850-1100								

Example: **Order-N°.** Article-N°. **EH0591** ø-Code **058**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH0591
058	M 4	0.70	66	7.00	-	19.0	6.0	3	3.30	●
084	M 5	0.80	70	8.00	-	23.0	6.0	3	4.20	●
088	M 6	1.00	80	10.00	-	28.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	4	8.50	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	4	10.20	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.00	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.00	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.50	●
316	M 22	2.50	140	25.00	64.0	62.0	20.0	5	19.50	●
320	M 24	3.00	160	30.00	74.0	72.0	20.0	5	21.00	●

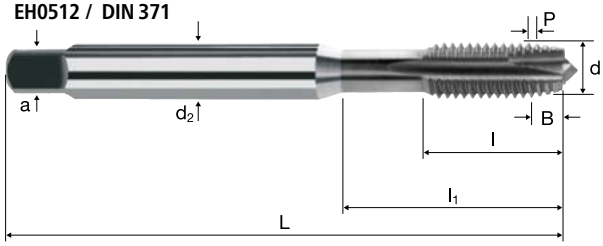
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel 1100 - 1300 N/mm²	M 2	2.000	0.40	10	1590	636	8	1275	510	5	795	318
		M 2.5	2.500	0.45	10	1275	574	8	1020	459	5	635	286
		M 3	3.000	0.50	10	1060	530	8	850	425	5	530	265
		M 4	4.000	0.70	10	795	557	8	635	445	5	400	280
		M 5	5.000	0.80	10	635	508	8	510	408	5	320	256
		M 6	6.000	1.00	10	530	530	8	425	425	5	265	265
		M 8	8.000	1.25	10	400	500	8	320	400	5	200	250
		M 10	10.000	1.50	10	320	480	8	255	383	5	160	240
		M 12	12.000	1.75	10	265	464	8	210	368	5	135	236
	Steel 1100 - 1300 N/mm²	M 14	14.000	2.00	10	225	450	8	180	360	5	115	230
		M 16	16.000	2.00	10	200	400	8	160	320	5	100	200
		M 18	18.000	2.50	10	175	438	8	140	350	5	90	225
		M 20	20.000	2.50	10	160	400	8	125	313	5	80	200
		M 22	22.000	2.50	10	145	363	8	115	288	5	70	175
		M 24	24.000	3.00	10	135	405	8	105	315	5	65	195
	Steel 1300 - 1500 N/mm²	M 2	2.000	0.40	6	955	382	4	635	254	3	475	190
		M 2.5	2.500	0.45	6	765	344	4	510	230	3	380	171
		M 3	3.000	0.50	6	635	318	4	425	213	3	320	160
		M 4	4.000	0.70	6	475	333	4	320	224	3	240	168
		M 5	5.000	0.80	6	380	304	4	255	204	3	190	152
		M 6	6.000	1.00	6	320	320	4	210	210	3	160	160
		M 8	8.000	1.25	6	240	300	4	160	200	3	120	150
		M 10	10.000	1.50	6	190	285	4	125	188	3	95	143
		M 12	12.000	1.75	6	160	280	4	105	184	3	80	140
	Steel 1300 - 1500 N/mm²	M 14	14.000	2.00	6	135	270	4	90	180	3	70	140
		M 16	16.000	2.00	6	120	240	4	80	160	3	60	120
		M 18	18.000	2.50	6	105	263	4	70	175	3	55	138
		M 20	20.000	2.50	6	95	238	4	65	163	3	50	125
		M 22	22.000	2.50	6	85	213	4	60	150	3	45	113
		M 24	24.000	3.00	6	80	240	4	55	165	3	40	120

Taps

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	X · P Form B

EH0512 / DIN 371



EH0513 / DIN 376

Rm 1100-1300 | Rm 1300-1500

Example: **Order-N°.** Article-N°. **EH0512** ø-Code **034**

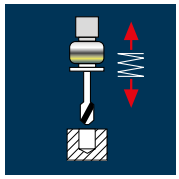
Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0512
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.70*	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.10	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.60*	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.40	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.30	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	5.10	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	6.90	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	8.60	●

Example: **Order-N°.** Article-N°. **EH0513** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0513
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.40	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.20	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.20	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.70	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.70	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	4	19.70	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	21.20	●

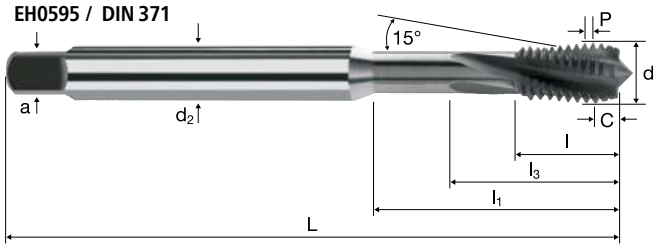
* The given dimension is out of norm

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]
	Steel 1100 - 1300 N/mm²	M 3	3.000	0.50	6	635	318	5	530	265
		M 4	4.000	0.70	6	475	333	5	400	280
		M 5	5.000	0.80	6	380	304	5	320	256
		M 6	6.000	1.00	6	320	320	5	265	265
		M 8	8.000	1.25	6	240	300	5	200	250
		M 10	10.000	1.50	6	190	285	5	160	240
		M 12	12.000	1.75	6	160	280	5	135	236
		M 14	14.000	2.00	6	135	270	5	115	230
		M 16	16.000	2.00	6	120	240	5	100	200
	Steel 1100 - 1300 N/mm²	M 18	18.000	2.50	6	105	263	5	90	225
		M 20	20.000	2.50	6	95	238	5	80	200
		M 22	22.000	2.50	6	85	213	5	70	175
		M 24	24.000	3.00	6	80	240	5	65	195
	Steel 1300 - 1500 N/mm²	M 3	3.000	0.50	5	530	265	4	425	213
		M 4	4.000	0.70	5	400	280	4	320	224
		M 5	5.000	0.80	5	320	256	4	255	204
		M 6	6.000	1.00	5	265	265	4	210	210
		M 8	8.000	1.25	5	200	250	4	160	200
		M 10	10.000	1.50	5	160	240	4	125	188
		M 12	12.000	1.75	5	135	236	4	105	184
		M 14	14.000	2.00	5	115	230	4	90	180
		M 16	16.000	2.00	5	100	200	4	80	160
	Steel 1300 - 1500 N/mm²	M 18	18.000	2.50	5	90	225	4	70	175
		M 20	20.000	2.50	5	80	200	4	65	163
		M 22	22.000	2.50	5	70	175	4	60	150
		M 24	24.000	3.00	5	65	195	4	55	165

Taps h-tap

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	Form C



Rm 1100-1300 | Rm 1300-1500

Example: **Order-N°.** Article-N°. **EH0595** ø-Code **044**

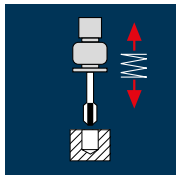
Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH0595
044	M 3	0.50	56	5.00	18.0	16.0	3.5	2.7	3	2.60*	●
058	M 4	0.70	63	7.00	21.0	19.0	4.5	3.4	3	3.40	●
084	M 5	0.80	70	8.00	25.0	23.0	6.0	4.9	3	4.30	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	4.9	3	5.10	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.90	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	4	8.60	●

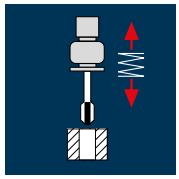
Example: **Order-N°.** Article-N°. **EH0596** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH0596
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	4	10.40	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.20	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.20	●
312	M 18	2.50	125	25.00	65.0	63.0	14.0	11.0	4	15.70	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	4	17.70	●
316	M 22	2.50	140	25.00	72.0	70.0	18.0	14.5	4	19.70	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	5	21.20	●

* The given dimension is out of norm

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Hardened tool steel 48 - 52 HRC	M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
		M 12	12.000	1.75	8	210	368	6	160	280	4	105	184
		M 14	14.000	2.00	8	180	360	6	135	270	4	90	180
		M 16	16.000	2.00	8	160	320	6	120	240	4	80	160
	Hardened tool steel 52 - 56 HRC	M 4	4.000	0.70	6	475	333	4	320	224	3	240	168
		M 5	5.000	0.80	6	380	304	4	255	204	3	190	152
		M 6	6.000	1.00	6	320	320	4	210	210	3	160	160
		M 8	8.000	1.25	6	240	300	4	160	200	3	120	150
		M 10	10.000	1.50	6	190	285	4	125	188	3	95	143
		M 12	12.000	1.75	6	160	280	4	105	184	3	80	140
		M 14	14.000	2.00	6	135	270	4	90	180	3	70	140
		M 16	16.000	2.00	6	120	240	4	80	160	3	60	120
	Hardened tool steel 56 - 60 HRC	M 4	4.000	0.70	4	320	224	2	160	112	-	-	-
		M 5	5.000	0.80	4	255	204	2	125	100	-	-	-
		M 6	6.000	1.00	4	210	210	2	105	105	-	-	-
		M 8	8.000	1.25	4	160	200	2	80	100	-	-	-
		M 10	10.000	1.50	4	125	188	2	65	98	-	-	-
		M 12	12.000	1.75	4	105	184	2	55	96	-	-	-
		M 14	14.000	2.00	4	90	180	2	45	90	-	-	-
		M 16	16.000	2.00	4	80	160	2	40	80	-	-	-
	Hardened tool steel > 60 HRC	M 4	4.000	0.70	2	160	112	1.5	120	84	-	-	-
		M 5	5.000	0.80	2	125	100	1.5	95	76	-	-	-
		M 6	6.000	1.00	2	105	105	1.5	80	80	-	-	-
		M 8	8.000	1.25	2	80	100	1.5	60	75	-	-	-
		M 10	10.000	1.50	2	65	98	1.5	50	75	-	-	-
		M 12	12.000	1.75	2	55	96	1.5	40	70	-	-	-
		M 14	14.000	2.00	2	45	90	1.5	35	70	-	-	-
		M 16	16.000	2.00	2	40	80	1.5	30	60	-	-	-

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Hardened tool steel 48 - 52 HRC	M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
		M 12	12.000	1.75	8	210	368	6	160	280	4	105	184
		M 14	14.000	2.00	8	180	360	6	135	270	4	90	180
		M 16	16.000	2.00	8	160	320	6	120	240	4	80	160
	Hardened tool steel 52 - 56 HRC	M 4	4.000	0.70	6	475	333	4	320	224	3	240	168
		M 5	5.000	0.80	6	380	304	4	255	204	3	190	152
		M 6	6.000	1.00	6	320	320	4	210	210	3	160	160
		M 8	8.000	1.25	6	240	300	4	160	200	3	120	150
		M 10	10.000	1.50	6	190	285	4	125	188	3	95	143
		M 12	12.000	1.75	6	160	280	4	105	184	3	80	140
		M 14	14.000	2.00	6	135	270	4	90	180	3	70	140
		M 16	16.000	2.00	6	120	240	4	80	160	3	60	120
	Hardened tool steel 56 - 60 HRC	M 4	4.000	0.70	4	320	224	2	160	112	-	-	-
		M 5	5.000	0.80	4	255	204	2	125	100	-	-	-
		M 6	6.000	1.00	4	210	210	2	105	105	-	-	-
		M 8	8.000	1.25	4	160	200	2	80	100	-	-	-
		M 10	10.000	1.50	4	125	188	2	65	98	-	-	-
		M 12	12.000	1.75	4	105	184	2	55	96	-	-	-
		M 14	14.000	2.00	4	90	180	2	45	90	-	-	-
		M 16	16.000	2.00	4	80	160	2	40	80	-	-	-
	Hardened tool steel > 60 HRC	M 4	4.000	0.70	2	160	112	1.5	120	84	-	-	-
		M 5	5.000	0.80	2	125	100	1.5	95	76	-	-	-
		M 6	6.000	1.00	2	105	105	1.5	80	80	-	-	-
		M 8	8.000	1.25	2	80	100	1.5	60	75	-	-	-
		M 10	10.000	1.50	2	65	98	1.5	50	75	-	-	-
		M 12	12.000	1.75	2	55	96	1.5	40	70	-	-	-
		M 14	14.000	2.00	2	45	90	1.5	35	70	-	-	-
		M 16	16.000	2.00	2	40	80	1.5	30	60	-	-	-

Taps durotap H

60

M

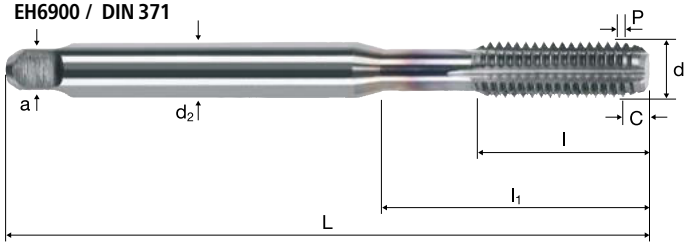
ISO 2 (6H)

HM MG10

DIN 371/376

Form C

EH6900 / DIN 371



EH6901 / DIN 376

HRC 48-56 | HRC 56-60 | HRC > 60

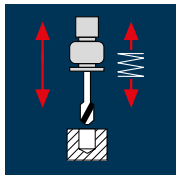
Example: **Order-N°.** Article-N°. **EH6900** ø-Code **058**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN
										EH6900
058	M 4	0.70	63	13.00	21.0	4.5	3.4	4	3.40	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	4	4.30	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.10	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	5	6.90	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	5	8.60	●

Example: **Order-N°.** Article-N°. **EH6901** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN
										EH6901
240	M 12	1.75	110	24.00	40.0	9.0	7.0	5	10.40	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	5	12.20	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	5	14.20	●

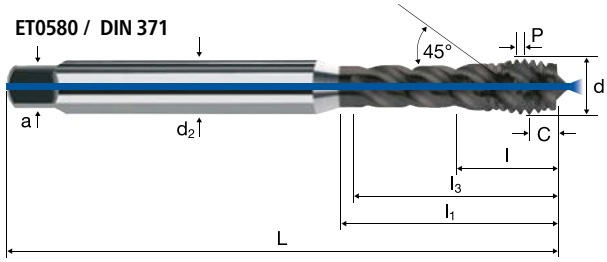
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
		M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
		M 14	14.000	2.00	10	225	450	8	180	360	6	135	270
		M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 18	18.000	2.50	10	175	438	8	140	350	6	105	263
	Stainless steel ferritc/martensitic	M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 22	22.000	2.50	10	145	363	8	115	288	6	85	213
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
		M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
		M 14	14.000	2.00	5	115	230	4	90	180	3	70	140
		M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 18	18.000	2.50	5	90	225	4	70	175	3	55	138
	Stainless steel [Cr-Ni/1.4301]	M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 22	22.000	2.50	5	70	175	4	60	150	3	45	113
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 4	4.000	0.70	6	475	333	5	400	280	4	320	224
		M 5	5.000	0.80	6	380	304	5	320	256	4	255	204
		M 6	6.000	1.00	6	320	320	5	265	265	4	210	210
		M 8	8.000	1.25	6	240	300	5	200	250	4	160	200
		M 10	10.000	1.50	6	190	285	5	160	240	4	125	188
		M 12	12.000	1.75	6	160	280	5	135	236	4	105	184
		M 14	14.000	2.00	6	135	270	5	115	230	4	90	180
		M 16	16.000	2.00	6	120	240	5	100	200	4	80	160
		M 18	18.000	2.50	6	105	263	5	90	225	4	70	175
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 20	20.000	2.50	6	95	238	5	80	200	4	65	163
		M 22	22.000	2.50	6	85	213	5	70	175	4	60	150
		M 24	24.000	3.00	6	80	240	5	65	195	4	55	165
	Heat resistant steel [17-4 PH]	M 4	4.000	0.70	4	320	224	3	240	168	-	-	-
		M 5	5.000	0.80	4	255	204	3	190	152	-	-	-
		M 6	6.000	1.00	4	210	210	3	160	160	-	-	-
		M 8	8.000	1.25	4	160	200	3	120	150	-	-	-
		M 10	10.000	1.50	4	125	188	3	95	143	-	-	-
		M 12	12.000	1.75	4	105	184	3	80	140	-	-	-
		M 14	14.000	2.00	4	90	180	3	70	140	-	-	-
		M 16	16.000	2.00	4	80	160	3	60	120	-	-	-
		M 18	18.000	2.50	4	70	175	3	55	138	-	-	-
	Heat resistant steel [17-4 PH]	M 20	20.000	2.50	4	65	163	3	50	125	-	-	-
		M 22	22.000	2.50	4	60	150	3	45	113	-	-	-
		M 24	24.000	3.00	4	55	165	3	40	120	-	-	-

Taps x-tap

Incool

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	X · P Form C



M

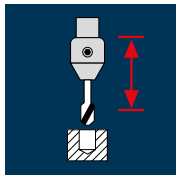
Inox Stainless

Example: **Order-N°.** Article-N°. **ET0580** ø-Code **058**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET0580
058	M 4	0.70	63	7.00	-	19.0	4.5	3.4	3	3.40	●
084	M 5	0.80	70	8.00	-	23.0	6.0	4.9	3	4.30	●
088	M 6	1.00	80	10.00	-	28.0	6.0	4.9	3	5.10	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.90	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	4	8.60	●

Example: **Order-N°.** Article-N°. **ET0581** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET0581
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	4	10.40	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.20	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.20	●
312	M 18	2.50	125	25.00	65.0	63.0	14.0	11.0	4	15.70	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	4	17.70	●
316	M 22	2.50	140	25.00	72.0	70.0	18.0	14.5	5	19.70	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	5	21.20	●

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Stainless steel ferritc/martensitic	M 3	3.000	0.50	12	1275	10	1060	8	850
		M 4	4.000	0.70	12	955	10	795	8	635
		M 5	5.000	0.80	12	765	10	635	8	510
		M 6	6.000	1.00	12	635	10	530	8	425
		M 8	8.000	1.25	12	475	10	400	8	320
		M 10	10.000	1.50	12	380	10	320	8	255
		M 12	12.000	1.75	12	320	10	265	8	210
		M 14	14.000	2.00	12	275	10	225	8	180
		M 16	16.000	2.00	12	240	10	200	8	160
	Stainless steel ferritc/martensitic	M 18	18.000	2.50	12	210	10	175	8	140
		M 20	20.000	2.50	12	190	10	160	8	125
		M 22	22.000	2.50	12	175	10	145	8	115
		M 24	24.000	3.00	12	160	10	135	8	105
	Stainless steel [Cr-Ni/1.4301]	M 3	3.000	0.50	7	745	5	530	4	425
		M 4	4.000	0.70	7	555	5	400	4	320
		M 5	5.000	0.80	7	445	5	320	4	255
		M 6	6.000	1.00	7	370	5	265	4	210
		M 8	8.000	1.25	7	280	5	200	4	160
		M 10	10.000	1.50	7	225	5	160	4	125
		M 12	12.000	1.75	7	185	5	135	4	105
		M 14	14.000	2.00	7	160	5	115	4	90
		M 16	16.000	2.00	7	140	5	100	4	80
	Stainless steel [Cr-Ni/1.4301]	M 18	18.000	2.50	7	125	5	90	4	70
		M 20	20.000	2.50	7	110	5	80	4	65
		M 22	22.000	2.50	7	100	5	70	4	60
		M 24	24.000	3.00	7	95	5	65	4	55
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 3	3.000	0.50	8	850	6	635	5	530
		M 4	4.000	0.70	8	635	6	475	5	400
		M 5	5.000	0.80	8	510	6	380	5	320
		M 6	6.000	1.00	8	425	6	320	5	265
		M 8	8.000	1.25	8	320	6	240	5	200
		M 10	10.000	1.50	8	255	6	190	5	160
		M 12	12.000	1.75	8	210	6	160	5	135
		M 14	14.000	2.00	8	180	6	135	5	115
		M 16	16.000	2.00	8	160	6	120	5	100
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 18	18.000	2.50	8	140	6	105	5	90
		M 20	20.000	2.50	8	125	6	95	5	80
		M 22	22.000	2.50	8	115	6	85	5	70
		M 24	24.000	3.00	8	105	6	80	5	65
	Heat resistant steel [17-4 PH]	M 3	3.000	0.50	5	530	4	425	-	-
		M 4	4.000	0.70	5	400	4	320	-	-
		M 5	5.000	0.80	5	320	4	255	-	-
		M 6	6.000	1.00	5	265	4	210	-	-
		M 8	8.000	1.25	5	200	4	160	-	-
		M 10	10.000	1.50	5	160	4	125	-	-
		M 12	12.000	1.75	5	135	4	105	-	-
		M 14	14.000	2.00	5	115	4	90	-	-
		M 16	16.000	2.00	5	100	4	80	-	-
	Heat resistant steel [17-4 PH]	M 18	18.000	2.50	5	90	4	70	-	-
		M 20	20.000	2.50	5	80	4	65	-	-
		M 22	22.000	2.50	5	70	4	60	-	-
		M 24	24.000	3.00	5	65	4	55	-	-

Taps x-tap-R

In

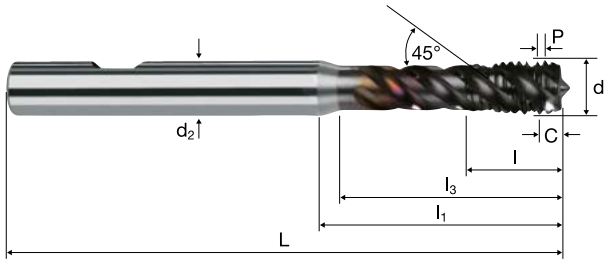
M

ISO 2 (6H)

HSS PM/F

HSS PM/F

Form C



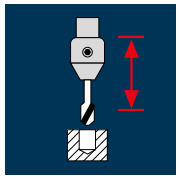
M

Inox Stainless

Example: **Order-N°.** Article-N°. **ET0590** ø-Code **044**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TRIBO ET0590
044	M 3	0.50	63	5.00	-	16.0	6.0	3	2.60*	●
058	M 4	0.70	66	7.00	-	19.0	6.0	3	3.40	●
084	M 5	0.80	70	8.00	-	23.0	6.0	3	4.30	●
088	M 6	1.00	80	10.00	-	28.0	6.0	3	5.10	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.90	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	4	8.60	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	4	10.40	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.20	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.20	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.70	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.70	●
316	M 22	2.50	140	25.00	64.0	62.0	20.0	5	19.70	●
320	M 24	3.00	160	30.00	74.0	72.0	20.0	5	21.20	●

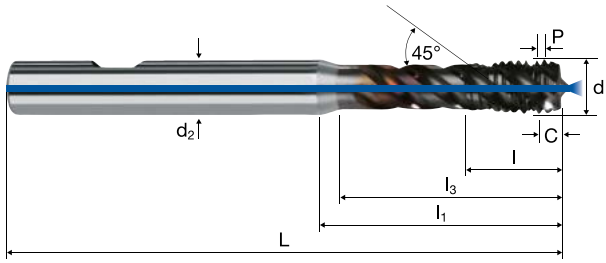
* The given dimension is out of norm

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Stainless steel ferritc/martensitic	M 4	4.000	0.70	12	955	10	795	8	635
		M 5	5.000	0.80	12	765	10	635	8	510
		M 6	6.000	1.00	12	635	10	530	8	425
		M 8	8.000	1.25	12	475	10	400	8	320
		M 10	10.000	1.50	12	380	10	320	8	255
		M 12	12.000	1.75	12	320	10	265	8	210
		M 14	14.000	2.00	12	275	10	225	8	180
		M 16	16.000	2.00	12	240	10	200	8	160
		M 18	18.000	2.50	12	210	10	175	8	140
	Stainless steel ferritc/martensitic	M 20	20.000	2.50	12	190	10	160	8	125
		M 22	22.000	2.50	12	175	10	145	8	115
		M 24	24.000	3.00	12	160	10	135	8	105
	Stainless steel [Cr-Ni/1.4301]	M 4	4.000	0.70	7	555	5	400	4	320
		M 5	5.000	0.80	7	445	5	320	4	255
		M 6	6.000	1.00	7	370	5	265	4	210
		M 8	8.000	1.25	7	280	5	200	4	160
		M 10	10.000	1.50	7	225	5	160	4	125
		M 12	12.000	1.75	7	185	5	135	4	105
		M 14	14.000	2.00	7	160	5	115	4	90
		M 16	16.000	2.00	7	140	5	100	4	80
		M 18	18.000	2.50	7	125	5	90	4	70
	Stainless steel [Cr-Ni/1.4301]	M 20	20.000	2.50	7	110	5	80	4	65
		M 22	22.000	2.50	7	100	5	70	4	60
		M 24	24.000	3.00	7	95	5	65	4	55
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 4	4.000	0.70	8	635	6	475	5	400
		M 5	5.000	0.80	8	510	6	380	5	320
		M 6	6.000	1.00	8	425	6	320	5	265
		M 8	8.000	1.25	8	320	6	240	5	200
		M 10	10.000	1.50	8	255	6	190	5	160
		M 12	12.000	1.75	8	210	6	160	5	135
		M 14	14.000	2.00	8	180	6	135	5	115
		M 16	16.000	2.00	8	160	6	120	5	100
		M 18	18.000	2.50	8	140	6	105	5	90
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 20	20.000	2.50	8	125	6	95	5	80
		M 22	22.000	2.50	8	115	6	85	5	70
		M 24	24.000	3.00	8	105	6	80	5	65
	Heat resistant steel [17-4 PH]	M 4	4.000	0.70	5	400	4	320	-	-
		M 5	5.000	0.80	5	320	4	255	-	-
		M 6	6.000	1.00	5	265	4	210	-	-
		M 8	8.000	1.25	5	200	4	160	-	-
		M 10	10.000	1.50	5	160	4	125	-	-
		M 12	12.000	1.75	5	135	4	105	-	-
		M 14	14.000	2.00	5	115	4	90	-	-
		M 16	16.000	2.00	5	100	4	80	-	-
		M 18	18.000	2.50	5	90	4	70	-	-
	Heat resistant steel [17-4 PH]	M 20	20.000	2.50	5	80	4	65	-	-
		M 22	22.000	2.50	5	70	4	60	-	-
		M 24	24.000	3.00	5	65	4	55	-	-

Taps x-tap-R

Incool

M	**ISO 2** (6H)
60°	**HSS PM/F**
HSS PM/F	
	X · P Form C



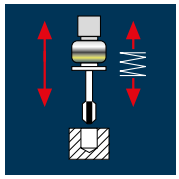
M

Inox Stainless

Example: **Order-N°.** Article-N°. **ET0591** ø-Code **058**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TRIBO ET0591
058	M 4	0.70	66	7.00	-	19.0	6.0	3	3.40	●
084	M 5	0.80	70	8.00	-	23.0	6.0	3	4.30	●
088	M 6	1.00	80	10.00	-	28.0	6.0	3	5.10	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.90	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	4	8.60	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	4	10.40	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.20	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.20	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.70	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.70	●
316	M 22	2.50	140	25.00	64.0	62.0	20.0	5	19.70	●
320	M 24	3.00	160	30.00	74.0	72.0	20.0	5	21.20	●

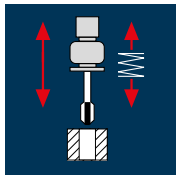
Application



Material

M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
Cast iron GG											
M 2	2.000	0.40	28	4455	1782	24	3820	1528	20	3185	1274
M 2.5	2.500	0.45	28	3565	1604	24	3055	1375	20	2545	1145
M 3	3.000	0.50	28	2970	1485	24	2545	1273	20	2120	1060
M 4	4.000	0.70	28	2230	1561	24	1910	1337	20	1590	1113
M 5	5.000	0.80	28	1785	1428	24	1530	1224	20	1275	1020
M 6	6.000	1.00	28	1485	1485	24	1275	1275	20	1060	1060
M 8	8.000	1.25	28	1115	1394	24	955	1194	20	795	994
M 10	10.000	1.50	28	890	1335	24	765	1148	20	635	953
M 12	12.000	1.75	28	745	1304	24	635	1111	20	530	928
Cast iron GG											
M 14	14.000	2.00	28	635	1270	24	545	1090	20	455	910
M 16	16.000	2.00	28	555	1110	24	475	950	20	400	800
M 18	18.000	2.50	28	495	1238	24	425	1063	20	355	888
M 20	20.000	2.50	28	445	1113	24	380	950	20	320	800
M 22	22.000	2.50	28	405	1013	24	345	863	20	290	725
M 24	24.000	3.00	28	370	1110	24	320	960	20	265	795
Cast iron GGG											
M 2	2.000	0.40	20	3185	1274	18	2865	1146	15	2385	954
M 2.5	2.500	0.45	20	2545	1145	18	2290	1031	15	1910	860
M 3	3.000	0.50	20	2120	1060	18	1910	955	15	1590	795
M 4	4.000	0.70	20	1590	1113	18	1430	1001	15	1195	837
M 5	5.000	0.80	20	1275	1020	18	1145	916	15	955	764
M 6	6.000	1.00	20	1060	1060	18	955	955	15	795	795
M 8	8.000	1.25	20	795	994	18	715	894	15	595	744
M 10	10.000	1.50	20	635	953	18	575	863	15	475	713
M 12	12.000	1.75	20	530	928	18	475	831	15	400	700
Cast iron GGG											
M 14	14.000	2.00	20	455	910	18	410	820	15	340	680
M 16	16.000	2.00	20	400	800	18	360	720	15	300	600
M 18	18.000	2.50	20	355	888	18	320	800	15	265	663
M 20	20.000	2.50	20	320	800	18	285	713	15	240	600
M 22	22.000	2.50	20	290	725	18	260	650	15	215	538
M 24	24.000	3.00	20	265	795	18	240	720	15	200	600

Application



Material

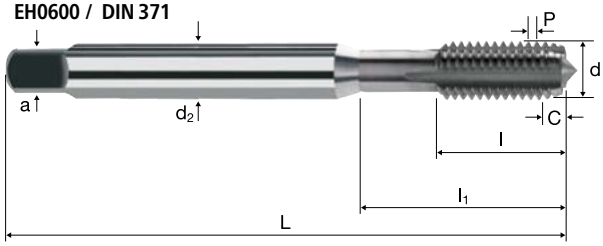
M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
Cast iron GG											
M 2	2.000	0.40	30	4775	1910	28	4455	1782	25	3980	1592
M 2.5	2.500	0.45	30	3820	1719	28	3565	1604	25	3185	1433
M 3	3.000	0.50	30	3185	1593	28	2970	1485	25	2655	1328
M 4	4.000	0.70	30	2385	1670	28	2230	1561	25	1990	1393
M 5	5.000	0.80	30	1910	1528	28	1785	1428	25	1590	1272
M 6	6.000	1.00	30	1590	1590	28	1485	1485	25	1325	1325
M 8	8.000	1.25	30	1195	1494	28	1115	1394	25	995	1244
M 10	10.000	1.50	30	955	1433	28	890	1335	25	795	1193
M 12	12.000	1.75	30	795	1391	28	745	1304	25	665	1164
Cast iron GG											
M 14	14.000	2.00	30	680	1360	28	635	1270	25	570	1140
M 16	16.000	2.00	30	595	1190	28	555	1110	25	495	990
M 18	18.000	2.50	30	530	1325	28	495	1238	25	440	1100
M 20	20.000	2.50	30	475	1188	28	445	1113	25	400	1000
M 22	22.000	2.50	30	435	1088	28	405	1013	25	360	900
M 24	24.000	3.00	30	400	1200	28	370	1110	25	330	990
Cast iron GGG											
M 2	2.000	0.40	25	3980	1592	22	3500	1400	20	3185	1274
M 2.5	2.500	0.45	25	3185	1433	22	2800	1260	20	2545	1145
M 3	3.000	0.50	25	2655	1328	22	2335	1168	20	2120	1060
M 4	4.000	0.70	25	1990	1393	22	1750	1225	20	1590	1113
M 5	5.000	0.80	25	1590	1272	22	1400	1120	20	1275	1020
M 6	6.000	1.00	25	1325	1325	22	1165	1165	20	1060	1060
M 8	8.000	1.25	25	995	1244	22	875	1094	20	795	994
M 10	10.000	1.50	25	795	1193	22	700	1050	20	635	953
M 12	12.000	1.75	25	665	1164	22	585	1024	20	530	928
Cast iron GGG											
M 14	14.000	2.00	25	570	1140	22	500	1000	20	455	910
M 16	16.000	2.00	25	495	990	22	440	880	20	400	800
M 18	18.000	2.50	25	440	1100	22	390	975	20	355	888
M 20	20.000	2.50	25	400	1000	22	350	875	20	320	800
M 22	22.000	2.50	25	360	900	22	320	800	20	290	725
M 24	24.000	3.00	25	330	990	22	290	870	20	265	795

Taps c-tap

GG

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	X · P Form C

EH0600 / DIN 371



EH0601 / DIN 376

M

GG(G)

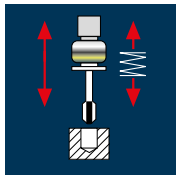
Example: **Order-N°.** Article-N°. **EH0600** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0600
034	M 2	0.40	45	8.00	-	2.8	2.1	3	1.60	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	3	2.05	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	4	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	4	8.50	●

Example: **Order-N°.** Article-N°. **EH0601** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0601
240	M 12	1.75	110	24.00	40.0	9.0	7.0	4	10.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	5	19.50	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	5	21.00	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Cast iron GG	M 4	4.000	0.70	28	2230	1561	24	1910	1337	20	1590	1113
		M 5	5.000	0.80	28	1785	1428	24	1530	1224	20	1275	1020
		M 6	6.000	1.00	28	1485	1485	24	1275	1275	20	1060	1060
		M 8	8.000	1.25	28	1115	1394	24	955	1194	20	795	994
		M 10	10.000	1.50	28	890	1335	24	765	1148	20	635	953
		M 12	12.000	1.75	28	745	1304	24	635	1111	20	530	928
		M 14	14.000	2.00	28	635	1270	24	545	1090	20	455	910
		M 16	16.000	2.00	28	555	1110	24	475	950	20	400	800
		M 18	18.000	2.50	28	495	1238	24	425	1063	20	355	888
	Cast iron GG	M 20	20.000	2.50	28	445	1113	24	380	950	20	320	800
		M 22	22.000	2.50	28	405	1013	24	345	863	20	290	725
		M 24	24.000	3.00	28	370	1110	24	320	960	20	265	795
	Cast iron GGG	M 4	4.000	0.70	20	1590	1113	18	1430	1001	15	1195	837
		M 5	5.000	0.80	20	1275	1020	18	1145	916	15	955	764
		M 6	6.000	1.00	20	1060	1060	18	955	955	15	795	795
		M 8	8.000	1.25	20	795	994	18	715	894	15	595	744
		M 10	10.000	1.50	20	635	953	18	575	863	15	475	713
		M 12	12.000	1.75	20	530	928	18	475	831	15	400	700
		M 14	14.000	2.00	20	455	910	18	410	820	15	340	680
		M 16	16.000	2.00	20	400	800	18	360	720	15	300	600
		M 18	18.000	2.50	20	355	888	18	320	800	15	265	663
	Cast iron GGG	M 20	20.000	2.50	20	320	800	18	285	713	15	240	600
		M 22	22.000	2.50	20	290	725	18	260	650	15	215	538
		M 24	24.000	3.00	20	265	795	18	240	720	15	200	600

Taps c-tap

Incool

GG

M

ISO 2 (6H)

60°

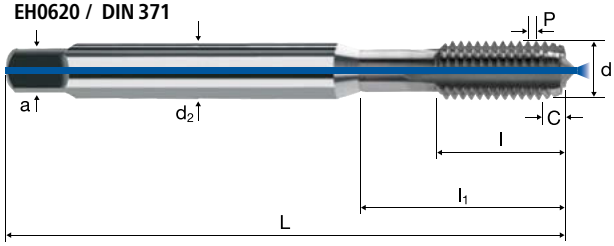
HSS PM/F

DIN 371/376

X · P

Form C

EH0620 / DIN 371



EH0621 / DIN 376

M

GG(G)

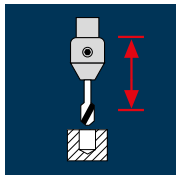
Example: **Order-N°.** Article-N°. **EH0620** ø-Code **058**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0620
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	4	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	4	8.50	●

Example: **Order-N°.** Article-N°. **EH0621** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH0621
240	M 12	1.75	110	24.00	40.0	9.0	7.0	4	10.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	5	19.50	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	5	21.00	●

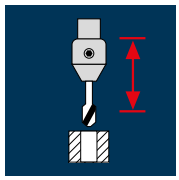
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material
	Cast iron GG

M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
M 3	3.000	0.50	80	8490	70	7425	50	5305
M 4	4.000	0.70	80	6365	70	5570	50	3980
M 5	5.000	0.80	80	5095	70	4455	50	3185
M 6	6.000	1.00	80	4245	70	3715	50	2655
M 8	8.000	1.25	80	3185	70	2785	50	1990
M 10	10.000	1.50	80	2545	70	2230	50	1590
M 12	12.000	1.75	80	2120	70	1855	50	1325

Material
Cast iron GGG

M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
M 3	3.000	0.50	60	6365	40	4245	30	3185
M 4	4.000	0.70	60	4775	40	3185	30	2385
M 5	5.000	0.80	60	3820	40	2545	30	1910
M 6	6.000	1.00	60	3185	40	2120	30	1590
M 8	8.000	1.25	60	2385	40	1590	30	1195
M 10	10.000	1.50	60	1910	40	1275	30	955
M 12	12.000	1.75	60	1590	40	1060	30	795

Application	Material
	Cast iron GG

M	d [mm]	P [mm]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]	v_c 3.0 x d	n [min^{-1}]
M 3	3.000	0.50	80	8490	60	6365	50	5305
M 4	4.000	0.70	80	6365	60	4775	50	3980
M 5	5.000	0.80	80	5095	60	3820	50	3185
M 6	6.000	1.00	80	4245	60	3185	50	2655
M 8	8.000	1.25	80	3185	60	2385	50	1990
M 10	10.000	1.50	80	2545	60	1910	50	1590
M 12	12.000	1.75	80	2120	60	1590	50	1325

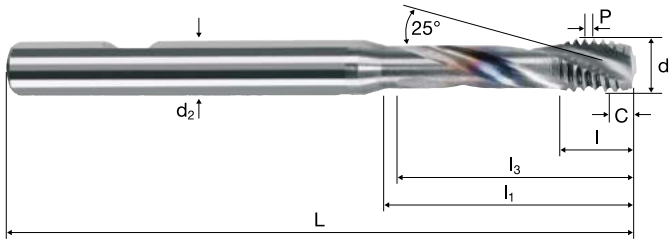
Material
Cast iron GGG

M	d [mm]	P [mm]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]	v_c 3.0 x d	n [min^{-1}]
M 3	3.000	0.50	60	6365	50	5305	40	4245
M 4	4.000	0.70	60	4775	50	3980	40	3185
M 5	5.000	0.80	60	3820	50	3185	40	2545
M 6	6.000	1.00	60	3185	50	2655	40	2120
M 8	8.000	1.25	60	2385	50	1990	40	1590
M 10	10.000	1.50	60	1910	50	1590	40	1275
M 12	12.000	1.75	60	1590	50	1325	40	1060

Taps durotap GG-R

GG

M	ISO 2 (6H)
60°	HM MG10
X · P Form C	
	X · P Form C



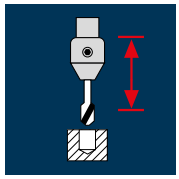
M

GG(G)

Example:
Order-N°. Article-N°. **EH6500** ø-Code **044**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH6500
044	M 3	0.50	63	2.50	18.0	16.0	6.0	3	2.50	●
058	M 4	0.70	63	3.50	21.0	19.0	6.0	3	3.30	●
084	M 5	0.80	70	4.00	25.0	23.0	6.0	3	4.20	●
088	M 6	1.00	80	5.00	30.0	28.0	6.0	3	5.00	●
160	M 8	1.25	90	6.50	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	7.50	39.0	37.0	10.0	3	8.50	●
240	M 12	1.75	110	9.00	45.0	43.0	12.0	3	10.20	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

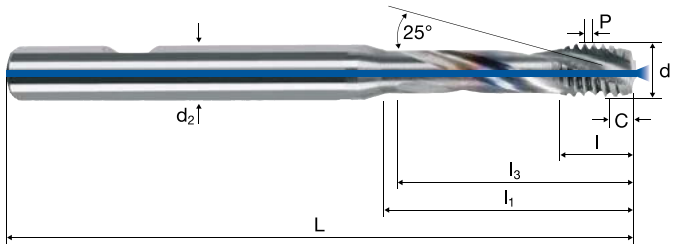
Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
	Cast iron GG	M 6	6.000	1.00	80	4245	70	3715	50	2655
		M 8	8.000	1.25	80	3185	70	2785	50	1990
		M 10	10.000	1.50	80	2545	70	2230	50	1590
		M 12	12.000	1.75	80	2120	70	1855	50	1325
	Cast iron GGG	M 6	6.000	1.00	60	3185	40	2120	30	1590
		M 8	8.000	1.25	60	2385	40	1590	30	1195
		M 10	10.000	1.50	60	1910	40	1275	30	955
		M 12	12.000	1.75	60	1590	40	1060	30	795

Taps durotap GG-R

Incool

GG

M	ISO 2 (6H)
60°	HM MG10
X · P Form C	
	X · P Form C



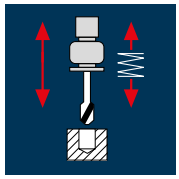
M

GG(G)

Example:
Order-N°. Article-N°. **EH6501** ø-Code **088**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH6501
088	M 6	1.00	80	5.00	30.0	28.0	6.0	3	5.00	●
160	M 8	1.25	90	6.50	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	7.50	39.0	37.0	10.0	3	8.50	●
240	M 12	1.75	110	9.00	45.0	43.0	12.0	3	10.20	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material
	Cast iron GG

M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
M 3	3.000	0.50	80	8490	70	7425	50	5305
M 4	4.000	0.70	80	6365	70	5570	50	3980
M 5	5.000	0.80	80	5095	70	4455	50	3185
M 6	6.000	1.00	80	4245	70	3715	50	2655
M 8	8.000	1.25	80	3185	70	2785	50	1990
M 10	10.000	1.50	80	2545	70	2230	50	1590
M 12	12.000	1.75	80	2120	70	1855	50	1325

Material
Cast iron GGG

M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
M 3	3.000	0.50	60	6365	40	4245	30	3185
M 4	4.000	0.70	60	4775	40	3185	30	2385
M 5	5.000	0.80	60	3820	40	2545	30	1910
M 6	6.000	1.00	60	3185	40	2120	30	1590
M 8	8.000	1.25	60	2385	40	1590	30	1195
M 10	10.000	1.50	60	1910	40	1275	30	955
M 12	12.000	1.75	60	1590	40	1060	30	795

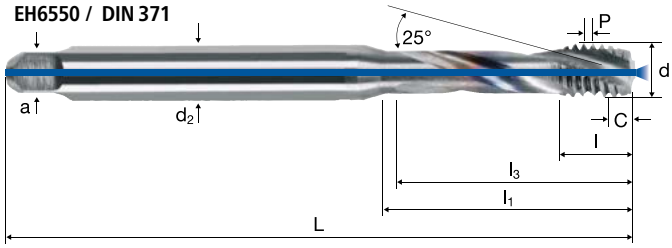
Taps durotap GG-R

Incool

GG

M	ISO 2 (6H)
60°	HM MG10
DIN 371/376	
	X · P Form C

EH6550 / DIN 371



EH6551 / DIN 376

M

GG(G)

Example: **Order-N°.** Article-N°. **EH6550** ø-Code **044**

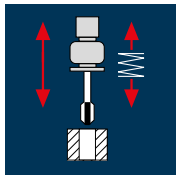
Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH6550
044*	M 3	0.50	56	5.00	18.0	16.0	3.5	2.7	3	2.50	●
058*	M 4	0.70	63	7.00	21.0	19.0	4.5	3.4	3	3.30	●
084*	M 5	0.80	70	8.00	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **EH6551** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH6551
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	3	10.20	●

* without internal cooling

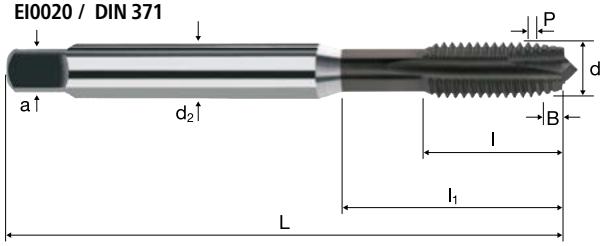
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Unalloyed aluminium	M 2	2.000	0.40	23	3660	1464	19	3025	1210	16	2545	1018
		M 2.5	2.500	0.45	23	2930	1319	19	2420	1089	16	2035	916
		M 3	3.000	0.50	23	2440	1220	19	2015	1008	16	1700	850
		M 4	4.000	0.70	23	1830	1281	19	1510	1057	16	1275	893
		M 5	5.000	0.80	23	1465	1172	19	1210	968	16	1020	816
		M 6	6.000	1.00	23	1220	1220	19	1010	1010	16	850	850
		M 8	8.000	1.25	23	915	1144	19	755	944	16	635	794
		M 10	10.000	1.50	23	730	1095	19	605	908	16	510	765
		M 12	12.000	1.75	23	610	1068	19	505	884	16	425	744
	Unalloyed aluminium	M 14	14.000	2.00	23	525	1050	19	430	860	16	365	730
		M 16	16.000	2.00	23	460	920	19	380	760	16	320	640
		M 18	18.000	2.50	23	405	1013	19	335	838	16	285	713
		M 20	20.000	2.50	23	365	913	19	300	750	16	255	638
		M 22	22.000	2.50	23	335	838	19	275	688	16	230	575
		M 24	24.000	3.00	23	305	915	19	250	750	16	210	630
	Wrought aluminium alloys Si < 6% not hardened	M 2	2.000	0.40	35	5570	2228	30	4775	1910	25	3980	1592
		M 2.5	2.500	0.45	35	4455	2005	30	3820	1719	25	3185	1433
		M 3	3.000	0.50	35	3715	1858	30	3185	1593	25	2655	1328
		M 4	4.000	0.70	35	2785	1950	30	2385	1670	25	1990	1393
		M 5	5.000	0.80	35	2230	1784	30	1910	1528	25	1590	1272
		M 6	6.000	1.00	35	1855	1855	30	1590	1590	25	1325	1325
		M 8	8.000	1.25	35	1395	1744	30	1195	1494	25	995	1244
		M 10	10.000	1.50	35	1115	1673	30	955	1433	25	795	1193
		M 12	12.000	1.75	35	930	1628	30	795	1391	25	665	1164
	Wrought aluminium alloys Si < 6% not hardened	M 14	14.000	2.00	35	795	1590	30	680	1360	25	570	1140
		M 16	16.000	2.00	35	695	1390	30	595	1190	25	495	990
		M 18	18.000	2.50	35	620	1550	30	530	1325	25	440	1100
		M 20	20.000	2.50	35	555	1388	30	475	1188	25	400	1000
		M 22	22.000	2.50	35	505	1263	30	435	1088	25	360	900
		M 24	24.000	3.00	35	465	1395	30	400	1200	25	330	990
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	20	3185	1274	17	2705	1082	14	2230	892
		M 2.5	2.500	0.45	20	2545	1145	17	2165	974	14	1785	803
		M 3	3.000	0.50	20	2120	1060	17	1805	903	14	1485	743
		M 4	4.000	0.70	20	1590	1113	17	1355	949	14	1115	781
		M 5	5.000	0.80	20	1275	1020	17	1080	864	14	890	712
		M 6	6.000	1.00	20	1060	1060	17	900	900	14	745	745
		M 8	8.000	1.25	20	795	994	17	675	844	14	555	694
		M 10	10.000	1.50	20	635	953	17	540	810	14	445	668
		M 12	12.000	1.75	20	530	928	17	450	788	14	370	648
	Wrought aluminium alloys Si < 6% hardened	M 14	14.000	2.00	20	455	910	17	385	770	14	320	640
		M 16	16.000	2.00	20	400	800	17	340	680	14	280	560
		M 18	18.000	2.50	20	355	888	17	300	750	14	250	625
		M 20	20.000	2.50	20	320	800	17	270	675	14	225	563
		M 22	22.000	2.50	20	290	725	17	245	613	14	205	513
		M 24	24.000	3.00	20	265	795	17	225	675	14	185	555
	Unalloyed copper	M 2	2.000	0.40	21	3340	1336	18	2865	1146	15	2385	954
		M 2.5	2.500	0.45	21	2675	1204	18	2290	1031	15	1910	860
		M 3	3.000	0.50	21	2230	1115	18	1910	955	15	1590	795
		M 4	4.000	0.70	21	1670	1169	18	1430	1001	15	1195	837
		M 5	5.000	0.80	21	1335	1068	18	1145	916	15	955	764
		M 6	6.000	1.00	21	1115	1115	18	955	955	15	795	795
		M 8	8.000	1.25	21	835	1044	18	715	894	15	595	744
		M 10	10.000	1.50	21	670	1005	18	575	863	15	475	713
		M 12	12.000	1.75	21	555	971	18	475	831	15	400	700
	Unalloyed copper	M 14	14.000	2.00	21	475	950	18	410	820	15	340	680
		M 16	16.000	2.00	21	420	840	18	360	720	15	300	600
		M 18	18.000	2.50	21	370	925	18	320	800	15	265	663
		M 20	20.000	2.50	21	335	838	18	285	713	15	240	600
		M 22	22.000	2.50	21	305	763	18	260	650	15	215	538
		M 24	24.000	3.00	21	280	840	18	240	720	15	200	600

Taps

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	Form B

EI0020 / DIN 371



EI0021 / DIN 376

M

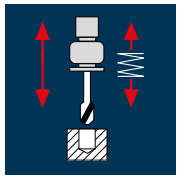
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	

Example: **Order-N°.** Article-N°. **EI0020** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			INTEGRAL EI0020
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.60	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.05	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	2	2.50	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	2	3.30	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	2	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	2	5.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	2	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	2	8.50	●

Example: **Order-N°.** Article-N°. **EI0021** ø-Code **240**

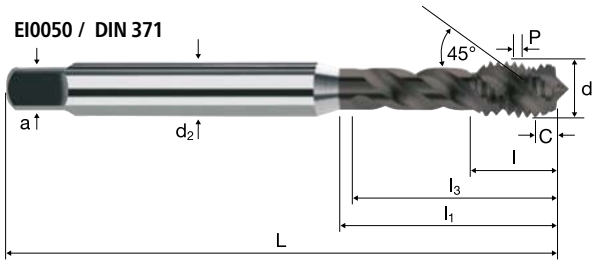
Ø Code	d	P	L	l	l_1	d_2	a			INTEGRAL EI0021
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.00	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.00	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	3	15.50	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	3	17.50	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	3	19.50	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	3	21.00	●

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Unalloyed aluminium	M 2	2.000	0.40	25	3980	1592	21	3340	1336	17	2705	1082
		M 2.5	2.500	0.45	25	3185	1433	21	2675	1204	17	2165	974
		M 3	3.000	0.50	25	2655	1328	21	2230	1115	17	1805	903
		M 4	4.000	0.70	25	1990	1393	21	1670	1169	17	1355	949
		M 5	5.000	0.80	25	1590	1272	21	1335	1068	17	1080	864
		M 6	6.000	1.00	25	1325	1325	21	1115	1115	17	900	900
		M 8	8.000	1.25	25	995	1244	21	835	1044	17	675	844
		M 10	10.000	1.50	25	795	1193	21	670	1005	17	540	810
		M 12	12.000	1.75	25	665	1164	21	555	971	17	450	788
	Unalloyed aluminium	M 14	14.000	2.00	25	570	1140	21	475	950	17	385	770
		M 16	16.000	2.00	25	495	990	21	420	840	17	340	680
		M 18	18.000	2.50	25	440	1100	21	370	925	17	300	750
		M 20	20.000	2.50	25	400	1000	21	335	838	17	270	675
		M 22	22.000	2.50	25	360	900	21	305	763	17	245	613
		M 24	24.000	3.00	25	330	990	21	280	840	17	225	675
	Wrought aluminium alloys Si < 6% not hardened	M 2	2.000	0.40	27	4295	1718	24	3820	1528	18	2865	1146
		M 2.5	2.500	0.45	27	3440	1548	24	3055	1375	18	2290	1031
		M 3	3.000	0.50	27	2865	1433	24	2545	1273	18	1910	955
		M 4	4.000	0.70	27	2150	1505	24	1910	1337	18	1430	1001
		M 5	5.000	0.80	27	1720	1376	24	1530	1224	18	1145	916
		M 6	6.000	1.00	27	1430	1430	24	1275	1275	18	955	955
		M 8	8.000	1.25	27	1075	1344	24	955	1194	18	715	894
		M 10	10.000	1.50	27	860	1290	24	765	1148	18	575	863
		M 12	12.000	1.75	27	715	1251	24	635	1111	18	475	831
	Wrought aluminium alloys Si < 6% not hardened	M 14	14.000	2.00	27	615	1230	24	545	1090	18	410	820
		M 16	16.000	2.00	27	535	1070	24	475	950	18	360	720
		M 18	18.000	2.50	27	475	1188	24	425	1063	18	320	800
		M 20	20.000	2.50	27	430	1075	24	380	950	18	285	713
		M 22	22.000	2.50	27	390	975	24	345	863	18	260	650
		M 24	24.000	3.00	27	360	1080	24	320	960	18	240	720
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	21	3340	1336	18	2865	1146	15	2385	954
		M 2.5	2.500	0.45	21	2675	1204	18	2290	1031	15	1910	860
		M 3	3.000	0.50	21	2230	1115	18	1910	955	15	1590	795
		M 4	4.000	0.70	21	1670	1169	18	1430	1001	15	1195	837
		M 5	5.000	0.80	21	1335	1068	18	1145	916	15	955	764
		M 6	6.000	1.00	21	1115	1115	18	955	955	15	795	795
		M 8	8.000	1.25	21	835	1044	18	715	894	15	595	744
		M 10	10.000	1.50	21	670	1005	18	575	863	15	475	713
		M 12	12.000	1.75	21	555	971	18	475	831	15	400	700
	Wrought aluminium alloys Si < 6% hardened	M 14	14.000	2.00	21	475	950	18	410	820	15	340	680
		M 16	16.000	2.00	21	420	840	18	360	720	15	300	600
		M 18	18.000	2.50	21	370	925	18	320	800	15	265	663
		M 20	20.000	2.50	21	335	838	18	285	713	15	240	600
		M 22	22.000	2.50	21	305	763	18	260	650	15	215	538
		M 24	24.000	3.00	21	280	840	18	240	720	15	200	600
	Unalloyed copper	M 2	2.000	0.40	20	3185	1274	18	2865	1146	16	2545	1018
		M 2.5	2.500	0.45	20	2545	1145	18	2290	1031	16	2035	916
		M 3	3.000	0.50	20	2120	1060	18	1910	955	16	1700	850
		M 4	4.000	0.70	20	1590	1113	18	1430	1001	16	1275	893
		M 5	5.000	0.80	20	1275	1020	18	1145	916	16	1020	816
		M 6	6.000	1.00	20	1060	1060	18	955	955	16	850	850
		M 8	8.000	1.25	20	795	994	18	715	894	16	635	794
		M 10	10.000	1.50	20	635	953	18	575	863	16	510	765
		M 12	12.000	1.75	20	530	928	18	475	831	16	425	744
	Unalloyed copper	M 14	14.000	2.00	20	455	910	18	410	820	16	365	730
		M 16	16.000	2.00	20	400	800	18	360	720	16	320	640
		M 18	18.000	2.50	20	355	888	18	320	800	16	285	713
		M 20	20.000	2.50	20	320	800	18	285	713	16	255	638
		M 22	22.000	2.50	20	290	725	18	260	650	16	230	575
		M 24	24.000	3.00	20	265	795	18	240	720	16	210	630

Taps

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371/376	
	Form C

EI0050 / DIN 371



EI0051 / DIN 376

M

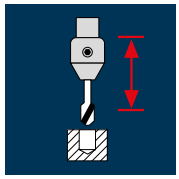
Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	Plastic Thermo-plast

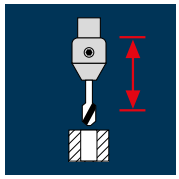
Example: **Order-N°.** Article-N°. **EI0050** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			INTEGRAL EI0050
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	1.60	●
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	2.05	●
044	M 3	0.50	56	5.00	18.0	16.0	3.5	2.7	3	2.50	●
058	M 4	0.70	63	7.00	21.0	19.0	4.5	3.4	3	3.30	●
084	M 5	0.80	70	8.00	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **EI0051** ø-Code **240**

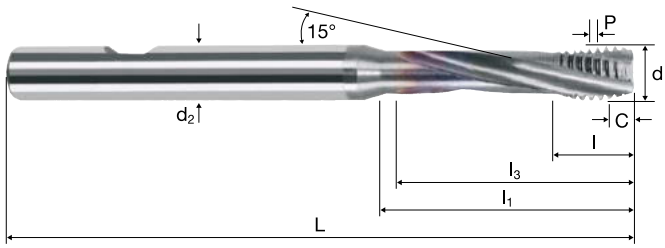
Ø Code	d	P	L	l	l_1	l_3	d_2	a			INTEGRAL EI0051
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.00	●
312	M 18	2.50	125	25.00	65.0	63.0	14.0	11.0	4	15.50	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	4	17.50	●
316	M 22	2.50	140	25.00	72.0	70.0	18.0	14.5	4	19.50	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	4	21.00	●

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
	Cast aluminium	M 5	5.000	0.80	80	5095	60	3820	40	2545
		M 6	6.000	1.00	80	4245	60	3185	40	2120
		M 7	7.000	1.00	80	3640	60	2730	40	1820
		M 8	8.000	1.25	80	3185	60	2385	40	1590
		M 10	10.000	1.50	80	2545	60	1910	40	1275
	CuAlFe (Ampco)	M 5	5.000	0.80	10	635	8	510	7	445
		M 6	6.000	1.00	10	530	8	425	7	370
		M 7	7.000	1.00	10	455	8	365	7	320
		M 8	8.000	1.25	10	400	8	320	7	280
		M 10	10.000	1.50	10	320	8	255	7	225

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]	v_c 3.0 x d	n [min^{-1}]
	Cast aluminium	M 5	5.000	0.80	100	6365	80	5095	60	3820
		M 6	6.000	1.00	100	5305	80	4245	60	3185
		M 7	7.000	1.00	100	4545	80	3640	60	2730
		M 8	8.000	1.25	100	3980	80	3185	60	2385
		M 10	10.000	1.50	100	3185	80	2545	60	1910
	CuAlFe (Ampco)	M 5	5.000	0.80	12	765	10	635	9	575
		M 6	6.000	1.00	12	635	10	530	9	475
		M 7	7.000	1.00	12	545	10	455	9	410
		M 8	8.000	1.25	12	475	10	400	9	360
		M 10	10.000	1.50	12	380	10	320	9	285

Taps durotap A-R

M	ISO 2 (6H)
60°	HM MG10
X · P Form C	
	X · P Form C



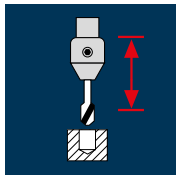
M

					Al Aluminium Cast		Cu Copper		GG(G)

Example: **Order-N°.** Article-N°. **EH6300** ø-Code **084**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH6300
084	M 5	0.80	70	4.00	25.0	23.0	6.0	3	4.20	●
088	M 6	1.00	80	5.00	30.0	28.0	6.0	3	5.00	●
089	M 7	1.00	80	5.00	30.0	28.0	8.0	3	6.00	●
160	M 8	1.25	90	6.50	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	7.50	39.0	37.0	10.0	3	8.50	●

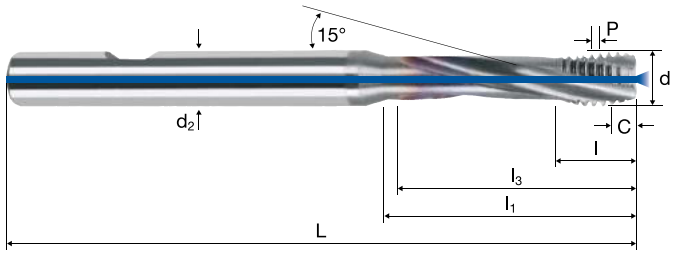
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_c 1.5 x d	n [min^{-1}]	v_c 2.0 x d	n [min^{-1}]
	Cast aluminium	M 6	6.000	1.00	80	4245	60	3185	40	2120
		M 7	7.000	1.00	80	3640	60	2730	40	1820
		M 8	8.000	1.25	80	3185	60	2385	40	1590
		M 10	10.000	1.50	80	2545	60	1910	40	1275
	CuAlFe (Ampco)	M 6	6.000	1.00	10	530	8	425	7	370
		M 7	7.000	1.00	10	455	8	365	7	320
		M 8	8.000	1.25	10	400	8	320	7	280
		M 10	10.000	1.50	10	320	8	255	7	225

Taps durotap A-R

Incool

M	ISO 2 (6H)
60°	HM MG10
X · P Form C	
	X · P Form C



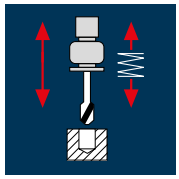
M

					Al Aluminium Cast		Cu Copper		GG(G)

Example: **Order-N°.** Article-N°. **EH6301** ø-Code **088**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH6301
088	M 6	1.00	80	5.00	30.0	28.0	6.0	3	5.00	●
089	M 7	1.00	80	5.00	30.0	28.0	8.0	3	6.00	●
160	M 8	1.25	90	6.50	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	7.50	39.0	37.0	10.0	3	8.50	●

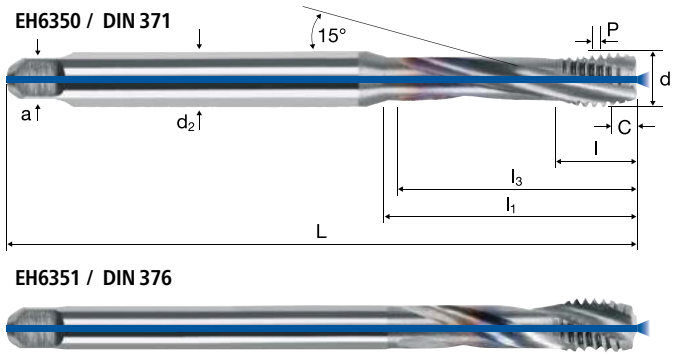
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Cast aluminium	M 4	4.000	0.70	80	6365	4456	60	4775	3343	40	3185	2230
		M 5	5.000	0.80	80	5095	4076	60	3820	3056	40	2545	2036
		M 6	6.000	1.00	80	4245	4245	60	3185	3185	40	2120	2120
		M 8	8.000	1.25	80	3185	3981	60	2385	2981	40	1590	1988
		M 10	10.000	1.50	80	2545	3818	60	1910	2865	40	1275	1913
		M 12	12.000	1.75	80	2120	3710	60	1590	2783	40	1060	1855
		M 14	14.000	2.00	80	1820	3640	60	1365	2730	40	910	1820
		M 16	16.000	2.00	80	1590	3180	60	1195	2390	40	795	1590
	CuAlFe (Ampco)	M 4	4.000	0.70	10	795	557	8	635	445	7	555	389
		M 5	5.000	0.80	10	635	508	8	510	408	7	445	356
		M 6	6.000	1.00	10	530	530	8	425	425	7	370	370
		M 8	8.000	1.25	10	400	500	8	320	400	7	280	350
		M 10	10.000	1.50	10	320	480	8	255	383	7	225	338
		M 12	12.000	1.75	10	265	464	8	210	368	7	185	324
		M 14	14.000	2.00	10	225	450	8	180	360	7	160	320
		M 16	16.000	2.00	10	200	400	8	160	320	7	140	280

Taps durotap A

Incool

M	ISO 2 (6H)
60°	HM MG10
DIN 371/376	
	Form C



M

					Al Aluminium Cast		Cu Copper		GG(G)

Example: **Order-N°.** Article-N°. **EH6350** ø-Code **058**

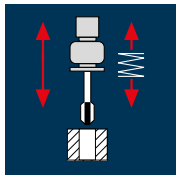
Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH6350
058*	M 4	0.70	63	7.00	21.0	19.0	4.5	3.4	3	3.30	●
084*	M 5	0.80	70	8.00	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **EH6351** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH6351
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	3	10.20	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.00	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.00	●

* without internal cooling

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

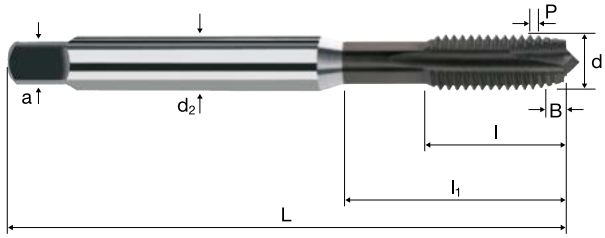
Application	Material
	Titanium alloys > 300 HB [Ti6Al4V]
	Titanium alloys > 300 HB [Ti6Al4V]

M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
M 1.2	1.200	0.25	4	1060	265	3	795	199	2	530	133
M 1.4	1.400	0.30	4	910	273	3	680	204	2	455	137
M 1.6	1.600	0.35	4	795	278	3	595	208	2	400	140
M 1.8	1.800	0.35	4	705	247	3	530	186	2	355	124
M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
M 3.5	3.500	0.60	5	455	273	4	365	219	3	275	165
M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
M 10	10.000	1.50	5	160	240	4	125	188	3	95	143

Taps titap

Ti

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371	
	Form B



M

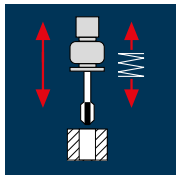
Ti Titanium

Example: **Order-N°.** Article-N°. **ET0705** ø-Code **012**

Ø Code	d	P	L	l	l_1	d_2	a			TRIBO ET0705
012	M 1.2	0.25	40	5.50	-	2.5	2.1	2	1.00*	●
020	M 1.4	0.30	40	7.00	-	2.5	2.1	2	1.15*	●
022	M 1.6	0.35	40	8.00	-	2.5	2.1	2	1.30	●
026	M 1.8	0.35	40	8.00	-	2.5	2.1	2	1.50	●
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.70*	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.10	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.60*	●
056	M 3.5	0.60	56	12.00	20.0	4.0	3.0	3	3.00	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.40	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.30	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	5.10	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	6.90	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	8.60	●

≤ M 1.4 Tolerance ISO 1 (4H)
* The given dimension is out of norm
For larger dimensions see article no. ET0706

Application



Material

Titanium alloys
> 300 HB
[Ti6Al4V]

M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
M 14	14.000	2.00	5	115	230	4	90	180	3	70	140
M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
M 18	18.000	2.50	5	90	225	4	70	175	3	55	138
M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
M 22	22.000	2.50	5	70	175	4	60	150	3	45	113
M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps titap

Ti

M

ISO 2 (6H)

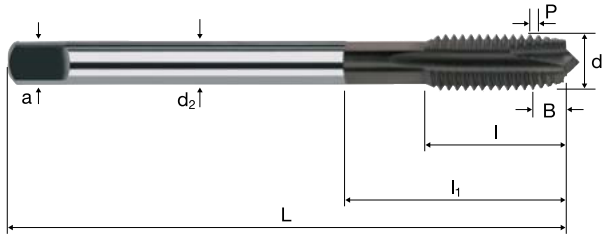
60°

HSS PM/F

DIN 376

X · P

Form B

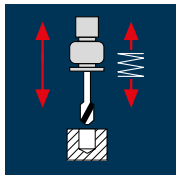


M

Ti Titanium

Example: **Order-N°.** Article-N°. **ET0706** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TRIBO ET0706
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.40	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.20	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.20	●
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.70	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.70	●
316	M 22	2.50	140	32.00	50.0	18.0	14.5	4	19.70	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	21.20	●

Application	Material
	Titanium alloys > 300 HB [Ti6Al4V]
	Titanium alloys > 300 HB [Ti6Al4V]

M	d [mm]	P [mm]	v_c 1.0 x d	n [min^{-1}]	v_f [100%]	v_c 1.5 x d	n [min^{-1}]	v_f [100%]
M 2	2.000	0.40	4	635	254	3	475	190
M 2.5	2.500	0.45	4	510	230	3	380	171
M 3	3.000	0.50	5	530	265	4	425	213
M 3.5	3.500	0.60	5	455	273	4	365	219
M 4	4.000	0.70	5	400	280	4	320	224
M 5	5.000	0.80	5	320	256	4	255	204
M 6	6.000	1.00	5	265	265	4	210	210
M 8	8.000	1.25	5	200	250	4	160	200
M 10	10.000	1.50	5	160	240	4	125	188
M 12	12.000	1.75	5	135	236	4	105	184
M 14	14.000	2.00	5	115	230	4	90	180
M 16	16.000	2.00	5	100	200	4	80	160
M 18	18.000	2.50	5	90	225	4	70	175
M 20	20.000	2.50	5	80	200	4	65	163
M 22	22.000	2.50	5	70	175	4	60	150
M 24	24.000	3.00	5	65	195	4	55	165

Taps titap

Ti

M

ISO 2 (6H)

60°

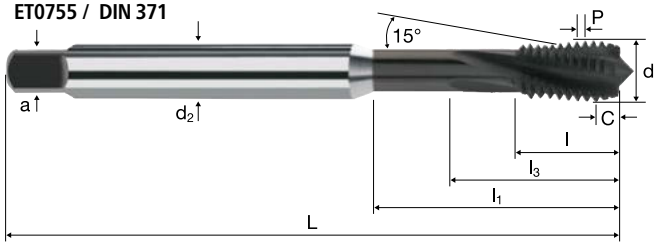
HSS PM/F

DIN 371/376

X · P

Form C

ET0755 / DIN 371



ET0756 / DIN 376

Ti Titanium

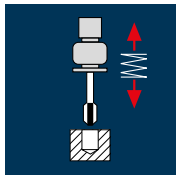
Example: **Order-N°.** Article-N°. **ET0755** ø-Code **034**

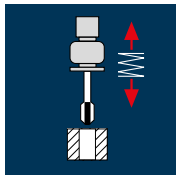
Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET0755
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	1.70*	●
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	2.10	●
044	M 3	0.50	56	5.00	18.0	16.0	3.5	2.7	3	2.60*	●
056	M 3.5	0.60	56	6.00	20.0	18.0	4.0	3.0	3	3.00	●
058	M 4	0.70	63	7.00	21.0	19.0	4.5	3.4	3	3.40	●
084	M 5	0.80	70	8.00	25.0	23.0	6.0	4.9	3	4.30	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	4.9	3	5.10	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	6.90	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	4	8.60	●

Example: **Order-N°.** Article-N°. **ET0756** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET0756
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	4	10.40	●
244	M 14	2.00	110	20.00	58.0	56.0	11.0	9.0	4	12.20	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	14.20	●
312	M 18	2.50	125	25.00	65.0	63.0	14.0	11.0	5	15.70	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	5	17.70	●
316	M 22	2.50	140	25.00	72.0	70.0	18.0	14.5	5	19.70	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	5	21.20	●

* The given dimension is out of norm

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]
	Nickel base alloys hardened	M 2	2.000	0.40	2	320	128	2	320	128
		M 2.5	2.500	0.45	2	255	115	2	255	115
		M 3	3.000	0.50	2	210	105	2	210	105
		M 4	4.000	0.70	2	160	112	2	160	112
		M 5	5.000	0.80	2	125	100	2	125	100
		M 6	6.000	1.00	2	105	105	2	105	105
		M 8	8.000	1.25	2	80	100	2	80	100
		M 10	10.000	1.50	2	65	98	2	65	98
		M 12	12.000	1.75	2	55	96	2	55	96
	Nickel base alloys hardened	M 14	14.000	2.00	2	45	90	2	45	90
		M 16	16.000	2.00	2	40	80	2	40	80
		M 18	18.000	2.50	2	35	88	2	35	88
		M 20	20.000	2.50	2	30	75	2	30	75
		M 22	22.000	2.50	2	30	75	2	30	75
		M 24	24.000	3.00	2	25	75	2	25	75
	Nickel base alloys not hardened	M 2	2.000	0.40	3	475	190	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115
		M 3	3.000	0.50	3	320	160	2	210	105
		M 4	4.000	0.70	3	240	168	2	160	112
		M 5	5.000	0.80	3	190	152	2	125	100
		M 6	6.000	1.00	3	160	160	2	105	105
		M 8	8.000	1.25	3	120	150	2	80	100
		M 10	10.000	1.50	3	95	143	2	65	98
		M 12	12.000	1.75	3	80	140	2	55	96
	Nickel base alloys not hardened	M 14	14.000	2.00	3	70	140	2	45	90
		M 16	16.000	2.00	3	60	120	2	40	80
		M 18	18.000	2.50	3	55	138	2	35	88
		M 20	20.000	2.50	3	50	125	2	30	75
		M 22	22.000	2.50	3	45	113	2	30	75
		M 24	24.000	3.00	3	40	120	2	25	75

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]
	Nickel base alloys hardened	M 2	2.000	0.40	2	320	128	2	320	128
		M 2.5	2.500	0.45	2	255	115	2	255	115
		M 3	3.000	0.50	2	210	105	2	210	105
		M 4	4.000	0.70	2	160	112	2	160	112
		M 5	5.000	0.80	2	125	100	2	125	100
		M 6	6.000	1.00	2	105	105	2	105	105
		M 8	8.000	1.25	2	80	100	2	80	100
		M 10	10.000	1.50	2	65	98	2	65	98
		M 12	12.000	1.75	2	55	96	2	55	96
	Nickel base alloys hardened	M 14	14.000	2.00	2	45	90	2	45	90
		M 16	16.000	2.00	2	40	80	2	40	80
		M 18	18.000	2.50	2	35	88	2	35	88
		M 20	20.000	2.50	2	30	75	2	30	75
		M 22	22.000	2.50	2	30	75	2	30	75
		M 24	24.000	3.00	2	25	75	2	25	75
	Nickel base alloys not hardened	M 2	2.000	0.40	3	475	190	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115
		M 3	3.000	0.50	3	320	160	2	210	105
		M 4	4.000	0.70	3	240	168	2	160	112
		M 5	5.000	0.80	3	190	152	2	125	100
		M 6	6.000	1.00	3	160	160	2	105	105
		M 8	8.000	1.25	3	120	150	2	80	100
		M 10	10.000	1.50	3	95	143	2	65	98
		M 12	12.000	1.75	3	80	140	2	55	96
	Nickel base alloys not hardened	M 14	14.000	2.00	3	70	140	2	45	90
		M 16	16.000	2.00	3	60	120	2	40	80
		M 18	18.000	2.50	3	55	138	2	35	88
		M 20	20.000	2.50	3	50	125	2	30	75
		M 22	22.000	2.50	3	45	113	2	30	75
		M 24	24.000	3.00	3	40	120	2	25	75

Taps n-tap

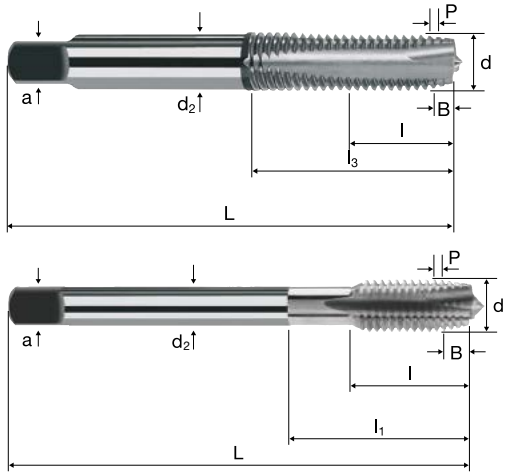
Ni

M

ISO 2 (6H)

HSS PM/F

Form B

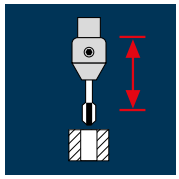


Nickel-Alloys

Example:
Order-N°. Article-N°. **E0598** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			E0598	
034	M 2	0.40	41	8.00	-	11.0	2.8	2.1	2	1.70*	●	
040	M 2.5	0.45	44	9.00	-	13.0	2.8	2.1	2	2.10	●	
044	M 3	0.50	48	11.00	-	16.0	3.5	2.7	3	2.60*	●	
058	M 4	0.70	53	13.00	-	19.0	4.5	3.4	3	3.40	●	
084	M 5	0.80	58	15.00	-	22.0	6.0	4.9	3	4.30	●	
088	M 6	1.00	66	17.00	-	28.0	6.0	4.9	3	5.10	●	
160	M 8	1.25	72	20.00	-	34.0	8.0	6.2	3	6.90	●	
174	M 10	1.50	80	22.00	-	37.0	10.0	8.0	3	8.60	●	
240	M 12	1.75	89	24.00	40.0	-	9.0	7.0	3	10.40	●	
244	M 14	2.00	95	26.00	40.0	-	11.0	9.0	3	12.20	●	
246	M 16	2.00	102	27.00	40.0	-	12.0	9.0	3	14.20	●	
312	M 18	2.50	112	30.00	45.0	-	14.0	11.0	3	15.70	●	
314	M 20	2.50	112	32.00	45.0	-	16.0	12.0	3	17.70	●	
316	M 22	2.50	118	32.00	50.0	-	18.0	14.5	4	19.70	●	
320	M 24	3.00	130	34.00	60.0	-	18.0	14.5	4	21.20	●	

* The given dimension is out of norm

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]	v_c 3.0 x d	n [min⁻¹]
	Steel < 500 N/mm²	M 3	3.000	0.50	25	2655	20	2120	15	1590
		M 4	4.000	0.70	25	1990	20	1590	15	1195
		M 5	5.000	0.80	25	1590	20	1275	15	955
		M 6	6.000	1.00	25	1325	20	1060	15	795
		M 8	8.000	1.25	25	995	20	795	15	595
		M 10	10.000	1.50	25	795	20	635	15	475
		M 12	12.000	1.75	25	665	20	530	15	400
		M 16	16.000	2.00	25	495	20	400	15	300
		M 20	20.000	2.50	25	400	20	320	15	240
	Steel 500 - 850 N/mm²	M 3	3.000	0.50	22	2335	18	1910	12	1275
		M 4	4.000	0.70	22	1750	18	1430	12	955
		M 5	5.000	0.80	22	1400	18	1145	12	765
		M 6	6.000	1.00	22	1165	18	955	12	635
		M 8	8.000	1.25	22	875	18	715	12	475
		M 10	10.000	1.50	22	700	18	575	12	380
		M 12	12.000	1.75	22	585	18	475	12	320
		M 16	16.000	2.00	22	440	18	360	12	240
		M 20	20.000	2.50	22	350	18	285	12	190
	Steel 850 - 1100 N/mm²	M 3	3.000	0.50	18	1910	12	1275	10	1060
		M 4	4.000	0.70	18	1430	12	955	10	795
		M 5	5.000	0.80	18	1145	12	765	10	635
		M 6	6.000	1.00	18	955	12	635	10	530
		M 8	8.000	1.25	18	715	12	475	10	400
		M 10	10.000	1.50	18	575	12	380	10	320
		M 12	12.000	1.75	18	475	12	320	10	265
		M 16	16.000	2.00	18	360	12	240	10	200
		M 20	20.000	2.50	18	285	12	190	10	160
	Cast iron GG	M 3	3.000	0.50	22	2335	20	2120	18	1910
		M 4	4.000	0.70	22	1750	20	1590	18	1430
		M 5	5.000	0.80	22	1400	20	1275	18	1145
		M 6	6.000	1.00	22	1165	20	1060	18	955
		M 8	8.000	1.25	22	875	20	795	18	715
		M 10	10.000	1.50	22	700	20	635	18	575
		M 12	12.000	1.75	22	585	20	530	18	475
		M 16	16.000	2.00	22	440	20	400	18	360
		M 20	20.000	2.50	22	350	20	320	18	285
	Stainless steel [Cr-Ni/1.4301]	M 3	3.000	0.50	6	635	4	425	3	320
		M 4	4.000	0.70	6	475	4	320	3	240
		M 5	5.000	0.80	6	380	4	255	3	190
		M 6	6.000	1.00	6	320	4	210	3	160
		M 8	8.000	1.25	6	240	4	160	3	120
		M 10	10.000	1.50	6	190	4	125	3	95
		M 12	12.000	1.75	6	160	4	105	3	80
		M 16	16.000	2.00	6	120	4	80	3	60
		M 20	20.000	2.50	6	95	4	65	3	50
	Wrought aluminium alloys Si < 6% hardened	M 3	3.000	0.50	25	2655	20	2120	15	1590
		M 4	4.000	0.70	25	1990	20	1590	15	1195
		M 5	5.000	0.80	25	1590	20	1275	15	955
		M 6	6.000	1.00	25	1325	20	1060	15	795
		M 8	8.000	1.25	25	995	20	795	15	595
		M 10	10.000	1.50	25	795	20	635	15	475
		M 12	12.000	1.75	25	665	20	530	15	400
		M 16	16.000	2.00	25	495	20	400	15	300
		M 20	20.000	2.50	25	400	20	320	15	240

Taps polytap-R

R

M

ISO 2 (6H)

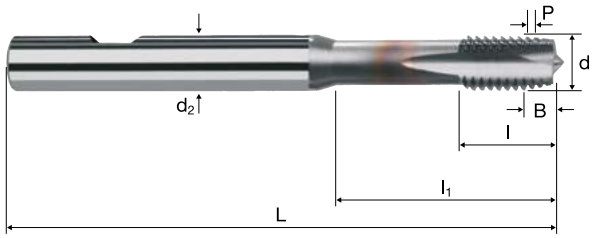
60°

HSS PM/F

HSS PM/F

X · P

Form B



Rm < 850

Rm 850-1100

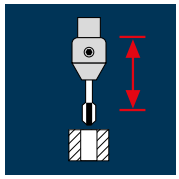
Inox Stainless

GG(G) Aluminium

Example:
Order-N°. Article-N°. **EH0109** ø-Code **044**

Ø Code	d	P	L	l	l_1	d_2 h6			TiCN
									EH0109
044	M 3	0.50	63	5.00	18.0	6.0	3	2.50	●
058	M 4	0.70	66	7.00	21.0	6.0	3	3.30	●
084	M 5	0.80	70	8.00	25.0	6.0	3	4.20	●
088	M 6	1.00	80	10.00	30.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	10.0	3	8.50	●
240	M 12	1.75	110	18.00	45.0	12.0	3	10.20	●
244	M 14	2.00	110	20.00	46.0	16.0	3	12.00	●
246	M 16	2.00	110	20.00	50.0	16.0	3	14.00	●
312	M 18	2.50	125	25.00	60.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	16.0	4	17.50	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]	v_c 3.0 x d	n [min⁻¹]
	Steel < 500 N/mm²	M 6	6.000	1.00	25	1325	20	1060	15	795
		M 8	8.000	1.25	25	995	20	795	15	595
		M 10	10.000	1.50	25	795	20	635	15	475
		M 12	12.000	1.75	25	665	20	530	15	400
		M 14	14.000	2.00	25	570	20	455	15	340
		M 16	16.000	2.00	25	495	20	400	15	300
		M 18	18.000	2.50	25	440	20	355	15	265
		M 20	20.000	2.50	25	400	20	320	15	240
	Steel 500 - 850 N/mm²	M 6	6.000	1.00	22	1165	18	955	12	635
		M 8	8.000	1.25	22	875	18	715	12	475
		M 10	10.000	1.50	22	700	18	575	12	380
		M 12	12.000	1.75	22	585	18	475	12	320
		M 14	14.000	2.00	22	500	18	410	12	275
		M 16	16.000	2.00	22	440	18	360	12	240
		M 18	18.000	2.50	22	390	18	320	12	210
		M 20	20.000	2.50	22	350	18	285	12	190
	Steel 850 - 1100 N/mm²	M 6	6.000	1.00	18	955	12	635	10	530
		M 8	8.000	1.25	18	715	12	475	10	400
		M 10	10.000	1.50	18	575	12	380	10	320
		M 12	12.000	1.75	18	475	12	320	10	265
		M 14	14.000	2.00	18	410	12	275	10	225
		M 16	16.000	2.00	18	360	12	240	10	200
		M 18	18.000	2.50	18	320	12	210	10	175
		M 20	20.000	2.50	18	285	12	190	10	160
	Cast iron GG	M 6	6.000	1.00	22	1165	20	1060	18	955
		M 8	8.000	1.25	22	875	20	795	18	715
		M 10	10.000	1.50	22	700	20	635	18	575
		M 12	12.000	1.75	22	585	20	530	18	475
		M 14	14.000	2.00	22	500	20	455	18	410
		M 16	16.000	2.00	22	440	20	400	18	360
		M 18	18.000	2.50	22	390	20	355	18	320
		M 20	20.000	2.50	22	350	20	320	18	285
	Stainless steel [Cr-Ni/1.4301]	M 6	6.000	1.00	6	320	4	210	3	160
		M 8	8.000	1.25	6	240	4	160	3	120
		M 10	10.000	1.50	6	190	4	125	3	95
		M 12	12.000	1.75	6	160	4	105	3	80
		M 14	14.000	2.00	6	135	4	90	3	70
		M 16	16.000	2.00	6	120	4	80	3	60
		M 18	18.000	2.50	6	105	4	70	3	55
		M 20	20.000	2.50	6	95	4	65	3	50
	Wrought aluminium alloys Si < 6% hardened	M 6	6.000	1.00	25	1325	20	1060	15	795
		M 8	8.000	1.25	25	995	20	795	15	595
		M 10	10.000	1.50	25	795	20	635	15	475
		M 12	12.000	1.75	25	665	20	530	15	400
		M 14	14.000	2.00	25	570	20	455	15	340
		M 16	16.000	2.00	25	495	20	400	15	300
		M 18	18.000	2.50	25	440	20	355	15	265
		M 20	20.000	2.50	25	400	20	320	15	240

Taps polytap-R

Incool

R

M

ISO 2 (6H)

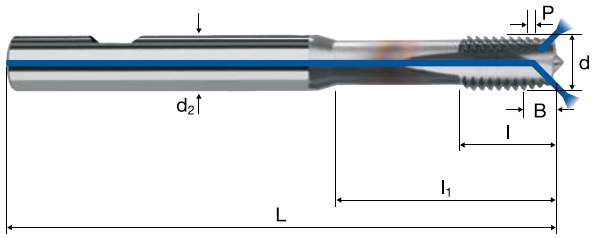
60°

HSS PM/F

HSS PM/F

X · P

Form B



Rm < 850

Rm 850-1100

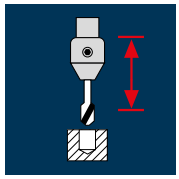
Inox Stainless

GG(G) Aluminium

Example:
Order-N°. Article-N°. **EH0110** ø-Code **088**

Ø Code	d	P	L	l	l_1	d_2 h6			TiCN EH0110
088	M 6	1.00	80	10.00	30.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	10.0	3	8.50	●
240	M 12	1.75	110	18.00	45.0	12.0	3	10.20	●
244	M 14	2.00	110	20.00	46.0	16.0	3	12.00	●
246	M 16	2.00	110	20.00	50.0	16.0	3	14.00	●
312	M 18	2.50	125	25.00	60.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	16.0	4	17.50	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Steel < 500 N/mm²	M 3	3.000	0.50	25	2655	22	2335	15	1590
		M 4	4.000	0.70	25	1990	22	1750	15	1195
		M 5	5.000	0.80	25	1590	22	1400	15	955
		M 6	6.000	1.00	25	1325	22	1165	15	795
		M 8	8.000	1.25	25	995	22	875	15	595
		M 10	10.000	1.50	25	795	22	700	15	475
		M 12	12.000	1.75	25	665	22	585	15	400
		M 16	16.000	2.00	25	495	22	440	15	300
		M 20	20.000	2.50	25	400	22	350	15	240
	Steel 500 - 850 N/mm²	M 3	3.000	0.50	22	2335	20	2120	12	1275
		M 4	4.000	0.70	22	1750	20	1590	12	955
		M 5	5.000	0.80	22	1400	20	1275	12	765
		M 6	6.000	1.00	22	1165	20	1060	12	635
		M 8	8.000	1.25	22	875	20	795	12	475
		M 10	10.000	1.50	22	700	20	635	12	380
		M 12	12.000	1.75	22	585	20	530	12	320
		M 16	16.000	2.00	22	440	20	400	12	240
		M 20	20.000	2.50	22	350	20	320	12	190
	Steel 850 - 1100 N/mm²	M 3	3.000	0.50	18	1910	12	1275	8	850
		M 4	4.000	0.70	18	1430	12	955	8	635
		M 5	5.000	0.80	18	1145	12	765	8	510
		M 6	6.000	1.00	18	955	12	635	8	425
		M 8	8.000	1.25	18	715	12	475	8	320
		M 10	10.000	1.50	18	575	12	380	8	255
		M 12	12.000	1.75	18	475	12	320	8	210
		M 16	16.000	2.00	18	360	12	240	8	160
		M 20	20.000	2.50	18	285	12	190	8	125
	Cast iron GG	M 3	3.000	0.50	18	1910	15	1590	12	1275
		M 4	4.000	0.70	18	1430	15	1195	12	955
		M 5	5.000	0.80	18	1145	15	955	12	765
		M 6	6.000	1.00	18	955	15	795	12	635
		M 8	8.000	1.25	18	715	15	595	12	475
		M 10	10.000	1.50	18	575	15	475	12	380
		M 12	12.000	1.75	18	475	15	400	12	320
		M 16	16.000	2.00	18	360	15	300	12	240
		M 20	20.000	2.50	18	285	15	240	12	190
	Stainless steel [Cr-Ni/1.4301]	M 3	3.000	0.50	4	425	3	320	2	210
		M 4	4.000	0.70	4	320	3	240	2	160
		M 5	5.000	0.80	4	255	3	190	2	125
		M 6	6.000	1.00	4	210	3	160	2	105
		M 8	8.000	1.25	4	160	3	120	2	80
		M 10	10.000	1.50	4	125	3	95	2	65
		M 12	12.000	1.75	4	105	3	80	2	55
		M 16	16.000	2.00	4	80	3	60	2	40
		M 20	20.000	2.50	4	65	3	50	2	30
	Wrought aluminium alloys Si < 6% hardened	M 3	3.000	0.50	25	2655	22	2335	15	1590
		M 4	4.000	0.70	25	1990	22	1750	15	1195
		M 5	5.000	0.80	25	1590	22	1400	15	955
		M 6	6.000	1.00	25	1325	22	1165	15	795
		M 8	8.000	1.25	25	995	22	875	15	595
		M 10	10.000	1.50	25	795	22	700	15	475
		M 12	12.000	1.75	25	665	22	585	15	400
		M 16	16.000	2.00	25	495	22	440	15	300
		M 20	20.000	2.50	25	400	22	350	15	240

Taps polytap-R

R

M

ISO 2 (6H)

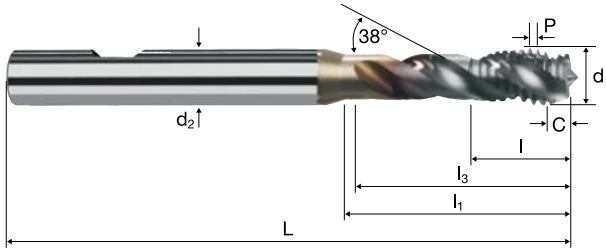
60°

HSS PM/F

HSS PM/F

X · P

Form C



M

Rm < 850

Rm 850-1100

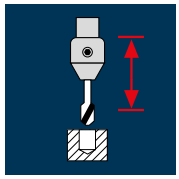
Inox Stainless

GG(G) Aluminium

Example: **Order-N°.** Article-N°. **EH0229** ø-Code **044**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH0229
044	M 3	0.50	63	5.00	18.0	16.0	6.0	3	2.50	●
058	M 4	0.70	66	7.00	21.0	19.0	6.0	3	3.30	●
084	M 5	0.80	70	8.00	25.0	23.0	6.0	3	4.20	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	3	8.50	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	3	10.20	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.00	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.00	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.50	●

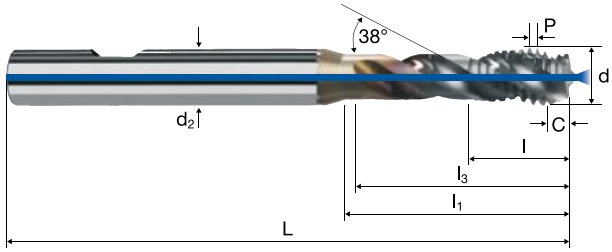
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_c 1.5 x d	n [min⁻¹]	v_c 2.0 x d	n [min⁻¹]
	Steel < 500 N/mm²	M 4	4.000	0.70	25	1990	22	1750	15	1195
		M 5	5.000	0.80	25	1590	22	1400	15	955
		M 6	6.000	1.00	25	1325	22	1165	15	795
		M 8	8.000	1.25	25	995	22	875	15	595
		M 10	10.000	1.50	25	795	22	700	15	475
		M 12	12.000	1.75	25	665	22	585	15	400
		M 14	14.000	2.00	25	570	22	500	15	340
		M 16	16.000	2.00	25	495	22	440	15	300
		M 20	20.000	2.50	25	400	22	350	15	240
	Steel 500 - 850 N/mm²	M 4	4.000	0.70	22	1750	20	1590	12	955
		M 5	5.000	0.80	22	1400	20	1275	12	765
		M 6	6.000	1.00	22	1165	20	1060	12	635
		M 8	8.000	1.25	22	875	20	795	12	475
		M 10	10.000	1.50	22	700	20	635	12	380
		M 12	12.000	1.75	22	585	20	530	12	320
		M 14	14.000	2.00	22	500	20	455	12	275
		M 16	16.000	2.00	22	440	20	400	12	240
		M 20	20.000	2.50	22	350	20	320	12	190
	Steel 850 - 1100 N/mm²	M 4	4.000	0.70	18	1430	12	955	8	635
		M 5	5.000	0.80	18	1145	12	765	8	510
		M 6	6.000	1.00	18	955	12	635	8	425
		M 8	8.000	1.25	18	715	12	475	8	320
		M 10	10.000	1.50	18	575	12	380	8	255
		M 12	12.000	1.75	18	475	12	320	8	210
		M 14	14.000	2.00	18	410	12	275	8	180
		M 16	16.000	2.00	18	360	12	240	8	160
		M 20	20.000	2.50	18	285	12	190	8	125
	Cast iron GG	M 4	4.000	0.70	18	1430	15	1195	12	955
		M 5	5.000	0.80	18	1145	15	955	12	765
		M 6	6.000	1.00	18	955	15	795	12	635
		M 8	8.000	1.25	18	715	15	595	12	475
		M 10	10.000	1.50	18	575	15	475	12	380
		M 12	12.000	1.75	18	475	15	400	12	320
		M 14	14.000	2.00	18	410	15	340	12	275
		M 16	16.000	2.00	18	360	15	300	12	240
		M 20	20.000	2.50	18	285	15	240	12	190
	Stainless steel [Cr-Ni/1.4301]	M 4	4.000	0.70	4	320	3	240	2	160
		M 5	5.000	0.80	4	255	3	190	2	125
		M 6	6.000	1.00	4	210	3	160	2	105
		M 8	8.000	1.25	4	160	3	120	2	80
		M 10	10.000	1.50	4	125	3	95	2	65
		M 12	12.000	1.75	4	105	3	80	2	55
		M 14	14.000	2.00	4	90	3	70	2	45
		M 16	16.000	2.00	4	80	3	60	2	40
		M 20	20.000	2.50	4	65	3	50	2	30
	Wrought aluminium alloys Si < 6% hardened	M 4	4.000	0.70	25	1990	22	1750	15	1195
		M 5	5.000	0.80	25	1590	22	1400	15	955
		M 6	6.000	1.00	25	1325	22	1165	15	795
		M 8	8.000	1.25	25	995	22	875	15	595
		M 10	10.000	1.50	25	795	22	700	15	475
		M 12	12.000	1.75	25	665	22	585	15	400
		M 14	14.000	2.00	25	570	22	500	15	340
		M 16	16.000	2.00	25	495	22	440	15	300
		M 20	20.000	2.50	25	400	22	350	15	240

Taps polytap-R

Incool

M	ISO 2 (6H)
60°	HSS PM/F
HSS PM/F	
	X · P Form C



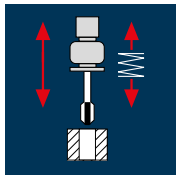
M

Rm < 850	Rm 850-1100						Inox Stainless		GG(G) Aluminium

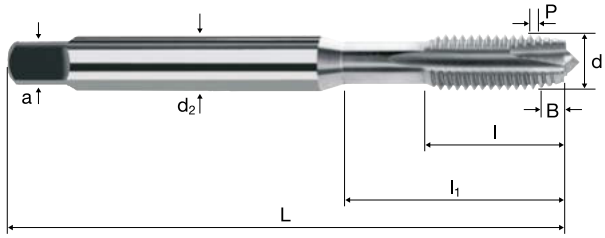
Example: **Order-N°.** Article-N°. **EH0230** ø-Code **058**

Ø Code	d	P	L	l	l_1	l_3	d_2 h6			TiCN EH0230
058	M 4	0.70	66	7.00	21.0	19.0	6.0	3	3.30	●
084	M 5	0.80	70	8.00	25.0	23.0	6.0	3	4.20	●
088	M 6	1.00	80	10.00	30.0	28.0	6.0	3	5.00	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	3	6.80	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	3	8.50	●
240	M 12	1.75	110	18.00	45.0	43.0	12.0	3	10.20	●
244	M 14	2.00	110	20.00	46.0	44.0	16.0	4	12.00	●
246	M 16	2.00	110	20.00	50.0	48.0	16.0	4	14.00	●
312	M 18	2.50	125	25.00	60.0	58.0	16.0	4	15.50	●
314	M 20	2.50	140	25.00	64.0	62.0	16.0	4	17.50	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 1	1.000	0.25	14	4455	1114	12	3820	955	10	3185	796
		M 1.2	1.200	0.25	14	3715	929	12	3185	796	10	2655	664
		M 1.4	1.400	0.30	14	3185	956	12	2730	819	10	2275	683
		M 1.6	1.600	0.35	14	2785	975	12	2385	835	10	1990	697
		M 1.8	1.800	0.35	14	2475	866	12	2120	742	10	1770	620
		M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.2	2.200	0.45	14	2025	911	12	1735	781	10	1445	650
		M 2.3	2.300	0.40	14	1940	776	12	1660	664	10	1385	554
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
	Steel < 500 N/mm²	M 2.6	2.600	0.45	18	2205	992	15	1835	826	12	1470	662
		M 3	3.000	0.50	18	1910	955	15	1590	795	12	1275	638
		M 3.5	3.500	0.60	18	1635	981	15	1365	819	12	1090	654
		M 4	4.000	0.70	18	1430	1001	15	1195	837	12	955	669
		M 4.5	4.500	0.75	18	1275	956	15	1060	795	12	850	638
		M 5	5.000	0.80	18	1145	916	15	955	764	12	765	612
		M 6	6.000	1.00	18	955	955	15	795	795	12	635	635
		M 8	8.000	1.25	18	715	894	15	595	744	12	475	594
		M 10	10.000	1.50	18	575	863	15	475	713	12	380	570
	Steel 500 - 850 N/mm²	M 1	1.000	0.25	12	3820	955	8	2545	636	6	1910	478
		M 1.2	1.200	0.25	12	3185	796	8	2120	530	6	1590	398
		M 1.4	1.400	0.30	12	2730	819	8	1820	546	6	1365	410
		M 1.6	1.600	0.35	12	2385	835	8	1590	557	6	1195	418
		M 1.8	1.800	0.35	12	2120	742	8	1415	495	6	1060	371
		M 2	2.000	0.40	12	1910	764	8	1275	510	6	955	382
		M 2.2	2.200	0.45	12	1735	781	8	1155	520	6	870	392
		M 2.3	2.300	0.40	12	1660	664	8	1105	442	6	830	332
		M 2.5	2.500	0.45	12	1530	689	8	1020	459	6	765	344
	Steel 500 - 850 N/mm²	M 2.6	2.600	0.45	15	1835	826	10	1225	551	8	980	441
		M 3	3.000	0.50	15	1590	795	10	1060	530	8	850	425
		M 3.5	3.500	0.60	15	1365	819	10	910	546	8	730	438
		M 4	4.000	0.70	15	1195	837	10	795	557	8	635	445
		M 4.5	4.500	0.75	15	1060	795	10	705	529	8	565	424
		M 5	5.000	0.80	15	955	764	10	635	508	8	510	408
		M 6	6.000	1.00	15	795	795	10	530	530	8	425	425
		M 8	8.000	1.25	15	595	744	10	400	500	8	320	400
		M 10	10.000	1.50	15	475	713	10	320	480	8	255	383
	Wrought aluminium alloys Si < 6% hardened	M 1	1.000	0.25	12	3820	955	10	3185	796	8	2545	636
		M 1.2	1.200	0.25	12	3185	796	10	2655	664	8	2120	530
		M 1.4	1.400	0.30	12	2730	819	10	2275	683	8	1820	546
		M 1.6	1.600	0.35	12	2385	835	10	1990	697	8	1590	557
		M 1.8	1.800	0.35	12	2120	742	10	1770	620	8	1415	495
		M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.2	2.200	0.45	12	1735	781	10	1445	650	8	1155	520
		M 2.3	2.300	0.40	12	1660	664	10	1385	554	8	1105	442
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
	Wrought aluminium alloys Si < 6% hardened	M 2.6	2.600	0.45	15	1835	826	12	1470	662	10	1225	551
		M 3	3.000	0.50	15	1590	795	12	1275	638	10	1060	530
		M 3.5	3.500	0.60	15	1365	819	12	1090	654	10	910	546
		M 4	4.000	0.70	15	1195	837	12	955	669	10	795	557
		M 4.5	4.500	0.75	15	1060	795	12	850	638	10	705	529
		M 5	5.000	0.80	15	955	764	12	765	612	10	635	508
		M 6	6.000	1.00	15	795	795	12	635	635	10	530	530
		M 8	8.000	1.25	15	595	744	12	475	594	10	400	500
		M 10	10.000	1.50	15	475	713	12	380	570	10	320	480
	Stainless steel [Cr-Ni/1.4301]	M 1	1.000	0.25	4	1275	319	3	955	239	2	635	159
		M 1.2	1.200	0.25	4	1060	265	3	795	199	2	530	133
		M 1.4	1.400	0.30	4	910	273	3	680	204	2	455	137
		M 1.6	1.600	0.35	4	795	278	3	595	208	2	400	140
		M 1.8	1.800	0.35	4	705	247	3	530	186	2	355	124
		M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
		M 2.2	2.200	0.45	4	580	261	3	435	196	2	290	131
		M 2.3	2.300	0.40	4	555	222	3	415	166	2	275	110
		M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
	Stainless steel [Cr-Ni/1.4301]	M 2.6	2.600	0.45	5	610	275	4	490	221	3	365	164
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 3.5	3.500	0.60	5	455	273	4	365	219	3	275	165
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 4.5	4.500	0.75	5	355	266	4	285	214	3	210	158
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143

Taps u-tap



M | ISO 2 (6H)

HSS-E Co5

DIN 371

Form B

Rm < 850 | **Inox** Stainless | **GG(G) Aluminium Copper**

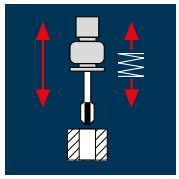
Example: **Order-N°.** Article-N°. **E10800** ø-Code **010**

Ø Code	d	P	L	l	l_1	d_2	a			**E10800**
010	M 1	0.25	40	5.50	-	2.5	2.1	2	0.80*	●
012	M 1.2	0.25	40	5.50	-	2.5	2.1	2	1.00	●
020	M 1.4	0.30	40	7.00	-	2.5	2.1	2	1.15*	●
022	M 1.6	0.35	40	8.00	-	2.5	2.1	2	1.30	●
024	M 1.7	0.35	40	8.00	-	2.5	2.1	2	1.40	●
026	M 1.8	0.35	40	8.00	-	2.5	2.1	2	1.50	●
034	M 2	0.40	45	8.00	-	2.8	2.1	2	1.60	●
036	M 2.2	0.45	45	9.00	-	2.8	2.1	2	1.75	●
038	M 2.3	0.40	45	9.00	-	2.8	2.1	2	1.90	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	2.05	●
042	M 2.6	0.45	50	9.00	-	2.8	2.1	2	2.15	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.50	●
056	M 3.5	0.60	56	12.00	20.0	4.0	3.0	3	2.90	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.30	●
061	M 4.5	0.75	70	14.00	25.0	6.0	4.9	3	3.75	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	4.20	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	5.00	●
089	M 7	1.00	80	17.00	30.0	7.0	6.2	3	6.00	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	6.80	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	8.50	●

≤ M 1.4 Tolerance ISO 1 (4H)

* The given dimension is out of norm

For larger dimensions see article no. E10801

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 12	12.000	1.75	18	475	831	15	400	700	12	320	560
		M 14	14.000	2.00	18	410	820	15	340	680	12	275	550
		M 16	16.000	2.00	18	360	720	15	300	600	12	240	480
		M 18	18.000	2.50	18	320	800	15	265	663	12	210	525
		M 20	20.000	2.50	18	285	713	15	240	600	12	190	475
		M 22	22.000	2.50	18	260	650	15	215	538	12	175	438
		M 24	24.000	3.00	18	240	720	15	200	600	12	160	480
	Steel 500 - 850 N/mm²	M 12	12.000	1.75	15	400	700	10	265	464	8	210	368
		M 14	14.000	2.00	15	340	680	10	225	450	8	180	360
		M 16	16.000	2.00	15	300	600	10	200	400	8	160	320
		M 18	18.000	2.50	15	265	663	10	175	438	8	140	350
		M 20	20.000	2.50	15	240	600	10	160	400	8	125	313
		M 22	22.000	2.50	15	215	538	10	145	363	8	115	288
		M 24	24.000	3.00	15	200	600	10	135	405	8	105	315
	Wrought aluminium alloys Si < 6% hardened	M 12	12.000	1.75	15	400	700	12	320	560	10	265	464
		M 14	14.000	2.00	15	340	680	12	275	550	10	225	450
		M 16	16.000	2.00	15	300	600	12	240	480	10	200	400
		M 18	18.000	2.50	15	265	663	12	210	525	10	175	438
		M 20	20.000	2.50	15	240	600	12	190	475	10	160	400
		M 22	22.000	2.50	15	215	538	12	175	438	10	145	363
		M 24	24.000	3.00	15	200	600	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
		M 14	14.000	2.00	5	115	230	4	90	180	3	70	140
		M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 18	18.000	2.50	5	90	225	4	70	175	3	55	138
		M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 22	22.000	2.50	5	70	175	4	60	150	3	45	113
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps u-tap

U

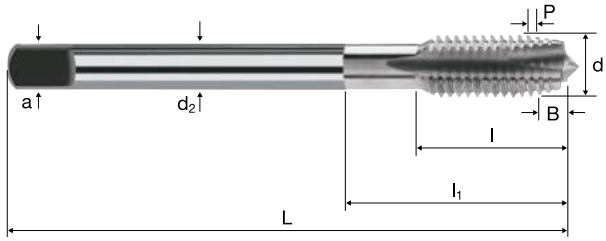
M

ISO 2 (6H)

HSS-E Co5

DIN 376

Form B



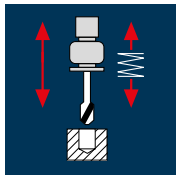
Rm < 850

Inox Stainless

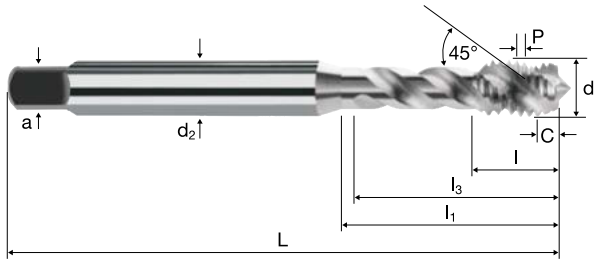
GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10801** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			E10801	
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	10.20	●	
244	M 14	2.00	110	26.00	40.0	11.0	9.0	3	12.00	●	
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	14.00	●	
312	M 18	2.50	125	30.00	45.0	14.0	11.0	4	15.50	●	
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	17.50	●	
316	M 22	2.50	140	32.00	50.0	18.0	14.5	4	19.50	●	
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	21.00	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 1.6	1.600	0.35	11	2190	767	10	1990	697	8	1590	557
		M 1.7	1.700	0.35	11	2060	721	10	1870	655	8	1500	525
		M 1.8	1.800	0.35	11	1945	681	10	1770	620	8	1415	495
		M 2	2.000	0.40	11	1750	700	10	1590	636	8	1275	510
		M 2.2	2.200	0.45	11	1590	716	10	1445	650	8	1155	520
		M 2.3	2.300	0.40	11	1520	608	10	1385	554	8	1105	442
		M 2.5	2.500	0.45	11	1400	630	10	1275	574	8	1020	459
		M 2.6	2.600	0.45	14	1715	772	12	1470	662	10	1225	551
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
	Steel < 500 N/mm²	M 3.5	3.500	0.60	14	1275	765	12	1090	654	10	910	546
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 4.5	4.500	0.75	14	990	743	12	850	638	10	705	529
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 7	7.000	1.00	14	635	635	12	545	545	10	455	455
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
	Steel 500 - 850 N/mm²	M 1.6	1.600	0.35	8	1590	557	7	1395	488	6	1195	418
		M 1.7	1.700	0.35	8	1500	525	7	1310	459	6	1125	394
		M 1.8	1.800	0.35	8	1415	495	7	1240	434	6	1060	371
		M 2	2.000	0.40	8	1275	510	7	1115	446	6	955	382
		M 2.2	2.200	0.45	8	1155	520	7	1015	457	6	870	392
		M 2.3	2.300	0.40	8	1105	442	7	970	388	6	830	332
		M 2.5	2.500	0.45	8	1020	459	7	890	401	6	765	344
		M 2.6	2.600	0.45	9	1100	495	8	980	441	7	855	385
		M 3	3.000	0.50	9	955	478	8	850	425	7	745	373
	Steel 500 - 850 N/mm²	M 3.5	3.500	0.60	9	820	492	8	730	438	7	635	381
		M 4	4.000	0.70	9	715	501	8	635	445	7	555	389
		M 4.5	4.500	0.75	9	635	476	8	565	424	7	495	371
		M 5	5.000	0.80	9	575	460	8	510	408	7	445	356
		M 6	6.000	1.00	9	475	475	8	425	425	7	370	370
		M 7	7.000	1.00	9	410	410	8	365	365	7	320	320
		M 8	8.000	1.25	9	360	450	8	320	400	7	280	350
		M 10	10.000	1.50	9	285	428	8	255	383	7	225	338
	Wrought aluminium alloys Si < 6% hardened	M 1.6	1.600	0.35	8	1590	557	6	1195	418	5	995	348
		M 1.7	1.700	0.35	8	1500	525	6	1125	394	5	935	327
		M 1.8	1.800	0.35	8	1415	495	6	1060	371	5	885	310
		M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.2	2.200	0.45	8	1155	520	6	870	392	5	725	326
		M 2.3	2.300	0.40	8	1105	442	6	830	332	5	690	276
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 2.6	2.600	0.45	10	1225	551	8	980	441	6	735	331
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
	Wrought aluminium alloys Si < 6% hardened	M 3.5	3.500	0.60	10	910	546	8	730	438	6	545	327
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 4.5	4.500	0.75	10	705	529	8	565	424	6	425	319
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 7	7.000	1.00	10	455	455	8	365	365	6	275	275
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
	Stainless steel [Cr-Ni/1.4301]	M 1.6	1.600	0.35	3	595	208	2	400	140	2	400	140
		M 1.7	1.700	0.35	3	560	196	2	375	131	2	375	131
		M 1.8	1.800	0.35	3	530	186	2	355	124	2	355	124
		M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.2	2.200	0.45	3	435	196	2	290	131	2	290	131
		M 2.3	2.300	0.40	3	415	166	2	275	110	2	275	110
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 2.6	2.600	0.45	4	490	221	3	365	164	3	365	164
		M 3	3.000	0.50	4	425	213	3	320	160	3	320	160
	Stainless steel [Cr-Ni/1.4301]	M 3.5	3.500	0.60	4	365	219	3	275	165	3	275	165
		M 4	4.000	0.70	4	320	224	3	240	168	3	240	168
		M 4.5	4.500	0.75	4	285	214	3	210	158	3	210	158
		M 5	5.000	0.80	4	255	204	3	190	152	3	190	152
		M 6	6.000	1.00	4	210	210	3	160	160	3	160	160
		M 7	7.000	1.00	4	180	180	3	135	135	3	135	135
		M 8	8.000	1.25	4	160	200	3	120	150	3	120	150
		M 10	10.000	1.50	4	125	188	3	95	143	3	95	143

Taps u-tap



M | ISO 2 (6H)

HSS-E Co5

DIN 371

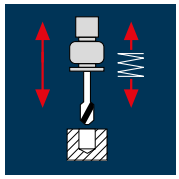
X · P Form C

Rm < 850 | **Inox** Stainless | **GG(G) Aluminium Copper**

Example: **Order-N°.** Article-N°. **E10820** ø-Code **022**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			E10820	
022	M 1.6	0.35	40	8.00	-	9.0	2.5	2.1	3	1.30	●	
024	M 1.7	0.35	40	8.00	-	9.0	2.5	2.1	3	1.40	●	
026	M 1.8	0.35	40	8.00	-	9.0	2.5	2.1	3	1.50	●	
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	1.60	●	
036	M 2.2	0.45	45	9.00	-	12.5	2.8	2.1	3	1.75	●	
038	M 2.3	0.40	45	9.00	-	12.5	2.8	2.1	3	1.90	●	
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	2.05	●	
042	M 2.6	0.45	50	9.00	-	13.0	2.8	2.1	3	2.15	●	
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	2.50	●	
056	M 3.5	0.60	56	4.80	20.0	18.0	4.0	3.0	3	2.90	●	
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	3.30	●	
061	M 4.5	0.75	70	6.00	25.0	23.0	6.0	4.9	3	3.75	●	
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	4.20	●	
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	5.00	●	
089	M 7	1.00	80	8.00	30.0	28.0	7.0	6.2	3	6.00	●	
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	6.80	●	
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	8.50	●	

For larger dimensions see article no. E10821

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
		M 14	14.000	2.00	14	320	640	12	275	550	10	225	450
		M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 18	18.000	2.50	14	250	625	12	210	525	10	175	438
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 22	22.000	2.50	14	205	513	12	175	438	10	145	363
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Steel 500 - 850 N/mm²	M 12	12.000	1.75	9	240	420	8	210	368	7	185	324
		M 14	14.000	2.00	9	205	410	8	180	360	7	160	320
		M 16	16.000	2.00	9	180	360	8	160	320	7	140	280
		M 18	18.000	2.50	9	160	400	8	140	350	7	125	313
		M 20	20.000	2.50	9	145	363	8	125	313	7	110	275
		M 22	22.000	2.50	9	130	325	8	115	288	7	100	250
		M 24	24.000	3.00	9	120	360	8	105	315	7	95	285
	Wrought aluminium alloys Si < 6% hardened	M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
		M 14	14.000	2.00	10	225	450	8	180	360	6	135	270
		M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 18	18.000	2.50	10	175	438	8	140	350	6	105	263
		M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 22	22.000	2.50	10	145	363	8	115	288	6	85	213
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.75	4	105	184	3	80	140	3	80	140
		M 14	14.000	2.00	4	90	180	3	70	140	3	70	140
		M 16	16.000	2.00	4	80	160	3	60	120	3	60	120
		M 18	18.000	2.50	4	70	175	3	55	138	3	55	138
		M 20	20.000	2.50	4	65	163	3	50	125	3	50	125
		M 22	22.000	2.50	4	60	150	3	45	113	3	45	113
		M 24	24.000	3.00	4	55	165	3	40	120	3	40	120

Taps u-tap

U

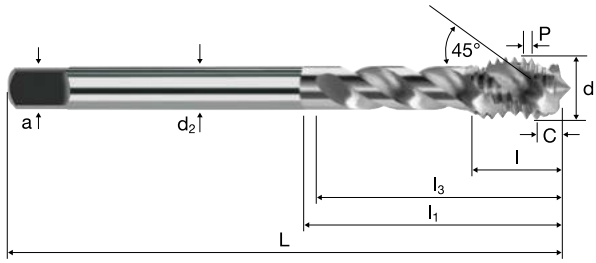
M

ISO 2 (6H)

HSS-E Co5

DIN 376

Form C



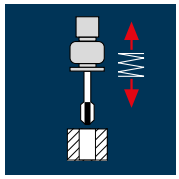
Rm < 850

Inox Stainless

GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10821** ø-Code **240**

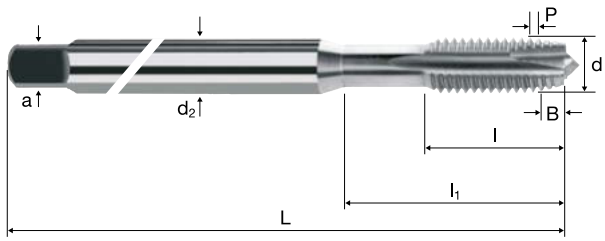
Ø Code	d	P	L	l	l_1	l_3	d_2	a			E10821	
240	M 12	1.75	110	14.00	50.0	48.0	9.0	7.0	3	10.20	●	
244	M 14	2.00	110	16.00	58.0	56.0	11.0	9.0	4	12.00	●	
246	M 16	2.00	110	16.00	58.0	56.0	12.0	9.0	4	14.00	●	
312	M 18	2.50	125	20.00	65.0	63.0	14.0	11.0	4	15.50	●	
314	M 20	2.50	140	20.00	72.0	70.0	16.0	12.0	4	17.50	●	
316	M 22	2.50	140	20.00	72.0	70.0	18.0	14.5	4	19.50	●	
320	M 24	3.00	160	24.00	74.0	72.0	18.0	14.5	4	21.00	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 3	3.000	0.50	8	850	425	6	635	318	4	425	213
		M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
	Steel 500 - 850 N/mm²	M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
	Wrought aluminium alloys Si < 6% hardened	M 3	3.000	0.50	8	850	425	6	635	318	4	425	213
		M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
	Cast iron GG	M 3	3.000	0.50	12	1275	638	10	1060	530	8	850	425
		M 4	4.000	0.70	12	955	669	10	795	557	8	635	445
		M 5	5.000	0.80	12	765	612	10	635	508	8	510	408
		M 6	6.000	1.00	12	635	635	10	530	530	8	425	425
		M 8	8.000	1.25	12	475	594	10	400	500	8	320	400
		M 10	10.000	1.50	12	380	570	10	320	480	8	255	383

Taps

Special long execution

M	ISO 2 (6H)
60°	HSS PM/F
	Form B

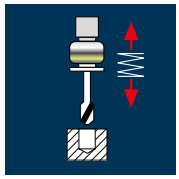


M

Rm < 850									GG(G) Aluminium

Example: **Order-N°.** Article-N°. **E10340** ø-Code **044**

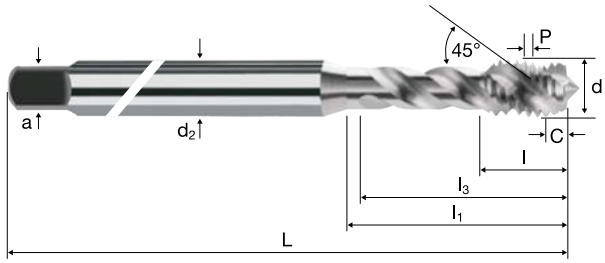
Ø Code	d	P	L	l	l_1	d_2	a			E10340	
044	M 3	0.50	100	12.00	18.0	3.5	2.7	3	2.50	●	
058	M 4	0.70	125	13.00	21.0	4.5	3.4	3	3.30	●	
084	M 5	0.80	140	15.00	25.0	6.0	4.9	3	4.20	●	
088	M 6	1.00	160	17.00	30.0	6.0	4.9	3	5.00	●	
160	M 8	1.25	180	20.00	35.0	8.0	6.2	3	6.80	●	
174	M 10	1.50	200	22.00	39.0	10.0	8.0	3	8.50	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 3	3.000	0.50	8	850	425	6	635	318	4	425	213
		M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
	Steel 500 - 850 N/mm²	M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
	Wrought aluminium alloys Si < 6% hardened	M 3	3.000	0.50	8	850	425	6	635	318	4	425	213
		M 4	4.000	0.70	8	635	445	6	475	333	4	320	224
		M 5	5.000	0.80	8	510	408	6	380	304	4	255	204
		M 6	6.000	1.00	8	425	425	6	320	320	4	210	210
		M 8	8.000	1.25	8	320	400	6	240	300	4	160	200
		M 10	10.000	1.50	8	255	383	6	190	285	4	125	188
	Cast iron GG	M 3	3.000	0.50	12	1275	638	10	1060	530	8	850	425
		M 4	4.000	0.70	12	955	669	10	795	557	8	635	445
		M 5	5.000	0.80	12	765	612	10	635	508	8	510	408
		M 6	6.000	1.00	12	635	635	10	530	530	8	425	425
		M 8	8.000	1.25	12	475	594	10	400	500	8	320	400
		M 10	10.000	1.50	12	380	570	10	320	480	8	255	383

Taps

Special long execution

M	ISO 2 (6H)
HSS PM/F	
Form C	

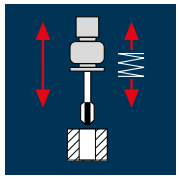


M

Rm < 850									GG(G) Aluminium

Example: **Order-N°.** Article-N°. **E10350** ø-Code **044**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			E10350	
044	M 3	0.50	100	4.00	18.0	16.0	3.5	2.7	3	2.50	●	
058	M 4	0.70	125	5.60	21.0	19.0	4.5	3.4	3	3.30	●	
084	M 5	0.80	140	6.40	25.0	23.0	6.0	4.9	3	4.20	●	
088	M 6	1.00	160	8.00	30.0	28.0	6.0	4.9	3	5.00	●	
160	M 8	1.25	180	10.00	35.0	33.0	8.0	6.2	3	6.80	●	
174	M 10	1.50	200	12.00	39.0	37.0	10.0	8.0	3	8.50	●	

Application	Material	M-LH	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	18	1910	955	15	1590	795	12	1275	638
		M 4	4.000	0.70	18	1430	1001	15	1195	837	12	955	669
		M 5	5.000	0.80	18	1145	916	15	955	764	12	765	612
		M 6	6.000	1.00	18	955	955	15	795	795	12	635	635
		M 8	8.000	1.25	18	715	894	15	595	744	12	475	594
		M 10	10.000	1.50	18	575	863	15	475	713	12	380	570
		M 12	12.000	1.75	18	475	831	15	400	700	12	320	560
	Steel < 500 N/mm²	M 16	16.000	2.00	18	360	720	15	300	600	12	240	480
		M 20	20.000	2.50	18	285	713	15	240	600	12	190	475
		M 24	24.000	3.00	18	240	720	15	200	600	12	160	480
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	12	1910	764	8	1275	510	6	955	382
		M 2.5	2.500	0.45	12	1530	689	8	1020	459	6	765	344
		M 3	3.000	0.50	15	1590	795	10	1060	530	8	850	425
		M 4	4.000	0.70	15	1195	837	10	795	557	8	635	445
		M 5	5.000	0.80	15	955	764	10	635	508	8	510	408
		M 6	6.000	1.00	15	795	795	10	530	530	8	425	425
		M 8	8.000	1.25	15	595	744	10	400	500	8	320	400
		M 10	10.000	1.50	15	475	713	10	320	480	8	255	383
		M 12	12.000	1.75	15	400	700	10	265	464	8	210	368
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	15	300	600	10	200	400	8	160	320
		M 20	20.000	2.50	15	240	600	10	160	400	8	125	313
		M 24	24.000	3.00	15	200	600	10	135	405	8	105	315
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
		M 3	3.000	0.50	15	1590	795	12	1275	638	10	1060	530
		M 4	4.000	0.70	15	1195	837	12	955	669	10	795	557
		M 5	5.000	0.80	15	955	764	12	765	612	10	635	508
		M 6	6.000	1.00	15	795	795	12	635	635	10	530	530
		M 8	8.000	1.25	15	595	744	12	475	594	10	400	500
		M 10	10.000	1.50	15	475	713	12	380	570	10	320	480
		M 12	12.000	1.75	15	400	700	12	320	560	10	265	464
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	15	300	600	12	240	480	10	200	400
		M 20	20.000	2.50	15	240	600	12	190	475	10	160	400
		M 24	24.000	3.00	15	200	600	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
		M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
		M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps

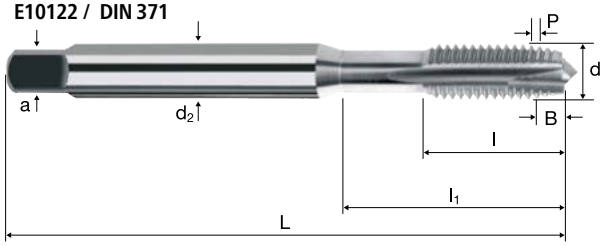
M-LH | ISO 2 (6H)

HSS-E Co5

DIN 371/376

Form B

E10122 / DIN 371



E10123 / DIN 376

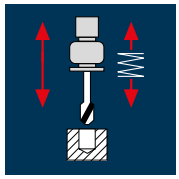
Rm < 850 | Inox Stainless | GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10122** ø-Code **034**

Ø Code	d	P		L	l	l_1	d_2	a			E10122	
034	M 2	0.40	LH	45	8.00	-	2.8	2.1	2	1.60	●	
040	M 2.5	0.45	LH	50	9.00	-	2.8	2.1	2	2.05	●	
044	M 3	0.50	LH	56	12.00	18.0	3.5	2.7	3	2.50	●	
058	M 4	0.70	LH	63	13.00	21.0	4.5	3.4	3	3.30	●	
084	M 5	0.80	LH	70	15.00	25.0	6.0	4.9	3	4.20	●	
088	M 6	1.00	LH	80	17.00	30.0	6.0	4.9	3	5.00	●	
160	M 8	1.25	LH	90	20.00	35.0	8.0	6.2	3	6.80	●	
174	M 10	1.50	LH	100	22.00	39.0	10.0	8.0	3	8.50	●	

Example: **Order-N°.** Article-N°. **E10123** ø-Code **240**

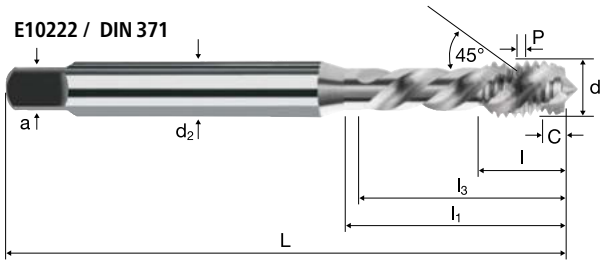
Ø Code	d	P		L	l	l_1	d_2	a			E10123	
240	M 12	1.75	LH	110	24.00	40.0	9.0	7.0	3	10.20	●	
246	M 16	2.00	LH	110	27.00	40.0	12.0	9.0	3	14.00	●	
314	M 20	2.50	LH	140	32.00	50.0	16.0	12.0	4	17.50	●	
320	M 24	3.00	LH	160	34.00	60.0	18.0	14.5	4	21.00	●	

Application	Material	M-LH	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	11	1750	700	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	11	1400	630	10	1275	574	8	1020	459
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
		M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
	Steel < 500 N/mm²	M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	7	1115	446	6	955	382	5	795	318
		M 2.5	2.500	0.45	7	890	401	6	765	344	5	635	286
		M 3	3.000	0.50	9	955	478	8	850	425	7	745	373
		M 4	4.000	0.70	9	715	501	8	635	445	7	555	389
		M 5	5.000	0.80	9	575	460	8	510	408	7	445	356
		M 6	6.000	1.00	9	475	475	8	425	425	7	370	370
		M 8	8.000	1.25	9	360	450	8	320	400	7	280	350
		M 10	10.000	1.50	9	285	428	8	255	383	7	225	338
		M 12	12.000	1.75	9	240	420	8	210	368	7	185	324
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	9	180	360	8	160	320	7	140	280
		M 20	20.000	2.50	9	145	363	8	125	313	7	110	275
		M 24	24.000	3.00	9	120	360	8	105	315	7	95	285
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
		M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 3	3.000	0.50	4	425	213	3	320	160	3	320	160
		M 4	4.000	0.70	4	320	224	3	240	168	3	240	168
		M 5	5.000	0.80	4	255	204	3	190	152	3	190	152
		M 6	6.000	1.00	4	210	210	3	160	160	3	160	160
		M 8	8.000	1.25	4	160	200	3	120	150	3	120	150
		M 10	10.000	1.50	4	125	188	3	95	143	3	95	143
		M 12	12.000	1.75	4	105	184	3	80	140	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	4	80	160	3	60	120	3	60	120
		M 20	20.000	2.50	4	65	163	3	50	125	3	50	125
		M 24	24.000	3.00	4	55	165	3	40	120	3	40	120

Taps

M-LH	ISO 2 (6H)
HSS-E Co5	
DIN 371/376	
Form C	

E10222 / DIN 371



E10223 / DIN 376

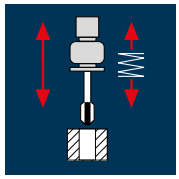
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10222** ø-Code **034**

Ø Code	d	P		L	l	l_1	l_3	d_2	a			E10222
034	M 2	0.40	LH	45	8.00	-	10.5	2.8	2.1	3	1.60	●
040	M 2.5	0.45	LH	50	9.00	-	13.0	2.8	2.1	3	2.05	●
044	M 3	0.50	LH	56	4.00	18.0	16.0	3.5	2.7	3	2.50	●
058	M 4	0.70	LH	63	5.60	21.0	19.0	4.5	3.4	3	3.30	●
084	M 5	0.80	LH	70	6.40	25.0	23.0	6.0	4.9	3	4.20	●
088	M 6	1.00	LH	80	8.00	30.0	28.0	6.0	4.9	3	5.00	●
160	M 8	1.25	LH	90	10.00	35.0	33.0	8.0	6.2	3	6.80	●
174	M 10	1.50	LH	100	12.00	39.0	37.0	10.0	8.0	3	8.50	●

Example: **Order-N°.** Article-N°. **E10223** ø-Code **240**

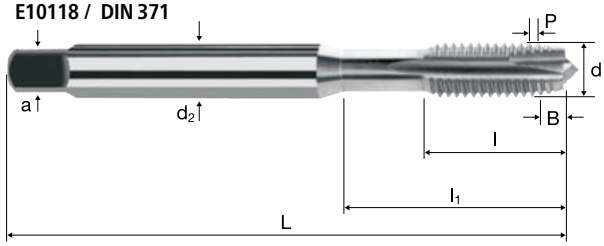
Ø Code	d	P		L	l	l_1	l_3	d_2	a			E10223
240	M 12	1.75	LH	110	14.00	50.0	48.0	9.0	7.0	3	10.20	●
246	M 16	2.00	LH	110	16.00	58.0	56.0	12.0	9.0	4	14.00	●
314	M 20	2.50	LH	140	20.00	72.0	70.0	16.0	12.0	4	17.50	●
320	M 24	3.00	LH	160	24.00	74.0	72.0	18.0	14.5	4	21.00	●

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	18	1910	955	15	1590	795	12	1275	638
		M 4	4.000	0.70	18	1430	1001	15	1195	837	12	955	669
		M 5	5.000	0.80	18	1145	916	15	955	764	12	765	612
		M 6	6.000	1.00	18	955	955	15	795	795	12	635	635
		M 8	8.000	1.25	18	715	894	15	595	744	12	475	594
		M 10	10.000	1.50	18	575	863	15	475	713	12	380	570
		M 12	12.000	1.75	18	475	831	15	400	700	12	320	560
	Steel < 500 N/mm²	M 16	16.000	2.00	18	360	720	15	300	600	12	240	480
		M 20	20.000	2.50	18	285	713	15	240	600	12	190	475
		M 24	24.000	3.00	18	240	720	15	200	600	12	160	480
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	12	1910	764	8	1275	510	6	955	382
		M 2.5	2.500	0.45	12	1530	689	8	1020	459	6	765	344
		M 3	3.000	0.50	15	1590	795	10	1060	530	8	850	425
		M 4	4.000	0.70	15	1195	837	10	795	557	8	635	445
		M 5	5.000	0.80	15	955	764	10	635	508	8	510	408
		M 6	6.000	1.00	15	795	795	10	530	530	8	425	425
		M 8	8.000	1.25	15	595	744	10	400	500	8	320	400
		M 10	10.000	1.50	15	475	713	10	320	480	8	255	383
		M 12	12.000	1.75	15	400	700	10	265	464	8	210	368
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	15	300	600	10	200	400	8	160	320
		M 20	20.000	2.50	15	240	600	10	160	400	8	125	313
		M 24	24.000	3.00	15	200	600	10	135	405	8	105	315
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
		M 3	3.000	0.50	15	1590	795	12	1275	638	10	1060	530
		M 4	4.000	0.70	15	1195	837	12	955	669	10	795	557
		M 5	5.000	0.80	15	955	764	12	765	612	10	635	508
		M 6	6.000	1.00	15	795	795	12	635	635	10	530	530
		M 8	8.000	1.25	15	595	744	12	475	594	10	400	500
		M 10	10.000	1.50	15	475	713	12	380	570	10	320	480
		M 12	12.000	1.75	15	400	700	12	320	560	10	265	464
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	15	300	600	12	240	480	10	200	400
		M 20	20.000	2.50	15	240	600	12	190	475	10	160	400
		M 24	24.000	3.00	15	200	600	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
		M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
		M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps

M	ISO 2 +0,1
60°	HSS-E Co5
DIN 371/376	
	Form B

E10118 / DIN 371



E10119 / DIN 376

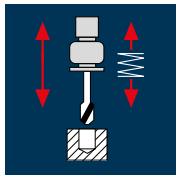
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10118** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	E10118	
034	M 2	0.40	45	8.00	-	2.8	2.1	2	+0.100	●	
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	+0.100	●	
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	+0.100	●	
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	+0.100	●	
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	+0.100	●	
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	+0.100	●	
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	+0.100	●	
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	+0.100	●	

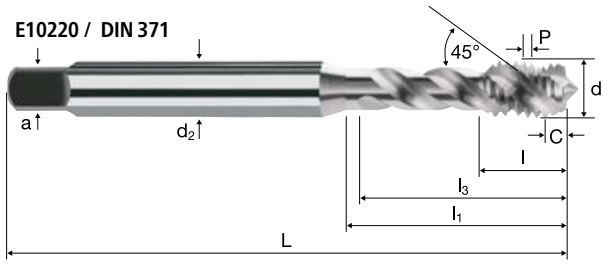
Example: **Order-N°.** Article-N°. **E10119** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	E10119	
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	+0.100	●	
246	M 16	2.00	110	27.00	40.0	12.0	9.0	4	+0.100	●	
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	+0.100	●	
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	+0.100	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
		M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
	Steel < 500 N/mm²	M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	7	1115	446	6	955	382	5	795	318
		M 2.5	2.500	0.45	7	890	401	6	765	344	5	635	286
		M 3	3.000	0.50	9	955	478	8	850	425	7	745	373
		M 4	4.000	0.70	9	715	501	8	635	445	7	555	389
		M 5	5.000	0.80	9	575	460	8	510	408	7	445	356
		M 6	6.000	1.00	9	475	475	8	425	425	7	370	370
		M 8	8.000	1.25	9	360	450	8	320	400	7	280	350
		M 10	10.000	1.50	9	285	428	8	255	383	7	225	338
		M 12	12.000	1.75	9	240	420	8	210	368	7	185	324
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	9	180	360	8	160	320	7	140	280
		M 20	20.000	2.50	9	145	363	8	125	313	7	110	275
		M 24	24.000	3.00	9	120	360	8	105	315	7	95	285
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
		M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 3	3.000	0.50	4	425	213	3	320	160	3	320	160
		M 4	4.000	0.70	4	320	224	3	240	168	3	240	168
		M 5	5.000	0.80	4	255	204	3	190	152	3	190	152
		M 6	6.000	1.00	4	210	210	3	160	160	3	160	160
		M 8	8.000	1.25	4	160	200	3	120	150	3	120	150
		M 10	10.000	1.50	4	125	188	3	95	143	3	95	143
		M 12	12.000	1.75	4	105	184	3	80	140	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	4	80	160	3	60	120	3	60	120
		M 20	20.000	2.50	4	65	163	3	50	125	3	50	125
		M 24	24.000	3.00	4	55	165	3	40	120	3	40	120

Taps

M	ISO 2 +0,1
60°	HSS-E Co5
DIN 371/376	
	Form C



M

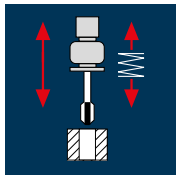
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10220** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	E10220	
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	+0.100	●	
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	+0.100	●	
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	+0.100	●	
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	+0.100	●	
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	+0.100	●	
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	+0.100	●	
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	+0.100	●	
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	+0.100	●	

Example: **Order-N°.** Article-N°. **E10221** ø-Code **240**

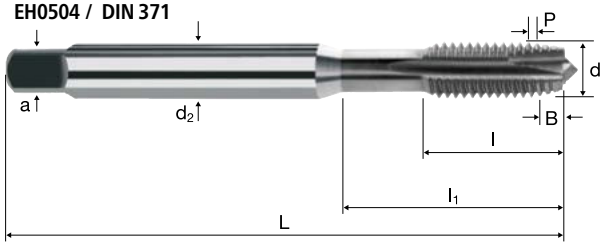
Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	E10221	
240	M 12	1.75	110	14.00	50.0	48.0	9.0	7.0	3	+0.100	●	
246	M 16	2.00	110	16.00	58.0	56.0	12.0	9.0	4	+0.100	●	
314	M 20	2.50	140	20.00	72.0	70.0	16.0	12.0	4	+0.100	●	
320	M 24	3.00	160	24.00	74.0	72.0	18.0	14.5	4	+0.100	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	25	3980	1592	20	3185	1274	15	2385	954
		M 2.5	2.500	0.45	25	3185	1433	20	2545	1145	15	1910	860
		M 3	3.000	0.50	25	2655	1328	20	2120	1060	15	1590	795
		M 4	4.000	0.70	25	1990	1393	20	1590	1113	15	1195	837
		M 5	5.000	0.80	25	1590	1272	20	1275	1020	15	955	764
		M 6	6.000	1.00	25	1325	1325	20	1060	1060	15	795	795
		M 8	8.000	1.25	25	995	1244	20	795	994	15	595	744
		M 10	10.000	1.50	25	795	1193	20	635	953	15	475	713
		M 12	12.000	1.75	25	665	1164	20	530	928	15	400	700
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	25	495	990	20	400	800	15	300	600
		M 20	20.000	2.50	25	400	1000	20	320	800	15	240	600
		M 24	24.000	3.00	25	330	990	20	265	795	15	200	600
	Steel 850 - 1100 N/mm²	M 2	2.000	0.40	20	3185	1274	15	2385	954	12	1910	764
		M 2.5	2.500	0.45	20	2545	1145	15	1910	860	12	1530	689
		M 3	3.000	0.50	20	2120	1060	15	1590	795	12	1275	638
		M 4	4.000	0.70	20	1590	1113	15	1195	837	12	955	669
		M 5	5.000	0.80	20	1275	1020	15	955	764	12	765	612
		M 6	6.000	1.00	20	1060	1060	15	795	795	12	635	635
		M 8	8.000	1.25	20	795	994	15	595	744	12	475	594
		M 10	10.000	1.50	20	635	953	15	475	713	12	380	570
		M 12	12.000	1.75	20	530	928	15	400	700	12	320	560
	Steel 850 - 1100 N/mm²	M 16	16.000	2.00	20	400	800	15	300	600	12	240	480
		M 20	20.000	2.50	20	320	800	15	240	600	12	190	475
		M 24	24.000	3.00	20	265	795	15	200	600	12	160	480
	Steel 1100 - 1300 N/mm²	M 2	2.000	0.40	7	1115	446	4	635	254	-	-	-
		M 2.5	2.500	0.45	7	890	401	4	510	230	-	-	-
		M 3	3.000	0.50	7	745	373	4	425	213	-	-	-
		M 4	4.000	0.70	7	555	389	4	320	224	-	-	-
		M 5	5.000	0.80	7	445	356	4	255	204	-	-	-
		M 6	6.000	1.00	7	370	370	4	210	210	-	-	-
		M 8	8.000	1.25	7	280	350	4	160	200	-	-	-
		M 10	10.000	1.50	7	225	338	4	125	188	-	-	-
		M 12	12.000	1.75	7	185	324	4	105	184	-	-	-
	Steel 1100 - 1300 N/mm²	M 16	16.000	2.00	7	140	280	4	80	160	-	-	-
		M 20	20.000	2.50	7	110	275	4	65	163	-	-	-
		M 24	24.000	3.00	7	95	285	4	55	165	-	-	-

Taps x-tap

M	ISO 3 (6G)
60°	HSS PM/F
DIN 371/376	
	Form B

EH0504 / DIN 371



EH0505 / DIN 376

Rm < 850	Rm 850-1100	Rm 1100-1300							

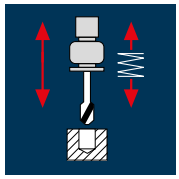
Example: **Order-N°.** Article-N°. **EH0504** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	TiCN EH0504
034	M 2	0.40	45	8.00	-	2.8	2.1	2	+0.015	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	+0.015	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	+0.016	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	+0.019	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	+0.020	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	+0.024	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	+0.025	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	+0.028	●

Example: **Order-N°.** Article-N°. **EH0505** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	TiCN EH0505
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	+0.032	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	+0.034	●
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	+0.036	●
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	+0.042	●

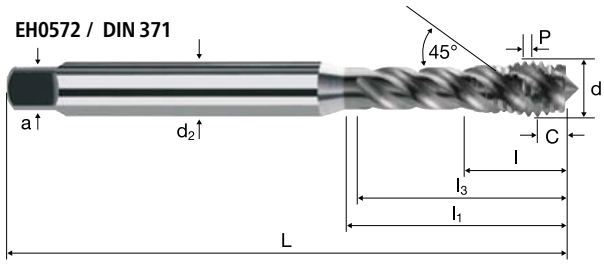
Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	32	5095	2038	28	4455	1782	22	3500	1400
		M 2.5	2.500	0.45	32	4075	1834	28	3565	1604	22	2800	1260
		M 3	3.000	0.50	32	3395	1698	28	2970	1485	22	2335	1168
		M 4	4.000	0.70	32	2545	1782	28	2230	1561	22	1750	1225
		M 5	5.000	0.80	32	2035	1628	28	1785	1428	22	1400	1120
		M 6	6.000	1.00	32	1700	1700	28	1485	1485	22	1165	1165
		M 8	8.000	1.25	32	1275	1594	28	1115	1394	22	875	1094
		M 10	10.000	1.50	32	1020	1530	28	890	1335	22	700	1050
		M 12	12.000	1.75	32	850	1488	28	745	1304	22	585	1024
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	32	635	1270	28	555	1110	22	440	880
		M 20	20.000	2.50	32	510	1275	28	445	1113	22	350	875
		M 24	24.000	3.00	32	425	1275	28	370	1110	22	290	870
	Steel 850 - 1100 N/mm²	M 2	2.000	0.40	20	3185	1274	16	2545	1018	10	1590	636
		M 2.5	2.500	0.45	20	2545	1145	16	2035	916	10	1275	574
		M 3	3.000	0.50	20	2120	1060	16	1700	850	10	1060	530
		M 4	4.000	0.70	20	1590	1113	16	1275	893	10	795	557
		M 5	5.000	0.80	20	1275	1020	16	1020	816	10	635	508
		M 6	6.000	1.00	20	1060	1060	16	850	850	10	530	530
		M 8	8.000	1.25	20	795	994	16	635	794	10	400	500
		M 10	10.000	1.50	20	635	953	16	510	765	10	320	480
		M 12	12.000	1.75	20	530	928	16	425	744	10	265	464
	Steel 850 - 1100 N/mm²	M 16	16.000	2.00	20	400	800	16	320	640	10	200	400
		M 20	20.000	2.50	20	320	800	16	255	638	10	160	400
		M 24	24.000	3.00	20	265	795	16	210	630	10	135	405

Taps x-tap

M	ISO 3 (6G)
60°	HSS PM/F
DIN 371/376	
	Form C

EH0572 / DIN 371



EH0573 / DIN 376

Rm < 850	Rm 850-1100

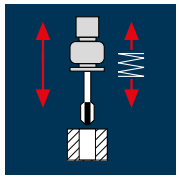
Example: **Order-N°.** Article-N°. **EH0572** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	TiCN EH0572
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	+0.015	●
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	+0.015	●
044	M 3	0.50	56	5.00	-	16.0	3.5	2.7	3	+0.016	●
058	M 4	0.70	63	7.00	-	19.0	4.5	3.4	3	+0.019	●
084	M 5	0.80	70	8.00	-	23.0	6.0	4.9	3	+0.020	●
088	M 6	1.00	80	10.00	-	28.0	6.0	4.9	3	+0.024	●
160	M 8	1.25	90	13.00	35.0	33.0	8.0	6.2	3	+0.025	●
174	M 10	1.50	100	15.00	39.0	37.0	10.0	8.0	4	+0.028	●

Example: **Order-N°.** Article-N°. **EH0573** ø-Code **240**

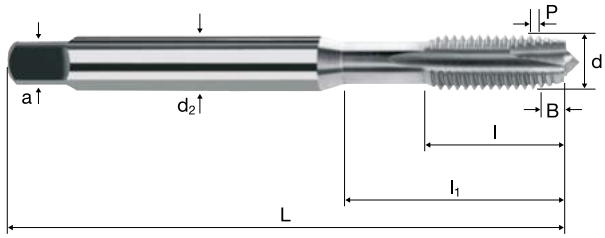
Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	TiCN EH0573
240	M 12	1.75	110	18.00	50.0	48.0	9.0	7.0	4	+0.032	●
246	M 16	2.00	110	20.00	58.0	56.0	12.0	9.0	4	+0.034	●
314	M 20	2.50	140	25.00	72.0	70.0	16.0	12.0	4	+0.036	●
320	M 24	3.00	160	30.00	74.0	72.0	18.0	14.5	5	+0.042	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	18	1910	955	15	1590	795	12	1275	638
		M 4	4.000	0.70	18	1430	1001	15	1195	837	12	955	669
		M 5	5.000	0.80	18	1145	916	15	955	764	12	765	612
		M 6	6.000	1.00	18	955	955	15	795	795	12	635	635
		M 8	8.000	1.25	18	715	894	15	595	744	12	475	594
		M 10	10.000	1.50	18	575	863	15	475	713	12	380	570
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	12	1910	764	8	1275	510	6	955	382
		M 2.5	2.500	0.45	12	1530	689	8	1020	459	6	765	344
		M 3	3.000	0.50	15	1590	795	10	1060	530	8	850	425
		M 4	4.000	0.70	15	1195	837	10	795	557	8	635	445
		M 5	5.000	0.80	15	955	764	10	635	508	8	510	408
		M 6	6.000	1.00	15	795	795	10	530	530	8	425	425
		M 8	8.000	1.25	15	595	744	10	400	500	8	320	400
		M 10	10.000	1.50	15	475	713	10	320	480	8	255	383
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
		M 3	3.000	0.50	15	1590	795	12	1275	638	10	1060	530
		M 4	4.000	0.70	15	1195	837	12	955	669	10	795	557
		M 5	5.000	0.80	15	955	764	12	765	612	10	635	508
		M 6	6.000	1.00	15	795	795	12	635	635	10	530	530
		M 8	8.000	1.25	15	595	744	12	475	594	10	400	500
		M 10	10.000	1.50	15	475	713	12	380	570	10	320	480
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
		M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143

Taps

M	ISO 1 (4H)
60°	HSS-E Co5
X · P Form B	
	X · P Form B

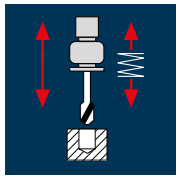


M

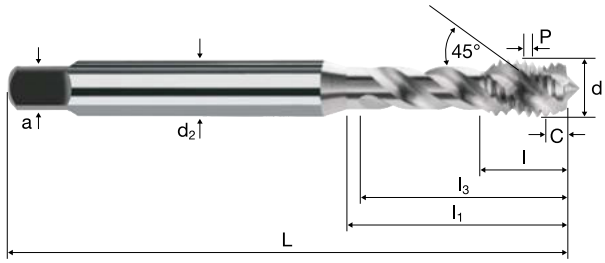
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10110** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	E10110	
034	M 2	0.40	45	8.00	-	2.8	2.1	2	–0.014	●	
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	–0.015	●	
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	–0.016	●	
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	–0.019	●	
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	–0.020	●	
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	–0.024	●	
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	–0.025	●	
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	–0.028	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	11	1750	700	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	11	1400	630	10	1275	574	8	1020	459
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	7	1115	446	6	955	382	5	795	318
		M 2.5	2.500	0.45	7	890	401	6	765	344	5	635	286
		M 3	3.000	0.50	9	955	478	8	850	425	7	745	373
		M 4	4.000	0.70	9	715	501	8	635	445	7	555	389
		M 5	5.000	0.80	9	575	460	8	510	408	7	445	356
		M 6	6.000	1.00	9	475	475	8	425	425	7	370	370
		M 8	8.000	1.25	9	360	450	8	320	400	7	280	350
		M 10	10.000	1.50	9	285	428	8	255	383	7	225	338
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 3	3.000	0.50	4	425	213	3	320	160	3	320	160
		M 4	4.000	0.70	4	320	224	3	240	168	3	240	168
		M 5	5.000	0.80	4	255	204	3	190	152	3	190	152
		M 6	6.000	1.00	4	210	210	3	160	160	3	160	160
		M 8	8.000	1.25	4	160	200	3	120	150	3	120	150
		M 10	10.000	1.50	4	125	188	3	95	143	3	95	143

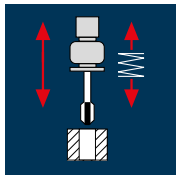
M	**ISO 1** (4H)
60°	**HSS-E Co5**
X · P Form C	
	X · P Form C



Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10214** ø-Code **034**

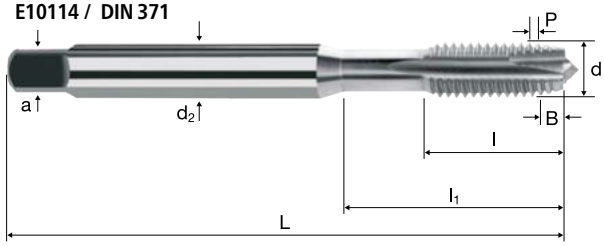
Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	E10214	
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	–0.014	●	
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	–0.015	●	
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	–0.016	●	
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	–0.019	●	
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	–0.020	●	
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	–0.024	●	
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	–0.025	●	
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	–0.028	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	14	2230	892	12	1910	764	10	1590	636
		M 2.5	2.500	0.45	14	1785	803	12	1530	689	10	1275	574
		M 3	3.000	0.50	18	1910	955	15	1590	795	12	1275	638
		M 4	4.000	0.70	18	1430	1001	15	1195	837	12	955	669
		M 5	5.000	0.80	18	1145	916	15	955	764	12	765	612
		M 6	6.000	1.00	18	955	955	15	795	795	12	635	635
		M 8	8.000	1.25	18	715	894	15	595	744	12	475	594
		M 10	10.000	1.50	18	575	863	15	475	713	12	380	570
		M 12	12.000	1.75	18	475	831	15	400	700	12	320	560
	Steel < 500 N/mm²	M 16	16.000	2.00	18	360	720	15	300	600	12	240	480
		M 20	20.000	2.50	18	285	713	15	240	600	12	190	475
		M 24	24.000	3.00	18	240	720	15	200	600	12	160	480
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	12	1910	764	8	1275	510	6	955	382
		M 2.5	2.500	0.45	12	1530	689	8	1020	459	6	765	344
		M 3	3.000	0.50	15	1590	795	10	1060	530	8	850	425
		M 4	4.000	0.70	15	1195	837	10	795	557	8	635	445
		M 5	5.000	0.80	15	955	764	10	635	508	8	510	408
		M 6	6.000	1.00	15	795	795	10	530	530	8	425	425
		M 8	8.000	1.25	15	595	744	10	400	500	8	320	400
		M 10	10.000	1.50	15	475	713	10	320	480	8	255	383
		M 12	12.000	1.75	15	400	700	10	265	464	8	210	368
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	15	300	600	10	200	400	8	160	320
		M 20	20.000	2.50	15	240	600	10	160	400	8	125	313
		M 24	24.000	3.00	15	200	600	10	135	405	8	105	315
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	12	1910	764	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	12	1530	689	10	1275	574	8	1020	459
		M 3	3.000	0.50	15	1590	795	12	1275	638	10	1060	530
		M 4	4.000	0.70	15	1195	837	12	955	669	10	795	557
		M 5	5.000	0.80	15	955	764	12	765	612	10	635	508
		M 6	6.000	1.00	15	795	795	12	635	635	10	530	530
		M 8	8.000	1.25	15	595	744	12	475	594	10	400	500
		M 10	10.000	1.50	15	475	713	12	380	570	10	320	480
		M 12	12.000	1.75	15	400	700	12	320	560	10	265	464
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	15	300	600	12	240	480	10	200	400
		M 20	20.000	2.50	15	240	600	12	190	475	10	160	400
		M 24	24.000	3.00	15	200	600	12	160	480	10	135	405
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	4	635	254	3	475	190	2	320	128
		M 2.5	2.500	0.45	4	510	230	3	380	171	2	255	115
		M 3	3.000	0.50	5	530	265	4	425	213	3	320	160
		M 4	4.000	0.70	5	400	280	4	320	224	3	240	168
		M 5	5.000	0.80	5	320	256	4	255	204	3	190	152
		M 6	6.000	1.00	5	265	265	4	210	210	3	160	160
		M 8	8.000	1.25	5	200	250	4	160	200	3	120	150
		M 10	10.000	1.50	5	160	240	4	125	188	3	95	143
		M 12	12.000	1.75	5	135	236	4	105	184	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	5	100	200	4	80	160	3	60	120
		M 20	20.000	2.50	5	80	200	4	65	163	3	50	125
		M 24	24.000	3.00	5	65	195	4	55	165	3	40	120

Taps

M	7G
60°	HSS-E Co5
DIN 371/376	
	Form B

E10114 / DIN 371



E10115 / DIN 376

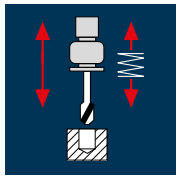
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

Example: **Order-N°.** Article-N°. **E10114** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	E10114	
034	M 2	0.40	45	8.00	-	2.8	2.1	2	+0.030	●	
040	M 2.5	0.45	50	9.00	-	2.8	2.1	2	+0.030	●	
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	+0.032	●	
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	+0.038	●	
084	M 5	0.80	70	15.00	25.0	6.0	4.9	3	+0.040	●	
088	M 6	1.00	80	17.00	30.0	6.0	4.9	3	+0.048	●	
160	M 8	1.25	90	20.00	35.0	8.0	6.2	3	+0.050	●	
174	M 10	1.50	100	22.00	39.0	10.0	8.0	3	+0.056	●	

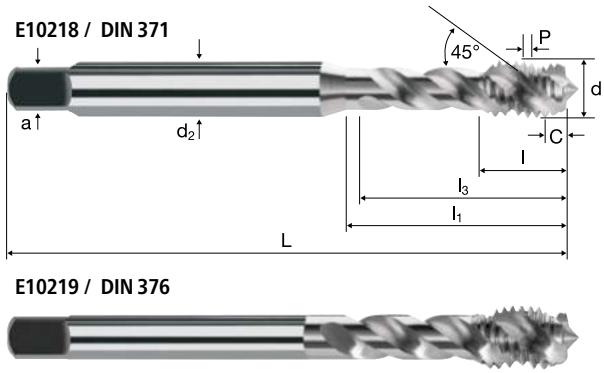
Example: **Order-N°.** Article-N°. **E10115** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a		Δ	E10115	
240	M 12	1.75	110	24.00	40.0	9.0	7.0	3	+0.064	●	
246	M 16	2.00	110	27.00	40.0	12.0	9.0	3	+0.068	●	
314	M 20	2.50	140	32.00	50.0	16.0	12.0	4	+0.072	●	
320	M 24	3.00	160	34.00	60.0	18.0	14.5	4	+0.085	●	

Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	M 2	2.000	0.40	11	1750	700	10	1590	636	8	1275	510
		M 2.5	2.500	0.45	11	1400	630	10	1275	574	8	1020	459
		M 3	3.000	0.50	14	1485	743	12	1275	638	10	1060	530
		M 4	4.000	0.70	14	1115	781	12	955	669	10	795	557
		M 5	5.000	0.80	14	890	712	12	765	612	10	635	508
		M 6	6.000	1.00	14	745	745	12	635	635	10	530	530
		M 8	8.000	1.25	14	555	694	12	475	594	10	400	500
		M 10	10.000	1.50	14	445	668	12	380	570	10	320	480
		M 12	12.000	1.75	14	370	648	12	320	560	10	265	464
	Steel < 500 N/mm²	M 16	16.000	2.00	14	280	560	12	240	480	10	200	400
		M 20	20.000	2.50	14	225	563	12	190	475	10	160	400
		M 24	24.000	3.00	14	185	555	12	160	480	10	135	405
	Steel 500 - 850 N/mm²	M 2	2.000	0.40	7	1115	446	6	955	382	5	795	318
		M 2.5	2.500	0.45	7	890	401	6	765	344	5	635	286
		M 3	3.000	0.50	9	955	478	8	850	425	7	745	373
		M 4	4.000	0.70	9	715	501	8	635	445	7	555	389
		M 5	5.000	0.80	9	575	460	8	510	408	7	445	356
		M 6	6.000	1.00	9	475	475	8	425	425	7	370	370
		M 8	8.000	1.25	9	360	450	8	320	400	7	280	350
		M 10	10.000	1.50	9	285	428	8	255	383	7	225	338
		M 12	12.000	1.75	9	240	420	8	210	368	7	185	324
	Steel 500 - 850 N/mm²	M 16	16.000	2.00	9	180	360	8	160	320	7	140	280
		M 20	20.000	2.50	9	145	363	8	125	313	7	110	275
		M 24	24.000	3.00	9	120	360	8	105	315	7	95	285
	Wrought aluminium alloys Si < 6% hardened	M 2	2.000	0.40	8	1275	510	6	955	382	5	795	318
		M 2.5	2.500	0.45	8	1020	459	6	765	344	5	635	286
		M 3	3.000	0.50	10	1060	530	8	850	425	6	635	318
		M 4	4.000	0.70	10	795	557	8	635	445	6	475	333
		M 5	5.000	0.80	10	635	508	8	510	408	6	380	304
		M 6	6.000	1.00	10	530	530	8	425	425	6	320	320
		M 8	8.000	1.25	10	400	500	8	320	400	6	240	300
		M 10	10.000	1.50	10	320	480	8	255	383	6	190	285
		M 12	12.000	1.75	10	265	464	8	210	368	6	160	280
	Wrought aluminium alloys Si < 6% hardened	M 16	16.000	2.00	10	200	400	8	160	320	6	120	240
		M 20	20.000	2.50	10	160	400	8	125	313	6	95	238
		M 24	24.000	3.00	10	135	405	8	105	315	6	80	240
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	3	475	190	2	320	128	2	320	128
		M 2.5	2.500	0.45	3	380	171	2	255	115	2	255	115
		M 3	3.000	0.50	4	425	213	3	320	160	3	320	160
		M 4	4.000	0.70	4	320	224	3	240	168	3	240	168
		M 5	5.000	0.80	4	255	204	3	190	152	3	190	152
		M 6	6.000	1.00	4	210	210	3	160	160	3	160	160
		M 8	8.000	1.25	4	160	200	3	120	150	3	120	150
		M 10	10.000	1.50	4	125	188	3	95	143	3	95	143
		M 12	12.000	1.75	4	105	184	3	80	140	3	80	140
	Stainless steel [Cr-Ni/1.4301]	M 16	16.000	2.00	4	80	160	3	60	120	3	60	120
		M 20	20.000	2.50	4	65	163	3	50	125	3	50	125
		M 24	24.000	3.00	4	55	165	3	40	120	3	40	120

Taps

M	7G
60°	HSS-E Co5
DIN 371/376	
	X · P Form C



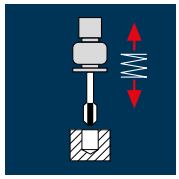
Rm < 850							Inox Stainless		GG(G) Aluminium Copper

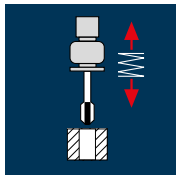
Example: **Order-N°.** Article-N°. **E10218** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	E10218	
034	M 2	0.40	45	8.00	-	10.5	2.8	2.1	3	+0.030	●	
040	M 2.5	0.45	50	9.00	-	13.0	2.8	2.1	3	+0.030	●	
044	M 3	0.50	56	4.00	18.0	16.0	3.5	2.7	3	+0.032	●	
058	M 4	0.70	63	5.60	21.0	19.0	4.5	3.4	3	+0.038	●	
084	M 5	0.80	70	6.40	25.0	23.0	6.0	4.9	3	+0.040	●	
088	M 6	1.00	80	8.00	30.0	28.0	6.0	4.9	3	+0.048	●	
160	M 8	1.25	90	10.00	35.0	33.0	8.0	6.2	3	+0.050	●	
174	M 10	1.50	100	12.00	39.0	37.0	10.0	8.0	3	+0.056	●	

Example: **Order-N°.** Article-N°. **E10219** ø-Code **240**

Ø Code	d	P	L	l	l_1	l_3	d_2	a		Δ	E10219	
240	M 12	1.75	110	14.00	50.0	48.0	9.0	7.0	3	+0.064	●	
246	M 16	2.00	110	16.00	58.0	56.0	12.0	9.0	4	+0.068	●	
314	M 20	2.50	140	20.00	72.0	70.0	16.0	12.0	4	+0.072	●	
320	M 24	3.00	160	24.00	74.0	72.0	18.0	14.5	4	+0.085	●	

Application	Material	MJ	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]
	Nickel base alloys hardened	MJ 2	2.000	0.40	2	320	128	2	320	128
		MJ 2.5	2.500	0.45	2	255	115	2	255	115
		MJ 3	3.000	0.50	2	210	105	2	210	105
		MJ 4	4.000	0.70	2	160	112	2	160	112
		MJ 5	5.000	0.80	2	125	100	2	125	100
		MJ 6	6.000	1.00	2	105	105	2	105	105
		MJ 8	8.000	1.00	2	80	80	2	80	80
		MJ 8	8.000	1.25	2	80	100	2	80	100
		MJ 10	10.000	1.25	2	65	81	2	65	81
	Nickel base alloys hardened	MJ 10	10.000	1.50	2	65	98	2	65	98
	Nickel base alloys not hardened	MJ 2	2.000	0.40	3	475	190	2	320	128
		MJ 2.5	2.500	0.45	3	380	171	2	255	115
		MJ 3	3.000	0.50	3	320	160	2	210	105
		MJ 4	4.000	0.70	3	240	168	2	160	112
		MJ 5	5.000	0.80	3	190	152	2	125	100
		MJ 6	6.000	1.00	3	160	160	2	105	105
		MJ 8	8.000	1.00	3	120	120	2	80	80
		MJ 8	8.000	1.25	3	120	150	2	80	100
		MJ 10	10.000	1.25	3	95	119	2	65	81
	Nickel base alloys not hardened	MJ 10	10.000	1.50	3	95	143	2	65	98

Application	Material	MJ	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]
	Nickel base alloys hardened	MJ 2	2.000	0.40	2	320	128	2	320	128
		MJ 2.5	2.500	0.45	2	255	115	2	255	115
		MJ 3	3.000	0.50	2	210	105	2	210	105
		MJ 4	4.000	0.70	2	160	112	2	160	112
		MJ 5	5.000	0.80	2	125	100	2	125	100
		MJ 6	6.000	1.00	2	105	105	2	105	105
		MJ 8	8.000	1.00	2	80	80	2	80	80
		MJ 8	8.000	1.25	2	80	100	2	80	100
		MJ 10	10.000	1.25	2	65	81	2	65	81
	Nickel base alloys hardened	MJ 10	10.000	1.50	2	65	98	2	65	98
	Nickel base alloys not hardened	MJ 2	2.000	0.40	3	475	190	2	320	128
		MJ 2.5	2.500	0.45	3	380	171	2	255	115
		MJ 3	3.000	0.50	3	320	160	2	210	105
		MJ 4	4.000	0.70	3	240	168	2	160	112
		MJ 5	5.000	0.80	3	190	152	2	125	100
		MJ 6	6.000	1.00	3	160	160	2	105	105
		MJ 8	8.000	1.00	3	120	120	2	80	80
		MJ 8	8.000	1.25	3	120	150	2	80	100
		MJ 10	10.000	1.25	3	95	119	2	65	81
	Nickel base alloys not hardened	MJ 10	10.000	1.50	3	95	143	2	65	98

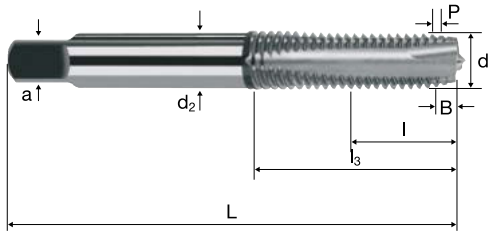
Taps

Ni

MJ | 4H

60° | HSS PM/F

X · P Form B



M

Nickel-Alloys

Example:
Order-N°. Article-N°. **E0599** ø-Code **034**

Ø Code	d	P	L	l	l_3	d_2	a			E0599	
034	MJ 2	0.40	41	8.00	11.0	2.8	2.1	3	1.70	●	
040	MJ 2.5	0.45	44	9.00	13.0	2.8	2.1	3	2.20*	●	
044	MJ 3	0.50	48	11.00	16.0	3.5	2.7	3	2.65	●	
058	MJ 4	0.70	53	13.00	19.0	4.5	3.4	3	3.50*	●	
084	MJ 5	0.80	58	15.00	22.0	6.0	4.9	3	4.40	●	
088	MJ 6	1.00	66	17.00	28.0	6.0	4.9	3	5.20	●	
090	MJ 8	1.00	72	20.00	34.0	8.0	6.2	3	7.20	●	
160	MJ 8	1.25	72	20.00	34.0	8.0	6.2	3	7.00*	●	
162	MJ 10	1.25	80	22.00	37.0	10.0	8.0	3	9.00*	●	
174	MJ 10	1.50	80	22.00	37.0	10.0	8.0	3	8.70	●	

* The given dimension is out of norm

passion
for precision
fraisa

Metric fine thread MF

Tolerance ISO 2 (6H)

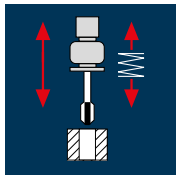
N° EH1257 / EH1258

N° EH1260 / EH1261

N° ET1240 / ET1241

N° ET1260 / ET1261

x-tap	11	**HSS PM/F**		**Rm** 850-1100		289
x-tap	11	**HSS PM/F**		**Rm** 850-1100		293
Inotap	In	**HSS PM/F**		**Inox** Stainless		297
x-tap	In	**HSS PM/F**		**Inox** Stainless		301

Application	Material	MF	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2.5	2.500	0.35	25	3185	1115	20	2545	891	15	1910	669
		M 3	3.000	0.35	25	2655	929	20	2120	742	15	1590	557
		M 3.5	3.500	0.35	25	2275	796	20	1820	637	15	1365	478
		M 4	4.000	0.50	25	1990	995	20	1590	795	15	1195	598
		M 5	5.000	0.50	25	1590	795	20	1275	638	15	955	478
		M 6	6.000	0.50	25	1325	663	20	1060	530	15	795	398
		M 8	8.000	0.50	25	995	498	20	795	398	15	595	298
		M 10	10.000	0.50	25	795	398	20	635	318	15	475	238
		M 6	6.000	0.75	25	1325	994	20	1060	795	15	795	596
	Steel 500 - 850 N/mm²	M 7	7.000	0.75	25	1135	851	20	910	683	15	680	510
		M 8	8.000	0.75	25	995	746	20	795	596	15	595	446
		M 10	10.000	0.75	25	795	596	20	635	476	15	475	356
		M 8	8.000	1.00	25	995	995	20	795	795	15	595	595
		M 9	9.000	1.00	25	885	885	20	705	705	15	530	530
		M 10	10.000	1.00	25	795	795	20	635	635	15	475	475
		M 10	10.000	1.25	25	795	994	20	635	794	15	475	594
	Steel 850 - 1100 N/mm²	M 2.5	2.500	0.35	20	2545	891	15	1910	669	12	1530	536
		M 3	3.000	0.35	20	2120	742	15	1590	557	12	1275	446
		M 3.5	3.500	0.35	20	1820	637	15	1365	478	12	1090	382
		M 4	4.000	0.50	20	1590	795	15	1195	598	12	955	478
		M 5	5.000	0.50	20	1275	638	15	955	478	12	765	383
		M 6	6.000	0.50	20	1060	530	15	795	398	12	635	318
		M 8	8.000	0.50	20	795	398	15	595	298	12	475	238
		M 10	10.000	0.50	20	635	318	15	475	238	12	380	190
		M 6	6.000	0.75	20	1060	795	15	795	596	12	635	476
	Steel 850 - 1100 N/mm²	M 7	7.000	0.75	20	910	683	15	680	510	12	545	409
		M 8	8.000	0.75	20	795	596	15	595	446	12	475	356
		M 10	10.000	0.75	20	635	476	15	475	356	12	380	285
		M 8	8.000	1.00	20	795	795	15	595	595	12	475	475
		M 9	9.000	1.00	20	705	705	15	530	530	12	425	425
		M 10	10.000	1.00	20	635	635	15	475	475	12	380	380
		M 10	10.000	1.25	20	635	794	15	475	594	12	380	475
	Steel 1100 - 1300 N/mm²	M 2.5	2.500	0.35	7	890	312	4	510	179	-	-	-
		M 3	3.000	0.35	7	745	261	4	425	149	-	-	-
		M 3.5	3.500	0.35	7	635	222	4	365	128	-	-	-
		M 4	4.000	0.50	7	555	278	4	320	160	-	-	-
		M 5	5.000	0.50	7	445	223	4	255	128	-	-	-
		M 6	6.000	0.50	7	370	185	4	210	105	-	-	-
		M 8	8.000	0.50	7	280	140	4	160	80	-	-	-
		M 10	10.000	0.50	7	225	113	4	125	63	-	-	-
		M 6	6.000	0.75	7	370	278	4	210	158	-	-	-
	Steel 1100 - 1300 N/mm²	M 7	7.000	0.75	7	320	240	4	180	135	-	-	-
		M 8	8.000	0.75	7	280	210	4	160	120	-	-	-
		M 10	10.000	0.75	7	225	169	4	125	94	-	-	-
		M 8	8.000	1.00	7	280	280	4	160	160	-	-	-
		M 9	9.000	1.00	7	250	250	4	140	140	-	-	-
		M 10	10.000	1.00	7	225	225	4	125	125	-	-	-
		M 10	10.000	1.25	7	225	281	4	125	156	-	-	-

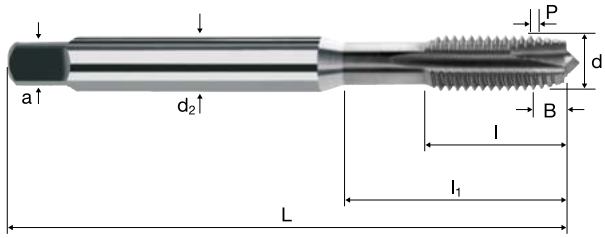
Taps x-tap

MF | ISO 2 (6H)

60° | HSS PM/F

DIN 371

X · P Form B



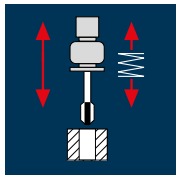
Rm < 850 | **Rm 850-1100** | Rm 1100-1300

Example: **Order-N°.** Article-N°. **EH1257** ø-Code **029**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH1257
029	M 2.5	0.35	50	9.00	-	2.8	2.1	2	2.15	●
031	M 3	0.35	56	12.00	18.0	3.5	2.7	3	2.65	●
032	M 3.5	0.35	56	12.00	20.0	4.0	3.0	3	3.15	●
046	M 4	0.50	63	13.00	21.0	4.5	3.4	3	3.50	●
048	M 5	0.50	70	15.00	25.0	6.0	4.9	3	4.50	●
050	M 6	0.50	80	17.00	30.0	6.0	4.9	3	5.50	●
052	M 8	0.50	90	20.00	35.0	8.0	6.2	3	7.50	●
054	M 10	0.50	100	22.00	39.0	10.0	8.0	3	9.50	●
064	M 6	0.75	80	17.00	30.0	6.0	4.9	3	5.20	●
065	M 7	0.75	80	17.00	30.0	7.0	5.5	3	6.20	●
066	M 8	0.75	90	20.00	35.0	8.0	6.2	3	7.20	●
068	M 10	0.75	100	22.00	39.0	10.0	8.0	3	9.20	●
090	M 8	1.00	90	20.00	35.0	8.0	6.2	3	7.00	●
091	M 9	1.00	90	20.00	35.0	9.0	7.0	3	8.00	●
092	M 10	1.00	100	22.00	39.0	10.0	8.0	3	9.00	●
162	M 10	1.25	100	22.00	39.0	10.0	8.0	3	8.80	●

For larger dimensions see article no. EH1258

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	MF	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 12	12.000	0.75	25	665	499	20	530	398	15	400	300
		M 14	14.000	0.75	25	570	428	20	455	341	15	340	255
		M 16	16.000	0.75	25	495	371	20	400	300	15	300	225
		M 12	12.000	1.00	25	665	665	20	530	530	15	400	400
		M 13	13.000	1.00	25	610	610	20	490	490	15	365	365
		M 14	14.000	1.00	25	570	570	20	455	455	15	340	340
		M 16	16.000	1.00	25	495	495	20	400	400	15	300	300
		M 18	18.000	1.00	25	440	440	20	355	355	15	265	265
		M 20	20.000	1.00	25	400	400	20	320	320	15	240	240
	Steel 500 - 850 N/mm²	M 12	12.000	1.25	25	665	831	20	530	663	15	400	500
		M 14	14.000	1.25	25	570	713	20	455	569	15	340	425
		M 16	16.000	1.25	25	495	619	20	400	500	15	300	375
		M 12	12.000	1.50	25	665	998	20	530	795	15	400	600
		M 14	14.000	1.50	25	570	855	20	455	683	15	340	510
		M 16	16.000	1.50	25	495	743	20	400	600	15	300	450
		M 18	18.000	1.50	25	440	660	20	355	533	15	265	398
		M 20	20.000	1.50	25	400	600	20	320	480	15	240	360
		M 24	24.000	1.50	25	330	495	20	265	398	15	200	300
	Steel 850 - 1100 N/mm²	M 12	12.000	0.75	20	530	398	15	400	300	12	320	240
		M 14	14.000	0.75	20	455	341	15	340	255	12	275	206
		M 16	16.000	0.75	20	400	300	15	300	225	12	240	180
		M 12	12.000	1.00	20	530	530	15	400	400	12	320	320
		M 13	13.000	1.00	20	490	490	15	365	365	12	295	295
		M 14	14.000	1.00	20	455	455	15	340	340	12	275	275
		M 16	16.000	1.00	20	400	400	15	300	300	12	240	240
		M 18	18.000	1.00	20	355	355	15	265	265	12	210	210
		M 20	20.000	1.00	20	320	320	15	240	240	12	190	190
	Steel 850 - 1100 N/mm²	M 12	12.000	1.25	20	530	663	15	400	500	12	320	400
		M 14	14.000	1.25	20	455	569	15	340	425	12	275	344
		M 16	16.000	1.25	20	400	500	15	300	375	12	240	300
		M 12	12.000	1.50	20	530	795	15	400	600	12	320	480
		M 14	14.000	1.50	20	455	683	15	340	510	12	275	413
		M 16	16.000	1.50	20	400	600	15	300	450	12	240	360
		M 18	18.000	1.50	20	355	533	15	265	398	12	210	315
		M 20	20.000	1.50	20	320	480	15	240	360	12	190	285
		M 24	24.000	1.50	20	265	398	15	200	300	12	160	240
	Steel 1100 - 1300 N/mm²	M 12	12.000	0.75	7	185	139	4	105	79	-	-	-
		M 14	14.000	0.75	7	160	120	4	90	68	-	-	-
		M 16	16.000	0.75	7	140	105	4	80	60	-	-	-
		M 12	12.000	1.00	7	185	185	4	105	105	-	-	-
		M 13	13.000	1.00	7	170	170	4	100	100	-	-	-
		M 14	14.000	1.00	7	160	160	4	90	90	-	-	-
		M 16	16.000	1.00	7	140	140	4	80	80	-	-	-
		M 18	18.000	1.00	7	125	125	4	70	70	-	-	-
		M 20	20.000	1.00	7	110	110	4	65	65	-	-	-
	Steel 1100 - 1300 N/mm²	M 12	12.000	1.25	7	185	231	4	105	131	-	-	-
		M 14	14.000	1.25	7	160	200	4	90	113	-	-	-
		M 16	16.000	1.25	7	140	175	4	80	100	-	-	-
		M 12	12.000	1.50	7	185	278	4	105	158	-	-	-
		M 14	14.000	1.50	7	160	240	4	90	135	-	-	-
		M 16	16.000	1.50	7	140	210	4	80	120	-	-	-
		M 18	18.000	1.50	7	125	188	4	70	105	-	-	-
		M 20	20.000	1.50	7	110	165	4	65	98	-	-	-
		M 24	24.000	1.50	7	95	143	4	55	83	-	-	-

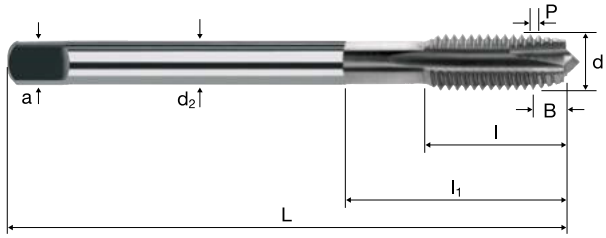
Taps x-tap

MF | ISO 2 (6H)

HSS PM/F

DIN 374

Form B

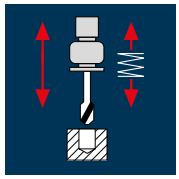


Rm < 850 | **Rm 850-1100** | Rm 1100-1300

Example: **Order-N°.** Article-N°. **EH1258** ø-Code **070**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH1258
070	M 12	0.75	100	18.00	39.0	9.0	7.0	3	11.30	●
072	M 14	0.75	100	18.00	39.0	11.0	9.0	3	13.30	●
074	M 16	0.75	100	18.00	39.0	12.0	9.0	3	15.30	●
094	M 12	1.00	100	18.00	39.0	9.0	7.0	3	11.00	●
095	M 13	1.00	100	18.00	39.0	11.0	7.0	3	12.00	●
096	M 14	1.00	100	18.00	39.0	11.0	9.0	3	13.00	●
097	M 15	1.00	100	18.00	39.0	12.0	9.0	3	14.00	●
098	M 16	1.00	100	18.00	39.0	12.0	9.0	3	15.00	●
099	M 17	1.00	100	18.00	39.0	12.0	9.0	4	16.00	●
100	M 18	1.00	110	20.00	45.0	14.0	11.0	4	17.00	●
102	M 20	1.00	125	20.00	50.0	16.0	12.0	4	19.00	●
164	M 12	1.25	100	22.00	39.0	9.0	7.0	3	10.80	●
166	M 14	1.25	100	22.00	39.0	11.0	9.0	3	12.80	●
168	M 16	1.25	100	22.00	39.0	12.0	9.0	3	14.80	●
176	M 12	1.50	100	22.00	39.0	9.0	7.0	3	10.50	●
178	M 14	1.50	100	22.00	39.0	11.0	9.0	3	12.50	●
180	M 16	1.50	100	22.00	39.0	12.0	9.0	3	14.50	●
182	M 18	1.50	110	22.00	45.0	14.0	11.0	4	16.50	●
184	M 20	1.50	125	25.00	50.0	16.0	12.0	4	18.50	●
186	M 22	1.50	125	26.00	50.0	18.0	14.5	4	20.50	●
188	M 24	1.50	140	27.00	52.0	18.0	14.5	4	22.50	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	MF	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 2.5	2.500	0.35	32	4075	1426	28	3565	1248	22	2800	980
		M 3	3.000	0.35	32	3395	1188	28	2970	1040	22	2335	817
		M 3.5	3.500	0.35	32	2910	1019	28	2545	891	22	2000	700
		M 4	4.000	0.50	32	2545	1273	28	2230	1115	22	1750	875
		M 5	5.000	0.50	32	2035	1018	28	1785	893	22	1400	700
		M 6	6.000	0.50	32	1700	850	28	1485	743	22	1165	583
		M 8	8.000	0.50	32	1275	638	28	1115	558	22	875	438
		M 10	10.000	0.50	32	1020	510	28	890	445	22	700	350
		M 6	6.000	0.75	32	1700	1275	28	1485	1114	22	1165	874
	Steel 500 - 850 N/mm²	M 7	7.000	0.75	32	1455	1091	28	1275	956	22	1000	750
		M 8	8.000	0.75	32	1275	956	28	1115	836	22	875	656
		M 10	10.000	0.75	32	1020	765	28	890	668	22	700	525
		M 8	8.000	1.00	32	1275	1275	28	1115	1115	22	875	875
		M 9	9.000	1.00	32	1130	1130	28	990	990	22	780	780
		M 10	10.000	1.00	32	1020	1020	28	890	890	22	700	700
		M 10	10.000	1.25	32	1020	1275	28	890	1113	22	700	875
	Steel 850 - 1100 N/mm²	M 2.5	2.500	0.35	20	2545	891	16	2035	712	10	1275	446
		M 3	3.000	0.35	20	2120	742	16	1700	595	10	1060	371
		M 3.5	3.500	0.35	20	1820	637	16	1455	509	10	910	319
		M 4	4.000	0.50	20	1590	795	16	1275	638	10	795	398
		M 5	5.000	0.50	20	1275	638	16	1020	510	10	635	318
		M 6	6.000	0.50	20	1060	530	16	850	425	10	530	265
		M 8	8.000	0.50	20	795	398	16	635	318	10	400	200
		M 10	10.000	0.50	20	635	318	16	510	255	10	320	160
		M 6	6.000	0.75	20	1060	795	16	850	638	10	530	398
	Steel 850 - 1100 N/mm²	M 7	7.000	0.75	20	910	683	16	730	548	10	455	341
		M 8	8.000	0.75	20	795	596	16	635	476	10	400	300
		M 10	10.000	0.75	20	635	476	16	510	383	10	320	240
		M 8	8.000	1.00	20	795	795	16	635	635	10	400	400
		M 9	9.000	1.00	20	705	705	16	565	565	10	355	355
		M 10	10.000	1.00	20	635	635	16	510	510	10	320	320
		M 10	10.000	1.25	20	635	794	16	510	638	10	320	400

Taps x-tap

MF | ISO 2 (6H)

60° | HSS PM/F

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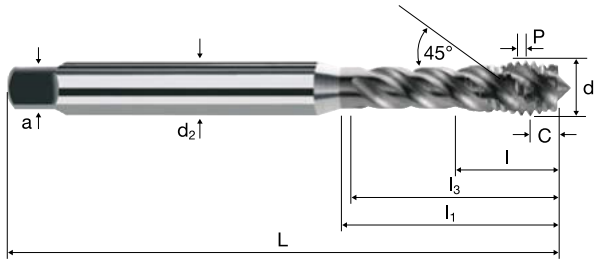


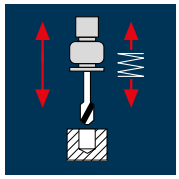
Rm < 850 | **Rm 850-1100**

Example: **Order-N°.** Article-N°. **EH1260** ø-Code **029**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH1260
029	M 2.5	0.35	50	9.00	-	13.0	2.8	2.1	3	2.15	●
031	M 3	0.35	56	5.00	18.0	16.0	3.5	2.7	3	2.65	●
032	M 3.5	0.35	56	6.00	20.0	18.0	4.0	3.0	3	3.15	●
046	M 4	0.50	63	7.00	21.0	19.0	4.5	3.4	3	3.50	●
048	M 5	0.50	70	8.00	25.0	23.0	6.0	4.9	3	4.50	●
050	M 6	0.50	80	10.00	30.0	28.0	6.0	4.9	3	5.50	●
052	M 8	0.50	90	13.00	35.0	33.0	8.0	6.2	3	7.50	●
054	M 10	0.50	100	15.00	39.0	37.0	10.0	8.0	4	9.50	●
064	M 6	0.75	80	10.00	30.0	28.0	6.0	4.9	3	5.20	●
065	M 7	0.75	80	10.00	30.0	28.0	7.0	5.5	3	6.20	●
066	M 8	0.75	90	13.00	35.0	33.0	8.0	6.2	3	7.20	●
068	M 10	0.75	100	15.00	39.0	37.0	10.0	8.0	4	9.20	●
090	M 8	1.00	90	13.00	35.0	33.0	8.0	6.2	3	7.00	●
091	M 9	1.00	90	13.00	35.0	33.0	9.0	7.0	3	8.00	●
092	M 10	1.00	100	15.00	39.0	37.0	10.0	8.0	4	9.00	●
162	M 10	1.25	100	15.00	39.0	37.0	10.0	8.0	4	8.80	●

For larger dimensions see article no. EH1261

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	MF	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	M 12	12.000	0.75	32	850	638	28	745	559	22	585	439
		M 14	14.000	0.75	32	730	548	28	635	476	22	500	375
		M 16	16.000	0.75	32	635	476	28	555	416	22	440	330
		M 12	12.000	1.00	32	850	850	28	745	745	22	585	585
		M 13	13.000	1.00	32	785	785	28	685	685	22	540	540
		M 14	14.000	1.00	32	730	730	28	635	635	22	500	500
		M 16	16.000	1.00	32	635	635	28	555	555	22	440	440
		M 18	18.000	1.00	32	565	565	28	495	495	22	390	390
		M 20	20.000	1.00	32	510	510	28	445	445	22	350	350
	Steel 500 - 850 N/mm²	M 12	12.000	1.25	32	850	1063	28	745	931	22	585	731
		M 14	14.000	1.25	32	730	913	28	635	794	22	500	625
		M 16	16.000	1.25	32	635	794	28	555	694	22	440	550
		M 12	12.000	1.50	32	850	1275	28	745	1118	22	585	878
		M 14	14.000	1.50	32	730	1095	28	635	953	22	500	750
		M 16	16.000	1.50	32	635	953	28	555	833	22	440	660
		M 18	18.000	1.50	32	565	848	28	495	743	22	390	585
		M 20	20.000	1.50	32	510	765	28	445	668	22	350	525
		M 24	24.000	1.50	32	425	638	28	370	555	22	290	435
	Steel 850 - 1100 N/mm²	M 12	12.000	0.75	20	530	398	16	425	319	10	265	199
		M 14	14.000	0.75	20	455	341	16	365	274	10	225	169
		M 16	16.000	0.75	20	400	300	16	320	240	10	200	150
		M 12	12.000	1.00	20	530	530	16	425	425	10	265	265
		M 13	13.000	1.00	20	490	490	16	390	390	10	245	245
		M 14	14.000	1.00	20	455	455	16	365	365	10	225	225
		M 16	16.000	1.00	20	400	400	16	320	320	10	200	200
		M 18	18.000	1.00	20	355	355	16	285	285	10	175	175
		M 20	20.000	1.00	20	320	320	16	255	255	10	160	160
	Steel 850 - 1100 N/mm²	M 12	12.000	1.25	20	530	663	16	425	531	10	265	331
		M 14	14.000	1.25	20	455	569	16	365	456	10	225	281
		M 16	16.000	1.25	20	400	500	16	320	400	10	200	250
		M 12	12.000	1.50	20	530	795	16	425	638	10	265	398
		M 14	14.000	1.50	20	455	683	16	365	548	10	225	338
		M 16	16.000	1.50	20	400	600	16	320	480	10	200	300
		M 18	18.000	1.50	20	355	533	16	285	428	10	175	263
		M 20	20.000	1.50	20	320	480	16	255	383	10	160	240
		M 24	24.000	1.50	20	265	398	16	210	315	10	135	203

Taps x-tap

MF | ISO 2 (6H)

60° | HSS PM/F

DIN 374

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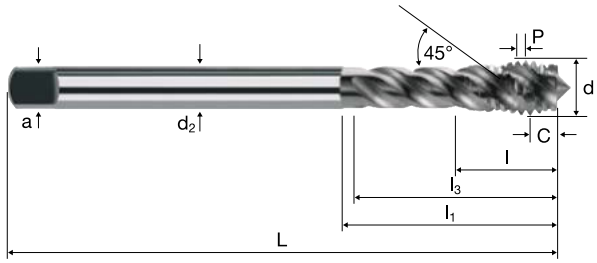
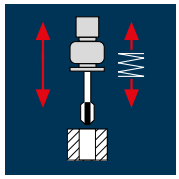


Rm < 850 | **Rm 850-1100**

Example: **Order-N°.** Article-N°. **EH1261** ø-Code **070**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TiCN EH1261
070	M 12	0.75	100	11.00	39.0	37.0	9.0	7.0	4	11.30	●
072	M 14	0.75	100	11.00	39.0	37.0	11.0	9.0	4	13.30	●
074	M 16	0.75	100	12.00	39.0	37.0	12.0	9.0	4	15.30	●
094	M 12	1.00	100	11.00	39.0	37.0	9.0	7.0	4	11.00	●
095	M 13	1.00	100	11.00	39.0	37.0	11.0	9.0	4	12.00	●
096	M 14	1.00	100	11.00	39.0	37.0	11.0	9.0	4	13.00	●
097	M 15	1.00	100	12.00	39.0	37.0	12.0	9.0	4	14.00	●
098	M 16	1.00	100	12.00	39.0	37.0	12.0	9.0	4	15.00	●
099	M 17	1.00	100	12.00	39.0	37.0	12.0	9.0	4	16.00	●
100	M 18	1.00	110	13.00	50.0	48.0	14.0	11.0	4	17.00	●
102	M 20	1.00	125	14.00	65.0	63.0	16.0	12.0	4	19.00	●
164	M 12	1.25	100	15.00	39.0	37.0	9.0	7.0	4	10.80	●
166	M 14	1.25	100	15.00	39.0	37.0	11.0	9.0	4	12.80	●
168	M 16	1.25	100	15.00	39.0	37.0	12.0	9.0	4	14.80	●
176	M 12	1.50	100	15.00	39.0	37.0	9.0	7.0	4	10.50	●
178	M 14	1.50	100	15.00	39.0	37.0	11.0	9.0	4	12.50	●
180	M 16	1.50	100	15.00	39.0	37.0	12.0	9.0	4	14.50	●
182	M 18	1.50	110	17.00	50.0	48.0	14.0	11.0	4	16.50	●
184	M 20	1.50	125	18.00	65.0	63.0	16.0	12.0	4	18.50	●
186	M 22	1.50	125	18.00	65.0	63.0	18.0	14.5	5	20.50	●
188	M 24	1.50	140	20.00	72.0	70.0	18.0	14.5	5	22.50	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	MF	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	M 2.5	2.500	0.35	12	1530	536	10	1275	446	8	1020	357
		M 3	3.000	0.35	12	1275	446	10	1060	371	8	850	298
		M 3.5	3.500	0.35	12	1090	382	10	910	319	8	730	256
		M 4	4.000	0.50	12	955	478	10	795	398	8	635	318
		M 5	5.000	0.50	12	765	383	10	635	318	8	510	255
		M 6	6.000	0.50	12	635	318	10	530	265	8	425	213
		M 8	8.000	0.50	12	475	238	10	400	200	8	320	160
		M 10	10.000	0.50	12	380	190	10	320	160	8	255	128
		M 6	6.000	0.75	12	635	476	10	530	398	8	425	319
	Stainless steel ferritc/martensitic	M 7	7.000	0.75	12	545	409	10	455	341	8	365	274
		M 8	8.000	0.75	12	475	356	10	400	300	8	320	240
		M 10	10.000	0.75	12	380	285	10	320	240	8	255	191
		M 8	8.000	1.00	12	475	475	10	400	400	8	320	320
		M 9	9.000	1.00	12	425	425	10	355	355	8	285	285
		M 10	10.000	1.00	12	380	380	10	320	320	8	255	255
		M 10	10.000	1.25	12	380	475	10	320	400	8	255	319
	Stainless steel [Cr-Ni/1.4301]	M 2.5	2.500	0.35	7	890	312	5	635	222	4	510	179
		M 3	3.000	0.35	7	745	261	5	530	186	4	425	149
		M 3.5	3.500	0.35	7	635	222	5	455	159	4	365	128
		M 4	4.000	0.50	7	555	278	5	400	200	4	320	160
		M 5	5.000	0.50	7	445	223	5	320	160	4	255	128
		M 6	6.000	0.50	7	370	185	5	265	133	4	210	105
		M 8	8.000	0.50	7	280	140	5	200	100	4	160	80
		M 10	10.000	0.50	7	225	113	5	160	80	4	125	63
		M 6	6.000	0.75	7	370	278	5	265	199	4	210	158
	Stainless steel [Cr-Ni/1.4301]	M 7	7.000	0.75	7	320	240	5	225	169	4	180	135
		M 8	8.000	0.75	7	280	210	5	200	150	4	160	120
		M 10	10.000	0.75	7	225	169	5	160	120	4	125	94
		M 8	8.000	1.00	7	280	280	5	200	200	4	160	160
		M 9	9.000	1.00	7	250	250	5	175	175	4	140	140
		M 10	10.000	1.00	7	225	225	5	160	160	4	125	125
		M 10	10.000	1.25	7	225	281	5	160	200	4	125	156
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 2.5	2.500	0.35	8	1020	357	6	765	268	5	635	222
		M 3	3.000	0.35	8	850	298	6	635	222	5	530	186
		M 3.5	3.500	0.35	8	730	256	6	545	191	5	455	159
		M 4	4.000	0.50	8	635	318	6	475	238	5	400	200
		M 5	5.000	0.50	8	510	255	6	380	190	5	320	160
		M 6	6.000	0.50	8	425	213	6	320	160	5	265	133
		M 8	8.000	0.50	8	320	160	6	240	120	5	200	100
		M 10	10.000	0.50	8	255	128	6	190	95	5	160	80
		M 6	6.000	0.75	8	425	319	6	320	240	5	265	199
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 7	7.000	0.75	8	365	274	6	275	206	5	225	169
		M 8	8.000	0.75	8	320	240	6	240	180	5	200	150
		M 10	10.000	0.75	8	255	191	6	190	143	5	160	120
		M 8	8.000	1.00	8	320	320	6	240	240	5	200	200
		M 9	9.000	1.00	8	285	285	6	210	210	5	175	175
		M 10	10.000	1.00	8	255	255	6	190	190	5	160	160
		M 10	10.000	1.25	8	255	319	6	190	238	5	160	200
	Heat resistant steel [17-4 PH]	M 2.5	2.500	0.35	5	635	222	4	510	179	3	380	133
		M 3	3.000	0.35	5	530	186	4	425	149	3	320	112
		M 3.5	3.500	0.35	5	455	159	4	365	128	3	275	96
		M 4	4.000	0.50	5	400	200	4	320	160	3	240	120
		M 5	5.000	0.50	5	320	160	4	255	128	3	190	95
		M 6	6.000	0.50	5	265	133	4	210	105	3	160	80
		M 8	8.000	0.50	5	200	100	4	160	80	3	120	60
		M 10	10.000	0.50	5	160	80	4	125	63	3	95	48
		M 6	6.000	0.75	5	265	199	4	210	158	3	160	120
	Heat resistant steel [17-4 PH]	M 7	7.000	0.75	5	225	169	4	180	135	3	135	101
		M 8	8.000	0.75	5	200	150	4	160	120	3	120	90
		M 10	10.000	0.75	5	160	120	4	125	94	3	95	71
		M 8	8.000	1.00	5	200	200	4	160	160	3	120	120
		M 9	9.000	1.00	5	175	175	4	140	140	3	105	105
		M 10	10.000	1.00	5	160	160	4	125	125	3	95	95
		M 10	10.000	1.25	5	160	200	4	125	156	3	95	119

Taps Inotap

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MF | ISO 2 (6H)

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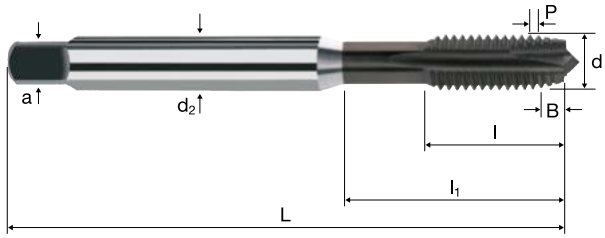
DIN 371

X · P Form B



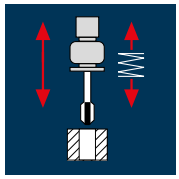
Inox Stainless

Example: **Order-N°.** Article-N°. **ET1240** ø-Code **029**

Ø Code	d	P	L	l	l_1	d_2	a			TRIBO ET1240
029	M 2.5	0.35	50	9.00	-	2.8	2.1	2	2.20	●
031	M 3	0.35	56	12.00	18.0	3.5	2.7	3	2.70	●
032	M 3.5	0.35	56	12.00	20.0	4.0	3.0	3	3.20	●
046	M 4	0.50	63	13.00	21.0	4.5	3.4	3	3.60*	●
048	M 5	0.50	70	15.00	25.0	6.0	4.9	3	4.60*	●
050	M 6	0.50	80	17.00	30.0	6.0	4.9	3	5.60*	●
052	M 8	0.50	90	20.00	35.0	8.0	6.2	3	7.60*	●
054	M 10	0.50	100	22.00	39.0	10.0	8.0	3	9.60*	●
064	M 6	0.75	80	17.00	30.0	6.0	4.9	3	5.30	●
065	M 7	0.75	80	17.00	30.0	7.0	5.5	3	6.30	●
066	M 8	0.75	90	20.00	35.0	8.0	6.2	3	7.30	●
068	M 10	0.75	100	22.00	39.0	10.0	8.0	3	9.30	●
090	M 8	1.00	90	20.00	35.0	8.0	6.2	3	7.10	●
091	M 9	1.00	90	20.00	35.0	9.0	7.0	3	8.10	●
092	M 10	1.00	100	22.00	39.0	10.0	8.0	3	9.10	●
162	M 10	1.25	100	22.00	39.0	10.0	8.0	3	8.90	●

* The given dimension is out of norm

For larger dimensions see article no. ET1241

Application	Material	MF	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	M 12	12.000	0.75	12	320	240	10	265	199	8	210	158
		M 14	14.000	0.75	12	275	206	10	225	169	8	180	135
		M 16	16.000	0.75	12	240	180	10	200	150	8	160	120
		M 12	12.000	1.00	12	320	320	10	265	265	8	210	210
		M 13	13.000	1.00	12	295	295	10	245	245	8	195	195
		M 14	14.000	1.00	12	275	275	10	225	225	8	180	180
		M 16	16.000	1.00	12	240	240	10	200	200	8	160	160
		M 18	18.000	1.00	12	210	210	10	175	175	8	140	140
		M 20	20.000	1.00	12	190	190	10	160	160	8	125	125
	Stainless steel ferritc/martensitic	M 12	12.000	1.25	12	320	400	10	265	331	8	210	263
		M 14	14.000	1.25	12	275	344	10	225	281	8	180	225
		M 16	16.000	1.25	12	240	300	10	200	250	8	160	200
		M 12	12.000	1.50	12	320	480	10	265	398	8	210	315
		M 14	14.000	1.50	12	275	413	10	225	338	8	180	270
		M 16	16.000	1.50	12	240	360	10	200	300	8	160	240
		M 18	18.000	1.50	12	210	315	10	175	263	8	140	210
		M 20	20.000	1.50	12	190	285	10	160	240	8	125	188
		M 24	24.000	1.50	12	160	240	10	135	203	8	105	158
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	0.75	7	185	139	5	135	101	4	105	79
		M 14	14.000	0.75	7	160	120	5	115	86	4	90	68
		M 16	16.000	0.75	7	140	105	5	100	75	4	80	60
		M 12	12.000	1.00	7	185	185	5	135	135	4	105	105
		M 13	13.000	1.00	7	170	170	5	120	120	4	100	100
		M 14	14.000	1.00	7	160	160	5	115	115	4	90	90
		M 16	16.000	1.00	7	140	140	5	100	100	4	80	80
		M 18	18.000	1.00	7	125	125	5	90	90	4	70	70
		M 20	20.000	1.00	7	110	110	5	80	80	4	65	65
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.25	7	185	231	5	135	169	4	105	131
		M 14	14.000	1.25	7	160	200	5	115	144	4	90	113
		M 16	16.000	1.25	7	140	175	5	100	125	4	80	100
		M 12	12.000	1.50	7	185	278	5	135	203	4	105	158
		M 14	14.000	1.50	7	160	240	5	115	173	4	90	135
		M 16	16.000	1.50	7	140	210	5	100	150	4	80	120
		M 18	18.000	1.50	7	125	188	5	90	135	4	70	105
		M 20	20.000	1.50	7	110	165	5	80	120	4	65	98
		M 24	24.000	1.50	7	95	143	5	65	98	4	55	83
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 12	12.000	0.75	8	210	158	6	160	120	5	135	101
		M 14	14.000	0.75	8	180	135	6	135	101	5	115	86
		M 16	16.000	0.75	8	160	120	6	120	90	5	100	75
		M 12	12.000	1.00	8	210	210	6	160	160	5	135	135
		M 13	13.000	1.00	8	195	195	6	145	145	5	120	120
		M 14	14.000	1.00	8	180	180	6	135	135	5	115	115
		M 16	16.000	1.00	8	160	160	6	120	120	5	100	100
		M 18	18.000	1.00	8	140	140	6	105	105	5	90	90
		M 20	20.000	1.00	8	125	125	6	95	95	5	80	80
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 12	12.000	1.25	8	210	263	6	160	200	5	135	169
		M 14	14.000	1.25	8	180	225	6	135	169	5	115	144
		M 16	16.000	1.25	8	160	200	6	120	150	5	100	125
		M 12	12.000	1.50	8	210	315	6	160	240	5	135	203
		M 14	14.000	1.50	8	180	270	6	135	203	5	115	173
		M 16	16.000	1.50	8	160	240	6	120	180	5	100	150
		M 18	18.000	1.50	8	140	210	6	105	158	5	90	135
		M 20	20.000	1.50	8	125	188	6	95	143	5	80	120
		M 24	24.000	1.50	8	105	158	6	80	120	5	65	98
	Heat resistant steel [17-4 PH]	M 12	12.000	0.75	5	135	101	4	105	79	3	80	60
		M 14	14.000	0.75	5	115	86	4	90	68	3	70	53
		M 16	16.000	0.75	5	100	75	4	80	60	3	60	45
		M 12	12.000	1.00	5	135	135	4	105	105	3	80	80
		M 13	13.000	1.00	5	120	120	4	100	100	3	75	75
		M 14	14.000	1.00	5	115	115	4	90	90	3	70	70
		M 16	16.000	1.00	5	100	100	4	80	80	3	60	60
		M 18	18.000	1.00	5	90	90	4	70	70	3	55	55
		M 20	20.000	1.00	5	80	80	4	65	65	3	50	50
	Heat resistant steel [17-4 PH]	M 12	12.000	1.25	5	135	169	4	105	131	3	80	100
		M 14	14.000	1.25	5	115	144	4	90	113	3	70	88
		M 16	16.000	1.25	5	100	125	4	80	100	3	60	75
		M 12	12.000	1.50	5	135	203	4	105	158	3	80	120
		M 14	14.000	1.50	5	115	173	4	90	135	3	70	105
		M 16	16.000	1.50	5	100	150	4	80	120	3	60	90
		M 18	18.000	1.50	5	90	135	4	70	105	3	55	83
		M 20	20.000	1.50	5	80	120	4	65	98	3	50	75
		M 24	24.000	1.50	5	65	98	4	55	83	3	40	60

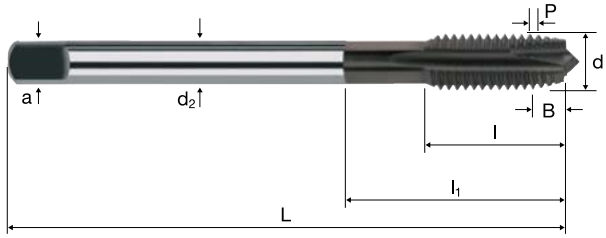
Taps Inotap

MF | ISO 2 (6H)

HSS PM/F

DIN 374

Form B



Inox Stainless

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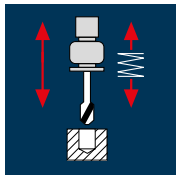
Example:
Order-N°. Article-N°. **ET1241** ø-Code **070**

Ø Code	d	P	L	l	l_1	d_2	a			TRIBO ET1241
070	M 12	0.75	100	18.00	39.0	9.0	7.0	3	11.40*	●
072	M 14	0.75	100	18.00	39.0	11.0	9.0	3	13.40*	●
074	M 16	0.75	100	18.00	39.0	12.0	9.0	3	15.40*	●
094	M 12	1.00	100	18.00	39.0	9.0	7.0	3	11.10	●
095	M 13	1.00	100	18.00	39.0	11.0	9.0	3	12.10	●
096	M 14	1.00	100	18.00	39.0	11.0	9.0	3	13.10	●
097	M 15	1.00	100	18.00	39.0	12.0	9.0	3	14.10	●
098	M 16	1.00	100	18.00	39.0	12.0	9.0	3	15.10	●
099	M 17	1.00	100	18.00	39.0	12.0	9.0	4	16.10	●
100	M 18	1.00	110	20.00	45.0	14.0	11.0	4	17.10	●
102	M 20	1.00	125	20.00	50.0	16.0	12.0	4	19.10	●
164	M 12	1.25	100	22.00	39.0	9.0	7.0	3	10.90	●
166	M 14	1.25	100	22.00	39.0	11.0	9.0	3	12.90	●
168	M 16	1.25	100	22.00	39.0	12.0	9.0	3	14.90	●
176	M 12	1.50	100	22.00	39.0	9.0	7.0	3	10.70	●
178	M 14	1.50	100	22.00	39.0	11.0	9.0	3	12.70	●
180	M 16	1.50	100	22.00	39.0	12.0	9.0	3	14.70	●
182	M 18	1.50	110	25.00	45.0	14.0	11.0	4	16.70	●
184	M 20	1.50	125	26.00	50.0	16.0	12.0	4	18.70	●
186	M 22	1.50	125	26.00	50.0	18.0	14.5	4	20.70	●
188	M 24	1.50	140	27.00	52.0	18.0	14.5	4	22.70	●

* The given dimension is out of norm

Application	Material	MF	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	M 2.5	2.500	0.35	10	1275	446	8	1020	357	6	765	268
		M 3	3.000	0.35	10	1060	371	8	850	298	6	635	222
		M 3.5	3.500	0.35	10	910	319	8	730	256	6	545	191
		M 4	4.000	0.50	10	795	398	8	635	318	6	475	238
		M 5	5.000	0.50	10	635	318	8	510	255	6	380	190
		M 6	6.000	0.50	10	530	265	8	425	213	6	320	160
		M 8	8.000	0.50	10	400	200	8	320	160	6	240	120
		M 10	10.000	0.50	10	320	160	8	255	128	6	190	95
		M 6	6.000	0.75	10	530	398	8	425	319	6	320	240
	Stainless steel ferritc/martensitic	M 7	7.000	0.75	10	455	341	8	365	274	6	275	206
		M 8	8.000	0.75	10	400	300	8	320	240	6	240	180
		M 10	10.000	0.75	10	320	240	8	255	191	6	190	143
		M 8	8.000	1.00	10	400	400	8	320	320	6	240	240
		M 9	9.000	1.00	10	355	355	8	285	285	6	210	210
		M 10	10.000	1.00	10	320	320	8	255	255	6	190	190
		M 10	10.000	1.25	10	320	400	8	255	319	6	190	238
	Stainless steel [Cr-Ni/1.4301]	M 2.5	2.500	0.35	5	635	222	4	510	179	3	380	133
		M 3	3.000	0.35	5	530	186	4	425	149	3	320	112
		M 3.5	3.500	0.35	5	455	159	4	365	128	3	275	96
		M 4	4.000	0.50	5	400	200	4	320	160	3	240	120
		M 5	5.000	0.50	5	320	160	4	255	128	3	190	95
		M 6	6.000	0.50	5	265	133	4	210	105	3	160	80
		M 8	8.000	0.50	5	200	100	4	160	80	3	120	60
		M 10	10.000	0.50	5	160	80	4	125	63	3	95	48
		M 6	6.000	0.75	5	265	199	4	210	158	3	160	120
	Stainless steel [Cr-Ni/1.4301]	M 7	7.000	0.75	5	225	169	4	180	135	3	135	101
		M 8	8.000	0.75	5	200	150	4	160	120	3	120	90
		M 10	10.000	0.75	5	160	120	4	125	94	3	95	71
		M 8	8.000	1.00	5	200	200	4	160	160	3	120	120
		M 9	9.000	1.00	5	175	175	4	140	140	3	105	105
		M 10	10.000	1.00	5	160	160	4	125	125	3	95	95
		M 10	10.000	1.25	5	160	200	4	125	156	3	95	119
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 2.5	2.500	0.35	6	765	268	5	635	222	4	510	179
		M 3	3.000	0.35	6	635	222	5	530	186	4	425	149
		M 3.5	3.500	0.35	6	545	191	5	455	159	4	365	128
		M 4	4.000	0.50	6	475	238	5	400	200	4	320	160
		M 5	5.000	0.50	6	380	190	5	320	160	4	255	128
		M 6	6.000	0.50	6	320	160	5	265	133	4	210	105
		M 8	8.000	0.50	6	240	120	5	200	100	4	160	80
		M 10	10.000	0.50	6	190	95	5	160	80	4	125	63
		M 6	6.000	0.75	6	320	240	5	265	199	4	210	158
	Stainless steel [Cr-Ni-Mo-.../1.4571]	M 7	7.000	0.75	6	275	206	5	225	169	4	180	135
		M 8	8.000	0.75	6	240	180	5	200	150	4	160	120
		M 10	10.000	0.75	6	190	143	5	160	120	4	125	94
		M 8	8.000	1.00	6	240	240	5	200	200	4	160	160
		M 9	9.000	1.00	6	210	210	5	175	175	4	140	140
		M 10	10.000	1.00	6	190	190	5	160	160	4	125	125
		M 10	10.000	1.25	6	190	238	5	160	200	4	125	156
	Heat resistant steel [17-4 PH]	M 2.5	2.500	0.35	4	510	179	3	380	133	-	-	-
		M 3	3.000	0.35	4	425	149	3	320	112	-	-	-
		M 3.5	3.500	0.35	4	365	128	3	275	96	-	-	-
		M 4	4.000	0.50	4	320	160	3	240	120	-	-	-
		M 5	5.000	0.50	4	255	128	3	190	95	-	-	-
		M 6	6.000	0.50	4	210	105	3	160	80	-	-	-
		M 8	8.000	0.50	4	160	80	3	120	60	-	-	-
		M 10	10.000	0.50	4	125	63	3	95	48	-	-	-
		M 6	6.000	0.75	4	210	158	3	160	120	-	-	-
	Heat resistant steel [17-4 PH]	M 7	7.000	0.75	4	180	135	3	135	101	-	-	-
		M 8	8.000	0.75	4	160	120	3	120	90	-	-	-
		M 10	10.000	0.75	4	125	94	3	95	71	-	-	-
		M 8	8.000	1.00	4	160	160	3	120	120	-	-	-
		M 9	9.000	1.00	4	140	140	3	105	105	-	-	-
		M 10	10.000	1.00	4	125	125	3	95	95	-	-	-
		M 10	10.000	1.25	4	125	156	3	95	119	-	-	-

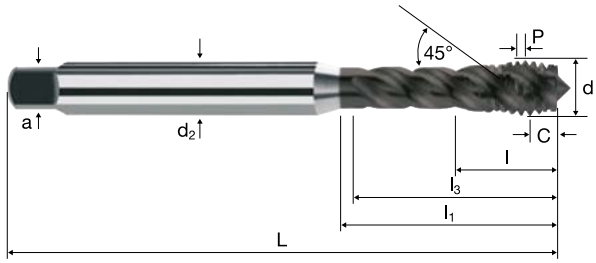
Taps x-tap

MF | ISO 2 (6H)

HSS PM/F

DIN 371

Form C



Inox Stainless

MF
G
UN
EG

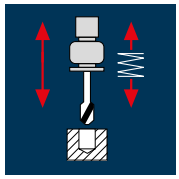
Example: **Order-N°.** Article-N°. **ET1260** ø-Code **029**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET1260
029	M 2.5	0.35	50	9.00	-	13.0	2.8	2.1	3	2.20	●
031	M 3	0.35	56	5.00	18.0	16.0	3.5	2.7	3	2.70	●
032	M 3.5	0.35	56	6.00	20.0	18.0	4.0	3.0	3	3.20	●
046	M 4	0.50	63	7.00	21.0	19.0	4.5	3.4	3	3.60*	●
048	M 5	0.50	70	8.00	25.0	23.0	6.0	4.9	3	4.60*	●
050	M 6	0.50	80	10.00	30.0	28.0	6.0	4.9	3	5.60*	●
052	M 8	0.50	90	13.00	35.0	33.0	8.0	6.2	3	7.60*	●
054	M 10	0.50	100	15.00	39.0	37.0	10.0	8.0	4	9.60*	●
064	M 6	0.75	80	10.00	30.0	28.0	6.0	4.9	3	5.30	●
065	M 7	0.75	80	10.00	30.0	28.0	7.0	5.5	3	6.30	●
066	M 8	0.75	90	13.00	35.0	33.0	8.0	6.2	3	7.30	●
068	M 10	0.75	100	15.00	39.0	37.0	10.0	8.0	4	9.30	●
090	M 8	1.00	90	13.00	35.0	33.0	8.0	6.2	3	7.10	●
091	M 9	1.00	90	13.00	35.0	33.0	9.0	7.0	3	8.10	●
092	M 10	1.00	100	15.00	39.0	37.0	10.0	8.0	4	9.10	●
162	M 10	1.25	100	15.00	39.0	37.0	10.0	8.0	4	8.90	●

* The given dimension is out of norm

For larger dimensions see article no. ET1261

Application



Material

MF	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
Stainless steel ferritc/martensitic											
M 12	12.000	0.75	10	265	199	8	210	158	6	160	120
M 14	14.000	0.75	10	225	169	8	180	135	6	135	101
M 16	16.000	0.75	10	200	150	8	160	120	6	120	90
M 12	12.000	1.00	10	265	265	8	210	210	6	160	160
M 13	13.000	1.00	10	245	245	8	195	195	6	145	145
M 14	14.000	1.00	10	225	225	8	180	180	6	135	135
M 16	16.000	1.00	10	200	200	8	160	160	6	120	120
M 18	18.000	1.00	10	175	175	8	140	140	6	105	105
M 20	20.000	1.00	10	160	160	8	125	125	6	95	95
Stainless steel ferritc/martensitic											
M 12	12.000	1.25	10	265	331	8	210	263	6	160	200
M 14	14.000	1.25	10	225	281	8	180	225	6	135	169
M 16	16.000	1.25	10	200	250	8	160	200	6	120	150
M 12	12.000	1.50	10	265	398	8	210	315	6	160	240
M 14	14.000	1.50	10	225	338	8	180	270	6	135	203
M 16	16.000	1.50	10	200	300	8	160	240	6	120	180
M 18	18.000	1.50	10	175	263	8	140	210	6	105	158
M 20	20.000	1.50	10	160	240	8	125	188	6	95	143
M 24	24.000	1.50	10	135	203	8	105	158	6	80	120
Stainless steel [Cr-Ni/1.4301]											
M 12	12.000	0.75	5	135	101	4	105	79	3	80	60
M 14	14.000	0.75	5	115	86	4	90	68	3	70	53
M 16	16.000	0.75	5	100	75	4	80	60	3	60	45
M 12	12.000	1.00	5	135	135	4	105	105	3	80	80
M 13	13.000	1.00	5	120	120	4	100	100	3	75	75
M 14	14.000	1.00	5	115	115	4	90	90	3	70	70
M 16	16.000	1.00	5	100	100	4	80	80	3	60	60
M 18	18.000	1.00	5	90	90	4	70	70	3	55	55
M 20	20.000	1.00	5	80	80	4	65	65	3	50	50
Stainless steel [Cr-Ni/1.4301]											
M 12	12.000	1.25	5	135	169	4	105	131	3	80	100
M 14	14.000	1.25	5	115	144	4	90	113	3	70	88
M 16	16.000	1.25	5	100	125	4	80	100	3	60	75
M 12	12.000	1.50	5	135	203	4	105	158	3	80	120
M 14	14.000	1.50	5	115	173	4	90	135	3	70	105
M 16	16.000	1.50	5	100	150	4	80	120	3	60	90
M 18	18.000	1.50	5	90	135	4	70	105	3	55	83
M 20	20.000	1.50	5	80	120	4	65	98	3	50	75
M 24	24.000	1.50	5	65	98	4	55	83	3	40	60
Stainless steel [Cr-Ni-Mo-.../1.4571]											
M 12	12.000	0.75	6	160	120	5	135	101	4	105	79
M 14	14.000	0.75	6	135	101	5	115	86	4	90	68
M 16	16.000	0.75	6	120	90	5	100	75	4	80	60
M 12	12.000	1.00	6	160	160	5	135	135	4	105	105
M 13	13.000	1.00	6	145	145	5	120	120	4	100	100
M 14	14.000	1.00	6	135	135	5	115	115	4	90	90
M 16	16.000	1.00	6	120	120	5	100	100	4	80	80
M 18	18.000	1.00	6	105	105	5	90	90	4	70	70
M 20	20.000	1.00	6	95	95	5	80	80	4	65	65
Stainless steel [Cr-Ni-Mo-.../1.4571]											
M 12	12.000	1.25	6	160	200	5	135	169	4	105	131
M 14	14.000	1.25	6	135	169	5	115	144	4	90	113
M 16	16.000	1.25	6	120	150	5	100	125	4	80	100
M 12	12.000	1.50	6	160	240	5	135	203	4	105	158
M 14	14.000	1.50	6	135	203	5	115	173	4	90	135
M 16	16.000	1.50	6	120	180	5	100	150	4	80	120
M 18	18.000	1.50	6	105	158	5	90	135	4	70	105
M 20	20.000	1.50	6	95	143	5	80	120	4	65	98
M 24	24.000	1.50	6	80	120	5	65	98	4	55	83
Heat resistant steel [17-4 PH]											
M 12	12.000	0.75	4	105	79	3	80	60	-	-	-
M 14	14.000	0.75	4	90	68	3	70	53	-	-	-
M 16	16.000	0.75	4	80	60	3	60	45	-	-	-
M 12	12.000	1.00	4	105	105	3	80	80	-	-	-
M 13	13.000	1.00	4	100	100	3	75	75	-	-	-
M 14	14.000	1.00	4	90	90	3	70	70	-	-	-
M 16	16.000	1.00	4	80	80	3	60	60	-	-	-
M 18	18.000	1.00	4	70	70	3	55	55	-	-	-
M 20	20.000	1.00	4	65	65	3	50	50	-	-	-
Heat resistant steel [17-4 PH]											
M 12	12.000	1.25	4	105	131	3	80	100	-	-	-
M 14	14.000	1.25	4	90	113	3	70	88	-	-	-
M 16	16.000	1.25	4	80	100	3	60	75	-	-	-
M 12	12.000	1.50	4	105	158	3	80	120	-	-	-
M 14	14.000	1.50	4	90	135	3	70	105	-	-	-
M 16	16.000	1.50	4	80	120	3	60	90	-	-	-
M 18	18.000	1.50	4	70	105	3	55	83	-	-	-
M 20	20.000	1.50	4	65	98	3	50	75	-	-	-
M 24	24.000	1.50	4	55	83	3	40	60	-	-	-

Taps x-tap

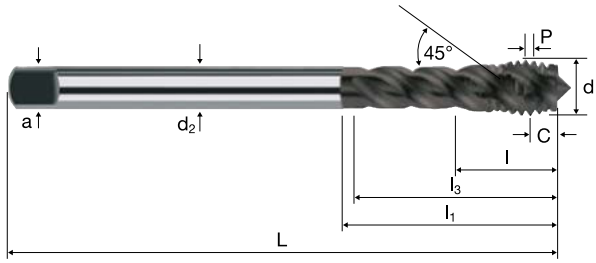
In

MF | ISO 2 (6H)

60° | HSS PM/F

DIN 374

X · P Form C



Inox Stainless

MF
G
UN
EG

Example: **Order-N°.** Article-N°. **ET1261** ø-Code **070**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			TRIBO ET1261
070	M 12	0.75	100	11.00	39.0	37.0	9.0	7.0	4	11.40*	●
072	M 14	0.75	100	11.00	39.0	37.0	11.0	9.0	4	13.40*	●
074	M 16	0.75	100	12.00	39.0	37.0	12.0	9.0	4	15.40*	●
094	M 12	1.00	100	11.00	39.0	37.0	9.0	7.0	4	11.10	●
095	M 13	1.00	100	11.00	39.0	37.0	11.0	9.0	4	12.10	●
096	M 14	1.00	100	11.00	39.0	37.0	11.0	9.0	4	13.10	●
097	M 15	1.00	100	12.00	39.0	37.0	12.0	9.0	4	14.10	●
098	M 16	1.00	100	12.00	39.0	37.0	12.0	9.0	4	15.10	●
099	M 17	1.00	100	12.00	39.0	37.0	12.0	9.0	4	16.10	●
100	M 18	1.00	110	13.00	50.0	48.0	14.0	11.0	4	17.10	●
102	M 20	1.00	125	14.00	65.0	63.0	16.0	12.0	4	19.10	●
164	M 12	1.25	100	15.00	39.0	37.0	9.0	7.0	4	10.90	●
166	M 14	1.25	100	15.00	39.0	37.0	11.0	9.0	4	12.90	●
168	M 16	1.25	100	15.00	39.0	37.0	12.0	9.0	4	14.90	●
176	M 12	1.50	100	15.00	39.0	37.0	9.0	7.0	4	10.70*	●
178	M 14	1.50	100	15.00	39.0	37.0	11.0	9.0	4	12.70*	●
180	M 16	1.50	100	15.00	39.0	37.0	12.0	9.0	4	14.70*	●
182	M 18	1.50	110	17.00	50.0	48.0	14.0	11.0	4	16.70*	●
184	M 20	1.50	125	18.00	65.0	63.0	16.0	12.0	4	18.70*	●
186	M 22	1.50	125	18.00	65.0	63.0	18.0	14.5	5	20.70*	●
188	M 24	1.50	140	20.00	72.0	70.0	18.0	14.5	5	22.70*	●

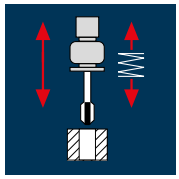
* The given dimension is out of norm

passion
for precision
fraisa

Whitworth pipe thread cylindrical G

G

N° EH1472	**x-tap**	11	**HSS PM/F**		**Rm** 850-1100		307
N° EH1475	**x-tap**	11	**HSS PM/F**		**Rm** 850-1100		309
N° ET1440	**Inotap**	In	**HSS PM/F**		**Inox** Stainless		311
N° ET1475	**x-tap**	In	**HSS PM/F**		**Inox** Stainless		313

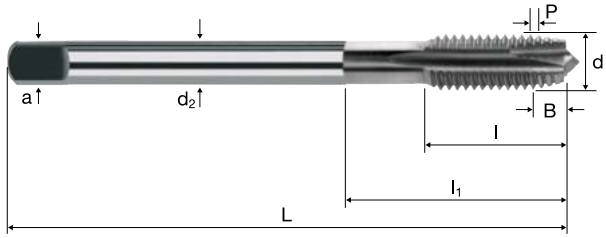
Application	Material	G	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	G 1/8	9.728	0.907	25	820	744	20	655	594	15	490	445
		G 1/4	13.157	1.337	25	605	809	20	485	648	15	365	488
		G 3/8	16.662	1.337	25	480	642	20	380	508	15	285	381
		G 1/2	20.955	1.814	25	380	689	20	305	553	15	230	417
	Steel 850 - 1100 N/mm²	G 1/8	9.728	0.907	20	655	594	15	490	445	12	395	358
		G 1/4	13.157	1.337	20	485	648	15	365	488	12	290	388
		G 3/8	16.662	1.337	20	380	508	15	285	381	12	230	308
		G 1/2	20.955	1.814	20	305	553	15	230	417	12	180	327
	Steel 1100 - 1300 N/mm²	G 1/8	9.728	0.907	7	230	209	4	130	118	-	-	-
		G 1/4	13.157	1.337	7	170	227	4	95	127	-	-	-
		G 3/8	16.662	1.337	7	135	181	4	75	100	-	-	-
		G 1/2	20.955	1.814	7	105	191	4	60	109	-	-	-

G

HSS PM/F

HSS PM/F

Form B



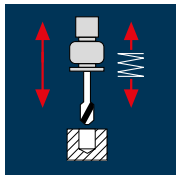
Rm < 850 | **Rm 850-1100** | Rm 1100-1300

Example: **Order-N°.** Article-N°. **EH1472** ø-Code **551**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	d_2	a			TiCN
											EH1472
551	G 1/8	28.0	9.728	90	18.00	35.0	7.0	5.5	3	8.80	●
552	G 1/4	19.0	13.157	100	20.00	39.0	11.0	9.0	3	11.80	●
553	G 3/8	19.0	16.662	100	22.00	39.0	12.0	9.0	4	15.25	●
554	G 1/2	14.0	20.955	125	25.00	50.0	16.0	12.0	4	19.00	●

MF G UN EG

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material
	Steel 500 - 850 N/mm²
	Steel 850 - 1100 N/mm²

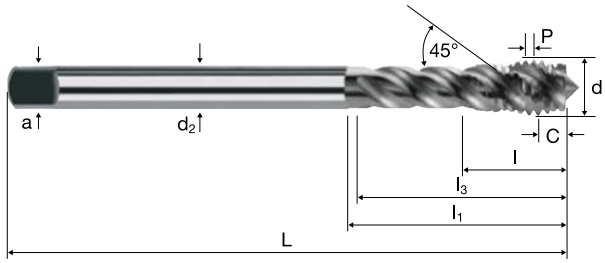
G	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
G 1/8	9.728	0.907	32	1045	948	28	915	830	22	720	653
G 1/4	13.157	1.337	32	775	1036	28	675	902	22	530	709
G 3/8	16.662	1.337	32	610	815	28	535	715	22	420	562
G 1/2	20.955	1.814	32	485	880	28	425	771	22	335	608
G 1/8	9.728	0.907	20	655	594	16	525	476	10	325	295
G 1/4	13.157	1.337	20	485	648	16	385	515	10	240	321
G 3/8	16.662	1.337	20	380	508	16	305	408	10	190	254
G 1/2	20.955	1.814	20	305	553	16	245	445	10	150	272

G

HSS PM/F

HSS PM/F

Form C



Rm < 850

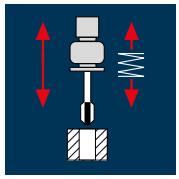
Rm 850-1100

MF G UN EG

Example: **Order-N°.** Article-N°. **EH1475** ø-Code **551**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	l_3	d_2	a			TiCN EH1475
551	G 1/8	28.0	9.728	90	10.00	35.0	33.0	7.0	5.5	3	8.80	●
552	G 1/4	19.0	13.157	100	14.00	39.0	37.0	11.0	9.0	4	11.80	●
553	G 3/8	19.0	16.662	100	14.00	39.0	37.0	12.0	9.0	4	15.25	●
554	G 1/2	14.0	20.955	125	20.00	65.0	63.0	16.0	12.0	5	19.00	●

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	G	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	G 1/8	9.728	0.907	12	395	358	10	325	295	8	260	236
		G 1/4	13.157	1.337	12	290	388	10	240	321	8	195	261
		G 3/8	16.662	1.337	12	230	308	10	190	254	8	155	207
		G 1/2	20.955	1.814	12	180	327	10	150	272	8	120	218
	Stainless steel [Cr-Ni/1.4301]	G 1/8	9.728	0.907	7	230	209	5	165	150	4	130	118
		G 1/4	13.157	1.337	7	170	227	5	120	160	4	95	127
		G 3/8	16.662	1.337	7	135	181	5	95	127	4	75	100
		G 1/2	20.955	1.814	7	105	191	5	75	136	4	60	109
	Stainless steel [Cr-Ni-Mo-.../1.4571]	G 1/8	9.728	0.907	8	260	236	6	195	177	5	165	150
		G 1/4	13.157	1.337	8	195	261	6	145	194	5	120	160
		G 3/8	16.662	1.337	8	155	207	6	115	154	5	95	127
		G 1/2	20.955	1.814	8	120	218	6	90	163	5	75	136
	Heat resistant steel [17-4 PH]	G 1/8	9.728	0.907	5	165	150	4	130	118	3	100	91
		G 1/4	13.157	1.337	5	120	160	4	95	127	3	75	100
		G 3/8	16.662	1.337	5	95	127	4	75	100	3	55	74
		G 1/2	20.955	1.814	5	75	136	4	60	109	3	45	82

Taps Inotap

In

G

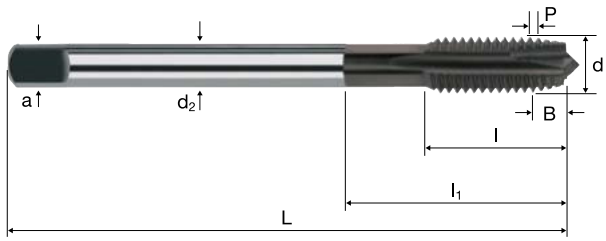
55°

HSS PM/F

HSS PM/F

X · P

Form B



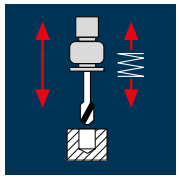
Inox
Stainless

MF
G
UN
EG

Example:
Order-N°. Article-N°. **ET1440** ø-Code **551**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	d_2	a			TRIBO ET1440
551	G 1/8	28.0	9.728	90	18.00	35.0	7.0	5.5	3	8.85*	●
552	G 1/4	19.0	13.157	100	20.00	39.0	11.0	9.0	3	11.90*	●
553	G 3/8	19.0	16.662	100	22.00	39.0	12.0	9.0	4	15.40*	●
554	G 1/2	14.0	20.955	125	25.00	50.0	16.0	12.0	4	19.20*	●

* The given dimension is out of norm

Application	Material	G	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Stainless steel ferritc/martensitic	G 1/8	9.728	0.907	10	325	295	8	260	236	6	195	177
		G 1/4	13.157	1.337	10	240	321	8	195	261	6	145	194
		G 3/8	16.662	1.337	10	190	254	8	155	207	6	115	154
		G 1/2	20.955	1.814	10	150	272	8	120	218	6	90	163
	Stainless steel [Cr-Ni/1.4301]	G 1/8	9.728	0.907	5	165	150	4	130	118	3	100	91
		G 1/4	13.157	1.337	5	120	160	4	95	127	3	75	100
		G 3/8	16.662	1.337	5	95	127	4	75	100	3	55	74
		G 1/2	20.955	1.814	5	75	136	4	60	109	3	45	82
	Stainless steel [Cr-Ni-Mo-.../1.4571]	G 1/8	9.728	0.907	6	195	177	5	165	150	4	130	118
		G 1/4	13.157	1.337	6	145	194	5	120	160	4	95	127
		G 3/8	16.662	1.337	6	115	154	5	95	127	4	75	100
		G 1/2	20.955	1.814	6	90	163	5	75	136	4	60	109
	Heat resistant steel [17-4 PH]	G 1/8	9.728	0.907	4	130	118	3	100	91	-	-	-
		G 1/4	13.157	1.337	4	95	127	3	75	100	-	-	-
		G 3/8	16.662	1.337	4	75	100	3	55	74	-	-	-
		G 1/2	20.955	1.814	4	60	109	3	45	82	-	-	-

Taps x-tap

In

G

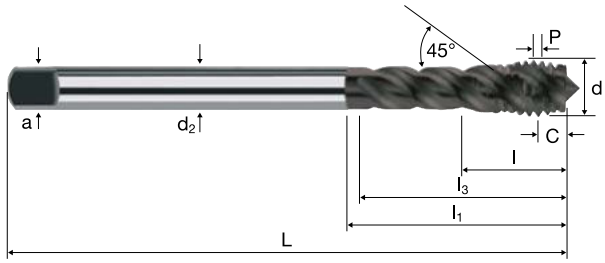
55°

HSS PM/F

HSS PM/F

X · P

Form C



Inox Stainless

Example:
Order-N°. Article-N°. **ET1475** ø-Code **551**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	l_3	d_2	a			TRIBO ET1475
551	**G 1/8**	**28.0**	9.728	90	10.00	35.0	33.0	7.0	5.5	3	8.85*	●
552	**G 1/4**	**19.0**	13.157	100	14.00	39.0	37.0	11.0	9.0	4	11.90*	●
553	**G 3/8**	**19.0**	16.662	100	14.00	39.0	37.0	12.0	9.0	4	15.40*	●
554	**G 1/2**	**14.0**	20.955	125	20.00	65.0	63.0	16.0	12.0	5	19.20*	●

* The given dimension is out of norm

MF
G
UN
EG

passion
for precision
fraisa

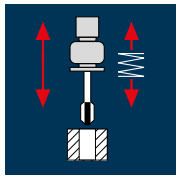
Unified thread UNC

UNC, tolerance 2B

N° EK11670 / EK11671

N° EK11680 / EK11681

11	HSS-E Co5		Rm 850-1100		317
11	HSS-E Co5		Rm 850-1100		319

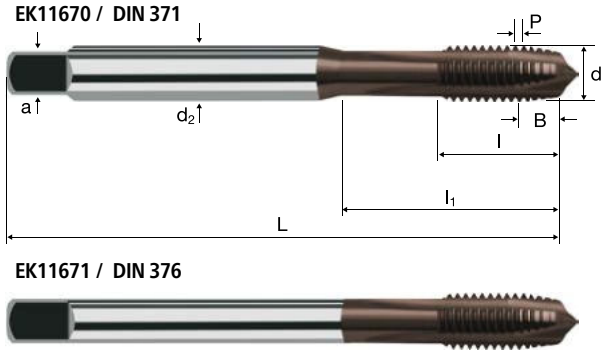
Application	Material	UNC	P(TPI)	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel 500 - 850 N/mm²	Nr.2	-56.0	2.184	0.454	20	2915	1323	16	2330	1058	12	1750	795
		Nr.4	-40.0	2.845	0.635	20	2240	1422	16	1790	1137	12	1345	854
		Nr.6	-32.0	3.505	0.794	20	1815	1441	16	1455	1155	12	1090	866
		Nr.8	-32.0	4.166	0.794	20	1530	1215	16	1225	973	12	915	727
		Nr.10	-24.0	4.826	1.058	20	1320	1397	16	1055	1116	12	790	836
		Nr.12	-24.0	5.486	1.058	20	1160	1227	16	930	984	12	695	735
		1/4	-20.0	6.350	1.270	20	1005	1276	16	800	1016	12	600	762
		5/16	-18.0	7.938	1.411	20	800	1129	16	640	903	12	480	677
		3/8	-16.0	9.525	1.588	20	670	1064	16	535	850	12	400	635
	Steel 500 - 850 N/mm²	7/16	-14.0	11.113	1.814	20	575	1043	16	460	834	12	345	626
		1/2	-13.0	12.700	1.954	20	500	977	16	400	782	12	300	586
		9/16	-12.0	14.288	2.117	20	445	942	16	355	752	12	265	561
		5/8	-11.0	15.875	2.309	20	400	924	16	320	739	12	240	554
		3/4	-10.0	19.050	2.540	20	335	851	16	265	673	12	200	508
		7/8	-9.0	22.225	2.822	20	285	804	16	230	649	12	170	480
	Steel 850 - 1100 N/mm²	Nr.2	-56.0	2.184	0.454	16	2330	1058	12	1750	795	10	1455	661
		Nr.4	-40.0	2.845	0.635	16	1790	1137	12	1345	854	10	1120	711
		Nr.6	-32.0	3.505	0.794	16	1455	1155	12	1090	866	10	910	723
		Nr.8	-32.0	4.166	0.794	16	1225	973	12	915	727	10	765	607
		Nr.10	-24.0	4.826	1.058	16	1055	1116	12	790	836	10	660	698
		Nr.12	-24.0	5.486	1.058	16	930	984	12	695	735	10	580	614
		1/4	-20.0	6.350	1.270	16	800	1016	12	600	762	10	500	635
		5/16	-18.0	7.938	1.411	16	640	903	12	480	677	10	400	564
		3/8	-16.0	9.525	1.588	16	535	850	12	400	635	10	335	532
	Steel 850 - 1100 N/mm²	7/16	-14.0	11.113	1.814	16	460	834	12	345	626	10	285	517
		1/2	-13.0	12.700	1.954	16	400	782	12	300	586	10	250	489
		9/16	-12.0	14.288	2.117	16	355	752	12	265	561	10	225	476
		5/8	-11.0	15.875	2.309	16	320	739	12	240	554	10	200	462
		3/4	-10.0	19.050	2.540	16	265	673	12	200	508	10	165	419
		7/8	-9.0	22.225	2.822	16	230	649	12	170	480	10	145	409
	Steel 1100 - 1300 N/mm²	Nr.2	-56.0	2.184	0.454	5	730	331	3	435	198	-	-	-
		Nr.4	-40.0	2.845	0.635	5	560	356	3	335	213	-	-	-
		Nr.6	-32.0	3.505	0.794	5	455	361	3	270	214	-	-	-
		Nr.8	-32.0	4.166	0.794	5	380	302	3	230	183	-	-	-
		Nr.10	-24.0	4.826	1.058	5	330	349	3	200	212	-	-	-
		Nr.12	-24.0	5.486	1.058	5	290	307	3	175	185	-	-	-
		1/4	-20.0	6.350	1.270	5	250	318	3	150	191	-	-	-
		5/16	-18.0	7.938	1.411	5	200	282	3	120	169	-	-	-
		3/8	-16.0	9.525	1.588	5	165	262	3	100	159	-	-	-
	Steel 1100 - 1300 N/mm²	7/16	-14.0	11.113	1.814	5	145	263	3	85	154	-	-	-
		1/2	-13.0	12.700	1.954	5	125	244	3	75	147	-	-	-
		9/16	-12.0	14.288	2.117	5	110	233	3	65	138	-	-	-
		5/8	-11.0	15.875	2.309	5	100	231	3	60	139	-	-	-
		3/4	-10.0	19.050	2.540	5	85	216	3	50	127	-	-	-
		7/8	-9.0	22.225	2.822	5	70	198	3	45	127	-	-	-

UNC | 2B

60° | HSS-E Co5

DIN 371/376

X · P Form B



Rm < 850 | **Rm 850-1100** | Rm 1100-1300

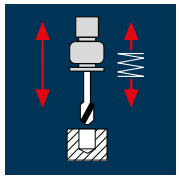
Example: **Order-N°.** Article-N°. **EK11670** ø-Code **701**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	d_2	a			TiAlN
											EK11670
701	Nr.2	-56.0	2.184	45	9.00	14.5	2.8	2.1	3	1.85	●
703	Nr.4	-40.0	2.845	56	11.00	18.0	3.5	2.7	3	2.35	●
705	Nr.6	-32.0	3.505	56	12.00	20.0	4.0	3.0	3	2.85	●
706	Nr.8	-32.0	4.166	63	12.00	21.0	4.5	3.4	3	3.50	●
707	Nr.10	-24.0	4.826	70	14.00	25.0	6.0	4.9	3	3.90	●
708	Nr.12	-24.0	5.486	80	16.00	30.0	6.0	4.9	3	4.50	●
709	1/4	-20.0	6.350	80	16.00	30.0	7.0	5.5	3	5.10	●
710	5/16	-18.0	7.938	90	18.00	35.0	8.0	6.2	3	6.60	●
711	3/8	-16.0	9.525	100	20.00	39.0	10.0	8.0	3	8.00	●

Example: **Order-N°.** Article-N°. **EK11671** ø-Code **712**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	d_2	a			TiAlN
											EK11671
712	7/16	-14.0	11.113	100	22.00	42.0	8.0	6.2	3	9.40	●
713	1/2	-13.0	12.700	110	25.00	49.0	9.0	7.0	4	10.80	●
714	9/16	-12.0	14.288	110	28.00	53.0	11.0	9.0	4	12.20	●
715	5/8	-11.0	15.875	110	30.00	53.0	12.0	9.0	4	13.50	●
716	3/4	-10.0	19.050	125	33.00	62.0	14.0	11.0	4	16.50	●
717	7/8	-9.0	22.225	140	35.00	62.0	18.0	14.5	4	19.50	●

Application



Material

Steel
500 - 850 N/mm²

UNC	P(TPI)	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
Nr.2	-56.0	2.184	0.454	25	3645	1655	22	3205	1455	18	2625	1192
Nr.4	-40.0	2.845	0.635	25	2795	1775	22	2460	1562	18	2015	1280
Nr.6	-32.0	3.505	0.794	25	2270	1802	22	2000	1588	18	1635	1298
Nr.8	-32.0	4.166	0.794	25	1910	1517	22	1680	1334	18	1375	1092
Nr.10	-24.0	4.826	1.058	25	1650	1746	22	1450	1534	18	1185	1254
Nr.12	-24.0	5.486	1.058	25	1450	1534	22	1275	1349	18	1045	1106
1/4	-20.0	6.350	1.270	25	1255	1594	22	1105	1403	18	900	1143
5/16	-18.0	7.938	1.411	25	1000	1411	22	880	1242	18	720	1016
3/8	-16.0	9.525	1.588	25	835	1326	22	735	1167	18	600	953

Steel
500 - 850 N/mm²

7/16	-14.0	11.113	1.814	25	715	1297	22	630	1143	18	515	934
1/2	-13.0	12.700	1.954	25	625	1221	22	550	1075	18	450	879
9/16	-12.0	14.288	2.117	25	555	1175	22	490	1037	18	400	847
5/8	-11.0	15.875	2.309	25	500	1155	22	440	1016	18	360	831
3/4	-10.0	19.050	2.540	25	420	1067	22	370	940	18	300	762
7/8	-9.0	22.225	2.822	25	360	1016	22	315	889	18	260	734

Steel
850 - 1100 N/mm²

Nr.2	-56.0	2.184	0.454	16	2330	1058	13	1895	860	8	1165	529
Nr.4	-40.0	2.845	0.635	16	1790	1137	13	1455	924	8	895	568
Nr.6	-32.0	3.505	0.794	16	1455	1155	13	1180	937	8	725	576
Nr.8	-32.0	4.166	0.794	16	1225	973	13	995	790	8	610	484
Nr.10	-24.0	4.826	1.058	16	1055	1116	13	855	905	8	530	561
Nr.12	-24.0	5.486	1.058	16	930	984	13	755	799	8	465	492
1/4	-20.0	6.350	1.270	16	800	1016	13	650	826	8	400	508
5/16	-18.0	7.938	1.411	16	640	903	13	520	734	8	320	452
3/8	-16.0	9.525	1.588	16	535	850	13	435	691	8	265	421

Steel
850 - 1100 N/mm²

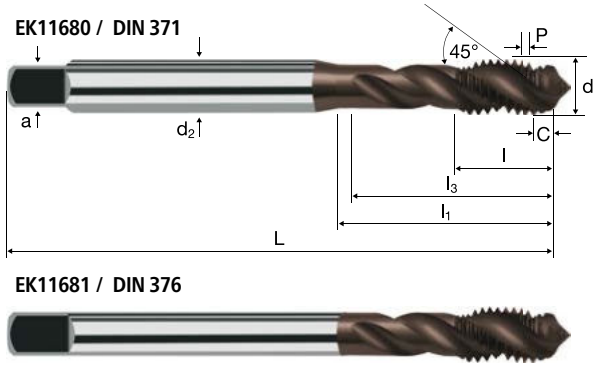
7/16	-14.0	11.113	1.814	16	460	834	13	370	671	8	230	417
1/2	-13.0	12.700	1.954	16	400	782	13	325	635	8	200	391
9/16	-12.0	14.288	2.117	16	355	752	13	290	614	8	180	381
5/8	-11.0	15.875	2.309	16	320	739	13	260	600	8	160	369
3/4	-10.0	19.050	2.540	16	265	673	13	215	546	8	135	343
7/8	-9.0	22.225	2.822	16	230	649	13	185	522	8	115	325

UNC | 2B

60° | HSS-E Co5

DIN 371/376

X · P Form C



Rm < 850 | **Rm 850-1100**

Example: **Order-N°.** Article-N°. **EK11680** ø-Code **701**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	l_3	d_2	a			TiAlN EK11680
701	Nr.2	-56.0	2.184	45	5.00	14.5	12.5	2.8	2.1	3	1.85	●
703	Nr.4	-40.0	2.845	56	7.00	18.0	14.0	3.5	2.7	3	2.35	●
705	Nr.6	-32.0	3.505	56	8.00	20.0	16.0	4.0	3.0	3	2.85	●
706	Nr.8	-32.0	4.166	63	8.00	21.0	17.0	4.5	3.4	3	3.50	●
707	Nr.10	-24.0	4.826	70	11.00	25.0	21.0	6.0	4.9	3	3.90	●
708	Nr.12	-24.0	5.486	80	11.00	30.0	26.0	6.0	4.9	3	4.50	●
709	1/4	-20.0	6.350	80	13.00	30.0	26.0	7.0	5.5	3	5.10	●
710	5/16	-18.0	7.938	90	14.00	35.0	31.0	8.0	6.2	3	6.60	●
711	3/8	-16.0	9.525	100	16.00	39.0	35.0	10.0	8.0	3	8.00	●

Example: **Order-N°.** Article-N°. **EK11681** ø-Code **712**

Ø Code	d	P(TPI)	d (mm)	L	l	l_1	l_3	d_2	a			TiAlN EK11681
712	7/16	-14.0	11.113	100	18.00	42.0	38.0	8.0	6.2	3	9.40	●
713	1/2	-13.0	12.700	110	20.00	49.0	45.0	9.0	7.0	3	10.80	●
714	9/16	-12.0	14.288	110	21.00	53.0	49.0	11.0	9.0	3	12.20	●
715	5/8	-11.0	15.875	110	24.00	53.0	49.0	12.0	9.0	4	13.50	●
716	3/4	-10.0	19.050	125	25.00	62.0	58.0	14.0	11.0	4	16.50	●
717	7/8	-9.0	22.225	140	28.00	62.0	58.0	18.0	14.5	4	19.50	●

passion
for precision
fraisa

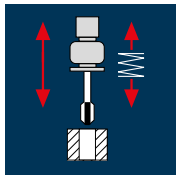
Metric coarse thread for inserts EG M

Tolerance 6H mod

N° E11955

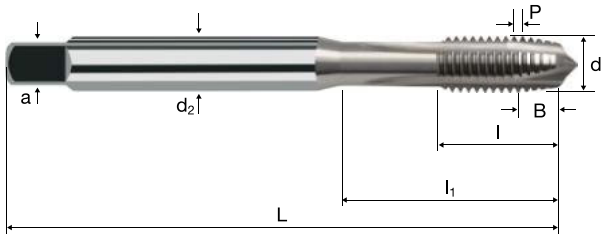
N° E11965

U	HSS-E Co5		Rm <850	Al Aluminium Alloy	323
U	HSS-E Co5		Rm <850	Al Aluminium Alloy	325

Application	Material	EG-M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	EGM 2	2.520	0.40	14	1770	708	12	1515	606	10	1265	506
		EGM 2.5	3.084	0.45	14	1445	650	12	1240	558	10	1030	464
		EGM 3	3.650	0.50	14	1220	610	12	1045	523	10	870	435
		EGM 4	4.910	0.70	14	910	637	12	780	546	10	650	455
		EGM 5	6.040	0.80	14	740	592	12	630	504	10	525	420
		EGM 6	7.300	1.00	14	610	610	12	525	525	10	435	435
		EGM 8	9.624	1.25	14	465	581	12	395	494	10	330	413
		EGM 10	11.948	1.50	14	375	563	12	320	480	10	265	398
		EGM 12	14.274	1.75	14	310	543	12	270	473	10	225	394
	Steel < 500 N/mm²	EGM 14	16.598	2.00	14	270	540	12	230	460	10	190	380
		EGM 16	18.598	2.00	14	240	480	12	205	410	10	170	340
	Steel 500 - 850 N/mm²	EGM 2	2.520	0.40	10	1265	506	8	1010	404	6	760	304
		EGM 2.5	3.084	0.45	10	1030	464	8	825	371	6	620	279
		EGM 3	3.650	0.50	10	870	435	8	700	350	6	525	263
		EGM 4	4.910	0.70	10	650	455	8	520	364	6	390	273
		EGM 5	6.040	0.80	10	525	420	8	420	336	6	315	252
		EGM 6	7.300	1.00	10	435	435	8	350	350	6	260	260
		EGM 8	9.624	1.25	10	330	413	8	265	331	6	200	250
		EGM 10	11.948	1.50	10	265	398	8	215	323	6	160	240
		EGM 12	14.274	1.75	10	225	394	8	180	315	6	135	236
	Steel 500 - 850 N/mm²	EGM 14	16.598	2.00	10	190	380	8	155	310	6	115	230
		EGM 16	18.598	2.00	10	170	340	8	135	270	6	105	210
	Wrought aluminium alloys Si < 6% hardened	EGM 2	2.520	0.40	11	1390	556	9	1135	454	7	885	354
		EGM 2.5	3.084	0.45	11	1135	511	9	930	419	7	720	324
		EGM 3	3.650	0.50	11	960	480	9	785	393	7	610	305
		EGM 4	4.910	0.70	11	715	501	9	585	410	7	455	319
		EGM 5	6.040	0.80	11	580	464	9	475	380	7	370	296
		EGM 6	7.300	1.00	11	480	480	9	390	390	7	305	305
		EGM 8	9.624	1.25	11	365	456	9	300	375	7	230	288
		EGM 10	11.948	1.50	11	295	443	9	240	360	7	185	278
		EGM 12	14.274	1.75	11	245	429	9	200	350	7	155	271
	Wrought aluminium alloys Si < 6% hardened	EGM 14	16.598	2.00	11	210	420	9	175	350	7	135	270
		EGM 16	18.598	2.00	11	190	380	9	155	310	7	120	240
	Unalloyed copper	EGM 2	2.520	0.40	12	1515	606	10	1265	506	8	1010	404
		EGM 2.5	3.084	0.45	12	1240	558	10	1030	464	8	825	371
		EGM 3	3.650	0.50	12	1045	523	10	870	435	8	700	350
		EGM 4	4.910	0.70	12	780	546	10	650	455	8	520	364
		EGM 5	6.040	0.80	12	630	504	10	525	420	8	420	336
		EGM 6	7.300	1.00	12	525	525	10	435	435	8	350	350
		EGM 8	9.624	1.25	12	395	494	10	330	413	8	265	331
		EGM 10	11.948	1.50	12	320	480	10	265	398	8	215	323
		EGM 12	14.274	1.75	12	270	473	10	225	394	8	180	315
	Unalloyed copper	EGM 14	16.598	2.00	12	230	460	10	190	380	8	155	310
		EGM 16	18.598	2.00	12	205	410	10	170	340	8	135	270

Taps for inserts

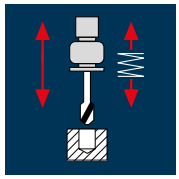
EG M	6H mod
60°	HSS-E Co5
DIN 40435	
	X · P Form B



Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	GG(G)

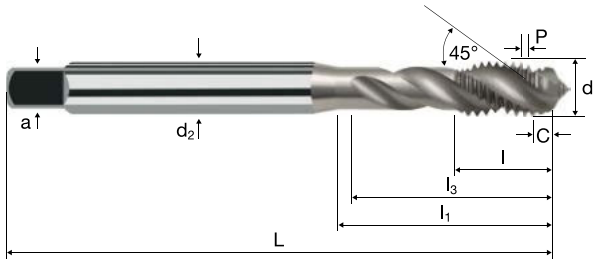
Example: **Order-N°.** Article-N°. **E11955** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			E11955	
034	EGM 2	0.40	50	9.00	15.0	2.8	2.1	3	2.15	●	
040	EGM 2.5	0.45	56	12.00	18.0	3.5	2.7	3	2.65	●	
044	EGM 3	0.50	63	12.00	21.0	4.5	3.4	3	3.15	●	
058	EGM 4	0.70	70	12.00	25.0	6.0	4.9	3	4.20	●	
084	EGM 5	0.80	80	14.00	30.0	6.0	4.9	3	5.25	●	
088	EGM 6	1.00	90	17.00	35.0	8.0	6.2	3	6.30	●	
160	EGM 8	1.25	100	20.00	39.0	10.0	8.0	3	8.40	●	
174	EGM 10	1.50	100	20.00	40.0	9.0	7.0	3	10.40	●	
240	EGM 12	1.75	110	28.00	53.0	11.0	9.0	4	12.50	●	
244	EGM 14	2.00	110	26.00	54.0	12.0	9.0	4	14.50	●	
246	EGM 16	2.00	125	33.00	62.0	14.0	11.0	4	16.50	●	

Application	Material	EG-M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 500 N/mm²	EGM 2	2.520	0.40	11	1390	556	10	1265	506	8	1010	404
		EGM 2.5	3.084	0.45	11	1135	511	10	1030	464	8	825	371
		EGM 3	3.650	0.50	11	960	480	10	870	435	8	700	350
		EGM 4	4.910	0.70	11	715	501	10	650	455	8	520	364
		EGM 5	6.040	0.80	11	580	464	10	525	420	8	420	336
		EGM 6	7.300	1.00	11	480	480	10	435	435	8	350	350
		EGM 8	9.624	1.25	11	365	456	10	330	413	8	265	331
		EGM 10	11.948	1.50	11	295	443	10	265	398	8	215	323
		EGM 12	14.274	1.75	11	245	429	10	225	394	8	180	315
	Steel < 500 N/mm²	EGM 14	16.598	2.00	11	210	420	10	190	380	8	155	310
		EGM 16	18.598	2.00	11	190	380	10	170	340	8	135	270
	Steel 500 - 850 N/mm²	EGM 2	2.520	0.40	8	1010	404	7	885	354	6	760	304
		EGM 2.5	3.084	0.45	8	825	371	7	720	324	6	620	279
		EGM 3	3.650	0.50	8	700	350	7	610	305	6	525	263
		EGM 4	4.910	0.70	8	520	364	7	455	319	6	390	273
		EGM 5	6.040	0.80	8	420	336	7	370	296	6	315	252
		EGM 6	7.300	1.00	8	350	350	7	305	305	6	260	260
		EGM 8	9.624	1.25	8	265	331	7	230	288	6	200	250
		EGM 10	11.948	1.50	8	215	323	7	185	278	6	160	240
		EGM 12	14.274	1.75	8	180	315	7	155	271	6	135	236
	Steel 500 - 850 N/mm²	EGM 14	16.598	2.00	8	155	310	7	135	270	6	115	230
		EGM 16	18.598	2.00	8	135	270	7	120	240	6	105	210
	Wrought aluminium alloys Si < 6% hardened	EGM 2	2.520	0.40	7	885	354	6	760	304	6	760	304
		EGM 2.5	3.084	0.45	7	720	324	6	620	279	6	620	279
		EGM 3	3.650	0.50	7	610	305	6	525	263	6	525	263
		EGM 4	4.910	0.70	7	455	319	6	390	273	6	390	273
		EGM 5	6.040	0.80	7	370	296	6	315	252	6	315	252
		EGM 6	7.300	1.00	7	305	305	6	260	260	6	260	260
		EGM 8	9.624	1.25	7	230	288	6	200	250	6	200	250
		EGM 10	11.948	1.50	7	185	278	6	160	240	6	160	240
		EGM 12	14.274	1.75	7	155	271	6	135	236	6	135	236
	Wrought aluminium alloys Si < 6% hardened	EGM 14	16.598	2.00	7	135	270	6	115	230	6	115	230
		EGM 16	18.598	2.00	7	120	240	6	105	210	6	105	210
	Unalloyed copper	EGM 2	2.520	0.40	10	1265	506	9	1135	454	8	1010	404
		EGM 2.5	3.084	0.45	10	1030	464	9	930	419	8	825	371
		EGM 3	3.650	0.50	10	870	435	9	785	393	8	700	350
		EGM 4	4.910	0.70	10	650	455	9	585	410	8	520	364
		EGM 5	6.040	0.80	10	525	420	9	475	380	8	420	336
		EGM 6	7.300	1.00	10	435	435	9	390	390	8	350	350
		EGM 8	9.624	1.25	10	330	413	9	300	375	8	265	331
		EGM 10	11.948	1.50	10	265	398	9	240	360	8	215	323
		EGM 12	14.274	1.75	10	225	394	9	200	350	8	180	315
	Unalloyed copper	EGM 14	16.598	2.00	10	190	380	9	175	350	8	155	310
		EGM 16	18.598	2.00	10	170	340	9	155	310	8	135	270

Taps for inserts

EG M	6H mod
60°	HSS-E Co5
DIN 40435	
	X · P Form C



Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	GG(G)

Example: **Order-N°.** Article-N°. **E11965** ø-Code **034**

Ø Code	d	P	L	l	l_1	l_3	d_2	a			E11965	
034	EGM 2	0.40	50	9.00	15.0	13.0	2.8	2.1	3	2.15	●	
040	EGM 2.5	0.45	56	4.00	18.0	16.0	3.5	2.7	3	2.65	●	
044	EGM 3	0.50	63	6.00	21.0	17.0	4.5	3.4	3	3.15	●	
058	EGM 4	0.70	70	7.50	25.0	21.0	6.0	4.9	3	4.20	●	
084	EGM 5	0.80	80	8.50	30.0	26.0	6.0	4.9	3	5.25	●	
088	EGM 6	1.00	90	11.00	35.0	31.0	8.0	6.2	3	6.30	●	
160	EGM 8	1.25	100	14.00	39.0	35.0	10.0	8.0	3	8.40	●	
174	EGM 10	1.50	100	16.00	40.0	36.0	9.0	7.0	3	10.40	●	
240	EGM 12	1.75	110	18.50	53.0	49.0	11.0	9.0	3	12.50	●	
244	EGM 14	2.00	110	20.00	54.0	50.0	12.0	9.0	4	14.50	●	
246	EGM 16	2.00	125	20.00	62.0	58.0	14.0	11.0	4	16.50	●	

passion
for precision
fraisa

Cold forming taps M

Tolerance ISO 2 (6H)

N° EF10060 / EF10061

N° EH6100 / EH6101

N° EL10080 / EL10081

N° EH10070 / EH10071

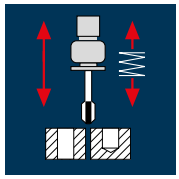
	Al	HSS PM/F		Al Aluminium Alloy	Cu Copper	329
duroform	U	HM MG10		Rm <850-1100	Al Aluminium Alloy	333
Lightform Steel	St	HSS PM/F		Rm <850		335
	St	HSS PM/F		Rm <850		339

Tolerance ISO 3 (6G)

N° EH10040 / EH10041

St	HSS-E Co5		Rm <850		343

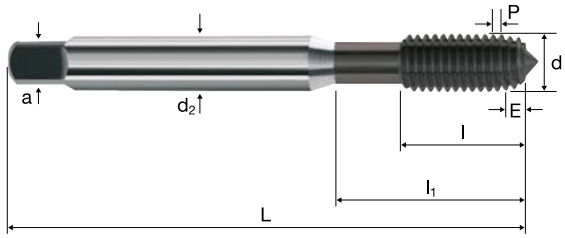
CF

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Unalloyed aluminium	M 1	1.000	0.25	25	7960	1990	20	6365	1591	15	4775	1194
		M 1.2	1.200	0.25	25	6630	1658	20	5305	1326	15	3980	995
		M 1.4	1.400	0.30	25	5685	1706	20	4545	1364	15	3410	1023
		M 1.6	1.600	0.35	25	4975	1741	20	3980	1393	15	2985	1045
		M 1.8	1.800	0.35	25	4420	1547	20	3535	1237	15	2655	929
		M 2	2.000	0.40	25	3980	1592	20	3185	1274	15	2385	954
		M 2.2	2.200	0.45	25	3615	1627	20	2895	1303	15	2170	977
		M 2.5	2.500	0.45	25	3185	1433	20	2545	1145	15	1910	860
		M 3	3.000	0.50	25	2655	1328	20	2120	1060	15	1590	795
	Unalloyed aluminium	M 4	4.000	0.70	25	1990	1393	20	1590	1113	15	1195	837
		M 5	5.000	0.80	25	1590	1272	20	1275	1020	15	955	764
		M 6	6.000	1.00	25	1325	1325	20	1060	1060	15	795	795
		M 8	8.000	1.25	25	995	1244	20	795	994	15	595	744
		M 10	10.000	1.50	25	795	1193	20	635	953	15	475	713
	Wrought aluminium alloys Si < 6% not hardened	M 1	1.000	0.25	30	9550	2388	25	7960	1990	20	6365	1591
		M 1.2	1.200	0.25	30	7960	1990	25	6630	1658	20	5305	1326
		M 1.4	1.400	0.30	30	6820	2046	25	5685	1706	20	4545	1364
		M 1.6	1.600	0.35	30	5970	2090	25	4975	1741	20	3980	1393
		M 1.8	1.800	0.35	30	5305	1857	25	4420	1547	20	3535	1237
		M 2	2.000	0.40	30	4775	1910	25	3980	1592	20	3185	1274
		M 2.2	2.200	0.45	30	4340	1953	25	3615	1627	20	2895	1303
		M 2.5	2.500	0.45	30	3820	1719	25	3185	1433	20	2545	1145
		M 3	3.000	0.50	30	3185	1593	25	2655	1328	20	2120	1060
	Wrought aluminium alloys Si < 6% not hardened	M 4	4.000	0.70	30	2385	1670	25	1990	1393	20	1590	1113
		M 5	5.000	0.80	30	1910	1528	25	1590	1272	20	1275	1020
		M 6	6.000	1.00	30	1590	1590	25	1325	1325	20	1060	1060
		M 8	8.000	1.25	30	1195	1494	25	995	1244	20	795	994
		M 10	10.000	1.50	30	955	1433	25	795	1193	20	635	953
	Unalloyed copper	M 1	1.000	0.25	15	4775	1194	10	3185	796	10	3185	796
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	10	2655	664
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	10	2275	683
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	10	1990	697
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	10	1770	620
		M 2	2.000	0.40	15	2385	954	10	1590	636	10	1590	636
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	10	1445	650
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	10	1275	574
		M 3	3.000	0.50	15	1590	795	10	1060	530	10	1060	530
	Unalloyed copper	M 4	4.000	0.70	15	1195	837	10	795	557	10	795	557
		M 5	5.000	0.80	15	955	764	10	635	508	10	635	508
		M 6	6.000	1.00	15	795	795	10	530	530	10	530	530
		M 8	8.000	1.25	15	595	744	10	400	500	10	400	500
		M 10	10.000	1.50	15	475	713	10	320	480	10	320	480
	Non ferrous metal A_5 > 15%	M 1	1.000	0.25	15	4775	1194	10	3185	796	10	3185	796
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	10	2655	664
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	10	2275	683
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	10	1990	697
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	10	1770	620
		M 2	2.000	0.40	15	2385	954	10	1590	636	10	1590	636
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	10	1445	650
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	10	1275	574
		M 3	3.000	0.50	15	1590	795	10	1060	530	10	1060	530
	Non ferrous metal A_5 > 15%	M 4	4.000	0.70	15	1195	837	10	795	557	10	795	557
		M 5	5.000	0.80	15	955	764	10	635	508	10	635	508
		M 6	6.000	1.00	15	795	795	10	530	530	10	530	530
		M 8	8.000	1.25	15	595	744	10	400	500	10	400	500
		M 10	10.000	1.50	15	475	713	10	320	480	10	320	480

Cold forming taps

Al

M	ISO 2 (6H)
60°	HSS PM/F
DIN 371	
	Form E



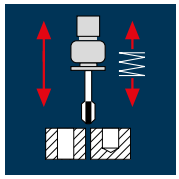
			Al Aluminium > 99%	Al Aluminium Alloy			Cu Copper		CuZn Brass

Example: **Order-N°.** Article-N°. **EF10060** ø-Code **010**

Ø Code	d	P	L	l	l_1	d_2	a			F-DLC EF10060
010	M 1	0.25	40	5.50	-	2.5	2.1	3	0.87	●
012	M 1.2	0.25	40	5.50	-	2.5	2.1	3	1.07	●
020	M 1.4	0.30	40	7.00	-	2.5	2.1	3	1.25	●
022	M 1.6	0.35	40	8.00	-	2.5	2.1	3	1.42	●
026	M 1.8	0.35	40	8.00	-	2.5	2.1	3	1.62	●
034	M 2	0.40	45	8.00	-	2.8	2.1	3	1.80	●
036	M 2.2	0.45	45	9.00	-	2.8	2.1	3	2.00	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	3	2.30	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.80	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.70	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	4	4.60	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.50	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	4	7.40	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	4	9.30	●

≤ M 1.4 Tolerance ISO1 (4H)
For larger dimensions see article no. EF10061

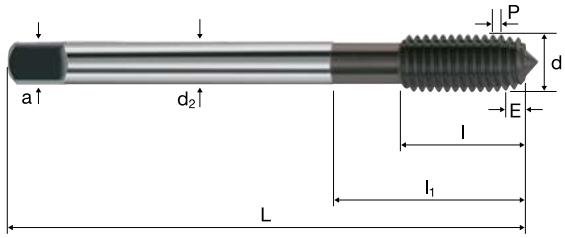
CF

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Unalloyed aluminium	M 12	12.000	1.75	25	665	1164	20	530	928	15	400	700
		M 14	14.000	2.00	25	570	1140	20	455	910	15	340	680
		M 16	16.000	2.00	25	495	990	20	400	800	15	300	600
	Wrought aluminium alloys Si < 6% not hardened	M 12	12.000	1.75	30	795	1391	25	665	1164	20	530	928
		M 14	14.000	2.00	30	680	1360	25	570	1140	20	455	910
		M 16	16.000	2.00	30	595	1190	25	495	990	20	400	800
	Unalloyed copper	M 12	12.000	1.75	15	400	700	10	265	464	10	265	464
		M 14	14.000	2.00	15	340	680	10	225	450	10	225	450
		M 16	16.000	2.00	15	300	600	10	200	400	10	200	400
	Non ferrous metal A_5 > 15%	M 12	12.000	1.75	15	400	700	10	265	464	10	265	464
		M 14	14.000	2.00	15	340	680	10	225	450	10	225	450
		M 16	16.000	2.00	15	300	600	10	200	400	10	200	400

Cold forming taps

Al

M	ISO 2 (6H)
60°	HSS PM/F
DIN 376	
	Form E

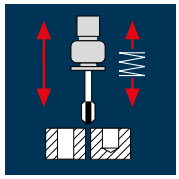


			Al Aluminium > 99%	Al Aluminium Alloy			Cu Copper		CuZn Brass

Example: **Order-N°.** Article-N°. **EF10061** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			F-DLC EF10061
240	M 12	1.75	110	24.00	40.0	9.0	7.0	5	11.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	5	13.10	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	5	15.10	●

CF

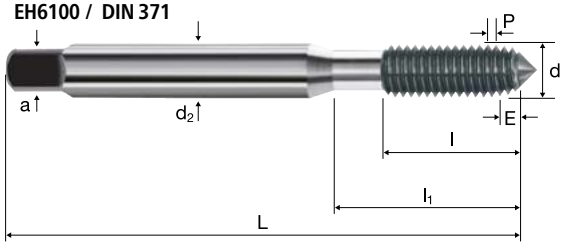
Application	Material	M	d [mm]	P [mm]	v_c 1.0 x d	n [min⁻¹]	v_f [100%]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 3	3.000	0.50	35	3715	1858	30	3185	1593	25	2655	1328
		M 4	4.000	0.70	35	2785	1950	30	2385	1670	25	1990	1393
		M 5	5.000	0.80	35	2230	1784	30	1910	1528	25	1590	1272
		M 6	6.000	1.00	35	1855	1855	30	1590	1590	25	1325	1325
		M 8	8.000	1.25	35	1395	1744	30	1195	1494	25	995	1244
		M 10	10.000	1.50	35	1115	1673	30	955	1433	25	795	1193
		M 12	12.000	1.75	35	930	1628	30	795	1391	25	665	1164
	Steel 850 - 1100 N/mm² A_5 > 10%	M 3	3.000	0.50	30	3185	1593	25	2655	1328	20	2120	1060
		M 4	4.000	0.70	30	2385	1670	25	1990	1393	20	1590	1113
		M 5	5.000	0.80	30	1910	1528	25	1590	1272	20	1275	1020
		M 6	6.000	1.00	30	1590	1590	25	1325	1325	20	1060	1060
		M 8	8.000	1.25	30	1195	1494	25	995	1244	20	795	994
		M 10	10.000	1.50	30	955	1433	25	795	1193	20	635	953
		M 12	12.000	1.75	30	795	1391	25	665	1164	20	530	928
	Unalloyed aluminium	M 3	3.000	0.50	50	5305	2653	40	4245	2123	30	3185	1593
		M 4	4.000	0.70	50	3980	2786	40	3185	2230	30	2385	1670
		M 5	5.000	0.80	50	3185	2548	40	2545	2036	30	1910	1528
		M 6	6.000	1.00	50	2655	2655	40	2120	2120	30	1590	1590
		M 8	8.000	1.25	50	1990	2488	40	1590	1988	30	1195	1494
		M 10	10.000	1.50	50	1590	2385	40	1275	1913	30	955	1433
		M 12	12.000	1.75	50	1325	2319	40	1060	1855	30	795	1391
	Wrought aluminium alloys Si < 6% not hardened	M 3	3.000	0.50	80	8490	4245	60	6365	3183	40	4245	2123
		M 4	4.000	0.70	80	6365	4456	60	4775	3343	40	3185	2230
		M 5	5.000	0.80	80	5095	4076	60	3820	3056	40	2545	2036
		M 6	6.000	1.00	80	4245	4245	60	3185	3185	40	2120	2120
		M 8	8.000	1.25	80	3185	3981	60	2385	2981	40	1590	1988
		M 10	10.000	1.50	80	2545	3818	60	1910	2865	40	1275	1913
		M 12	12.000	1.75	80	2120	3710	60	1590	2783	40	1060	1855
	Unalloyed copper	M 3	3.000	0.50	60	6365	3183	40	4245	2123	30	3185	1593
		M 4	4.000	0.70	60	4775	3343	40	3185	2230	30	2385	1670
		M 5	5.000	0.80	60	3820	3056	40	2545	2036	30	1910	1528
		M 6	6.000	1.00	60	3185	3185	40	2120	2120	30	1590	1590
		M 8	8.000	1.25	60	2385	2981	40	1590	1988	30	1195	1494
		M 10	10.000	1.50	60	1910	2865	40	1275	1913	30	955	1433
		M 12	12.000	1.75	60	1590	2783	40	1060	1855	30	795	1391
	Non ferrous metal A_5 > 15%	M 3	3.000	0.50	50	5305	2653	30	3185	1593	25	2655	1328
		M 4	4.000	0.70	50	3980	2786	30	2385	1670	25	1990	1393
		M 5	5.000	0.80	50	3185	2548	30	1910	1528	25	1590	1272
		M 6	6.000	1.00	50	2655	2655	30	1590	1590	25	1325	1325
		M 8	8.000	1.25	50	1990	2488	30	1195	1494	25	995	1244
		M 10	10.000	1.50	50	1590	2385	30	955	1433	25	795	1193
		M 12	12.000	1.75	50	1325	2319	30	795	1391	25	665	1164
	Stainless steel ferritc/martensitic A_5 > 10%	M 3	3.000	0.50	30	3185	1593	25	2655	1328	20	2120	1060
		M 4	4.000	0.70	30	2385	1670	25	1990	1393	20	1590	1113
		M 5	5.000	0.80	30	1910	1528	25	1590	1272	20	1275	1020
		M 6	6.000	1.00	30	1590	1590	25	1325	1325	20	1060	1060
		M 8	8.000	1.25	30	1195	1494	25	995	1244	20	795	994
		M 10	10.000	1.50	30	955	1433	25	795	1193	20	635	953
		M 12	12.000	1.75	30	795	1391	25	665	1164	20	530	928
	Stainless steel [Cr-Ni/1.4301]	M 3	3.000	0.50	30	3185	1593	25	2655	1328	20	2120	1060
		M 4	4.000	0.70	30	2385	1670	25	1990	1393	20	1590	1113
		M 5	5.000	0.80	30	1910	1528	25	1590	1272	20	1275	1020
		M 6	6.000	1.00	30	1590	1590	25	1325	1325	20	1060	1060
		M 8	8.000	1.25	30	1195	1494	25	995	1244	20	795	994
		M 10	10.000	1.50	30	955	1433	25	795	1193	20	635	953
		M 12	12.000	1.75	30	795	1391	25	665	1164	20	530	928

Cold forming taps duroform

U

M	ISO 2 (6H)
60°	HM MG10
DIN 371/376	
	X · P Form E

EH6100 / DIN 371



EH6101 / DIN 376

Rm < 850	Rm 850-1100						Inox Stainless		Aluminium Copper

Example: **Order-N°.** Article-N°. **EH6100** ø-Code **044**

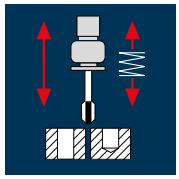
Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH6100
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.80	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	4	3.70	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	4	4.60	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.50	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	5	7.40	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	5	9.30	●

Example: **Order-N°.** Article-N°. **EH6101** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH6101
240	M 12	1.75	110	24.00	50.0	9.0	7.0	7	11.20	●

CF

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 1	1.000	0.25	20	6365	1591	15	4775	1194	10	3185	796
		M 1.2	1.200	0.25	20	5305	1326	15	3980	995	10	2655	664
		M 1.4	1.400	0.30	20	4545	1364	15	3410	1023	10	2275	683
		M 1.6	1.600	0.35	20	3980	1393	15	2985	1045	10	1990	697
		M 1.8	1.800	0.35	20	3535	1237	15	2655	929	10	1770	620
		M 2	2.000	0.40	20	3185	1274	15	2385	954	10	1590	636
		M 2.2	2.200	0.45	20	2895	1303	15	2170	977	10	1445	650
		M 2.5	2.500	0.45	20	2545	1145	15	1910	860	10	1275	574
		M 3	3.000	0.50	20	2120	1060	15	1590	795	10	1060	530
	Steel < 850 N/mm² A_5 > 10%	M 4	4.000	0.70	20	1590	1113	15	1195	837	10	795	557
		M 5	5.000	0.80	20	1275	1020	15	955	764	10	635	508
		M 6	6.000	1.00	20	1060	1060	15	795	795	10	530	530
		M 8	8.000	1.25	20	795	994	15	595	744	10	400	500
		M 10	10.000	1.50	20	635	953	15	475	713	10	320	480
	Steel 850 - 1100 N/mm² A_5 > 10%	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Steel 850 - 1100 N/mm² A_5 > 10%	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-

Cold forming taps Lightform Steel

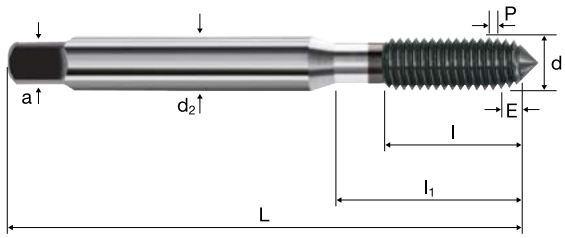
St

M | ISO 2 (6H)

60° | HSS PM/F

DIN 371

X · P Form C



Rm < 850 | **Rm** 850-1100 | **Inox** Stainless

Example: **Order-N°.** Article-N°. **EL10080** ø-Code **010**

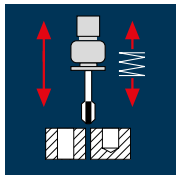
Ø Code	d	P	L	l	l_1	d_2	a			LONGCUT
										EL10080
010*	M 1	0.25	40	5.50	-	2.5	2.1	3	0.87	●
012*	M 1.2	0.25	40	5.50	-	2.5	2.1	3	1.07	●
020*	M 1.4	0.30	40	7.00	-	2.5	2.1	3	1.25	●
022*	M 1.6	0.35	40	8.00	-	2.5	2.1	3	1.42	●
026*	M 1.8	0.35	40	8.00	-	2.5	2.1	3	1.62	●
034	M 2	0.40	45	8.00	-	2.8	2.1	3	1.80	●
036	M 2.2	0.45	45	9.00	-	2.8	2.1	3	2.00	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	3	2.30	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.80	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	3	3.70	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	4	4.60	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.50	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	4	7.40	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	4	9.30	●

≤ M 1.4 Tolerance ISO1 (4H)

* without oil grooves

For larger dimensions see article no. EL10081

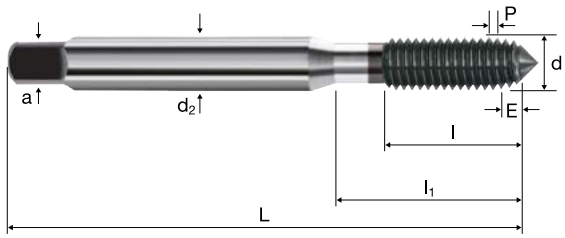
CF

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 12	12.000	1.75	20	530	928	15	400	700	10	265	464
		M 14	14.000	2.00	20	455	910	15	340	680	10	225	450
		M 16	16.000	2.00	20	400	800	15	300	600	10	200	400
	Steel 850 - 1100 N/mm² A_5 > 10%	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-

Cold forming taps Lightform Steel

St

M	ISO 2 (6H)
60°	HSS PM/F
DIN 376	
	X · P Form C

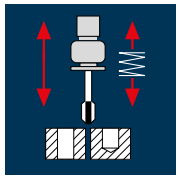


Rm < 850	Rm 850-1100						Inox Stainless		

Example:
Order-N°. Article-N°. **EL10081** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			LONGCUT EL10081
240	M 12	1.75	110	24.00	40.0	9.0	7.0	5	11.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	5	13.10	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	5	15.10	●

CF

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 1	1.000	0.25	20	6365	1591	15	4775	1194	10	3185	796
		M 1.2	1.200	0.25	20	5305	1326	15	3980	995	10	2655	664
		M 1.4	1.400	0.30	20	4545	1364	15	3410	1023	10	2275	683
		M 1.6	1.600	0.35	20	3980	1393	15	2985	1045	10	1990	697
		M 1.8	1.800	0.35	20	3535	1237	15	2655	929	10	1770	620
		M 2	2.000	0.40	20	3185	1274	15	2385	954	10	1590	636
		M 2.2	2.200	0.45	20	2895	1303	15	2170	977	10	1445	650
		M 2.5	2.500	0.45	20	2545	1145	15	1910	860	10	1275	574
		M 3	3.000	0.50	20	2120	1060	15	1590	795	10	1060	530
	Steel < 850 N/mm² A_5 > 10%	M 4	4.000	0.70	20	1590	1113	15	1195	837	10	795	557
		M 5	5.000	0.80	20	1275	1020	15	955	764	10	635	508
		M 6	6.000	1.00	20	1060	1060	15	795	795	10	530	530
		M 8	8.000	1.25	20	795	994	15	595	744	10	400	500
		M 10	10.000	1.50	20	635	953	15	475	713	10	320	480
	Steel 850 - 1100 N/mm² A_5 > 10%	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Steel 850 - 1100 N/mm² A_5 > 10%	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 1	1.000	0.25	15	4775	1194	10	3185	796	-	-	-
		M 1.2	1.200	0.25	15	3980	995	10	2655	664	-	-	-
		M 1.4	1.400	0.30	15	3410	1023	10	2275	683	-	-	-
		M 1.6	1.600	0.35	15	2985	1045	10	1990	697	-	-	-
		M 1.8	1.800	0.35	15	2655	929	10	1770	620	-	-	-
		M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.2	2.200	0.45	15	2170	977	10	1445	650	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-

Cold forming taps

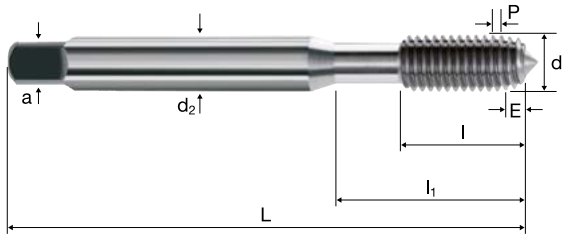
St

M | ISO 2 (6H)

60° | HSS PM/F

DIN 371

Form E



Rm < 850 | Rm 850-1100 | Inox Stainless

Example: **Order-N°.** Article-N°. **EH10070** ø-Code **010**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH10070
010*	M 1	0.25	40	5.50	-	2.5	2.1	3	0.87	●
012*	M 1.2	0.25	40	5.50	-	2.5	2.1	3	1.07	●
020*	M 1.4	0.30	40	7.00	-	2.5	2.1	3	1.25	●
022*	M 1.6	0.35	40	8.00	-	2.5	2.1	3	1.42	●
026*	M 1.8	0.35	40	8.00	-	2.5	2.1	3	1.62	●
034	M 2	0.40	45	8.00	-	2.8	2.1	3	1.80	●
036	M 2.2	0.45	45	9.00	-	2.8	2.1	3	2.00	●
040	M 2.5	0.45	50	9.00	-	2.8	2.1	3	2.30	●
044	M 3	0.50	56	12.00	18.0	3.5	2.7	3	2.80	●
058	M 4	0.70	63	13.00	21.0	4.5	3.4	4	3.70	●
084	M 5	0.80	70	15.00	25.0	6.0	4.9	4	4.60	●
088	M 6	1.00	80	17.00	30.0	6.0	4.9	4	5.50	●
160	M 8	1.25	90	20.00	35.0	8.0	6.2	5	7.40	●
174	M 10	1.50	100	22.00	39.0	10.0	8.0	5	9.30	●

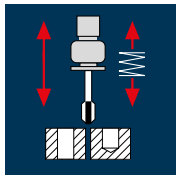
≤ M 1.4 Tolerance ISO1 (4H)

* without oil grooves

For larger dimensions see article no. EH10071

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

CF

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 12	12.000	1.75	20	530	928	15	400	700	10	265	464
		M 14	14.000	2.00	20	455	910	15	340	680	10	225	450
		M 16	16.000	2.00	20	400	800	15	300	600	10	200	400
	Steel 850 - 1100 N/mm² A_5 > 10%	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
		M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-

Cold forming taps

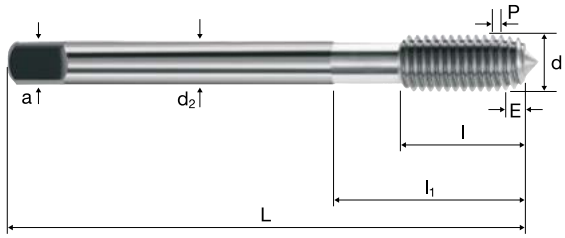
St

M | ISO 2 (6H)

60° | HSS PM/F

DIN 376

Form E



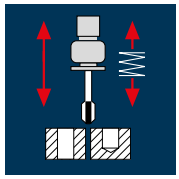
Rm < 850 | Rm 850-1100 | Inox Stainless

Example: **Order-N°.** Article-N°. **EH10071** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH10071
240	M 12	1.75	110	24.00	40.0	9.0	7.0	7	11.20	●
244	M 14	2.00	110	26.00	40.0	11.0	9.0	7	13.10	●
246	M 16	2.00	110	27.00	40.0	12.0	9.0	7	15.10	●

CF

Ongoing coating changeover as of 01.04.23 from TiCN to AlCrTiN

Application	Material	M	d [mm]	P [mm]	v_c 1.5 x d	n [min⁻¹]	v_f [100%]	v_c 2.0 x d	n [min⁻¹]	v_f [100%]	v_c 3.0 x d	n [min⁻¹]	v_f [100%]
	Steel < 850 N/mm² A_5 > 10%	M 2	2.000	0.40	20	3185	1274	15	2385	954	10	1590	636
		M 2.5	2.500	0.45	20	2545	1145	15	1910	860	10	1275	574
		M 3	3.000	0.50	20	2120	1060	15	1590	795	10	1060	530
		M 4	4.000	0.70	20	1590	1113	15	1195	837	10	795	557
		M 5	5.000	0.80	20	1275	1020	15	955	764	10	635	508
		M 6	6.000	1.00	20	1060	1060	15	795	795	10	530	530
		M 8	8.000	1.25	20	795	994	15	595	744	10	400	500
		M 10	10.000	1.50	20	635	953	15	475	713	10	320	480
		M 12	12.000	1.75	20	530	928	15	400	700	10	265	464
	Steel < 850 N/mm² A_5 > 10%	M 14	14.000	2.00	20	455	910	15	340	680	10	225	450
		M 16	16.000	2.00	20	400	800	15	300	600	10	200	400
	Steel 850 - 1100 N/mm² A_5 > 10%	M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
		M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
		M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
	Steel 850 - 1100 N/mm² A_5 > 10%	M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
		M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
		M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
	Stainless steel ferritc/martensitic A_5 > 10%	M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 2	2.000	0.40	15	2385	954	10	1590	636	-	-	-
		M 2.5	2.500	0.45	15	1910	860	10	1275	574	-	-	-
		M 3	3.000	0.50	15	1590	795	10	1060	530	-	-	-
		M 4	4.000	0.70	15	1195	837	10	795	557	-	-	-
		M 5	5.000	0.80	15	955	764	10	635	508	-	-	-
		M 6	6.000	1.00	15	795	795	10	530	530	-	-	-
		M 8	8.000	1.25	15	595	744	10	400	500	-	-	-
		M 10	10.000	1.50	15	475	713	10	320	480	-	-	-
		M 12	12.000	1.75	15	400	700	10	265	464	-	-	-
	Stainless steel [Cr-Ni/1.4301]	M 14	14.000	2.00	15	340	680	10	225	450	-	-	-
		M 16	16.000	2.00	15	300	600	10	200	400	-	-	-

Cold forming taps

St

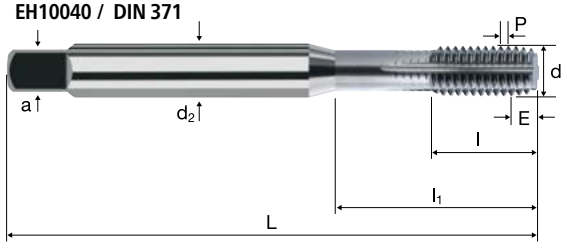
M | ISO 3 (6G)

60° | HSS PM/F

DIN 371/376

X · P Form E

EH10040 / DIN 371



EH10041 / DIN 376

Rm < 850 | **Rm** 850-1100 | **Inox** Stainless

Example: **Order-N°.** Article-N°. **EH10040** ø-Code **034**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH10040
034	M 2	0.40	45	8.00	13.5	2.8	2.1	4	1.80	●
040	M 2.5	0.45	50	9.00	14.5	2.8	2.1	4	2.30	●
044	M 3	0.50	56	10.00	18.0	3.5	2.7	4	2.80	●
058	M 4	0.70	63	12.00	21.0	4.5	3.4	4	3.70	●
084	M 5	0.80	70	14.00	25.0	6.0	4.9	5	4.60	●
088	M 6	1.00	80	16.00	30.0	6.0	4.9	5	5.50	●
160	M 8	1.25	90	17.00	35.0	8.0	6.2	5	7.40	●
174	M 10	1.50	100	20.00	39.0	10.0	8.0	5	9.30	●

Example: **Order-N°.** Article-N°. **EH10041** ø-Code **240**

Ø Code	d	P	L	l	l_1	d_2	a			TiCN EH10041
240	M 12	1.75	110	24.00	49.0	9.0	7.0	7	11.20	●
244	M 14	2.00	110	26.00	53.0	11.0	9.0	7	13.10	●
246	M 16	2.00	110	26.00	54.0	12.0	9.0	8	15.10	●

CF

passion
for precision
fraisa

Drilling tool information

346 – 351

Thread cutting tool information

352 – 373

General information

374 – 379

Legend to the product page of drilling tools

Tool technologies

Drilling tools with four chamfers (Two friction and two guide lands)
- Improved straightness of the hole
- Improved hole quality and alignment
- Less deviation of the hole when drilling through cross holes
- Precise holes with good surface and maximum support of the tool upon exit

Drilling tool with optimised polished flutes and internal cooling
- Reduction of friction and therefore less adhesion, improved chip formation and lower heat generation

Drilling tool with optimised polished flutes, without internal cooling
- Reduction of friction and therefore less adhesion, improved chip formation and lower heat generation

Drilling tool with shank of h5 tolerance
- High concentricity and roundness
- Optimal for modern precision chucks

Cutting tool substrate material

HM XA

Fine grain carbide. Hardness 1950 HV. Co content 8%. Characterised by a particularly high level of abrasion resistance.

HM MGX

High-performance fine grain carbide with ultrafine tungsten carbides. Hardness 1610 HV. Co content 10%.

HM MG10

Fine grain carbide. Hardness 1600 HV. Co content 10%.

HM MGD²

Fine grain carbide with high bending and shear strength combined with good elasticity.

HM

Universal fine grain carbide.

HSS

High-performance substrate material, conventionally melted HSS alloy.

Legend to the product page of drilling tools

Internal cooling

Drills with internal cooling show improved chip formation and better chip removal which in turn results in an improved tool life.

Drills without internal cooling.

Point angle and helix angle

The point angle influences decisively the spectrum of materials that can be drilled. Further, small point angles bring a better centering behaviour; large point angles reduce the torque.

The helix angle influences decisively the rake angle on the major cutting edge (drill point) of the drill. Therefore, large helix angles are used for soft materials, small helix angles for hard and brittle materials.

Versions and dimensions of spiral flute drills

Spiral flute drills carbide, 3xd
The dimensions of this tool correspond to DIN 6537 K «Spiral flute drills carbide with offset cylindrical shank».

Spiral flute drills carbide, 5xd
The dimensions of this tool correspond to DIN 6537 L «Spiral flute drills carbide with offset cylindrical shank».

Spiral flute drills carbide and deep hole drills carbide, greater than 5xd
According to company standard.

Spiral flute drills carbide 8xd, optimised
According to company standard, but with optimised l/d ratio for optimum tool stability.

Special versions and dimensions

90°

Indication of the point angle for center drills or counterbores.
Counterbores 90° to DIN 335.

Drilling depths

Indication of the nominal drilling depth. (Example: 5xd: five times drill diameter).
The nominal drilling depth does not correspond to the maximum depth! The maximum drilling depth is specified under L_{max}.

Legend to the product page of drilling tools

Shape of the shank / Shank versions

Full carbide tools with a cylindrical shank: shank version in accordance with DIN 6535 HA

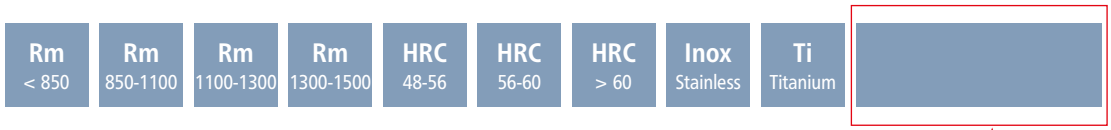
Full carbide tools with a cylindrical shank and a side clamping surface. Shank version in accordance with DIN 6535 HB

Carbide Micro drills and Deep hole drills with cylindrical shank: Shank design to company standard.

Application suitability

A blue background means that the tool is particularly suitable for this material.

A light blue background means that the tool has good to adequate suitability for this material.



Additional material which can be machined is stated in the additional field

Abbreviations

d_1	Diameter of the cutting edge [mm]
d_2	Diameter of the shank [mm]
d_3	Face-surface diameter on rose countersinks [mm]
l_1	Total length of the tool [mm]
l_2	Length of the chip groove [mm]
l_3	Length of the 2nd step (Step drills) [mm]
l_4	Length of the shank [mm]
L_{max}	Maximum drilling depth of the tool
L_K	Drill depth for chamfered edge (Step drills)

Technical notes regarding use of drilling tools

Lubrication and coolant pressure

Basically, when drilling work with lubricant. The goal is more efficient chip removal and heat reduction. Hardened steel or abrasive materials can be cooled by using air or treated with MQL (minimal quantity lubrication).

If the coolant is applied externally, ensure the correct positioning of the coolant jet. This should be in the flute (directed parallel to the helix angle) and the entrance to the hole.

The use of internal cooling (internal coolant supply) can increase tool life. It is necessary, depending on the tool diameter, to apply a minimum coolant pressure.

The following table provides a guideline for the recommended FRAISA coolant pressure for IKZ drills:

Required coolant pressure for spiral fl ute drills with internal coolant emulsion						
Versions	< ø 3 mm	ø 3-5 mm	ø 5-8 mm	ø 8-12 mm	ø 12-16 mm	ø 16-20 mm
up to 5xd	60 bar	50 bar	30 bar	25 bar	20 bar	15 bar
8xd – 30xd	80 bar	60 bar	40 bar	30 bar	25 bar	20 bar
Required coolant pressure for spiral flute drills with internal coolant/MQL (minimal quantity lubrication)						
Versions	< ø 3 mm	ø 3-5 mm	ø 5-8 mm	ø 8-12 mm	ø 12-16 mm	ø 16-20 mm
up to 5xd	12 bar	10 bar	9 bar	8 bar	8 bar	7 bar
8xd – 30xd	14 bar	12 bar	10 bar	9 bar	9 bar	8 bar

Concentricity

The concentricity of the drilling process is an important process influencing variable. The eccentricity should be as small as possible, as this greatly influences the development of tool wear. The rotation should be controlled especially for hole diameters less than 6 mm. The control measurement is made when the drilling tool is in the clamped condition and in the machine spindle.

The following table provides a guideline from FRAISA for the recommended maximum eccentricity:

Maximum eccentricity of spiral flute drills						
Diameter range	< ø 1 mm	ø 1-3 mm	ø 3-6 mm	ø 6-10 mm	ø 10-16 mm	ø 16-20 mm
Maximum eccentricity	3 µm	5 µm	10 µm	15 µm	20 µm	25 µm

Centering and pilot hole

Drilling tools must always be set at right angles to the workpiece. If drilling is required on an inclined surface, an addtional machining operation may be necessary to align the workpiece surface at a right angle to the drilling tool.

The point angle of the center drill should always be larger than the point angle of the subsequent spiral flute drill. Thus, an optimum centering of the drill and lower development of tool wear is achieved.

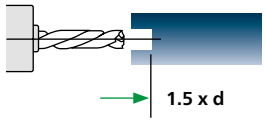
The following recommendation is from FRAISA for centering and pilot holes:

Versions	Cutting material	Recommendation
up to 5xd	HM	No
up to 5xd	HSS	Yes
8xd	HM	Optional. An improvement of positonal accuracy can be achieved by centering.
12xd – 30xd	HM	Yes, a pilot hole is required (see page «Technical notes regarding use of deep hole drills»)

Technical notes regarding use of deep hole drills

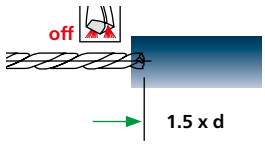
FRAISA SA recommends the following drilling strategy to increase both service life and reliability:

Step 1



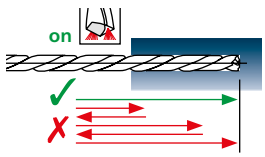
Pilot hole = 1.5 x d.
e.g. Supradrill® U 3xd. B62011.
The pilot hole must be free of chips prior to insertion of the deep-hole drill!

Step 2



Insert the tool into the hole at max. 300 1/min and v_f = 1000mm/min.
Without cooling up to 1 mm from the bottom of the pilot hole.

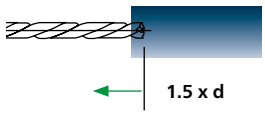
Step 3



Coolant supply on.

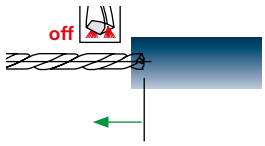
Drill using recommended cutting data and without chip breaking. When drilling **through-holes**, reduce the feed rate by at least 25% before retracting from the hole.

Step 4



Retract the deep-hole drill with double the feed rate (=2 x v_f) – until 1.5 x d after entering the hole. Position as stated in Step 2.

Step 5



Next reduce the spindle speed to max. 300 1/min.
Coolant feed is switched off.
Withdraw the drill from the drilled hole. (max. 1000 mm/min).

SAFETY NOTE

Outside of the drill hole, long deep-hole drills may only turn at a low speed (max. 300 1/min).

Higher spindle speeds can cause such tools to vibrate, leading to spontaneous failure.

Calculation formulas for cutting data

d_1 Diameter of the cutting edge [mm]

v_c Cutting speed [m/min]

f Feed per rotation [mm]

n Spindle speed [min^{-1}]

v_f Feed rate [mm/min]

Q Material removal rate [cm^3/min]

T Primary processing time for the maximum drill depth of the tool [sec]

L Effective drill depth [mm]

Spindle speed	$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$	$\left[\frac{1}{min}\right]$
Cutting speed	$v_c = \frac{d_1 \cdot n \cdot \pi}{1000}$	$\left[\frac{m}{min}\right]$
Feed rate	$v_f = f \cdot n$	$\left[\frac{mm}{min}\right]$
Material removal rate	$Q = \frac{d_1^2 \cdot \pi \cdot v_f}{4 \cdot 1000}$	$\left[\frac{cm^3}{min}\right]$
Primary processing time	$T = \frac{L}{v_f} \cdot 60$	$\left[sec\right]$

Thread cutting tool material codes

Taps

P	Steel 850 - 1100 N/mm² Stainless steel
08	Steel < 850 N/mm²
11	Steel 850 - 1100 N/mm²
15	Steel 1100 - 1500 N/mm²
60	Hardened tool steel 48 - 60 HRC
In	Stainless steel
GG	Cast iron (lamellar/spheroidal)
Al	Aluminium
Ti	Titanium alloys
Ni	Nickel base alloys prec.-hardness
R	Universal Rigid
U	Universal

Cold forming taps

St	Steel
Al	Aluminium
U	Universal

Legend to the product page of thread cutting tools

Thread types

M	Metric coarse thread according to ISO DIN 965 (DIN 13)
MF	Metric fine thread according to ISO DIN 965 (DIN 13)
MJ	MJ thread for aerospace use according to DIN ISO 5855
G	Whitworth pipe thread according to DIN ISO 228
UNC	Unified coarse thread according to ASME B1.1
UNF	Unified fine thread according to ASME B1.1
NPT	Conical american coarse thread according to ANSI B1.20.1
NPTF	Conical american coarse thread according to ANSI B1.20.3
EG M	Metric coarse thread for inserts according to DIN 8140-2

Legend to the product page of thread cutting tools

Application classes / Tolerance positions

ISO 2 (6H)	Tools of application class 2 (ISO 2) are designed for the production of threads with the tolerance fields 4G, 5G, 6H.
ISO 1 (4H)	Tools of application class 1 (ISO 1) are designed for the production of threads with the tolerance fields 4H, 5H.
ISO 3 (6G)	Tools of application class 3 (ISO 3) are designed for the production of threads with the tolerance fields 6G, 7H, 8H.
7G	Tools of application class 7G are preventively designed for the production of threads with the tolerance fields 7G, 8G, where subsequent heat treatment may cause dimensional distortions.
ISO 2 +0,1	Tools of application class 2 (ISO 2) are designed for the production of threads with the tolerance fields 4G, 5G, 6H. For threads which will get a galvanic coating of 0.025 mm thickness the tools are designed with an increased thread tolerance of 0.1 mm.
4H	Tools of application class 4H are designed for the production of threads MJ with the tolerance field 4H (ASME B1.1).
2B	Tools of application 2B are designed for the production of threads with the tolerance field 2B.
6H mod	Tools of application 6H are designed for the production of threads for inserts.

Cutting tool substrate material

HSS PM/F	High-performance cutting tool substrate material, powder metallurgically produced HSS alloys.
HSS-E Co5	High-performance substrate material, conventionally melted HSS alloy. Co-content 5%.
HM MG10	Universal fine-grain carbide. Hardness 1600 HV. Co-content 10%.
HM	Universal fine-grain carbide.

Legend to the product page of thread cutting tools

Thread norm

The teeth profiles of the tool correspond to the specified norm (see «Thread types»).

Form of the shanks

Cylindrical shank execution according to the specified tool norms.

Cylindrical shank execution with flat according to the specified tool norms.

Cylindrical shank execution with square end according to the specified tool norms.

Cylindrical shank execution with square end similar to the specified tool norms.

Cylindrical shank execution with square end according to the specified tool norms.

Cylindrical shank execution with square end.

Bore forms

The thread core bore must have the correct diameter.
(General rule for threading: bore diameter = thread diameter - pitch)

The tool is suitable for the fabrication of blind hole threads.

The tool is suitable for the fabrication of through hole threads.

The tool is suitable for the fabrication of blind hole and through hole threads.

The tool is suitable for the production of conical through and blind hole threads.

i

Legend to the product page of thread cutting tools

Chamfer forms / Lead-in cone forms

Chamfer form for taps according to DIN 2197, table 4, type B.
The pitch number in the chamfer is between 3.5 and 5.

Chamfer form for taps according to DIN 2197, table 4, type C.
The pitch number in the chamfer is between 2 and 3.
Lead-in cone form for thread former according to DIN 2175, table 4: type C.
The length of the lead-in cone is between 2 to 3 times the pitch.

Lead-in cone form for thread former according to DIN 2175, table 4: type E.
The length of the lead-in cone is at most double the pitch.

Chip flow

Tool with chip flow in feed direction.

Tool with chip flow against the feed direction.

Tool for short chipping work piece materials.

Cold forming taps

Tool with polygon profile without lubrication grooves.

Tool with polygon profile with lubrication grooves.

Thread milling cutters

The tool is suitable for the fabrication of internal threads.

The tool is suitable for the fabrication of external threads.

Legend to the product page of thread cutting tools

Application suitability

A blue background means that the tool is particularly suitable for this material.

A light blue background means that the tool has good to adequate suitability for this material.

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Additional material which can be machined is stated in the additional field

Cooling lubricants

For the process of thread cutting and in particular for thread forming a good lubrication is essential. Especially for deeper threads proper lubrication is very important.

Best results for threading can be achieved by using oil (lubrication effect). The machining with an emulsion of at least 5% is also possible.

Wet machining

Dry machining

Oil must be used as lubricant.

Oil with special additives must be used as lubricant.

Choose diameter of the drill hole according to column critical material (see page «Core hole drill sizes»).

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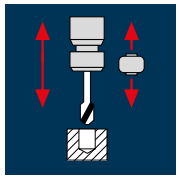
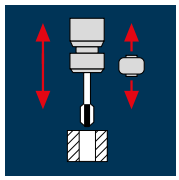
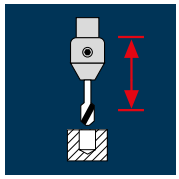
Technical notes regarding use of thread cutting tools

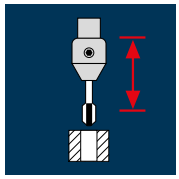




Thread cutting with micro-compensation or rigid tapping

Modern CNC machine tools can synchronize the spindle speed and feed rate. Despite this, microscopic pitch errors can arise. These are compensated by micro-compensation or synchronous tapping attachments and facilitate better results in terms of tool life and quality.



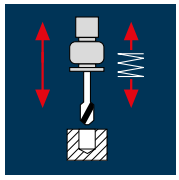


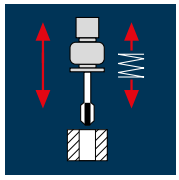
Rigid Tapping

Rigid tapping is designed for modern machines with synchronised spindle drives. All tools have a clamping flat and are used with conventional chucks.

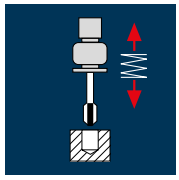
When using Rigid tapping, a sufficient approach distance must be programmed. If the distance is too small, the machine spindle may not be able to properly synchronize with the feed before entering the drillhole. This will result in a pitch error of the thread, even with synchronous working.

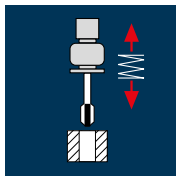
For some machines, it is possible that the recommended spindle speed for synchronous operation cannot be reached. In these cases it is necessary to operate at the highest possible spindle speed where synchronism of the machine is still guaranteed.





Thread cutting with functional performance of the compensation chuck or Rigid Tapping



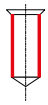


Thread cutting with functional performance of the compensation chuck

A satisfactory compensation function of the chuck must be guaranteed (no jamming). Otherwise, despite the chuck, the thread may be miscut or pitch errors can arise. The torque level of the compensation chuck must be selected according to the thread type and the work piece material.

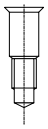
Programming of a too high RPM value can lead to problems. If a RPM is selected which cannot be reached (due to the inertia of the spindle), the result may be premature breakage of the tool or miscutting of the thread. A careful analysis often shows that high spindle speeds do not lead to overall significant time savings.

Technical notes regarding use of thread cutting tools



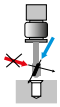
Hardness increase during drilling
For drilling, care has to be taken to ensure that a sharp, intact drill is used. If the wear is already too great, there is a risk that hardening of the periphery will occur during drilling. One result of this hardening may be the tap breaking.

Age or precipitation hardening and upsetting the countersink
When preparing for tapping, quality tools should be used which are adapted to the material. If the counterbore is too worn, the countersink will harden or be upset. This means the tap will encounter problems as soon as it starts to cut. This can lead to breakage right at the beginning. The countersink is important in guiding the tap.

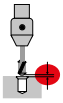


Deeper threads
For deep threads, tools must be chosen with sufficiently long flutes. There is otherwise a risk of tool breakage due to chip build-up, because the chips cannot flow out of the hole. With Rigid Tapping, pecking in several steps can be programmed, in order to shorten the chips. Sufficient cooling is important.

Functional performance of the compensation chuck
A satisfactory compensation function of the chuck must be guaranteed (no jamming). Otherwise, despite the chuck, the thread may be miscut or pitch errors can arise. The torque level of the compensation chuck must be selected according to the thread diameter.



Correctly adjusted coolant jet
A specifically aimed coolant jet is important in tapping work. The direction should be from above, in the direction of the flutes, so that the cooling is also effective at depth. If the coolant jet is not aimed, the problem of heat development in the drillhole arises, with the risk of cold welding-together of the material, which in turn may lead to reduced service life and poor chip formation.



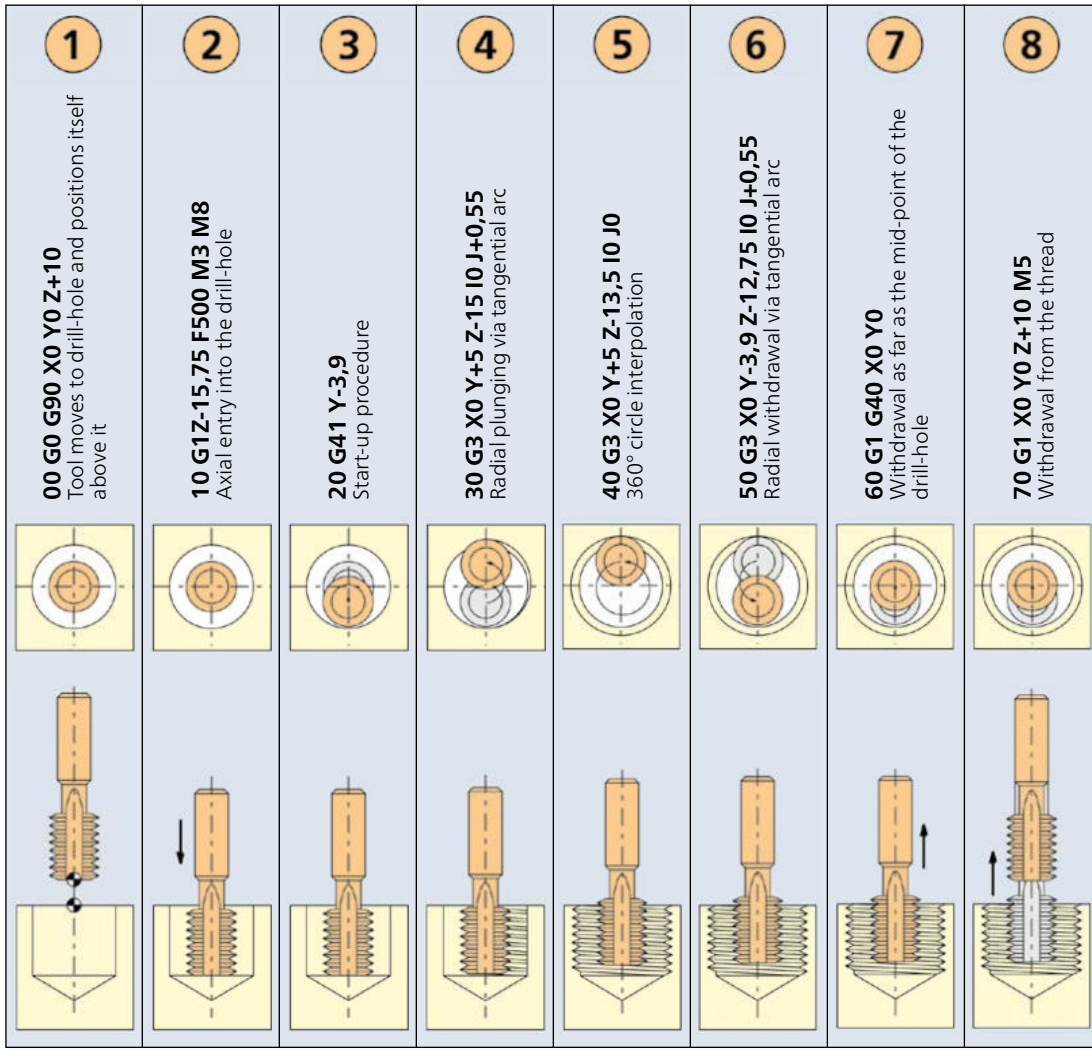
Safety clearance
When using Rigid Tapping, a sufficient approach distance must be programmed. If the clearance is too small, the problem arises of the machine spindle not synchronising with the feed before entering the drillhole. This results in pitch error of the thread, even with synchronous working.

Suitability of the machine
On a number of machines, there is a possibility that the recommended RPM cannot be applied. In this case, the RPM of the machine should be programmed accordingly.

Inconstant RPM
Programming too high RPM can lead to problems: if a RPM is selected which cannot be achieved (due to the inertia of the machine), the result may be premature breakage of the tool or miscutting of the thread. If observed closely, it may often be seen that a high RPM does not in fact produce the time saving which was intended.

Technical notes regarding use of thread milling cutters

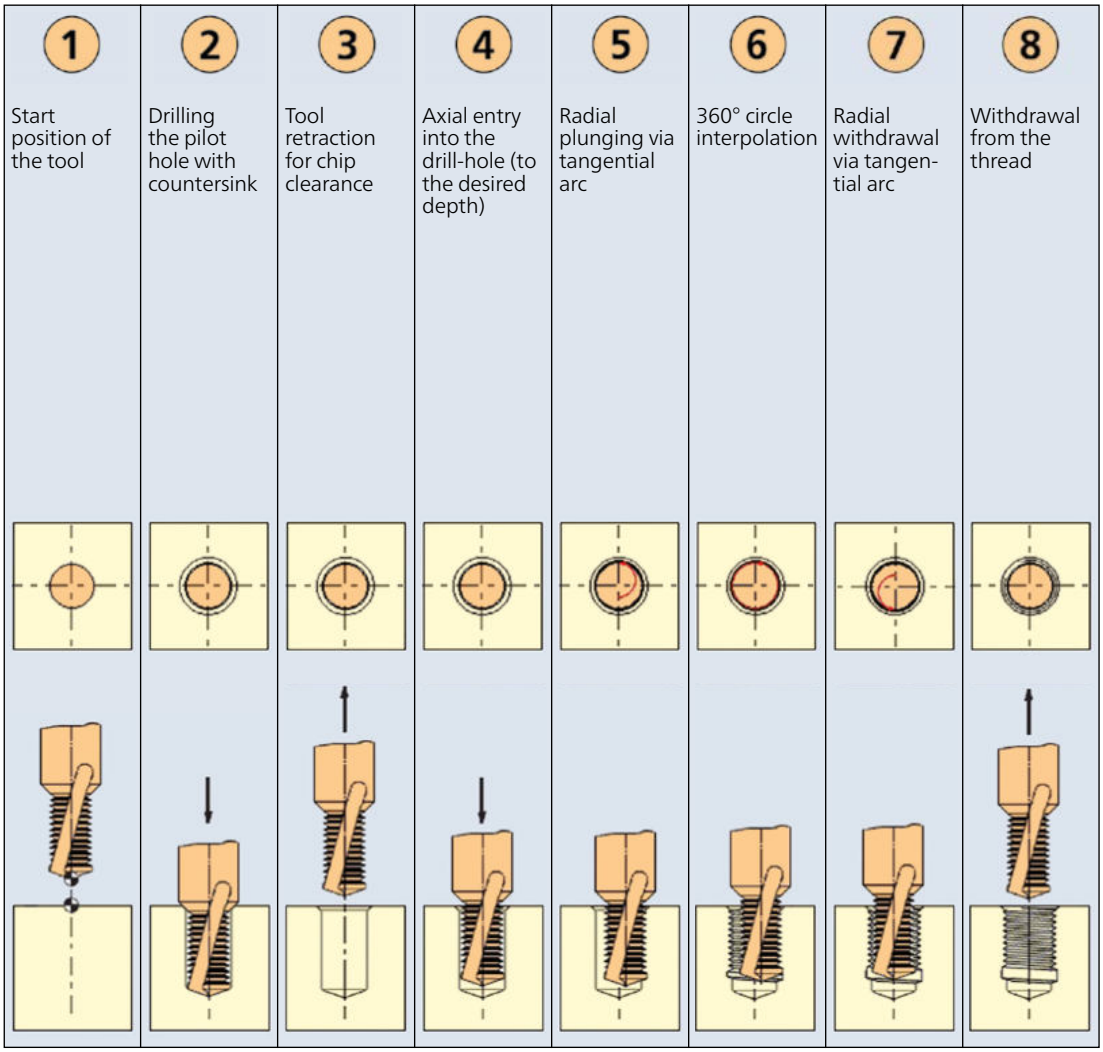
Thread milling cycle for M10 in ISO-code as an example



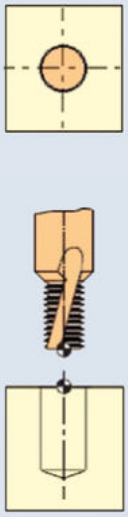
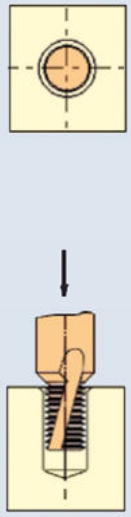
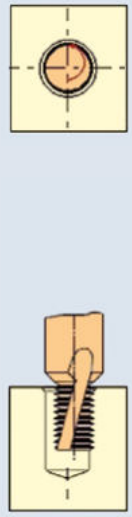
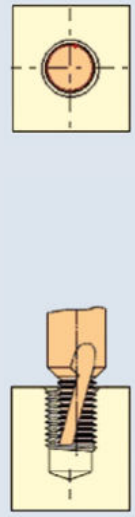
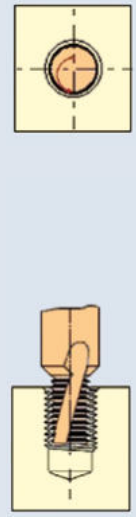
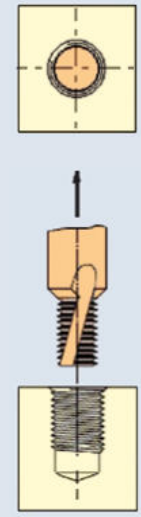
Meaning of the G and M commands used

G0	G1	G3	G40	G41	G90	G91	M3	M5	M8	M9
Linear motion at high speed	Linear motion with feed F in mm/min	Circular arc inter-polation with mid-point (I, J)	Cancel too-radius correction	Tool-radius correction (tool to left of contour)	Absolute-measure-ment pro-gramming	Sequential-measure-ment pro-gramming	Spindle on (right-handed motion)	Spindle off	Cooling on	Cooling off

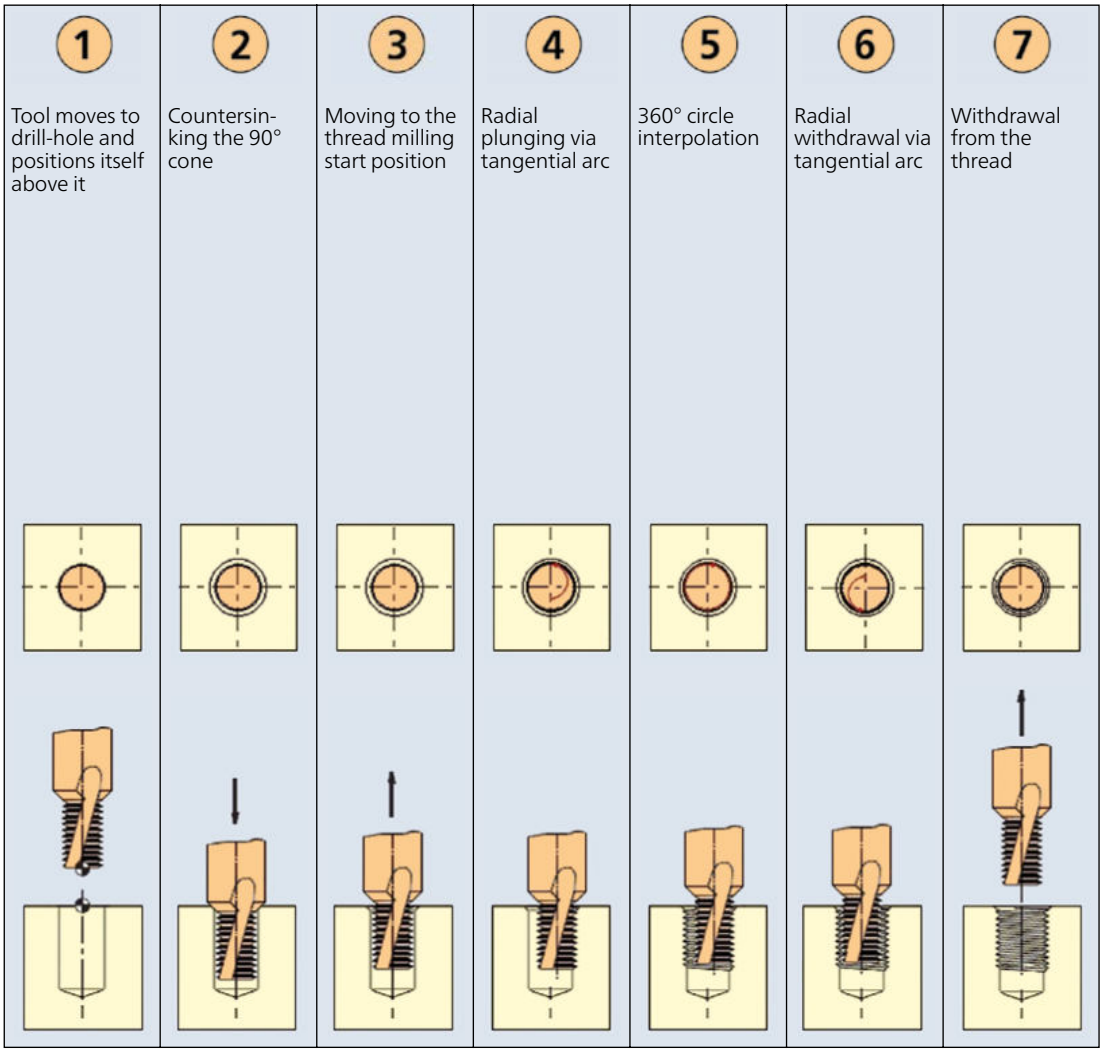
Thread milling cycle for drill / thread milling



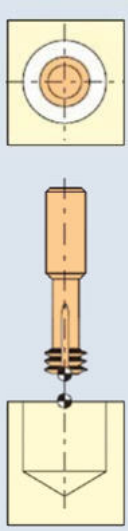
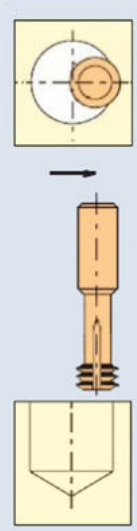
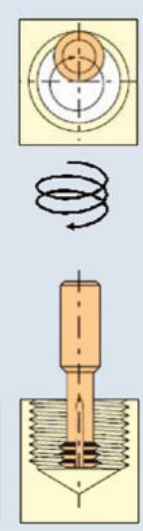
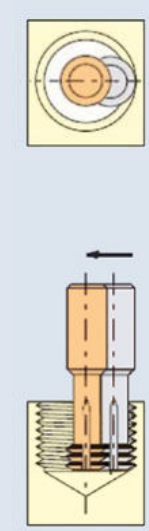
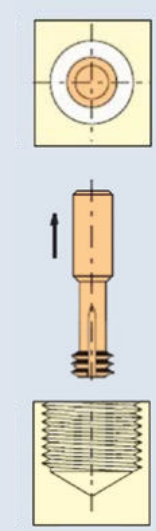
Thread milling cycle for thread milling cutters (recommended machining direction: up-cut milling)

1	2	3	4	5	6
Tool moves to drill-hole and positions itself above it	Moving to the thread milling start position	Radial plunging via tangential arc	360° circle interpolation	Radial withdrawal via tangential arc	Withdrawal from the thread
					

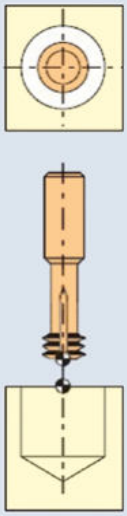
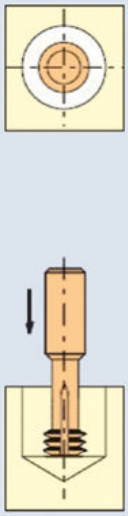
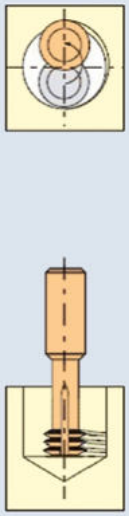
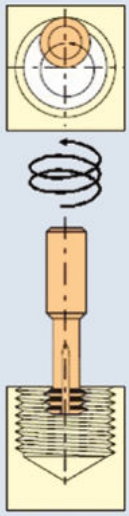
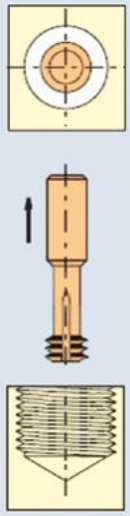
Thread milling cycle for thread milling cutter with chamfer



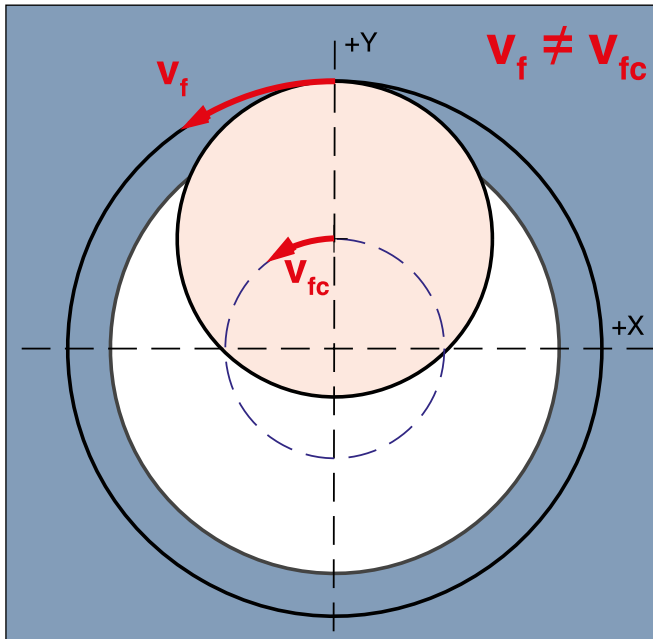
Thread milling cycle for thread milling cutter with chamfer (recommended machining direction)

1	2	3	4	5
Tool moves to drill-hole and positions itself above it	Radial infeed	Generate thread using helical interpolation (to the desired depth)	Radial retraction	Withdrawal from the thread
				

Thread milling cycle for right-handed thread clockwise-rotating with thread whirler

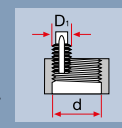
1	2	3	4	5
Tool moves to drill-hole and positions itself above it	Axial entry into the drill-hole (to the desired depth)	Radial plunging via tangential arc	Generate thread using helical interpolation	Withdrawal from the thread
				

Specifying the feed speed



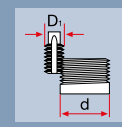
Conversion from feed v_f on the workpiece to the programming feed v_{fc} which is the feed in the tool centre:

For internal threads



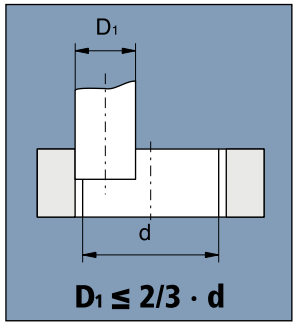
$$v_{fc} = \frac{v_f \cdot (d - D_1)}{d}$$

For external threads



$$v_{fc} = \frac{v_f \cdot (d + D_1)}{d}$$

Avoiding profile distortions



In order to avoid profile distortions, the diameter of the thread milling cutter D_1 must not exceed 2/3 of the nut core diameter d.

The overmeasure of the core drill-hole should be 0.1 to 0.3 mm.

The thread is thereby milled perfectly.

Formulas and abbreviations

a	Dimension of square end
d	Nominal diameter of the thread
d_1	Drilling diameter of the drill / thread milling cutter
d_2	Diameter of the shank
D_1	Diameter of the thread milling cutter
d/D_1	Ratio of diameters for the determination of the feed speed
Rk	Corrected milling cutter radius for ISO 2 (6H) thread tolerance (radius to be programmed in the machine control system)
f_z	Feed per tooth
l	Length of threaded section of the tap / thread former / thread milling cutter
l_1	Neck length of the tap / thread former / thread milling cutter
l_3	Flute length of the tap
L	Overall length of the tap / thread former / thread milling cutter
L_K	Countersinking depth of the thread milling cutter with chamfer
n	Spindle speed
P	Thread pitch
v_c	Cutting speed
v_f	Feed rate
v_{fc}	Feed speed in the tool centre
⬡	Number of flutes on the tap and thread cutter
◯	Number of form edges of cold forming taps
Δ	Diameter differences of the thread flank, the thread outside and the thread core in the application class 2 (ISO 2) according to DIN 22857
R_m	Mechanical tensile strength
HRC	Hardness according to Rockwell C
HV	Hardness according to Vickers
HB	Hardness according to Brinell

Spindle speed	$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi}$	$\left[\frac{1}{min}\right]$
Cutting speed	$v_c = \frac{d \cdot \pi \cdot n}{1000}$	$\left[\frac{m}{min}\right]$
Feed rate Taps	$v_f = P \cdot n$	$\left[\frac{mm}{min}\right]$
Feed rate Thread milling cutters	$v_f = f_z \cdot z \cdot n$	$\left[\frac{mm}{min}\right]$

Core hole drill sizes

M

ø	P	Max. dimension	Standard	Critical material	*
1.0	0.25	0.785	0.75	0.80	*
1.2	0.25	0.985	0.95	1.00	*
1.4	0.30	1.142	1.10	1.15	*
1.6	0.35	1.321	1.25	1.30	
1.7	0.35	1.421	1.35	1.40	
1.8	0.35	1.521	1.45	1.50	
2.0	0.40	1.679	1.60	1.70	
2.2	0.45	1.838	1.75	1.85	*
2.3	0.40	1.979	1.90	1.95	
2.5	0.45	2.138	2.05	2.10	
2.6	0.45	2.238	2.15	2.20	
3.0	0.50	2.599	2.50	2.60	*
3.5	0.60	3.010	2.90	3.00	
4.0	0.70	3.422	3.30	3.40	
4.5	0.75	3.878	3.75	3.90	*
5.0	0.80	4.334	4.20	4.30	
6.0	1.00	5.153	5.00	5.10	
7.0	1.00	6.153	6.00	6.10	
8.0	1.25	6.912	6.80	6.90	
10.0	1.50	8.676	8.50	8.60	
12.0	1.75	10.441	10.20	10.40	
14.0	2.00	12.210	12.00	12.20	
16.0	2.00	14.210	14.00	14.20	
18.0	2.50	15.744	15.50	15.70	
20.0	2.50	17.744	17.50	17.70	
22.0	2.50	19.744	19.50	19.70	
24.0	3.00	21.252	21.00	21.20	
27.0	3.00	24.252	24.00	24.20	
30.0	3.50	26.771	26.50	26.70	
33.0	3.50	29.771	29.50	29.70	
36.0	4.00	32.270	32.00	32.20	
39.0	4.00	35.270	35.00	35.20	
42.0	4.50	37.799	37.50	37.70	

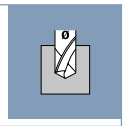
MF

ø	P	Max. dimension	Standard	Critical material	*
2.5	0.35	2.221	2.15	2.20	
3.0	0.35	2.721	2.65	2.70	
3.5	0.35	3.221	3.15	3.20	
4.0	0.50	3.599	3.50	3.60	*
5.0	0.50	4.599	4.50	4.60	*
6.0	0.50	5.599	5.50	5.60	*
8.0	0.50	7.599	7.50	7.60	*
10.0	0.50	9.599	9.50	9.60	*
6.0	0.75	5.378	5.20	5.30	
7.0	0.75	6.378	6.25	6.30	
8.0	0.75	7.378	7.20	7.30	
10.0	0.75	9.378	9.20	9.30	
12.0	0.75	11.378	11.30	11.40	*
14.0	0.75	13.378	13.30	13.40	*
16.0	0.75	15.378	15.30	15.40	*
8.0	1.00	7.153	7.00	7.10	
9.0	1.00	8.153	8.00	8.10	
10.0	1.00	9.153	9.00	9.10	
12.0	1.00	11.153	11.00	11.10	
13.0	1.00	12.153	12.00	12.10	
14.0	1.00	13.153	13.00	13.10	
15.0	1.00	14.153	14.00	14.10	
16.0	1.00	15.153	15.00	15.10	
17.0	1.00	16.153	16.00	16.10	
18.0	1.00	17.153	17.00	17.10	
20.0	1.00	19.153	19.00	19.10	
10.0	1.25	8.912	8.80	8.90	
12.0	1.25	10.912	10.80	10.90	
14.0	1.25	12.912	12.80	12.90	
16.0	1.25	14.912	14.80	14.90	
12.0	1.50	10.676	10.50	10.70	*
14.0	1.50	12.676	12.50	12.70	*
16.0	1.50	14.676	14.50	14.70	*
18.0	1.50	16.676	16.50	16.70	*
20.0	1.50	18.676	18.50	18.70	*
22.0	1.50	20.676	20.50	20.70	*
24.0	1.50	22.676	22.50	22.70	*

* The given dimension is out of norm

Core hole drill sizes

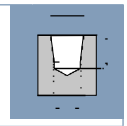
MJ



ø	P	Max. dimension	Standard	Critical material*	
2.0	0.40	1.722	1.65	1.70	
2.5	0.45	2.187	2.10	2.20	*
3.0	0.50	2.653	2.60	2.65	
4.0	0.70	3.498	3.40	3.50	*
5.0	0.80	4.421	4.30	4.40	
6.0	1.00	5.216	5.10	5.20	
8.0	1.00	7.216	7.10	7.20	
10.0	1.25	8.994	8.90	9.00	*

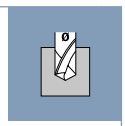
Rc

Rc 1:16 Conical reaming of the hole with a conical reamer 1:16



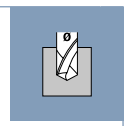
ø	P(TPI)	ø	D max	D min	L min
1/16	28	6.10	6.605	6.515	11.90
1/8	28	8.10	8.615	8.525	11.90
1/4	19	10.80	11.505	11.395	17.70
3/8	19	14.30	15.005	14.895	18.10
1/2	14	17.80	18.695	18.565	24.00
3/4	14	23.00	24.185	24.055	25.30

G



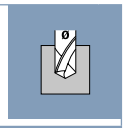
ø	P	Max. dimension	Standard	Critical material*	
1/8	28	8.848	8.80	8.85	*
1/4	19	11.890	11.80	11.90	*
3/8	19	15.395	15.25	15.40	*
1/2	14	19.172	19.00	19.20	*
5/8	14	21.128	21.00	21.10	
3/4	14	24.658	24.50	24.60	

BSW



ø	P	Max. dimension	Standard	Critical material*	
1/8	40	2.591	2.50	2.60	*
3/16	24	3.745	3.60	3.70	
1/4	20	5.156	5.10	5.10	
5/16	18	6.588	6.50	6.60	*
3/8	16	7.988	7.90	8.00	*
7/16	14	9.332	9.20	9.30	
1/2	12	10.589	10.50	10.60	*
5/8	11	13.558	13.50	13.50	
3/4	10	16.484	16.20	16.50	*
7/8	9	19.355	19.20	19.30	
1	8	22.1492	22.00	22.10	

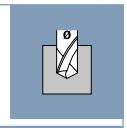
Rp



ø	P	Max. dimension	Standard	Critical material*
1/8	28	8.637	8.60	8.60
1/4	19	11.549	11.50	11.50
3/8	19	15.054	15.00	15.00
1/2	14	18.773	18.50	18.70
3/4	14	24.259	24.00	24.20

W zyl.

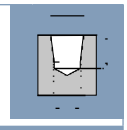
Cylindrical drilling



ø	P	Max. dimension	Standard	Critical material*
21.80	14	20.066	19.80	20.00
24.32	14	22.586	22.30	22.50

W kon.

W kon 3:25 Conical reaming of the hole with a conical reamer 3:25

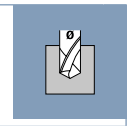


ø	P(TPI)	ø	D max	D min	L min
19.80	14	14.60	16.880	16.760	23.50
28.80	14	22.60	25.480	25.360	28.50

* The given dimension is out of norm

Core hole drill sizes

UNC

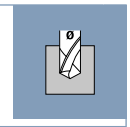


ø	P	Max. dimension	Standard	Critical material*	
1	64	1.582	1.55	1.60	*
2	56	1.872	1.85	1.90	*
3	48	2.146	2.10	2.15	*
4	40	2.385	2.35	2.40	*
5	40	2.697	2.65	2.70	*
6	32	2.896	2.85	2.90	*
8	32	3.531	3.50	3.50	
10	24	3.962	3.90	4.00	*
12	24	4.597	4.50	4.60	*
1/4	20	5.258	5.10	5.20	
5/16	18	6.731	6.60	6.70	
3/8	16	8.153	8.00	8.10	
7/16	14	9.550	9.40	9.50	
1/2	13	11.024	10.80	11.00	
9/16	12	12.446	12.20	12.40	
5/8	11	13.868	13.50	13.80	
3/4	10	16.840	16.50	16.80	
7/8	9	19.761	19.50	19.70	
1	8	22.601	22.30	22.60	

UNF

ø	P	Max. dimension	Standard	Critical material*	
0	80	1.306	1.25	1.30	
1	72	1.613	1.55	1.60	
2	64	1.913	1.85	1.90	
3	56	2.197	2.15	2.20	*
4	48	2.459	2.40	2.45	
5	44	2.741	2.70	2.75	*
6	40	3.023	2.95	3.00	
8	36	3.607	3.50	3.60	
10	32	4.166	4.10	4.20	*
12	28	4.727	4.60	4.70	
1/4	28	5.588	5.50	5.60	*
5/16	24	7.036	6.90	7.00	
3/8	24	8.636	8.50	8.60	
7/16	20	10.033	9.90	10.00	
1/2	20	11.608	11.50	11.60	
9/16	18	13.081	12.90	13.00	
5/8	18	14.681	14.50	14.70	*
3/4	16	17.678	17.50	17.70	*
7/8	14	20.675	20.50	20.70	*
1	12	23.571	23.30	23.50	

UNJC



ø	P	Max. dimension	Standard	Critical material*	
4	40	2.392	2.30	2.40	*
6	32	2.938	2.85	2.90	
8	32	3.599	3.50	3.60	*
10	24	4.064	3.90	4.00	
1/4	20	5.387	5.25	5.40	*
5/16	18	6.832	6.70	6.80	
3/8	16	8.257	8.10	8.20	

UNJF

ø	P	Max. dimension	Standard	Critical material*	
6	40	3.053	3.00	3.05	
8	36	3.662	3.55	3.60	
10	32	4.254	4.15	4.20	
1/4	28	5.661	5.55	5.60	
5/16	24	7.109	7.00	7.10	
3/8	24	8.679	8.60	8.70	*

UNEF

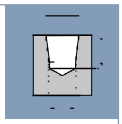
ø	P	Max. dimension	Standard	Critical material*	
1/4	32	5.689	5.60	5.70	*
5/16	32	7.264	7.20	7.30	*
3/8	32	8.864	8.80	8.90	*
7/16	28	10.337	10.20	10.30	
1/2	28	11.938	11.80	11.90	
9/16	24	13.385	13.20	13.40	*
5/8	24	14.986	14.80	15.00	*
11/16	24	16.560	16.40	16.50	
3/4	20	17.957	17.80	18.00	*
7/8	20	21.132	21.00	21.10	
1	20	24.307	24.20	24.30	

* The given dimension is out of norm

Core hole drill sizes

NPT

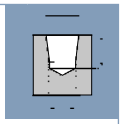
1:16 Conical reaming of the hole with a conical reamer 1:16



ø	P(TPI)	ø	D max	D min	L min
1/16	27	6.00	6.440	6.390	12.00
1/8	27	8.30	8.790	8.740	12.00
1/4	18	10.80	11.410	11.360	17.50
3/8	18	14.20	14.850	14.800	17.60
1/2	14	17.50	18.370	18.320	22.90
3/4	14	22.80	23.720	23.670	23.00
1	11.5	28.60	29.740	29.690	27.40

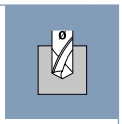
NPTF

1:16 Conical reaming of the hole with a conical reamer 1:16



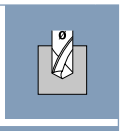
ø	P(TPI)	ø	D max	D min	L min
1/16	27	6.00	6.460	6.410	12.00
1/8	27	8.30	8.810	8.760	12.00
1/4	18	10.80	11.450	11.400	17.50
3/8	18	14.20	14.890	14.840	17.60
1/2	14	17.50	18.380	18.330	22.90
3/4	14	22.80	23.730	23.680	23.00
1	11.5	28.60	29.770	29.720	27.40

NPSM



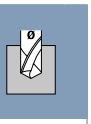
ø	P	Max. dimension	Standard	Critical material*
1/8	27	9.246	9.10	9.20
1/4	18	12.217	12.00	12.20
3/8	18	15.545	15.50	15.50
1/2	14	19.279	19.00	19.20
3/4	14	24.638	24.50	24.60

PG



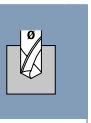
ø	P	Max. dimension	Standard	Critical material*
7	20	11.430	11.40	11.40
9	18	14.010	14.00	14.00
11	18	17.410	17.30	17.40
13.5	18	19.210	19.10	19.20
16	18	21.310	21.25	21.30

EG M



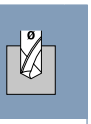
ø	P	Max. dimension	Standard	Critical material*	
2.0	0.40	2.177	2.15	2.20	*
2.5	0.45	2.697	2.65	2.70	*
3.0	0.50	3.220	3.15	3.20	
4.0	0.70	4.292	4.20	4.30	*
5.0	0.80	5.334	5.25	5.30	
6.0	1.00	6.407	6.30	6.40	
8.0	1.25	8.483	8.40	8.50	*
10.0	1.50	10.560	10.40	10.50	
12.0	1.75	12.644	12.50	12.60	
14.0	2.00	14.733	14.50	14.70	
16.0	2.00	16.733	16.50	16.70	

EG MF



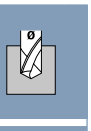
ø	P	Grösstmass	Standard	Critical material*
8.0	1.00	8.407	8.30	8.40
10.0	1.00	10.407	10.30	10.40
12.0	1.50	12.560	12.50	12.50
14.0	1.50	14.560	14.50	14.50
16.0	1.50	16.560	16.50	16.50

EG UNC



ø	P	Max. dimension	Standard	Critical material*	
4	40	3.178	3.10	3.20	*
6	32	3.879	3.80	3.90	*
8	32	4.523	4.40	4.50	
10	24	5.283	5.20	5.30	*
1/4	20	6.872	6.70	6.90	*
5/16	18	8.490	8.40	8.50	*
3/8	16	10.126	10.00	10.10	
1/2	13	13.393	13.30	13.40	*

EG UNF



ø	P	Max. dimension	Standard	Critical material*	
6	40	3.815	3.70	3.80	
8	36	4.496	4.40	4.50	*
10	32	5.184	5.10	5.20	*
1/4	28	6.720	6.60	6.70	
5/16	24	8.351	8.30	8.40	*
3/8	24	9.931	9.80	9.90	
7/16	20	11.587	11.50	11.60	*
1/2	20	13.176	13.10	13.20	*

* The given dimension is out of norm

passion
for precision
fraisa

Hardness conversion table (R_m → HV10 → HB → HRC)

R_m [N/mm²]	HV 10	HB	HRC		R_m [N/mm²]	HV 10	HB	HRC
240	75	71			920	287	273	28
255	80	76			940	293	278	29
270	85	81			970	302	287	30
285	90	86			995	310	295	31
305	95	90			1020	317	301	32
320	100	95			1050	327	311	33
335	105	100			1080	336	319	34
350	110	105			1110	345	328	35
370	115	109			1140	355	337	36
385	120	114			1170	364	346	37
400	125	119			1200	373	354	38
415	130	124			1230	382	363	39
430	135	128			1260	392	372	40
450	140	133			1300	403	383	41
465	145	138			1330	413	393	42
480	150	143			1360	423	402	43
495	155	147			1400	434	413	44
510	160	152			1440	446	424	45
530	165	157			1480	458	435	46
545	170	162			1530	473	449	47
560	175	166			1570	484	460	48
575	180	171			1620	497	472	49
595	185	176			1680	514	488	50
610	190	181			1730	527	501	51
625	195	185			1790	544	517	52
640	200	190			1845	560	532	53
660	205	195			1910	578	549	54
675	210	199			1980	596	567	55
690	215	204			2050	615	584	56
705	220	209			2140	639	607	57
720	225	214				655	622	58
740	230	219				675		59
755	235	223				698		60
770	240	228				720		61
785	245	233				745		62
800	250	238	22			773		63
820	255	242	23			800		64
835	260	247	24			829		65
860	268	255	25			864		66
870	272	258	26			900		67
900	280	266	27			940		68

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(●) Associated companies.
To find your **contact** and our **conditions** refer to **www.fraisa.com.**

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Article list – Drilling tools

Example: Article: B62015

Article-N°.: B62015
Coating: NANO-U²
Page: 17

Article-N°.		Coating							
INDEX		without	U-4XD	NANO-U²	DURO-VD	DURO-X	DURO-SD	DURO-D²	DIAPLUS
Chemical composition			TiAlCN	AlTiN	AlTiSiN	TiAlN/TiN	AlTiN	AlTiN/TiN	C
Hardness [HV]			3200	3700	3500	3300	3600	3300	10000
Max. temp. [°C]			650	1100	1100	900	880	900	600
B52020	97						●		
B52112	75				●				
B52801	123							●	
B52915	101							●	
B52920	103							●	
B52925	105							●	
B52930	107							●	
B53020	97						●		
B57014	109						●		
B57015	115						●		
B57020	119						●		
B62011	61			●					
B62014	35			●					
B62015	17			●					
B63011	61			●					
B63014	35			●					
B63015	17			●					
B72011	65					●			
B72015	45					●			
B72020	87					●			
B92008	129		●						
B92020	127		●						
B92040	125		●						
B92310	131		●						

Article list – Thread cutting tools

Example: Article: EH27500

Article-N°.: EH27500
Coating: TiCN
Page: 139

Article-N°.		Coating							
INDEX		E	EC	EK	EH	ET	EI	EF	EL
		without	AlCrTiN	TiAlN	TiCN	TRIBO	INTEGRAL	F-DLC	LONGCUT
Chemical composition			AlCrTiN	TiAlN	TiCN	TiAlN	TiAlN	DLC	AlCrN
Hardness [HV]			3000	3400	3000	3000	3500	2800	3200
Max. temp. [°C]			600	450	400	300	1000	500	1100
_ 0020	227						●		
_ 0021	227						●		
_ 0050	229						●		
_ 0051	229						●		
_ 0100	195				●				
_ 0101	195				●				
_ 0109	245				●				
_ 0110	247				●				
_ 0229	249				●				
_ 0230	251				●				
_ 0504	273				●				
_ 0505	273				●				
_ 0512	205				●				
_ 0513	205				●				
_ 0572	275				●				
_ 0573	275				●				
_ 0580	199				●				
_ 0580	211					●			
_ 0581	199				●				
_ 0581	211					●			
_ 0590	201				●				
_ 0590	213					●			
_ 0591	203				●				
_ 0591	215					●			
_ 0595	207				●				
_ 0596	207				●				
_ 0598	243	●							
_ 0599	285	●							
_ 0600	217				●				
_ 0601	217				●				
_ 0620	219				●				
_ 0621	219				●				
_ 0705	237					●			
_ 0706	239					●			
_ 0755	241					●			
_ 0756	241					●			
_ 1240	297					●			
_ 1241	299					●			
_ 1257	289				●				
_ 1258	291				●				
_ 1260	293				●				

Article-N°.		Coating							
INDEX		E	EC	EK	EH	ET	EI	EF	EL
		without	AlCrTiN	TiAlN	TiCN	TRIBO	INTEGRAL	F-DLC	LONGCUT
_ 1260	301					●			
_ 1261	295				●				
_ 1261	303					●			
_ 1440	311					●			
_ 1472	307				●				
_ 1475	309				●				
_ 1475	313					●			
_ 6100	333				●				
_ 6101	333				●				
_ 6300	231				●				
_ 6301	233				●				
_ 6350	235				●				
_ 6351	235				●				
_ 6500	221				●				
_ 6501	223				●				
_ 6550	225				●				
_ 6551	225				●				
_ 6900	209				●				
_ 6901	209				●				
_ 10040	343				●				
_ 10041	343				●				
_ 10060	329							●	
_ 10061	331							●	
_ 10070	339				●				
_ 10071	341				●				
_ 10080	335								●
_ 10081	337								●
_ 10110	277	●							
_ 10114	281	●							
_ 10115	281	●							
_ 10118	269	●							
_ 10119	269	●							
_ 10122	265	●							
_ 10123	265	●							
_ 10214	279	●							
_ 10218	283	●							
_ 10219	283	●							
_ 10220	271	●							
_ 10221	271	●							
_ 10222	267	●							
_ 10223	267	●							
_ 10310	197				●				
_ 10311	197				●				
_ 10340	261	●							
_ 10350	263	●							
_ 10540	191		●						
_ 10541	191		●						
_ 10550	193		●						
_ 10551	193		●						
_ 10800	253	●							
_ 10801	255	●							
_ 10820	257	●							
_ 10821	259	●							
_ 11670	317			●					
_ 11671	317			●					
_ 11680	319			●					
_ 11681	319			●					
_ 11955	323	●							
_ 11965	325	●							
_ 20300	149				●				
_ 20306	149				●				
_ 20320	151				●				
_ 20326	151				●				
_ 20340	153				●				
_ 20360	155				●				
_ 20370	157				●				

Article-N°.		Coating							
INDEX		E	EC	EK	EH	ET	EI	EF	EL
		without	AlCrTiN	TiAlN	TiCN	TRIBO	INTEGRAL	F-DLC	LONGCUT
_ 20380	159				●				
_ 20390	161				●				
_ 22200	179	●			●				
_ 22300	177	●			●				
_ 24200	173				●				
_ 24220	175				●				
_ 24300	163				●				
_ 24320	165				●				
_ 24340	167				●				
_ 24360	169				●				
_ 24370	171				●				
_ 26020	181				●				
_ 26040	183				●				
_ 27500	139				●				
_ 27502	141				●				
_ 27504	143						●		
_ 27540	145				●				
_ 27560	147				●				

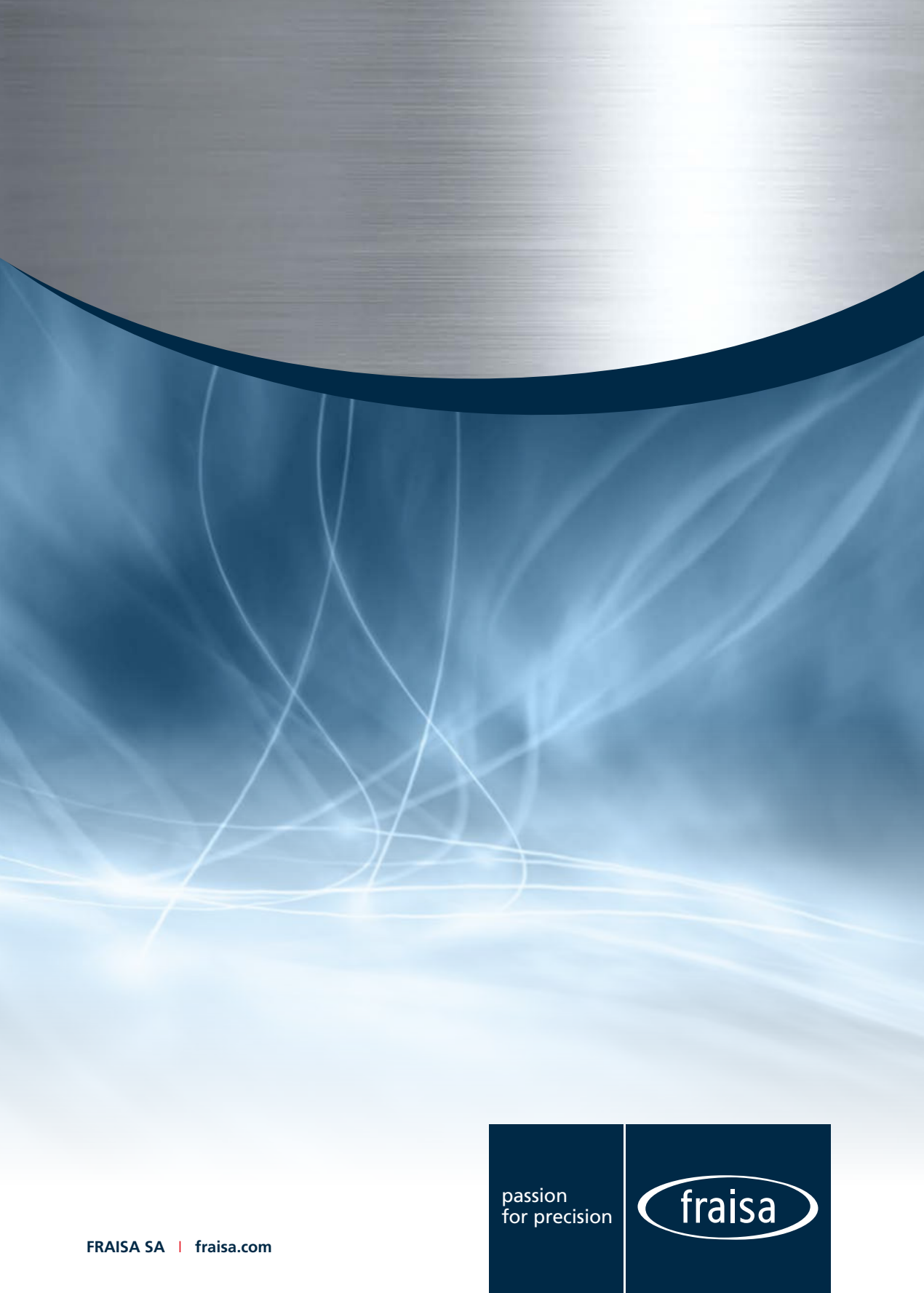
Notes

Notes

Notes

Notes

Notes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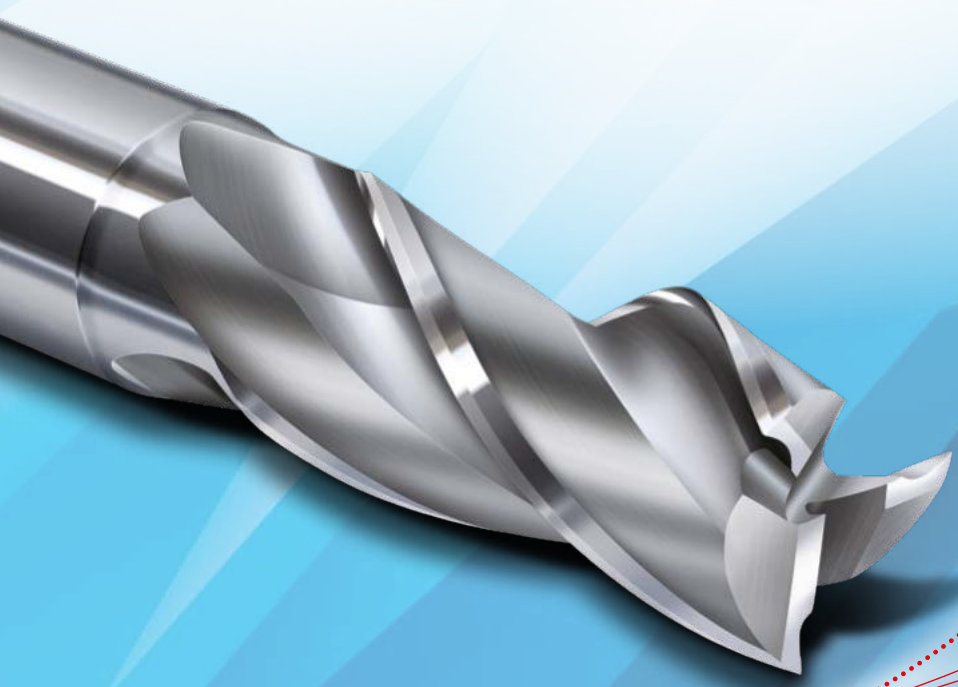
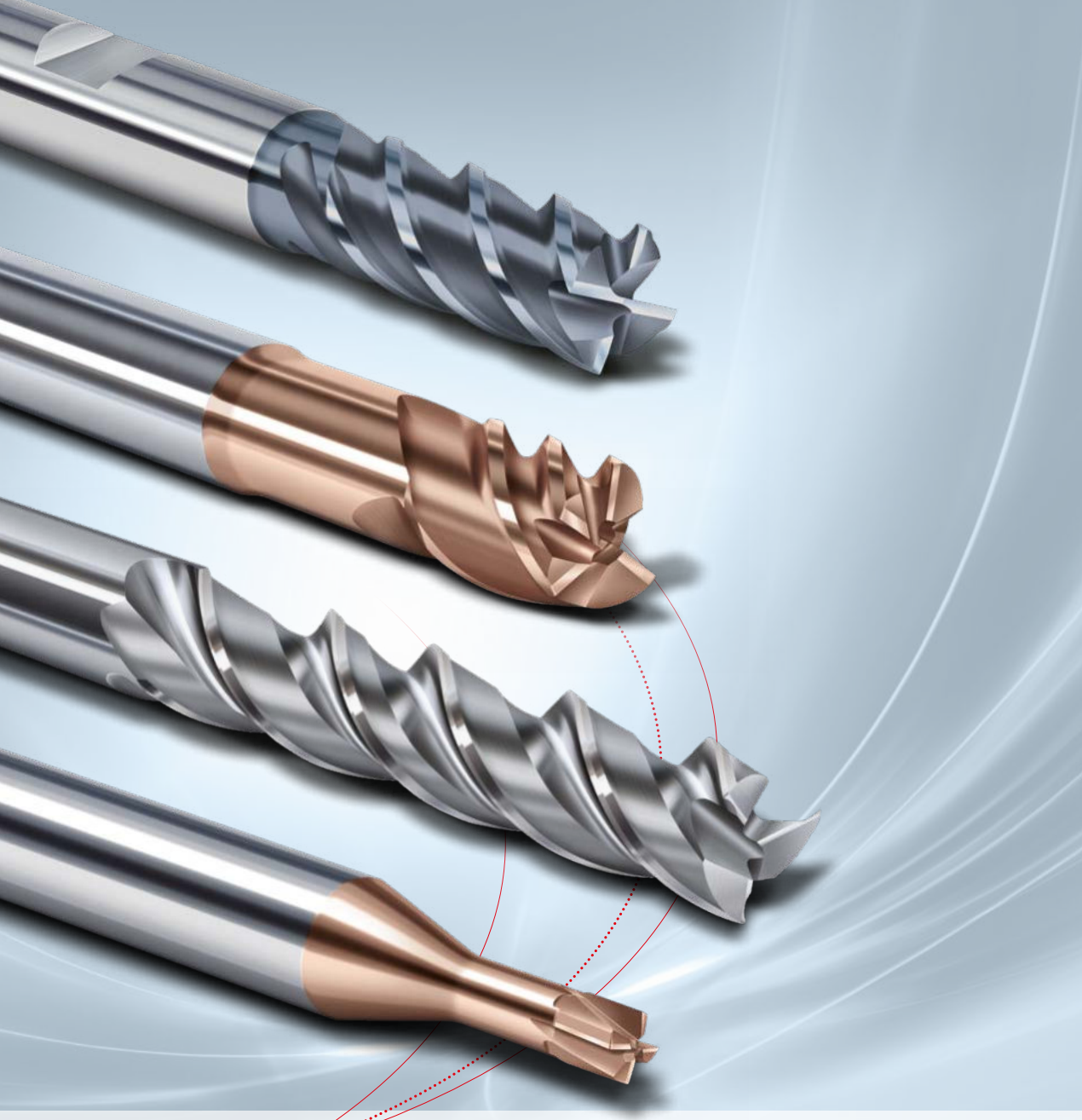
High-performance milling tools



PRODUCTS

- Largest range of European-made, solid-carbide milling tools
- Leading innovator: 7 % of turnover reinvested in R&D
- Trendsetter in HSC, HPC, HDC and MFC
  (HSC: High Speed Cutting; HPC: High Performance Cutting;
  HDC: High Dynamic Cutting; MFC: Multi-functional Cutting)
- Perfection is our passion

E-Cut milling process:
www.fraisa.com/qr/env47



PRODUCTS

FRAISA ReTool®

- Industrial tool reconditioning with performance guarantee for FRAISA and third-party tools
- Largest European service center for solid-carbide milling tools in Willich, Germany
- Over 30 years' experience in tool reconditioning and around 360,000 reconditioned tools every year.
  State-of-the-art CNC grinding center and own systems for cutting-edge preparation and coating
- Cost savings thanks to producibility, 100% performance and maximum substrate retention
- Environmentally significant savings of 50,000 kg of tungsten and 5,000 kg of cobalt every year thanks to industrial tool reconditioning and recycling of tools that can no longer be reconditioned

FRAISA ReTool®:
www.fraisa.com/qr/env7

FRAISA ReTool®

LOGISTICS

- Trendsetter in FRAISA ToolCare® tool management systems: 22 years' experience, 800 installed systems
- FRAISA ToolCareSecure: 100 % ability to deliver – guaranteed!
- FRAISA ToolCareConcept: order special tools like standard production items
- E-shop: simple ordering process at any time of the day or night
- Next-day delivery to anywhere in Europe, China and the USA

FRAISA ToolCare® 2.1:
www.fraisa.com/qr/env5

LOGISTICS

APPLICATION TECHNOLOGY

- 47 years' experience in milling technology data
- ToolSchool: 19 years of added value thanks to extensive Know-how transfer and training for more than 29,000 clients
- Accurate and dependable application information for each individual FRAISA tool
- FRAISA ToolExpert®: online access to application data for all FRAISA milling tools and strategies
- Unique presentation of application data directly in the catalogue

FRAISA ToolExpert®:
www.fraisa.com/qr/enw60

APPLICATION

PERSONAL CUSTOMER CONTACT

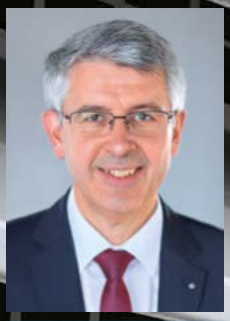
- Outstanding expertise thanks to regular and intensive professional training of our own customer service representatives
- Customer contact exclusively through in-house representatives and FRAISA-qualified sales partners
- FRAISA customer service representatives are experienced milling technology specialists
- Fast and efficient information transfer regarding products and technologies by means of online seminars
- National sales and distribution companies in Germany, France, Italy, Hungary, the USA, China and Switzerland
- Short communication channels from the customer service representatives to company management thanks to our medium-sized structure and transparent organization

ToolSchool:
www.fraisa.com/qr/env8

CUSTOMER CONTACT

SUSTAINABILITY

- 3R principle (Reduce, Reuse, Recycle): Reduction of the ecological footprint in life cycle management with innovative tools, optimum cutting data, recycling, and recovery of raw materials
- Sustainable production processes thanks to the latest technology, such as free cooling, photovoltaic systems, waste heat recovery, and oil treatment
- Long-term goal: To reduce the ecological footprint to net zero



"Industrial production can and must be **ecologically, economically and socially sustainable!"**

Josef Maushart | **FRAISA SA**
Chairman of the Board of Directors and Chief Executive Officer

SUSTAINABILITY

Replace edition 2022

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End milling tools for steel, stainless steel, titanium and nickel
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End milling tools for 3D machining
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End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version

N° 8504 / 8604	**HX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	**HRC** 48- >60	**HSS**		35
N° 8500 / 8600	**NX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	37
N° 15222 / 15322	**NX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	39
N° 8700 / 8800	**ZX**	X-Generation X	Roughing Finishing	d_1 3 – 20 r	**Ni-/Mn-** Alloys	**Ti** Titanium		41
N° 8705 / 8805	**ZX**	X-Generation X	Roughing Finishing	d_1 6 – 20 r	**Ni-/Mn-** Alloys	**Ti** Titanium		43
N° 8506 / 8606	**SX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	**Inox** Stainless			45
N° 8508 / 8608	**SX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	**Inox** Stainless	**Ni-** Alloys		47
N° 8101 / 8201	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	49
N° 8102 / 8202	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	51
N° 8105 / 8205	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	53
N° 8100 / 8200	**NVDS**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	55
N° 8304 / 8404	**NVS**	Base-X B	Roughing Finishing	d_1 2 – 20 r	**Rm** <850-1100	**Inox** Stainless		57
N° 15207 / 15307	**NVD**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	59
N° 8300 / 8400	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 1 – 20 r	**Rm** <850-1500	**Inox** Stainless		61
N° 8305 / 8405	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**Inox** Stainless		63

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version

N° 5255 / 5355		Base-X B	Roughing Finishing	d_1 3 – 20 45°	Rm <850-1100	Inox Stainless	Ti Titanium	65
N° 8303 / 8403	E-Cut	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 1 – 20 r	Rm <850-1500	Inox Stainless		67
N° 46200 / 46300		Favora® F	Roughing HPC Roughing HDC Finishing	d_1 1 – 20 r	Rm <850-1100	Inox Stainless		69
N° 45225 / 45325		Favora® F	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 45°	Rm <850-1100	Inox Stainless		71
N° 45217 / 45317 ToolSchool		Favora® F	Roughing Finishing	d_1 1 – 25 45°	Rm <850-1100	Inox Stainless		73
N° 45255 / 45355		Favora® F	Roughing Finishing	d_1 3 – 20 45°	Rm <850-1100	Inox Stainless	Ti Titanium	75
N° 45233 / 45333		Favora® F	Roughing Finishing	d_1 2 – 20 45°	Rm <850-1100	Inox Stainless		77
N° 0110		HSS	Roughing Finishing	d_1 1 – 40 90°	Rm <850-1100			81
N° 0780		HSS	Roughing Finishing	d_1 1 – 25 90°	Rm <850-1100			85

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version with neck

N° 15242 / 15342

N° 5225 / 5325

NX

X-Generation X	Roughing / Finishing	d_1 4 – 20, 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	89
Base-X B	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1300	**Inox** Stainless		91

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Medium length version

N° 8514 / 8614	**HX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	**HRC** 48- >60	**HSS**		93
N° 15223 / 15323	**NX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	95
N° 8516 / 8616	**SX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	**Inox** Stainless			97
N° 8518 / 8618	**SX**	X-Generation X	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	**Inox** Stainless	**Ni-** Alloys		99
N° 8111 / 8211	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	101
N° 8112 / 8212	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	103
N° 8115 / 8215	**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	105
N° 15210 / 15310	**NVD**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	107
N° 15208 / 15308	**NVD**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	109
N° 8310 / 8410	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 2 – 20 r	**Rm** <850-1500	**Inox** Stainless		111
N° 8315 / 8415	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 4 – 20 r	**Rm** <850-1500	**Inox** Stainless		113
N° 8313 / 8413	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 2 – 20 r	**Rm** <850-1500	**Inox** Stainless		115
N° 46210 / 46310		Favora® F	Roughing HPC Roughing HDC Finishing	d_1 2 – 20 r	**Rm** <850-1100	**Inox** Stainless		117
N° 45226 / 45326		Favora® F	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 45°	**Rm** <850-1100	**Inox** Stainless		119

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Medium length version

N° 45234 / 45334

Favora® F	Roughing Finishing	d_1 3 – 20 45°	Rm <850-1100	Inox Stainless			121

Medium length version with neck

N° 15259 / 15359

N° 15225 / 15325

N° 15299 / 15399

NX X-Generation X	Roughing Finishing	d_1 4 – 16 45°	Rm 850-1500	HRC 48-56	Ti Titanium		123
Base-X B	Roughing Finishing	d_1 6 – 16 45°	Rm <850-1300				125
Base-X B	Roughing Finishing	d_1 3 – 16 45°	Rm <850-1300				127

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Long version

N° 45223 / 45323

N° 0200

Faxora® F	Roughing Finishing	d_1 6 – 20 45°	Rm <850-1100	Inox Stainless		129
HSS	Roughing Finishing	d_1 2 – 40 90°	Rm <850-1100			131

5.2xd version

N° 8121 / 8221

N° 8320 / 8420

N° 8323 / 8423

MFC	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	Rm <850-1500	HRC 48-56	Inox / Ti	133
E-Cut	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	Rm <850-1500	Inox Stainless		135
E-Cut	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 3 – 20 r	Rm <850-1500	Inox Stainless		137

6.3xd version

N° 8122 / 8222 **new!**

MFC	Base-X B	Roughing HPC Roughing HDC Finishing	d_1 6 – 20 r	Rm <850-1500	Inox Stainless	Ti Titanium	139

Short version

N° 5249 / 5349

N° 5213 / 5313

N° 5229 / 5329

N° 5036

N° 0700

HX	X-Generation X	Roughing Finishing	d_1 1 – 16 45°	Rm 1300-1500	HRC 48-60		141
SX	X-Generation X	Roughing Finishing	d_1 3 – 16 45°	Inox Stainless			143
	Base-X B	Roughing Finishing	d_1 3 – 16 45°	Rm <850-1100	Inox Stainless		145
	Base-X B	Roughing Finishing	d_1 1.5 – 10 90°	Rm <850-1100	Inox Stainless		147
	HSS	Roughing Finishing	d_1 1 – 25 90°	Rm <850-1100			149

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, with corner radius

Normal version

N° 8507 / 8607		**HX**	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0	**HRC** 48- >60	**HSS**		153
N° 15268 / 15368		**NX**	X-Generation X	Roughing Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	157
N° 8720 / 8820		**ZX**	X-Generation X	Roughing Finishing	r 0.4, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	**Ni-/Mn-** Alloys	**Ti** Titanium		161
N° 8107 / 8207		**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	167
N° 8307 / 8407	**new!**	**E-Cut**	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** <850-1500	**Inox** Stainless		171
$l_2 = 2.2xd_1$ $l_3 = 3.0xd_1$									
N° 15226 / 15326 ToolSchool			Base-X B	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** <850-1300	**Inox** Stainless		177
N° 45219 / 45319			Favora® F	Roughing Finishing	r 0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	**Rm** <850-1100	**Inox** Stainless		181

Medium length version

N° 8517 / 8617		**HX**	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0	**HRC** 48- >60	**HSS**		187
N° 8117 / 8217		**MFC**	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	191

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Normal version

N° 8302 / 8402	**SupraCarb®**	Base-X B	Roughing / Finishing	d_1 4 – 20 r	**Rm** <850-1100	**Inox** Stainless		195
N° 15236 / 15336	**SupraCarb®**	Base-X B	Roughing / Finishing	d_1 3 – 20 45°	**Rm** <850-1100	**Inox** Stainless		197
N° 45371		Favora® F	Roughing / Finishing	d_1 3 – 20 45°	**Rm** <850-1100			199
N° 0619		HSS	Roughing / Finishing	d_1 5 – 25 45°	**Rm** 850-1300			201
N° 0540		HSS	Roughing / Finishing	d_1 6 – 25 45°	**Rm** <850-1300	**Inox** Stainless		203
N° 0610		HSS	Roughing / Finishing	d_1 5 – 40 45°	**Rm** <850-1100			205
N° 0609		HSS	Roughing / Finishing	d_1 6 – 32 45°	**Rm** <850-1100	**Inox** Stainless		209
N° 0695		HSS	Roughing / Finishing	d_1 8 – 32 45°	**Rm** <850-1100	**Inox** Stainless		211

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Medium length version

N° 15238 / 15338

SupraCarb®

Base-X B | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** <850-1100 | **Inox** Stainless | 213

N° 0659

HSS | Roughing / Finishing | d_1 6 – 25 | 45° | **Rm** 850-1300 | 215

N° 0650

HSS | Roughing / Finishing | d_1 5 – 32 | 45° | **Rm** <850-1100 | 217

Medium length version with neck

N° 15239 / 15339

SupraCarb®

Base-X B | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** <850-1100 | **Inox** Stainless | 219

End milling tools for steel, stainless steel, titanium and nickel
Profiled, cylindrical

Short version

N° 15260 / 15360

SupraCarb®

Base-X **B**

Roughing
Finishing

d_1 3 – 16

45°

Rm <850-1100

Inox Stainless

221

Long version

N° 15248 / 15348

SupraCarb®

Base-X **B**

Roughing
Finishing

d_1 6 – 20

45°

Rm <850-1100

Inox Stainless

223

N° 0665

HSS

Roughing
Finishing

d_1 5 – 40

45°

Rm <850-1100

225

Extra-long version with neck

N° 0621

HSS

Roughing
Finishing

d_1 6 – 25

45°

Rm 850-1300

227

End milling tools for steel, stainless steel, titanium and nickel
Finishing, cylindrical

Normal version

N° 15250

MulticutXF

X-Generation **X** | Roughing / Finishing | d_1 3 – 20 | 45° | **Rm** <850-1500 | **HRC** 48-60 | **Inox** Stainless | 229

N° 8301 / 8401

E-Cut

Base-X **B** | Roughing / Finishing | d_1 3 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 231

Medium length version

N° 15251

MulticutXF

X-Generation **X** | Roughing / Finishing | d_1 3 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 233

N° 8311

E-Cut

Base-X **B** | Roughing / Finishing | d_1 3 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 235

Long version

N° 15254

MulticutXF

X-Generation **X** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 237

5.2xd version

N° 8521

MulticutXF

X-Generation **X** | Roughing / Finishing | d_1 6 – 20 | 45° | **Rm** 850-1500 | **HRC** 48-60 | **Inox** Stainless | 239

N° 8321

E-Cut

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 241

6.3xd version

N° 8322 **new!**

E-Cut

Base-X **B** | Roughing / Finishing | d_1 6 – 20 | r | **Rm** <850-1500 | **Inox** Stainless | 243

End milling tools for steel, stainless steel, titanium and nickel
Face finishing, cylindrical

Normal version

N° 8502

NX

X-Generation

Roughing

Finishing

d_1 3 – 16

Rm 1300-1500

HRC 48-56

Inox / Ti

245

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

Shank ø 6mm

N° 6500	MicroX	X-Generation X	1xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Ti Titanium	247
N° 6501	MicroX	X-Generation X	2xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Ti Titanium	249
N° 6502	MicroX	X-Generation X	3xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Ti Titanium	251
N° 6503	MicroX	X-Generation X	4xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Ti Titanium	253
N° 6504	MicroX	X-Generation X	5xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Ti Titanium	255
N° 6505	MicroX	X-Generation X	6xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Ti Titanium	257
N° 6506	MicroX	X-Generation X	8xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Ti Titanium	259
N° 6508	MicroX	X-Generation X	10xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Ti Titanium	261

passion
for precision
fraisa

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

Shank ø 4mm

N° 6800	**Microcut**	Base-X B	**1xd**	d_1 0.2 – 2.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	263
N° 6802	**Microcut**	Base-X B	**3xd**	d_1 0.2 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	265
N° 6804	**Microcut**	Base-X B	**5xd**	d_1 0.2 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	267
N° 6807	**Microcut**	Base-X B	**8xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	269
N° 6809	**Microcut**	Base-X B	**10xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	271
N° 6810	**Microcut**	Base-X B	**12xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	273
N° 6811	**Microcut**	Base-X B	**15xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	275
N° 6812	**Microcut**	Base-X B	**20xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	277

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

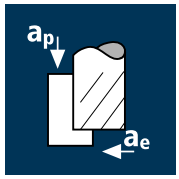
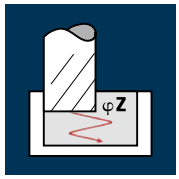
Shank ø 3mm

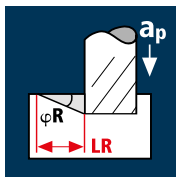
N° 5712	**Microcut**	Base-X B	**3xd**	d_1 0.2 – 3.0	**Rm** <850-1500	**Inox** Stainless	**Ti** Titanium	279
N° 15752	**Microcut**	Base-X B	**3xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**Inox** Stainless	**Ti** Titanium	281
N° 5714	**Microcut**	Base-X B	**5xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**Inox** Stainless	**Ti** Titanium	283
N° 15754	**Microcut**	Base-X B	**5xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**Inox** Stainless	**Ti** Titanium	285
N° 5716	**Microcut**	Base-X B	**8xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**Inox** Stainless	**Ti** Titanium	287
N° 45710		Favora F	**3xd**	d_1 0.3 – 3.0	**Rm** <850-1100			289
N° 45713		Favora F	**3xd**	d_1 0.4 – 2.9	**Rm** <850	**Inox** Stainless	**CuZn Gold Pl**	293

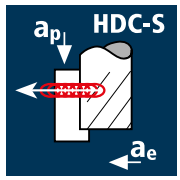
End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

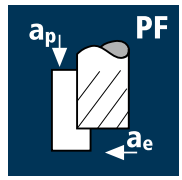
Short-shank version

N° 15232	Favora® F	Roughing / Finishing	d_1 1.5 – 10, 90°	Rm <850-1100	Inox Stainless	Al CuZn Gold	297
N° 5236 / 5336	Favora® F	Roughing / Finishing	d_1 1.5 – 10, 90°	Rm <850-1100	Inox Stainless		299
N° 5335	Favora® F	Roughing / Finishing	d_1 2 – 10, 45°	Rm <850-1100	Inox Stainless		301
N° 5237 / 5337	Favora® F	Roughing / Finishing	d_1 3 – 10, 90°	Rm <850-1300	Inox Stainless		303
N° 0400	HSS	Roughing / Finishing	d_1 1 – 10, 90°	Rm <850			305
N° 0410	HSS	Roughing / Finishing	d_1 2 – 10, 90°	Rm <850			309

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC H	3.00	4	60	0.012	4.500	1.800	6365	306	2.5	5.0°
		4.00	4	60	0.017	6.000	2.400	4775	325	4.7	5.0°
		5.00	4	60	0.022	7.500	3.000	3820	336	7.6	5.0°
		6.00	4	60	0.027	9.000	3.600	3185	344	11.1	5.0°
		8.00	4	60	0.035	12.000	4.800	2385	334	19.2	5.0°
		10.00	4	60	0.045	15.000	6.000	1910	344	30.9	5.0°
		12.00	4	60	0.055	18.000	7.200	1590	350	45.3	5.0°
		16.00	4	60	0.065	24.000	9.600	1195	311	71.6	5.0°
		20.00	4	60	0.080	30.000	12.000	955	306	110.0	5.0°
	Hardened tool steel > 60 HRC H	3.00	4	25	0.006	3.750	1.800	2655	64	0.4	3.0°
		4.00	4	25	0.008	5.000	2.400	1990	64	0.8	4.0°
		5.00	4	25	0.010	6.250	3.000	1590	64	1.2	5.0°
		6.00	4	25	0.012	7.500	3.600	1325	64	1.7	5.0°
		8.00	4	25	0.015	10.000	4.800	995	60	2.9	5.0°
		10.00	4	25	0.020	12.500	6.000	795	64	4.8	5.0°
		12.00	4	25	0.025	15.000	7.200	665	67	7.2	5.0°
		16.00	4	25	0.030	20.000	9.600	495	59	11.4	5.0°
		20.00	4	25	0.035	25.000	12.000	400	56	16.8	3.0°
	High speed steel, hardened 64 - 70 HRC H	3.00	4	15	0.005	3.000	0.750	1590	32	0.1	3.0°
		4.00	4	15	0.009	4.000	1.000	1195	43	0.2	4.0°
		5.00	4	15	0.012	5.000	1.250	955	46	0.3	5.0°
		6.00	4	15	0.009	6.000	3.600	795	29	0.6	5.0°
		8.00	4	15	0.012	8.000	4.800	595	29	1.1	5.0°
		10.00	4	15	0.015	10.000	6.000	475	29	1.7	5.0°
		12.00	4	15	0.018	12.000	7.200	400	29	2.5	5.0°
		16.00	4	15	0.023	16.000	9.600	300	28	4.2	5.0°
		20.00	4	15	0.025	20.000	12.000	240	24	5.8	3.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC H	3.00	4	50	0.013	3.000	3.000	5305	276	2.5	5.0°	34.3
		4.00	4	50	0.017	4.000	4.000	3980	271	4.3	5.0°	45.7
		5.00	4	50	0.022	5.000	5.000	3185	280	7.0	5.0°	57.2
		6.00	4	50	0.027	6.000	6.000	2655	287	10.3	5.0°	68.6
		8.00	4	50	0.035	8.000	8.000	1990	279	17.8	5.0°	91.4
		10.00	4	50	0.045	10.000	10.000	1590	286	28.6	5.0°	114.3
		12.00	4	50	0.055	12.000	12.000	1325	292	42.0	5.0°	137.2
		16.00	4	50	0.080	8.000	16.000	995	318	40.8	5.0°	91.4
		20.00	4	50	0.095	10.000	20.000	795	302	60.4	5.0°	114.3
	Hardened tool steel > 60 HRC H	3.00	4	20	0.007	3.000	3.000	2120	59	0.5	3.0°	57.2
		4.00	4	20	0.010	4.000	4.000	1590	64	1.0	4.0°	57.2
		5.00	4	20	0.013	5.000	5.000	1275	66	1.7	5.0°	57.2
		6.00	4	20	0.016	6.000	6.000	1060	68	2.4	5.0°	68.6
		8.00	4	20	0.021	8.000	8.000	795	67	4.3	5.0°	91.4
		10.00	4	20	0.026	10.000	10.000	635	66	6.6	5.0°	114.3
		12.00	4	20	0.032	12.000	12.000	530	68	9.8	5.0°	137.2
		16.00	4	20	0.050	8.000	16.000	400	80	10.2	5.0°	91.4
		20.00	4	20	0.060	10.000	20.000	320	77	15.4	3.0°	190.8
	High speed steel, hardened 64 - 70 HRC H	3.00	4	10	0.004	1.500	3.000	1060	17	0.1	3.0°	28.6
		4.00	4	10	0.006	2.000	4.000	795	19	0.2	4.0°	28.6
		5.00	4	10	0.008	3.750	5.000	635	20	0.4	5.0°	42.9
		6.00	4	10	0.009	4.500	6.000	530	19	0.5	5.0°	51.4
		8.00	4	10	0.012	6.000	8.000	400	19	0.9	5.0°	68.6
		10.00	4	10	0.015	7.500	10.000	320	19	1.4	5.0°	85.7
		12.00	4	10	0.020	9.000	12.000	265	21	2.3	5.0°	102.9
		16.00	4	10	0.030	8.000	16.000	200	24	3.1	5.0°	91.4
		20.00	4	10	0.035	10.000	20.000	160	22	4.5	3.0°	190.8





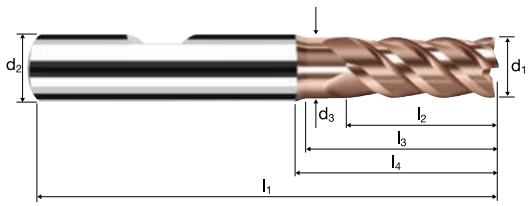
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills HX

Smooth-edged, normal version, short neck
High-performance penetration edge

HM XA

λ **45°**
γ **-10°**



Roughing HPC

Roughing HDC

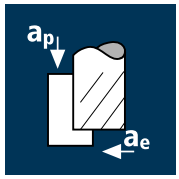
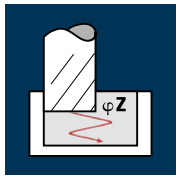
Finishing

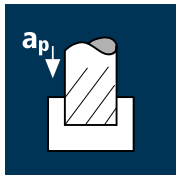
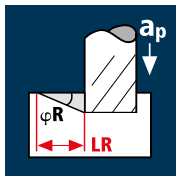
ReTool®

						HRC 48-56	HRC 56-60	HRC > 60			HSS

Example:
Order-N°. Coating **H** Article-N°. **8604** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si
											H8604
											H8504
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.100	4.5°	4	●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4	●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4	●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4	●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4	●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4	●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4	●
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.200	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1432	13.7	20.0°
		5.00	4	150	0.035	7.500	2.000	9550	1337	20.1	20.0°
		6.00	4	150	0.040	9.000	2.400	7960	1274	27.5	20.0°
		8.00	4	150	0.050	12.000	3.200	5970	1194	45.8	20.0°
		10.00	4	150	0.065	15.000	4.000	4775	1242	74.5	20.0°
		12.00	4	150	0.075	18.000	4.800	3980	1194	103.2	20.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	20.0°
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0	20.0°
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.030	6.000	1.600	9150	1098	10.5	17.5°
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4	17.5°
		6.00	4	115	0.040	9.000	2.400	6100	976	21.1	17.5°
		8.00	4	115	0.050	12.000	3.200	4575	915	35.1	17.5°
		10.00	4	115	0.065	15.000	4.000	3660	952	57.1	17.5°
		12.00	4	115	0.075	18.000	4.800	3050	915	79.1	17.5°
		16.00	4	115	0.085	24.000	6.400	2290	779	119.6	17.5°
		20.00	4	115	0.100	30.000	8.000	1830	732	175.7	17.5°
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	6.000	1.600	3980	239	2.3	15.0°
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8	15.0°
		6.00	4	50	0.025	9.000	2.400	2655	266	5.7	15.0°
		8.00	4	50	0.030	12.000	3.200	1990	239	9.2	15.0°
		10.00	4	50	0.035	15.000	4.000	1590	223	13.4	15.0°
		12.00	4	50	0.045	18.000	4.800	1325	239	20.6	15.0°
		16.00	4	50	0.055	24.000	6.400	995	219	33.6	15.0°
		20.00	4	50	0.070	30.000	8.000	795	223	53.4	15.0°
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.020	6.000	1.600	4775	382	3.7	12.0°
		5.00	4	60	0.025	7.500	2.000	3820	382	5.7	12.0°
		6.00	4	60	0.030	9.000	2.400	3185	382	8.3	12.0°
		8.00	4	60	0.040	12.000	3.200	2385	382	14.7	12.0°
		10.00	4	60	0.045	15.000	4.000	1910	344	20.6	12.0°
		12.00	4	60	0.055	18.000	4.800	1590	350	30.2	12.0°
		16.00	4	60	0.065	24.000	6.400	1195	311	47.7	12.0°
		20.00	4	60	0.080	30.000	8.000	955	306	73.3	12.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	120	0.025	5.000	4.000	9550	955	19.1	32.0°	8.0
		5.00	4	120	0.025	6.250	5.000	7640	764	23.9	32.0°	10.1
		6.00	4	120	0.030	7.500	6.000	6365	764	34.4	32.0°	12.0
		8.00	4	120	0.040	10.000	8.000	4775	764	61.1	32.0°	16.0
		10.00	4	120	0.050	12.500	10.000	3820	764	95.5	32.0°	20.0
		12.00	4	120	0.055	15.000	12.000	3185	701	126.1	32.0°	24.0
		16.00	4	120	0.065	20.000	16.000	2385	620	198.4	32.0°	32.0
		20.00	4	120	0.075	25.000	20.000	1910	573	286.5	32.0°	40.0
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.025	5.000	4.000	7160	716	14.3	28.0°	9.4
		5.00	4	90	0.025	6.250	5.000	5730	573	17.9	28.0°	11.8
		6.00	4	90	0.030	7.500	6.000	4775	573	25.8	28.0°	14.1
		8.00	4	90	0.040	10.000	8.000	3580	573	45.8	28.0°	18.8
		10.00	4	90	0.050	12.500	10.000	2865	573	71.6	28.0°	23.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.4	28.0°	28.2
		16.00	4	90	0.065	20.000	16.000	1790	465	148.9	28.0°	37.6
		20.00	4	90	0.075	25.000	20.000	1430	429	214.5	28.0°	47.0
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	5.000	4.000	3185	127	2.5	24.0°	11.2
		5.00	4	40	0.015	6.250	5.000	2545	153	4.8	24.0°	14.2
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6	24.0°	16.8
		8.00	4	40	0.025	10.000	8.000	1590	159	12.7	24.0°	22.5
		10.00	4	40	0.025	12.500	10.000	1275	128	15.9	24.0°	28.1
		12.00	4	40	0.035	15.000	12.000	1060	148	26.7	24.0°	33.7
		16.00	4	40	0.040	20.000	16.000	795	127	40.7	24.0°	44.9
		20.00	4	40	0.055	25.000	20.000	635	140	69.9	24.0°	56.2
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	5.000	4.000	3980	239	4.8	19.0°	14.5
		5.00	4	50	0.020	6.250	5.000	3185	255	8.0	19.0°	18.3
		6.00	4	50	0.025	7.500	6.000	2655	266	11.9	19.0°	21.8
		8.00	4	50	0.030	10.000	8.000	1990	239	19.1	19.0°	29.0
		10.00	4	50	0.035	12.500	10.000	1590	223	27.8	19.0°	36.3
		12.00	4	50	0.040	15.000	12.000	1325	212	38.2	19.0°	43.6
		16.00	4	50	0.050	20.000	16.000	995	199	63.7	19.0°	58.1
		20.00	4	50	0.060	25.000	20.000	795	191	95.4	19.0°	72.6

Cylindrical end mills NX

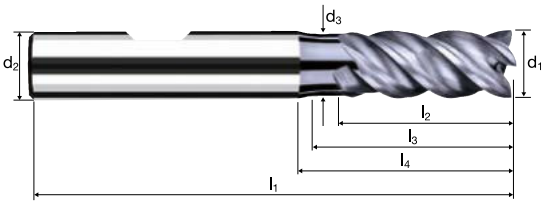
Smooth-edged, normal version, short neck
High-performance penetration edge

HM MG10

λ 45°
γ -20°

r

Vario



Roughing HPC

Roughing HDC

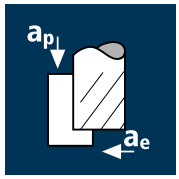
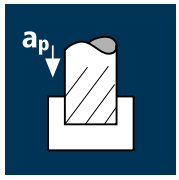
Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8600** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8600	POLYCHROM P8500
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1432	13.7
		5.00	4	150	0.035	7.500	2.000	9550	1337	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1274	27.5
		8.00	4	150	0.050	12.000	3.200	5970	1194	45.8
		10.00	4	150	0.065	15.000	4.000	4775	1242	74.5
		12.00	4	150	0.075	18.000	4.800	3980	1194	103.2
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.030	6.000	1.600	9150	1098	10.5
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4
		6.00	4	115	0.040	9.000	2.400	6100	976	21.1
		8.00	4	115	0.050	12.000	3.200	4575	915	35.1
		10.00	4	115	0.065	15.000	4.000	3660	952	57.1
		12.00	4	115	0.075	18.000	4.800	3050	915	79.1
		16.00	4	115	0.085	24.000	6.400	2290	779	119.6
		20.00	4	115	0.100	30.000	8.000	1830	732	175.7
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	6.000	1.600	3980	239	2.3
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8
		6.00	4	50	0.025	9.000	2.400	2655	266	5.7
		8.00	4	50	0.030	12.000	3.200	1990	239	9.2
		10.00	4	50	0.035	15.000	4.000	1590	223	13.4
		12.00	4	50	0.045	18.000	4.800	1325	239	20.6
		16.00	4	50	0.055	24.000	6.400	995	219	33.6
		20.00	4	50	0.070	30.000	8.000	795	223	53.4
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.020	6.000	1.600	4775	382	3.7
		5.00	4	60	0.025	7.500	2.000	3820	382	5.7
		6.00	4	60	0.030	9.000	2.400	3185	382	8.3
		8.00	4	60	0.040	12.000	3.200	2385	382	14.7
		10.00	4	60	0.045	15.000	4.000	1910	344	20.6
		12.00	4	60	0.055	18.000	4.800	1590	350	30.2
		16.00	4	60	0.065	24.000	6.400	1195	311	47.7
		20.00	4	60	0.080	30.000	8.000	955	306	73.3
	Steel 850 - 1100 N/mm²	4.00	4	120	0.025	5.000	4.000	9550	955	19.1
		5.00	4	120	0.025	6.250	5.000	7640	764	23.9
		6.00	4	120	0.030	7.500	6.000	6365	764	34.4
		8.00	4	120	0.040	10.000	8.000	4775	764	61.1
		10.00	4	120	0.050	12.500	10.000	3820	764	95.5
		12.00	4	120	0.055	15.000	12.000	3185	701	126.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.4
		20.00	4	120	0.075	25.000	20.000	1910	573	286.5
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.025	5.000	4.000	7160	716	14.3
		5.00	4	90	0.025	6.250	5.000	5730	573	17.9
		6.00	4	90	0.030	7.500	6.000	4775	573	25.8
		8.00	4	90	0.040	10.000	8.000	3580	573	45.8
		10.00	4	90	0.050	12.500	10.000	2865	573	71.6
		12.00	4	90	0.055	15.000	12.000	2385	525	94.4
		16.00	4	90	0.065	20.000	16.000	1790	465	148.9
		20.00	4	90	0.075	25.000	20.000	1430	429	214.5
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	5.000	4.000	3185	127	2.5
		5.00	4	40	0.015	6.250	5.000	2545	153	4.8
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6
		8.00	4	40	0.025	10.000	8.000	1590	159	12.7
		10.00	4	40	0.025	12.500	10.000	1275	128	15.9
		12.00	4	40	0.035	15.000	12.000	1060	148	26.7
		16.00	4	40	0.040	20.000	16.000	795	127	40.7
		20.00	4	40	0.055	25.000	20.000	635	140	69.9
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	5.000	4.000	3980	239	4.8
		5.00	4	50	0.020	6.250	5.000	3185	255	8.0
		6.00	4	50	0.025	7.500	6.000	2655	266	11.9
		8.00	4	50	0.030	10.000	8.000	1990	239	19.1
		10.00	4	50	0.035	12.500	10.000	1590	223	27.8
		12.00	4	50	0.040	15.000	12.000	1325	212	38.2
		16.00	4	50	0.050	20.000	16.000	995	199	63.7
		20.00	4	50	0.060	25.000	20.000	795	191	95.4

Cylindrical end mills NX

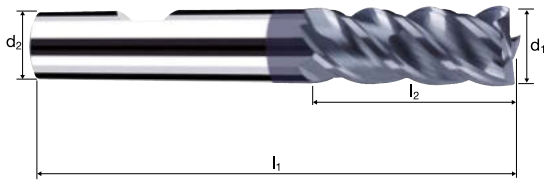
Smooth-edged, normal version

HM
MG10

λ **45°**
γ **-20°**

45°

Vario



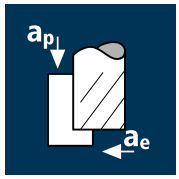
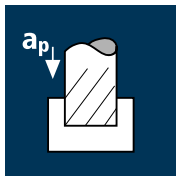
Roughing HPC | Roughing HDC | Finishing

ReTool®

	Rm 850-1100	**Rm** 1100-1300	**Rm** 1300-1500	**HRC** 48-56	**HRC** 56-60			**Ti** Titanium	**GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **15322** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM **P15322**	**P15222**
180	3.00	6.00	57	8.00	15.56	0.05	6.0°	4		●
220	4.00	6.00	57	8.00	14.59	0.05	4.5°	4		●
260	5.00	6.00	57	10.00	14.72	0.10	2.5°	4		●
300	6.00	6.00	57	12.00	-	0.10	0.0°	4		●
391	8.00	8.00	63	19.00	-	0.10	0.0°	4		●
450	10.00	10.00	72	23.00	-	0.15	0.0°	4		●
501	12.00	12.00	83	27.00	-	0.15	0.0°	4		●
610	16.00	16.00	92	32.00	-	0.15	0.0°	4		●
682	20.00	20.00	104	39.00	-	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	35	0.010	5.400	1.800	3715	149	1.4
		4.00	4	35	0.015	7.200	2.400	2785	167	2.9
		5.00	4	35	0.020	9.000	3.000	2230	178	4.8
		6.00	4	35	0.020	10.800	3.600	1855	148	5.8
		8.00	4	35	0.030	14.400	4.800	1395	167	11.6
		10.00	4	35	0.035	18.000	6.000	1115	156	16.9
		12.00	4	35	0.045	21.600	7.200	930	167	26.0
		16.00	4	35	0.050	28.800	9.600	695	139	38.4
		20.00	4	35	0.060	36.000	12.000	555	133	57.5
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	25	0.010	5.400	1.800	2655	106	1.0
		4.00	4	25	0.010	7.200	2.400	1990	80	1.4
		5.00	4	25	0.015	9.000	3.000	1590	95	2.6
		6.00	4	25	0.015	10.800	3.600	1325	80	3.1
		8.00	4	25	0.025	14.400	4.800	995	100	6.9
		10.00	4	25	0.030	18.000	6.000	795	95	10.3
		12.00	4	25	0.035	21.600	7.200	665	93	14.5
		16.00	4	25	0.040	28.800	9.600	495	79	21.9
		20.00	4	25	0.050	36.000	12.000	400	80	34.6
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	3.00	4	40	0.010	5.400	1.800	4245	170	1.7
		4.00	4	40	0.015	7.200	2.400	3185	191	3.3
		5.00	4	40	0.020	9.000	3.000	2545	204	5.5
		6.00	4	40	0.020	10.800	3.600	2120	170	6.6
		8.00	4	40	0.030	14.400	4.800	1590	191	13.2
		10.00	4	40	0.035	18.000	6.000	1275	179	19.3
		12.00	4	40	0.045	21.600	7.200	1060	191	29.7
		16.00	4	40	0.050	28.800	9.600	795	159	44.0
		20.00	4	40	0.060	36.000	12.000	635	152	65.8
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	50	0.015	5.400	1.800	5305	318	3.1
		4.00	4	50	0.020	7.200	2.400	3980	318	5.5
		5.00	4	50	0.030	9.000	3.000	3185	382	10.3
		6.00	4	50	0.035	10.800	3.600	2655	372	14.5
		8.00	4	50	0.045	14.400	4.800	1990	358	24.8
		10.00	4	50	0.055	18.000	6.000	1590	350	37.8
		12.00	4	50	0.065	21.600	7.200	1325	345	53.6
		16.00	4	50	0.070	28.800	9.600	995	279	77.0
		20.00	4	50	0.085	36.000	12.000	795	270	116.8
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	3.00	4	80	0.010	5.400	1.800	8490	340	3.3
		4.00	4	80	0.015	7.200	2.400	6365	382	6.6
		5.00	4	80	0.020	9.000	3.000	5095	408	11.0
		6.00	4	80	0.020	10.800	3.600	4245	340	13.2
		8.00	4	80	0.030	14.400	4.800	3185	382	26.4
		10.00	4	80	0.035	18.000	6.000	2545	356	38.5
		12.00	4	80	0.045	21.600	7.200	2120	382	59.3
		16.00	4	80	0.050	28.800	9.600	1590	318	87.9
		20.00	4	80	0.060	36.000	12.000	1275	306	132.2
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	4	70	0.010	5.400	1.800	7425	297	2.9
		4.00	4	70	0.015	7.200	2.400	5570	334	5.8
		5.00	4	70	0.015	9.000	3.000	4455	267	7.2
		6.00	4	70	0.020	10.800	3.600	3715	297	11.6
		8.00	4	70	0.025	14.400	4.800	2785	279	19.2
		10.00	4	70	0.035	18.000	6.000	2230	312	33.7
		12.00	4	70	0.040	21.600	7.200	1855	297	46.2
		16.00	4	70	0.045	28.800	9.600	1395	251	69.4
		20.00	4	70	0.055	36.000	12.000	1115	245	106.0
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	25	0.010	4.200	3.000	2655	106	1.3
		4.00	4	25	0.010	5.600	4.000	1990	80	1.8
		5.00	4	25	0.015	7.000	5.000	1590	95	3.3
		6.00	4	25	0.015	8.400	6.000	1325	80	4.0
		8.00	4	25	0.025	11.200	8.000	995	100	8.9
		10.00	4	25	0.030	14.000	10.000	795	95	13.4
		12.00	4	25	0.035	16.800	12.000	665	93	18.8
		16.00	4	25	0.040	22.400	16.000	495	79	28.4
		20.00	4	25	0.050	28.000	20.000	400	80	44.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	20	0.005	4.200	3.000	2120	42	0.5
		4.00	4	20	0.010	5.600	4.000	1590	64	1.4
		5.00	4	20	0.010	7.000	5.000	1275	51	1.8
		6.00	4	20	0.015	8.400	6.000	1060	64	3.2
		8.00	4	20	0.020	11.200	8.000	795	64	5.7
		10.00	4	20	0.020	14.000	10.000	635	51	7.1
		12.00	4	20	0.025	16.800	12.000	530	53	10.7
		16.00	4	20	0.030	22.400	16.000	400	48	17.2
		20.00	4	20	0.040	28.000	20.000	320	51	28.7

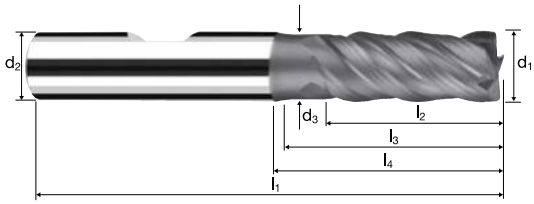
Cylindrical end mills ZX

Smooth-edged, normal version, short neck

HM MG10

λ 40°
γ 5°

r



Roughing

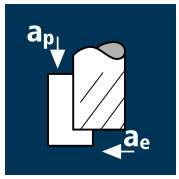
Finishing

ReTool®

Inox Stainless
Ti Titanium
Nickel-Alloys Mangan-Steels HSS

Example: **Order-N°.** Coating **P** Article-N°. **8800** ø-Code **180**

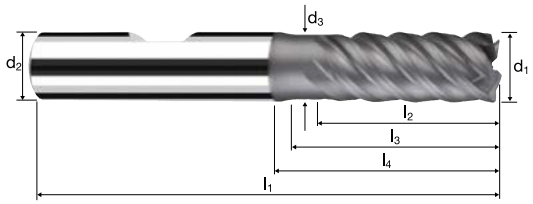
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8800	POLYCHROM P8700
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.100	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.150	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.300	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.300	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	6.00	5	45	0.020	10.800	1.200	2385	239	3.1
		8.00	5	45	0.030	14.400	1.600	1790	269	6.2
		10.00	5	45	0.035	18.000	2.000	1430	250	9.0
		12.00	5	45	0.045	21.600	2.400	1195	269	13.9
		16.00	5	45	0.050	28.800	3.200	895	224	20.6
		20.00	5	45	0.060	36.000	4.000	715	215	30.9
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	5	30	0.015	10.800	1.200	1590	119	1.5
		8.00	5	30	0.025	14.400	1.600	1195	149	3.4
		10.00	5	30	0.030	18.000	2.000	955	143	5.2
		12.00	5	30	0.035	21.600	2.400	795	139	7.2
		16.00	5	30	0.040	28.800	3.200	595	119	11.0
		20.00	5	30	0.050	36.000	4.000	475	119	17.1
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	6.00	5	50	0.020	10.800	1.200	2655	266	3.4
		8.00	5	50	0.030	14.400	1.600	1990	299	6.9
		10.00	5	50	0.035	18.000	2.000	1590	278	10.0
		12.00	5	50	0.045	21.600	2.400	1325	298	15.5
		16.00	5	50	0.050	28.800	3.200	995	249	22.9
		20.00	5	50	0.060	36.000	4.000	795	239	34.3
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	5	60	0.035	10.800	1.200	3185	557	7.2
		8.00	5	60	0.045	14.400	1.600	2385	537	12.4
		10.00	5	60	0.055	18.000	2.000	1910	525	18.9
		12.00	5	60	0.065	21.600	2.400	1590	517	26.8
		16.00	5	60	0.070	28.800	3.200	1195	418	38.6
		20.00	5	60	0.085	36.000	4.000	955	406	58.4
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	6.00	5	90	0.020	10.800	1.200	4775	478	6.2
		8.00	5	90	0.030	14.400	1.600	3580	537	12.4
		10.00	5	90	0.035	18.000	2.000	2865	501	18.1
		12.00	5	90	0.045	21.600	2.400	2385	537	27.8
		16.00	5	90	0.050	28.800	3.200	1790	448	41.2
		20.00	5	90	0.060	36.000	4.000	1430	429	61.8
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	85	0.020	10.800	1.200	4510	451	5.8
		8.00	5	85	0.025	14.400	1.600	3380	423	9.7
		10.00	5	85	0.035	18.000	2.000	2705	473	17.0
		12.00	5	85	0.040	21.600	2.400	2255	451	23.4
		16.00	5	85	0.045	28.800	3.200	1690	380	35.0
		20.00	5	85	0.055	36.000	4.000	1355	373	53.7

Cylindrical end mills ZX

Smooth-edged, normal version, short neck

HM MG10 | λ 40° γ 5°



Roughing

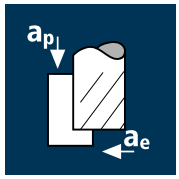
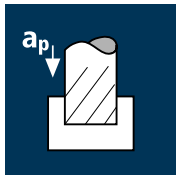
Finishing

ReTool®

Inox Stainless | **Ti** Titanium | **Nickel-Alloys Mangan-Steels HSS**

Example: **Order-N°.** Coating **P** Article-N°. **8805** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	z	POLYCHROM P8805	POLYCHROM P8705
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	5		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	5		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	5		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	5		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.300	5		●
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.300	5		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] H	3.00	4	96	0.015	3.750	1.200	10185	611	2.7
		4.00	4	96	0.020	5.000	1.600	7640	611	4.9
		5.00	4	80	0.023	6.250	3.250	5095	469	9.5
		6.00	4	80	0.027	9.000	3.900	4245	459	16.1
		8.00	4	80	0.036	12.000	5.200	3185	459	28.6
		10.00	4	80	0.045	15.000	6.500	2545	458	44.7
		12.00	4	80	0.054	18.000	7.800	2120	458	64.3
		16.00	4	80	0.064	20.000	10.400	1590	407	84.7
		20.00	4	80	0.080	25.000	13.000	1275	408	132.6
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] H	3.00	4	65	0.014	3.750	1.200	6895	386	1.7
		4.00	4	65	0.018	5.000	1.600	5175	373	3.0
		5.00	4	59	0.023	6.250	3.250	3755	346	7.0
		6.00	4	59	0.027	9.000	3.900	3130	338	11.9
		8.00	4	59	0.036	12.000	5.200	2350	338	21.1
		10.00	4	59	0.045	15.000	6.500	1880	338	33.0
		12.00	4	59	0.054	18.000	7.800	1565	338	47.5
		16.00	4	59	0.064	20.000	10.400	1175	301	62.6
		20.00	4	59	0.080	25.000	13.000	940	301	97.8
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] H	3.00	4	48	0.014	3.750	1.200	5095	285	1.3
		4.00	4	48	0.018	5.000	1.600	3820	275	2.2
		5.00	4	44	0.020	6.250	3.250	2800	224	4.6
		6.00	4	44	0.024	9.000	3.900	2335	224	7.9
		8.00	4	44	0.032	12.000	5.200	1750	224	14.0
		10.00	4	44	0.040	15.000	6.500	1400	224	21.8
		12.00	4	44	0.048	18.000	7.800	1165	224	31.4
		16.00	4	44	0.056	20.000	10.400	875	196	40.8
		20.00	4	44	0.070	25.000	13.000	700	196	63.7
	Inox martensitic C < 0.3% [Cr/1.4021] H	3.00	4	122	0.020	3.750	1.200	12945	1036	4.7
		4.00	4	122	0.026	5.000	1.600	9710	1010	8.1
		5.00	4	102	0.030	6.250	3.250	6495	779	15.8
		6.00	4	102	0.036	9.000	3.900	5410	779	27.3
		8.00	4	102	0.048	12.000	5.200	4060	780	48.6
		10.00	4	102	0.060	15.000	6.500	3245	779	75.9
		12.00	4	102	0.072	18.000	7.800	2705	779	109.4
		16.00	4	102	0.088	20.000	10.400	2030	715	148.6
		20.00	4	102	0.110	25.000	13.000	1625	715	232.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] H	3.00	4	70	0.009	2.250	3.000	7425	267	1.8
		4.00	4	70	0.012	3.000	4.000	5570	267	3.2
		5.00	4	70	0.015	6.250	5.000	4455	267	8.4
		6.00	4	70	0.022	9.000	6.000	3715	327	17.7
		8.00	4	70	0.029	12.000	8.000	2785	323	31.0
		10.00	4	70	0.036	15.000	10.000	2230	321	48.2
		12.00	4	70	0.043	18.000	12.000	1855	319	68.9
		16.00	4	70	0.051	20.000	16.000	1395	285	91.1
		20.00	4	70	0.064	25.000	20.000	1115	285	142.7
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] H	3.00	4	52	0.008	2.250	3.000	5515	177	1.2
		4.00	4	52	0.011	3.000	4.000	4140	182	2.2
		5.00	4	52	0.015	6.250	5.000	3310	199	6.2
		6.00	4	52	0.022	9.000	6.000	2760	243	13.1
		8.00	4	52	0.029	12.000	8.000	2070	240	23.0
		10.00	4	52	0.036	15.000	10.000	1655	238	35.7
		12.00	4	52	0.043	18.000	12.000	1380	237	51.3
		16.00	4	52	0.051	20.000	16.000	1035	211	67.6
		20.00	4	52	0.064	25.000	20.000	830	213	106.3
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] H	3.00	4	39	0.008	2.250	3.000	4140	133	0.9
		4.00	4	39	0.011	3.000	4.000	3105	137	1.6
		5.00	4	39	0.013	6.250	5.000	2485	129	4.0
		6.00	4	39	0.019	9.000	6.000	2070	157	8.5
		8.00	4	39	0.026	12.000	8.000	1550	161	15.5
		10.00	4	39	0.032	15.000	10.000	1240	159	23.8
		12.00	4	39	0.038	18.000	12.000	1035	157	34.0
		16.00	4	39	0.045	20.000	16.000	775	140	44.6
		20.00	4	39	0.056	25.000	20.000	620	139	69.5
	Inox martensitic C < 0.3% [Cr/1.4021] H	3.00	4	89	0.009	2.250	3.000	9445	340	2.3
		4.00	4	89	0.012	3.000	4.000	7080	340	4.1
		5.00	4	89	0.015	5.000	5.000	5665	340	8.5
		6.00	4	89	0.022	7.500	6.000	4720	415	18.7
		8.00	4	89	0.029	10.000	8.000	3540	411	32.8
		10.00	4	89	0.036	12.500	10.000	2835	408	51.0
		12.00	4	89	0.043	15.000	12.000	2360	406	73.1
		16.00	4	89	0.053	16.000	16.000	1770	375	96.1
		20.00	4	89	0.066	20.000	20.000	1415	374	149.4

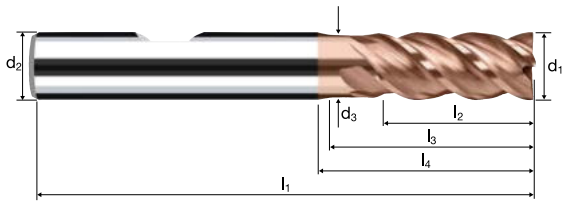
Cylindrical end mills SX

Smooth-edged, normal version, short neck

HM MG10 | λ 43° γ 3°

r

Vario



Roughing HPC | Roughing HDC | Finishing

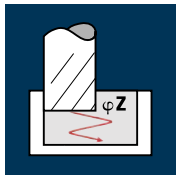
ReTool®

Rm < 850 | **Inox** Stainless | **Ti** Titanium | Nickel-Alloys Mangan-Steels Tool Steel

Example: **Order-N°.** Coating **H** Article-N°. **8606** ø-Code **180**

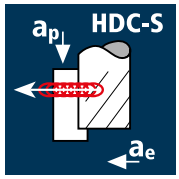
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si H8606	DURO-Si H8506
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	48.23	53.00	0.250	0.0°	4		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	80	0.022	16.000	5.400	4245	560	5.0°
	8.00	6	80	0.029	21.000	7.200	3185	554	5.0°
	10.00	7	80	0.031	25.000	9.000	2545	552	5.0°
	12.00	7	80	0.037	31.000	10.800	2120	549	5.0°
	16.00	8	80	0.038	36.000	14.400	1590	483	5.0°
	20.00	8	80	0.048	46.000	18.000	1275	490	5.0°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	6	60	0.022	16.000	5.400	3185	420	5.0°
	8.00	6	60	0.029	21.000	7.200	2385	415	5.0°
	10.00	7	60	0.031	25.000	9.000	1910	415	5.0°
	12.00	7	60	0.037	31.000	10.800	1590	412	5.0°
	16.00	8	60	0.038	36.000	14.400	1195	363	5.0°
	20.00	8	60	0.048	46.000	18.000	955	367	5.0°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	6	45	0.019	16.000	5.400	2385	272	5.0°
	8.00	6	45	0.026	21.000	7.200	1790	279	5.0°
	10.00	7	45	0.027	25.000	9.000	1430	270	5.0°
	12.00	7	45	0.033	31.000	10.800	1195	276	5.0°
	16.00	8	45	0.034	36.000	14.400	895	243	5.0°
	20.00	8	45	0.042	46.000	18.000	715	240	5.0°
Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	6	15	0.010	16.000	5.400	795	48	3.0°
	8.00	6	15	0.013	21.000	7.200	595	46	3.0°
	10.00	7	15	0.014	25.000	9.000	475	47	3.0°
	12.00	7	15	0.016	31.000	10.800	400	45	3.0°
	16.00	8	15	0.017	36.000	14.400	300	41	3.0°
	20.00	8	15	0.019	46.000	18.000	240	37	3.0°

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	122	0.050	16.000	0.600	6470	1941	18.6
	8.00	6	122	0.074	21.000	0.800	4855	2156	36.2
	10.00	7	115	0.082	25.000	1.000	3660	2101	52.5
	12.00	7	115	0.094	31.000	1.200	3050	2007	74.7
	16.00	8	109	0.109	36.000	1.600	2170	1892	109.0
	20.00	8	109	0.110	46.000	2.000	1735	1527	140.5
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	6	90	0.050	16.000	0.600	4775	1433	13.8
	8.00	6	90	0.074	21.000	0.800	3580	1590	26.7
	10.00	7	84	0.082	25.000	1.000	2675	1536	38.4
	12.00	7	84	0.094	31.000	1.200	2230	1467	54.6
	16.00	8	80	0.109	36.000	1.600	1590	1387	79.9
	20.00	8	80	0.110	46.000	2.000	1275	1122	103.2
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	6	71	0.045	16.000	0.600	3765	1017	9.8
	8.00	6	71	0.067	21.000	0.800	2825	1136	19.1
	10.00	7	68	0.073	25.000	1.000	2165	1106	27.7
	12.00	7	68	0.083	31.000	1.200	1805	1049	39.0
	16.00	8	64	0.098	36.000	1.600	1275	1000	57.6
	20.00	8	64	0.102	46.000	2.000	1020	832	76.6
Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	6	33	0.044	16.000	0.300	1750	462	2.2
	8.00	6	33	0.062	21.000	0.400	1315	489	4.1
	10.00	7	32	0.071	25.000	0.500	1020	507	6.3
	12.00	7	32	0.077	31.000	0.600	850	458	8.5
	16.00	8	30	0.091	36.000	0.800	595	433	12.5
	20.00	8	30	0.090	46.000	1.000	475	342	15.7

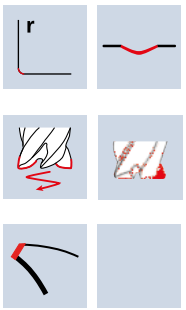
Cylindrical end mills SX

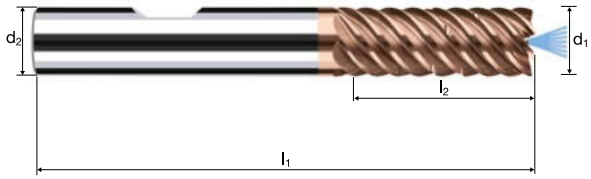
Smooth-edged, chip breaker, normal version
High-performance penetration edge, central air/cooling channel

X-Generation X

I

HM MG10 | λ **55°** γ **10°**





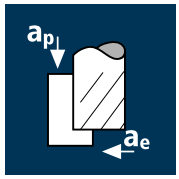
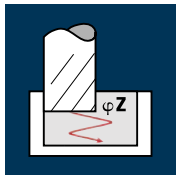
Roughing HPC | Roughing HDC | Finishing

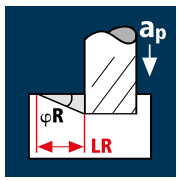
ReTool®

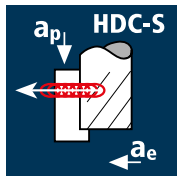
Inox Stainless | **Ti** Titanium | **Nickel-Alloys**

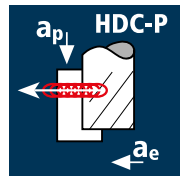
Example: **Order-N°.** Coating **S** | Article-N°. **8608** | ø-Code **300**

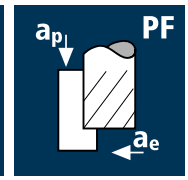
Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	DURO-XI S8608	DURO-XI S8508
300	6.00	6.00	57	16.00	0.100	6		●
391	8.00	8.00	63	21.00	0.150	6		●
450	10.00	10.00	72	25.00	0.200	7		●
501	12.00	12.00	83	31.00	0.200	7		●
610	16.00	16.00	92	36.00	0.200	8		●
682	20.00	20.00	104	46.00	0.250	8		●

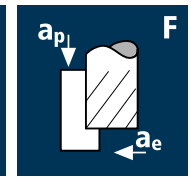
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	7.200	1.600	11935	1432	16.5	18.0°
		5.00	4	150	0.035	9.000	2.000	9550	1337	24.1	18.0°
		6.00	4	150	0.040	10.800	2.400	7960	1274	33.0	18.0°
		8.00	4	150	0.050	14.400	3.200	5970	1194	55.0	18.0°
		10.00	4	150	0.065	18.000	4.000	4775	1242	89.4	18.0°
		12.00	4	150	0.075	21.600	4.800	3980	1194	123.8	18.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	18.0°
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0	18.0°
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	7.200	1.600	9150	915	10.5	15.0°
		5.00	4	115	0.030	9.000	2.000	7320	878	15.8	15.0°
		6.00	4	115	0.035	10.800	2.400	6100	854	22.1	15.0°
		8.00	4	115	0.045	14.400	3.200	4575	824	37.9	15.0°
		10.00	4	115	0.055	18.000	4.000	3660	805	58.0	15.0°
		12.00	4	115	0.065	21.600	4.800	3050	793	82.2	15.0°
		16.00	4	115	0.075	24.000	6.400	2290	687	105.5	15.0°
		20.00	4	115	0.090	30.000	8.000	1830	659	158.1	15.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.020	7.200	1.600	7160	573	6.6	12.0°
		5.00	4	90	0.025	9.000	2.000	5730	573	10.3	12.0°
		6.00	4	90	0.030	10.800	2.400	4775	573	14.9	12.0°
		8.00	4	90	0.035	14.400	3.200	3580	501	23.1	12.0°
		10.00	4	90	0.045	18.000	4.000	2865	516	37.1	12.0°
		12.00	4	90	0.055	21.600	4.800	2385	525	54.4	12.0°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	12.0°
		20.00	4	90	0.080	30.000	8.000	1430	458	109.8	12.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	6.000	4.000	9550	764	18.3	20.0°	16.5
		5.00	4	120	0.023	7.500	5.000	7640	703	26.4	20.0°	20.6
		6.00	4	120	0.026	9.000	6.000	6365	662	35.7	20.0°	24.7
		8.00	4	120	0.033	12.000	8.000	4775	630	60.5	20.0°	33.0
		10.00	4	120	0.042	15.000	10.000	3820	642	96.3	20.0°	41.2
		12.00	4	120	0.049	18.000	12.000	3185	624	134.8	20.0°	49.5
		16.00	4	120	0.055	24.000	16.000	2385	525	201.5	20.0°	54.9
		20.00	4	120	0.065	25.000	20.000	1910	497	248.3	20.0°	68.7
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.016	6.000	4.000	7160	458	11.0	20.0°	16.5
		5.00	4	90	0.020	7.500	5.000	5730	458	17.2	20.0°	20.6
		6.00	4	90	0.023	9.000	6.000	4775	439	23.7	20.0°	24.7
		8.00	4	90	0.029	12.000	8.000	3580	415	39.9	20.0°	33.0
		10.00	4	90	0.036	15.000	10.000	2865	413	61.9	20.0°	41.2
		12.00	4	90	0.042	18.000	12.000	2385	401	86.6	20.0°	49.5
		16.00	4	90	0.049	24.000	16.000	1790	351	134.7	20.0°	54.9
		20.00	4	90	0.058	25.000	20.000	1430	332	165.9	20.0°	68.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	70	0.013	6.000	4.000	5570	290	7.0	14.0°	24.1
		5.00	4	70	0.016	7.500	5.000	4455	285	10.7	14.0°	30.1
		6.00	4	70	0.020	9.000	6.000	3715	297	16.0	14.0°	36.1
		8.00	4	70	0.023	12.000	8.000	2785	256	24.6	14.0°	48.1
		10.00	4	70	0.029	15.000	10.000	2230	259	38.8	14.0°	60.2
		12.00	4	70	0.036	18.000	12.000	1855	267	57.7	14.0°	72.2
		16.00	4	70	0.042	24.000	16.000	1395	234	90.0	14.0°	80.2
		20.00	4	70	0.052	25.000	20.000	1115	232	116.0	14.0°	100.3









Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

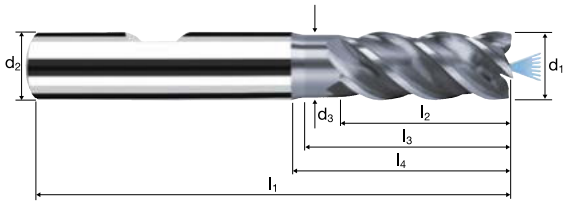
Cylindrical end mills MFC

Smooth-edged, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

r

Vario



Roughing HPC | Roughing HDC | Finishing

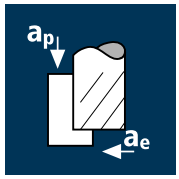
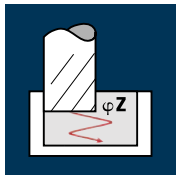
ReTool®

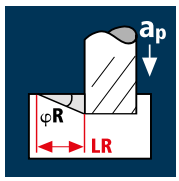
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

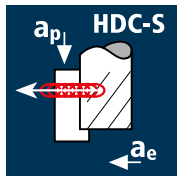
Example: **Order-N°.** Coating **P** Article-N°. **8201** ø-Code **220**

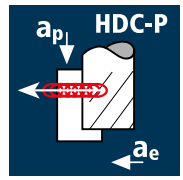
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8201	POLYCHROM P8101
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
503*	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

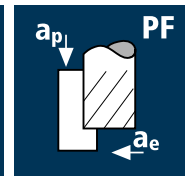
* with chip breaker

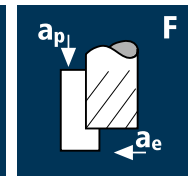
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	7.200	1.600	11935	1432	16.5	18.0°
		5.00	4	150	0.035	9.000	2.000	9550	1337	24.1	18.0°
		6.00	4	150	0.040	10.800	2.400	7960	1274	33.0	18.0°
		8.00	4	150	0.050	14.400	3.200	5970	1194	55.0	18.0°
		10.00	4	150	0.065	18.000	4.000	4775	1242	89.4	18.0°
		12.00	4	150	0.075	21.600	4.800	3980	1194	123.8	18.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	18.0°
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0	18.0°
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	7.200	1.600	9150	915	10.5	15.0°
		5.00	4	115	0.030	9.000	2.000	7320	878	15.8	15.0°
		6.00	4	115	0.035	10.800	2.400	6100	854	22.1	15.0°
		8.00	4	115	0.045	14.400	3.200	4575	824	37.9	15.0°
		10.00	4	115	0.055	18.000	4.000	3660	805	58.0	15.0°
		12.00	4	115	0.065	21.600	4.800	3050	793	82.2	15.0°
		16.00	4	115	0.075	24.000	6.400	2290	687	105.5	15.0°
		20.00	4	115	0.090	30.000	8.000	1830	659	158.1	15.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.020	7.200	1.600	7160	573	6.6	12.0°
		5.00	4	90	0.025	9.000	2.000	5730	573	10.3	12.0°
		6.00	4	90	0.030	10.800	2.400	4775	573	14.9	12.0°
		8.00	4	90	0.035	14.400	3.200	3580	501	23.1	12.0°
		10.00	4	90	0.045	18.000	4.000	2865	516	37.1	12.0°
		12.00	4	90	0.055	21.600	4.800	2385	525	54.4	12.0°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	12.0°
		20.00	4	90	0.080	30.000	8.000	1430	458	109.8	12.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	120	0.021	6.000	4.000	9550	802	19.3	20.0°	16.5
		5.00	4	120	0.025	7.500	5.000	7640	764	28.7	20.0°	20.6
		6.00	4	120	0.028	9.000	6.000	6365	713	38.5	20.0°	24.7
		8.00	4	120	0.035	12.000	8.000	4775	669	64.2	20.0°	33.0
		10.00	4	120	0.046	15.000	10.000	3820	703	105.4	20.0°	41.2
		12.00	4	120	0.053	18.000	12.000	3185	675	145.8	20.0°	49.5
		16.00	4	120	0.059	24.000	16.000	2385	563	216.2	20.0°	54.9
		20.00	4	120	0.070	25.000	20.000	1910	535	267.4	20.0°	68.7
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.018	6.000	4.000	7160	516	12.4	20.0°	16.5
		5.00	4	90	0.021	7.500	5.000	5730	481	18.0	20.0°	20.6
		6.00	4	90	0.025	9.000	6.000	4775	478	25.8	20.0°	24.7
		8.00	4	90	0.032	12.000	8.000	3580	458	44.0	20.0°	33.0
		10.00	4	90	0.039	15.000	10.000	2865	447	67.0	20.0°	41.2
		12.00	4	90	0.046	18.000	12.000	2385	439	94.8	20.0°	49.5
		16.00	4	90	0.053	24.000	16.000	1790	380	145.7	20.0°	54.9
		20.00	4	90	0.063	25.000	20.000	1430	360	180.2	20.0°	68.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	70	0.014	6.000	4.000	5570	312	7.5	14.0°	24.1
		5.00	4	70	0.018	7.500	5.000	4455	321	12.0	14.0°	30.1
		6.00	4	70	0.021	9.000	6.000	3715	312	16.9	14.0°	36.1
		8.00	4	70	0.025	12.000	8.000	2785	279	26.7	14.0°	48.1
		10.00	4	70	0.032	15.000	10.000	2230	285	42.8	14.0°	60.2
		12.00	4	70	0.039	18.000	12.000	1855	289	62.5	14.0°	72.2
		16.00	4	70	0.046	24.000	16.000	1395	257	98.6	14.0°	80.2
		20.00	4	70	0.056	25.000	20.000	1115	250	124.9	14.0°	100.3









Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills MFC

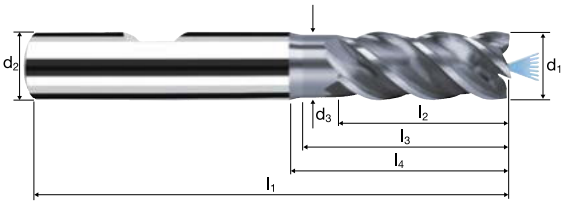
Smooth-edged, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10

λ 45°
γ 0°

r

Vario



Roughing HPC

Roughing HDC

Finishing

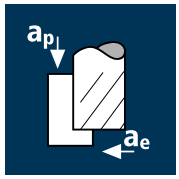
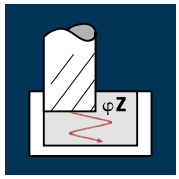
ReTool®

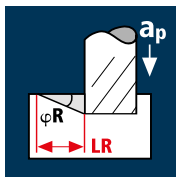
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

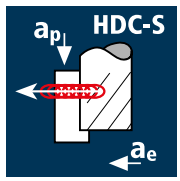
Example: **Order-N°.** Coating **P** Article-N°. **8202** ø-Code **220**

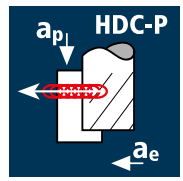
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8202	POLYCHROM P8102
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

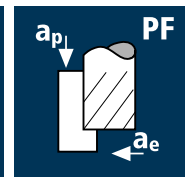
* with chip breaker

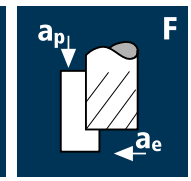
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	6.00	5	150	0.040	10.800	2.100	7960	1592	36.1	10.0°
		8.00	5	150	0.050	14.400	2.800	5970	1493	60.2	12.0°
		10.00	5	150	0.065	18.000	3.500	4775	1552	97.8	12.0°
		12.00	5	150	0.075	21.600	4.200	3980	1493	135.4	12.0°
		16.00	5	150	0.085	24.000	5.600	2985	1269	170.5	12.0°
		20.00	5	150	0.100	30.000	7.000	2385	1193	250.4	12.0°
	Steel 1100 - 1300 N/mm²	6.00	5	115	0.035	10.800	2.100	6100	1068	24.2	10.0°
		8.00	5	115	0.045	14.400	2.800	4575	1029	41.5	11.0°
		10.00	5	115	0.055	18.000	3.500	3660	1007	63.4	11.0°
		12.00	5	115	0.065	21.600	4.200	3050	991	89.9	11.0°
		16.00	5	115	0.075	24.000	5.600	2290	859	115.4	11.0°
		20.00	5	115	0.090	30.000	7.000	1830	824	172.9	11.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	90	0.030	10.800	2.100	4775	716	16.2	8.0°
		8.00	5	90	0.035	14.400	2.800	3580	627	25.3	8.0°
		10.00	5	90	0.045	18.000	3.500	2865	645	40.6	8.0°
		12.00	5	90	0.055	21.600	4.200	2385	656	59.5	8.0°
		16.00	5	90	0.065	24.000	5.600	1790	582	78.2	8.0°
		20.00	5	90	0.080	30.000	7.000	1430	572	120.1	8.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	6.00	5	120	0.024	6.000	6.000	6365	764	27.5	12.0°	28.2
		8.00	5	120	0.030	8.000	8.000	4775	716	45.8	12.0°	37.6
		10.00	5	120	0.039	10.000	10.000	3820	745	74.5	12.0°	47.0
		12.00	5	120	0.045	12.000	12.000	3185	717	103.2	12.0°	56.5
		16.00	5	120	0.051	16.000	16.000	2385	608	155.7	12.0°	75.3
		20.00	5	120	0.060	20.000	20.000	1910	573	229.2	12.0°	94.1
	Steel 1100 - 1300 N/mm²	6.00	5	90	0.021	6.000	6.000	4775	501	18.1	12.0°	28.2
		8.00	5	90	0.027	8.000	8.000	3580	483	30.9	12.0°	37.6
		10.00	5	90	0.033	10.000	10.000	2865	473	47.3	12.0°	47.0
		12.00	5	90	0.039	12.000	12.000	2385	465	67.0	12.0°	56.5
		16.00	5	90	0.045	16.000	16.000	1790	403	103.1	12.0°	75.3
		20.00	5	90	0.054	20.000	20.000	1430	386	154.4	12.0°	94.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	70	0.018	6.000	6.000	3715	334	12.0	12.0°	28.2
		8.00	5	70	0.021	8.000	8.000	2785	292	18.7	12.0°	37.6
		10.00	5	70	0.027	10.000	10.000	2230	301	30.1	12.0°	47.0
		12.00	5	70	0.033	12.000	12.000	1855	306	44.1	12.0°	56.5
		16.00	5	70	0.039	16.000	16.000	1395	272	69.6	12.0°	75.3
		20.00	5	70	0.048	20.000	20.000	1115	268	107.0	12.0°	94.1









Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

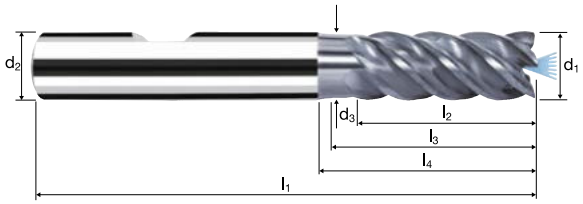
Cylindrical end mills MFC

Smooth-edged, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10 | λ 45° γ 0°

r

Vario



Roughing HPC | Roughing HDC | Finishing

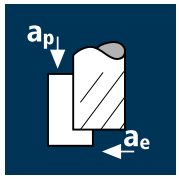
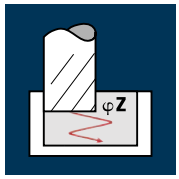
ReTool®

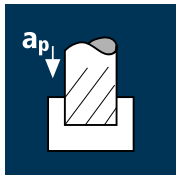
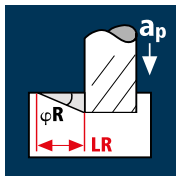
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8205** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z	POLYCHROM P8205	POLYCHROM P8105
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	5		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	5		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	5		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	5		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	5		●
612*	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	5		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	5		●
684*	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	5		●

* with chip breaker

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Steel < 850 N/mm²	4.00	4	180	0.035	6.000	1.600	14325	2006	19.3	20.0°
		5.00	4	180	0.040	7.500	2.000	11460	1834	27.5	20.0°
		6.00	4	180	0.050	9.000	2.400	9550	1910	41.3	20.0°
		8.00	4	180	0.060	12.000	3.200	7160	1718	66.0	20.0°
		10.00	4	180	0.075	15.000	4.000	5730	1719	103.1	20.0°
		12.00	4	180	0.085	18.000	4.800	4775	1624	140.3	20.0°
		16.00	4	180	0.095	24.000	6.400	3580	1360	209.0	20.0°
		20.00	4	180	0.110	30.000	8.000	2865	1261	302.5	20.0°
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1432	13.7	18.0°
		5.00	4	150	0.035	7.500	2.000	9550	1337	20.1	18.0°
		6.00	4	150	0.040	9.000	2.400	7960	1274	27.5	18.0°
		8.00	4	150	0.050	12.000	3.200	5970	1194	45.8	18.0°
		10.00	4	150	0.065	15.000	4.000	4775	1242	74.5	18.0°
		12.00	4	150	0.075	18.000	4.800	3980	1194	103.2	18.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	18.0°
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0	18.0°
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.030	6.000	1.600	5570	668	6.4	12.0°
		5.00	4	70	0.035	7.500	2.000	4455	624	9.4	12.0°
		6.00	4	70	0.040	9.000	2.400	3715	594	12.8	12.0°
		8.00	4	70	0.050	12.000	3.200	2785	557	21.4	12.0°
		10.00	4	70	0.060	15.000	4.000	2230	535	32.1	12.0°
		12.00	4	70	0.075	18.000	4.800	1855	557	48.1	12.0°
		16.00	4	70	0.085	24.000	6.400	1395	474	72.9	12.0°
		20.00	4	70	0.095	30.000	8.000	1115	424	101.7	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.020	6.000	1.600	7160	573	5.5	12.0°
		5.00	4	90	0.025	7.500	2.000	5730	573	8.6	12.0°
		6.00	4	90	0.030	9.000	2.400	4775	573	12.4	12.0°
		8.00	4	90	0.035	12.000	3.200	3580	501	19.2	12.0°
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9	12.0°
		12.00	4	90	0.055	18.000	4.800	2385	525	45.3	12.0°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	12.0°
		20.00	4	90	0.080	30.000	8.000	1430	458	109.8	12.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	4.00	4	145	0.025	5.000	4.000	11540	1154	23.1	32.0°	8.0
		5.00	4	145	0.030	6.250	5.000	9230	1108	34.6	32.0°	10.1
		6.00	4	145	0.040	7.500	6.000	7690	1230	55.4	32.0°	12.0
		8.00	4	145	0.045	10.000	8.000	5770	1039	83.1	32.0°	16.0
		10.00	4	145	0.055	12.500	10.000	4615	1015	126.9	32.0°	20.0
		12.00	4	145	0.065	15.000	12.000	3845	1000	179.9	32.0°	24.0
		16.00	4	145	0.070	20.000	16.000	2885	808	258.5	32.0°	32.0
		20.00	4	145	0.085	25.000	20.000	2310	785	392.7	32.0°	40.0
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	5.000	4.000	9550	764	15.3	29.0°	9.0
		5.00	4	120	0.025	6.250	5.000	7640	764	23.9	29.0°	11.4
		6.00	4	120	0.030	7.500	6.000	6365	764	34.4	29.0°	13.5
		8.00	4	120	0.040	10.000	8.000	4775	764	61.1	29.0°	18.0
		10.00	4	120	0.050	12.500	10.000	3820	764	95.5	29.0°	22.6
		12.00	4	120	0.055	15.000	12.000	3185	701	126.1	29.0°	27.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.4	29.0°	36.1
		20.00	4	120	0.075	25.000	20.000	1910	573	286.5	29.0°	45.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.025	5.000	4.000	4375	438	8.8	19.0°	14.5
		5.00	4	55	0.025	6.250	5.000	3500	350	10.9	19.0°	18.3
		6.00	4	55	0.030	7.500	6.000	2920	350	15.8	19.0°	21.8
		8.00	4	55	0.040	10.000	8.000	2190	350	28.0	19.0°	29.0
		10.00	4	55	0.045	12.500	10.000	1750	315	39.4	19.0°	36.3
		12.00	4	55	0.055	15.000	12.000	1460	321	57.8	19.0°	43.6
		16.00	4	55	0.065	20.000	16.000	1095	285	91.1	19.0°	58.1
		20.00	4	55	0.070	25.000	20.000	875	245	122.5	19.0°	72.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	70	0.015	5.000	4.000	5570	334	6.7	14.0°	20.1
		5.00	4	70	0.020	6.250	5.000	4455	356	11.1	14.0°	25.3
		6.00	4	70	0.025	7.500	6.000	3715	372	16.7	14.0°	30.1
		8.00	4	70	0.025	10.000	8.000	2785	279	22.3	14.0°	40.1
		10.00	4	70	0.035	12.500	10.000	2230	312	39.0	14.0°	50.1
		12.00	4	70	0.040	15.000	12.000	1855	297	53.4	14.0°	60.2
		16.00	4	70	0.050	20.000	16.000	1395	279	89.3	14.0°	80.2
		20.00	4	70	0.060	25.000	20.000	1115	268	133.8	14.0°	100.3

Cylindrical end mills NVDS

Smooth-edged, normal version, short neck
High-performance penetration edge

HM MG10	λ 45° γ 0°

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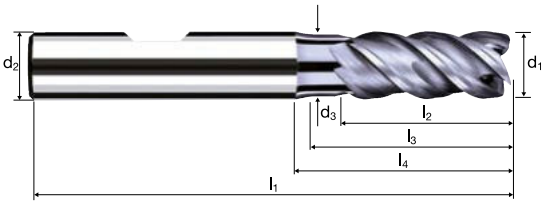
Vario



Roughing HPC

Roughing HDC

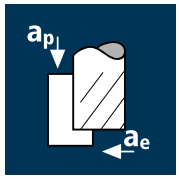
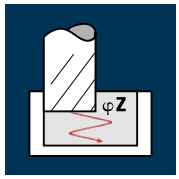
Finishing

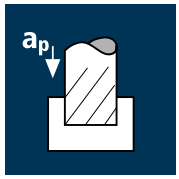
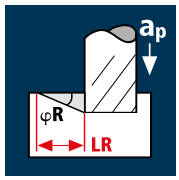
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **8200** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8200	POLYCHROM P8100
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	39.00	48.23	53.00	0.200	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	150	0.018	4.500	1.200	15915	1146	6.2	16.0°
		4.00	4	150	0.020	6.000	1.600	11935	955	9.2	16.0°
		5.00	4	150	0.028	7.500	2.000	9550	1070	16.0	16.0°
		6.00	4	150	0.035	9.000	2.400	7960	1114	24.1	16.0°
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3	16.0°
		10.00	4	150	0.060	15.000	4.000	4775	1146	68.8	16.0°
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4	16.0°
		16.00	4	150	0.075	24.000	6.400	2985	896	137.5	16.0°
		20.00	4	150	0.090	30.000	8.000	2385	859	206.1	16.0°
	Steel 850 - 1100 N/mm²	3.00	4	125	0.015	4.500	1.200	13265	796	4.3	15.0°
		4.00	4	125	0.018	6.000	1.600	9945	716	6.9	15.0°
		5.00	4	125	0.024	7.500	2.000	7960	764	11.5	15.0°
		6.00	4	125	0.030	9.000	2.400	6630	796	17.2	15.0°
		8.00	4	125	0.040	12.000	3.200	4975	796	30.6	15.0°
		10.00	4	125	0.055	15.000	4.000	3980	876	52.5	15.0°
		12.00	4	125	0.060	18.000	4.800	3315	796	68.7	15.0°
		16.00	4	125	0.070	24.000	6.400	2485	696	106.9	15.0°
		20.00	4	125	0.080	30.000	8.000	1990	637	152.8	15.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	85	0.013	4.500	1.200	9020	469	2.5	9.0°
		4.00	4	85	0.016	6.000	1.600	6765	433	4.2	9.0°
		5.00	4	85	0.020	7.500	2.000	5410	433	6.5	9.0°
		6.00	4	85	0.025	9.000	2.400	4510	451	9.7	9.0°
		8.00	4	85	0.035	12.000	3.200	3380	473	18.2	9.0°
		10.00	4	85	0.045	15.000	4.000	2705	487	29.2	9.0°
		12.00	4	85	0.050	18.000	4.800	2255	451	39.0	9.0°
		16.00	4	85	0.060	24.000	6.400	1690	406	62.3	9.0°
		20.00	4	85	0.070	30.000	8.000	1355	379	91.1	9.0°
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	45	0.013	4.500	1.200	4775	248	1.3	7.0°
		4.00	4	45	0.016	6.000	1.600	3580	229	2.2	7.0°
		5.00	4	45	0.020	7.500	2.000	2865	229	3.4	7.0°
		6.00	4	45	0.025	9.000	2.400	2385	239	5.2	7.0°
		8.00	4	45	0.035	12.000	3.200	1790	251	9.6	7.0°
		10.00	4	45	0.045	15.000	4.000	1430	257	15.4	7.0°
		12.00	4	45	0.050	18.000	4.800	1195	239	20.6	7.0°
		16.00	4	45	0.060	24.000	6.400	895	215	33.0	7.0°
		20.00	4	45	0.070	30.000	8.000	715	200	48.0	7.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	3.00	4	120	0.014	1.800	3.000	12730	713	3.8	26.0°	3.7
		4.00	4	120	0.018	2.800	4.000	9550	688	7.7	26.0°	5.7
		5.00	4	120	0.022	4.000	5.000	7640	672	13.4	26.0°	8.2
		6.00	4	120	0.028	6.000	6.000	6365	713	25.7	26.0°	12.3
		8.00	4	120	0.036	8.000	8.000	4775	688	44.0	26.0°	16.4
		10.00	4	120	0.048	10.000	10.000	3820	733	73.3	26.0°	20.5
		12.00	4	120	0.052	12.000	12.000	3185	663	95.4	26.0°	24.6
		16.00	4	120	0.060	16.000	16.000	2385	572	146.5	26.0°	32.8
		20.00	4	120	0.072	20.000	20.000	1910	550	220.0	26.0°	41.0
	Steel 850 - 1100 N/mm²	3.00	4	100	0.011	1.800	3.000	10610	467	2.5	24.0°	4.0
		4.00	4	100	0.014	2.800	4.000	7960	446	5.0	24.0°	6.3
		5.00	4	100	0.020	4.000	5.000	6365	509	10.2	24.0°	9.0
		6.00	4	100	0.024	6.000	6.000	5305	509	18.3	24.0°	13.5
		8.00	4	100	0.032	8.000	8.000	3980	509	32.6	24.0°	18.0
		10.00	4	100	0.044	10.000	10.000	3185	561	56.1	24.0°	22.5
		12.00	4	100	0.048	12.000	12.000	2655	510	73.4	24.0°	27.0
		16.00	4	100	0.056	16.000	16.000	1990	446	114.1	24.0°	35.9
		20.00	4	100	0.064	20.000	20.000	1590	407	162.8	24.0°	44.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	70	0.010	1.800	3.000	7425	297	1.6	11.0°	9.3
		4.00	4	70	0.013	2.800	4.000	5570	290	3.2	11.0°	14.4
		5.00	4	70	0.016	4.000	5.000	4455	285	5.7	11.0°	20.6
		6.00	4	70	0.020	6.000	6.000	3715	297	10.7	11.0°	30.9
		8.00	4	70	0.028	8.000	8.000	2785	312	20.0	11.0°	41.2
		10.00	4	70	0.036	10.000	10.000	2230	321	32.1	11.0°	51.4
		12.00	4	70	0.040	12.000	12.000	1855	297	42.7	11.0°	61.7
		16.00	4	70	0.048	16.000	16.000	1395	268	68.6	11.0°	82.3
		20.00	4	70	0.056	20.000	20.000	1115	250	99.9	11.0°	102.9
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	35	0.010	1.800	3.000	3715	149	0.8	10.0°	10.2
		4.00	4	35	0.013	2.800	4.000	2785	145	1.6	10.0°	15.9
		5.00	4	35	0.016	4.000	5.000	2230	143	2.9	10.0°	22.7
		6.00	4	35	0.020	6.000	6.000	1855	148	5.3	10.0°	34.0
		8.00	4	35	0.028	8.000	8.000	1395	156	10.0	10.0°	45.4
		10.00	4	35	0.036	10.000	10.000	1115	161	16.1	10.0°	56.7
		12.00	4	35	0.040	12.000	12.000	930	149	21.4	10.0°	68.1
		16.00	4	35	0.048	16.000	16.000	695	133	34.2	10.0°	90.7
		20.00	4	35	0.056	20.000	20.000	555	124	49.7	10.0°	113.4

Cylindrical end mills NVS

Smooth-edged, normal version, short neck
High-performance penetration edge

HM MG10 | λ **45°** γ **15°**

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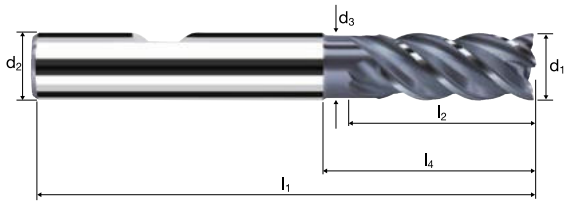
Vario



Roughing

Finishing

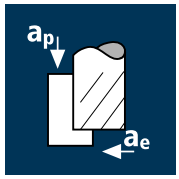
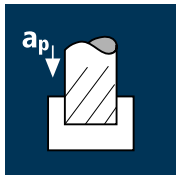
ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Copper Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8404** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM **P8404**	**P8304**
140	2.00	6.00	1.90	57	7.00	10.00	18.31	0.050	7.0°	4		●
160	2.50	6.00	2.30	57	8.00	10.00	17.56	0.050	6.5°	4		●
178*	3.00	3.00	2.80	45	8.00	13.56	14.00	0.050	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.050	4.5°	4		●
200	3.50	6.00	3.20	57	8.00	14.00	19.88	0.050	4.0°	4		●
218*	4.00	4.00	3.70	50	11.00	15.47	16.00	0.100	0.0°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.100	3.0°	4		●
240	4.50	6.00	4.10	57	12.00	16.00	20.20	0.100	2.5°	4		●
258*	5.00	5.00	4.60	50	13.00	15.40	16.00	0.100	0.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
280	5.50	6.00	5.00	57	13.00	20.00	22.52	0.100	1.0°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.100	0.0°	4		●
331	7.00	8.00	6.40	63	16.00	24.00	27.64	0.100	1.5°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.150	0.0°	4		●
420	9.00	10.00	8.20	72	19.00	26.00	30.02	0.200	1.5°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.200	0.0°	4		●

* without clamping flat only

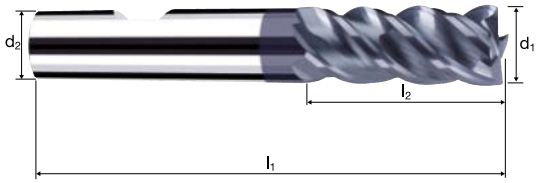
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	4.00	4	180	0.035	6.000	1.600	14325	2006	19.3
		5.00	4	180	0.040	7.500	2.000	11460	1834	27.5
		6.00	4	180	0.050	9.000	2.400	9550	1910	41.3
		8.00	4	180	0.060	12.000	3.200	7160	1718	66.0
		10.00	4	180	0.075	15.000	4.000	5730	1719	103.1
		12.00	4	180	0.085	18.000	4.800	4775	1624	140.3
		16.00	4	180	0.095	24.000	6.400	3580	1360	209.0
		20.00	4	180	0.110	30.000	8.000	2865	1261	302.5
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	6.000	1.600	11935	1432	13.7
		5.00	4	150	0.035	7.500	2.000	9550	1337	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1274	27.5
		8.00	4	150	0.050	12.000	3.200	5970	1194	45.8
		10.00	4	150	0.065	15.000	4.000	4775	1242	74.5
		12.00	4	150	0.075	18.000	4.800	3980	1194	103.2
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9
		20.00	4	150	0.100	30.000	8.000	2385	954	229.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.030	6.000	1.600	5570	668	6.4
		5.00	4	70	0.035	7.500	2.000	4455	624	9.4
		6.00	4	70	0.040	9.000	2.400	3715	594	12.8
		8.00	4	70	0.050	12.000	3.200	2785	557	21.4
		10.00	4	70	0.060	15.000	4.000	2230	535	32.1
		12.00	4	70	0.075	18.000	4.800	1855	557	48.1
		16.00	4	70	0.085	24.000	6.400	1395	474	72.9
		20.00	4	70	0.095	30.000	8.000	1115	424	101.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.020	6.000	1.600	7160	573	5.5
		5.00	4	90	0.025	7.500	2.000	5730	573	8.6
		6.00	4	90	0.030	9.000	2.400	4775	573	12.4
		8.00	4	90	0.035	12.000	3.200	3580	501	19.2
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.3
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.080	30.000	8.000	1430	458	109.8
	Steel < 850 N/mm²	4.00	4	145	0.025	5.000	4.000	11540	1154	23.1
		5.00	4	145	0.030	6.250	5.000	9230	1108	34.6
		6.00	4	145	0.040	7.500	6.000	7690	1230	55.4
		8.00	4	145	0.045	10.000	8.000	5770	1039	83.1
		10.00	4	145	0.055	12.500	10.000	4615	1015	126.9
		12.00	4	145	0.065	15.000	12.000	3845	1000	179.9
		16.00	4	145	0.070	20.000	16.000	2885	808	258.5
		20.00	4	145	0.085	25.000	20.000	2310	785	392.7
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	5.000	4.000	9550	764	15.3
		5.00	4	120	0.025	6.250	5.000	7640	764	23.9
		6.00	4	120	0.030	7.500	6.000	6365	764	34.4
		8.00	4	120	0.040	10.000	8.000	4775	764	61.1
		10.00	4	120	0.050	12.500	10.000	3820	764	95.5
		12.00	4	120	0.055	15.000	12.000	3185	701	126.1
		16.00	4	120	0.065	20.000	16.000	2385	620	198.4
		20.00	4	120	0.075	25.000	20.000	1910	573	286.5
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.025	5.000	4.000	4375	438	8.8
		5.00	4	55	0.025	6.250	5.000	3500	350	10.9
		6.00	4	55	0.030	7.500	6.000	2920	350	15.8
		8.00	4	55	0.040	10.000	8.000	2190	350	28.0
		10.00	4	55	0.045	12.500	10.000	1750	315	39.4
		12.00	4	55	0.055	15.000	12.000	1460	321	57.8
		16.00	4	55	0.065	20.000	16.000	1095	285	91.1
		20.00	4	55	0.070	25.000	20.000	875	245	122.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	70	0.015	5.000	4.000	5570	334	6.7
		5.00	4	70	0.020	6.250	5.000	4455	356	11.1
		6.00	4	70	0.025	7.500	6.000	3715	372	16.7
		8.00	4	70	0.025	10.000	8.000	2785	279	22.3
		10.00	4	70	0.035	12.500	10.000	2230	312	39.0
		12.00	4	70	0.040	15.000	12.000	1855	297	53.4
		16.00	4	70	0.050	20.000	16.000	1395	279	89.3
		20.00	4	70	0.060	25.000	20.000	1115	268	133.8

Cylindrical end mills NVD

Smooth-edged, normal version

HM
MG10

λ **45°**
γ **0°**



Roughing HPC

Roughing HDC

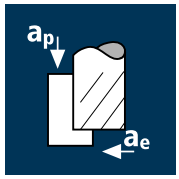
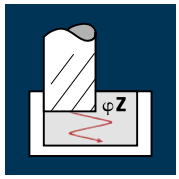
Finishing

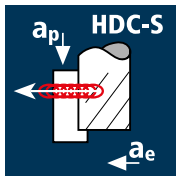
ReTool®

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500				**Inox** Stainless	**Ti** Titanium	**GG(G)** **Tool Steel** **Nickel-Alloys**

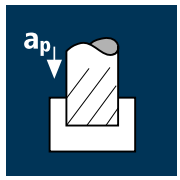
Example: **Order-N°.** Coating **P** Article-N°. **15307** ø-Code **180**

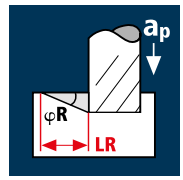
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM **P15307**	**P15207**
180	3.00	6.00	57	8.00	15.56	0.05	6.0°	4		●
220	4.00	6.00	57	8.00	14.59	0.05	4.5°	4		●
260	5.00	6.00	57	10.00	14.72	0.10	2.5°	4		●
300	6.00	6.00	57	12.00	-	0.10	0.0°	4		●
391	8.00	8.00	63	19.00	-	0.10	0.0°	4		●
450	10.00	10.00	72	23.00	-	0.15	0.0°	4		●
501	12.00	12.00	83	27.00	-	0.15	0.0°	4		●
610	16.00	16.00	92	32.00	-	0.15	0.0°	4		●
682	20.00	20.00	104	39.00	-	0.15	0.0°	4		●

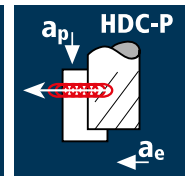
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	155	0.024	3.750	1.200	16445	1579	7.1	1.5°
		4.00	4	155	0.034	5.000	1.600	12335	1678	13.4	1.5°
		5.00	4	155	0.042	6.250	2.000	9870	1658	20.7	1.5°
		6.00	4	155	0.045	9.000	2.400	8225	1481	32.0	1.5°
		8.00	4	155	0.060	12.000	3.200	6165	1480	56.8	1.5°
		10.00	4	155	0.075	15.000	4.000	4935	1481	88.8	1.5°
		12.00	4	155	0.084	18.000	4.800	4110	1381	119.3	1.5°
		16.00	4	155	0.096	24.000	6.400	3085	1185	182.0	1.5°
		20.00	4	155	0.110	30.000	8.000	2465	1085	260.3	1.5°
	Steel 850 - 1100 N/mm²	3.00	4	140	0.022	3.750	1.200	14855	1307	5.9	2.0°
		4.00	4	140	0.030	5.000	1.600	11140	1337	10.7	2.0°
		5.00	4	140	0.037	6.250	2.000	8915	1319	16.5	2.0°
		6.00	4	140	0.039	9.000	2.400	7425	1158	25.0	2.0°
		8.00	4	140	0.052	12.000	3.200	5570	1159	44.5	2.0°
		10.00	4	140	0.065	15.000	4.000	4455	1158	69.5	2.0°
		12.00	4	140	0.078	18.000	4.800	3715	1159	100.1	2.0°
		16.00	4	140	0.088	24.000	6.400	2785	980	150.6	2.0°
		20.00	4	140	0.100	30.000	8.000	2230	892	214.1	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.014	3.750	1.200	9550	535	2.4	1.5°
		4.00	4	90	0.018	5.000	1.600	7160	516	4.1	1.5°
		5.00	4	90	0.023	6.250	2.000	5730	527	6.6	1.5°
		6.00	4	90	0.027	9.000	2.400	4775	516	11.1	1.5°
		8.00	4	90	0.036	12.000	3.200	3580	516	19.8	1.5°
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9	1.5°
		12.00	4	90	0.054	18.000	4.800	2385	515	44.5	1.5°
		16.00	4	90	0.056	24.000	6.400	1790	401	61.6	1.5°
		20.00	4	90	0.070	30.000	8.000	1430	400	96.1	1.5°

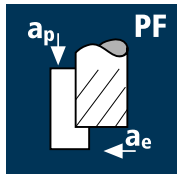
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	270	0.054	8.000	0.300	28650	6188	14.9
		4.00	4	270	0.073	11.000	0.400	21485	6274	27.6
		5.00	4	270	0.092	13.000	0.500	17190	6326	41.1
		6.00	4	270	0.112	13.000	0.600	14325	6418	50.1
		8.00	4	270	0.150	19.000	0.800	10745	6447	98.0
		10.00	4	270	0.185	23.000	1.000	8595	6360	146.3
		12.00	4	270	0.223	27.000	1.200	7160	6387	206.9
		16.00	4	270	0.245	32.000	1.600	5370	5263	269.4
		20.00	4	270	0.307	40.000	2.000	4295	5274	421.9
	Steel 850 - 1100 N/mm²	3.00	4	216	0.054	8.000	0.300	22920	4951	11.9
		4.00	4	216	0.073	11.000	0.400	17190	5020	22.1
		5.00	4	216	0.092	13.000	0.500	13750	5060	32.9
		6.00	4	216	0.112	13.000	0.600	11460	5134	40.0
		8.00	4	216	0.150	19.000	0.800	8595	5157	78.4
		10.00	4	216	0.185	23.000	1.000	6875	5088	117.0
		12.00	4	216	0.223	27.000	1.200	5730	5111	165.6
		16.00	4	216	0.245	32.000	1.600	4295	4209	215.5
		20.00	4	216	0.307	40.000	2.000	3440	4224	337.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	132	0.038	8.000	0.225	14005	2129	3.8
		4.00	4	132	0.053	11.000	0.300	10505	2227	7.3
		5.00	4	132	0.066	13.000	0.375	8405	2219	10.8
		6.00	4	132	0.080	13.000	0.450	7005	2242	13.1
		8.00	4	132	0.106	19.000	0.600	5250	2226	25.4
		10.00	4	132	0.133	23.000	0.750	4200	2234	38.5
		12.00	4	132	0.159	27.000	0.900	3500	2226	54.1
		16.00	4	132	0.173	32.000	1.200	2625	1817	69.8
		20.00	4	132	0.222	40.000	1.500	2100	1865	111.9

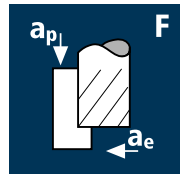
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**











Cylindrical end mills E-Cut

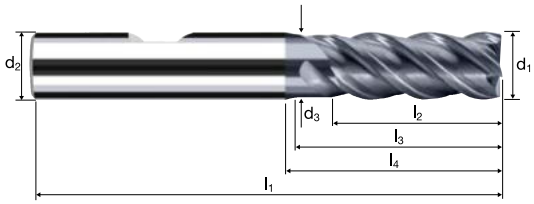
Smooth-edged, normal version, short neck

HM MG10

λ 45°
γ 10°

r

Vario



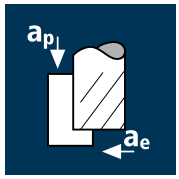
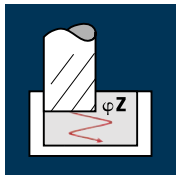
Roughing HPC | Roughing HDC | Finishing

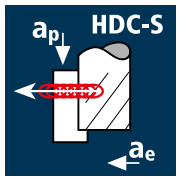
ReTool®

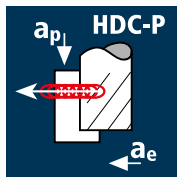
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G)** Tool Steel

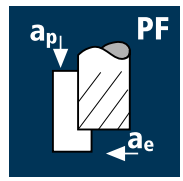
Example: **Order-N°.** Coating **P** Article-N°. **8400** ø-Code **100**

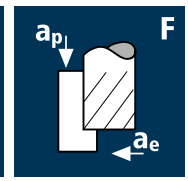
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8400	P8300
100	1.00	6.00	0.95	57	3.00	5.00	14.82	0.050	10.0°	4		●
140	2.00	6.00	1.90	57	5.00	8.00	16.05	0.050	7.5°	4		●
160	2.50	6.00	2.30	57	7.00	10.00	17.30	0.050	6.5°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
570	14.00	14.00	13.00	83	28.00	32.97	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φz [°]
	Steel < 850 N/mm²	4.00	5	165	0.040	6.000	1.200	13130	2626	18.9	1.0°
		5.00	5	165	0.049	7.500	1.500	10505	2574	29.0	1.0°
		6.00	5	165	0.051	9.000	1.800	8755	2233	36.2	1.0°
		8.00	5	165	0.069	12.000	2.400	6565	2265	65.2	1.0°
		10.00	5	165	0.085	15.000	3.000	5250	2231	100.4	1.0°
		12.00	5	165	0.096	18.000	3.600	4375	2100	136.1	1.0°
		16.00	5	165	0.111	24.000	4.800	3285	1823	210.0	1.0°
		20.00	5	165	0.127	30.000	6.000	2625	1667	300.0	1.0°
	Steel 850 - 1100 N/mm²	4.00	5	150	0.035	6.000	1.200	11935	2089	15.0	1.5°
		5.00	5	150	0.042	7.500	1.500	9550	2006	22.6	1.5°
		6.00	5	150	0.045	9.000	1.800	7960	1791	29.0	1.5°
		8.00	5	150	0.060	12.000	2.400	5970	1791	51.6	1.5°
		10.00	5	150	0.074	15.000	3.000	4775	1767	79.5	1.5°
		12.00	5	150	0.089	18.000	3.600	3980	1771	114.8	1.5°
		16.00	5	150	0.102	24.000	4.800	2985	1522	175.4	1.5°
		20.00	5	150	0.115	30.000	6.000	2385	1371	246.9	1.5°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	5	95	0.020	6.000	1.200	7560	756	5.4	1.0°
		5.00	5	95	0.026	7.500	1.500	6050	787	8.8	1.0°
		6.00	5	95	0.031	9.000	1.800	5040	781	12.7	1.0°
		8.00	5	95	0.042	12.000	2.400	3780	794	22.9	1.0°
		10.00	5	95	0.051	15.000	3.000	3025	771	34.7	1.0°
		12.00	5	95	0.062	18.000	3.600	2520	781	50.6	1.0°
		16.00	5	95	0.064	24.000	4.800	1890	605	69.7	1.0°
		20.00	5	95	0.080	30.000	6.000	1510	604	108.7	1.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	4.00	5	243	0.073	11.000	0.400	19335	7057	31.1
		5.00	5	243	0.092	13.000	0.500	15470	7116	46.3
		6.00	5	243	0.112	13.000	0.600	12890	7218	56.3
		8.00	5	243	0.150	19.000	0.800	9670	7253	110.2
		10.00	5	243	0.185	23.000	1.000	7735	7155	164.6
		12.00	5	243	0.223	27.000	1.200	6445	7186	232.8
		16.00	5	243	0.245	32.000	1.600	4835	5923	303.3
		20.00	5	243	0.307	40.000	2.000	3865	5933	474.6
	Steel 850 - 1100 N/mm²	4.00	5	195	0.073	11.000	0.400	15520	5665	24.9
		5.00	5	195	0.092	13.000	0.500	12415	5711	37.1
		6.00	5	195	0.112	13.000	0.600	10345	5793	45.2
		8.00	5	195	0.150	19.000	0.800	7760	5820	88.5
		10.00	5	195	0.185	23.000	1.000	6205	5740	132.0
		12.00	5	195	0.223	27.000	1.200	5175	5770	187.0
		16.00	5	195	0.245	32.000	1.600	3880	4753	243.4
		20.00	5	195	0.307	40.000	2.000	3105	4766	381.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	5	135	0.070	11.000	0.200	10745	3761	8.3
		5.00	5	135	0.088	13.000	0.250	8595	3782	12.3
		6.00	5	135	0.106	13.000	0.300	7160	3795	14.8
		8.00	5	135	0.141	19.000	0.400	5370	3786	28.8
		10.00	5	135	0.176	23.000	0.500	4295	3780	43.5
		12.00	5	135	0.211	27.000	0.600	3580	3777	61.2
		16.00	5	135	0.229	32.000	0.800	2685	3074	78.7
		20.00	5	135	0.295	40.000	1.000	2150	3171	126.9







Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills E-Cut

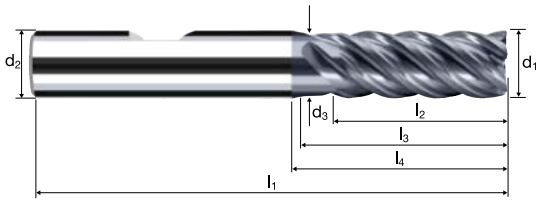
Smooth-edged, normal version, short neck

HM MG10

λ 45°
γ 10°

r

Vario



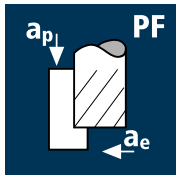
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8405** ø-Code **220**

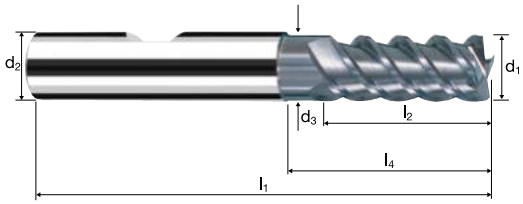
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8405	P8305
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	5		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	5		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	5		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	5		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	5		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	5		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	5		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	5		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	4.00	4	140	0.015	6.000	1.000	11140	668
		6.00	4	140	0.020	9.000	1.500	7425	594
		8.00	4	140	0.025	12.000	2.000	5570	557
		10.00	4	140	0.035	15.000	2.500	4455	624
		12.00	4	140	0.040	18.000	3.000	3715	594
		14.00	4	140	0.045	21.000	3.500	3185	573
		16.00	4	140	0.055	24.000	4.000	2785	613
		18.00	4	140	0.060	27.000	4.500	2475	594
		20.00	4	140	0.065	30.000	5.000	2230	580
	Steel 850 - 1100 N/mm²	4.00	4	100	0.015	6.000	1.000	7960	478
		6.00	4	100	0.020	9.000	1.500	5305	424
		8.00	4	100	0.025	12.000	2.000	3980	398
		10.00	4	100	0.035	15.000	2.500	3185	446
		12.00	4	100	0.040	18.000	3.000	2655	425
		14.00	4	100	0.045	21.000	3.500	2275	410
		16.00	4	100	0.055	24.000	4.000	1990	438
		18.00	4	100	0.060	27.000	4.500	1770	425
		20.00	4	100	0.065	30.000	5.000	1590	413
	Steel 1100 - 1300 N/mm²	4.00	4	75	0.015	6.000	0.400	5970	358
		6.00	4	75	0.020	9.000	0.600	3980	318
		8.00	4	75	0.025	12.000	0.800	2985	299
		10.00	4	75	0.035	15.000	1.000	2385	334
		12.00	4	75	0.040	18.000	1.200	1990	318
		14.00	4	75	0.045	21.000	1.400	1705	307
		16.00	4	75	0.055	24.000	1.600	1490	328
		18.00	4	75	0.060	27.000	1.800	1325	318
		20.00	4	75	0.065	30.000	2.000	1195	311
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.015	6.000	1.000	7160	430
		6.00	4	90	0.020	9.000	1.500	4775	382
		8.00	4	90	0.025	12.000	2.000	3580	358
		10.00	4	90	0.035	15.000	2.500	2865	401
		12.00	4	90	0.040	18.000	3.000	2385	382
		14.00	4	90	0.045	21.000	3.500	2045	368
		16.00	4	90	0.055	24.000	4.000	1790	394
		18.00	4	90	0.060	27.000	4.500	1590	382
		20.00	4	90	0.065	30.000	5.000	1430	372
	Cast iron (lamellar / spheroidal)	4.00	4	120	0.015	6.000	1.000	9550	573
		6.00	4	120	0.020	9.000	1.500	6365	509
		8.00	4	120	0.025	12.000	2.000	4775	478
		10.00	4	120	0.035	15.000	2.500	3820	535
		12.00	4	120	0.040	18.000	3.000	3185	510
		14.00	4	120	0.045	21.000	3.500	2730	491
		16.00	4	120	0.055	24.000	4.000	2385	525
		18.00	4	120	0.060	27.000	4.500	2120	509
		20.00	4	120	0.065	30.000	5.000	1910	497
	Unalloyed copper	4.00	4	230	0.015	6.000	1.000	18305	1098
		6.00	4	230	0.020	9.000	1.500	12200	976
		8.00	4	230	0.025	12.000	2.000	9150	915
		10.00	4	230	0.035	15.000	2.500	7320	1025
		12.00	4	230	0.040	18.000	3.000	6100	976
		14.00	4	230	0.045	21.000	3.500	5230	941
		16.00	4	230	0.055	24.000	4.000	4575	1007
		18.00	4	230	0.060	27.000	4.500	4065	976
		20.00	4	230	0.065	30.000	5.000	3660	952
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	4.00	4	95	0.015	6.000	1.000	7560	454
		6.00	4	95	0.020	9.000	1.500	5040	403
		8.00	4	95	0.025	12.000	2.000	3780	378
		10.00	4	95	0.035	15.000	2.500	3025	424
		12.00	4	95	0.040	18.000	3.000	2520	403
		14.00	4	95	0.045	21.000	3.500	2160	389
		16.00	4	95	0.055	24.000	4.000	1890	416
		18.00	4	95	0.060	27.000	4.500	1680	403
		20.00	4	95	0.065	30.000	5.000	1510	393
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	4.00	4	50	0.015	6.000	1.000	3980	239
		6.00	4	50	0.020	9.000	1.500	2655	212
		8.00	4	50	0.025	12.000	2.000	1990	199
		10.00	4	50	0.035	15.000	2.500	1590	223
		12.00	4	50	0.040	18.000	3.000	1325	212
		14.00	4	50	0.045	21.000	3.500	1135	204
		16.00	4	50	0.055	24.000	4.000	995	219
		18.00	4	50	0.060	27.000	4.500	885	212
		20.00	4	50	0.065	30.000	5.000	795	207

Cylindrical end mills

Smooth-edged, normal version, short neck

HM MG10	λ 55° γ 15°



Roughing

Finishing

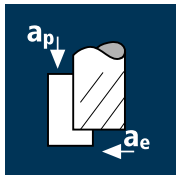
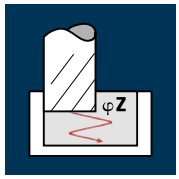
ReTool®

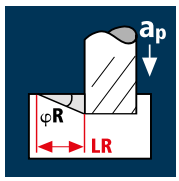
Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Gold / Platinum

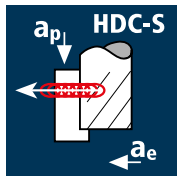
Example: **Order-N°.** Coating **P** Article-N°. **5355** ø-Code **180**

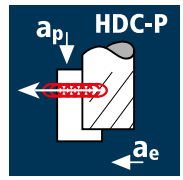
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5355	POLYCHROM P5255
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.05	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.05	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.10	0.0°	4		●
331*	7.00	8.00	-	63	16.00	-	20.02	0.10	1.5°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.10	0.0°	4		●
420*	9.00	10.00	-	72	19.00	-	23.02	0.15	1.5°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.15	0.0°	4		●
470*	11.00	12.00	-	83	26.00	-	30.52	0.15	1.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.15	0.0°	4		●
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.15	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.15	0.0°	4		●

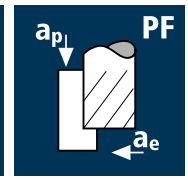
* without short neck only

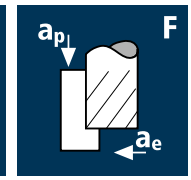
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	3	145	0.021	3.750	1.950	15385	969	7.1	2.0°
		4.00	3	145	0.030	5.000	2.600	11540	1039	13.5	2.0°
		5.00	3	145	0.038	6.250	3.250	9230	1052	21.4	2.0°
		6.00	3	145	0.041	9.000	3.900	7690	946	33.2	2.0°
		8.00	3	145	0.054	12.000	5.200	5770	935	58.3	2.0°
		10.00	3	145	0.068	15.000	6.500	4615	942	91.8	2.0°
		12.00	3	145	0.076	18.000	7.800	3845	877	123.1	2.0°
		16.00	3	145	0.086	24.000	10.400	2885	744	185.8	2.0°
		20.00	3	145	0.099	30.000	13.000	2310	686	267.6	2.0°
	Steel 850 - 1100 N/mm²	3.00	3	130	0.020	3.750	1.950	13795	828	6.1	3.0°
		4.00	3	130	0.027	5.000	2.600	10345	838	10.9	3.0°
		5.00	3	130	0.033	6.250	3.250	8275	819	16.6	3.0°
		6.00	3	130	0.035	9.000	3.900	6895	724	25.4	3.0°
		8.00	3	130	0.047	12.000	5.200	5175	730	45.5	3.0°
		10.00	3	130	0.059	15.000	6.500	4140	733	71.4	3.0°
		12.00	3	130	0.070	18.000	7.800	3450	725	101.7	3.0°
		16.00	3	130	0.079	24.000	10.400	2585	613	152.9	3.0°
		20.00	3	130	0.099	30.000	13.000	2070	615	239.8	3.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	80	0.014	3.750	1.950	8490	357	2.6	2.0°
		4.00	3	80	0.018	5.000	2.600	6365	344	4.5	2.0°
		5.00	3	80	0.025	6.250	3.250	5095	382	7.8	2.0°
		6.00	3	80	0.027	9.000	3.900	4245	344	12.1	2.0°
		8.00	3	80	0.036	12.000	5.200	3185	344	21.5	2.0°
		10.00	3	80	0.045	15.000	6.500	2545	344	33.5	2.0°
		12.00	3	80	0.054	18.000	7.800	2120	343	48.2	2.0°
		16.00	3	80	0.056	24.000	10.400	1590	267	66.7	2.0°
		20.00	3	80	0.070	30.000	13.000	1275	268	104.4	2.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]
	Steel < 850 N/mm²	3.00	3	123	0.017	3.000	3.000	13050	666	6.0	2.0°
		4.00	3	123	0.024	5.000	4.000	9790	705	14.1	2.0°
		5.00	3	123	0.030	6.250	5.000	7830	705	22.0	2.0°
		6.00	3	123	0.033	9.000	6.000	6525	646	34.9	2.0°
		8.00	3	123	0.043	12.000	8.000	4895	632	60.6	2.0°
		10.00	3	123	0.054	15.000	10.000	3915	634	95.1	2.0°
		12.00	3	123	0.061	18.000	12.000	3265	598	129.1	2.0°
		16.00	3	123	0.069	24.000	16.000	2445	506	194.3	2.0°
		20.00	3	123	0.079	30.000	20.000	1960	465	278.7	2.0°
	Steel 850 - 1100 N/mm²	3.00	3	111	0.016	3.000	3.000	11775	565	5.1	2.0°
		4.00	3	111	0.022	5.000	4.000	8835	583	11.7	2.0°
		5.00	3	111	0.026	6.250	5.000	7065	551	17.2	2.0°
		6.00	3	111	0.028	9.000	6.000	5890	495	26.7	2.0°
		8.00	3	111	0.038	12.000	8.000	4415	503	48.3	2.0°
		10.00	3	111	0.047	15.000	10.000	3535	498	74.8	2.0°
		12.00	3	111	0.056	18.000	12.000	2945	495	106.9	2.0°
		16.00	3	111	0.063	24.000	16.000	2210	418	160.4	2.0°
		20.00	3	111	0.079	30.000	20.000	1765	418	251.0	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	68	0.011	3.000	3.000	7215	238	2.1	2.0°
		4.00	3	68	0.014	5.000	4.000	5410	227	4.5	2.0°
		5.00	3	68	0.020	6.250	5.000	4330	260	8.1	2.0°
		6.00	3	68	0.022	9.000	6.000	3610	238	12.9	2.0°
		8.00	3	68	0.029	12.000	8.000	2705	235	22.6	2.0°
		10.00	3	68	0.036	15.000	10.000	2165	234	35.1	2.0°
		12.00	3	68	0.043	18.000	12.000	1805	233	50.3	2.0°
		16.00	3	68	0.045	24.000	16.000	1355	183	70.2	2.0°
		20.00	3	68	0.056	30.000	20.000	1080	181	108.8	2.0°









Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

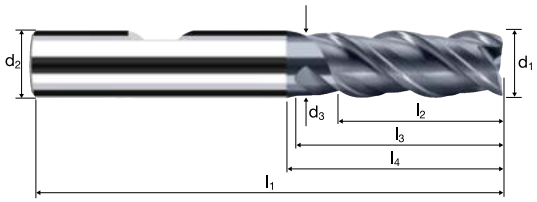
Cylindrical end mills E-Cut

Smooth-edged, normal version, short neck

HM MG10 | λ **45°** γ **10°**

r

Vario



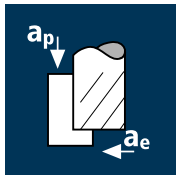
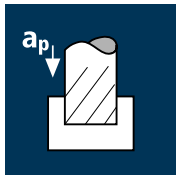
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8403** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8403	POLYCHROM P8303
100	1.00	6.00	0.95	57	3.00	5.00	14.82	0.050	10.0°	3		●
140	2.00	6.00	1.90	57	5.00	8.00	16.05	0.050	7.5°	3		●
160	2.50	6.00	2.30	57	7.00	10.00	17.30	0.050	6.5°	3		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	3		●
200	3.50	6.00	3.20	57	9.00	14.00	19.69	0.050	4.0°	3		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	3		●
240	4.50	6.00	4.10	57	12.00	17.00	21.14	0.100	2.5°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	3		●
280	5.50	6.00	5.00	57	13.00	18.00	20.59	0.100	1.0°	3		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	3		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	3		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	3		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	3		●
570	14.00	14.00	13.00	83	28.00	32.97	37.00	0.200	0.0°	3		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	3		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	3.00	4	140	0.022	3.750	1.200	14855	1307	5.9
		4.00	4	140	0.031	5.000	1.600	11140	1381	11.1
		5.00	4	140	0.038	6.250	2.000	8915	1355	16.9
		6.00	4	140	0.041	9.000	2.400	7425	1218	26.3
		8.00	4	140	0.054	12.000	3.200	5570	1203	46.2
		10.00	4	140	0.068	15.000	4.000	4455	1212	72.7
		12.00	4	140	0.076	18.000	4.800	3715	1129	97.6
		16.00	4	140	0.086	24.000	6.400	2785	958	147.1
		20.00	4	140	0.099	30.000	8.000	2230	883	211.9
	Steel 850 - 1100 N/mm²	3.00	4	120	0.020	3.750	1.200	12730	1018	4.6
		4.00	4	120	0.025	5.000	1.600	9550	955	7.6
		5.00	4	120	0.033	6.250	2.000	7640	1009	12.6
		6.00	4	120	0.035	9.000	2.400	6365	891	19.2
		8.00	4	120	0.047	12.000	3.200	4775	898	34.5
		10.00	4	120	0.059	15.000	4.000	3820	902	54.1
		12.00	4	120	0.070	18.000	4.800	3185	892	77.1
		16.00	4	120	0.079	24.000	6.400	2385	754	115.8
		20.00	4	120	0.090	30.000	8.000	1910	688	165.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	80	0.012	3.750	1.200	8490	408	1.8
		4.00	4	80	0.016	5.000	1.600	6365	407	3.3
		5.00	4	80	0.020	6.250	2.000	5095	408	5.1
		6.00	4	80	0.024	9.000	2.400	4245	408	8.8
		8.00	4	80	0.032	12.000	3.200	3185	408	15.7
		10.00	4	80	0.041	15.000	4.000	2545	417	25.0
		12.00	4	80	0.049	18.000	4.800	2120	416	35.9
		16.00	4	80	0.050	24.000	6.400	1590	318	48.8
		20.00	4	80	0.063	30.000	8.000	1275	321	77.1
	Cast iron (lamellar / spheroidal)	3.00	4	155	0.020	3.750	1.200	16445	1316	5.9
		4.00	4	155	0.029	5.000	1.600	12335	1431	11.4
		5.00	4	155	0.034	6.250	2.000	9870	1342	16.8
		6.00	4	155	0.038	9.000	2.400	8225	1250	27.0
		8.00	4	155	0.050	12.000	3.200	6165	1233	47.3
		10.00	4	155	0.063	15.000	4.000	4935	1244	74.6
		12.00	4	155	0.076	18.000	4.800	4110	1249	107.9
		16.00	4	155	0.086	24.000	6.400	3085	1061	163.0
		20.00	4	155	0.099	30.000	8.000	2465	976	234.3
	Steel 500 - 850 N/mm²	3.00	4	105	0.011	2.250	3.000	11140	490	3.3
		4.00	4	105	0.016	4.000	4.000	8355	535	8.6
		5.00	4	105	0.019	5.000	5.000	6685	508	12.7
		6.00	4	105	0.027	7.500	6.000	5570	602	27.1
		8.00	4	105	0.035	10.000	8.000	4180	585	46.8
		10.00	4	105	0.044	12.500	10.000	3340	588	73.5
		12.00	4	105	0.049	15.000	12.000	2785	546	98.3
		16.00	4	105	0.056	20.000	16.000	2090	468	149.8
		20.00	4	105	0.064	25.000	20.000	1670	428	213.8
	Steel 850 - 1100 N/mm²	3.00	4	90	0.010	2.250	3.000	9550	382	2.6
		4.00	4	90	0.013	4.000	4.000	7160	372	6.0
		5.00	4	90	0.017	5.000	5.000	5730	390	9.7
		6.00	4	90	0.023	7.500	6.000	4775	439	19.8
		8.00	4	90	0.031	10.000	8.000	3580	444	35.5
		10.00	4	90	0.038	12.500	10.000	2865	436	54.4
		12.00	4	90	0.046	15.000	12.000	2385	439	79.0
		16.00	4	90	0.051	20.000	16.000	1790	365	116.9
		20.00	4	90	0.058	25.000	20.000	1430	332	165.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	60	0.006	2.250	3.000	6365	153	1.0
		4.00	4	60	0.008	4.000	4.000	4775	153	2.4
		5.00	4	60	0.010	5.000	5.000	3820	153	3.8
		6.00	4	60	0.016	7.500	6.000	3185	204	9.2
		8.00	4	60	0.021	10.000	8.000	2385	200	16.0
		10.00	4	60	0.027	12.500	10.000	1910	206	25.8
		12.00	4	60	0.032	15.000	12.000	1590	204	36.6
		16.00	4	60	0.033	20.000	16.000	1195	158	50.5
		20.00	4	60	0.041	25.000	20.000	955	157	78.3
	Cast iron (lamellar / spheroidal)	3.00	4	116	0.010	2.250	3.000	12310	492	3.3
		4.00	4	116	0.015	4.000	4.000	9230	554	8.9
		5.00	4	116	0.017	5.000	5.000	7385	502	12.6
		6.00	4	116	0.025	7.500	6.000	6155	616	27.7
		8.00	4	116	0.033	10.000	8.000	4615	609	48.7
		10.00	4	116	0.041	12.500	10.000	3690	605	75.7
		12.00	4	116	0.049	15.000	12.000	3075	603	108.5
		16.00	4	116	0.056	20.000	16.000	2310	517	165.6
		20.00	4	116	0.064	25.000	20.000	1845	472	236.2

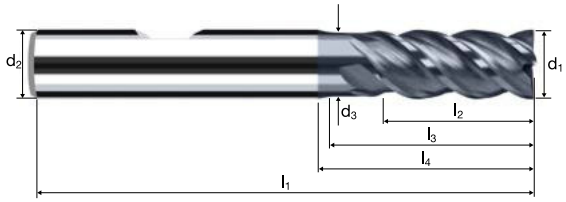
Cylindrical end mills

Smooth-edged, normal version, short neck

HM MG10	λ 43° γ 6°

r

Vario



Roughing HPC | Roughing HDC | Finishing

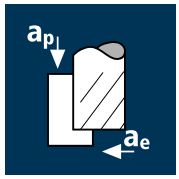
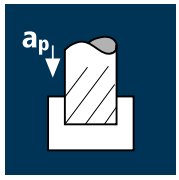
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **46300** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P46300	P46200
100	1.00	6.00	0.95	57	3.00	7.00	16.82	0.050	9.0°	4		●
140	2.00	6.00	1.90	57	5.00	10.00	18.05	0.050	6.5°	4		●
178*	3.00	3.00	-	45	8.00	-	-	0.050	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4		●
218*	4.00	4.00	-	50	11.00	-	-	0.100	0.0°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	4		●
258*	5.00	5.00	-	50	13.00	-	-	0.100	0.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
570	14.00	14.00	13.00	83	28.00	32.97	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	4		●

* without clamping flat only, without short neck

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	6.00	4	140	0.041	9.000	2.400	7425	1203	26.0
		8.00	4	140	0.054	12.000	3.200	5570	1203	46.2
		10.00	4	140	0.068	15.000	4.000	4455	1203	72.2
		12.00	4	140	0.076	18.000	4.800	3715	1123	97.1
		16.00	4	140	0.086	24.000	6.400	2785	963	147.8
		20.00	4	140	0.099	30.000	8.000	2230	883	211.9
	Steel 850 - 1100 N/mm²	6.00	4	125	0.035	9.000	2.400	6630	931	20.1
		8.00	4	125	0.047	12.000	3.200	4975	931	35.8
		10.00	4	125	0.059	15.000	4.000	3980	931	55.9
		12.00	4	125	0.070	18.000	4.800	3315	931	80.4
		16.00	4	125	0.079	24.000	6.400	2485	787	120.9
		20.00	4	125	0.090	30.000	8.000	1990	716	171.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	80	0.024	9.000	2.400	4245	413	8.9
		8.00	4	80	0.032	12.000	3.200	3185	413	15.9
		10.00	4	80	0.041	15.000	4.000	2545	412	24.7
		12.00	4	80	0.049	18.000	4.800	2120	412	35.6
		16.00	4	80	0.050	24.000	6.400	1590	321	49.2
		20.00	4	80	0.063	30.000	8.000	1275	321	77.1
	Cast iron (lamellar / spheroidal)	6.00	4	155	0.038	9.000	2.400	8225	1244	26.9
		8.00	4	155	0.050	12.000	3.200	6165	1243	47.7
		10.00	4	155	0.063	15.000	4.000	4935	1244	74.6
		12.00	4	155	0.076	18.000	4.800	4110	1243	107.4
		16.00	4	155	0.086	24.000	6.400	3085	1066	163.8
		20.00	4	155	0.099	30.000	8.000	2465	976	234.3
	Steel 500 - 850 N/mm²	6.00	4	110	0.026	7.500	6.000	5835	607	27.3
		8.00	4	110	0.035	10.000	8.000	4375	613	49.0
		10.00	4	110	0.044	12.500	10.000	3500	616	77.0
		12.00	4	110	0.049	15.000	12.000	2920	572	103.0
		16.00	4	110	0.056	20.000	16.000	2190	491	157.0
		20.00	4	110	0.064	25.000	20.000	1750	448	224.0
	Steel 850 - 1100 N/mm²	6.00	4	100	0.023	7.500	6.000	5305	488	22.0
		8.00	4	100	0.030	10.000	8.000	3980	478	38.2
		10.00	4	100	0.038	12.500	10.000	3185	484	60.5
		12.00	4	100	0.046	15.000	12.000	2655	489	87.9
		16.00	4	100	0.051	20.000	16.000	1990	406	129.9
		20.00	4	100	0.059	25.000	20.000	1590	375	187.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	65	0.016	7.500	6.000	3450	221	9.9
		8.00	4	65	0.021	10.000	8.000	2585	217	17.4
		10.00	4	65	0.026	12.500	10.000	2070	215	26.9
		12.00	4	65	0.032	15.000	12.000	1725	221	39.7
		16.00	4	65	0.033	20.000	16.000	1295	171	54.7
		20.00	4	65	0.041	25.000	20.000	1035	170	84.9
	Cast iron (lamellar / spheroidal)	6.00	4	125	0.025	7.500	6.000	6630	663	29.8
		8.00	4	125	0.033	10.000	8.000	4975	657	52.5
		10.00	4	125	0.041	12.500	10.000	3980	653	81.6
		12.00	4	125	0.049	15.000	12.000	3315	650	116.9
		16.00	4	125	0.056	20.000	16.000	2485	557	178.1
		20.00	4	125	0.064	25.000	20.000	1990	509	254.7

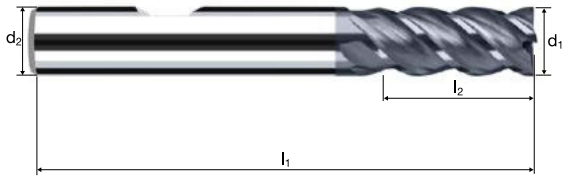
Cylindrical end mills

Smooth-edged, normal version

HM MG10 | λ 43° γ 3°

45°

Vario



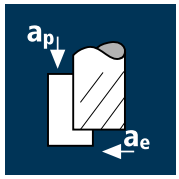
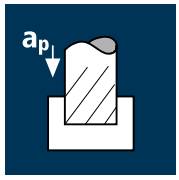
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45325** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P45325	POLYCHROM P45225
300	6.00	6.00	57	13.00	0.10	4	●	
391	8.00	8.00	63	19.00	0.10	4	●	
450	10.00	10.00	72	22.00	0.15	4	●	
501	12.00	12.00	83	26.00	0.15	4	●	
610	16.00	16.00	92	32.00	0.15	4	●	
682	20.00	20.00	104	38.00	0.15	4	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	150	0.015	4.500	0.750	15915	955	3.2
		4.00	4	150	0.020	6.000	1.200	11935	955	6.9
		5.00	4	150	0.025	7.500	1.750	9550	955	12.5
		6.00	4	150	0.030	9.000	2.400	7960	955	20.6
		8.00	4	150	0.040	12.000	3.200	5970	955	36.7
		10.00	4	150	0.050	15.000	4.000	4775	955	57.3
		12.00	4	150	0.060	18.000	4.800	3980	955	82.5
		16.00	4	150	0.075	24.000	6.400	2985	896	137.5
		20.00	4	150	0.095	30.000	8.000	2385	906	217.5
	Steel 850 - 1100 N/mm²	3.00	4	120	0.015	4.500	0.750	12730	764	2.6
		4.00	4	120	0.020	6.000	1.200	9550	764	5.5
		5.00	4	120	0.025	7.500	1.750	7640	764	10.0
		6.00	4	120	0.030	9.000	2.400	6365	764	16.5
		8.00	4	120	0.040	12.000	3.200	4775	764	29.3
		10.00	4	120	0.050	15.000	4.000	3820	764	45.8
		12.00	4	120	0.060	18.000	4.800	3185	764	66.0
		16.00	4	120	0.075	24.000	6.400	2385	716	109.9
		20.00	4	120	0.095	30.000	8.000	1910	726	174.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	80	0.010	4.500	0.750	8490	340	1.1
		4.00	4	80	0.015	6.000	1.200	6365	382	2.7
		5.00	4	80	0.020	7.500	1.750	5095	408	5.3
		6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	382	14.7
		10.00	4	80	0.040	15.000	4.000	2545	407	24.4
		12.00	4	80	0.050	18.000	4.800	2120	424	36.6
		16.00	4	80	0.060	24.000	6.400	1590	382	58.6
		20.00	4	80	0.075	30.000	8.000	1275	383	91.8
	Cast iron (lamellar / spheroidal)	3.00	4	135	0.015	4.500	0.750	14325	860	2.9
		4.00	4	135	0.020	6.000	1.200	10745	860	6.2
		5.00	4	135	0.025	7.500	1.750	8595	860	11.3
		6.00	4	135	0.030	9.000	2.400	7160	859	18.6
		8.00	4	135	0.040	12.000	3.200	5370	859	33.0
		10.00	4	135	0.050	15.000	4.000	4295	859	51.5
		12.00	4	135	0.060	18.000	4.800	3580	859	74.2
		16.00	4	135	0.085	24.000	6.400	2685	913	140.2
		20.00	4	135	0.105	30.000	8.000	2150	903	216.7
	Steel < 850 N/mm²	3.00	4	125	0.010	1.800	3.000	13265	531	2.9
		4.00	4	125	0.015	2.800	4.000	9945	597	6.7
		5.00	4	125	0.020	4.000	5.000	7960	637	12.7
		6.00	4	125	0.025	6.000	6.000	6630	663	23.9
		8.00	4	125	0.030	8.000	8.000	4975	597	38.2
		10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.045	12.000	12.000	3315	597	85.9
		16.00	4	125	0.055	8.000	16.000	2485	547	70.0
		20.00	4	125	0.070	10.000	20.000	1990	557	111.4
	Steel 850 - 1100 N/mm²	3.00	4	95	0.010	1.800	3.000	10080	403	2.2
		4.00	4	95	0.015	2.800	4.000	7560	454	5.1
		5.00	4	95	0.020	4.000	5.000	6050	484	9.7
		6.00	4	95	0.025	6.000	6.000	5040	504	18.1
		8.00	4	95	0.030	8.000	8.000	3780	454	29.0
		10.00	4	95	0.040	10.000	10.000	3025	484	48.4
		12.00	4	95	0.045	12.000	12.000	2520	454	65.3
		16.00	4	95	0.055	8.000	16.000	1890	416	53.2
		20.00	4	95	0.070	10.000	20.000	1510	423	84.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	65	0.008	1.300	3.000	6895	221	0.9
		4.00	4	65	0.010	2.000	4.000	5175	207	1.7
		5.00	4	65	0.015	2.800	5.000	4140	248	3.5
		6.00	4	65	0.020	4.200	6.000	3450	276	7.0
		8.00	4	65	0.025	8.000	8.000	2585	259	16.5
		10.00	4	65	0.030	10.000	10.000	2070	248	24.8
		12.00	4	65	0.040	12.000	12.000	1725	276	39.7
		16.00	4	65	0.045	8.000	16.000	1295	233	29.8
		20.00	4	65	0.055	10.000	20.000	1035	228	45.5
	Cast iron (lamellar / spheroidal)	3.00	4	115	0.010	1.800	3.000	12200	488	2.6
		4.00	4	115	0.015	2.800	4.000	9150	549	6.1
		5.00	4	115	0.025	4.000	5.000	7320	732	14.6
		6.00	4	115	0.025	6.000	6.000	6100	610	22.0
		8.00	4	115	0.035	8.000	8.000	4575	641	41.0
		10.00	4	115	0.040	10.000	10.000	3660	586	58.6
		12.00	4	115	0.050	12.000	12.000	3050	610	87.8
		16.00	4	115	0.065	8.000	16.000	2290	595	76.2
		20.00	4	115	0.080	10.000	20.000	1830	586	117.1

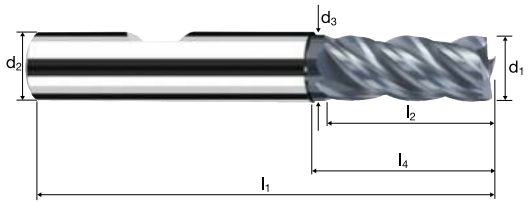
Cylindrical end mills

Smooth-edged, normal version, short neck

HM MG10	λ 40° γ 6°

45°

Vario



Roughing

Finishing

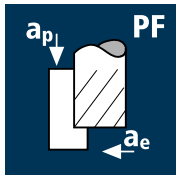
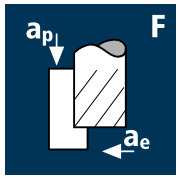
ToolSchool P46200 / P46300

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45317** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P45317	P45217
100	1.00	6.00	0.95	57	5.00	7.00	17.08	0.04	9.5°	4		●
140	2.00	6.00	1.90	57	7.00	10.00	18.31	0.05	7.5°	4		●
178*	3.00	3.00	-	45	8.00	-	-	0.05	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.05	4.5°	4		●
218*	4.00	4.00	-	50	11.00	-	-	0.05	0.0°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.05	3.0°	4		●
258*	5.00	5.00	-	50	13.00	-	-	0.10	0.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.10	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.10	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.15	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.15	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.15	0.0°	4		●
772	25.00	25.00	24.00	121	45.00	63.13	64.00	0.20	0.0°	4		●

* without clamping flat only, without short neck

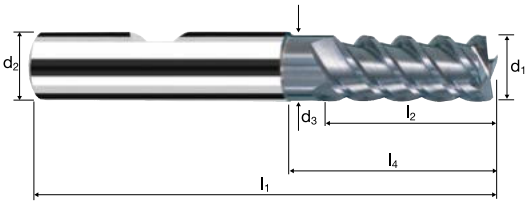
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	4.00	4	140	0.015	6.000	1.000	11140	668
		6.00	4	140	0.020	9.000	1.500	7425	594
		8.00	4	140	0.025	12.000	2.000	5570	557
		10.00	4	140	0.035	15.000	2.500	4455	624
		12.00	4	140	0.040	18.000	3.000	3715	594
		14.00	4	140	0.045	21.000	3.500	3185	573
		16.00	4	140	0.055	24.000	4.000	2785	613
		18.00	4	140	0.060	27.000	4.500	2475	594
		20.00	4	140	0.065	30.000	5.000	2230	580
	Steel 850 - 1100 N/mm²	4.00	4	120	0.015	6.000	1.000	9550	573
		6.00	4	120	0.020	9.000	1.500	6365	509
		8.00	4	120	0.025	12.000	2.000	4775	478
		10.00	4	120	0.035	15.000	2.500	3820	535
		12.00	4	120	0.040	18.000	3.000	3185	510
		14.00	4	120	0.045	21.000	3.500	2730	491
		16.00	4	120	0.055	24.000	4.000	2385	525
		18.00	4	120	0.060	27.000	4.500	2120	509
		20.00	4	120	0.065	30.000	5.000	1910	497
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.015	6.000	1.000	7160	430
		6.00	4	90	0.020	9.000	1.500	4775	382
		8.00	4	90	0.025	12.000	2.000	3580	358
		10.00	4	90	0.035	15.000	2.500	2865	401
		12.00	4	90	0.040	18.000	3.000	2385	382
		14.00	4	90	0.045	21.000	3.500	2045	368
		16.00	4	90	0.055	24.000	4.000	1790	394
		18.00	4	90	0.060	27.000	4.500	1590	382
		20.00	4	90	0.065	30.000	5.000	1430	372
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	6.000	1.000	3980	239
		6.00	4	50	0.020	9.000	1.500	2655	212
		8.00	4	50	0.025	12.000	2.000	1990	199
		10.00	4	50	0.035	15.000	2.500	1590	223
		12.00	4	50	0.040	18.000	3.000	1325	212
		14.00	4	50	0.045	21.000	3.500	1135	204
		16.00	4	50	0.055	24.000	4.000	995	219
		18.00	4	50	0.060	27.000	4.500	885	212
		20.00	4	50	0.065	30.000	5.000	795	207
	Steel < 850 N/mm²	4.00	4	150	0.010	6.000	0.100	11935	477
		6.00	4	150	0.015	9.000	0.100	7960	478
		8.00	4	150	0.025	12.000	0.150	5970	597
		10.00	4	150	0.030	15.000	0.150	4775	573
		12.00	4	150	0.035	18.000	0.200	3980	557
		14.00	4	150	0.040	21.000	0.200	3410	546
		16.00	4	150	0.045	24.000	0.250	2985	537
		18.00	4	150	0.050	27.000	0.250	2655	531
		20.00	4	150	0.055	30.000	0.300	2385	525
	Steel 850 - 1100 N/mm²	4.00	4	140	0.010	6.000	0.100	11140	446
		6.00	4	140	0.015	9.000	0.100	7425	446
		8.00	4	140	0.025	12.000	0.150	5570	557
		10.00	4	140	0.030	15.000	0.150	4455	535
		12.00	4	140	0.035	18.000	0.200	3715	520
		14.00	4	140	0.040	21.000	0.200	3185	510
		16.00	4	140	0.045	24.000	0.250	2785	501
		18.00	4	140	0.050	27.000	0.250	2475	495
		20.00	4	140	0.055	30.000	0.300	2230	491
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	100	0.010	6.000	0.100	7960	318
		6.00	4	100	0.015	9.000	0.100	5305	318
		8.00	4	100	0.025	12.000	0.150	3980	398
		10.00	4	100	0.030	15.000	0.150	3185	382
		12.00	4	100	0.035	18.000	0.200	2655	372
		14.00	4	100	0.040	21.000	0.200	2275	364
		16.00	4	100	0.045	24.000	0.250	1990	358
		18.00	4	100	0.050	27.000	0.250	1770	354
		20.00	4	100	0.055	30.000	0.300	1590	350
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.010	6.000	0.100	4775	191
		6.00	4	60	0.015	9.000	0.100	3185	191
		8.00	4	60	0.025	12.000	0.150	2385	239
		10.00	4	60	0.030	15.000	0.150	1910	229
		12.00	4	60	0.035	18.000	0.200	1590	223
		14.00	4	60	0.040	21.000	0.200	1365	218
		16.00	4	60	0.045	24.000	0.250	1195	215
		18.00	4	60	0.050	27.000	0.250	1060	212
		20.00	4	60	0.055	30.000	0.300	955	210

Cylindrical end mills

Smooth-edged, normal version, short neck

Favora® F

HM MG10	λ 55° γ 15°



Roughing

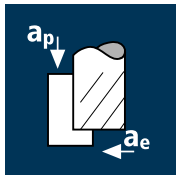
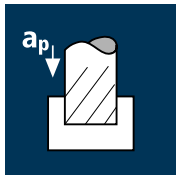
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **45355** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P45355	P45255
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.05	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.05	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.10	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.10	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.15	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.15	0.0°	4		●
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.15	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	2.00	3	150	0.005	3.000	1.300	23875	358	1.4
		3.00	3	150	0.010	4.500	1.950	15915	478	4.2
		4.00	3	150	0.015	6.000	2.600	11935	537	8.4
		5.00	3	150	0.020	7.500	3.250	9550	573	14.0
		6.00	3	150	0.020	9.000	3.900	7960	478	16.8
		7.00	3	150	0.025	10.500	4.550	6820	512	24.4
		8.00	3	150	0.030	12.000	5.200	5970	537	33.5
		9.00	3	150	0.030	13.500	5.850	5305	478	37.7
		10.00	3	150	0.035	15.000	6.500	4775	501	48.9
	Steel 850 - 1100 N/mm²	2.00	3	110	0.005	3.000	1.300	17505	263	1.0
		3.00	3	110	0.010	4.500	1.950	11670	350	3.1
		4.00	3	110	0.015	6.000	2.600	8755	394	6.1
		5.00	3	110	0.020	7.500	3.250	7005	420	10.2
		6.00	3	110	0.020	9.000	3.900	5835	350	12.3
		7.00	3	110	0.025	10.500	4.550	5000	375	17.9
		8.00	3	110	0.030	12.000	5.200	4375	394	24.6
		9.00	3	110	0.030	13.500	5.850	3890	350	27.6
		10.00	3	110	0.035	15.000	6.500	3500	368	35.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	80	0.005	3.000	1.300	12730	191	0.7
		3.00	3	80	0.010	4.500	1.950	8490	255	2.2
		4.00	3	80	0.010	6.000	2.600	6365	191	3.0
		5.00	3	80	0.015	7.500	3.250	5095	229	5.6
		6.00	3	80	0.015	9.000	3.900	4245	191	6.7
		7.00	3	80	0.020	10.500	4.550	3640	218	10.4
		8.00	3	80	0.020	12.000	5.200	3185	191	11.9
		9.00	3	80	0.025	13.500	5.850	2830	212	16.8
		10.00	3	80	0.025	15.000	6.500	2545	191	18.6
	Cast iron (lamellar / spheroidal)	2.00	3	130	0.005	3.000	1.300	20690	310	1.2
		3.00	3	130	0.010	4.500	1.950	13795	414	3.6
		4.00	3	130	0.015	6.000	2.600	10345	466	7.3
		5.00	3	130	0.020	7.500	3.250	8275	497	12.1
		6.00	3	130	0.020	9.000	3.900	6895	414	14.5
		7.00	3	130	0.025	10.500	4.550	5910	443	21.2
		8.00	3	130	0.030	12.000	5.200	5175	466	29.1
		9.00	3	130	0.030	13.500	5.850	4600	414	32.7
		10.00	3	130	0.035	15.000	6.500	4140	435	42.4
	Steel < 850 N/mm²	2.00	3	120	0.005	2.800	2.000	19100	287	1.6
		3.00	3	120	0.010	4.200	3.000	12730	382	4.8
		4.00	3	120	0.015	5.600	4.000	9550	430	9.6
		5.00	3	120	0.015	7.000	5.000	7640	344	12.0
		6.00	3	120	0.020	8.400	6.000	6365	382	19.2
		7.00	3	120	0.025	9.800	7.000	5455	409	28.1
		8.00	3	120	0.025	11.200	8.000	4775	358	32.1
		9.00	3	120	0.030	12.600	9.000	4245	382	43.3
		10.00	3	120	0.030	14.000	10.000	3820	344	48.1
	Steel 850 - 1100 N/mm²	2.00	3	85	0.005	2.800	2.000	13530	203	1.1
		3.00	3	85	0.010	4.200	3.000	9020	271	3.4
		4.00	3	85	0.015	5.600	4.000	6765	304	6.8
		5.00	3	85	0.015	7.000	5.000	5410	244	8.5
		6.00	3	85	0.020	8.400	6.000	4510	271	13.6
		7.00	3	85	0.025	9.800	7.000	3865	290	19.9
		8.00	3	85	0.025	11.200	8.000	3380	254	22.7
		9.00	3	85	0.030	12.600	9.000	3005	271	30.7
		10.00	3	85	0.030	14.000	10.000	2705	244	34.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	65	0.005	2.800	2.000	10345	155	0.9
		3.00	3	65	0.005	4.200	3.000	6895	103	1.3
		4.00	3	65	0.010	5.600	4.000	5175	155	3.5
		5.00	3	65	0.010	7.000	5.000	4140	124	4.3
		6.00	3	65	0.015	8.400	6.000	3450	155	7.8
		7.00	3	65	0.015	9.800	7.000	2955	133	9.1
		8.00	3	65	0.020	11.200	8.000	2585	155	13.9
		9.00	3	65	0.020	12.600	9.000	2300	138	15.6
		10.00	3	65	0.025	14.000	10.000	2070	155	21.7
	Cast iron (lamellar / spheroidal)	2.00	3	110	0.005	2.800	2.000	17505	263	1.5
		3.00	3	110	0.010	4.200	3.000	11670	350	4.4
		4.00	3	110	0.015	5.600	4.000	8755	394	8.8
		5.00	3	110	0.015	7.000	5.000	7005	315	11.0
		6.00	3	110	0.020	8.400	6.000	5835	350	17.6
		7.00	3	110	0.025	9.800	7.000	5000	375	25.7
		8.00	3	110	0.025	11.200	8.000	4375	328	29.4
		9.00	3	110	0.030	12.600	9.000	3890	350	39.7
		10.00	3	110	0.030	14.000	10.000	3500	315	44.1

Cylindrical end mills

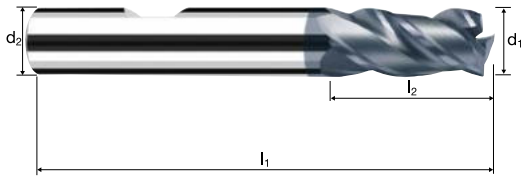
Smooth-edged, normal version

Favora® F

HM MG10 | λ **40°** γ **6°**

45°

Vario



Roughing

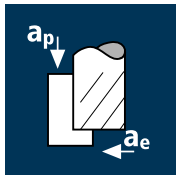
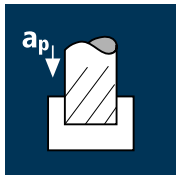
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45333** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45333	POLYCHROM P45233
140	2.00	6.00	54	6.00	15.32	0.05	8.0°	3		●
160	2.50	6.00	54	6.00	14.89	0.05	7.5°	3		●
180	3.00	6.00	57	7.00	14.96	0.05	6.0°	3		●
200	3.50	6.00	57	7.00	14.02	0.05	5.5°	3		●
220	4.00	6.00	57	8.00	14.59	0.05	4.5°	3		●
240	4.50	6.00	57	8.00	13.66	0.10	3.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.10	2.5°	3		●
280	5.50	6.00	57	10.00	13.79	0.10	1.5°	3		●
300	6.00	6.00	57	10.00	-	0.10	0.0°	3		●
322	6.50	8.00	63	13.00	18.66	0.10	2.5°	3		●
331	7.00	8.00	63	13.00	17.72	0.10	2.0°	3		●
362	7.50	8.00	63	16.00	19.79	0.10	1.0°	3		●
391	8.00	8.00	63	16.00	-	0.10	0.0°	3		●
410	8.50	10.00	72	16.00	21.66	0.15	2.5°	3		●
420	9.00	10.00	72	16.00	20.72	0.15	1.5°	3		●
430	9.50	10.00	72	19.00	22.79	0.15	1.0°	3		●
450	10.00	10.00	72	19.00	-	0.15	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	11.00	3	150	0.040	16.500	7.150	4340	521	61.4
		12.00	3	150	0.045	18.000	7.440	3980	537	72.0
		13.00	3	150	0.045	19.500	7.800	3675	496	75.5
		14.00	3	150	0.050	21.000	8.120	3410	512	87.2
		15.00	3	150	0.055	22.500	8.400	3185	526	99.3
		16.00	3	150	0.055	24.000	8.800	2985	493	104.0
		20.00	3	150	0.070	30.000	11.000	2385	501	165.3
	Steel 850 - 1100 N/mm²	11.00	3	110	0.040	16.500	7.150	3185	382	45.1
		12.00	3	110	0.045	18.000	7.440	2920	394	52.8
		13.00	3	110	0.045	19.500	7.800	2695	364	55.3
		14.00	3	110	0.050	21.000	8.120	2500	375	63.9
		15.00	3	110	0.055	22.500	8.400	2335	385	72.8
		16.00	3	110	0.055	24.000	8.800	2190	361	76.3
		20.00	3	110	0.070	30.000	11.000	1750	368	121.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	11.00	3	80	0.030	16.500	7.150	2315	208	24.6
		12.00	3	80	0.030	18.000	7.440	2120	191	25.6
		13.00	3	80	0.035	19.500	7.800	1960	206	31.3
		14.00	3	80	0.035	21.000	8.120	1820	191	32.6
		15.00	3	80	0.040	22.500	8.400	1700	204	38.6
		16.00	3	80	0.040	24.000	8.800	1590	191	40.3
		20.00	3	80	0.055	30.000	11.000	1275	210	69.4
	Cast iron (lamellar / spheroidal)	11.00	3	130	0.040	16.500	7.150	3760	451	53.2
		12.00	3	130	0.045	18.000	7.440	3450	466	62.4
		13.00	3	130	0.045	19.500	7.800	3185	430	65.4
		14.00	3	130	0.050	21.000	8.120	2955	443	75.6
		15.00	3	130	0.055	22.500	8.400	2760	455	86.1
		16.00	3	130	0.055	24.000	8.800	2585	427	90.1
		20.00	3	130	0.070	30.000	11.000	2070	435	143.5
	Steel < 850 N/mm²	11.00	3	120	0.035	15.400	11.000	3470	364	61.7
		12.00	3	120	0.040	16.200	12.000	3185	382	74.3
		13.00	3	120	0.040	17.030	13.000	2940	353	78.1
		14.00	3	120	0.045	17.990	14.000	2730	369	92.8
		15.00	3	120	0.050	18.750	15.000	2545	382	107.4
		16.00	3	120	0.050	19.200	16.000	2385	358	109.9
		20.00	3	120	0.065	22.000	20.000	1910	373	163.9
	Steel 850 - 1100 N/mm²	11.00	3	85	0.035	15.400	11.000	2460	258	43.8
		12.00	3	85	0.040	16.200	12.000	2255	271	52.6
		13.00	3	85	0.040	17.030	13.000	2080	250	55.3
		14.00	3	85	0.045	17.990	14.000	1935	261	65.8
		15.00	3	85	0.050	18.750	15.000	1805	271	76.2
		16.00	3	85	0.050	19.200	16.000	1690	254	77.9
		20.00	3	85	0.065	22.000	20.000	1355	264	116.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	11.00	3	65	0.025	15.400	11.000	1880	141	23.9
		12.00	3	65	0.030	16.200	12.000	1725	155	30.2
		13.00	3	65	0.030	17.030	13.000	1590	143	31.7
		14.00	3	65	0.035	17.990	14.000	1480	155	39.1
		15.00	3	65	0.035	18.750	15.000	1380	145	40.8
		16.00	3	65	0.040	19.200	16.000	1295	155	47.7
		20.00	3	65	0.045	22.000	20.000	1035	140	61.5
	Cast iron (lamellar / spheroidal)	11.00	3	110	0.035	15.400	11.000	3185	334	56.6
		12.00	3	110	0.040	16.200	12.000	2920	350	68.1
		13.00	3	110	0.040	17.030	13.000	2695	323	71.6
		14.00	3	110	0.045	17.990	14.000	2500	338	85.0
		15.00	3	110	0.050	18.750	15.000	2335	350	98.5
		16.00	3	110	0.050	19.200	16.000	2190	329	100.9
		20.00	3	110	0.065	22.000	20.000	1750	341	150.2

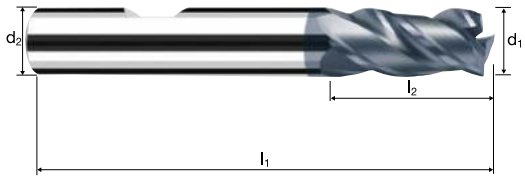
Cylindrical end mills

Smooth-edged, normal version

HM MG10 | λ **40°** γ **6°**

45°

Vario



Roughing

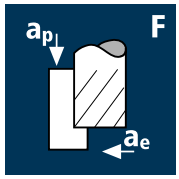
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45333** ø-Code **470**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45333	POLYCHROM P45233
470	11.00	12.00	83	22.00	27.22	0.15	1.5°	3		●
501	12.00	12.00	83	22.00	-	0.15	0.0°	3		●
540	13.00	14.00	83	22.00	27.22	0.15	1.5°	3		●
570	14.00	14.00	83	22.00	-	0.15	0.0°	3		●
581	15.00	16.00	92	26.00	31.22	0.15	1.0°	3		●
610	16.00	16.00	92	26.00	-	0.15	0.0°	3		●
682	20.00	20.00	104	32.00	-	0.15	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	4	58	0.005	3.000	0.050	9230	185
		4.00	4	58	0.010	6.000	0.100	4615	185
		5.00	4	58	0.015	7.500	0.150	3690	221
		6.00	4	58	0.015	9.000	0.150	3075	185
		8.00	4	58	0.025	12.000	0.200	2310	231
		10.00	4	58	0.030	15.000	0.250	1845	221
		12.00	4	58	0.035	18.000	0.300	1540	216
		16.00	4	58	0.045	24.000	0.400	1155	208
	Steel 850 - 1100 N/mm²	2.00	4	54	0.005	3.000	0.050	8595	172
		4.00	4	54	0.010	6.000	0.100	4295	172
		5.00	4	54	0.015	7.500	0.150	3440	206
		6.00	4	54	0.015	9.000	0.150	2865	172
		8.00	4	54	0.025	12.000	0.200	2150	215
		10.00	4	54	0.030	15.000	0.250	1720	206
		12.00	4	54	0.035	18.000	0.300	1430	200
		16.00	4	54	0.045	24.000	0.400	1075	194
	Steel 1100 - 1300 N/mm²	2.00	4	42	0.005	3.000	0.050	6685	134
		4.00	4	42	0.010	6.000	0.100	3340	134
		5.00	4	42	0.015	7.500	0.150	2675	161
		6.00	4	42	0.015	9.000	0.150	2230	134
		8.00	4	42	0.025	12.000	0.200	1670	167
		10.00	4	42	0.030	15.000	0.250	1335	160
		12.00	4	42	0.035	18.000	0.300	1115	156
		16.00	4	42	0.045	24.000	0.400	835	150
	Cold work tool steel (12% Cr), high alloyed [1.2379]	2.00	4	30	0.005	3.000	0.050	4775	96
		4.00	4	30	0.010	6.000	0.100	2385	95
		5.00	4	30	0.015	7.500	0.150	1910	115
		6.00	4	30	0.015	9.000	0.150	1590	95
		8.00	4	30	0.025	12.000	0.200	1195	120
		10.00	4	30	0.030	15.000	0.250	955	115
		12.00	4	30	0.035	18.000	0.300	795	111
		16.00	4	30	0.045	24.000	0.400	595	107
	Cast iron (lamellar / spheroidal)	2.00	4	50	0.005	3.000	0.050	7960	159
		4.00	4	50	0.010	6.000	0.100	3980	159
		5.00	4	50	0.015	7.500	0.150	3185	191
		6.00	4	50	0.015	9.000	0.150	2655	159
		8.00	4	50	0.025	12.000	0.200	1990	199
		10.00	4	50	0.030	15.000	0.250	1590	191
		12.00	4	50	0.035	18.000	0.300	1325	186
		16.00	4	50	0.045	24.000	0.400	995	179
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	4	26	0.005	3.000	0.050	4140	83
		4.00	4	26	0.010	6.000	0.100	2070	83
		5.00	4	26	0.015	7.500	0.150	1655	99
		6.00	4	26	0.015	9.000	0.150	1380	83
		8.00	4	26	0.025	12.000	0.200	1035	104
		10.00	4	26	0.030	15.000	0.250	830	100
		12.00	4	26	0.035	18.000	0.300	690	97
		16.00	4	26	0.045	24.000	0.400	515	93
	Unalloyed copper	2.00	4	80	0.005	3.000	0.050	12730	255
		4.00	4	80	0.010	6.000	0.100	6365	255
		5.00	4	80	0.015	7.500	0.150	5095	306
		6.00	4	80	0.015	9.000	0.150	4245	255
		8.00	4	80	0.025	12.000	0.200	3185	319
		10.00	4	80	0.030	15.000	0.250	2545	305
		12.00	4	80	0.035	18.000	0.300	2120	297
		16.00	4	80	0.045	24.000	0.400	1590	286
	Wrought aluminium Construction aluminium	2.00	4	100	0.005	3.000	0.050	15915	318
		4.00	4	100	0.010	6.000	0.100	7960	318
		5.00	4	100	0.015	7.500	0.150	6365	382
		6.00	4	100	0.015	9.000	0.150	5305	318
		8.00	4	100	0.025	12.000	0.200	3980	398
		10.00	4	100	0.030	15.000	0.250	3185	382
		12.00	4	100	0.035	18.000	0.300	2655	372
		16.00	4	100	0.045	24.000	0.400	1990	358

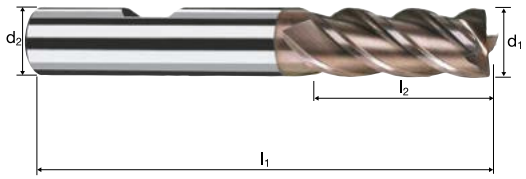
Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8

λ **40°**
γ **15°**

90°



Roughing

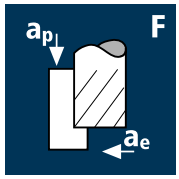
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Aluminium Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0110** ø-Code **100**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0110
100	1.00	6.00	49	5.00	12.48	3.0°	4	●
120	1.50	6.00	50	6.00	12.99	3.0°	4	●
140	2.00	6.00	51	7.00	13.61	2.5°	4	●
160	2.50	6.00	52	8.00	15.50	2.0°	4	●
180	3.00	6.00	52	8.00	15.50	2.0°	4	●
200	3.50	6.00	54	10.00	17.50	1.5°	4	●
220	4.00	6.00	55	11.00	18.50	1.5°	4	●
240	4.50	6.00	55	11.00	18.50	1.0°	4	●
260	5.00	6.00	57	13.00	20.50	1.0°	4	●
280	5.50	6.00	57	13.00	20.50	1.0°	4	●
300	6.00	6.00	57	13.00	-	0.0°	4	●
342	7.00	10.00	66	16.00	25.50	1.5°	4	●
391	8.00	8.00	63	19.00	-	0.0°	4	●
420	9.00	10.00	69	19.00	28.50	0.5°	4	●
450	10.00	10.00	72	22.00	-	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.5°	4	●
501	12.00	12.00	83	26.00	-	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.0°	4	●
581	15.00	12.00	83	26.00	-	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	20.00	4	58	0.055	30.000	0.500	925	204
		22.00	4	58	0.065	33.000	0.550	840	218
		24.00	4	58	0.070	36.000	0.600	770	216
		25.00	4	58	0.070	37.500	0.650	740	207
		28.00	6	58	0.080	42.000	0.700	660	317
		30.00	6	58	0.085	45.000	0.750	615	314
		32.00	6	58	0.090	48.000	0.800	575	311
		36.00	6	58	0.105	54.000	0.900	515	325
		40.00	6	58	0.115	60.000	1.000	460	317
	Steel 850 - 1100 N/mm²	20.00	4	54	0.055	30.000	0.500	860	189
		22.00	4	54	0.065	33.000	0.550	780	203
		24.00	4	54	0.070	36.000	0.600	715	200
		25.00	4	54	0.070	37.500	0.650	690	193
		28.00	6	54	0.080	42.000	0.700	615	295
		30.00	6	54	0.085	45.000	0.750	575	293
		32.00	6	54	0.090	48.000	0.800	535	289
		36.00	6	54	0.105	54.000	0.900	475	299
		40.00	6	54	0.115	60.000	1.000	430	297
	Steel 1100 - 1300 N/mm²	20.00	4	42	0.055	30.000	0.500	670	147
		22.00	4	42	0.065	33.000	0.550	610	159
		24.00	4	42	0.070	36.000	0.600	555	155
		25.00	4	42	0.070	37.500	0.650	535	150
		28.00	6	42	0.080	42.000	0.700	475	228
		30.00	6	42	0.085	45.000	0.750	445	227
		32.00	6	42	0.090	48.000	0.800	420	227
		36.00	6	42	0.105	54.000	0.900	370	233
		40.00	6	42	0.115	60.000	1.000	335	231
	Cold work tool steel (12% Cr), high alloyed [1.2379]	20.00	4	30	0.055	30.000	0.500	475	105
		22.00	4	30	0.065	33.000	0.550	435	113
		24.00	4	30	0.070	36.000	0.600	400	112
		25.00	4	30	0.070	37.500	0.650	380	106
		28.00	6	30	0.080	42.000	0.700	340	163
		30.00	6	30	0.085	45.000	0.750	320	163
		32.00	6	30	0.090	48.000	0.800	300	162
		36.00	6	30	0.105	54.000	0.900	265	167
		40.00	6	30	0.115	60.000	1.000	240	166
	Cast iron (lamellar / spheroidal)	20.00	4	50	0.055	30.000	0.500	795	175
		22.00	4	50	0.065	33.000	0.550	725	189
		24.00	4	50	0.070	36.000	0.600	665	186
		25.00	4	50	0.070	37.500	0.650	635	178
		28.00	6	50	0.080	42.000	0.700	570	274
		30.00	6	50	0.085	45.000	0.750	530	270
		32.00	6	50	0.090	48.000	0.800	495	267
		36.00	6	50	0.105	54.000	0.900	440	277
		40.00	6	50	0.115	60.000	1.000	400	276
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	20.00	4	26	0.055	30.000	0.500	415	91
		22.00	4	26	0.065	33.000	0.550	375	98
		24.00	4	26	0.070	36.000	0.600	345	97
		25.00	4	26	0.070	37.500	0.650	330	92
		28.00	6	26	0.080	42.000	0.700	295	142
		30.00	6	26	0.085	45.000	0.750	275	140
		32.00	6	26	0.090	48.000	0.800	260	140
		36.00	6	26	0.105	54.000	0.900	230	145
		40.00	6	26	0.115	60.000	1.000	205	142
	Unalloyed copper	20.00	4	80	0.055	30.000	0.500	1275	281
		22.00	4	80	0.065	33.000	0.550	1155	300
		24.00	4	80	0.070	36.000	0.600	1060	297
		25.00	4	80	0.070	37.500	0.650	1020	286
		28.00	6	80	0.080	42.000	0.700	910	437
		30.00	6	80	0.085	45.000	0.750	850	434
		32.00	6	80	0.090	48.000	0.800	795	429
		36.00	6	80	0.105	54.000	0.900	705	444
		40.00	6	80	0.115	60.000	1.000	635	438
	Wrought aluminium Construction aluminium	20.00	4	100	0.055	30.000	0.500	1590	350
		22.00	4	100	0.065	33.000	0.550	1445	376
		24.00	4	100	0.070	36.000	0.600	1325	371
		25.00	4	100	0.070	37.500	0.650	1275	357
		28.00	6	100	0.080	42.000	0.700	1135	545
		30.00	6	100	0.085	45.000	0.750	1060	541
		32.00	6	100	0.090	48.000	0.800	995	537
		36.00	6	100	0.105	54.000	0.900	885	558
		40.00	6	100	0.115	60.000	1.000	795	549

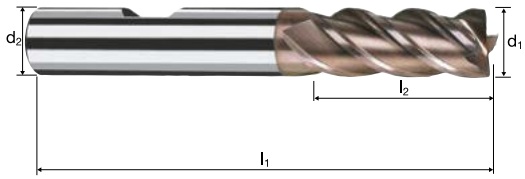
Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8

λ **40°**
γ **15°**

90°



Roughing

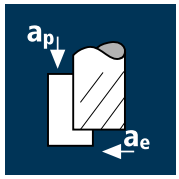
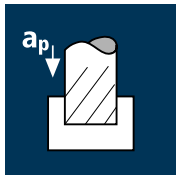
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Aluminium Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0110** ø-Code **682**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0110
682	20.00	20.00	104	38.00	-	0.0°	4	●
690	21.00	20.00	104	38.00	-	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.0°	4	●
741	24.00	20.00	111	45.00	-	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.0°	4	●
800	28.00	25.00	121	45.00	-	0.0°	6	●
810	30.00	25.00	121	45.00	-	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.0°	6	●
860	36.00	32.00	133	53.00	-	0.0°	6	●
881	40.00	32.00	143	63.00	-	0.0°	6	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	58	0.010	4.500	0.200	6155	185	0.2
		4.00	3	58	0.010	6.000	0.300	4615	139	0.2
		5.00	3	58	0.015	7.500	0.350	3690	166	0.4
		6.00	3	58	0.020	9.000	0.400	3075	185	0.7
		7.00	3	58	0.020	10.500	0.500	2635	158	0.8
		8.00	3	58	0.025	12.000	0.550	2310	173	1.1
		10.00	3	58	0.030	15.000	0.700	1845	166	1.7
		12.00	3	58	0.045	18.000	0.850	1540	208	3.2
		14.00	3	58	0.055	21.000	1.000	1320	218	4.6
	Steel 850 - 1100 N/mm²	3.00	3	52	0.010	4.500	0.200	5515	166	0.1
		4.00	3	52	0.010	6.000	0.300	4140	124	0.2
		5.00	3	52	0.015	7.500	0.350	3310	149	0.4
		6.00	3	52	0.020	9.000	0.400	2760	166	0.6
		7.00	3	52	0.020	10.500	0.500	2365	142	0.7
		8.00	3	52	0.025	12.000	0.550	2070	155	1.0
		10.00	3	52	0.030	15.000	0.700	1655	149	1.6
		12.00	3	52	0.045	18.000	0.850	1380	186	2.9
		14.00	3	52	0.055	21.000	1.000	1180	195	4.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	26	0.010	4.500	0.200	2760	83	0.1
		4.00	3	26	0.010	6.000	0.300	2070	62	0.1
		5.00	3	26	0.015	7.500	0.350	1655	75	0.2
		6.00	3	26	0.020	9.000	0.400	1380	83	0.3
		7.00	3	26	0.020	10.500	0.500	1180	71	0.4
		8.00	3	26	0.025	12.000	0.550	1035	78	0.5
		10.00	3	26	0.030	15.000	0.700	830	75	0.8
		12.00	3	26	0.045	18.000	0.850	690	93	1.4
		14.00	3	26	0.055	21.000	1.000	590	97	2.0
	Cast iron (lamellar / spheroidal)	3.00	3	45	0.010	4.500	0.200	4775	143	0.1
		4.00	3	45	0.010	6.000	0.300	3580	107	0.2
		5.00	3	45	0.015	7.500	0.350	2865	129	0.3
		6.00	3	45	0.020	9.000	0.400	2385	143	0.5
		7.00	3	45	0.020	10.500	0.500	2045	123	0.6
		8.00	3	45	0.025	12.000	0.550	1790	134	0.9
		10.00	3	45	0.030	15.000	0.700	1430	129	1.4
		12.00	3	45	0.045	18.000	0.850	1195	161	2.5
		14.00	3	45	0.055	21.000	1.000	1025	169	3.6
	Steel < 850 N/mm²	3.00	3	54	0.010	1.500	3.000	5730	172	0.8
		4.00	3	54	0.010	2.000	4.000	4295	129	1.0
		5.00	3	54	0.015	2.500	5.000	3440	155	1.9
		6.00	3	54	0.020	3.000	6.000	2865	172	3.1
		7.00	3	54	0.020	3.500	7.000	2455	147	3.6
		8.00	3	54	0.025	4.000	8.000	2150	161	5.2
		10.00	3	54	0.030	5.000	10.000	1720	155	7.7
		12.00	3	54	0.045	6.000	12.000	1430	193	13.9
		14.00	3	54	0.055	7.000	14.000	1230	203	19.9
	Steel 850 - 1100 N/mm²	3.00	3	50	0.010	1.500	3.000	5305	159	0.7
		4.00	3	50	0.010	2.000	4.000	3980	119	1.0
		5.00	3	50	0.015	2.500	5.000	3185	143	1.8
		6.00	3	50	0.020	3.000	6.000	2655	159	2.9
		7.00	3	50	0.020	3.500	7.000	2275	137	3.3
		8.00	3	50	0.025	4.000	8.000	1990	149	4.8
		10.00	3	50	0.030	5.000	10.000	1590	143	7.2
		12.00	3	50	0.045	6.000	12.000	1325	179	12.9
		14.00	3	50	0.055	7.000	14.000	1135	187	18.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	23	0.010	1.500	3.000	2440	73	0.3
		4.00	3	23	0.010	2.000	4.000	1830	55	0.4
		5.00	3	23	0.015	2.500	5.000	1465	66	0.8
		6.00	3	23	0.020	3.000	6.000	1220	73	1.3
		7.00	3	23	0.020	3.500	7.000	1045	63	1.5
		8.00	3	23	0.025	4.000	8.000	915	69	2.2
		10.00	3	23	0.030	5.000	10.000	730	66	3.3
		12.00	3	23	0.045	6.000	12.000	610	82	5.9
		14.00	3	23	0.055	7.000	14.000	525	87	8.5
	Cast iron (lamellar / spheroidal)	3.00	3	40	0.010	1.500	3.000	4245	127	0.6
		4.00	3	40	0.010	2.000	4.000	3185	96	0.8
		5.00	3	40	0.015	2.500	5.000	2545	115	1.4
		6.00	3	40	0.020	3.000	6.000	2120	127	2.3
		7.00	3	40	0.020	3.500	7.000	1820	109	2.7
		8.00	3	40	0.025	4.000	8.000	1590	119	3.8
		10.00	3	40	0.030	5.000	10.000	1275	115	5.7
		12.00	3	40	0.045	6.000	12.000	1060	143	10.3
		14.00	3	40	0.055	7.000	14.000	910	150	14.7

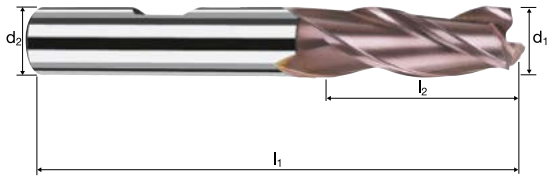
Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8

λ **30°**
γ **15°**

90°



Roughing

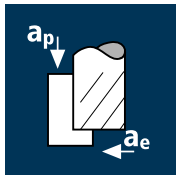
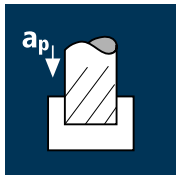
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G) Aluminium Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0780** ø-Code **100**

Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0780
100	1.00	6.00	49	5.00	12.48	10.5°	3	●
120	1.50	6.00	50	6.00	12.99	10.0°	3	●
140	2.00	6.00	51	7.00	13.61	8.5°	3	●
160	2.50	6.00	52	8.00	15.50	6.5°	3	●
180	3.00	6.00	52	8.00	15.50	6.0°	3	●
200	3.50	6.00	54	10.00	17.50	4.5°	3	●
220	4.00	6.00	55	11.00	18.50	3.5°	3	●
240	4.50	6.00	55	11.00	18.50	2.5°	3	●
260	5.00	6.00	57	13.00	20.50	1.5°	3	●
280	5.50	6.00	57	13.00	20.50	1.0°	3	●
300	6.00	6.00	57	13.00	-	0.0°	3	●
322	6.50	10.00	66	16.00	25.50	4.0°	3	●
342	7.00	10.00	66	16.00	25.50	3.5°	3	●
391	8.00	8.00	63	19.00	-	0.0°	3	●
402	8.00	10.00	69	19.00	28.50	2.5°	3	●
420	9.00	10.00	69	19.00	28.50	1.5°	3	●
450	10.00	10.00	72	22.00	-	0.0°	3	●
470	11.00	12.00	79	22.00	33.50	1.0°	3	●
501	12.00	12.00	83	26.00	-	0.0°	3	●
540	13.00	12.00	83	26.00	-	0.0°	3	●
570	14.00	12.00	83	26.00	-	0.0°	3	●

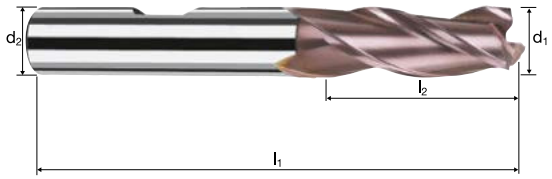
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	15.00	3	58	0.060	22.500	1.050	1230	221	5.2
		16.00	3	58	0.060	24.000	1.100	1155	208	5.5
		18.00	3	58	0.070	27.000	1.250	1025	215	7.3
		20.00	3	58	0.080	30.000	1.400	925	222	9.3
		22.00	3	58	0.085	33.000	1.550	840	214	11.0
		25.00	3	58	0.100	37.500	1.750	740	222	14.6
	Steel 850 - 1100 N/mm²	15.00	3	52	0.060	22.500	1.050	1105	199	4.7
		16.00	3	52	0.060	24.000	1.100	1035	186	4.9
		18.00	3	52	0.070	27.000	1.250	920	193	6.5
		20.00	3	52	0.080	30.000	1.400	830	199	8.4
		22.00	3	52	0.085	33.000	1.550	750	191	9.8
		25.00	3	52	0.100	37.500	1.750	660	198	13.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	15.00	3	26	0.060	22.500	1.050	550	99	2.3
		16.00	3	26	0.060	24.000	1.100	515	93	2.4
		18.00	3	26	0.070	27.000	1.250	460	97	3.3
		20.00	3	26	0.080	30.000	1.400	415	100	4.2
		22.00	3	26	0.085	33.000	1.550	375	96	4.9
		25.00	3	26	0.100	37.500	1.750	330	99	6.5
	Cast iron (lamellar / spheroidal)	15.00	3	45	0.060	22.500	1.050	955	172	4.1
		16.00	3	45	0.060	24.000	1.100	895	161	4.3
		18.00	3	45	0.070	27.000	1.250	795	167	5.6
		20.00	3	45	0.080	30.000	1.400	715	172	7.2
		22.00	3	45	0.085	33.000	1.550	650	166	8.5
		25.00	3	45	0.100	37.500	1.750	575	173	11.3
	Steel < 850 N/mm²	15.00	3	54	0.060	7.500	15.000	1145	206	23.2
		16.00	3	54	0.065	8.000	16.000	1075	210	26.8
		18.00	3	54	0.070	9.000	18.000	955	201	32.5
		20.00	3	54	0.080	10.000	20.000	860	206	41.3
		22.00	3	54	0.085	11.000	22.000	780	199	48.1
		25.00	3	54	0.100	12.500	25.000	690	207	64.7
	Steel 850 - 1100 N/mm²	15.00	3	50	0.060	7.500	15.000	1060	191	21.5
		16.00	3	50	0.065	8.000	16.000	995	194	24.8
		18.00	3	50	0.070	9.000	18.000	885	186	30.1
		20.00	3	50	0.080	10.000	20.000	795	191	38.2
		22.00	3	50	0.085	11.000	22.000	725	185	44.7
		25.00	3	50	0.100	12.500	25.000	635	191	59.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	15.00	3	23	0.060	7.500	15.000	490	88	9.9
		16.00	3	23	0.065	8.000	16.000	460	90	11.5
		18.00	3	23	0.070	9.000	18.000	405	85	13.8
		20.00	3	23	0.080	10.000	20.000	365	88	17.5
		22.00	3	23	0.085	11.000	22.000	335	85	20.7
		25.00	3	23	0.100	12.500	25.000	295	89	27.7
	Cast iron (lamellar / spheroidal)	15.00	3	40	0.060	7.500	15.000	850	153	17.2
		16.00	3	40	0.065	8.000	16.000	795	155	19.8
		18.00	3	40	0.070	9.000	18.000	705	148	24.0
		20.00	3	40	0.080	10.000	20.000	635	152	30.5
		22.00	3	40	0.085	11.000	22.000	580	148	35.8
		25.00	3	40	0.100	12.500	25.000	510	153	47.8

Cylindrical end mills

Smooth-edged, normal version

HSS-E Co8 | λ **30°** γ **15°**

90°



Roughing

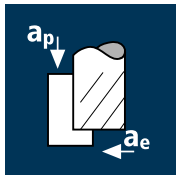
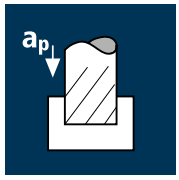
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G) Aluminium Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0780** ø-Code **581**

Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0780
581	15.00	12.00	83	26.00	-	0.0°	3	●
610	16.00	16.00	92	32.00	-	0.0°	3	●
640	18.00	16.00	92	32.00	-	0.0°	3	●
671	20.00	16.00	98	38.00	-	0.0°	3	●
682	20.00	20.00	104	38.00	-	0.0°	3	●
710	22.00	20.00	104	38.00	-	0.0°	3	●
772	25.00	25.00	121	45.00	-	0.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	4.000	2.600	11935	1432	14.9
		5.00	4	150	0.040	5.000	3.250	9550	1528	24.8
		6.00	4	150	0.045	6.000	3.900	7960	1433	33.5
		8.00	4	150	0.060	8.000	5.200	5970	1433	59.6
		10.00	4	150	0.075	10.000	6.500	4775	1433	93.1
		12.00	4	150	0.090	12.000	7.800	3980	1433	134.1
		16.00	4	150	0.100	16.000	10.400	2985	1194	198.7
		20.00	4	150	0.125	20.000	13.000	2385	1193	310.1
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	4.000	2.600	9150	915	9.5
		5.00	4	115	0.035	5.000	3.250	7320	1025	16.7
		6.00	4	115	0.040	6.000	3.900	6100	976	22.8
		8.00	4	115	0.055	8.000	5.200	4575	1007	41.9
		10.00	4	115	0.065	10.000	6.500	3660	952	61.9
		12.00	4	115	0.080	12.000	7.800	3050	976	91.4
		16.00	4	115	0.090	16.000	10.400	2290	824	137.2
		20.00	4	115	0.110	20.000	13.000	1830	805	209.4
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	4.000	2.600	3980	239	2.5
		5.00	4	50	0.020	5.000	3.250	3185	255	4.1
		6.00	4	50	0.020	6.000	3.900	2655	212	5.0
		8.00	4	50	0.025	8.000	5.200	1990	199	8.3
		10.00	4	50	0.035	10.000	6.500	1590	223	14.5
		12.00	4	50	0.040	12.000	7.800	1325	212	19.8
		16.00	4	50	0.050	16.000	10.400	995	199	33.1
		20.00	4	50	0.060	20.000	13.000	795	191	49.6
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.015	4.000	1.600	4775	287	1.8
		5.00	4	60	0.020	5.000	2.000	3820	306	3.1
		6.00	4	60	0.020	6.000	2.300	3185	255	3.5
		8.00	4	60	0.025	8.000	3.100	2385	239	5.9
		10.00	4	60	0.035	10.000	3.900	1910	267	10.4
		12.00	4	60	0.040	12.000	4.700	1590	254	14.3
		16.00	4	60	0.050	16.000	6.200	1195	239	23.7
		20.00	4	60	0.060	20.000	7.800	955	229	35.8
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	3.600	4.000	9550	764	11.0
		5.00	4	120	0.025	4.500	5.000	7640	764	17.2
		6.00	4	120	0.035	5.400	6.000	6365	891	28.9
		8.00	4	120	0.045	7.200	8.000	4775	860	49.5
		10.00	4	120	0.055	9.000	10.000	3820	840	75.6
		12.00	4	120	0.065	10.800	12.000	3185	828	107.3
		16.00	4	120	0.075	14.400	16.000	2385	716	164.9
		20.00	4	120	0.095	18.000	20.000	1910	726	261.3
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	3.600	4.000	7160	573	8.2
		5.00	4	90	0.025	4.500	5.000	5730	573	12.9
		6.00	4	90	0.035	5.400	6.000	4775	669	21.7
		8.00	4	90	0.045	7.200	8.000	3580	644	37.1
		10.00	4	90	0.055	9.000	10.000	2865	630	56.7
		12.00	4	90	0.065	10.800	12.000	2385	620	80.4
		16.00	4	90	0.075	14.400	16.000	1790	537	123.7
		20.00	4	90	0.095	18.000	20.000	1430	543	195.6
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.015	3.600	4.000	3185	191	2.8
		5.00	4	40	0.020	4.500	5.000	2545	204	4.6
		6.00	4	40	0.025	5.400	6.000	2120	212	6.9
		8.00	4	40	0.030	7.200	8.000	1590	191	11.0
		10.00	4	40	0.040	9.000	10.000	1275	204	18.4
		12.00	4	40	0.045	10.800	12.000	1060	191	24.7
		16.00	4	40	0.050	14.400	16.000	795	159	36.6
		20.00	4	40	0.065	18.000	20.000	635	165	59.4
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.020	3.600	4.000	3980	318	4.6
		5.00	4	50	0.025	4.500	5.000	3185	319	7.2
		6.00	4	50	0.030	5.400	6.000	2655	319	10.3
		8.00	4	50	0.040	7.200	8.000	1990	318	18.3
		10.00	4	50	0.050	9.000	10.000	1590	318	28.6
		12.00	4	50	0.060	10.800	12.000	1325	318	41.2
		16.00	4	50	0.070	14.400	16.000	995	279	64.2
		20.00	4	50	0.085	18.000	20.000	795	270	97.3

Cylindrical end mills NX

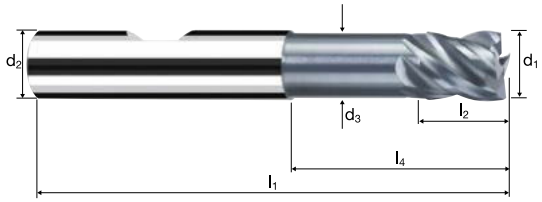
Smooth-edged, normal version, neck

HM MG10

λ 45°
γ -20°

45°

Vario



Roughing

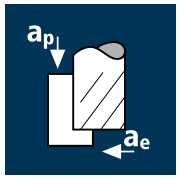
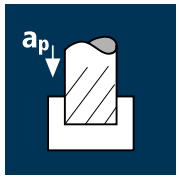
Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15342** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15342	P15242
220	4.00	6.00	3.70	57	6.00	16.00	20.95	0.05	3.0°	4		●
260	5.00	6.00	4.60	57	8.00	18.00	21.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	57	9.00	19.34	20.00	0.10	0.0°	4		●
391	8.00	8.00	7.40	63	12.00	25.29	26.00	0.10	0.0°	4		●
450	10.00	10.00	9.20	72	15.00	30.20	31.00	0.15	0.0°	4		●
501	12.00	12.00	11.00	83	18.00	36.13	37.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	92	24.00	42.13	43.00	0.15	0.0°	4		●
682	20.00	20.00	19.00	104	30.00	52.13	53.00	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	170	0.020	3.000	1.400	18040	1443	6.1
		4.00	4	170	0.030	4.000	1.800	13530	1624	11.7
		5.00	4	170	0.040	5.000	2.300	10825	1732	19.9
		6.00	4	170	0.050	6.000	2.700	9020	1804	29.2
		8.00	4	170	0.065	8.000	3.600	6765	1759	50.7
		10.00	4	170	0.080	10.000	4.500	5410	1731	77.9
		12.00	4	170	0.095	12.000	5.400	4510	1714	111.1
		16.00	4	170	0.125	16.000	7.200	3380	1690	194.7
		20.00	4	170	0.155	20.000	9.000	2705	1677	301.9
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	3.000	1.400	14855	1188	5.0
		4.00	4	140	0.030	4.000	1.800	11140	1337	9.6
		5.00	4	140	0.040	5.000	2.300	8915	1426	16.4
		6.00	4	140	0.050	6.000	2.700	7425	1485	24.1
		8.00	4	140	0.065	8.000	3.600	5570	1448	41.7
		10.00	4	140	0.080	10.000	4.500	4455	1426	64.2
		12.00	4	140	0.095	12.000	5.400	3715	1412	91.5
		16.00	4	140	0.125	16.000	7.200	2785	1393	160.4
		20.00	4	140	0.155	20.000	9.000	2230	1383	248.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	3.000	1.400	7425	594	2.5
		4.00	4	70	0.030	4.000	1.800	5570	668	4.8
		5.00	4	70	0.035	5.000	2.300	4455	624	7.2
		6.00	4	70	0.045	6.000	2.700	3715	669	10.8
		8.00	4	70	0.060	8.000	3.600	2785	668	19.2
		10.00	4	70	0.070	10.000	4.500	2230	624	28.1
		12.00	4	70	0.085	12.000	5.400	1855	631	40.9
		16.00	4	70	0.110	16.000	7.200	1395	614	70.7
		20.00	4	70	0.140	20.000	9.000	1115	624	112.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.015	3.000	1.400	9550	573	2.4
		4.00	4	90	0.020	4.000	1.800	7160	573	4.1
		5.00	4	90	0.025	5.000	2.300	5730	573	6.6
		6.00	4	90	0.030	6.000	2.700	4775	573	9.3
		8.00	4	90	0.040	8.000	3.600	3580	573	16.5
		10.00	4	90	0.050	10.000	4.500	2865	573	25.8
		12.00	4	90	0.060	12.000	5.400	2385	572	37.1
		16.00	4	90	0.080	16.000	7.200	1790	573	66.0
		20.00	4	90	0.100	20.000	9.000	1430	572	103.0
	Steel < 850 N/mm²	3.00	4	135	0.015	2.400	3.000	14325	860	6.2
		4.00	4	135	0.020	3.200	4.000	10745	860	11.0
		5.00	4	135	0.030	4.000	5.000	8595	1031	20.6
		6.00	4	135	0.040	4.800	6.000	7160	1146	33.0
		8.00	4	135	0.050	6.400	8.000	5370	1074	55.0
		10.00	4	135	0.065	8.000	10.000	4295	1117	89.3
		12.00	4	135	0.075	9.600	12.000	3580	1074	123.7
		16.00	4	135	0.075	8.000	16.000	2685	806	103.1
		20.00	4	135	0.095	10.000	20.000	2150	817	163.4
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	2.400	3.000	11140	668	4.8
		4.00	4	105	0.020	3.200	4.000	8355	668	8.6
		5.00	4	105	0.030	4.000	5.000	6685	802	16.0
		6.00	4	105	0.040	4.800	6.000	5570	891	25.7
		8.00	4	105	0.050	6.400	8.000	4180	836	42.8
		10.00	4	105	0.065	8.000	10.000	3340	868	69.5
		12.00	4	105	0.075	9.600	12.000	2785	836	96.2
		16.00	4	105	0.075	8.000	16.000	2090	627	80.3
		20.00	4	105	0.095	10.000	20.000	1670	635	126.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	2.400	3.000	5835	350	2.5
		4.00	4	55	0.020	3.200	4.000	4375	350	4.5
		5.00	4	55	0.030	4.000	5.000	3500	420	8.4
		6.00	4	55	0.035	4.800	6.000	2920	409	11.8
		8.00	4	55	0.045	6.400	8.000	2190	394	20.2
		10.00	4	55	0.055	8.000	10.000	1750	385	30.8
		12.00	4	55	0.060	9.600	12.000	1460	350	40.4
		16.00	4	55	0.075	8.000	16.000	1095	329	42.0
		20.00	4	55	0.095	10.000	20.000	875	333	66.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	75	0.015	2.400	3.000	7960	478	3.4
		4.00	4	75	0.015	3.200	4.000	5970	358	4.6
		5.00	4	75	0.025	4.000	5.000	4775	478	9.6
		6.00	4	75	0.030	4.800	6.000	3980	478	13.8
		8.00	4	75	0.040	6.400	8.000	2985	478	24.5
		10.00	4	75	0.050	8.000	10.000	2385	477	38.2
		12.00	4	75	0.050	9.600	12.000	1990	398	45.8
		16.00	4	75	0.065	8.000	16.000	1490	387	49.6
		20.00	4	75	0.080	10.000	20.000	1195	382	76.5

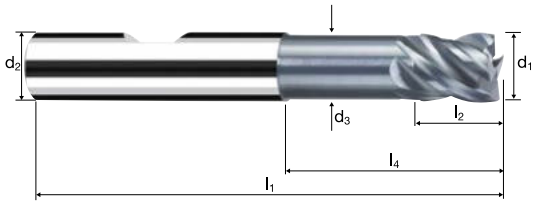
Cylindrical end mills

Smooth-edged, normal version, neck

HM MG10 | λ **40°** γ **0°**

45°

Vario



Roughing

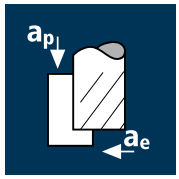
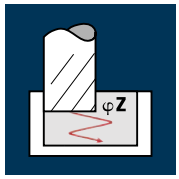
Finishing

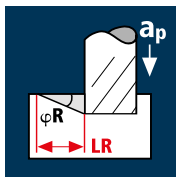
ReTool®

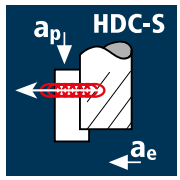
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G)** Tool Steel Nickel-Alloys

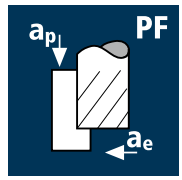
Example: **Order-N°.** Coating **P** Article-N°. **5325** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P5325	P5225
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.05	4.5°	4		●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.05	3.0°	4		●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.10	0.0°	4		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.10	0.0°	4		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.15	0.0°	4		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	0.15	0.0°	4		●
682	20.00	20.00	19.00	104	21.00	52.13	53.00	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC H	3.00	4	60	0.009	3.000	1.800	6365	229	1.2	5.0°
		4.00	4	60	0.013	4.000	2.400	4775	248	2.4	5.0°
		5.00	4	60	0.017	5.000	3.000	3820	260	3.9	5.0°
		6.00	4	60	0.021	7.500	3.600	3185	268	7.2	5.0°
		8.00	4	60	0.028	10.000	4.800	2385	267	12.8	5.0°
		10.00	4	60	0.035	12.500	6.000	1910	267	20.1	5.0°
		12.00	4	60	0.042	15.000	7.200	1590	267	28.8	5.0°
		16.00	4	60	0.050	20.000	9.600	1195	239	45.9	5.0°
		20.00	4	60	0.060	25.000	12.000	955	229	68.8	5.0°
	Hardened tool steel > 60 HRC H	3.00	4	25	0.004	3.000	1.800	2655	43	0.2	3.0°
		4.00	4	25	0.006	4.000	2.400	1990	48	0.5	4.0°
		5.00	4	25	0.008	5.000	3.000	1590	51	0.8	5.0°
		6.00	4	25	0.009	6.000	3.600	1325	48	1.0	5.0°
		8.00	4	25	0.011	8.000	4.800	995	44	1.7	5.0°
		10.00	4	25	0.015	10.000	6.000	795	48	2.9	5.0°
		12.00	4	25	0.018	12.000	7.200	665	48	4.1	5.0°
		16.00	4	25	0.023	16.000	9.600	495	46	7.0	5.0°
		20.00	4	25	0.025	20.000	12.000	400	40	9.6	3.0°
	High speed steel, hardened 64 - 70 HRC H	3.00	4	15	0.005	2.250	0.450	1590	32	0.0	3.0°
		4.00	4	15	0.006	3.000	0.600	1195	29	0.1	4.0°
		5.00	4	15	0.008	3.750	0.750	955	31	0.1	5.0°
		6.00	4	15	0.006	4.500	3.600	795	19	0.3	5.0°
		8.00	4	15	0.008	6.000	4.800	595	19	0.5	5.0°
		10.00	4	15	0.010	7.500	6.000	475	19	0.9	5.0°
		12.00	4	15	0.012	9.000	7.200	400	19	1.2	5.0°
		16.00	4	15	0.016	12.000	9.600	300	19	2.2	5.0°
		20.00	4	15	0.020	15.000	12.000	240	19	3.5	3.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC H	3.00	4	50	0.010	3.000	3.000	5305	212	1.9	5.0°	34.3
		4.00	4	50	0.013	4.000	4.000	3980	207	3.3	5.0°	45.7
		5.00	4	50	0.017	5.000	5.000	3185	217	5.4	5.0°	57.2
		6.00	4	50	0.021	6.000	6.000	2655	223	8.0	5.0°	68.6
		8.00	4	50	0.028	8.000	8.000	1990	223	14.3	5.0°	91.4
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3	5.0°	114.3
		12.00	4	50	0.042	12.000	12.000	1325	223	32.1	5.0°	137.2
		16.00	4	50	0.064	8.000	16.000	995	255	32.6	5.0°	91.4
		20.00	4	50	0.075	10.000	20.000	795	239	47.7	5.0°	114.3
	Hardened tool steel > 60 HRC H	3.00	4	20	0.004	3.000	3.000	2120	34	0.3	3.0°	57.2
		4.00	4	20	0.006	4.000	4.000	1590	38	0.6	4.0°	57.2
		5.00	4	20	0.008	5.000	5.000	1275	41	1.0	5.0°	57.2
		6.00	4	20	0.009	6.000	6.000	1060	38	1.4	5.0°	68.6
		8.00	4	20	0.011	8.000	8.000	795	35	2.2	5.0°	91.4
		10.00	4	20	0.015	10.000	10.000	635	38	3.8	5.0°	114.3
		12.00	4	20	0.020	12.000	12.000	530	42	6.1	5.0°	137.2
		16.00	4	20	0.032	8.000	16.000	400	51	6.6	5.0°	91.4
		20.00	4	20	0.040	10.000	20.000	320	51	10.2	3.0°	190.8
	High speed steel, hardened 64 - 70 HRC H	3.00	4	10	0.003	1.500	3.000	1060	13	0.1	3.0°	28.6
		4.00	4	10	0.004	2.000	4.000	795	13	0.1	4.0°	28.6
		5.00	4	10	0.005	2.500	5.000	635	13	0.2	5.0°	28.6
		6.00	4	10	0.006	3.000	6.000	530	13	0.2	5.0°	34.3
		8.00	4	10	0.008	4.000	8.000	400	13	0.4	5.0°	45.7
		10.00	4	10	0.010	5.000	10.000	320	13	0.6	5.0°	57.2
		12.00	4	10	0.012	6.000	12.000	265	13	0.9	5.0°	68.6
		16.00	4	10	0.016	8.000	16.000	200	13	1.6	5.0°	91.4
		20.00	4	10	0.020	10.000	20.000	160	13	2.6	3.0°	190.8





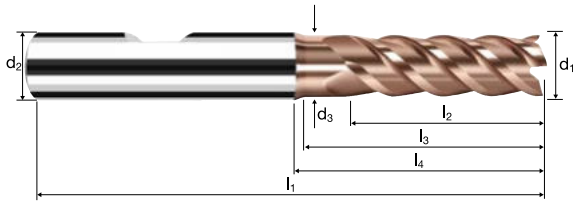
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills HX

Smooth-edged, medium length version, short neck
High-performance penetration edge

HM
XA

λ **45°**
γ **-10°**



Roughing HPC

Roughing HDC

Finishing

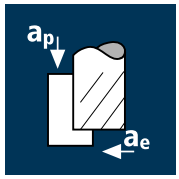
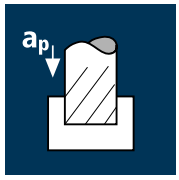
ReTool®

HRC 48-56 | **HRC** 56-60 | **HRC** > 60 | **HSS**

Example:
Order-N°.

Coating: **H** | Article-N°.: **8614** | ø-Code: **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si **H8614**	DURO-Si **H8514**
180	3.00	6.00	2.80	63	11.00	18.00	24.37	0.100	4.5°	4		●
220	4.00	6.00	3.70	63	13.00	22.00	26.82	0.100	3.5°	4		●
260	5.00	6.00	4.60	63	16.00	24.00	27.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	63	21.00	25.34	26.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	72	31.00	34.79	35.50	0.150	0.0°	4		●
450	10.00	10.00	9.20	84	37.00	42.20	43.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	97	44.00	50.13	51.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	108	53.00	58.13	59.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	122	62.00	70.13	71.00	0.200	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	7.200	0.800	9150	915	5.3
		5.00	4	115	0.035	9.000	1.000	7320	1025	9.2
		6.00	4	115	0.040	10.800	1.200	6100	976	12.6
		8.00	4	115	0.055	14.400	1.600	4575	1007	23.2
		10.00	4	115	0.065	18.000	2.000	3660	952	34.3
		12.00	4	115	0.080	21.600	2.400	3050	976	50.6
		16.00	4	115	0.090	28.800	3.200	2290	824	76.0
		20.00	4	115	0.110	36.000	4.000	1830	805	115.9
	Steel 1300 - 1500 N/mm²	4.00	4	80	0.025	7.200	0.800	6365	637	3.7
		5.00	4	80	0.030	9.000	1.000	5095	611	5.5
		6.00	4	80	0.035	10.800	1.200	4245	594	7.7
		8.00	4	80	0.045	14.400	1.600	3185	573	13.2
		10.00	4	80	0.060	18.000	2.000	2545	611	22.0
		12.00	4	80	0.070	21.600	2.400	2120	594	30.8
		16.00	4	80	0.080	28.800	3.200	1590	509	46.9
		20.00	4	80	0.100	36.000	4.000	1275	510	73.4
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.015	7.200	0.800	3980	239	1.4
		5.00	4	50	0.020	9.000	1.000	3185	255	2.3
		6.00	4	50	0.020	10.800	1.200	2655	212	2.8
		8.00	4	50	0.025	14.400	1.600	1990	199	4.6
		10.00	4	50	0.035	18.000	2.000	1590	223	8.0
		12.00	4	50	0.040	21.600	2.400	1325	212	11.0
		16.00	4	50	0.050	28.800	3.200	995	199	18.3
		20.00	4	50	0.060	36.000	4.000	795	191	27.5
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	60	0.015	7.200	0.800	4775	287	1.7
		5.00	4	60	0.020	9.000	1.000	3820	306	2.8
		6.00	4	60	0.020	10.800	1.200	3185	255	3.3
		8.00	4	60	0.025	14.400	1.600	2385	239	5.5
		10.00	4	60	0.035	18.000	2.000	1910	267	9.6
		12.00	4	60	0.040	21.600	2.400	1590	254	13.2
		16.00	4	60	0.050	28.800	3.200	1195	239	22.0
		20.00	4	60	0.060	36.000	4.000	955	229	33.0
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.015	6.000	4.000	7160	430	10.3
		5.00	4	90	0.015	7.500	5.000	5730	344	12.9
		6.00	4	90	0.020	9.000	6.000	4775	382	20.6
		8.00	4	90	0.025	12.000	8.000	3580	358	34.4
		10.00	4	90	0.035	15.000	10.000	2865	401	60.2
		12.00	4	90	0.040	18.000	12.000	2385	382	82.4
		16.00	4	90	0.050	24.000	16.000	1790	358	137.5
		20.00	4	90	0.060	30.000	20.000	1430	343	205.9
	Steel 1300 - 1500 N/mm²	4.00	4	65	0.010	6.000	4.000	5175	207	5.0
		5.00	4	65	0.015	7.500	5.000	4140	248	9.3
		6.00	4	65	0.020	9.000	6.000	3450	276	14.9
		8.00	4	65	0.025	12.000	8.000	2585	259	24.8
		10.00	4	65	0.030	15.000	10.000	2070	248	37.3
		12.00	4	65	0.035	18.000	12.000	1725	242	52.2
		16.00	4	65	0.045	24.000	16.000	1295	233	89.5
		20.00	4	65	0.055	30.000	20.000	1035	228	136.6
	Hardened tool steel 52 - 56 HRC	4.00	4	40	0.010	4.000	4.000	3185	127	2.0
		5.00	4	40	0.010	5.000	5.000	2545	102	2.5
		6.00	4	40	0.015	6.000	6.000	2120	127	4.6
		8.00	4	40	0.020	8.000	8.000	1590	127	8.1
		10.00	4	40	0.025	10.000	10.000	1275	128	12.8
		12.00	4	40	0.025	12.000	12.000	1060	106	15.3
		16.00	4	40	0.030	16.000	16.000	795	95	24.4
		20.00	4	40	0.040	20.000	20.000	635	102	40.6
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.010	6.000	4.000	3980	159	3.8
		5.00	4	50	0.015	7.500	5.000	3185	191	7.2
		6.00	4	50	0.020	9.000	6.000	2655	212	11.5
		8.00	4	50	0.025	12.000	8.000	1990	199	19.1
		10.00	4	50	0.030	15.000	10.000	1590	191	28.6
		12.00	4	50	0.035	18.000	12.000	1325	186	40.1
		16.00	4	50	0.045	24.000	16.000	995	179	68.8
		20.00	4	50	0.055	30.000	20.000	795	175	104.9

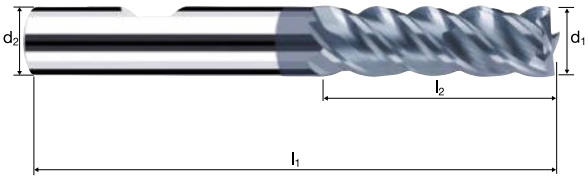
Cylindrical end mills NX

Smooth-edged, medium length version

HM MG10 | λ 45° γ -20°

45°

Vario



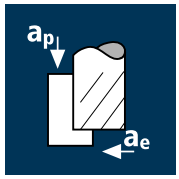
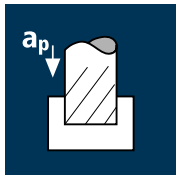
Roughing HPC | Roughing HDC | Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15323** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15323	P15223
220	4.00	6.00	63	13.00	19.59	0.05	3.5°	4		●
260	5.00	6.00	63	16.00	20.72	0.10	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.10	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.10	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.15	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.15	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.15	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] H	3.00	4	86	0.013	3.750	1.200	9125	475	2.1
		4.00	4	86	0.017	5.000	1.600	6845	466	3.7
		5.00	4	72	0.020	6.250	3.250	4585	367	7.5
		6.00	4	72	0.024	9.000	3.900	3820	367	12.9
		8.00	4	72	0.032	12.000	5.200	2865	367	22.9
		10.00	4	72	0.041	15.000	6.500	2290	376	36.6
		12.00	4	72	0.049	18.000	7.800	1910	374	52.6
		16.00	4	72	0.058	20.000	10.400	1430	332	69.0
		20.00	4	72	0.072	25.000	13.000	1145	330	107.2
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] H	3.00	4	58	0.013	3.750	1.200	6155	320	1.4
		4.00	4	58	0.017	5.000	1.600	4615	314	2.5
		5.00	4	53	0.020	6.250	3.250	3375	270	5.5
		6.00	4	53	0.024	9.000	3.900	2810	270	9.5
		8.00	4	53	0.032	12.000	5.200	2110	270	16.9
		10.00	4	53	0.041	15.000	6.500	1685	276	26.9
		12.00	4	53	0.049	18.000	7.800	1405	275	38.7
		16.00	4	53	0.058	20.000	10.400	1055	245	50.9
		20.00	4	53	0.072	25.000	13.000	845	243	79.1
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] H	3.00	4	44	0.012	3.750	1.200	4670	224	1.0
		4.00	4	44	0.015	5.000	1.600	3500	210	1.7
		5.00	4	40	0.018	6.250	3.250	2545	183	3.7
		6.00	4	40	0.022	9.000	3.900	2120	187	6.5
		8.00	4	40	0.029	12.000	5.200	1590	184	11.5
		10.00	4	40	0.036	15.000	6.500	1275	184	17.9
		12.00	4	40	0.043	18.000	7.800	1060	182	25.6
		16.00	4	40	0.050	20.000	10.400	795	159	33.1
		20.00	4	40	0.061	25.000	13.000	635	155	50.3
	Inox martensitic C < 0.3% [Cr/1.4021] H	3.00	4	110	0.017	3.750	1.200	11670	794	3.6
		4.00	4	110	0.023	5.000	1.600	8755	806	6.4
		5.00	4	92	0.027	6.250	3.250	5855	632	12.8
		6.00	4	92	0.033	9.000	3.900	4880	644	22.6
		8.00	4	92	0.043	12.000	5.200	3660	630	39.3
		10.00	4	92	0.054	15.000	6.500	2930	633	61.7
		12.00	4	92	0.065	18.000	7.800	2440	634	89.1
		16.00	4	92	0.079	20.000	10.400	1830	578	120.3
		20.00	4	92	0.097	25.000	13.000	1465	568	184.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] H	3.00	4	63	0.007	2.250	3.000	6685	187	1.3
		4.00	4	63	0.009	3.000	4.000	5015	181	2.2
		5.00	4	63	0.013	6.250	5.000	4010	209	6.5
		6.00	4	63	0.019	9.000	6.000	3340	254	13.7
		8.00	4	63	0.026	12.000	8.000	2505	261	25.0
		10.00	4	63	0.032	15.000	10.000	2005	257	38.5
		12.00	4	63	0.039	18.000	12.000	1670	261	56.3
		16.00	4	63	0.046	20.000	16.000	1255	231	73.9
		20.00	4	63	0.058	25.000	20.000	1005	233	116.6
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] H	3.00	4	46	0.007	2.250	3.000	4880	137	0.9
		4.00	4	46	0.009	3.000	4.000	3660	132	1.6
		5.00	4	46	0.013	6.250	5.000	2930	152	4.8
		6.00	4	46	0.019	9.000	6.000	2440	185	10.0
		8.00	4	46	0.026	12.000	8.000	1830	190	18.3
		10.00	4	46	0.032	15.000	10.000	1465	188	28.1
		12.00	4	46	0.039	18.000	12.000	1220	190	41.1
		16.00	4	46	0.046	20.000	16.000	915	168	53.9
		20.00	4	46	0.058	25.000	20.000	730	169	84.7
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] H	3.00	4	35	0.006	2.250	3.000	3715	89	0.6
		4.00	4	35	0.008	3.000	4.000	2785	89	1.1
		5.00	4	35	0.012	6.250	5.000	2230	107	3.3
		6.00	4	35	0.017	9.000	6.000	1855	126	6.8
		8.00	4	35	0.023	12.000	8.000	1395	128	12.3
		10.00	4	35	0.029	15.000	10.000	1115	129	19.4
		12.00	4	35	0.034	18.000	12.000	930	127	27.3
		16.00	4	35	0.040	20.000	16.000	695	111	35.6
		20.00	4	35	0.049	25.000	20.000	555	109	54.4
	Inox martensitic C < 0.3% [Cr/1.4021] H	3.00	4	81	0.007	2.250	3.000	8595	241	1.6
		4.00	4	81	0.009	3.000	4.000	6445	232	2.8
		5.00	4	81	0.014	5.000	5.000	5155	289	7.2
		6.00	4	81	0.020	7.500	6.000	4295	344	15.5
		8.00	4	81	0.026	10.000	8.000	3225	335	26.8
		10.00	4	81	0.032	12.500	10.000	2580	330	41.3
		12.00	4	81	0.039	15.000	12.000	2150	335	60.4
		16.00	4	81	0.047	16.000	16.000	1610	303	77.5
		20.00	4	81	0.058	20.000	20.000	1290	299	119.7

Cylindrical end mills SX

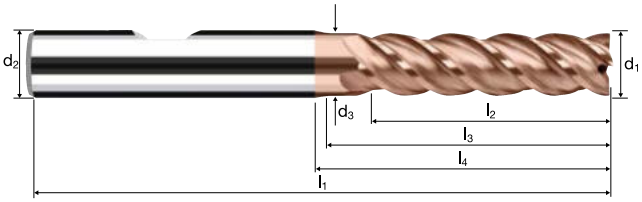
Smooth-edged, medium length version, short neck

HM MG10

λ 43°
γ 3°

r

Vario



Roughing HPC

Roughing HDC

Finishing

ReTool®

Rm < 850

Inox Stainless

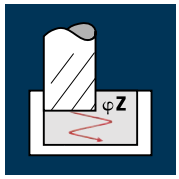
Ti Titanium

Nickel-Alloys
Mangan-Steels
Tool Steel

Example: **Order-N°.** Coating **H** Article-N°. **8616** ø-Code **180**

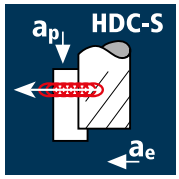
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	DURO-Si H8616	DURO-Si H8516
180	3.00	6.00	2.80	63	11.00	18.00	24.37	0.050	4.5°	4		●
220	4.00	6.00	3.70	63	13.00	22.00	26.82	0.100	3.5°	4		●
260	5.00	6.00	4.60	63	16.00	24.00	27.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	63	21.00	25.34	26.00	0.150	0.0°	4		●
391	8.00	8.00	7.40	72	31.00	34.79	35.50	0.150	0.0°	4		●
450	10.00	10.00	9.20	84	37.00	42.20	43.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	97	44.00	50.13	51.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	108	53.00	58.13	59.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	122	62.00	70.13	71.00	0.250	0.0°	4		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	70	0.019	22.000	5.400	3715	424	4.0°
	8.00	6	70	0.026	31.000	7.200	2785	435	4.0°
	10.00	7	70	0.028	39.000	9.000	2230	437	4.0°
	12.00	7	70	0.033	46.000	10.800	1855	429	4.0°
	16.00	8	70	0.035	53.000	14.400	1395	391	4.0°
	20.00	8	70	0.043	63.000	18.000	1115	384	4.0°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	6	55	0.019	22.000	5.400	2920	333	4.0°
	8.00	6	55	0.026	31.000	7.200	2190	342	4.0°
	10.00	7	55	0.028	39.000	9.000	1750	343	4.0°
	12.00	7	55	0.033	46.000	10.800	1460	337	4.0°
	16.00	8	55	0.035	53.000	14.400	1095	307	4.0°
	20.00	8	55	0.043	63.000	18.000	875	301	4.0°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	6	40	0.017	22.000	5.400	2120	216	4.0°
	8.00	6	40	0.023	31.000	7.200	1590	219	4.0°
	10.00	7	40	0.025	39.000	9.000	1275	223	4.0°
	12.00	7	40	0.029	46.000	10.800	1060	215	4.0°
	16.00	8	40	0.030	53.000	14.400	795	191	4.0°
	20.00	8	40	0.037	63.000	18.000	635	188	4.0°
Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	6	20	0.009	22.000	5.400	1060	57	2.0°
	8.00	6	20	0.012	31.000	7.200	795	57	2.0°
	10.00	7	20	0.012	39.000	9.000	635	53	2.0°
	12.00	7	20	0.015	46.000	10.800	530	56	2.0°
	16.00	8	20	0.016	53.000	14.400	400	51	2.0°
	20.00	8	20	0.017	63.000	18.000	320	44	2.0°

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	133	0.042	22.000	0.450	7055	1778	17.6
	8.00	6	133	0.058	31.000	0.600	5290	1841	34.2
	10.00	7	126	0.061	39.000	0.750	4010	1712	50.1
	12.00	7	126	0.073	46.000	0.900	3340	1707	70.7
	16.00	8	119	0.086	53.000	1.200	2365	1627	103.5
	20.00	8	119	0.094	63.000	1.500	1895	1425	134.7
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	6	98	0.042	22.000	0.450	5200	1310	13.0
	8.00	6	98	0.058	31.000	0.600	3900	1357	25.2
	10.00	7	92	0.061	39.000	0.750	2930	1251	36.6
	12.00	7	92	0.073	46.000	0.900	2440	1247	51.6
	16.00	8	87	0.086	53.000	1.200	1730	1190	75.7
	20.00	8	87	0.094	63.000	1.500	1385	1042	98.4
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	6	78	0.038	22.000	0.450	4140	944	9.3
	8.00	6	78	0.053	31.000	0.600	3105	987	18.4
	10.00	7	74	0.054	39.000	0.750	2355	890	26.0
	12.00	7	74	0.065	46.000	0.900	1965	894	37.0
	16.00	8	70	0.078	53.000	1.200	1395	871	55.4
	20.00	8	70	0.086	63.000	1.500	1115	767	72.5
Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	6.00	6	41	0.048	22.000	0.150	2175	626	2.1
	8.00	6	41	0.064	31.000	0.200	1630	626	3.9
	10.00	7	39	0.069	39.000	0.250	1240	599	5.8
	12.00	7	39	0.080	46.000	0.300	1035	580	8.0
	16.00	8	37	0.094	53.000	0.400	735	553	11.7
	20.00	8	37	0.101	63.000	0.500	590	477	15.0

Cylindrical end mills SX

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

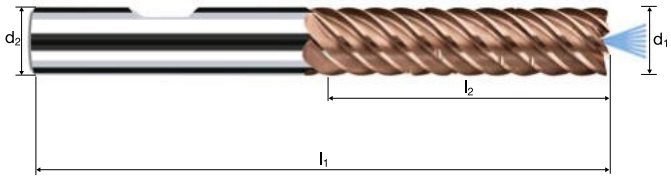
X-Generation X

I

HM MG10

λ **55°**
γ **10°**

r



Roughing HPC

Roughing HDC

Finishing

ReTool®

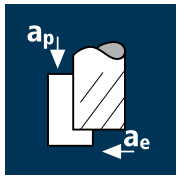
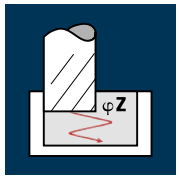
Inox Stainless

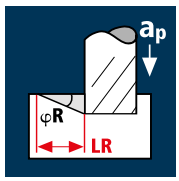
Ti Titanium

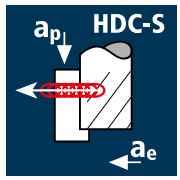
Nickel-Alloys

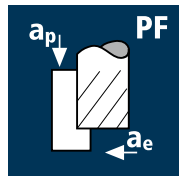
Example: **Order-N°.** Coating **S** Article-N°. **8618** ø-Code **300**

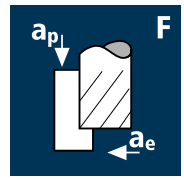
Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	DURO-XI S8618	DURO-XI S8518
300	6.00	6.00	63	22.00	0.100	6		●
391	8.00	8.00	72	31.00	0.150	6		●
450	10.00	10.00	84	39.00	0.200	7		●
501	12.00	12.00	97	46.00	0.200	7		●
610	16.00	16.00	108	53.00	0.200	8		●
682	20.00	20.00	122	63.00	0.250	8		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm² P P	4.00	4	135	0.026	8.000	1.200	10745	1118	10.7	12.0°
		5.00	4	135	0.030	10.000	1.500	8595	1031	15.5	12.0°
		6.00	4	135	0.034	12.000	1.800	7160	974	21.0	12.0°
		8.00	4	135	0.043	16.000	2.400	5370	924	35.5	12.0°
		10.00	4	135	0.055	20.000	3.000	4295	945	56.7	12.0°
		12.00	4	135	0.064	24.000	3.600	3580	917	79.2	12.0°
		16.00	4	135	0.072	25.600	4.800	2685	773	95.0	12.0°
		20.00	4	135	0.085	32.000	6.000	2150	731	140.4	12.0°
	Steel 1100 - 1300 N/mm² P P	4.00	4	105	0.021	8.000	1.200	8355	702	6.7	12.0°
		5.00	4	105	0.026	10.000	1.500	6685	695	10.4	12.0°
		6.00	4	105	0.030	12.000	1.800	5570	668	14.4	12.0°
		8.00	4	105	0.038	16.000	2.400	4180	635	24.4	12.0°
		10.00	4	105	0.047	20.000	3.000	3340	628	37.7	12.0°
		12.00	4	105	0.055	24.000	3.600	2785	613	52.9	12.0°
		16.00	4	105	0.064	25.600	4.800	2090	535	65.7	12.0°
		20.00	4	105	0.077	32.000	6.000	1670	514	98.8	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	4.00	4	80	0.017	8.000	1.200	6365	433	4.2	8.0°
		5.00	4	80	0.021	10.000	1.500	5095	428	6.4	8.0°
		6.00	4	80	0.026	12.000	1.800	4245	442	9.5	8.0°
		8.00	4	80	0.030	16.000	2.400	3185	382	14.7	8.0°
		10.00	4	80	0.038	20.000	3.000	2545	387	23.2	8.0°
		12.00	4	80	0.047	24.000	3.600	2120	399	34.4	8.0°
		16.00	4	80	0.055	25.600	4.800	1590	350	43.0	8.0°
		20.00	4	80	0.068	32.000	6.000	1275	347	66.6	8.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm² P P	4.00	4	110	0.017	6.000	4.000	8755	595	14.3	12.0°	28.2
		5.00	4	110	0.020	7.500	5.000	7005	560	21.0	12.0°	35.3
		6.00	4	110	0.022	9.000	6.000	5835	514	27.7	12.0°	42.3
		8.00	4	110	0.028	12.000	8.000	4375	490	47.0	12.0°	56.5
		10.00	4	110	0.036	15.000	10.000	3500	504	75.6	12.0°	70.6
		12.00	4	110	0.042	18.000	12.000	2920	491	106.0	12.0°	84.7
		16.00	4	110	0.047	24.000	16.000	2190	412	158.1	12.0°	112.9
		20.00	4	110	0.055	30.000	20.000	1750	385	231.0	12.0°	141.1
	Steel 1100 - 1300 N/mm² P P	4.00	4	85	0.014	6.000	4.000	6765	379	9.1	12.0°	28.2
		5.00	4	85	0.017	7.500	5.000	5410	368	13.8	12.0°	35.3
		6.00	4	85	0.020	9.000	6.000	4510	361	19.5	12.0°	42.3
		8.00	4	85	0.025	12.000	8.000	3380	338	32.4	12.0°	56.5
		10.00	4	85	0.031	15.000	10.000	2705	335	50.3	12.0°	70.6
		12.00	4	85	0.036	18.000	12.000	2255	325	70.1	12.0°	84.7
		16.00	4	85	0.042	24.000	16.000	1690	284	109.0	12.0°	112.9
		20.00	4	85	0.050	30.000	20.000	1355	271	162.6	12.0°	141.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	4.00	4	65	0.011	6.000	4.000	5175	228	5.5	12.0°	28.2
		5.00	4	65	0.014	7.500	5.000	4140	232	8.7	12.0°	35.3
		6.00	4	65	0.017	9.000	6.000	3450	235	12.7	12.0°	42.3
		8.00	4	65	0.020	12.000	8.000	2585	207	19.9	12.0°	56.5
		10.00	4	65	0.025	15.000	10.000	2070	207	31.1	12.0°	70.6
		12.00	4	65	0.031	18.000	12.000	1725	214	46.2	12.0°	84.7
		16.00	4	65	0.036	24.000	16.000	1295	187	71.6	12.0°	112.9
		20.00	4	65	0.044	30.000	20.000	1035	182	109.3	12.0°	141.1







Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

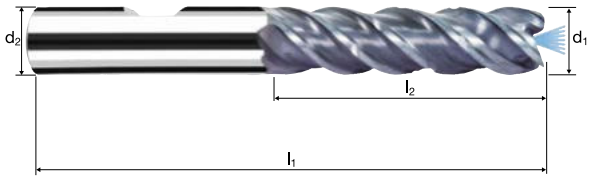
Cylindrical end mills MFC

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

r

Vario



Roughing HPC | Roughing HDC | Finishing

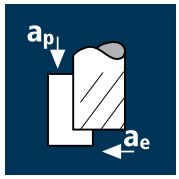
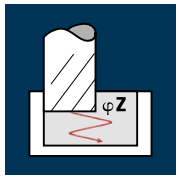
ReTool®

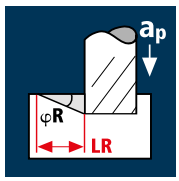
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

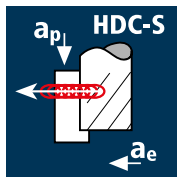
Example: **Order-N°.** Coating **P** Article-N°. **8211** ø-Code **220**

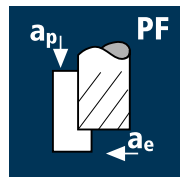
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r	α	z	POLYCHROM P8211	P8111
220*	4.00	6.00	63	13.00	19.59	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	20.72	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.200	0.0°	4		●

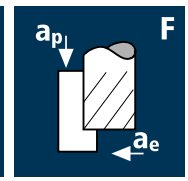
* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	135	0.026	8.000	1.200	10745	1118	10.7	12.0°
		5.00	4	135	0.030	10.000	1.500	8595	1031	15.5	12.0°
		6.00	4	135	0.034	12.000	1.800	7160	974	21.0	12.0°
		8.00	4	135	0.043	16.000	2.400	5370	924	35.5	12.0°
		10.00	4	135	0.055	20.000	3.000	4295	945	56.7	12.0°
		12.00	4	135	0.064	24.000	3.600	3580	917	79.2	12.0°
		16.00	4	135	0.072	25.600	4.800	2685	773	95.0	12.0°
		20.00	4	135	0.085	32.000	6.000	2150	731	140.4	12.0°
	Steel 1100 - 1300 N/mm²	4.00	4	105	0.021	8.000	1.200	8355	702	6.7	12.0°
		5.00	4	105	0.026	10.000	1.500	6685	695	10.4	12.0°
		6.00	4	105	0.030	12.000	1.800	5570	668	14.4	12.0°
		8.00	4	105	0.038	16.000	2.400	4180	635	24.4	12.0°
		10.00	4	105	0.047	20.000	3.000	3340	628	37.7	12.0°
		12.00	4	105	0.055	24.000	3.600	2785	613	52.9	12.0°
		16.00	4	105	0.064	25.600	4.800	2090	535	65.7	12.0°
		20.00	4	105	0.077	32.000	6.000	1670	514	98.8	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	80	0.017	8.000	1.200	6365	433	4.2	8.0°
		5.00	4	80	0.021	10.000	1.500	5095	428	6.4	8.0°
		6.00	4	80	0.026	12.000	1.800	4245	442	9.5	8.0°
		8.00	4	80	0.030	16.000	2.400	3185	382	14.7	8.0°
		10.00	4	80	0.038	20.000	3.000	2545	387	23.2	8.0°
		12.00	4	80	0.047	24.000	3.600	2120	399	34.4	8.0°
		16.00	4	80	0.055	25.600	4.800	1590	350	43.0	8.0°
		20.00	4	80	0.068	32.000	6.000	1275	347	66.6	8.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	110	0.017	6.000	4.000	8755	595	14.3	12.0°	28.2
		5.00	4	110	0.020	7.500	5.000	7005	560	21.0	12.0°	35.3
		6.00	4	110	0.022	9.000	6.000	5835	514	27.7	12.0°	42.3
		8.00	4	110	0.028	12.000	8.000	4375	490	47.0	12.0°	56.5
		10.00	4	110	0.036	15.000	10.000	3500	504	75.6	12.0°	70.6
		12.00	4	110	0.042	18.000	12.000	2920	491	106.0	12.0°	84.7
		16.00	4	110	0.047	24.000	16.000	2190	412	158.1	12.0°	112.9
		20.00	4	110	0.055	30.000	20.000	1750	385	231.0	12.0°	141.1
	Steel 1100 - 1300 N/mm²	4.00	4	85	0.014	6.000	4.000	6765	379	9.1	12.0°	28.2
		5.00	4	85	0.017	7.500	5.000	5410	368	13.8	12.0°	35.3
		6.00	4	85	0.020	9.000	6.000	4510	361	19.5	12.0°	42.3
		8.00	4	85	0.025	12.000	8.000	3380	338	32.4	12.0°	56.5
		10.00	4	85	0.031	15.000	10.000	2705	335	50.3	12.0°	70.6
		12.00	4	85	0.036	18.000	12.000	2255	325	70.1	12.0°	84.7
		16.00	4	85	0.042	24.000	16.000	1690	284	109.0	12.0°	112.9
		20.00	4	85	0.050	30.000	20.000	1355	271	162.6	12.0°	141.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	65	0.011	6.000	4.000	5175	228	5.5	12.0°	28.2
		5.00	4	65	0.014	7.500	5.000	4140	232	8.7	12.0°	35.3
		6.00	4	65	0.017	9.000	6.000	3450	235	12.7	12.0°	42.3
		8.00	4	65	0.020	12.000	8.000	2585	207	19.9	12.0°	56.5
		10.00	4	65	0.025	15.000	10.000	2070	207	31.1	12.0°	70.6
		12.00	4	65	0.031	18.000	12.000	1725	214	46.2	12.0°	84.7
		16.00	4	65	0.036	24.000	16.000	1295	187	71.6	12.0°	112.9
		20.00	4	65	0.044	30.000	20.000	1035	182	109.3	12.0°	141.1







Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

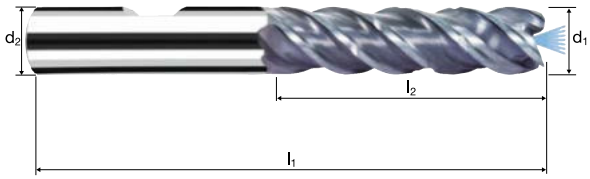
Cylindrical end mills MFC

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

HM MG10 | λ 45° γ 0°

r

Vario



Roughing HPC | Roughing HDC | Finishing

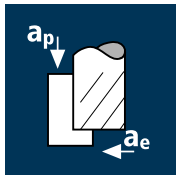
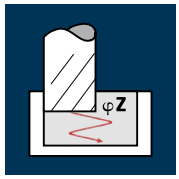
ReTool®

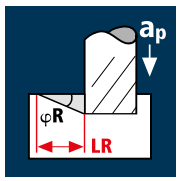
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

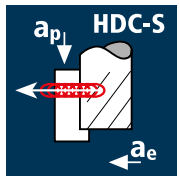
Example: **Order-N°.** Coating **P** Article-N°. **8212** ø-Code **220**

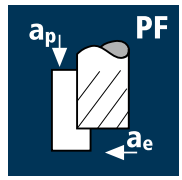
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r	α	z	POLYCHROM P8212	POLYCHROM P8112
220*	4.00	6.00	63	13.00	19.59	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	20.72	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.200	0.0°	4		●

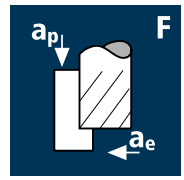
* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	6.00	5	135	0.034	12.000	1.500	7160	1217	21.9	10.0°
		8.00	5	135	0.043	16.000	2.000	5370	1155	36.9	12.0°
		10.00	5	135	0.055	20.000	2.500	4295	1181	59.1	12.0°
		12.00	5	135	0.064	24.000	3.000	3580	1146	82.5	12.0°
		16.00	5	135	0.072	25.600	4.000	2685	967	99.0	12.0°
		20.00	5	135	0.085	32.000	5.000	2150	914	146.2	12.0°
	Steel 1100 - 1300 N/mm²	6.00	5	105	0.030	12.000	1.500	5570	836	15.0	10.0°
		8.00	5	105	0.038	16.000	2.000	4180	794	25.4	12.0°
		10.00	5	105	0.047	20.000	2.500	3340	785	39.2	12.0°
		12.00	5	105	0.055	24.000	3.000	2785	766	55.1	12.0°
		16.00	5	105	0.064	25.600	4.000	2090	669	68.5	12.0°
		20.00	5	105	0.077	32.000	5.000	1670	643	102.9	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	80	0.026	12.000	1.500	4245	552	9.9	8.0°
		8.00	5	80	0.030	16.000	2.000	3185	478	15.3	8.0°
		10.00	5	80	0.038	20.000	2.500	2545	484	24.2	8.0°
		12.00	5	80	0.047	24.000	3.000	2120	498	35.9	8.0°
		16.00	5	80	0.055	25.600	4.000	1590	437	44.8	8.0°
		20.00	5	80	0.068	32.000	5.000	1275	434	69.4	8.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	6.00	5	110	0.020	6.000	6.000	5835	584	21.0	10.0°	34.0
		8.00	5	110	0.026	8.000	8.000	4375	569	36.4	10.0°	45.4
		10.00	5	110	0.033	10.000	10.000	3500	578	57.8	10.0°	56.7
		12.00	5	110	0.038	12.000	12.000	2920	555	79.9	10.0°	68.1
		16.00	5	110	0.043	16.000	16.000	2190	471	120.6	10.0°	90.7
		20.00	5	110	0.051	20.000	20.000	1750	446	178.5	10.0°	113.4
	Steel 1100 - 1300 N/mm²	6.00	5	85	0.018	6.000	6.000	4510	406	14.6	10.0°	34.0
		8.00	5	85	0.023	8.000	8.000	3380	389	24.9	10.0°	45.4
		10.00	5	85	0.028	10.000	10.000	2705	379	37.9	10.0°	56.7
		12.00	5	85	0.033	12.000	12.000	2255	372	53.6	10.0°	68.1
		16.00	5	85	0.038	16.000	16.000	1690	321	82.2	10.0°	90.7
		20.00	5	85	0.046	20.000	20.000	1355	312	124.7	10.0°	113.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	65	0.016	6.000	6.000	3450	276	9.9	10.0°	34.0
		8.00	5	65	0.018	8.000	8.000	2585	233	14.9	10.0°	45.4
		10.00	5	65	0.023	10.000	10.000	2070	238	23.8	10.0°	56.7
		12.00	5	65	0.028	12.000	12.000	1725	242	34.8	10.0°	68.1
		16.00	5	65	0.033	16.000	16.000	1295	214	54.7	10.0°	90.7
		20.00	5	65	0.041	20.000	20.000	1035	212	84.9	10.0°	113.4







Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

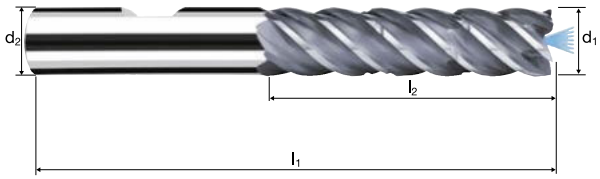
Cylindrical end mills MFC

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

HM MG10 | λ 45° γ 0°

r

Vario



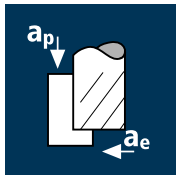
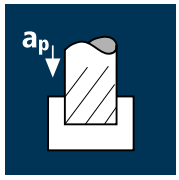
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8215** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	POLYCHROM P8215	POLYCHROM P8115
300	6.00	6.00	63	21.00	0.100	5		●
391	8.00	8.00	72	31.00	0.150	5		●
450	10.00	10.00	84	37.00	0.200	5		●
501	12.00	12.00	97	44.00	0.200	5		●
610	16.00	16.00	108	53.00	0.200	5		●
682	20.00	20.00	122	62.00	0.200	5		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	180	0.040	10.800	1.200	9550	1528	19.8
		8.00	4	180	0.050	14.400	1.600	7160	1432	33.0
		10.00	4	180	0.065	18.000	2.000	5730	1490	53.6
		12.00	4	180	0.075	21.600	2.400	4775	1433	74.3
		16.00	4	180	0.085	28.800	3.200	3580	1217	112.2
		20.00	4	180	0.105	36.000	4.000	2865	1203	173.3
	Steel 850 - 1100 N/mm²	6.00	4	140	0.040	10.800	1.200	7425	1188	15.4
		8.00	4	140	0.050	14.400	1.600	5570	1114	25.7
		10.00	4	140	0.065	18.000	2.000	4455	1158	41.7
		12.00	4	140	0.075	21.600	2.400	3715	1115	57.8
		16.00	4	140	0.085	28.800	3.200	2785	947	87.3
		20.00	4	140	0.105	36.000	4.000	2230	937	134.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	70	0.035	10.800	1.200	3715	520	6.7
		8.00	4	70	0.045	14.400	1.600	2785	501	11.5
		10.00	4	70	0.060	18.000	2.000	2230	535	19.3
		12.00	4	70	0.070	21.600	2.400	1855	519	26.9
		16.00	4	70	0.080	28.800	3.200	1395	446	41.1
		20.00	4	70	0.100	36.000	4.000	1115	446	64.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	85	0.025	10.800	1.200	4510	451	5.8
		8.00	4	85	0.030	14.400	1.600	3380	406	9.3
		10.00	4	85	0.040	18.000	2.000	2705	433	15.6
		12.00	4	85	0.050	21.600	2.400	2255	451	23.4
		16.00	4	85	0.055	28.800	3.200	1690	372	34.3
		20.00	4	85	0.070	36.000	4.000	1355	379	54.6
	Steel < 850 N/mm²	6.00	4	145	0.020	8.100	6.000	7690	615	29.9
		8.00	4	145	0.025	10.800	8.000	5770	577	49.9
		10.00	4	145	0.035	13.500	10.000	4615	646	87.2
		12.00	4	145	0.040	16.200	12.000	3845	615	119.6
		16.00	4	145	0.050	19.200	16.000	2885	577	177.3
		20.00	4	145	0.060	24.000	20.000	2310	554	266.1
	Steel 850 - 1100 N/mm²	6.00	4	105	0.020	8.100	6.000	5570	446	21.7
		8.00	4	105	0.025	10.800	8.000	4180	418	36.1
		10.00	4	105	0.035	13.500	10.000	3340	468	63.1
		12.00	4	105	0.040	16.200	12.000	2785	446	86.6
		16.00	4	105	0.050	19.200	16.000	2090	418	128.4
		20.00	4	105	0.060	24.000	20.000	1670	401	192.4
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	55	0.020	8.100	6.000	2920	234	11.4
		8.00	4	55	0.025	10.800	8.000	2190	219	18.9
		10.00	4	55	0.030	13.500	10.000	1750	210	28.4
		12.00	4	55	0.035	16.200	12.000	1460	204	39.7
		16.00	4	55	0.045	19.200	16.000	1095	197	60.5
		20.00	4	55	0.055	24.000	20.000	875	193	92.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	65	0.015	8.100	6.000	3450	207	10.1
		8.00	4	65	0.020	10.800	8.000	2585	207	17.9
		10.00	4	65	0.025	13.500	10.000	2070	207	27.9
		12.00	4	65	0.030	16.200	12.000	1725	207	40.2
		16.00	4	65	0.035	19.200	16.000	1295	181	55.7
		20.00	4	65	0.045	24.000	20.000	1035	186	89.4

Cylindrical end mills NVD

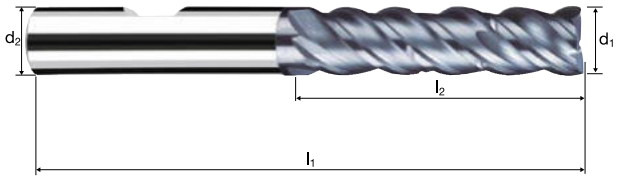
Smooth-edged, chip breaker, medium length version

HM MG10

λ 45°
γ 0°

45°

Vario



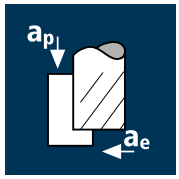
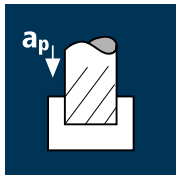
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15310** ø-Code **300**

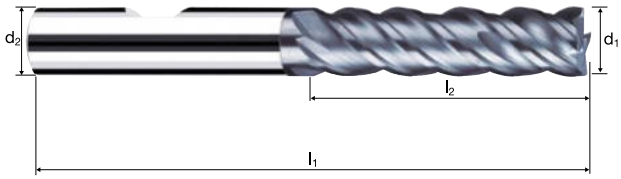
Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z		POLYCHROM P15310	P15210
300	6.00	6.00	63	21.00	0.10	4		●	
391	8.00	8.00	72	31.00	0.10	4		●	
450	10.00	10.00	84	37.00	0.15	4		●	
501	12.00	12.00	97	44.00	0.15	4		●	
610	16.00	16.00	108	53.00	0.15	4		●	
682	20.00	20.00	122	62.00	0.15	4		●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	4.00	4	180	0.025	7.200	0.800	14325	1433	8.3
		5.00	4	180	0.030	9.000	1.000	11460	1375	12.4
		6.00	4	180	0.040	10.800	1.200	9550	1528	19.8
		8.00	4	180	0.050	14.400	1.600	7160	1432	33.0
		10.00	4	180	0.065	18.000	2.000	5730	1490	53.6
		12.00	4	180	0.075	21.600	2.400	4775	1433	74.3
		16.00	4	180	0.085	28.800	3.200	3580	1217	112.2
		20.00	4	180	0.105	36.000	4.000	2865	1203	173.3
	Steel 850 - 1100 N/mm²	4.00	4	140	0.025	7.200	0.800	11140	1114	6.4
		5.00	4	140	0.030	9.000	1.000	8915	1070	9.6
		6.00	4	140	0.040	10.800	1.200	7425	1188	15.4
		8.00	4	140	0.050	14.400	1.600	5570	1114	25.7
		10.00	4	140	0.065	18.000	2.000	4455	1158	41.7
		12.00	4	140	0.075	21.600	2.400	3715	1115	57.8
		16.00	4	140	0.085	28.800	3.200	2785	947	87.3
		20.00	4	140	0.105	36.000	4.000	2230	937	134.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	70	0.025	7.200	0.800	5570	557	3.2
		5.00	4	70	0.030	9.000	1.000	4455	535	4.8
		6.00	4	70	0.035	10.800	1.200	3715	520	6.7
		8.00	4	70	0.045	14.400	1.600	2785	501	11.5
		10.00	4	70	0.060	18.000	2.000	2230	535	19.3
		12.00	4	70	0.070	21.600	2.400	1855	519	26.9
		16.00	4	70	0.080	28.800	3.200	1395	446	41.1
		20.00	4	70	0.100	36.000	4.000	1115	446	64.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	85	0.020	7.200	0.800	6765	541	3.1
		5.00	4	85	0.020	9.000	1.000	5410	433	3.9
		6.00	4	85	0.025	10.800	1.200	4510	451	5.8
		8.00	4	85	0.030	14.400	1.600	3380	406	9.3
		10.00	4	85	0.040	18.000	2.000	2705	433	15.6
		12.00	4	85	0.050	21.600	2.400	2255	451	23.4
		16.00	4	85	0.055	28.800	3.200	1690	372	34.3
		20.00	4	85	0.070	36.000	4.000	1355	379	54.6
	Steel < 850 N/mm²	4.00	4	145	0.015	5.400	4.000	11540	692	15.0
		5.00	4	145	0.015	6.750	5.000	9230	554	18.7
		6.00	4	145	0.020	8.100	6.000	7690	615	29.9
		8.00	4	145	0.025	10.800	8.000	5770	577	49.9
		10.00	4	145	0.035	13.500	10.000	4615	646	87.2
		12.00	4	145	0.040	16.200	12.000	3845	615	119.6
		16.00	4	145	0.050	19.200	16.000	2885	577	177.3
		20.00	4	145	0.060	24.000	20.000	2310	554	266.1
	Steel 850 - 1100 N/mm²	4.00	4	105	0.015	5.400	4.000	8355	501	10.8
		5.00	4	105	0.015	6.750	5.000	6685	401	13.5
		6.00	4	105	0.020	8.100	6.000	5570	446	21.7
		8.00	4	105	0.025	10.800	8.000	4180	418	36.1
		10.00	4	105	0.035	13.500	10.000	3340	468	63.1
		12.00	4	105	0.040	16.200	12.000	2785	446	86.6
		16.00	4	105	0.050	19.200	16.000	2090	418	128.4
		20.00	4	105	0.060	24.000	20.000	1670	401	192.4
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	55	0.010	5.400	4.000	4375	175	3.8
		5.00	4	55	0.015	6.750	5.000	3500	210	7.1
		6.00	4	55	0.020	8.100	6.000	2920	234	11.4
		8.00	4	55	0.025	10.800	8.000	2190	219	18.9
		10.00	4	55	0.030	13.500	10.000	1750	210	28.4
		12.00	4	55	0.035	16.200	12.000	1460	204	39.7
		16.00	4	55	0.045	19.200	16.000	1095	197	60.5
		20.00	4	55	0.055	24.000	20.000	875	193	92.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	65	0.010	5.400	4.000	5175	207	4.5
		5.00	4	65	0.010	6.750	5.000	4140	166	5.6
		6.00	4	65	0.015	8.100	6.000	3450	207	10.1
		8.00	4	65	0.020	10.800	8.000	2585	207	17.9
		10.00	4	65	0.025	13.500	10.000	2070	207	27.9
		12.00	4	65	0.030	16.200	12.000	1725	207	40.2
		16.00	4	65	0.035	19.200	16.000	1295	181	55.7
		20.00	4	65	0.045	24.000	20.000	1035	186	89.4

Cylindrical end mills NVD

Smooth-edged, medium length version

HM MG10	λ 45° γ 0°



Roughing HPC

Roughing HDC

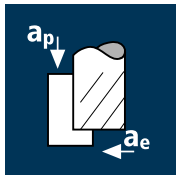
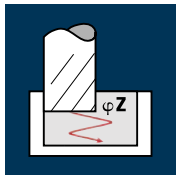
Finishing

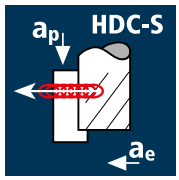
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

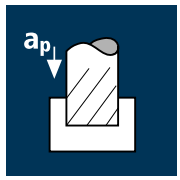
Example: **Order-N°.** Coating **P** Article-N°. **15308** ø-Code **220**

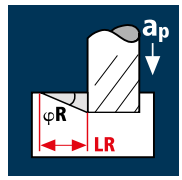
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P15308	POLYCHROM P15208
220	4.00	6.00	63	13.00	19.59	0.05	3.5°	4		●
260	5.00	6.00	63	16.00	20.72	0.10	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.10	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.10	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.15	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.15	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.15	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.15	0.0°	4		●

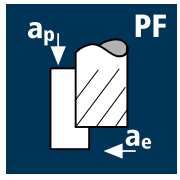
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	130	0.020	3.750	1.200	13795	1104	5.0	1.5°
		4.00	4	130	0.030	5.000	1.600	10345	1241	9.9	1.5°
		5.00	4	130	0.037	6.250	2.000	8275	1225	15.3	1.5°
		6.00	4	130	0.038	9.000	2.400	6895	1048	22.6	1.5°
		8.00	4	130	0.051	12.000	3.200	5175	1056	40.5	1.5°
		10.00	4	130	0.064	15.000	4.000	4140	1060	63.6	1.5°
		12.00	4	130	0.072	18.000	4.800	3450	994	85.8	1.5°
		16.00	4	130	0.086	24.000	6.400	2585	889	136.6	1.5°
		20.00	4	130	0.099	30.000	8.000	2070	820	196.7	1.5°
	Steel 850 - 1100 N/mm²	3.00	4	120	0.019	3.750	1.200	12730	968	4.4	2.0°
		4.00	4	120	0.026	5.000	1.600	9550	993	7.9	2.0°
		5.00	4	120	0.032	6.250	2.000	7640	978	12.2	2.0°
		6.00	4	120	0.033	9.000	2.400	6365	840	18.1	2.0°
		8.00	4	120	0.044	12.000	3.200	4775	840	32.3	2.0°
		10.00	4	120	0.055	15.000	4.000	3820	840	50.4	2.0°
		12.00	4	120	0.066	18.000	4.800	3185	841	72.6	2.0°
		16.00	4	120	0.079	24.000	6.400	2385	754	115.8	2.0°
		20.00	4	120	0.090	30.000	8.000	1910	688	165.0	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	75	0.012	3.750	1.200	7960	382	1.7	1.5°
		4.00	4	75	0.016	5.000	1.600	5970	382	3.1	1.5°
		5.00	4	75	0.020	6.250	2.000	4775	382	4.8	1.5°
		6.00	4	75	0.023	9.000	2.400	3980	366	7.9	1.5°
		8.00	4	75	0.031	12.000	3.200	2985	370	14.2	1.5°
		10.00	4	75	0.038	15.000	4.000	2385	363	21.8	1.5°
		12.00	4	75	0.046	18.000	4.800	1990	366	31.6	1.5°
		16.00	4	75	0.050	24.000	6.400	1490	298	45.8	1.5°
		20.00	4	75	0.063	30.000	8.000	1195	301	72.3	1.5°

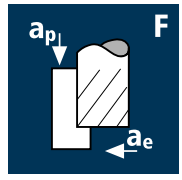
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	243	0.031	11.000	0.300	25785	3197	10.6
		4.00	4	243	0.042	13.000	0.400	19335	3248	16.9
		5.00	4	243	0.052	16.000	0.500	15470	3218	25.7
		6.00	4	243	0.063	21.000	0.600	12890	3248	40.9
		8.00	4	243	0.085	31.000	0.800	9670	3288	81.5
		10.00	4	243	0.105	37.000	1.000	7735	3249	120.2
		12.00	4	243	0.126	44.000	1.200	6445	3248	171.5
		16.00	4	243	0.138	53.000	1.600	4835	2669	226.3
		20.00	4	243	0.174	62.000	2.000	3865	2690	333.6
	Steel 850 - 1100 N/mm²	3.00	4	195	0.031	11.000	0.300	20690	2566	8.5
		4.00	4	195	0.042	13.000	0.400	15520	2607	13.6
		5.00	4	195	0.052	16.000	0.500	12415	2582	20.7
		6.00	4	195	0.063	21.000	0.600	10345	2607	32.8
		8.00	4	195	0.085	31.000	0.800	7760	2638	65.4
		10.00	4	195	0.105	37.000	1.000	6205	2606	96.4
		12.00	4	195	0.126	44.000	1.200	5175	2608	137.7
		16.00	4	195	0.138	53.000	1.600	3880	2142	181.6
		20.00	4	195	0.174	62.000	2.000	3105	2161	268.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	132	0.022	11.000	0.225	14005	1232	3.1
		4.00	4	132	0.030	13.000	0.300	10505	1261	4.9
		5.00	4	132	0.038	16.000	0.375	8405	1278	7.7
		6.00	4	132	0.045	21.000	0.450	7005	1261	11.9
		8.00	4	132	0.060	31.000	0.600	5250	1260	23.4
		10.00	4	132	0.075	37.000	0.750	4200	1260	35.0
		12.00	4	132	0.090	44.000	0.900	3500	1260	49.9
		16.00	4	132	0.098	53.000	1.200	2625	1029	65.4
		20.00	4	132	0.126	62.000	1.500	2100	1058	98.4

Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**









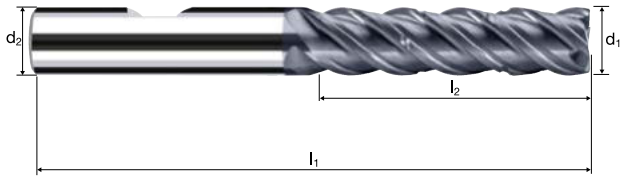
Cylindrical end mills E-Cut

Smooth-edged, chip breaker, medium length version

HM MG10 | λ **45°** γ **10°**

r

Vario



Roughing HPC | Roughing HDC | Finishing

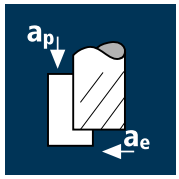
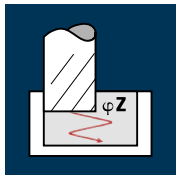
ReTool®

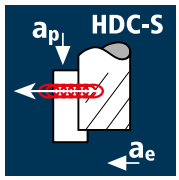
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

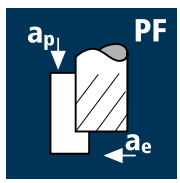
Example: **Order-N°.** Coating **P** Article-N°. **8410** ø-Code **140**

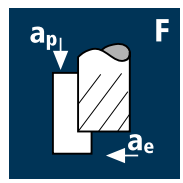
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8410	POLYCHROM P8310
140*	2.00	6.00	63	7.00	17.12	0.050	7.0°	4		●
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	4		●
220*	4.00	6.00	63	13.00	21.39	0.100	3.5°	4		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	4		●

* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	4.00	5	140	0.034	6.000	1.200	11140	1894	13.6	1.0°
		5.00	5	140	0.042	7.500	1.500	8915	1872	21.1	1.0°
		6.00	5	140	0.043	9.000	1.800	7425	1596	25.9	1.0°
		8.00	5	140	0.058	12.000	2.400	5570	1615	46.5	1.0°
		10.00	5	140	0.073	15.000	3.000	4455	1626	73.2	1.0°
		12.00	5	140	0.084	18.000	3.600	3715	1560	101.1	1.0°
		16.00	5	140	0.098	24.000	4.800	2785	1365	157.2	1.0°
		20.00	5	140	0.115	30.000	6.000	2230	1282	230.8	1.0°
	Steel 850 - 1100 N/mm²	4.00	5	130	0.030	6.000	1.200	10345	1552	11.2	1.5°
		5.00	5	130	0.036	7.500	1.500	8275	1490	16.8	1.5°
		6.00	5	130	0.038	9.000	1.800	6895	1310	21.2	1.5°
		8.00	5	130	0.051	12.000	2.400	5175	1320	38.0	1.5°
		10.00	5	130	0.064	15.000	3.000	4140	1325	59.6	1.5°
		12.00	5	130	0.076	18.000	3.600	3450	1311	85.0	1.5°
		16.00	5	130	0.091	24.000	4.800	2585	1176	135.5	1.5°
		20.00	5	130	0.104	30.000	6.000	2070	1076	193.8	1.5°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	5	80	0.018	6.000	1.200	6365	573	4.1	1.0°
		5.00	5	80	0.024	7.500	1.500	5095	611	6.9	1.0°
		6.00	5	80	0.027	9.000	1.800	4245	573	9.3	1.0°
		8.00	5	80	0.036	12.000	2.400	3185	573	16.5	1.0°
		10.00	5	80	0.043	15.000	3.000	2545	547	24.6	1.0°
		12.00	5	80	0.053	18.000	3.600	2120	562	36.4	1.0°
		16.00	5	80	0.058	24.000	4.800	1590	461	53.1	1.0°
		20.00	5	80	0.073	30.000	6.000	1275	465	83.8	1.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	4.00	5	230	0.035	13.000	0.400	18305	3203	16.7
		5.00	5	230	0.044	16.000	0.500	14640	3221	25.8
		6.00	5	230	0.054	21.000	0.600	12200	3294	41.5
		8.00	5	230	0.072	31.000	0.800	9150	3294	81.7
		10.00	5	230	0.089	37.000	1.000	7320	3257	120.5
		12.00	5	230	0.107	44.000	1.200	6100	3264	172.3
		16.00	5	230	0.118	53.000	1.600	4575	2699	228.9
		20.00	5	230	0.148	62.000	2.000	3660	2708	335.8
	Steel 850 - 1100 N/mm²	4.00	5	185	0.035	13.000	0.400	14720	2576	13.4
		5.00	5	185	0.044	16.000	0.500	11775	2591	20.7
		6.00	5	185	0.054	21.000	0.600	9815	2650	33.4
		8.00	5	185	0.072	31.000	0.800	7360	2650	65.7
		10.00	5	185	0.089	37.000	1.000	5890	2621	97.0
		12.00	5	185	0.107	44.000	1.200	4905	2624	138.6
		16.00	5	185	0.118	53.000	1.600	3680	2171	184.1
		20.00	5	185	0.148	62.000	2.000	2945	2179	270.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	5	142	0.034	13.000	0.200	11300	1921	5.0
		5.00	5	142	0.042	16.000	0.250	9040	1898	7.6
		6.00	5	142	0.051	21.000	0.300	7535	1921	12.1
		8.00	5	142	0.068	31.000	0.400	5650	1921	23.8
		10.00	5	142	0.085	37.000	0.500	4520	1921	35.5
		12.00	5	142	0.101	44.000	0.600	3765	1901	50.2
		16.00	5	142	0.110	53.000	0.800	2825	1554	65.9
		20.00	5	142	0.142	62.000	1.000	2260	1605	99.5





Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills E-Cut

Smooth-edged, chip breaker, medium length version

HM MG10 | λ 45° γ 10°

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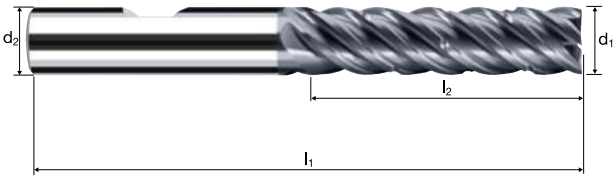
Vario



Roughing HPC | Roughing HDC | Finishing

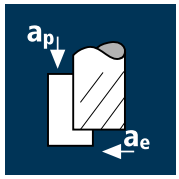
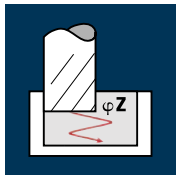
ReTool®

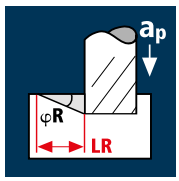
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

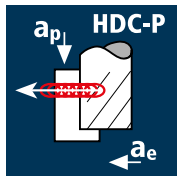
Example: **Order-N°.** Coating **P** Article-N°. **8415** ø-Code **220**

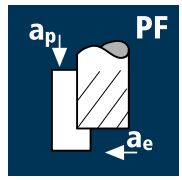
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8415	POLYCHROM P8315
220*	4.00	6.00	63	13.00	21.39	0.100	3.0°	5		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	5		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	5		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	5		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	5		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	5		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	5		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	5		●

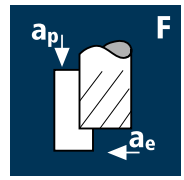
* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	3	120	0.018	3.750	1.950	12730	687	5.0	2.0°
		4.00	3	120	0.027	5.000	2.600	9550	774	10.1	2.0°
		5.00	3	120	0.033	6.250	3.250	7640	756	15.4	2.0°
		6.00	3	120	0.034	9.000	3.900	6365	649	22.8	2.0°
		8.00	3	120	0.046	12.000	5.200	4775	659	41.1	2.0°
		10.00	3	120	0.058	15.000	6.500	3820	665	64.8	2.0°
		12.00	3	120	0.065	18.000	7.800	3185	621	87.2	2.0°
		16.00	3	120	0.077	24.000	10.400	2385	551	137.5	2.0°
		20.00	3	120	0.089	30.000	13.000	1910	510	198.9	2.0°
	Steel 850 - 1100 N/mm²	3.00	3	110	0.017	3.750	1.950	11670	595	4.4	3.0°
		4.00	3	110	0.023	5.000	2.600	8755	604	7.9	3.0°
		5.00	3	110	0.029	6.250	3.250	7005	609	12.4	3.0°
		6.00	3	110	0.030	9.000	3.900	5835	525	18.4	3.0°
		8.00	3	110	0.040	12.000	5.200	4375	525	32.8	3.0°
		10.00	3	110	0.050	15.000	6.500	3500	525	51.2	3.0°
		12.00	3	110	0.059	18.000	7.800	2920	517	72.6	3.0°
		16.00	3	110	0.071	24.000	10.400	2190	467	116.4	3.0°
		20.00	3	110	0.081	30.000	13.000	1750	425	165.9	3.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	70	0.012	3.750	1.950	7425	267	2.0	2.0°
		4.00	3	70	0.016	5.000	2.600	5570	267	3.5	2.0°
		5.00	3	70	0.020	6.250	3.250	4455	267	5.4	2.0°
		6.00	3	70	0.023	9.000	3.900	3715	256	9.0	2.0°
		8.00	3	70	0.031	12.000	5.200	2785	259	16.2	2.0°
		10.00	3	70	0.038	15.000	6.500	2230	254	24.8	2.0°
		12.00	3	70	0.046	18.000	7.800	1855	256	35.9	2.0°
		16.00	3	70	0.050	24.000	10.400	1395	209	52.2	2.0°
		20.00	3	70	0.063	30.000	13.000	1115	211	82.2	2.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]
	Steel < 850 N/mm²	3.00	3	106	0.013	3.000	3.000	11245	439	3.9	2.0°
		4.00	3	106	0.019	5.000	4.000	8435	481	9.6	2.0°
		5.00	3	106	0.023	6.250	5.000	6750	466	14.6	2.0°
		6.00	3	106	0.027	9.000	6.000	5625	456	24.6	2.0°
		8.00	3	106	0.037	12.000	8.000	4220	468	45.0	2.0°
		10.00	3	106	0.046	15.000	10.000	3375	466	69.9	2.0°
		12.00	3	106	0.052	18.000	12.000	2810	438	94.7	2.0°
		16.00	3	106	0.062	24.000	16.000	2110	393	150.7	2.0°
		20.00	3	106	0.071	30.000	20.000	1685	359	215.3	2.0°
	Steel 850 - 1100 N/mm²	3.00	3	97	0.012	3.000	3.000	10290	370	3.3	2.0°
		4.00	3	97	0.016	5.000	4.000	7720	371	7.4	2.0°
		5.00	3	97	0.020	6.250	5.000	6175	371	11.6	2.0°
		6.00	3	97	0.024	9.000	6.000	5145	370	20.0	2.0°
		8.00	3	97	0.032	12.000	8.000	3860	371	35.6	2.0°
		10.00	3	97	0.040	15.000	10.000	3090	371	55.6	2.0°
		12.00	3	97	0.047	18.000	12.000	2575	363	78.4	2.0°
		16.00	3	97	0.057	24.000	16.000	1930	330	126.7	2.0°
		20.00	3	97	0.065	30.000	20.000	1545	301	180.8	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	62	0.008	3.000	3.000	6580	158	1.4	2.0°
		4.00	3	62	0.011	5.000	4.000	4935	163	3.3	2.0°
		5.00	3	62	0.014	6.250	5.000	3945	166	5.2	2.0°
		6.00	3	62	0.018	9.000	6.000	3290	178	9.6	2.0°
		8.00	3	62	0.025	12.000	8.000	2465	185	17.8	2.0°
		10.00	3	62	0.030	15.000	10.000	1975	178	26.7	2.0°
		12.00	3	62	0.037	18.000	12.000	1645	183	39.4	2.0°
		16.00	3	62	0.040	24.000	16.000	1235	148	56.9	2.0°
		20.00	3	62	0.050	30.000	20.000	985	148	88.7	2.0°







Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills E-Cut

Smooth-edged, chip breaker, medium length version

HM MG10 | λ **45°** γ **10°**

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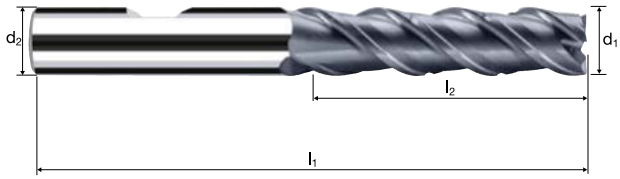
Vario



Roughing HPC | Roughing HDC | Finishing

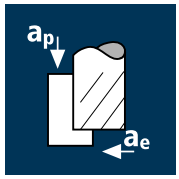
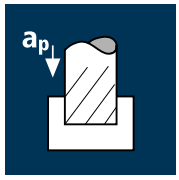
ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8413** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8413	POLYCHROM P8313
140*	2.00	6.00	63	7.00	17.12	0.050	7.0°	3		●
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	3		●
220*	4.00	6.00	63	13.00	21.39	0.100	3.0°	3		●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	3		●
300	6.00	6.00	63	21.00	-	0.100	0.0°	3		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	3		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	3		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	3		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	3		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	3		●

* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	3.00	4	115	0.018	3.750	1.200	12200	878	4.0
		4.00	4	115	0.027	5.000	1.600	9150	988	7.9
		5.00	4	115	0.033	6.250	2.000	7320	966	12.1
		6.00	4	115	0.034	9.000	2.400	6100	830	17.9
		8.00	4	115	0.046	12.000	3.200	4575	842	32.3
		10.00	4	115	0.058	15.000	4.000	3660	849	50.9
		12.00	4	115	0.065	18.000	4.800	3050	793	68.5
		16.00	4	115	0.077	24.000	6.400	2290	705	108.3
		20.00	4	115	0.089	30.000	8.000	1830	652	156.4
	Steel 850 - 1100 N/mm²	3.00	4	105	0.017	3.750	1.200	11140	758	3.4
		4.00	4	105	0.023	5.000	1.600	8355	769	6.1
		5.00	4	105	0.029	6.250	2.000	6685	776	9.7
		6.00	4	105	0.030	9.000	2.400	5570	668	14.4
		8.00	4	105	0.040	12.000	3.200	4180	669	25.7
		10.00	4	105	0.050	15.000	4.000	3340	668	40.1
		12.00	4	105	0.059	18.000	4.800	2785	657	56.8
		16.00	4	105	0.071	24.000	6.400	2090	594	91.2
		20.00	4	105	0.081	30.000	8.000	1670	541	129.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	70	0.011	3.750	1.200	7425	327	1.5
		4.00	4	70	0.014	5.000	1.600	5570	312	2.5
		5.00	4	70	0.018	6.250	2.000	4455	321	4.0
		6.00	4	70	0.021	9.000	2.400	3715	312	6.7
		8.00	4	70	0.028	12.000	3.200	2785	312	12.0
		10.00	4	70	0.034	15.000	4.000	2230	303	18.2
		12.00	4	70	0.041	18.000	4.800	1855	304	26.3
		16.00	4	70	0.046	24.000	6.400	1395	257	39.4
		20.00	4	70	0.057	30.000	8.000	1115	254	61.0
	Cast iron (lamellar / spheroidal)	3.00	4	130	0.017	3.750	1.200	13795	938	4.2
		4.00	4	130	0.025	5.000	1.600	10345	1035	8.3
		5.00	4	130	0.030	6.250	2.000	8275	993	12.4
		6.00	4	130	0.032	9.000	2.400	6895	883	19.1
		8.00	4	130	0.043	12.000	3.200	5175	890	34.2
		10.00	4	130	0.054	15.000	4.000	4140	894	53.7
		12.00	4	130	0.064	18.000	4.800	3450	883	76.3
		16.00	4	130	0.077	24.000	6.400	2585	796	122.3
		20.00	4	130	0.089	30.000	8.000	2070	737	176.9
	Steel 500 - 850 N/mm²	3.00	4	92	0.008	2.250	3.000	9760	312	2.1
		4.00	4	92	0.012	4.000	4.000	7320	351	5.6
		5.00	4	92	0.015	5.000	5.000	5855	351	8.8
		6.00	4	92	0.020	7.500	6.000	4880	390	17.6
		8.00	4	92	0.028	10.000	8.000	3660	410	32.8
		10.00	4	92	0.035	12.500	10.000	2930	410	51.3
		12.00	4	92	0.039	15.000	12.000	2440	381	68.5
		16.00	4	92	0.046	20.000	16.000	1830	337	107.7
		20.00	4	92	0.053	25.000	20.000	1465	311	155.3
	Steel 850 - 1100 N/mm²	3.00	4	84	0.008	2.250	3.000	8915	285	1.9
		4.00	4	84	0.010	4.000	4.000	6685	267	4.3
		5.00	4	84	0.013	5.000	5.000	5350	278	7.0
		6.00	4	84	0.018	7.500	6.000	4455	321	14.4
		8.00	4	84	0.024	10.000	8.000	3340	321	25.6
		10.00	4	84	0.030	12.500	10.000	2675	321	40.1
		12.00	4	84	0.035	15.000	12.000	2230	312	56.2
		16.00	4	84	0.043	20.000	16.000	1670	287	91.9
		20.00	4	84	0.049	25.000	20.000	1335	262	130.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	56	0.005	2.250	3.000	5940	119	0.8
		4.00	4	56	0.006	4.000	4.000	4455	107	1.7
		5.00	4	56	0.008	5.000	5.000	3565	114	2.9
		6.00	4	56	0.013	7.500	6.000	2970	154	6.9
		8.00	4	56	0.017	10.000	8.000	2230	152	12.1
		10.00	4	56	0.020	12.500	10.000	1785	143	17.9
		12.00	4	56	0.025	15.000	12.000	1485	149	26.7
		16.00	4	56	0.028	20.000	16.000	1115	125	40.0
		20.00	4	56	0.034	25.000	20.000	890	121	60.5
	Cast iron (lamellar / spheroidal)	3.00	4	104	0.008	2.250	3.000	11035	353	2.4
		4.00	4	104	0.011	4.000	4.000	8275	364	5.8
		5.00	4	104	0.014	5.000	5.000	6620	371	9.3
		6.00	4	104	0.019	7.500	6.000	5515	419	18.9
		8.00	4	104	0.026	10.000	8.000	4140	431	34.4
		10.00	4	104	0.032	12.500	10.000	3310	424	53.0
		12.00	4	104	0.038	15.000	12.000	2760	420	75.5
		16.00	4	104	0.046	20.000	16.000	2070	381	121.9
		20.00	4	104	0.053	25.000	20.000	1655	351	175.5

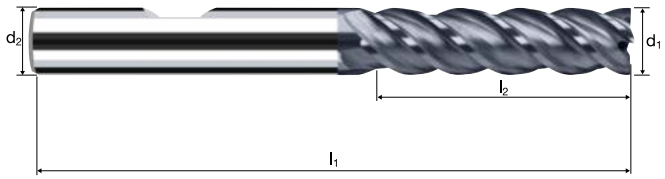
Cylindrical end mills

Smooth-edged, medium length version

HM MG10	λ 43° γ 6°

r

Vario



Roughing HPC

Roughing HDC

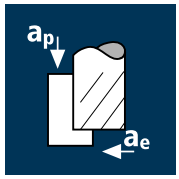
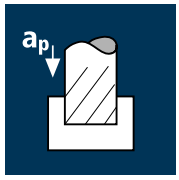
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **46310** ø-Code **140**

									POLYCHROM	
									P46310	
									P46210	
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z		
140	2.00	6.00	63	12.00	21.42	0.050	6.0°	4		●
160	2.50	6.00	63	12.00	20.49	0.050	5.0°	4		●
180	3.00	6.00	63	13.00	20.56	0.050	4.5°	4		●
220	4.00	6.00	63	13.00	18.89	0.100	3.5°	4		●
260	5.00	6.00	63	16.00	20.02	0.100	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.150	0.0°	4		●
391	8.00	8.00	72	31.00	-	0.150	0.0°	4		●
450	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
501	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
570	14.00	14.00	102	48.00	-	0.200	0.0°	4		●
610	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
682	20.00	20.00	122	62.00	-	0.250	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	6.00	4	120	0.034	9.000	2.400	6365	877	18.9
		8.00	4	120	0.046	12.000	3.200	4775	877	33.7
		10.00	4	120	0.057	15.000	4.000	3820	877	52.6
		12.00	4	120	0.064	18.000	4.800	3185	819	70.7
		16.00	4	120	0.073	24.000	6.400	2385	701	107.6
		20.00	4	120	0.084	30.000	8.000	1910	643	154.3
	Steel 850 - 1100 N/mm²	6.00	4	105	0.030	9.000	2.400	5570	665	14.4
		8.00	4	105	0.040	12.000	3.200	4180	665	25.5
		10.00	4	105	0.050	15.000	4.000	3340	664	39.9
		12.00	4	105	0.060	18.000	4.800	2785	665	57.4
		16.00	4	105	0.067	24.000	6.400	2090	563	86.4
		20.00	4	105	0.077	30.000	8.000	1670	511	122.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	70	0.021	9.000	2.400	3715	307	6.6
		8.00	4	70	0.028	12.000	3.200	2785	307	11.8
		10.00	4	70	0.034	15.000	4.000	2230	307	18.4
		12.00	4	70	0.041	18.000	4.800	1855	307	26.5
		16.00	4	70	0.043	24.000	6.400	1395	239	36.7
		20.00	4	70	0.054	30.000	8.000	1115	239	57.3
	Cast iron (lamellar / spheroidal)	6.00	4	130	0.032	9.000	2.400	6895	886	19.1
		8.00	4	130	0.043	12.000	3.200	5175	887	34.1
		10.00	4	130	0.054	15.000	4.000	4140	887	53.2
		12.00	4	130	0.064	18.000	4.800	3450	887	76.6
		16.00	4	130	0.073	24.000	6.400	2585	759	116.6
		20.00	4	130	0.084	30.000	8.000	2070	697	167.2
	Steel 500 - 850 N/mm²	6.00	4	95	0.022	7.500	6.000	5040	444	20.0
		8.00	4	95	0.030	10.000	8.000	3780	454	36.3
		10.00	4	95	0.037	12.500	10.000	3025	448	56.0
		12.00	4	95	0.042	15.000	12.000	2520	423	76.2
		16.00	4	95	0.048	20.000	16.000	1890	363	116.1
		20.00	4	95	0.055	25.000	20.000	1510	332	166.1
	Steel 850 - 1100 N/mm²	6.00	4	85	0.019	7.500	6.000	4510	343	15.4
		8.00	4	85	0.026	10.000	8.000	3380	352	28.1
		10.00	4	85	0.032	12.500	10.000	2705	346	43.3
		12.00	4	85	0.039	15.000	12.000	2255	352	63.3
		16.00	4	85	0.044	20.000	16.000	1690	297	95.2
		20.00	4	85	0.050	25.000	20.000	1355	271	135.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	55	0.013	7.500	6.000	2920	152	6.8
		8.00	4	55	0.018	10.000	8.000	2190	158	12.6
		10.00	4	55	0.022	12.500	10.000	1750	154	19.3
		12.00	4	55	0.027	15.000	12.000	1460	158	28.4
		16.00	4	55	0.028	20.000	16.000	1095	123	39.2
		20.00	4	55	0.035	25.000	20.000	875	123	61.3
	Cast iron (lamellar / spheroidal)	6.00	4	105	0.021	7.500	6.000	5570	468	21.1
		8.00	4	105	0.028	10.000	8.000	4180	468	37.5
		10.00	4	105	0.035	12.500	10.000	3340	468	58.5
		12.00	4	105	0.042	15.000	12.000	2785	468	84.2
		16.00	4	105	0.048	20.000	16.000	2090	401	128.4
		20.00	4	105	0.055	25.000	20.000	1670	367	183.7

Cylindrical end mills

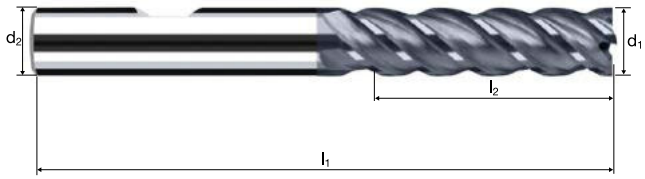
Smooth-edged, medium length version

Favora® F

HM MG10	λ 43° γ 3°

45°

Vario



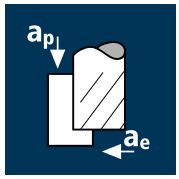
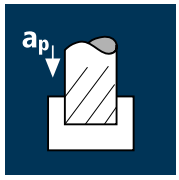
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **45326** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z		POLYCHROM P45326	POLYCHROM P45226
300	6.00	6.00	63	21.00	0.10	4		●	
391	8.00	8.00	72	31.00	0.10	4		●	
450	10.00	10.00	84	37.00	0.15	4		●	
501	12.00	12.00	97	44.00	0.15	4		●	
610	16.00	16.00	108	53.00	0.15	4		●	
682	20.00	20.00	122	62.00	0.15	4		●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	150	0.010	4.500	1.800	15915	478	3.9
		4.00	3	150	0.015	6.000	2.400	11935	537	7.7
		5.00	3	150	0.015	7.500	3.000	9550	430	9.7
		6.00	3	150	0.020	9.000	3.600	7960	478	15.5
		8.00	3	150	0.025	12.000	4.800	5970	448	25.8
		10.00	3	150	0.030	15.000	6.000	4775	430	38.7
		12.00	3	150	0.040	18.000	7.200	3980	478	61.9
		16.00	3	150	0.050	24.000	8.400	2985	448	90.3
		20.00	3	150	0.065	30.000	10.500	2385	465	146.5
	Steel 850 - 1100 N/mm²	3.00	3	110	0.010	4.500	1.800	11670	350	2.8
		4.00	3	110	0.015	6.000	2.400	8755	394	5.7
		5.00	3	110	0.015	7.500	3.000	7005	315	7.1
		6.00	3	110	0.020	9.000	3.600	5835	350	11.3
		8.00	3	110	0.025	12.000	4.800	4375	328	18.9
		10.00	3	110	0.030	15.000	6.000	3500	315	28.4
		12.00	3	110	0.040	18.000	7.200	2920	350	45.4
		16.00	3	110	0.050	24.000	8.400	2190	329	66.2
		20.00	3	110	0.065	30.000	10.500	1750	341	107.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	80	0.005	4.500	1.800	8490	127	1.0
		4.00	3	80	0.010	6.000	2.400	6365	191	2.8
		5.00	3	80	0.010	7.500	3.000	5095	153	3.4
		6.00	3	80	0.015	9.000	3.600	4245	191	6.2
		8.00	3	80	0.020	12.000	4.800	3185	191	11.0
		10.00	3	80	0.025	15.000	6.000	2545	191	17.2
		12.00	3	80	0.030	18.000	7.200	2120	191	24.7
		16.00	3	80	0.040	24.000	8.400	1590	191	38.5
		20.00	3	80	0.045	30.000	10.500	1275	172	54.2
	Cast iron (lamellar / spheroidal)	3.00	3	130	0.010	4.500	1.800	13795	414	3.4
		4.00	3	130	0.015	6.000	2.400	10345	466	6.7
		5.00	3	130	0.015	7.500	3.000	8275	372	8.4
		6.00	3	130	0.020	9.000	3.600	6895	414	13.4
		8.00	3	130	0.025	12.000	4.800	5175	388	22.4
		10.00	3	130	0.030	15.000	6.000	4140	373	33.5
		12.00	3	130	0.040	18.000	7.200	3450	414	53.7
		16.00	3	130	0.050	24.000	8.400	2585	388	78.2
		20.00	3	130	0.065	30.000	10.500	2070	404	127.2
	Steel < 850 N/mm²	3.00	3	120	0.010	2.000	3.000	12730	382	2.3
		4.00	3	120	0.015	3.100	4.000	9550	430	5.3
		5.00	3	120	0.015	4.400	5.000	7640	344	7.6
		6.00	3	120	0.020	7.800	6.000	6365	382	17.9
		8.00	3	120	0.025	10.400	8.000	4775	358	29.8
		10.00	3	120	0.025	13.000	10.000	3820	287	37.2
		12.00	3	120	0.035	15.600	12.000	3185	334	62.6
		16.00	3	120	0.045	17.600	16.000	2385	322	90.7
		20.00	3	120	0.060	22.000	20.000	1910	344	151.3
	Steel 850 - 1100 N/mm²	3.00	3	85	0.010	2.000	3.000	9020	271	1.6
		4.00	3	85	0.015	3.100	4.000	6765	304	3.8
		5.00	3	85	0.015	4.400	5.000	5410	244	5.4
		6.00	3	85	0.020	7.800	6.000	4510	271	12.7
		8.00	3	85	0.025	10.400	8.000	3380	254	21.1
		10.00	3	85	0.025	13.000	10.000	2705	203	26.4
		12.00	3	85	0.035	15.600	12.000	2255	237	44.3
		16.00	3	85	0.045	17.600	16.000	1690	228	64.3
		20.00	3	85	0.060	22.000	20.000	1355	244	107.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	65	0.005	2.000	3.000	6895	103	0.6
		4.00	3	65	0.010	3.100	4.000	5175	155	1.9
		5.00	3	65	0.010	4.400	5.000	4140	124	2.7
		6.00	3	65	0.015	7.800	6.000	3450	155	7.3
		8.00	3	65	0.020	10.400	8.000	2585	155	12.9
		10.00	3	65	0.025	13.000	10.000	2070	155	20.2
		12.00	3	65	0.025	15.600	12.000	1725	129	24.2
		16.00	3	65	0.035	17.600	16.000	1295	136	38.3
		20.00	3	65	0.040	22.000	20.000	1035	124	54.6
	Cast iron (lamellar / spheroidal)	3.00	3	110	0.010	2.000	3.000	11670	350	2.1
		4.00	3	110	0.015	3.100	4.000	8755	394	4.9
		5.00	3	110	0.015	4.400	5.000	7005	315	6.9
		6.00	3	110	0.020	7.800	6.000	5835	350	16.4
		8.00	3	110	0.025	10.400	8.000	4375	328	27.3
		10.00	3	110	0.025	13.000	10.000	3500	263	34.1
		12.00	3	110	0.035	15.600	12.000	2920	307	57.4
		16.00	3	110	0.045	17.600	16.000	2190	296	83.3
		20.00	3	110	0.060	22.000	20.000	1750	315	138.6

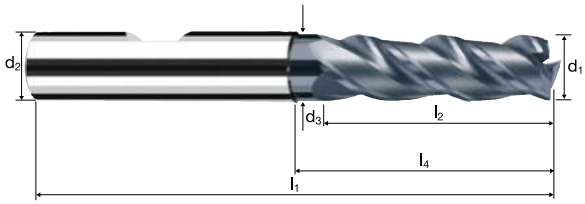
Cylindrical end mills

Smooth-edged, medium length version, short neck

HM MG10 | λ 40° γ 6°

45°

Vario



Roughing

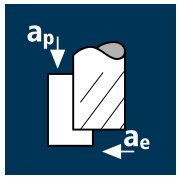
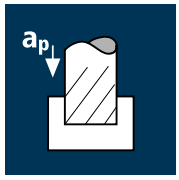
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45334** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P45334	P45234
180	3.00	6.00	2.80	63	14.00	20.00	26.63	0.05	3.5°	3		●
220	4.00	6.00	3.70	63	17.00	22.00	26.95	0.05	2.5°	3		●
260	5.00	6.00	4.60	63	19.00	24.00	27.27	0.10	1.5°	3		●
300	6.00	6.00	5.50	63	19.00	25.34	26.00	0.10	0.0°	3		●
391	8.00	8.00	7.40	72	28.00	34.29	35.00	0.10	0.0°	3		●
450	10.00	10.00	9.20	84	34.00	42.20	43.00	0.15	0.0°	3		●
501	12.00	12.00	11.00	97	40.00	50.13	51.00	0.15	0.0°	3		●
610	16.00	16.00	15.00	108	48.00	58.13	59.00	0.15	0.0°	3		●
682	20.00	20.00	19.00	122	56.00	70.13	71.00	0.15	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.025	4.000	1.800	11935	1194	8.6
		5.00	4	150	0.035	5.000	2.250	9550	1337	15.0
		6.00	4	150	0.040	6.000	2.700	7960	1274	20.6
		8.00	4	150	0.055	8.000	3.600	5970	1313	37.8
		10.00	4	150	0.065	10.000	4.500	4775	1242	55.9
		12.00	4	150	0.080	12.000	5.400	3980	1274	82.5
		16.00	4	150	0.090	16.000	7.200	2985	1075	123.8
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	4.000	1.800	9150	915	6.6
		5.00	4	115	0.035	5.000	2.250	7320	1025	11.5
		6.00	4	115	0.040	6.000	2.700	6100	976	15.8
		8.00	4	115	0.055	8.000	3.600	4575	1007	29.0
		10.00	4	115	0.065	10.000	4.500	3660	952	42.8
		12.00	4	115	0.080	12.000	5.400	3050	976	63.2
		16.00	4	115	0.090	16.000	7.200	2290	824	95.0
	Steel 1300 - 1500 N/mm²	4.00	4	80	0.025	4.000	1.800	6365	637	4.6
		5.00	4	80	0.030	5.000	2.250	5095	611	6.9
		6.00	4	80	0.035	6.000	2.700	4245	594	9.6
		8.00	4	80	0.045	8.000	3.600	3185	573	16.5
		10.00	4	80	0.060	10.000	4.500	2545	611	27.5
		12.00	4	80	0.070	12.000	5.400	2120	594	38.5
		16.00	4	80	0.080	16.000	7.200	1590	509	58.6
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	4.000	1.800	3980	239	1.7
		5.00	4	50	0.020	5.000	2.250	3185	255	2.9
		6.00	4	50	0.020	6.000	2.700	2655	212	3.4
		8.00	4	50	0.025	8.000	3.600	1990	199	5.7
		10.00	4	50	0.035	10.000	4.500	1590	223	10.0
		12.00	4	50	0.040	12.000	5.400	1325	212	13.7
		16.00	4	50	0.050	16.000	7.200	995	199	22.9
	Steel 850 - 1100 N/mm²	4.00	4	115	0.020	3.200	4.000	9150	732	9.4
		5.00	4	115	0.025	4.000	5.000	7320	732	14.6
		6.00	4	115	0.035	4.800	6.000	6100	854	24.6
		8.00	4	115	0.045	6.400	8.000	4575	824	42.2
		10.00	4	115	0.055	8.000	10.000	3660	805	64.4
		12.00	4	115	0.065	9.600	12.000	3050	793	91.4
		16.00	4	115	0.075	11.200	16.000	2290	687	123.1
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	3.200	4.000	7160	573	7.3
		5.00	4	90	0.025	4.000	5.000	5730	573	11.5
		6.00	4	90	0.035	4.800	6.000	4775	669	19.3
		8.00	4	90	0.045	6.400	8.000	3580	644	33.0
		10.00	4	90	0.055	8.000	10.000	2865	630	50.4
		12.00	4	90	0.065	9.600	12.000	2385	620	71.4
		16.00	4	90	0.075	11.200	16.000	1790	537	96.2
	Steel 1300 - 1500 N/mm²	4.00	4	65	0.020	3.200	4.000	5175	414	5.3
		5.00	4	65	0.025	4.000	5.000	4140	414	8.3
		6.00	4	65	0.030	4.800	6.000	3450	414	11.9
		8.00	4	65	0.040	6.400	8.000	2585	414	21.2
		10.00	4	65	0.050	8.000	10.000	2070	414	33.1
		12.00	4	65	0.060	9.600	12.000	1725	414	47.7
		16.00	4	65	0.070	11.200	16.000	1295	363	65.0
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	40	0.015	3.200	4.000	3185	191	2.4
		5.00	4	40	0.015	4.000	5.000	2545	153	3.1
		6.00	4	40	0.020	4.800	6.000	2120	170	4.9
		8.00	4	40	0.025	6.400	8.000	1590	159	8.1
		10.00	4	40	0.035	8.000	10.000	1275	179	14.3
		12.00	4	40	0.040	9.600	12.000	1060	170	19.5
		16.00	4	40	0.045	11.200	16.000	795	143	25.6

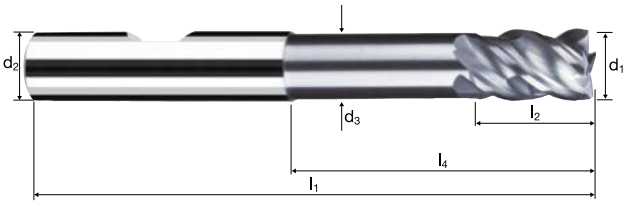
Cylindrical end mills NX

Smooth-edged, medium length version, neck

HM MG10	λ 45° γ -20°

45°

Vario



Roughing

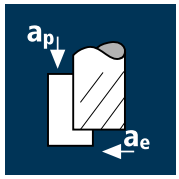
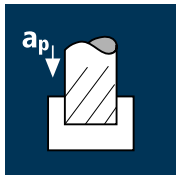
Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15359** ø-Code **220**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15359	POLYCHROM P15259
220	4.00	6.00	3.70	63	6.00	22.00	26.95	0.05	2.5°	4		●
260	5.00	6.00	4.60	63	8.00	24.00	27.27	0.10	1.5°	4		●
300	6.00	6.00	5.50	63	9.00	25.34	26.00	0.10	0.0°	4		●
391	8.00	8.00	7.40	72	12.00	34.29	35.00	0.10	0.0°	4		●
450	10.00	10.00	9.20	84	15.00	42.20	43.00	0.15	0.0°	4		●
501	12.00	12.00	11.00	97	18.00	50.13	51.00	0.15	0.0°	4		●
610	16.00	16.00	15.00	108	24.00	58.13	59.00	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	170	0.050	6.000	2.400	9020	1804	26.0
		8.00	4	170	0.065	8.000	3.200	6765	1759	45.0
		10.00	4	170	0.080	10.000	4.000	5410	1731	69.2
		12.00	4	170	0.095	12.000	4.800	4510	1714	98.7
		16.00	4	170	0.125	16.000	3.200	3380	1690	86.5
	Steel 850 - 1100 N/mm²	6.00	4	140	0.050	6.000	2.400	7425	1485	21.4
		8.00	4	140	0.065	8.000	3.200	5570	1448	37.1
		10.00	4	140	0.080	10.000	4.000	4455	1426	57.0
		12.00	4	140	0.095	12.000	4.800	3715	1412	81.3
		16.00	4	140	0.125	16.000	3.200	2785	1393	71.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	70	0.045	6.000	2.400	3715	669	9.6
		8.00	4	70	0.060	8.000	3.200	2785	668	17.1
		10.00	4	70	0.070	10.000	4.000	2230	624	25.0
		12.00	4	70	0.085	12.000	4.800	1855	631	36.3
		16.00	4	70	0.110	16.000	3.200	1395	614	31.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	90	0.030	6.000	2.400	4775	573	8.3
		8.00	4	90	0.040	8.000	3.200	3580	573	14.7
		10.00	4	90	0.050	10.000	4.000	2865	573	22.9
		12.00	4	90	0.060	12.000	4.800	2385	572	33.0
		16.00	4	90	0.080	16.000	3.200	1790	573	29.3
	Steel < 850 N/mm²	6.00	4	135	0.040	4.200	6.000	7160	1146	28.9
		8.00	4	135	0.050	5.600	8.000	5370	1074	48.1
		10.00	4	135	0.065	7.000	10.000	4295	1117	78.2
		12.00	4	135	0.075	8.400	12.000	3580	1074	108.3
		16.00	4	135	0.075	6.400	16.000	2685	806	82.5
	Steel 850 - 1100 N/mm²	6.00	4	105	0.040	4.200	6.000	5570	891	22.5
		8.00	4	105	0.050	5.600	8.000	4180	836	37.5
		10.00	4	105	0.065	7.000	10.000	3340	868	60.8
		12.00	4	105	0.075	8.400	12.000	2785	836	84.2
		16.00	4	105	0.075	6.400	16.000	2090	627	64.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	55	0.035	4.200	6.000	2920	409	10.3
		8.00	4	55	0.045	5.600	8.000	2190	394	17.7
		10.00	4	55	0.055	7.000	10.000	1750	385	27.0
		12.00	4	55	0.060	8.400	12.000	1460	350	35.3
		16.00	4	55	0.075	6.400	16.000	1095	329	33.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	75	0.030	4.200	6.000	3980	478	12.0
		8.00	4	75	0.040	5.600	8.000	2985	478	21.4
		10.00	4	75	0.045	7.000	10.000	2385	429	30.1
		12.00	4	75	0.050	8.400	12.000	1990	398	40.1
		16.00	4	75	0.065	6.400	16.000	1490	387	39.7

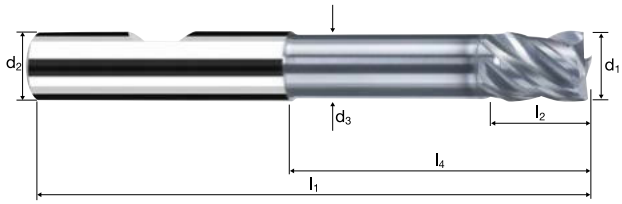
Cylindrical end mills

Smooth-edged, medium length version, neck

HM MG10	λ 40° γ 0°

45°

Vario



Roughing

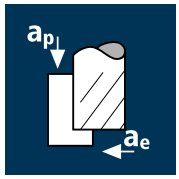
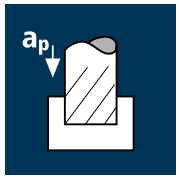
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15325** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P15325	POLYCHROM P15225
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.10	4		●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	0.10	4		●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	0.15	4		●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	0.15	4		●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	0.15	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	190	0.015	4.500	1.200	20160	907	4.9
		4.00	3	190	0.015	6.000	1.600	15120	680	6.5
		5.00	3	190	0.020	7.500	2.000	12095	726	10.9
		6.00	3	190	0.040	9.000	2.400	10080	1210	26.1
		8.00	3	190	0.050	12.000	3.200	7560	1134	43.5
		10.00	3	190	0.065	15.000	4.000	6050	1180	70.8
		12.00	3	190	0.075	18.000	4.800	5040	1134	98.0
		16.00	3	190	0.085	24.000	6.400	3780	964	148.1
	Steel 850 - 1100 N/mm²	3.00	3	140	0.015	4.500	1.200	14855	669	3.6
		4.00	3	140	0.015	6.000	1.600	11140	501	4.8
		5.00	3	140	0.020	7.500	2.000	8915	535	8.0
		6.00	3	140	0.040	9.000	2.400	7425	891	19.2
		8.00	3	140	0.050	12.000	3.200	5570	836	32.1
		10.00	3	140	0.065	15.000	4.000	4455	869	52.1
		12.00	3	140	0.075	18.000	4.800	3715	836	72.2
		16.00	3	140	0.085	24.000	6.400	2785	710	109.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	70	0.010	4.500	1.200	7425	223	1.2
		4.00	3	70	0.015	6.000	1.600	5570	251	2.4
		5.00	3	70	0.015	7.500	2.000	4455	201	3.0
		6.00	3	70	0.035	9.000	2.400	3715	390	8.4
		8.00	3	70	0.045	12.000	3.200	2785	376	14.4
		10.00	3	70	0.055	15.000	4.000	2230	368	22.1
		12.00	3	70	0.065	18.000	4.800	1855	362	31.3
		16.00	3	70	0.075	24.000	6.400	1395	314	48.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	90	0.010	4.500	1.200	9550	287	1.5
		4.00	3	90	0.010	6.000	1.600	7160	215	2.1
		5.00	3	90	0.010	7.500	2.000	5730	172	2.6
		6.00	3	90	0.030	9.000	2.400	4775	430	9.3
		8.00	3	90	0.035	12.000	3.200	3580	376	14.4
		10.00	3	90	0.045	15.000	4.000	2865	387	23.2
		12.00	3	90	0.050	18.000	4.800	2385	358	30.9
		16.00	3	90	0.060	24.000	6.400	1790	322	49.5
	Steel < 850 N/mm²	3.00	3	155	0.015	4.200	3.000	16445	740	9.3
		4.00	3	155	0.015	5.600	4.000	12335	555	12.4
		5.00	3	155	0.025	7.000	5.000	9870	740	25.9
		6.00	3	155	0.030	8.400	6.000	8225	740	37.3
		8.00	3	155	0.040	11.200	8.000	6165	740	66.3
		10.00	3	155	0.050	14.000	10.000	4935	740	103.6
		12.00	3	155	0.060	16.800	12.000	4110	740	149.1
		16.00	3	155	0.070	14.400	16.000	3085	648	149.3
	Steel 850 - 1100 N/mm²	3.00	3	105	0.015	4.200	3.000	11140	501	6.3
		4.00	3	105	0.015	5.600	4.000	8355	376	8.4
		5.00	3	105	0.025	7.000	5.000	6685	501	17.5
		6.00	3	105	0.030	8.400	6.000	5570	501	25.3
		8.00	3	105	0.040	11.200	8.000	4180	502	44.9
		10.00	3	105	0.050	14.000	10.000	3340	501	70.1
		12.00	3	105	0.060	16.800	12.000	2785	501	101.1
		16.00	3	105	0.070	14.400	16.000	2090	439	101.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	3	55	0.010	4.200	3.000	5835	175	2.2
		4.00	3	55	0.015	5.600	4.000	4375	197	4.4
		5.00	3	55	0.015	7.000	5.000	3500	158	5.5
		6.00	3	55	0.030	8.400	6.000	2920	263	13.2
		8.00	3	55	0.040	11.200	8.000	2190	263	23.5
		10.00	3	55	0.050	14.000	10.000	1750	263	36.8
		12.00	3	55	0.060	16.800	12.000	1460	263	53.0
		16.00	3	55	0.070	14.400	16.000	1095	230	53.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	70	0.010	4.200	3.000	7425	223	2.8
		4.00	3	70	0.010	5.600	4.000	5570	167	3.7
		5.00	3	70	0.010	7.000	5.000	4455	134	4.7
		6.00	3	70	0.025	8.400	6.000	3715	279	14.0
		8.00	3	70	0.030	11.200	8.000	2785	251	22.5
		10.00	3	70	0.040	14.000	10.000	2230	268	37.5
		12.00	3	70	0.050	16.800	12.000	1855	278	56.1
		16.00	3	70	0.055	14.400	16.000	1395	230	53.0

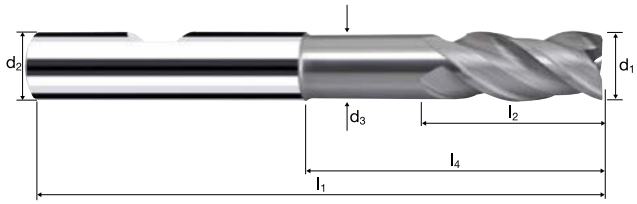
Cylindrical end mills

Smooth-edged, medium length version, neck

HM MG10	λ 40° γ 0°

45°

Vario



Roughing

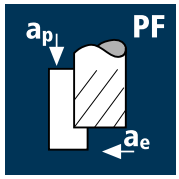
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15399** ø-Code **180**

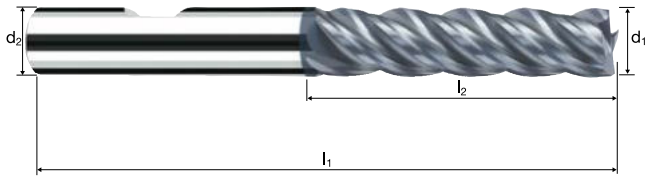
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15399	P15299
180	3.00	6.00	2.80	63	8.00	20.00	26.63	0.05	3.5°	3		●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	0.05	2.5°	3		●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	0.10	1.5°	3		●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.10	0.0°	3		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.10	0.0°	3		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.15	0.0°	3		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.15	0.0°	3		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.15	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	130	0.045	15.000	0.600	6895	1241	11.2
		8.00	4	130	0.060	20.000	0.800	5175	1242	19.9
		10.00	4	130	0.075	25.000	1.000	4140	1242	31.1
		12.00	4	130	0.090	30.000	1.200	3450	1242	44.7
		16.00	4	130	0.115	40.000	1.600	2585	1189	76.1
		20.00	4	130	0.145	50.000	2.000	2070	1201	120.1
	Steel 850 - 1100 N/mm²	6.00	4	120	0.040	15.000	0.600	6365	1018	9.2
		8.00	4	120	0.050	20.000	0.800	4775	955	15.3
		10.00	4	120	0.065	25.000	1.000	3820	993	24.8
		12.00	4	120	0.080	30.000	1.200	3185	1019	36.7
		16.00	4	120	0.100	40.000	1.600	2385	954	61.1
		20.00	4	120	0.125	50.000	2.000	1910	955	95.5
	Steel 1100 - 1300 N/mm²	6.00	4	100	0.035	15.000	0.600	5305	743	6.7
		8.00	4	100	0.045	20.000	0.800	3980	716	11.5
		10.00	4	100	0.060	25.000	1.000	3185	764	19.1
		12.00	4	100	0.070	30.000	1.200	2655	743	26.8
		16.00	4	100	0.090	40.000	1.600	1990	716	45.8
		20.00	4	100	0.110	50.000	2.000	1590	700	70.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	80	0.025	15.000	0.450	4245	425	2.9
		8.00	4	80	0.030	20.000	0.600	3185	382	4.6
		10.00	4	80	0.040	25.000	0.750	2545	407	7.6
		12.00	4	80	0.050	30.000	0.900	2120	424	11.4
		16.00	4	80	0.060	40.000	1.200	1590	382	18.3
		20.00	4	80	0.075	50.000	1.500	1275	383	28.7
	Cast iron (lamellar / spheroidal)	6.00	4	120	0.045	15.000	0.600	6365	1146	10.3
		8.00	4	120	0.060	20.000	0.800	4775	1146	18.3
		10.00	4	120	0.070	25.000	1.000	3820	1070	26.7
		12.00	4	120	0.085	30.000	1.200	3185	1083	39.0
		16.00	4	120	0.110	40.000	1.600	2385	1049	67.2
		20.00	4	120	0.135	50.000	2.000	1910	1031	103.1
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	76	0.045	15.000	0.450	4030	725	4.9
		8.00	4	76	0.060	20.000	0.600	3025	726	8.7
		10.00	4	76	0.075	25.000	0.750	2420	726	13.6
		12.00	4	76	0.090	30.000	0.900	2015	725	19.6
		16.00	4	76	0.115	40.000	1.200	1510	695	33.3
		20.00	4	76	0.145	50.000	1.500	1210	702	52.6
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	50	0.030	15.000	0.600	2655	319	2.9
		8.00	4	50	0.035	20.000	0.800	1990	279	4.5
		10.00	4	50	0.045	25.000	1.000	1590	286	7.2
		12.00	4	50	0.055	30.000	1.200	1325	292	10.5
		16.00	4	50	0.065	40.000	1.600	995	259	16.6
		20.00	4	50	0.085	50.000	2.000	795	270	27.0
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	6.00	4	40	0.025	15.000	0.450	2120	212	1.4
		8.00	4	40	0.030	20.000	0.600	1590	191	2.3
		10.00	4	40	0.040	25.000	0.750	1275	204	3.8
		12.00	4	40	0.050	30.000	0.900	1060	212	5.7
		16.00	4	40	0.060	40.000	1.200	795	191	9.2
		20.00	4	40	0.075	50.000	1.500	635	191	14.3

Cylindrical end mills

Smooth-edged, long version

HM MG10	λ 40° γ 6°
45°	
Vario	



Roughing

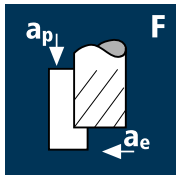
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **45323** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z		POLYCHROM P45323	POLYCHROM P45223
300	6.00	6.00	70	26.00	0.10	4		●	
391	8.00	8.00	80	36.00	0.10	4		●	
450	10.00	10.00	100	45.00	0.15	4		●	
501	12.00	12.00	110	53.00	0.15	4		●	
610	16.00	16.00	123	63.00	0.15	4		●	
682	20.00	20.00	141	75.00	0.15	4		●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	4.00	4	25	0.005	11.200	0.050	1990	40
		6.00	4	25	0.010	16.800	0.100	1325	53
		8.00	4	25	0.015	22.400	0.100	995	60
		10.00	4	25	0.020	28.000	0.150	795	64
		12.00	4	25	0.020	33.600	0.200	665	53
		16.00	4	25	0.030	44.800	0.250	495	59
		20.00	4	25	0.035	56.000	0.300	400	56
		30.00	6	25	0.055	84.000	0.450	265	88
		40.00	6	25	0.075	112.000	0.600	200	90
	Steel 1100 - 1300 N/mm²	4.00	4	20	0.005	11.200	0.050	1590	32
		6.00	4	20	0.010	16.800	0.100	1060	42
		8.00	4	20	0.015	22.400	0.100	795	48
		10.00	4	20	0.020	28.000	0.150	635	51
		12.00	4	20	0.020	33.600	0.200	530	42
		16.00	4	20	0.030	44.800	0.250	400	48
		20.00	4	20	0.035	56.000	0.300	320	45
		30.00	6	20	0.055	84.000	0.450	210	69
		40.00	6	20	0.075	112.000	0.600	160	72
	Cold work tool steel (12% Cr), high alloyed [1.2379]	4.00	4	18	0.005	11.200	0.050	1430	29
		6.00	4	18	0.010	16.800	0.100	955	38
		8.00	4	18	0.015	22.400	0.100	715	43
		10.00	4	18	0.020	28.000	0.150	575	46
		12.00	4	18	0.020	33.600	0.200	475	38
		16.00	4	18	0.030	44.800	0.250	360	43
		20.00	4	18	0.035	56.000	0.300	285	40
		30.00	6	18	0.055	84.000	0.450	190	63
		40.00	6	18	0.075	112.000	0.600	145	65
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	15	0.005	11.200	0.050	1195	24
		6.00	4	15	0.010	16.800	0.100	795	32
		8.00	4	15	0.015	22.400	0.100	595	36
		10.00	4	15	0.020	28.000	0.150	475	38
		12.00	4	15	0.020	33.600	0.200	400	32
		16.00	4	15	0.030	44.800	0.250	300	36
		20.00	4	15	0.035	56.000	0.300	240	34
		30.00	6	15	0.055	84.000	0.450	160	53
		40.00	6	15	0.075	112.000	0.600	120	54
	Cast iron (lamellar / spheroidal)	4.00	4	24	0.005	11.200	0.050	1910	38
		6.00	4	24	0.010	16.800	0.100	1275	51
		8.00	4	24	0.015	22.400	0.100	955	57
		10.00	4	24	0.020	28.000	0.150	765	61
		12.00	4	24	0.020	33.600	0.200	635	51
		16.00	4	24	0.030	44.800	0.250	475	57
		20.00	4	24	0.035	56.000	0.300	380	53
		30.00	6	24	0.055	84.000	0.450	255	84
		40.00	6	24	0.075	112.000	0.600	190	86
	Wrought aluminium Construction aluminium	4.00	4	50	0.005	11.200	0.050	3980	80
		6.00	4	50	0.010	16.800	0.100	2655	106
		8.00	4	50	0.015	22.400	0.100	1990	119
		10.00	4	50	0.020	28.000	0.150	1590	127
		12.00	4	50	0.020	33.600	0.200	1325	106
		16.00	4	50	0.030	44.800	0.250	995	119
		20.00	4	50	0.035	56.000	0.300	795	111
		30.00	6	50	0.055	84.000	0.450	530	175
		40.00	6	50	0.075	112.000	0.600	400	180
	Unalloyed copper	4.00	4	40	0.005	11.200	0.050	3185	64
		6.00	4	40	0.010	16.800	0.100	2120	85
		8.00	4	40	0.015	22.400	0.100	1590	95
		10.00	4	40	0.020	28.000	0.150	1275	102
		12.00	4	40	0.020	33.600	0.200	1060	85
		16.00	4	40	0.030	44.800	0.250	795	95
		20.00	4	40	0.035	56.000	0.300	635	89
		30.00	6	40	0.055	84.000	0.450	425	140
		40.00	6	40	0.075	112.000	0.600	320	144
	Steel < 850 N/mm²	4.00	4	28	0.005	11.200	0.050	2230	45
		6.00	4	28	0.010	16.800	0.100	1485	59
		8.00	4	28	0.015	22.400	0.100	1115	67
		10.00	4	28	0.020	28.000	0.150	890	71
		12.00	4	28	0.020	33.600	0.200	745	60
		16.00	4	28	0.030	44.800	0.250	555	67
		20.00	4	28	0.035	56.000	0.300	445	62
		30.00	6	28	0.055	84.000	0.450	295	97
		40.00	6	28	0.075	112.000	0.600	225	101

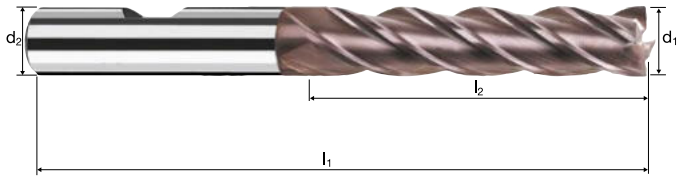
Cylindrical end mills

Smooth-edged, long version

HSS-E Co8

λ **35°**
γ **15°**

90°



Roughing

Finishing

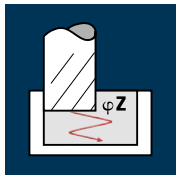
ReTool®

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300					**Inox** Stainless	**Ti** Titanium	**GG(G) Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0200** ø-Code **140**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	α	z		UNICUT-4X U0200
140	2.00	6.00	54	10.00	16.81	7.0°	4		●
160	2.50	6.00	56	12.00	19.50	5.5°	4		●
180	3.00	6.00	56	12.00	19.50	4.5°	4		●
220	4.00	6.00	63	19.00	26.50	2.5°	4		●
260	5.00	6.00	68	24.00	31.50	1.0°	4		●
300	6.00	6.00	68	24.00	-	0.0°	4		●
391	8.00	8.00	82	38.00	-	0.0°	4		●
450	10.00	10.00	95	45.00	-	0.0°	4		●
501	12.00	12.00	110	53.00	-	0.0°	4		●
570	14.00	12.00	110	53.00	-	0.0°	4		●
610	16.00	16.00	123	63.00	-	0.0°	4		●
640	18.00	16.00	123	63.00	-	0.0°	4		●
682	20.00	20.00	141	75.00	-	0.0°	4		●
772	25.00	25.00	166	90.00	-	0.0°	4		●
810	30.00	25.00	166	90.00	-	0.0°	6		●
832	32.00	32.00	186	106.00	-	0.0°	6		●
860	36.00	32.00	186	106.00	-	0.0°	6		●
881	40.00	32.00	205	125.00	-	0.0°	6		●
892	40.00	40.00	217	125.00	-	0.0°	6		●

Application



Material

Steel
850 - 1100 N/mm²

P
P

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
6.00	4	113	0.033	32.000	5.400	5995	791	10.0°
8.00	4	113	0.044	42.000	7.200	4495	791	10.0°
10.00	4	113	0.055	53.000	9.000	3595	791	10.0°
12.00	4	113	0.066	63.000	10.800	2995	791	10.0°
16.00	4	113	0.075	84.000	14.400	2250	677	10.0°
20.00	4	113	0.090	105.000	18.000	1800	648	10.0°

Steel
1100 - 1300 N/mm²

P
P

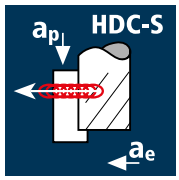
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
6.00	4	86	0.028	32.000	5.400	4560	514	10.0°
8.00	4	86	0.038	42.000	7.200	3420	514	10.0°
10.00	4	86	0.047	53.000	9.000	2735	514	10.0°
12.00	4	86	0.056	63.000	10.800	2280	514	10.0°
16.00	4	86	0.066	84.000	14.400	1710	449	10.0°
20.00	4	86	0.080	105.000	18.000	1370	438	10.0°

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

P

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
6.00	4	68	0.023	32.000	5.400	3610	329	7.0°
8.00	4	68	0.030	42.000	7.200	2705	329	7.0°
10.00	4	68	0.038	53.000	9.000	2165	329	7.0°
12.00	4	68	0.046	63.000	10.800	1805	329	7.0°
16.00	4	68	0.054	84.000	14.400	1355	295	7.0°
20.00	4	68	0.066	105.000	18.000	1080	285	7.0°

Application



Material

Steel
850 - 1100 N/mm²

P
P

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
6.00	4	202	0.085	32.000	0.300	10715	3643	35.0
8.00	4	202	0.137	42.000	0.400	8035	4403	74.0
10.00	4	202	0.164	53.000	0.500	6430	4218	111.8
12.00	4	202	0.195	63.000	0.600	5360	4181	158.0
16.00	4	202	0.191	84.000	0.800	4020	3071	206.4
20.00	4	202	0.233	105.000	1.000	3215	2996	314.6

Steel
1100 - 1300 N/mm²

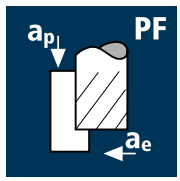
P
P

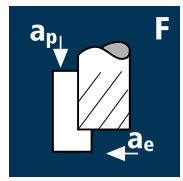
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
6.00	4	160	0.068	32.000	0.300	8490	2309	22.2
8.00	4	160	0.110	42.000	0.400	6365	2801	47.1
10.00	4	160	0.132	53.000	0.500	5095	2690	71.3
12.00	4	160	0.156	63.000	0.600	4245	2649	100.1
16.00	4	160	0.154	84.000	0.800	3185	1962	131.8
20.00	4	160	0.188	105.000	1.000	2545	1914	200.9

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

P

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
6.00	4	118	0.045	32.000	0.300	6260	1127	10.8
8.00	4	118	0.073	42.000	0.400	4695	1371	23.0
10.00	4	118	0.087	53.000	0.500	3755	1307	34.6
12.00	4	118	0.104	63.000	0.600	3130	1302	49.2
16.00	4	118	0.099	84.000	0.800	2350	931	62.5
20.00	4	118	0.121	105.000	1.000	1880	910	95.5





Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

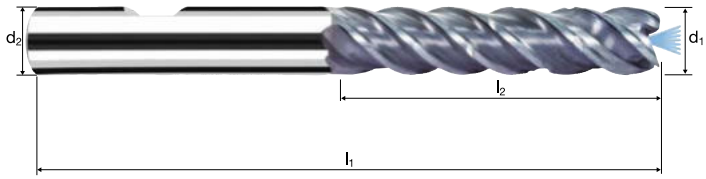
Cylindrical end mills MFC

Smooth-edged, chip breaker, extra-long version 5.2xd
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

r

Vario



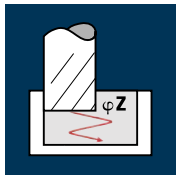
Roughing HPC | Roughing HDC | Finishing

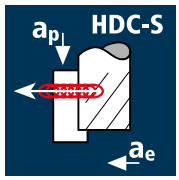
ReTool®

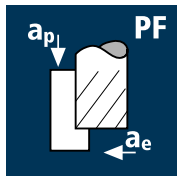
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

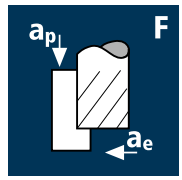
Example: **Order-N°.** Coating **P** Article-N°. **8221** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	POLYCHROM P8221	POLYCHROM P8121
300	6.00	6.00	73	32.00	0.100	4		●
391	8.00	8.00	84	42.00	0.150	4		●
450	10.00	10.00	100	53.00	0.200	4		●
501	12.00	12.00	117	63.00	0.200	4		●
610	16.00	16.00	144	84.00	0.200	4		●
682	20.00	20.00	169	105.00	0.200	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	90	0.020	16.000	2.700	9550	764	1.5°
		4.00	4	90	0.030	21.000	3.600	7160	859	1.5°
		5.00	4	90	0.037	26.000	4.500	5730	848	1.5°
		6.00	4	90	0.038	32.000	5.400	4775	726	1.5°
		8.00	4	90	0.051	42.000	7.200	3580	730	1.5°
		10.00	4	90	0.064	53.000	9.000	2865	733	1.5°
		12.00	4	90	0.072	63.000	10.800	2385	687	1.5°
		16.00	4	90	0.086	84.000	14.400	1790	616	1.5°
		20.00	4	90	0.099	105.000	18.000	1430	566	1.5°
	Steel 850 - 1100 N/mm²	3.00	4	85	0.019	16.000	2.700	9020	686	2.0°
		4.00	4	85	0.026	21.000	3.600	6765	704	2.0°
		5.00	4	85	0.032	26.000	4.500	5410	693	2.0°
		6.00	4	85	0.033	32.000	5.400	4510	595	2.0°
		8.00	4	85	0.044	42.000	7.200	3380	595	2.0°
		10.00	4	85	0.055	53.000	9.000	2705	595	2.0°
		12.00	4	85	0.066	63.000	10.800	2255	595	2.0°
		16.00	4	85	0.079	84.000	14.400	1690	534	2.0°
		20.00	4	85	0.090	105.000	18.000	1355	488	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	55	0.012	16.000	2.700	5835	280	1.5°
		4.00	4	55	0.016	21.000	3.600	4375	280	1.5°
		5.00	4	55	0.020	26.000	4.500	3500	280	1.5°
		6.00	4	55	0.023	32.000	5.400	2920	269	1.5°
		8.00	4	55	0.031	42.000	7.200	2190	272	1.5°
		10.00	4	55	0.038	53.000	9.000	1750	266	1.5°
		12.00	4	55	0.046	63.000	10.800	1460	269	1.5°
		16.00	4	55	0.050	84.000	14.400	1095	219	1.5°
		20.00	4	55	0.063	105.000	18.000	875	221	1.5°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	260	0.064	16.000	0.075	27585	7062	8.5
		4.00	4	260	0.087	21.000	0.100	20690	7200	15.1
		5.00	4	260	0.110	26.000	0.125	16550	7282	23.7
		6.00	4	260	0.132	32.000	0.150	13795	7284	35.0
		8.00	4	260	0.177	42.000	0.200	10345	7324	61.5
		10.00	4	260	0.219	53.000	0.250	8275	7249	96.0
		12.00	4	260	0.264	63.000	0.300	6895	7281	137.6
		16.00	4	260	0.290	84.000	0.400	5175	6003	201.7
		20.00	4	260	0.363	105.000	0.500	4140	6011	315.6
	Steel 850 - 1100 N/mm²	3.00	4	266	0.072	16.000	0.075	28225	8129	9.8
		4.00	4	266	0.098	21.000	0.100	21170	8299	17.4
		5.00	4	266	0.123	26.000	0.125	16935	8332	27.1
		6.00	4	266	0.148	32.000	0.150	14110	8353	40.1
		8.00	4	266	0.199	42.000	0.200	10585	8426	70.8
		10.00	4	266	0.246	53.000	0.250	8465	8330	110.4
		12.00	4	266	0.297	63.000	0.300	7055	8381	158.4
		16.00	4	266	0.326	84.000	0.400	5290	6898	231.8
		20.00	4	266	0.409	105.000	0.500	4235	6929	363.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	184	0.046	16.000	0.075	19525	3593	4.3
		4.00	4	184	0.064	21.000	0.100	14640	3748	7.9
		5.00	4	184	0.080	26.000	0.125	11715	3749	12.2
		6.00	4	184	0.097	32.000	0.150	9760	3787	18.2
		8.00	4	184	0.129	42.000	0.200	7320	3777	31.7
		10.00	4	184	0.161	53.000	0.250	5855	3771	50.0
		12.00	4	184	0.193	63.000	0.300	4880	3767	71.2
		16.00	4	184	0.209	84.000	0.400	3660	3060	102.8
		20.00	4	184	0.269	105.000	0.500	2930	3153	165.5





Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

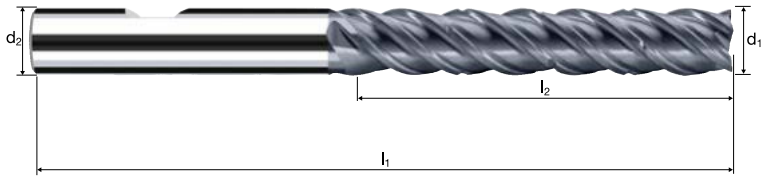
Cylindrical end mills E-Cut

Smooth-edged, chip breaker, extra-long version 5.2xd

HM MG10 | λ **45°** γ **10°**

r

Vario



Roughing HPC | Roughing HDC | Finishing

ReTool®

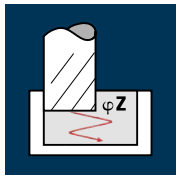
Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500	**HRC** 48-56			**Inox** Stainless	**Ti** Titanium	**GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8420** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8420	POLYCHROM P8320
180*	3.00	6.00	63	16.00	25.26	0.050	4.5°	4		●
220*	4.00	6.00	70	21.00	29.39	0.100	3.0°	4		●
260	5.00	6.00	73	26.00	33.52	0.100	1.5°	4		●
300	6.00	6.00	73	32.00	-	0.100	0.0°	4		●
391	8.00	8.00	84	42.00	-	0.150	0.0°	4		●
450	10.00	10.00	100	53.00	-	0.200	0.0°	4		●
501	12.00	12.00	117	63.00	-	0.200	0.0°	4		●
610	16.00	16.00	144	84.00	-	0.200	0.0°	4		●
682	20.00	20.00	169	105.00	-	0.250	0.0°	4		●

* without chip breaker only

Application



Material

Steel
< 850 N/mm²

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
3.00	3	85	0.018	16.000	2.700	9020	487	2.0°
4.00	3	85	0.027	21.000	3.600	6765	548	2.0°
5.00	3	85	0.033	26.000	4.500	5410	536	2.0°
6.00	3	85	0.034	32.000	5.400	4510	460	2.0°
8.00	3	85	0.046	42.000	7.200	3380	466	2.0°
10.00	3	85	0.058	53.000	9.000	2705	471	2.0°
12.00	3	85	0.065	63.000	10.800	2255	440	2.0°
16.00	3	85	0.077	84.000	14.400	1690	390	2.0°
20.00	3	85	0.089	105.000	18.000	1355	362	2.0°

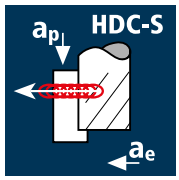
Steel
850 - 1100 N/mm²

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
3.00	3	75	0.017	16.000	2.700	7960	406	3.0°
4.00	3	75	0.023	21.000	3.600	5970	412	3.0°
5.00	3	75	0.029	26.000	4.500	4775	415	3.0°
6.00	3	75	0.030	32.000	5.400	3980	358	3.0°
8.00	3	75	0.040	42.000	7.200	2985	358	3.0°
10.00	3	75	0.050	53.000	9.000	2385	358	3.0°
12.00	3	75	0.059	63.000	10.800	1990	352	3.0°
16.00	3	75	0.071	84.000	14.400	1490	317	3.0°
20.00	3	75	0.081	105.000	18.000	1195	290	3.0°

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
3.00	3	50	0.013	16.000	2.700	5305	207	2.0°
4.00	3	50	0.019	21.000	3.600	3980	227	2.0°
5.00	3	50	0.022	26.000	4.500	3185	210	2.0°
6.00	3	50	0.023	32.000	5.400	2655	183	2.0°
8.00	3	50	0.031	42.000	7.200	1990	185	2.0°
10.00	3	50	0.038	53.000	9.000	1590	181	2.0°
12.00	3	50	0.046	63.000	10.800	1325	183	2.0°
16.00	3	50	0.050	84.000	14.400	995	149	2.0°
20.00	3	50	0.063	105.000	18.000	795	150	2.0°

Application



Material

Steel
< 850 N/mm²

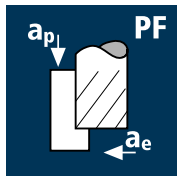
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
3.00	3	211	0.042	16.000	0.150	22390	2821	6.8
4.00	3	211	0.057	21.000	0.200	16790	2871	12.1
5.00	3	211	0.072	26.000	0.250	13435	2902	18.9
6.00	3	211	0.087	32.000	0.300	11195	2922	28.1
8.00	3	211	0.116	42.000	0.400	8395	2922	49.1
10.00	3	211	0.144	53.000	0.500	6715	2901	76.9
12.00	3	211	0.173	63.000	0.600	5595	2904	109.8
16.00	3	211	0.190	84.000	0.800	4200	2394	160.9
20.00	3	211	0.239	105.000	1.000	3360	2409	253.0

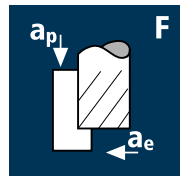
Steel
850 - 1100 N/mm²

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
3.00	3	216	0.047	16.000	0.150	22920	3232	7.8
4.00	3	216	0.064	21.000	0.200	17190	3301	13.9
5.00	3	216	0.080	26.000	0.250	13750	3300	21.5
6.00	3	216	0.097	32.000	0.300	11460	3335	32.0
8.00	3	216	0.130	42.000	0.400	8595	3352	56.3
10.00	3	216	0.161	53.000	0.500	6875	3321	88.0
12.00	3	216	0.194	63.000	0.600	5730	3335	126.1
16.00	3	216	0.213	84.000	0.800	4295	2745	184.4
20.00	3	216	0.267	105.000	1.000	3440	2755	289.3

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
3.00	3	149	0.029	16.000	0.150	15810	1376	3.3
4.00	3	149	0.040	21.000	0.200	11855	1423	6.0
5.00	3	149	0.050	26.000	0.250	9485	1423	9.2
6.00	3	149	0.060	32.000	0.300	7905	1423	13.7
8.00	3	149	0.080	42.000	0.400	5930	1423	23.9
10.00	3	149	0.099	53.000	0.500	4745	1409	37.3
12.00	3	149	0.119	63.000	0.600	3950	1410	53.3
16.00	3	149	0.129	84.000	0.800	2965	1148	77.1
20.00	3	149	0.167	105.000	1.000	2370	1187	124.7





Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Cylindrical end mills E-Cut

Smooth-edged, chip breaker, extra-long version 5.2xd

Base-X **B**

HM MG10 | λ **45°** γ **10°**

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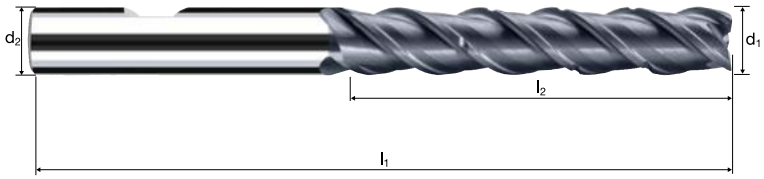
Vario



Roughing HPC | Roughing HDC | Finishing

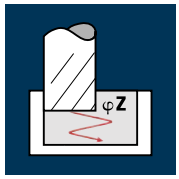
ReTool®

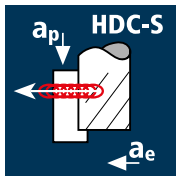
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

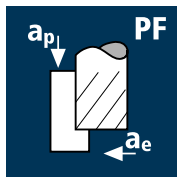
Example: **Order-N°.** Coating **P** Article-N°. **8423** ø-Code **180**

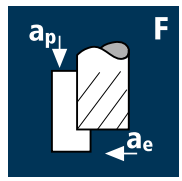
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8423	POLYCHROM P8323
180*	3.00	6.00	63	16.00	25.26	0.050	4.5°	3		●
220*	4.00	6.00	70	21.00	29.39	0.100	3.0°	3		●
260	5.00	6.00	73	26.00	33.52	0.100	1.5°	3		●
300	6.00	6.00	73	32.00	-	0.100	0.0°	3		●
391	8.00	8.00	84	42.00	-	0.150	0.0°	3		●
450	10.00	10.00	100	53.00	-	0.200	0.0°	3		●
501	12.00	12.00	117	63.00	-	0.200	0.0°	3		●
610	16.00	16.00	144	84.00	-	0.200	0.0°	3		●
682	20.00	20.00	169	105.00	-	0.250	0.0°	3		●

* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
	Steel 850 - 1100 N/mm²	6.00	4	75	0.033	38.000	5.400	3980	525	8.0°
		8.00	4	75	0.044	51.000	7.200	2985	525	8.0°
		10.00	4	75	0.055	63.000	9.000	2385	525	8.0°
		12.00	4	75	0.066	76.000	10.800	1990	525	8.0°
		16.00	4	75	0.075	101.000	14.400	1490	448	8.0°
		20.00	4	75	0.090	126.000	18.000	1195	430	8.0°
	Steel 1100 - 1300 N/mm²	6.00	4	58	0.028	38.000	5.400	3075	347	8.0°
		8.00	4	58	0.038	51.000	7.200	2310	347	8.0°
		10.00	4	58	0.047	63.000	9.000	1845	347	8.0°
		12.00	4	58	0.056	76.000	10.800	1540	347	8.0°
		16.00	4	58	0.066	101.000	14.400	1155	303	8.0°
		20.00	4	58	0.080	126.000	18.000	925	296	8.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	45	0.023	38.000	5.400	2385	218	6.0°
		8.00	4	45	0.030	51.000	7.200	1790	218	6.0°
		10.00	4	45	0.038	63.000	9.000	1430	217	6.0°
		12.00	4	45	0.046	76.000	10.800	1195	218	6.0°
		16.00	4	45	0.054	101.000	14.400	895	195	6.0°
		20.00	4	45	0.066	126.000	18.000	715	189	6.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	6.00	4	143	0.121	38.000	0.150	7585	3671	20.9
		8.00	4	143	0.190	51.000	0.200	5690	4324	44.1
		10.00	4	143	0.234	63.000	0.250	4550	4259	67.1
		12.00	4	143	0.273	76.000	0.300	3795	4144	94.5
		16.00	4	143	0.269	101.000	0.400	2845	3061	123.7
		20.00	4	143	0.328	126.000	0.500	2275	2985	188.0
	Steel 1100 - 1300 N/mm²	6.00	4	113	0.098	38.000	0.150	5995	2350	13.4
		8.00	4	113	0.154	51.000	0.200	4495	2769	28.2
		10.00	4	113	0.189	63.000	0.250	3595	2718	42.8
		12.00	4	113	0.221	76.000	0.300	2995	2648	60.4
		16.00	4	113	0.218	101.000	0.400	2250	1962	79.3
		20.00	4	113	0.266	126.000	0.500	1800	1915	120.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	119	0.053	38.000	0.150	6315	1339	7.6
		8.00	4	119	0.083	51.000	0.200	4735	1572	16.0
		10.00	4	119	0.102	63.000	0.250	3790	1546	24.4
		12.00	4	119	0.118	76.000	0.300	3155	1489	34.0
		16.00	4	119	0.114	101.000	0.400	2365	1078	43.6
		20.00	4	119	0.139	126.000	0.500	1895	1054	66.4





Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

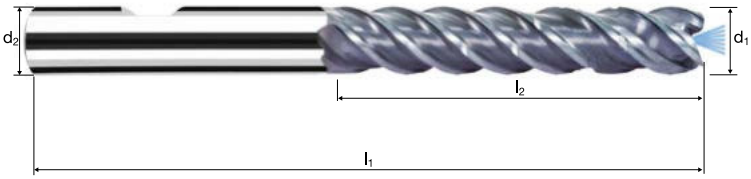
Cylindrical end mills MFC

Smooth-edged, chip breaker, extra-long version 6.3xd
High-performance penetration edge, central air/cooling channel

HM MG10 | λ 43° γ 8°

r

Vario



new!

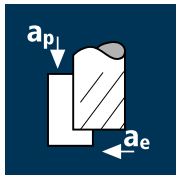
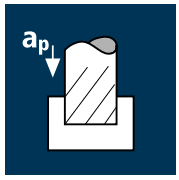
Roughing HPC | Roughing HDC | Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8222** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z		POLYCHROM P8222	POLYCHROM P8122
300	6.00	6.00	80	38.00	0.100	4			●
391	8.00	8.00	93	51.00	0.150	4			●
450	10.00	10.00	110	63.00	0.200	4			●
501	12.00	12.00	130	76.00	0.200	4			●
610	16.00	16.00	160	101.00	0.200	4			●
682	20.00	20.00	189	126.00	0.200	4			●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 42 - 48 HRC	2.00	3	90	0.015	2.000	1.200	14325	645	1.5
		3.00	4	90	0.025	3.000	1.800	9550	955	5.2
		4.00	4	90	0.025	4.000	2.400	7160	716	6.9
		5.00	4	90	0.035	5.000	3.000	5730	802	12.0
		6.00	4	90	0.040	6.000	1.500	4775	764	6.9
		8.00	4	90	0.055	8.000	4.800	3580	788	30.2
		10.00	4	90	0.070	10.000	6.000	2865	802	48.1
		12.00	4	90	0.085	12.000	7.200	2385	811	70.1
		16.00	4	90	0.110	16.000	4.000	1790	788	50.4
	Hardened tool steel 48 - 52 HRC	2.00	3	70	0.010	2.000	1.200	11140	334	0.8
		3.00	4	70	0.020	3.000	1.800	7425	594	3.2
		4.00	4	70	0.025	4.000	2.400	5570	557	5.3
		5.00	4	70	0.030	5.000	3.000	4455	535	8.0
		6.00	4	70	0.035	6.000	1.500	3715	520	4.7
		8.00	4	70	0.050	8.000	4.800	2785	557	21.4
		10.00	4	70	0.060	10.000	6.000	2230	535	32.1
		12.00	4	70	0.075	12.000	7.200	1855	557	48.1
		16.00	4	70	0.100	16.000	4.000	1395	558	35.7
	Hardened tool steel 52 - 56 HRC	2.00	3	45	0.010	2.000	1.200	7160	215	0.5
		3.00	4	45	0.015	3.000	1.800	4775	287	1.5
		4.00	4	45	0.020	4.000	2.400	3580	286	2.7
		5.00	4	45	0.025	5.000	3.000	2865	287	4.3
		6.00	4	45	0.030	6.000	1.500	2385	286	2.6
		8.00	4	45	0.040	8.000	4.800	1790	286	11.0
		10.00	4	45	0.050	10.000	6.000	1430	286	17.2
		12.00	4	45	0.060	12.000	7.200	1195	287	24.8
		16.00	4	45	0.080	16.000	4.000	895	286	18.3
	Hardened tool steel 56 - 60 HRC	2.00	3	20	0.005	2.000	1.200	3185	48	0.1
		3.00	4	20	0.010	3.000	1.800	2120	85	0.5
		4.00	4	20	0.015	4.000	2.400	1590	95	0.9
		5.00	4	20	0.020	5.000	3.000	1275	102	1.5
		6.00	4	20	0.020	6.000	1.500	1060	85	0.8
		8.00	4	20	0.030	8.000	4.800	795	95	3.7
		10.00	4	20	0.035	10.000	6.000	635	89	5.3
		12.00	4	20	0.045	12.000	7.200	530	95	8.2
		16.00	4	20	0.060	16.000	4.000	400	96	6.1
	Hardened tool steel 42 - 48 HRC	2.00	3	75	0.010	1.000	2.000	11935	358	0.7
		3.00	4	75	0.015	1.500	3.000	7960	478	2.1
		4.00	4	75	0.025	2.000	4.000	5970	597	4.8
		5.00	4	75	0.025	2.500	5.000	4775	478	6.0
		6.00	4	75	0.035	3.000	6.000	3980	557	10.0
		8.00	4	75	0.045	4.000	8.000	2985	537	17.2
		10.00	4	75	0.055	5.000	10.000	2385	525	26.2
		12.00	4	75	0.070	6.000	12.000	1990	557	40.1
		16.00	4	75	0.085	4.000	16.000	1490	507	32.4
	Hardened tool steel 48 - 52 HRC	2.00	3	60	0.010	1.000	2.000	9550	287	0.6
		3.00	4	60	0.015	1.500	3.000	6365	382	1.7
		4.00	4	60	0.020	2.000	4.000	4775	382	3.1
		5.00	4	60	0.030	2.500	5.000	3820	458	5.7
		6.00	4	60	0.035	3.000	6.000	3185	446	8.0
		8.00	4	60	0.045	4.000	8.000	2385	429	13.7
		10.00	4	60	0.055	5.000	10.000	1910	420	21.0
		12.00	4	60	0.065	6.000	12.000	1590	413	29.8
		16.00	4	60	0.090	4.000	16.000	1195	430	27.5
	Hardened tool steel 52 - 56 HRC	2.00	3	30	0.010	1.000	2.000	4775	143	0.3
		3.00	4	30	0.015	1.500	3.000	3185	191	0.9
		4.00	4	30	0.020	2.000	4.000	2385	191	1.5
		5.00	4	30	0.020	2.500	5.000	1910	153	1.9
		6.00	4	30	0.025	3.000	6.000	1590	159	2.9
		8.00	4	30	0.035	4.000	8.000	1195	167	5.4
		10.00	4	30	0.045	5.000	10.000	955	172	8.6
		12.00	4	30	0.055	6.000	12.000	795	175	12.6
		16.00	4	30	0.070	4.000	16.000	595	167	10.7
	Hardened tool steel 56 - 60 HRC	2.00	3	15	0.006	1.000	2.000	2385	43	0.1
		3.00	4	15	0.009	1.500	3.000	1590	57	0.3
		4.00	4	15	0.013	2.000	4.000	1195	62	0.5
		5.00	4	15	0.016	2.500	5.000	955	61	0.8
		6.00	4	15	0.019	3.000	6.000	795	60	1.1
		8.00	4	15	0.025	4.000	8.000	595	60	1.9
		10.00	4	15	0.031	5.000	10.000	475	59	2.9
		12.00	4	15	0.038	6.000	12.000	400	61	4.4
		16.00	4	15	0.050	4.000	16.000	300	60	3.8

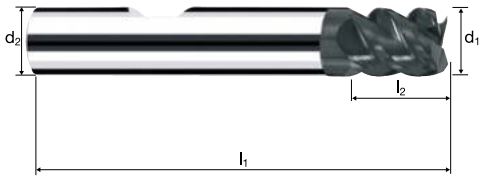
Cylindrical end mills HX

Smooth-edged, short version

HM MG10

λ **55°**
γ **-10°**

45°



Roughing

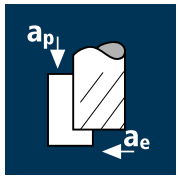
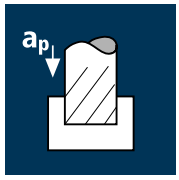
Finishing

ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5349** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	DURO-S D5349 / D5249	POLYCHROM P5349 / P5249
100	1.00	6.00	50	1.00	11.79	0.04	13.0°	3	●	●
108	1.20	6.00	50	1.20	11.82	0.04	12.5°	3	●	●
120	1.50	6.00	50	1.50	11.56	0.04	12.0°	3	●	●
140	2.00	6.00	50	2.00	11.12	0.05	11.0°	3	●	●
148	2.20	6.00	50	2.20	11.45	0.05	10.0°	3	●	●
160	2.50	6.00	50	2.50	11.19	0.05	9.5°	3	●	●
180	3.00	6.00	50	3.00	10.76	0.05	8.5°	4	●	●
220	4.00	6.00	54	4.00	9.89	0.05	6.5°	4	●	●
260	5.00	6.00	54	5.00	9.02	0.10	3.5°	4	●	●
300	6.00	6.00	54	7.00	-	0.10	0.0°	4	●	●
391	8.00	8.00	58	9.00	-	0.10	0.0°	4	●	●
450	10.00	10.00	66	11.00	-	0.15	0.0°	4	●	●
501	12.00	12.00	73	13.00	-	0.15	0.0°	4	●	●
610	16.00	16.00	82	17.00	-	0.15	0.0°	4	●	●

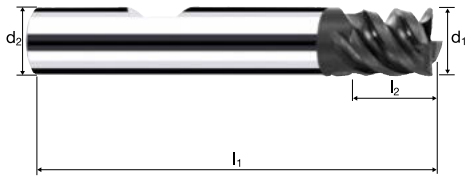
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	80	0.015	3.000	1.800	8490	509	2.8
		4.00	4	80	0.020	4.000	2.400	6365	509	4.9
		5.00	4	80	0.025	5.000	3.000	5095	510	7.6
		6.00	4	80	0.030	6.000	3.600	4245	509	11.0
		8.00	4	80	0.040	8.000	4.800	3185	510	19.6
		10.00	4	80	0.050	10.000	6.000	2545	509	30.5
		12.00	4	80	0.060	12.000	7.200	2120	509	44.0
		16.00	4	80	0.075	16.000	6.400	1590	477	48.8
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	3.00	4	40	0.015	3.000	1.800	4245	255	1.4
		4.00	4	40	0.020	4.000	2.400	3185	255	2.4
		5.00	4	40	0.025	5.000	3.000	2545	255	3.8
		6.00	4	40	0.030	6.000	3.600	2120	254	5.5
		8.00	4	40	0.040	8.000	4.800	1590	254	9.8
		10.00	4	40	0.050	10.000	6.000	1275	255	15.3
		12.00	4	40	0.060	12.000	7.200	1060	254	22.0
		16.00	4	40	0.075	16.000	6.400	795	239	24.4
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	25	0.015	3.000	1.800	2655	159	0.9
		4.00	4	25	0.020	4.000	2.400	1990	159	1.5
		5.00	4	25	0.025	5.000	3.000	1590	159	2.4
		6.00	4	25	0.030	6.000	3.600	1325	159	3.4
		8.00	4	25	0.035	8.000	4.800	995	139	5.3
		10.00	4	25	0.045	10.000	6.000	795	143	8.6
		12.00	4	25	0.050	12.000	7.200	665	133	11.5
		16.00	4	25	0.060	16.000	6.400	495	119	12.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	15	0.015	3.000	1.800	1590	95	0.5
		4.00	4	15	0.020	4.000	2.400	1195	96	0.9
		5.00	4	15	0.025	5.000	3.000	955	96	1.4
		6.00	4	15	0.030	6.000	3.600	795	95	2.1
		8.00	4	15	0.035	8.000	4.800	595	83	3.2
		10.00	4	15	0.045	10.000	6.000	475	86	5.1
		12.00	4	15	0.050	12.000	7.200	400	80	6.9
		16.00	4	15	0.060	16.000	6.400	300	72	7.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	60	0.015	2.100	3.000	6365	382	2.4
		4.00	4	60	0.020	2.800	4.000	4775	382	4.3
		5.00	4	60	0.025	3.500	5.000	3820	382	6.7
		6.00	4	60	0.030	4.200	6.000	3185	382	9.6
		8.00	4	60	0.040	5.600	8.000	2385	382	17.1
		10.00	4	60	0.045	7.000	10.000	1910	344	24.1
		12.00	4	60	0.045	8.400	12.000	1590	286	28.8
		16.00	4	60	0.065	6.400	16.000	1195	311	31.8
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	3.00	4	30	0.015	2.100	3.000	3185	191	1.2
		4.00	4	30	0.020	2.800	4.000	2385	191	2.1
		5.00	4	30	0.025	3.500	5.000	1910	191	3.3
		6.00	4	30	0.030	4.200	6.000	1590	191	4.8
		8.00	4	30	0.040	5.600	8.000	1195	191	8.6
		10.00	4	30	0.045	7.000	10.000	955	172	12.0
		12.00	4	30	0.045	8.400	12.000	795	143	14.4
		16.00	4	30	0.065	6.400	16.000	595	155	15.8
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	20	0.015	2.100	3.000	2120	127	0.8
		4.00	4	20	0.020	2.800	4.000	1590	127	1.4
		5.00	4	20	0.025	3.500	5.000	1275	128	2.2
		6.00	4	20	0.030	4.200	6.000	1060	127	3.2
		8.00	4	20	0.035	5.600	8.000	795	111	5.0
		10.00	4	20	0.045	7.000	10.000	635	114	8.0
		12.00	4	20	0.045	8.400	12.000	530	95	9.6
		16.00	4	20	0.060	6.400	16.000	400	96	9.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm^2 [Inconel 718]	3.00	4	10	0.015	2.100	3.000	1060	64	0.4
		4.00	4	10	0.020	2.800	4.000	795	64	0.7
		5.00	4	10	0.025	3.500	5.000	635	64	1.1
		6.00	4	10	0.030	4.200	6.000	530	64	1.6
		8.00	4	10	0.035	5.600	8.000	400	56	2.5
		10.00	4	10	0.045	7.000	10.000	320	58	4.0
		12.00	4	10	0.045	8.400	12.000	265	48	4.8
		16.00	4	10	0.060	6.400	16.000	200	48	4.9

Cylindrical end mills SX

Smooth-edged, short version

HM MG10 | λ **55°** γ **15°**

45°



Roughing

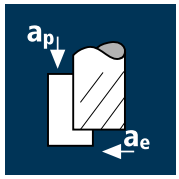
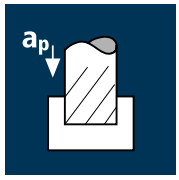
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Inox** Stainless | **Ti** Titanium | **Nickel-Alloys Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **5313** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5313	POLYCHROM P5213
180	3.00	6.00	50	3.00	10.76	0.05	8.5°	4		●
220	4.00	6.00	54	4.00	9.89	0.05	6.5°	4		●
260	5.00	6.00	54	5.00	9.02	0.10	3.5°	4		●
300	6.00	6.00	54	7.00	-	0.10	0.0°	4		●
391	8.00	8.00	58	9.00	-	0.10	0.0°	4		●
450	10.00	10.00	66	11.00	-	0.15	0.0°	4		●
501	12.00	12.00	73	13.00	-	0.15	0.0°	4		●
610	16.00	16.00	82	17.00	-	0.15	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	170	0.020	3.000	1.400	18040	1443	6.1
		4.00	4	170	0.025	4.000	1.800	13530	1353	9.7
		5.00	4	170	0.035	5.000	2.300	10825	1516	17.4
		6.00	4	170	0.040	6.000	2.700	9020	1443	23.4
		8.00	4	170	0.055	8.000	3.600	6765	1488	42.9
		10.00	4	170	0.070	10.000	4.500	5410	1515	68.2
		12.00	4	170	0.075	12.000	5.400	4510	1353	87.7
		16.00	4	170	0.100	16.000	4.000	3380	1352	86.5
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	3.000	1.400	14855	1188	5.0
		4.00	4	140	0.025	4.000	1.800	11140	1114	8.0
		5.00	4	140	0.035	5.000	2.300	8915	1248	14.4
		6.00	4	140	0.040	6.000	2.700	7425	1188	19.2
		8.00	4	140	0.055	8.000	3.600	5570	1225	35.3
		10.00	4	140	0.070	10.000	4.500	4455	1247	56.1
		12.00	4	140	0.075	12.000	5.400	3715	1115	72.2
		16.00	4	140	0.100	16.000	4.000	2785	1114	71.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	3.000	1.400	7425	594	2.5
		4.00	4	70	0.025	4.000	1.800	5570	557	4.0
		5.00	4	70	0.030	5.000	2.300	4455	535	6.1
		6.00	4	70	0.040	6.000	2.700	3715	594	9.6
		8.00	4	70	0.050	8.000	3.600	2785	557	16.0
		10.00	4	70	0.065	10.000	4.500	2230	580	26.1
		12.00	4	70	0.075	12.000	5.400	1855	557	36.1
		16.00	4	70	0.095	16.000	4.000	1395	530	33.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.015	3.000	1.400	9550	573	2.4
		4.00	4	90	0.020	4.000	1.800	7160	573	4.1
		5.00	4	90	0.020	5.000	2.300	5730	458	5.3
		6.00	4	90	0.030	6.000	2.700	4775	573	9.3
		8.00	4	90	0.035	8.000	3.600	3580	501	14.4
		10.00	4	90	0.045	10.000	4.500	2865	516	23.2
		12.00	4	90	0.055	12.000	5.400	2385	525	34.0
		16.00	4	90	0.065	16.000	4.000	1790	465	29.8
	Steel < 850 N/mm²	3.00	4	135	0.015	2.400	3.000	14325	860	6.2
		4.00	4	135	0.020	3.200	4.000	10745	860	11.0
		5.00	4	135	0.030	4.000	5.000	8595	1031	20.6
		6.00	4	135	0.035	4.800	6.000	7160	1002	28.9
		8.00	4	135	0.045	6.400	8.000	5370	967	49.5
		10.00	4	135	0.055	8.000	10.000	4295	945	75.6
		12.00	4	135	0.060	9.600	12.000	3580	859	99.0
		16.00	4	135	0.075	6.600	16.000	2685	806	85.1
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	2.400	3.000	11140	668	4.8
		4.00	4	105	0.020	3.200	4.000	8355	668	8.6
		5.00	4	105	0.030	4.000	5.000	6685	802	16.0
		6.00	4	105	0.035	4.800	6.000	5570	780	22.5
		8.00	4	105	0.045	6.400	8.000	4180	752	38.5
		10.00	4	105	0.055	8.000	10.000	3340	735	58.8
		12.00	4	105	0.060	9.600	12.000	2785	668	77.0
		16.00	4	105	0.075	6.400	16.000	2090	627	64.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	2.400	3.000	5835	350	2.5
		4.00	4	55	0.020	3.200	4.000	4375	350	4.5
		5.00	4	55	0.030	4.000	5.000	3500	420	8.4
		6.00	4	55	0.035	3.000	6.000	2920	409	7.4
		8.00	4	55	0.045	4.000	8.000	2190	394	12.6
		10.00	4	55	0.055	5.000	10.000	1750	385	19.3
		12.00	4	55	0.060	6.000	12.000	1460	350	25.2
		16.00	4	55	0.075	4.000	16.000	1095	329	21.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	70	0.010	2.400	3.000	7425	297	2.1
		4.00	4	70	0.015	3.200	4.000	5570	334	4.3
		5.00	4	70	0.025	4.000	5.000	4455	446	8.9
		6.00	4	70	0.030	4.800	6.000	3715	446	12.8
		8.00	4	70	0.035	6.400	8.000	2785	390	20.0
		10.00	4	70	0.045	8.000	10.000	2230	401	32.1
		12.00	4	70	0.050	9.600	12.000	1855	371	42.7
		16.00	4	70	0.060	6.400	16.000	1395	335	34.3

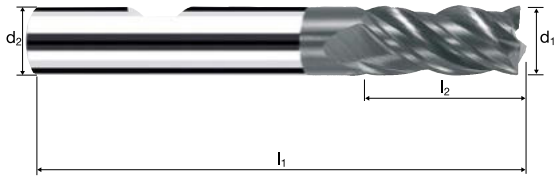
Cylindrical end mills

Smooth-edged, short version

HM MG10	λ 40° γ 0°

45°

Vario



Roughing

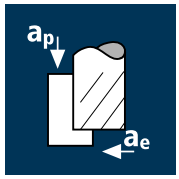
Finishing

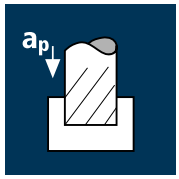
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **5329** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5329	P5229
180	3.00	6.00	50	6.00	13.56	0.05	7.0°	4		●
220	4.00	6.00	50	8.00	14.09	0.05	4.5°	4		●
260	5.00	6.00	50	9.00	13.22	0.10	2.5°	4		●
300	6.00	6.00	50	10.00	-	0.10	0.0°	4		●
391	8.00	8.00	54	13.00	-	0.10	0.0°	4		●
450	10.00	10.00	63	16.00	-	0.15	0.0°	4		●
501	12.00	12.00	73	19.00	-	0.15	0.0°	4		●
610	16.00	16.00	82	25.00	-	0.15	0.0°	4		●

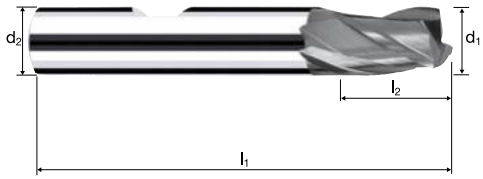
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	1.50	3	170	0.010	1.800	0.200	36075	1082
		2.00	3	170	0.015	2.400	0.200	27055	1218
		2.50	3	170	0.015	3.000	0.300	21645	974
		3.00	3	170	0.020	3.600	0.300	18040	1082
		4.00	3	170	0.025	4.800	0.400	13530	1015
		5.00	3	170	0.035	6.000	0.500	10825	1137
		6.00	3	170	0.040	7.200	0.600	9020	1082
		8.00	3	170	0.055	9.600	0.800	6765	1116
		10.00	3	170	0.065	12.000	1.000	5410	1055
	Steel 850 - 1100 N/mm²	1.50	3	130	0.010	1.800	0.200	27585	828
		2.00	3	130	0.015	2.400	0.200	20690	931
		2.50	3	130	0.015	3.000	0.300	16550	745
		3.00	3	130	0.020	3.600	0.300	13795	828
		4.00	3	130	0.025	4.800	0.400	10345	776
		5.00	3	130	0.035	6.000	0.500	8275	869
		6.00	3	130	0.040	7.200	0.600	6895	827
		8.00	3	130	0.050	9.600	0.800	5175	776
		10.00	3	130	0.060	12.000	1.000	4140	745
	Titanium alloys > 300 HB [Ti6Al4V]	1.50	3	50	0.005	1.800	0.200	10610	159
		2.00	3	50	0.010	2.400	0.200	7960	239
		2.50	3	50	0.010	3.000	0.300	6365	191
		3.00	3	50	0.010	3.600	0.300	5305	159
		4.00	3	50	0.015	4.800	0.400	3980	179
		5.00	3	50	0.020	6.000	0.500	3185	191
		6.00	3	50	0.020	7.200	0.600	2655	159
		8.00	3	50	0.030	9.600	0.800	1990	179
		10.00	3	50	0.035	12.000	1.000	1590	167
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.50	3	80	0.005	1.800	0.200	16975	255
		2.00	3	80	0.010	2.400	0.200	12730	382
		2.50	3	80	0.010	3.000	0.300	10185	306
		3.00	3	80	0.015	3.600	0.300	8490	382
		4.00	3	80	0.020	4.800	0.400	6365	382
		5.00	3	80	0.025	6.000	0.500	5095	382
		6.00	3	80	0.030	7.200	0.600	4245	382
		8.00	3	80	0.040	9.600	0.800	3185	382
		10.00	3	80	0.045	12.000	1.000	2545	344

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	1.50	3	130	0.010	0.600	1.500	27585	828	0.7
		2.00	3	130	0.010	0.800	2.000	20690	621	1.0
		2.50	3	130	0.015	1.000	2.500	16550	745	1.9
		3.00	3	130	0.015	1.200	3.000	13795	621	2.2
		4.00	3	130	0.020	1.600	4.000	10345	621	4.0
		5.00	3	130	0.030	2.000	5.000	8275	745	7.4
		6.00	3	130	0.035	2.400	6.000	6895	724	10.4
		8.00	3	130	0.045	3.200	8.000	5175	699	17.9
		10.00	3	130	0.055	4.000	10.000	4140	683	27.3
	Steel 850 - 1100 N/mm²	1.50	3	85	0.010	0.600	1.500	18040	541	0.5
		2.00	3	85	0.010	0.800	2.000	13530	406	0.6
		2.50	3	85	0.015	1.000	2.500	10825	487	1.2
		3.00	3	85	0.015	1.200	3.000	9020	406	1.5
		4.00	3	85	0.020	1.600	4.000	6765	406	2.6
		5.00	3	85	0.030	2.000	5.000	5410	487	4.9
		6.00	3	85	0.035	2.400	6.000	4510	474	6.8
		8.00	3	85	0.045	3.200	8.000	3380	456	11.7
		10.00	3	85	0.050	4.000	10.000	2705	406	16.2
	Titanium alloys > 300 HB [Ti6Al4V]	1.50	3	40	0.005	0.600	1.500	8490	127	0.1
		2.00	3	40	0.005	0.800	2.000	6365	96	0.2
		2.50	3	40	0.010	1.000	2.500	5095	153	0.4
		3.00	3	40	0.010	1.200	3.000	4245	127	0.5
		4.00	3	40	0.010	1.600	4.000	3185	96	0.6
		5.00	3	40	0.015	2.000	5.000	2545	115	1.1
		6.00	3	40	0.020	2.400	6.000	2120	127	1.8
		8.00	3	40	0.025	3.200	8.000	1590	119	3.1
		10.00	3	40	0.030	4.000	10.000	1275	115	4.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.50	3	55	0.005	0.600	1.500	11670	175	0.2
		2.00	3	55	0.005	0.800	2.000	8755	131	0.2
		2.50	3	55	0.010	1.000	2.500	7005	210	0.5
		3.00	3	55	0.010	1.200	3.000	5835	175	0.6
		4.00	3	55	0.015	1.600	4.000	4375	197	1.3
		5.00	3	55	0.020	2.000	5.000	3500	210	2.1
		6.00	3	55	0.025	2.400	6.000	2920	219	3.2
		8.00	3	55	0.030	3.200	8.000	2190	197	5.0
		10.00	3	55	0.040	4.000	10.000	1750	210	8.4

Cylindrical end mills

Smooth-edged, short version

HM MG10	λ 30° γ 12°
90°	



Roughing

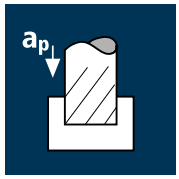
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **5036** ø-Code **120**

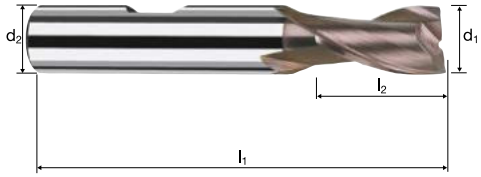
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5036
120	1.50	6.00	50	5.00	13.92	9.0°	3	●
140	2.00	6.00	50	5.00	13.15	8.5°	3	●
160	2.50	6.00	50	5.00	12.88	8.0°	3	●
180	3.00	6.00	50	6.00	13.96	6.5°	3	●
200	3.50	6.00	50	8.00	14.34	5.0°	3	●
220	4.00	6.00	50	8.00	14.59	4.5°	3	●
240	4.50	6.00	50	8.00	13.66	3.5°	3	●
260	5.00	6.00	50	9.00	13.72	2.5°	3	●
300	6.00	6.00	50	10.00	-	0.0°	3	●
331	7.00	8.00	54	10.00	14.72	2.5°	3	●
391	8.00	8.00	54	12.00	-	0.0°	3	●
420	9.00	10.00	63	12.00	16.72	2.0°	3	●
450	10.00	10.00	63	13.00	-	0.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	1.00	2	40	0.002	0.500	1.000	12730	51
		2.00	2	40	0.004	1.000	2.000	6365	51
		3.00	2	40	0.006	1.500	3.000	4245	51
		4.00	2	40	0.008	2.000	4.000	3185	51
		5.00	2	40	0.012	2.500	5.000	2545	61
		6.00	2	40	0.014	3.000	6.000	2120	59
		8.00	2	40	0.018	4.000	8.000	1590	57
		9.00	2	40	0.020	4.500	9.000	1415	57
		10.00	2	40	0.022	5.000	10.000	1275	56
	Steel 850 - 1100 N/mm²	1.00	2	36	0.002	0.500	1.000	11460	46
		2.00	2	36	0.004	1.000	2.000	5730	46
		3.00	2	36	0.006	1.500	3.000	3820	46
		4.00	2	36	0.008	2.000	4.000	2865	46
		5.00	2	36	0.012	2.500	5.000	2290	55
		6.00	2	36	0.014	3.000	6.000	1910	54
		8.00	2	36	0.018	4.000	8.000	1430	52
		9.00	2	36	0.020	4.500	9.000	1275	51
		10.00	2	36	0.022	5.000	10.000	1145	50
	Steel 1100 - 1300 N/mm²	1.00	2	28	0.002	0.500	1.000	8915	36
		2.00	2	28	0.004	1.000	2.000	4455	36
		3.00	2	28	0.006	1.500	3.000	2970	36
		4.00	2	28	0.008	2.000	4.000	2230	36
		5.00	2	28	0.012	2.500	5.000	1785	43
		6.00	2	28	0.014	3.000	6.000	1485	42
		8.00	2	28	0.018	4.000	8.000	1115	40
		9.00	2	28	0.020	4.500	9.000	990	40
		10.00	2	28	0.022	5.000	10.000	890	39
	Cold work tool steel (12% Cr), high alloyed [1.2379]	1.00	2	25	0.002	0.500	1.000	7960	32
		2.00	2	25	0.004	1.000	2.000	3980	32
		3.00	2	25	0.006	1.500	3.000	2655	32
		4.00	2	25	0.008	2.000	4.000	1990	32
		5.00	2	25	0.012	2.500	5.000	1590	38
		6.00	2	25	0.014	3.000	6.000	1325	37
		8.00	2	25	0.018	4.000	8.000	995	36
		9.00	2	25	0.020	4.500	9.000	885	35
		10.00	2	25	0.022	5.000	10.000	795	35
	Cast iron (lamellar / spheroidal)	1.00	2	34	0.002	0.500	1.000	10825	43
		2.00	2	34	0.004	1.000	2.000	5410	43
		3.00	2	34	0.006	1.500	3.000	3610	43
		4.00	2	34	0.008	2.000	4.000	2705	43
		5.00	2	34	0.012	2.500	5.000	2165	52
		6.00	2	34	0.014	3.000	6.000	1805	51
		8.00	2	34	0.018	4.000	8.000	1355	49
		9.00	2	34	0.020	4.500	9.000	1205	48
		10.00	2	34	0.022	5.000	10.000	1080	48
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	18	0.002	0.500	1.000	5730	23
		2.00	2	18	0.004	1.000	2.000	2865	23
		3.00	2	18	0.006	1.500	3.000	1910	23
		4.00	2	18	0.008	2.000	4.000	1430	23
		5.00	2	18	0.012	2.500	5.000	1145	28
		6.00	2	18	0.014	3.000	6.000	955	27
		8.00	2	18	0.018	4.000	8.000	715	26
		9.00	2	18	0.020	4.500	9.000	635	25
		10.00	2	18	0.022	5.000	10.000	575	25
	Unalloyed copper	1.00	2	80	0.002	0.500	1.000	25465	102
		2.00	2	80	0.004	1.000	2.000	12730	102
		3.00	2	80	0.006	1.500	3.000	8490	102
		4.00	2	80	0.008	2.000	4.000	6365	102
		5.00	2	80	0.012	2.500	5.000	5095	122
		6.00	2	80	0.014	3.000	6.000	4245	119
		8.00	2	80	0.018	4.000	8.000	3185	115
		9.00	2	80	0.020	4.500	9.000	2830	113
		10.00	2	80	0.022	5.000	10.000	2545	112
	Wrought aluminium Construction aluminium	1.00	2	100	0.002	0.500	1.000	31830	127
		2.00	2	100	0.004	1.000	2.000	15915	127
		3.00	2	100	0.006	1.500	3.000	10610	127
		4.00	2	100	0.008	2.000	4.000	7960	127
		5.00	2	100	0.012	2.500	5.000	6365	153
		6.00	2	100	0.014	3.000	6.000	5305	149
		8.00	2	100	0.018	4.000	8.000	3980	143
		9.00	2	100	0.020	4.500	9.000	3535	141
		10.00	2	100	0.022	5.000	10.000	3185	140

Cylindrical end mills

Smooth-edged, short version

HSS-E Co8	λ 30° γ 15°
90°	



Roughing

Finishing

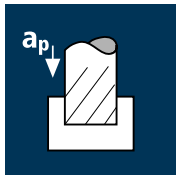
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0700** ø-Code **100**

Ø Code	d_1 h8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0700
100	1.00	6.00	47	3.00	10.48	14.0°	2	●
120	1.50	6.00	47	3.00	9.99	13.0°	2	●
140*	2.00	6.00	48	4.00	10.71	11.0°	2	●
160	2.50	6.00	49	5.00	12.50	8.0°	2	●
180*	3.00	6.00	49	5.00	12.50	7.0°	2	●
200	3.50	6.00	50	6.00	13.50	5.5°	2	●
220*	4.00	6.00	51	7.00	14.50	4.0°	2	●
240	4.50	6.00	51	7.00	14.50	3.0°	2	●
260*	5.00	6.00	52	8.00	15.50	2.0°	2	●
280	5.50	6.00	52	8.00	15.50	1.0°	2	●
300*	6.00	6.00	52	8.00	-	0.0°	2	●
322	6.50	10.00	60	10.00	19.50	5.5°	2	●
331	7.00	8.00	54	10.00	17.50	2.0°	2	●
362	7.50	10.00	60	10.00	19.50	4.0°	2	●
391*	8.00	8.00	55	11.00	-	0.0°	2	●
410	8.50	10.00	61	11.00	20.50	2.5°	2	●
420	9.00	10.00	61	11.00	20.50	1.5°	2	●
440	9.70	10.00	63	13.00	22.50	0.0°	2	●
450*	10.00	10.00	63	13.00	-	0.0°	2	●

* d1 tolerance for keyway P9

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	11.00	2	40	0.024	5.500	11.000	1155	55
		12.00	2	40	0.026	6.000	12.000	1060	55
		13.00	2	40	0.028	6.500	13.000	980	55
		14.00	2	40	0.032	7.000	14.000	910	58
		16.00	2	40	0.036	8.000	16.000	795	57
		18.00	2	40	0.040	9.000	18.000	705	56
		20.00	2	40	0.044	10.000	20.000	635	56
		22.00	2	40	0.048	11.000	22.000	580	56
		25.00	2	40	0.056	12.500	25.000	510	57
	Steel 850 - 1100 N/mm²	11.00	2	36	0.024	5.500	11.000	1040	50
		12.00	2	36	0.026	6.000	12.000	955	50
		13.00	2	36	0.028	6.500	13.000	880	49
		14.00	2	36	0.032	7.000	14.000	820	53
		16.00	2	36	0.036	8.000	16.000	715	52
		18.00	2	36	0.040	9.000	18.000	635	51
		20.00	2	36	0.044	10.000	20.000	575	51
		22.00	2	36	0.048	11.000	22.000	520	50
		25.00	2	36	0.056	12.500	25.000	460	52
	Steel 1100 - 1300 N/mm²	11.00	2	28	0.024	5.500	11.000	810	39
		12.00	2	28	0.026	6.000	12.000	745	39
		13.00	2	28	0.028	6.500	13.000	685	38
		14.00	2	28	0.032	7.000	14.000	635	41
		16.00	2	28	0.036	8.000	16.000	555	40
		18.00	2	28	0.040	9.000	18.000	495	40
		20.00	2	28	0.044	10.000	20.000	445	39
		22.00	2	28	0.048	11.000	22.000	405	39
		25.00	2	28	0.056	12.500	25.000	355	40
	Cold work tool steel (12% Cr), high alloyed [1.2379]	11.00	2	25	0.024	5.500	11.000	725	35
		12.00	2	25	0.026	6.000	12.000	665	35
		13.00	2	25	0.028	6.500	13.000	610	34
		14.00	2	25	0.032	7.000	14.000	570	37
		16.00	2	25	0.036	8.000	16.000	495	36
		18.00	2	25	0.040	9.000	18.000	440	35
		20.00	2	25	0.044	10.000	20.000	400	35
		22.00	2	25	0.048	11.000	22.000	360	35
		25.00	2	25	0.056	12.500	25.000	320	36
	Cast iron (lamellar / spheroidal)	11.00	2	34	0.024	5.500	11.000	985	47
		12.00	2	34	0.026	6.000	12.000	900	47
		13.00	2	34	0.028	6.500	13.000	835	47
		14.00	2	34	0.032	7.000	14.000	775	50
		16.00	2	34	0.036	8.000	16.000	675	49
		18.00	2	34	0.040	9.000	18.000	600	48
		20.00	2	34	0.044	10.000	20.000	540	48
		22.00	2	34	0.048	11.000	22.000	490	47
		25.00	2	34	0.056	12.500	25.000	435	49
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	11.00	2	18	0.024	5.500	11.000	520	25
		12.00	2	18	0.026	6.000	12.000	475	25
		13.00	2	18	0.028	6.500	13.000	440	25
		14.00	2	18	0.032	7.000	14.000	410	26
		16.00	2	18	0.036	8.000	16.000	360	26
		18.00	2	18	0.040	9.000	18.000	320	26
		20.00	2	18	0.044	10.000	20.000	285	25
		22.00	2	18	0.048	11.000	22.000	260	25
		25.00	2	18	0.056	12.500	25.000	230	26
	Unalloyed copper	11.00	2	80	0.024	5.500	11.000	2315	111
		12.00	2	80	0.026	6.000	12.000	2120	110
		13.00	2	80	0.028	6.500	13.000	1960	110
		14.00	2	80	0.032	7.000	14.000	1820	117
		16.00	2	80	0.036	8.000	16.000	1590	115
		18.00	2	80	0.040	9.000	18.000	1415	113
		20.00	2	80	0.044	10.000	20.000	1275	112
		22.00	2	80	0.048	11.000	22.000	1155	111
		25.00	2	80	0.056	12.500	25.000	1020	114
	Wrought aluminium Construction aluminium	11.00	2	100	0.024	5.500	11.000	2895	139
		12.00	2	100	0.026	6.000	12.000	2655	138
		13.00	2	100	0.028	6.500	13.000	2450	137
		14.00	2	100	0.032	7.000	14.000	2275	146
		16.00	2	100	0.036	8.000	16.000	1990	143
		18.00	2	100	0.040	9.000	18.000	1770	142
		20.00	2	100	0.044	10.000	20.000	1590	140
		22.00	2	100	0.048	11.000	22.000	1445	139
		25.00	2	100	0.056	12.500	25.000	1275	143

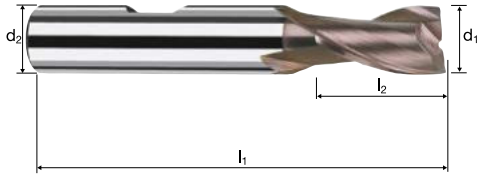
Cylindrical end mills

Smooth-edged, short version

HSS-E Co8

λ **30°**
γ **15°**

90°



Roughing

Finishing

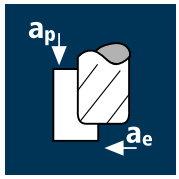
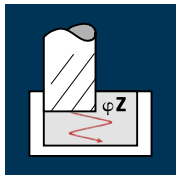
ReTool®

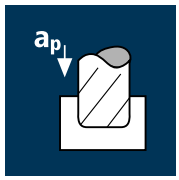
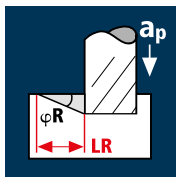
Rm < 850	**Rm** 850-1100	**Rm** 1100-1300					**Inox** Stainless	**Ti** Titanium	**GG(G) Aluminium Copper**

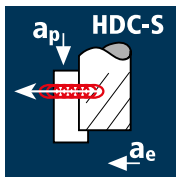
Example: **Order-N°.** Coating **U** Article-N°. **0700** ø-Code **460**

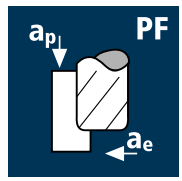
Ø Code	d_1 h8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0700
460	10.50	12.00	70	13.00	24.50	2.0°	2	●
470	11.00	12.00	70	13.00	24.50	1.5°	2	●
501*	12.00	12.00	73	16.00	-	0.0°	2	●
540	13.00	12.00	73	16.00	-	0.0°	2	●
570*	14.00	12.00	73	16.00	-	0.0°	2	●
581	15.00	12.00	73	16.00	-	0.0°	2	●
610*	16.00	16.00	79	19.00	-	0.0°	2	●
620	17.00	16.00	79	19.00	-	0.0°	2	●
640*	18.00	16.00	79	19.00	-	0.0°	2	●
650	19.00	16.00	79	19.00	-	0.0°	2	●
682*	20.00	20.00	88	22.00	-	0.0°	2	●
710*	22.00	20.00	88	22.00	-	0.0°	2	●
772*	25.00	25.00	102	26.00	-	0.0°	2	●

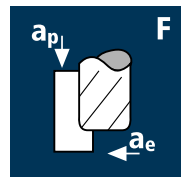
* d1 tolerance for keyway P9

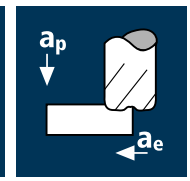
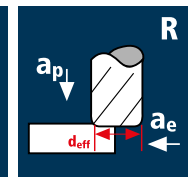
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC H	3.00	4	60	0.012	4.500	1.800	6365	306	2.5	5.0°
		4.00	4	60	0.017	6.000	2.400	4775	325	4.7	5.0°
		5.00	4	60	0.022	7.500	3.000	3820	336	7.6	5.0°
		6.00	4	60	0.027	9.000	3.600	3185	344	11.1	5.0°
		8.00	4	60	0.035	12.000	4.800	2385	334	19.2	5.0°
		10.00	4	60	0.045	15.000	6.000	1910	344	30.9	5.0°
		12.00	4	60	0.055	18.000	7.200	1590	350	45.3	5.0°
		16.00	4	60	0.065	24.000	9.600	1195	311	71.6	5.0°
	Hardened tool steel > 60 HRC H	3.00	4	25	0.006	3.750	1.800	2655	64	0.4	3.0°
		4.00	4	25	0.008	5.000	2.400	1990	64	0.8	4.0°
		5.00	4	25	0.010	6.250	3.000	1590	64	1.2	5.0°
		6.00	4	25	0.012	7.500	3.600	1325	64	1.7	5.0°
		8.00	4	25	0.015	10.000	4.800	995	60	2.9	5.0°
		10.00	4	25	0.020	12.500	6.000	795	64	4.8	5.0°
		12.00	4	25	0.025	15.000	7.200	665	67	7.2	5.0°
		16.00	4	25	0.030	20.000	9.600	495	59	11.4	5.0°
	High speed steel, hardened 64 - 70 HRC H	3.00	4	15	0.005	3.000	0.750	1590	32	0.1	3.0°
		4.00	4	15	0.009	4.000	1.000	1195	43	0.2	4.0°
		5.00	4	15	0.012	5.000	1.250	955	46	0.3	5.0°
		6.00	4	15	0.009	6.000	3.600	795	29	0.6	5.0°
		8.00	4	15	0.012	8.000	4.800	595	29	1.1	5.0°
		10.00	4	15	0.015	10.000	6.000	475	29	1.7	5.0°
		12.00	4	15	0.018	12.000	7.200	400	29	2.5	5.0°
		16.00	4	15	0.023	16.000	9.600	300	28	4.2	5.0°

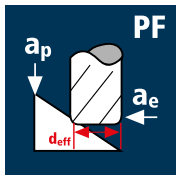
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC H	3.00	4	50	0.013	3.000	3.000	5305	276	2.5	5.0°	34.3
		4.00	4	50	0.017	4.000	4.000	3980	271	4.3	5.0°	45.7
		5.00	4	50	0.022	5.000	5.000	3185	280	7.0	5.0°	57.2
		6.00	4	50	0.027	6.000	6.000	2655	287	10.3	5.0°	68.6
		8.00	4	50	0.035	8.000	8.000	1990	279	17.8	5.0°	91.4
		10.00	4	50	0.045	10.000	10.000	1590	286	28.6	5.0°	114.3
		12.00	4	50	0.055	12.000	12.000	1325	292	42.0	5.0°	137.2
		16.00	4	50	0.080	8.000	16.000	995	318	40.8	5.0°	91.4
	Hardened tool steel > 60 HRC H	3.00	4	20	0.007	3.000	3.000	2120	59	0.5	3.0°	57.2
		4.00	4	20	0.010	4.000	4.000	1590	64	1.0	4.0°	57.2
		5.00	4	20	0.013	5.000	5.000	1275	66	1.7	5.0°	57.2
		6.00	4	20	0.016	6.000	6.000	1060	68	2.4	5.0°	68.6
		8.00	4	20	0.021	8.000	8.000	795	67	4.3	5.0°	91.4
		10.00	4	20	0.026	10.000	10.000	635	66	6.6	5.0°	114.3
		12.00	4	20	0.032	12.000	12.000	530	68	9.8	5.0°	137.2
		16.00	4	20	0.050	8.000	16.000	400	80	10.2	5.0°	91.4
	High speed steel, hardened 64 - 70 HRC H	3.00	4	10	0.004	1.500	3.000	1060	17	0.1	3.0°	28.6
		4.00	4	10	0.006	2.000	4.000	795	19	0.2	4.0°	28.6
		5.00	4	10	0.008	3.750	5.000	635	20	0.4	5.0°	42.9
		6.00	4	10	0.009	4.500	6.000	530	19	0.5	5.0°	51.4
		8.00	4	10	0.012	6.000	8.000	400	19	0.9	5.0°	68.6
		10.00	4	10	0.015	7.500	10.000	320	19	1.4	5.0°	85.7
		12.00	4	10	0.020	9.000	12.000	265	21	2.3	5.0°	102.9
		16.00	4	10	0.030	8.000	16.000	200	24	3.1	5.0°	91.4

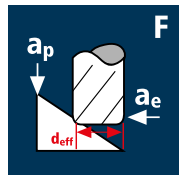


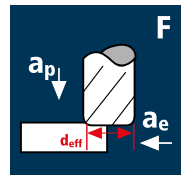


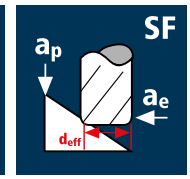










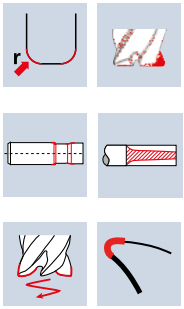
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

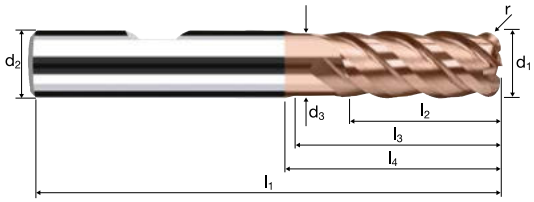
Corner radius end mills HX

Smooth-edged, normal version, short neck
High-performance penetration edge

HM XA

λ **45°**
γ **-10°**





Roughing HPC

Roughing HDC

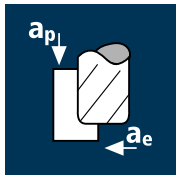
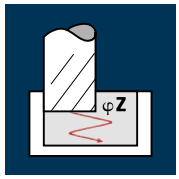
Finishing

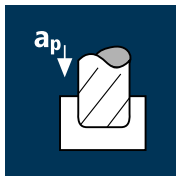
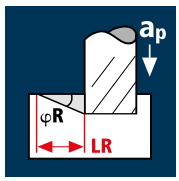
ReTool®

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

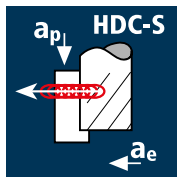
Example:
Order-N°. Coating **H** | Article-N°. **8607** | ø-Code **178**

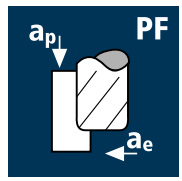
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si H8607	DURO-Si H8507
178	3.00	6.00	2.80	57	8.00	14.00	20.37	0.200	4.5°	4		●
218	4.00	6.00	3.70	57	11.00	16.00	20.82	0.200	3.0°	4		●
258	5.00	6.00	4.60	57	13.00	18.00	21.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	57	13.00	18.15	20.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	63	19.00	23.63	26.00	0.200	0.0°	4		●
445	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	0.0°	4		●
605	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.500	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	22.00	27.99	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	26.00	33.29	37.00	0.500	0.0°	4		●
606	16.00	16.00	15.00	92	32.00	38.73	43.00	0.500	0.0°	4		●

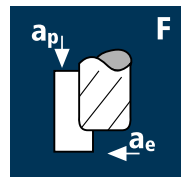
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC	6.00	4	60	0.027	9.000	3.600	3185	344	11.1	5.0°
		8.00	4	60	0.035	12.000	4.800	2385	334	19.2	5.0°
		10.00	4	60	0.045	15.000	6.000	1910	344	30.9	5.0°
		12.00	4	60	0.055	18.000	7.200	1590	350	45.3	5.0°
		16.00	4	60	0.065	24.000	9.600	1195	311	71.6	5.0°
	Hardened tool steel > 60 HRC	6.00	4	25	0.012	7.500	3.600	1325	64	1.7	5.0°
		8.00	4	25	0.015	10.000	4.800	995	60	2.9	5.0°
		10.00	4	25	0.020	12.500	6.000	795	64	4.8	5.0°
		12.00	4	25	0.025	15.000	7.200	665	67	7.2	5.0°
		16.00	4	25	0.030	20.000	9.600	495	59	11.4	5.0°
	High speed steel, hardened 64 - 70 HRC	6.00	4	15	0.009	6.000	3.600	795	29	0.6	5.0°
		8.00	4	15	0.012	8.000	4.800	595	29	1.1	5.0°
		10.00	4	15	0.015	10.000	6.000	475	29	1.7	5.0°
		12.00	4	15	0.018	12.000	7.200	400	29	2.5	5.0°
		16.00	4	15	0.023	16.000	9.600	300	28	4.2	5.0°

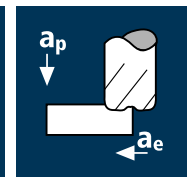
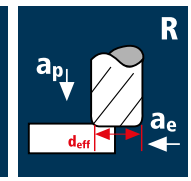
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC	6.00	4	50	0.027	6.000	6.000	2655	287	10.3	5.0°	68.6
		8.00	4	50	0.035	8.000	8.000	1990	279	17.8	5.0°	91.4
		10.00	4	50	0.045	10.000	10.000	1590	286	28.6	5.0°	114.3
		12.00	4	50	0.055	12.000	12.000	1325	292	42.0	5.0°	137.2
		16.00	4	50	0.080	8.000	16.000	995	318	40.8	5.0°	91.4
	Hardened tool steel > 60 HRC	6.00	4	20	0.016	6.000	6.000	1060	68	2.4	5.0°	68.6
		8.00	4	20	0.021	8.000	8.000	795	67	4.3	5.0°	91.4
		10.00	4	20	0.026	10.000	10.000	635	66	6.6	5.0°	114.3
		12.00	4	20	0.032	12.000	12.000	530	68	9.8	5.0°	137.2
		16.00	4	20	0.050	8.000	16.000	400	80	10.2	5.0°	91.4
	High speed steel, hardened 64 - 70 HRC	6.00	4	10	0.009	4.500	6.000	530	19	0.5	5.0°	51.4
		8.00	4	10	0.012	6.000	8.000	400	19	0.9	5.0°	68.6
		10.00	4	10	0.015	7.500	10.000	320	19	1.4	5.0°	85.7
		12.00	4	10	0.020	9.000	12.000	265	21	2.3	5.0°	102.9
		16.00	4	10	0.030	8.000	16.000	200	24	3.1	5.0°	91.4

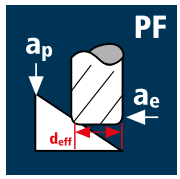
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

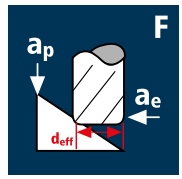


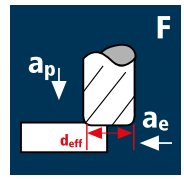


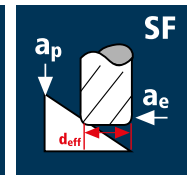








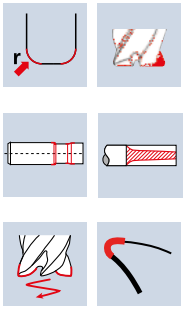


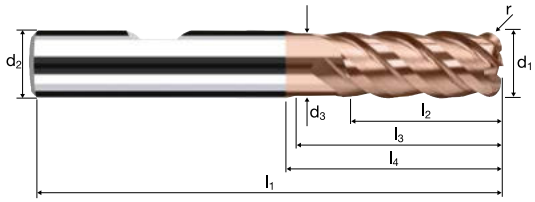
Corner radius end mills HX

Smooth-edged, normal version, short neck
High-performance penetration edge

HM
XA

λ **45°**
γ **-10°**





Roughing HPC

Roughing HDC

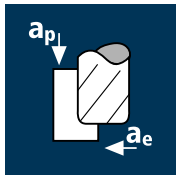
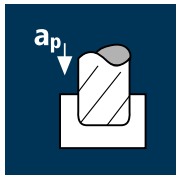
Finishing

ReTool®

HRC 48-56 | **HRC** 56-60 | **HRC** > 60 | **HSS**

Example:
Order-N°. Coating **H** Article-N°. **8607** ø-Code **302**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si **H8607**	DURO-Si **H8507**
302	6.00	6.00	5.50	57	13.00	18.15	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4		●
304	6.00	6.00	5.50	57	13.00	18.15	20.00	1.500	0.0°	4		●
395	8.00	8.00	7.40	63	19.00	23.63	26.00	2.000	0.0°	4		●
457	10.00	10.00	9.20	72	22.00	27.99	31.00	2.500	0.0°	4		●
507	12.00	12.00	11.00	83	26.00	33.29	37.00	3.000	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.025	6.000	1.600	11935	1194	11.5
		5.00	4	150	0.035	7.500	2.000	9550	1337	20.1
		6.00	4	150	0.040	9.000	2.400	7960	1274	27.5
		8.00	4	150	0.055	12.000	3.200	5970	1313	50.4
		10.00	4	150	0.065	15.000	4.000	4775	1242	74.5
		12.00	4	150	0.080	18.000	4.800	3980	1274	110.0
		16.00	4	150	0.090	24.000	6.400	2985	1075	165.1
		20.00	4	150	0.110	30.000	8.000	2385	1049	251.9
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	6.000	1.600	9150	915	8.8
		5.00	4	115	0.035	7.500	2.000	7320	1025	15.4
		6.00	4	115	0.040	9.000	2.400	6100	976	21.1
		8.00	4	115	0.055	12.000	3.200	4575	1007	38.6
		10.00	4	115	0.065	15.000	4.000	3660	952	57.1
		12.00	4	115	0.080	18.000	4.800	3050	976	84.3
		16.00	4	115	0.090	24.000	6.400	2290	824	126.6
		20.00	4	115	0.110	30.000	8.000	1830	805	193.2
	Hardened tool steel 52 - 56 HRC	4.00	4	55	0.015	6.000	1.200	4375	263	1.9
		5.00	4	55	0.018	7.500	1.500	3500	252	2.8
		6.00	4	55	0.021	9.000	1.800	2920	245	4.0
		8.00	4	55	0.027	12.000	2.400	2190	237	6.8
		10.00	4	55	0.036	15.000	3.000	1750	252	11.3
		12.00	4	55	0.042	18.000	3.600	1460	245	15.9
		16.00	4	55	0.048	24.000	4.800	1095	210	24.2
		20.00	4	55	0.060	30.000	6.000	875	210	37.8
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	50	0.015	6.000	1.600	3980	239	2.3
		5.00	4	50	0.020	7.500	2.000	3185	255	3.8
		6.00	4	50	0.020	9.000	2.400	2655	212	4.6
		8.00	4	50	0.025	12.000	3.200	1990	199	7.6
		10.00	4	50	0.035	15.000	4.000	1590	223	13.4
		12.00	4	50	0.040	18.000	4.800	1325	212	18.3
		16.00	4	50	0.050	24.000	6.400	995	199	30.6
		20.00	4	50	0.060	30.000	8.000	795	191	45.8
	Steel 850 - 1100 N/mm²	4.00	4	115	0.020	5.000	4.000	9150	732	14.6
		5.00	4	115	0.025	6.250	5.000	7320	732	22.9
		6.00	4	115	0.025	7.500	6.000	6100	610	27.5
		8.00	4	115	0.035	10.000	8.000	4575	641	51.2
		10.00	4	115	0.045	12.500	10.000	3660	659	82.4
		12.00	4	115	0.055	15.000	12.000	3050	671	120.8
		16.00	4	115	0.065	20.000	16.000	2290	595	190.5
		20.00	4	115	0.080	25.000	20.000	1830	586	292.8
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.020	5.000	4.000	7160	573	11.5
		5.00	4	90	0.025	6.250	5.000	5730	573	17.9
		6.00	4	90	0.025	7.500	6.000	4775	478	21.5
		8.00	4	90	0.035	10.000	8.000	3580	501	40.1
		10.00	4	90	0.045	12.500	10.000	2865	516	64.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.4
		16.00	4	90	0.065	20.000	16.000	1790	465	148.9
		20.00	4	90	0.080	25.000	20.000	1430	458	228.8
	Hardened tool steel 52 - 56 HRC	4.00	4	50	0.009	4.000	4.000	3980	143	2.3
		5.00	4	50	0.012	5.000	5.000	3185	153	3.8
		6.00	4	50	0.015	6.000	6.000	2655	159	5.7
		8.00	4	50	0.018	8.000	8.000	1990	143	9.2
		10.00	4	50	0.024	10.000	10.000	1590	153	15.3
		12.00	4	50	0.030	12.000	12.000	1325	159	22.9
		16.00	4	50	0.033	16.000	16.000	995	131	33.6
		20.00	4	50	0.042	20.000	20.000	795	134	53.4
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	4	40	0.010	5.000	4.000	3185	127	2.5
		5.00	4	40	0.015	6.250	5.000	2545	153	4.8
		6.00	4	40	0.020	7.500	6.000	2120	170	7.6
		8.00	4	40	0.025	10.000	8.000	1590	159	12.7
		10.00	4	40	0.030	12.500	10.000	1275	153	19.1
		12.00	4	40	0.040	15.000	12.000	1060	170	30.5
		16.00	4	40	0.045	20.000	16.000	795	143	45.8
		20.00	4	40	0.055	25.000	20.000	635	140	69.9

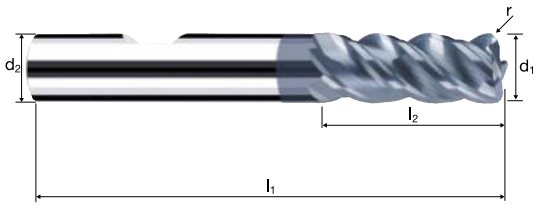
Corner radius end mills NX

Smooth-edged, normal version

HM MG10

λ 45°
γ -20°

Vario



Roughing

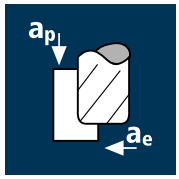
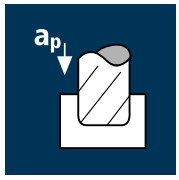
Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15368** ø-Code **178**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15368	POLYCHROM P15268
178	3.00	6.00	57	8.00	15.56	0.200	6.0°	4		●
180	3.00	6.00	57	8.00	15.56	0.500	6.0°	4		●
220	4.00	6.00	57	8.00	14.59	0.500	4.5°	4		●
260	5.00	6.00	57	10.00	14.72	0.500	2.5°	4		●
300	6.00	6.00	57	12.00	-	0.500	0.0°	4		●
388	8.00	8.00	63	19.00	-	0.500	0.0°	4		●
448	10.00	10.00	72	23.00	-	0.500	0.0°	4		●
498	12.00	12.00	83	27.00	-	0.500	0.0°	4		●
302	6.00	6.00	57	12.00	-	1.000	0.0°	4		●
391	8.00	8.00	63	19.00	-	1.000	0.0°	4		●
450	10.00	10.00	72	23.00	-	1.000	0.0°	4		●
501	12.00	12.00	83	27.00	-	1.000	0.0°	4		●
608	16.00	16.00	92	32.00	-	1.000	0.0°	4		●
680	20.00	20.00	104	39.00	-	1.000	0.0°	4		●
393	8.00	8.00	63	19.00	-	1.500	0.0°	4		●
453	10.00	10.00	72	23.00	-	1.500	0.0°	4		●
503	12.00	12.00	83	27.00	-	1.500	0.0°	4		●
610	16.00	16.00	92	32.00	-	1.500	0.0°	4		●

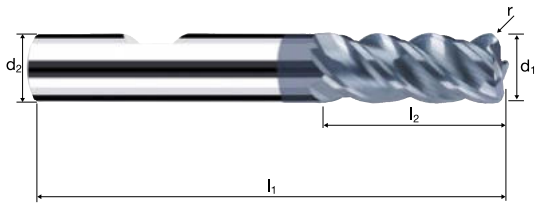
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	10.00	4	150	0.065	15.000	4.000	4775	1242	74.5
		12.00	4	150	0.080	18.000	4.800	3980	1274	110.0
		16.00	4	150	0.090	24.000	6.400	2985	1075	165.1
		20.00	4	150	0.110	30.000	8.000	2385	1049	251.9
	Steel 1100 - 1300 N/mm²	10.00	4	115	0.065	15.000	4.000	3660	952	57.1
		12.00	4	115	0.080	18.000	4.800	3050	976	84.3
		16.00	4	115	0.090	24.000	6.400	2290	824	126.6
		20.00	4	115	0.110	30.000	8.000	1830	805	193.2
	Hardened tool steel 52 - 56 HRC	10.00	4	55	0.036	15.000	3.000	1750	252	11.3
		12.00	4	55	0.042	18.000	3.600	1460	245	15.9
		16.00	4	55	0.048	24.000	4.800	1095	210	24.2
		20.00	4	55	0.060	30.000	6.000	875	210	37.8
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	50	0.035	15.000	4.000	1590	223	13.4
		12.00	4	50	0.040	18.000	4.800	1325	212	18.3
		16.00	4	50	0.050	24.000	6.400	995	199	30.6
		20.00	4	50	0.060	30.000	8.000	795	191	45.8
	Steel 850 - 1100 N/mm²	10.00	4	115	0.045	12.500	10.000	3660	659	82.4
		12.00	4	115	0.055	15.000	12.000	3050	671	120.8
		16.00	4	115	0.065	20.000	16.000	2290	595	190.5
		20.00	4	115	0.080	25.000	20.000	1830	586	292.8
	Steel 1100 - 1300 N/mm²	10.00	4	90	0.045	12.500	10.000	2865	516	64.5
		12.00	4	90	0.055	15.000	12.000	2385	525	94.4
		16.00	4	90	0.065	20.000	16.000	1790	465	148.9
		20.00	4	90	0.080	25.000	20.000	1430	458	228.8
	Hardened tool steel 52 - 56 HRC	10.00	4	50	0.024	10.000	10.000	1590	153	15.3
		12.00	4	50	0.030	12.000	12.000	1325	159	22.9
		16.00	4	50	0.033	16.000	16.000	995	131	33.6
		20.00	4	50	0.042	20.000	20.000	795	134	53.4
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	40	0.030	12.500	10.000	1275	153	19.1
		12.00	4	40	0.040	15.000	12.000	1060	170	30.5
		16.00	4	40	0.045	20.000	16.000	795	143	45.8
		20.00	4	40	0.055	25.000	20.000	635	140	69.9

Corner radius end mills NX

Smooth-edged, normal version

HM MG10 | λ 45° γ -20°

Vario



Roughing

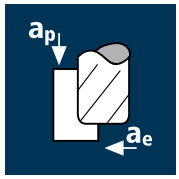
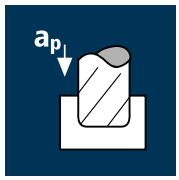
Finishing

ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15368** ø-Code **306**

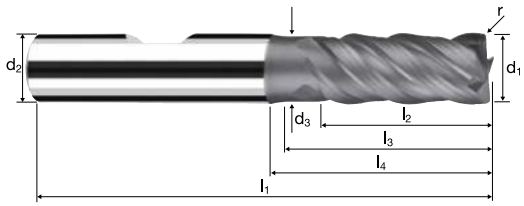
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15368	P15268
306	6.00	6.00	57	12.00	-	2.000	0.0°	4		●
395	8.00	8.00	63	19.00	-	2.000	0.0°	4		●
505	12.00	12.00	83	27.00	-	2.000	0.0°	4		●
611	16.00	16.00	92	32.00	-	2.000	0.0°	4		●
683	20.00	20.00	104	39.00	-	2.000	0.0°	4		●
457	10.00	10.00	72	23.00	-	2.500	0.0°	4		●
506	12.00	12.00	83	27.00	-	2.500	0.0°	4		●
612	16.00	16.00	92	32.00	-	2.500	0.0°	4		●
684	20.00	20.00	104	39.00	-	2.500	0.0°	4		●
508	12.00	12.00	83	27.00	-	4.000	0.0°	4		●
614	16.00	16.00	92	32.00	-	4.000	0.0°	4		●
686	20.00	20.00	104	39.00	-	4.000	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	35	0.010	5.400	1.350	3715	149	1.1
		4.00	4	35	0.015	7.200	1.800	2785	167	2.2
		5.00	4	35	0.020	9.000	2.250	2230	178	3.6
		6.00	4	35	0.020	10.800	2.700	1855	148	4.3
		8.00	4	35	0.030	14.400	3.600	1395	167	8.7
		10.00	4	35	0.035	18.000	4.500	1115	156	12.6
		12.00	4	35	0.045	21.600	5.400	930	167	19.5
		16.00	4	35	0.050	28.800	7.200	695	139	28.8
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	25	0.010	5.400	1.350	2655	106	0.8
		4.00	4	25	0.010	7.200	1.800	1990	80	1.0
		5.00	4	25	0.015	9.000	2.250	1590	95	1.9
		6.00	4	25	0.015	10.800	2.700	1325	80	2.3
		8.00	4	25	0.025	14.400	3.600	995	100	5.2
		10.00	4	25	0.030	18.000	4.500	795	95	7.7
		12.00	4	25	0.035	21.600	5.400	665	93	10.9
		16.00	4	25	0.040	28.800	7.200	495	79	16.4
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	3.00	4	40	0.010	5.400	1.350	4245	170	1.2
		4.00	4	40	0.015	7.200	1.800	3185	191	2.5
		5.00	4	40	0.020	9.000	2.250	2545	204	4.1
		6.00	4	40	0.020	10.800	2.700	2120	170	4.9
		8.00	4	40	0.030	14.400	3.600	1590	191	9.9
		10.00	4	40	0.035	18.000	4.500	1275	179	14.5
		12.00	4	40	0.045	21.600	5.400	1060	191	22.3
		16.00	4	40	0.050	28.800	7.200	795	159	33.0
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	50	0.015	5.400	1.350	5305	318	2.3
		4.00	4	50	0.020	7.200	1.800	3980	318	4.1
		5.00	4	50	0.030	9.000	2.250	3185	382	7.7
		6.00	4	50	0.035	10.800	2.700	2655	372	10.8
		8.00	4	50	0.045	14.400	3.600	1990	358	18.6
		10.00	4	50	0.055	18.000	4.500	1590	350	28.3
		12.00	4	50	0.065	21.600	5.400	1325	345	40.2
		16.00	4	50	0.070	28.800	7.200	995	279	57.8
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	3.00	4	80	0.010	5.400	1.350	8490	340	2.5
		4.00	4	80	0.015	7.200	1.800	6365	382	4.9
		5.00	4	80	0.020	9.000	2.250	5095	408	8.3
		6.00	4	80	0.020	10.800	2.700	4245	340	9.9
		8.00	4	80	0.030	14.400	3.600	3185	382	19.8
		10.00	4	80	0.035	18.000	4.500	2545	356	28.9
		12.00	4	80	0.045	21.600	5.400	2120	382	44.5
		16.00	4	80	0.050	28.800	7.200	1590	318	65.9
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	4	70	0.010	5.400	1.350	7425	297	2.2
		4.00	4	70	0.015	7.200	1.800	5570	334	4.3
		5.00	4	70	0.015	9.000	2.250	4455	267	5.4
		6.00	4	70	0.020	10.800	2.700	3715	297	8.7
		8.00	4	70	0.025	14.400	3.600	2785	279	14.4
		10.00	4	70	0.035	18.000	4.500	2230	312	25.3
		12.00	4	70	0.040	21.600	5.400	1855	297	34.6
		16.00	4	70	0.045	28.800	7.200	1395	251	52.1
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	3.00	4	25	0.010	3.750	3.000	2655	106	1.2
		4.00	4	25	0.010	5.000	4.000	1990	80	1.6
		5.00	4	25	0.015	6.250	5.000	1590	95	3.0
		6.00	4	25	0.015	7.500	6.000	1325	80	3.6
		8.00	4	25	0.025	10.000	8.000	995	100	8.0
		10.00	4	25	0.030	12.500	10.000	795	95	11.9
		12.00	4	25	0.035	15.000	12.000	665	93	16.8
		16.00	4	25	0.040	20.000	16.000	495	79	25.3
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	3.00	4	20	0.005	3.750	3.000	2120	42	0.5
		4.00	4	20	0.010	5.000	4.000	1590	64	1.3
		5.00	4	20	0.010	6.250	5.000	1275	51	1.6
		6.00	4	20	0.015	7.500	6.000	1060	64	2.9
		8.00	4	20	0.020	10.000	8.000	795	64	5.1
		10.00	4	20	0.020	12.500	10.000	635	51	6.4
		12.00	4	20	0.025	15.000	12.000	530	53	9.5
		16.00	4	20	0.030	20.000	16.000	400	48	15.4

Corner radius end mills ZX

Smooth-edged, normal version, short neck

HM MG10 | λ 40° γ 5°



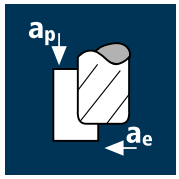
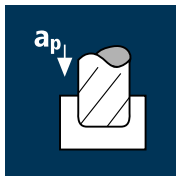
Roughing

Finishing

ReTool®

Inox Stainless | **Ti** Titanium | **Nickel-Alloys Mangan-Steels HSS**

Example: **Order-N°.**	Coating **P**	Article-N°. **8820**	ø-Code **299**								POLYCHROM **P8820**	POLYCHROM **P8720**
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z		
299	6.00	6.00	5.50	57	13.00	18.15	20.00	0.400	0.0°	4		●
387	8.00	8.00	7.40	63	19.00	23.63	26.00	0.400	0.0°	4		●
447	10.00	10.00	9.20	72	22.00	27.99	31.00	0.400	0.0°	4		●
497	12.00	12.00	11.00	83	26.00	33.29	37.00	0.400	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.500	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	22.00	27.99	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	26.00	33.29	37.00	0.500	0.0°	4		●
301	6.00	6.00	5.50	57	13.00	18.15	20.00	0.800	0.0°	4		●
389	8.00	8.00	7.40	63	19.00	23.63	26.00	0.800	0.0°	4		●
449	10.00	10.00	9.20	72	22.00	27.99	31.00	0.800	0.0°	4		●
499	12.00	12.00	11.00	83	26.00	33.29	37.00	0.800	0.0°	4		●
607	16.00	16.00	15.00	92	32.00	38.73	43.00	0.800	0.0°	4		●

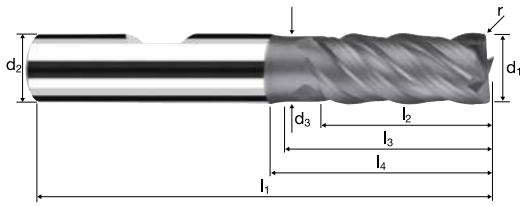
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718] P	6.00	4	35	0.020	10.800	2.400	1855	148	3.8
		8.00	4	35	0.025	14.400	3.200	1395	140	6.4
		10.00	4	35	0.030	18.000	4.000	1115	134	9.6
		12.00	4	35	0.040	21.600	4.800	930	149	15.4
		16.00	4	35	0.045	28.800	6.400	695	125	23.1
		20.00	4	35	0.055	36.000	8.000	555	122	35.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718] P	6.00	4	25	0.015	10.800	2.400	1325	80	2.1
		8.00	4	25	0.020	14.400	3.200	995	80	3.7
		10.00	4	25	0.025	18.000	4.000	795	80	5.7
		12.00	4	25	0.030	21.600	4.800	665	80	8.3
		16.00	4	25	0.035	28.800	6.400	495	69	12.8
		20.00	4	25	0.045	36.000	8.000	400	72	20.7
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12] P	6.00	4	40	0.020	10.800	2.400	2120	170	4.4
		8.00	4	40	0.025	14.400	3.200	1590	159	7.3
		10.00	4	40	0.030	18.000	4.000	1275	153	11.0
		12.00	4	40	0.040	21.600	4.800	1060	170	17.6
		16.00	4	40	0.045	28.800	6.400	795	143	26.4
		20.00	4	40	0.055	36.000	8.000	635	140	40.2
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	6.00	4	50	0.030	10.800	2.400	2655	319	8.3
		8.00	4	50	0.040	14.400	3.200	1990	318	14.7
		10.00	4	50	0.050	18.000	4.000	1590	318	22.9
		12.00	4	50	0.060	21.600	4.800	1325	318	33.0
		16.00	4	50	0.065	28.800	6.400	995	259	47.7
		20.00	4	50	0.080	36.000	8.000	795	254	73.3
	PM high-speed steel annealed [Böhler S390] [ASP 2023] P P	6.00	4	80	0.020	10.800	2.400	4245	340	8.8
		8.00	4	80	0.025	14.400	3.200	3185	319	14.7
		10.00	4	80	0.030	18.000	4.000	2545	305	22.0
		12.00	4	80	0.040	21.600	4.800	2120	339	35.2
		16.00	4	80	0.045	28.800	6.400	1590	286	52.8
		20.00	4	80	0.055	36.000	8.000	1275	281	80.8
	Titanium alloys > 300 HB [Ti6Al4V] P	6.00	4	70	0.020	10.800	2.400	3715	297	7.7
		8.00	4	70	0.025	14.400	3.200	2785	279	12.8
		10.00	4	70	0.030	18.000	4.000	2230	268	19.3
		12.00	4	70	0.035	21.600	4.800	1855	260	26.9
		16.00	4	70	0.040	28.800	6.400	1395	223	41.1
		20.00	4	70	0.050	36.000	8.000	1115	223	64.2
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718] P	6.00	4	25	0.015	7.200	6.000	1325	80	3.4
		8.00	4	25	0.020	9.600	8.000	995	80	6.1
		10.00	4	25	0.025	12.000	10.000	795	80	9.5
		12.00	4	25	0.030	14.400	12.000	665	80	13.8
		16.00	4	25	0.035	19.200	16.000	495	69	21.3
		20.00	4	25	0.045	24.000	20.000	400	72	34.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718] P	6.00	4	20	0.010	7.200	6.000	1060	42	1.8
		8.00	4	20	0.015	9.600	8.000	795	48	3.7
		10.00	4	20	0.020	12.000	10.000	635	51	6.1
		12.00	4	20	0.025	14.400	12.000	530	53	9.2
		16.00	4	20	0.030	19.200	16.000	400	48	14.7
		20.00	4	20	0.035	24.000	20.000	320	45	21.5

Corner radius end mills ZX

Smooth-edged, normal version, short neck

HM MG10

λ 40°
γ 5°



Roughing

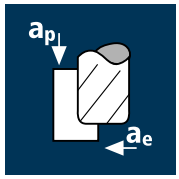
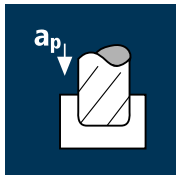
Finishing

ReTool®

Inox Stainless
Ti Titanium
Nickel-Alloys
Mangan-Steels
HSS

Example: **Order-N°.** Coating **P** Article-N°. **8820** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8820	P8720
302	6.00	6.00	5.50	57	13.00	18.15	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	27.99	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4		●
680	20.00	20.00	19.00	104	38.00	48.23	53.00	1.000	0.0°	4		●
453	10.00	10.00	9.20	72	22.00	27.99	31.00	1.500	0.0°	4		●
503	12.00	12.00	11.00	83	26.00	33.29	37.00	1.500	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	1.500	0.0°	4		●
505	12.00	12.00	11.00	83	26.00	33.29	37.00	2.000	0.0°	4		●
611	16.00	16.00	15.00	92	32.00	38.73	43.00	2.000	0.0°	4		●
683	20.00	20.00	19.00	104	38.00	48.23	53.00	2.000	0.0°	4		●

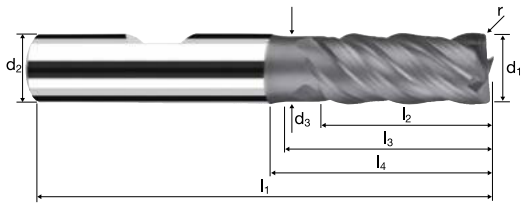
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	10.00	4	35	0.030	18.000	4.000	1115	134	9.6
		12.00	4	35	0.040	21.600	4.800	930	149	15.4
		16.00	4	35	0.045	28.800	6.400	695	125	23.1
		20.00	4	35	0.055	36.000	8.000	555	122	35.2
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	10.00	4	25	0.025	18.000	4.000	795	80	5.7
		12.00	4	25	0.030	21.600	4.800	665	80	8.3
		16.00	4	25	0.035	28.800	6.400	495	69	12.8
		20.00	4	25	0.045	36.000	8.000	400	72	20.7
	Manganese steel Mn >5% [1.3964 / Nitronic] [1.3401 / X120Mn12]	10.00	4	40	0.030	18.000	4.000	1275	153	11.0
		12.00	4	40	0.040	21.600	4.800	1060	170	17.6
		16.00	4	40	0.045	28.800	6.400	795	143	26.4
		20.00	4	40	0.055	36.000	8.000	635	140	40.2
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	10.00	4	50	0.050	18.000	4.000	1590	318	22.9
		12.00	4	50	0.060	21.600	4.800	1325	318	33.0
		16.00	4	50	0.065	28.800	6.400	995	259	47.7
		20.00	4	50	0.080	36.000	8.000	795	254	73.3
	PM high-speed steel annealed [Böhler S390] [ASP 2023]	10.00	4	80	0.030	18.000	4.000	2545	305	22.0
		12.00	4	80	0.040	21.600	4.800	2120	339	35.2
		16.00	4	80	0.045	28.800	6.400	1590	286	52.8
		20.00	4	80	0.055	36.000	8.000	1275	281	80.8
	Titanium alloys > 300 HB [Ti6Al4V]	10.00	4	70	0.030	18.000	4.000	2230	268	19.3
		12.00	4	70	0.035	21.600	4.800	1855	260	26.9
		16.00	4	70	0.040	28.800	6.400	1395	223	41.1
		20.00	4	70	0.050	36.000	8.000	1115	223	64.2
	Nickel-based alloys annealed Rm <1000 N/mm² [Inconel 718]	10.00	4	25	0.025	12.000	10.000	795	80	9.5
		12.00	4	25	0.030	14.400	12.000	665	80	13.8
		16.00	4	25	0.035	19.200	16.000	495	69	21.3
		20.00	4	25	0.045	24.000	20.000	400	72	34.6
	Nickel-based alloys precipitation hardened Rm > 1000 N/mm² [Inconel 718]	10.00	4	20	0.020	12.000	10.000	635	51	6.1
		12.00	4	20	0.025	14.400	12.000	530	53	9.2
		16.00	4	20	0.030	19.200	16.000	400	48	14.7
		20.00	4	20	0.035	24.000	20.000	320	45	21.5

Corner radius end mills ZX

Smooth-edged, normal version, short neck

HM MG10

λ 40°
γ 5°



Roughing

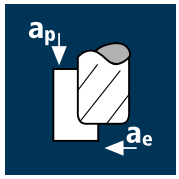
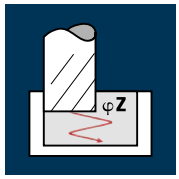
Finishing

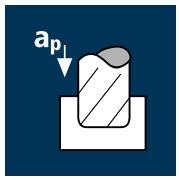
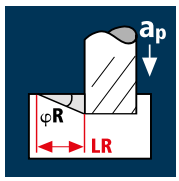
ReTool®

Inox Stainless | **Ti** Titanium | **Nickel-Alloys Mangan-Steels HSS**

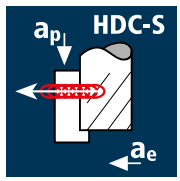
Example: **Order-N°.** Coating **P** Article-N°. **8820** ø-Code **457**

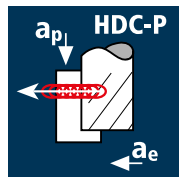
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8820	POLYCHROM P8720
457	10.00	10.00	9.20	72	22.00	27.99	31.00	2.500	0.0°	4		●
506	12.00	12.00	11.00	83	26.00	33.29	37.00	2.500	0.0°	4		●
612	16.00	16.00	15.00	92	32.00	38.73	43.00	2.500	0.0°	4		●
684	20.00	20.00	19.00	104	38.00	48.23	53.00	2.500	0.0°	4		●
508	12.00	12.00	11.00	83	26.00	33.29	37.00	4.000	0.0°	4		●
614	16.00	16.00	15.00	92	32.00	38.73	43.00	4.000	0.0°	4		●
686	20.00	20.00	19.00	104	38.00	48.23	53.00	4.000	0.0°	4		●

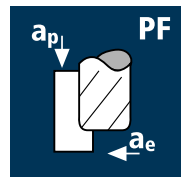
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	150	0.030	7.200	1.600	11935	1432	16.5	16.0°
		5.00	4	150	0.035	9.000	2.000	9550	1337	24.1	16.0°
		6.00	4	150	0.040	10.800	2.400	7960	1274	33.0	16.0°
		8.00	4	150	0.050	14.400	3.200	5970	1194	55.0	16.0°
		10.00	4	150	0.065	18.000	4.000	4775	1242	89.4	16.0°
		12.00	4	150	0.075	21.600	4.800	3980	1194	123.8	16.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	16.0°
	Steel 1100 - 1300 N/mm²	4.00	4	115	0.025	7.200	1.600	9150	915	10.5	14.0°
		5.00	4	115	0.030	9.000	2.000	7320	878	15.8	14.0°
		6.00	4	115	0.035	10.800	2.400	6100	854	22.1	14.0°
		8.00	4	115	0.045	14.400	3.200	4575	824	37.9	14.0°
		10.00	4	115	0.055	18.000	4.000	3660	805	58.0	14.0°
		12.00	4	115	0.065	21.600	4.800	3050	793	82.2	14.0°
		16.00	4	115	0.075	24.000	6.400	2290	687	105.5	14.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	90	0.020	7.200	1.600	7160	573	6.6	11.0°
		5.00	4	90	0.025	9.000	2.000	5730	573	10.3	11.0°
		6.00	4	90	0.030	10.800	2.400	4775	573	14.9	11.0°
		8.00	4	90	0.035	14.400	3.200	3580	501	23.1	11.0°
		10.00	4	90	0.045	18.000	4.000	2865	516	37.1	11.0°
		12.00	4	90	0.055	21.600	4.800	2385	525	54.4	11.0°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	11.0°

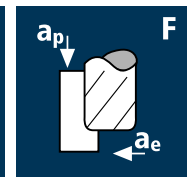
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	120	0.020	6.000	4.000	9550	764	18.3	18.0°	18.5
		5.00	4	120	0.023	7.500	5.000	7640	703	26.4	18.0°	23.1
		6.00	4	120	0.026	9.000	6.000	6365	662	35.7	18.0°	27.7
		8.00	4	120	0.033	12.000	8.000	4775	630	60.5	18.0°	36.9
		10.00	4	120	0.042	15.000	10.000	3820	642	96.3	18.0°	46.2
		12.00	4	120	0.049	18.000	12.000	3185	624	134.8	18.0°	55.4
		16.00	4	120	0.055	24.000	16.000	2385	525	201.5	18.0°	73.9
	Steel 1100 - 1300 N/mm²	4.00	4	90	0.016	6.000	4.000	7160	458	11.0	18.0°	18.5
		5.00	4	90	0.020	7.500	5.000	5730	458	17.2	18.0°	23.1
		6.00	4	90	0.023	9.000	6.000	4775	439	23.7	18.0°	27.7
		8.00	4	90	0.029	12.000	8.000	3580	415	39.9	18.0°	36.9
		10.00	4	90	0.036	15.000	10.000	2865	413	61.9	18.0°	46.2
		12.00	4	90	0.042	18.000	12.000	2385	401	86.6	18.0°	55.4
		16.00	4	90	0.049	24.000	16.000	1790	351	134.7	18.0°	73.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	70	0.013	6.000	4.000	5570	290	7.0	13.0°	26.0
		5.00	4	70	0.016	7.500	5.000	4455	285	10.7	13.0°	32.5
		6.00	4	70	0.020	9.000	6.000	3715	297	16.0	13.0°	39.0
		8.00	4	70	0.023	12.000	8.000	2785	256	24.6	13.0°	52.0
		10.00	4	70	0.029	15.000	10.000	2230	259	38.8	13.0°	65.0
		12.00	4	70	0.036	18.000	12.000	1855	267	57.7	13.0°	78.0
		16.00	4	70	0.042	24.000	16.000	1395	234	90.0	13.0°	104.0

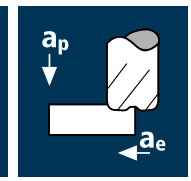
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

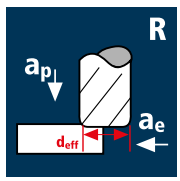


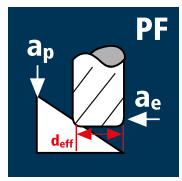












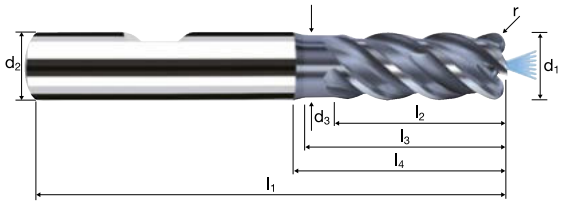
Corner radius end mills MFC

Smooth-edged, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10

λ **45°**
γ **10°**

Vario



Roughing HPC

Roughing HDC

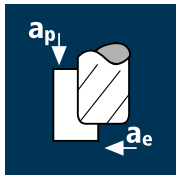
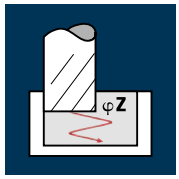
Finishing

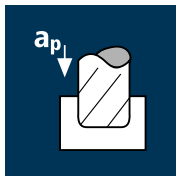
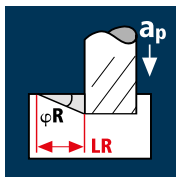
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

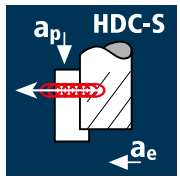
Example: **Order-N°.** Coating **P** Article-N°. **8207** ø-Code **218**

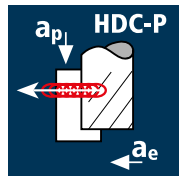
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8207	P8107
218	4.00	6.00	3.70	57	8.00	16.00	20.82	0.200	3.0°	4		●
258	5.00	6.00	4.60	57	10.00	18.00	21.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	57	12.00	18.15	20.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	63	19.00	23.63	26.00	0.200	0.0°	4		●
445	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	4		●
605	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	4		●
220	4.00	6.00	3.70	57	8.00	16.00	20.82	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	10.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	12.00	18.15	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	23.63	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	23.00	27.99	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	27.00	33.29	37.00	0.500	0.0°	4		●
606	16.00	16.00	15.00	92	32.00	38.73	43.00	0.500	0.0°	4		●
302	6.00	6.00	5.50	57	12.00	18.15	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	23.00	27.99	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	27.00	33.29	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4		●

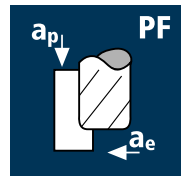
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	8.00	4	150	0.050	14.400	3.200	5970	1194	55.0	16.0°
		10.00	4	150	0.065	18.000	4.000	4775	1242	89.4	16.0°
		12.00	4	150	0.075	21.600	4.800	3980	1194	123.8	16.0°
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9	16.0°
	Steel 1100 - 1300 N/mm²	8.00	4	115	0.045	14.400	3.200	4575	824	37.9	14.0°
		10.00	4	115	0.055	18.000	4.000	3660	805	58.0	14.0°
		12.00	4	115	0.065	21.600	4.800	3050	793	82.2	14.0°
		16.00	4	115	0.075	24.000	6.400	2290	687	105.5	14.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	90	0.035	14.400	3.200	3580	501	23.1	11.0°
		10.00	4	90	0.045	18.000	4.000	2865	516	37.1	11.0°
		12.00	4	90	0.055	21.600	4.800	2385	525	54.4	11.0°
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5	11.0°

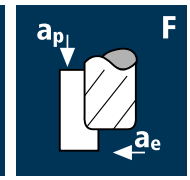
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	8.00	4	120	0.033	12.000	8.000	4775	630	60.5	18.0°	36.9
		10.00	4	120	0.042	15.000	10.000	3820	642	96.3	18.0°	46.2
		12.00	4	120	0.049	18.000	12.000	3185	624	134.8	18.0°	55.4
		16.00	4	120	0.055	24.000	16.000	2385	525	201.5	18.0°	73.9
	Steel 1100 - 1300 N/mm²	8.00	4	90	0.029	12.000	8.000	3580	415	39.9	18.0°	36.9
		10.00	4	90	0.036	15.000	10.000	2865	413	61.9	18.0°	46.2
		12.00	4	90	0.042	18.000	12.000	2385	401	86.6	18.0°	55.4
		16.00	4	90	0.049	24.000	16.000	1790	351	134.7	18.0°	73.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	70	0.023	12.000	8.000	2785	256	24.6	13.0°	52.0
		10.00	4	70	0.029	15.000	10.000	2230	259	38.8	13.0°	65.0
		12.00	4	70	0.036	18.000	12.000	1855	267	57.7	13.0°	78.0
		16.00	4	70	0.042	24.000	16.000	1395	234	90.0	13.0°	104.0

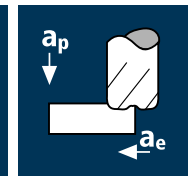
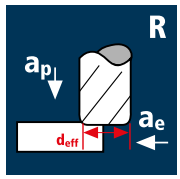
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

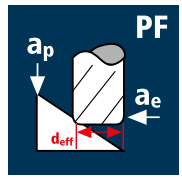








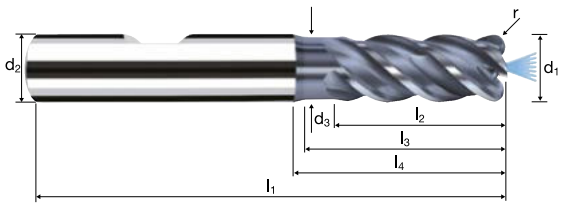


Corner radius end mills MFC

Smooth-edged, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

Vario



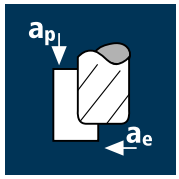
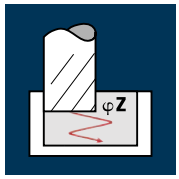
Roughing HPC | Roughing HDC | Finishing

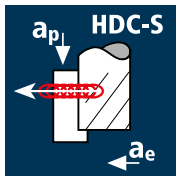
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

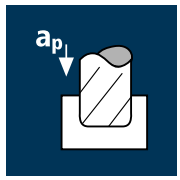
Example: **Order-N°.** Coating **P** Article-N°. **8207** ø-Code **393**

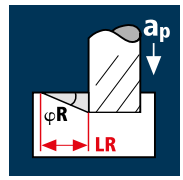
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8207	POLYCHROM P8107
393	8.00	8.00	7.40	63	19.00	23.63	26.00	1.500	0.0°	4		●
453	10.00	10.00	9.20	72	23.00	27.99	31.00	1.500	0.0°	4		●
503	12.00	12.00	11.00	83	27.00	33.29	37.00	1.500	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	38.73	43.00	1.500	0.0°	4		●
455	10.00	10.00	9.20	72	23.00	27.99	31.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	83	27.00	33.29	37.00	2.000	0.0°	4		●
611	16.00	16.00	15.00	92	32.00	38.73	43.00	2.000	0.0°	4		●
506	12.00	12.00	11.00	83	27.00	33.29	37.00	2.500	0.0°	4		●

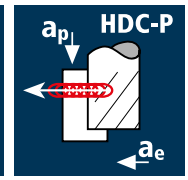
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	3.00	4	155	0.024	3.750	1.200	16445	1579	7.1	1.5°
		4.00	4	155	0.034	5.000	1.600	12335	1678	13.4	1.5°
		5.00	4	155	0.042	6.250	2.000	9870	1658	20.7	1.5°
		6.00	4	155	0.045	9.000	2.400	8225	1481	32.0	1.5°
		8.00	4	155	0.060	12.000	3.200	6165	1480	56.8	1.5°
		10.00	4	155	0.075	15.000	4.000	4935	1481	88.8	1.5°
		12.00	4	155	0.084	18.000	4.800	4110	1381	119.3	1.5°
	Steel 850 - 1100 N/mm²	3.00	4	135	0.022	3.750	1.200	14325	1261	5.7	2.0°
		4.00	4	135	0.028	5.000	1.600	10745	1203	9.6	2.0°
		5.00	4	135	0.037	6.250	2.000	8595	1272	15.9	2.0°
		6.00	4	135	0.039	9.000	2.400	7160	1117	24.1	2.0°
		8.00	4	135	0.052	12.000	3.200	5370	1117	42.9	2.0°
		10.00	4	135	0.065	15.000	4.000	4295	1117	67.0	2.0°
		12.00	4	135	0.078	18.000	4.800	3580	1117	96.5	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.014	3.750	1.200	9550	516	2.3	1.5°
		4.00	4	90	0.018	5.000	1.600	7160	516	4.1	1.5°
		5.00	4	90	0.023	6.250	2.000	5730	516	6.4	1.5°
		6.00	4	90	0.027	9.000	2.400	4775	516	11.1	1.5°
		8.00	4	90	0.036	12.000	3.200	3580	516	19.8	1.5°
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9	1.5°
		12.00	4	90	0.054	18.000	4.800	2385	515	44.5	1.5°

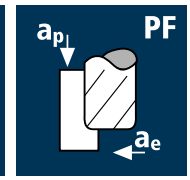
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	3.00	4	243	0.051	8.000	0.300	25785	5260	12.6
		4.00	4	243	0.069	11.000	0.400	19335	5337	23.5
		5.00	4	243	0.086	13.000	0.500	15470	5322	34.6
		6.00	4	243	0.103	13.000	0.600	12890	5311	41.4
		8.00	4	243	0.136	19.000	0.800	9670	5261	80.0
		10.00	4	243	0.171	23.000	1.000	7735	5291	121.7
		12.00	4	243	0.207	27.000	1.200	6445	5337	172.9
	Steel 850 - 1100 N/mm²	3.00	4	216	0.051	8.000	0.300	22920	4676	11.2
		4.00	4	216	0.069	11.000	0.400	17190	4744	20.9
		5.00	4	216	0.086	13.000	0.500	13750	4730	30.7
		6.00	4	216	0.103	13.000	0.600	11460	4722	36.8
		8.00	4	216	0.136	19.000	0.800	8595	4676	71.1
		10.00	4	216	0.171	23.000	1.000	6875	4703	108.2
		12.00	4	216	0.207	27.000	1.200	5730	4744	153.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	132	0.038	8.000	0.225	14005	2129	3.8
		4.00	4	132	0.053	11.000	0.300	10505	2227	7.3
		5.00	4	132	0.066	13.000	0.375	8405	2219	10.8
		6.00	4	132	0.080	13.000	0.450	7005	2242	13.1
		8.00	4	132	0.106	19.000	0.600	5250	2226	25.4
		10.00	4	132	0.133	23.000	0.750	4200	2234	38.5
		12.00	4	132	0.159	27.000	0.900	3500	2226	54.1

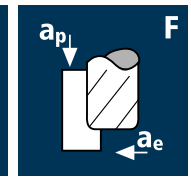
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

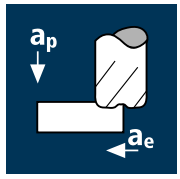


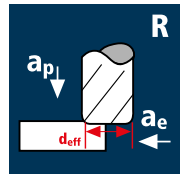


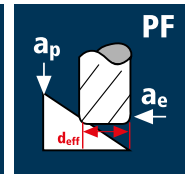












Corner radius end mills E-Cut

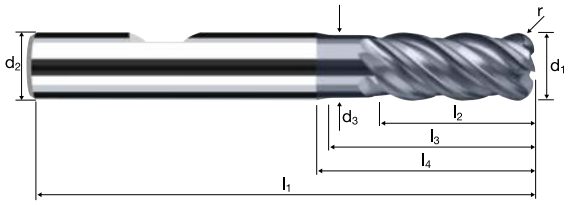
Smooth-edged, normal version, short neck

$l_2 = 2.2 \times d_1$

$l_3 = 3.0 \times d_1$

HM MG10 | λ 43° γ 6°

Vario



new!

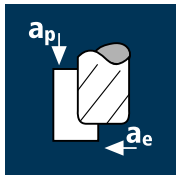
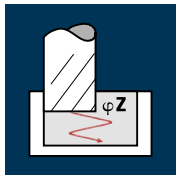
Roughing HDC | Roughing HPC | Finishing

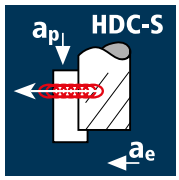
ReTool®

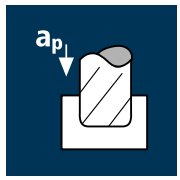
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

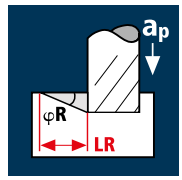
Example: **Order-N°.** Coating **P** Article-N°. **8407** ø-Code **178**

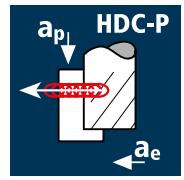
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8407	POLYCHROM P8307
178	3.00	6.00	2.80	54	6.60	9.00	15.37	0.200	5.8°	4	●	
218	4.00	6.00	3.70	54	9.00	12.00	16.82	0.200	3.9°	4	●	
258	5.00	6.00	4.60	57	11.00	15.00	18.27	0.200	2.1°	4	●	
297	6.00	6.00	5.50	57	13.50	18.00	19.85	0.200	0.0°	4	●	
385	8.00	8.00	7.40	63	18.00	24.00	26.37	0.200	0.0°	4	●	
445	10.00	10.00	9.20	74	22.00	30.00	33.01	0.200	0.0°	4	●	
496	12.00	12.00	11.00	85	27.00	36.00	39.71	0.200	0.0°	4	●	
180	3.00	6.00	2.80	54	6.60	9.00	15.37	0.500	5.8°	4	●	
220	4.00	6.00	3.70	54	9.00	12.00	16.82	0.500	3.9°	4	●	
260	5.00	6.00	4.60	57	11.00	15.00	18.27	0.500	2.1°	4	●	
300	6.00	6.00	5.50	57	13.50	18.00	19.85	0.500	0.0°	4	●	
388	8.00	8.00	7.40	63	18.00	24.00	26.35	0.500	0.0°	4	●	
448	10.00	10.00	9.20	74	22.00	30.00	33.00	0.500	0.0°	4	●	
498	12.00	12.00	11.00	85	27.00	36.00	39.70	0.500	0.0°	4	●	
301	6.00	6.00	5.50	57	13.50	18.00	19.85	0.800	0.0°	4	●	
389	8.00	8.00	7.40	63	18.00	24.00	26.35	0.800	0.0°	4	●	
449	10.00	10.00	9.20	74	22.00	30.00	33.00	0.800	0.0°	4	●	
499	12.00	12.00	11.00	85	27.00	36.00	39.70	0.800	0.0°	4	●	

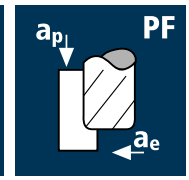
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	6.00	4	155	0.045	9.000	2.400	8225	1481	32.0	1.5°
		8.00	4	155	0.060	12.000	3.200	6165	1480	56.8	1.5°
		10.00	4	155	0.075	15.000	4.000	4935	1481	88.8	1.5°
		12.00	4	155	0.084	18.000	4.800	4110	1381	119.3	1.5°
		16.00	4	155	0.096	24.000	6.400	3085	1185	182.0	1.5°
		20.00	4	155	0.110	30.000	8.000	2465	1085	260.3	1.5°
	Steel 850 - 1100 N/mm²	6.00	4	135	0.039	9.000	2.400	7160	1117	24.1	2.0°
		8.00	4	135	0.052	12.000	3.200	5370	1117	42.9	2.0°
		10.00	4	135	0.065	15.000	4.000	4295	1117	67.0	2.0°
		12.00	4	135	0.078	18.000	4.800	3580	1117	96.5	2.0°
		16.00	4	135	0.088	24.000	6.400	2685	945	145.2	2.0°
		20.00	4	135	0.100	30.000	8.000	2150	860	206.4	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	90	0.027	9.000	2.400	4775	516	11.1	1.5°
		8.00	4	90	0.036	12.000	3.200	3580	516	19.8	1.5°
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9	1.5°
		12.00	4	90	0.054	18.000	4.800	2385	515	44.5	1.5°
		16.00	4	90	0.056	24.000	6.400	1790	401	61.6	1.5°
		20.00	4	90	0.070	30.000	8.000	1430	400	96.1	1.5°

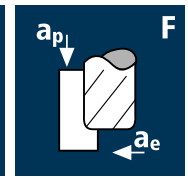
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	6.00	4	243	0.103	13.000	0.600	12890	5311	41.4
		8.00	4	243	0.136	19.000	0.800	9670	5261	80.0
		10.00	4	243	0.171	23.000	1.000	7735	5291	121.7
		12.00	4	243	0.207	27.000	1.200	6445	5337	172.9
		16.00	4	243	0.228	32.000	1.600	4835	4410	225.8
		20.00	4	243	0.286	40.000	2.000	3865	4422	353.7
	Steel 850 - 1100 N/mm²	6.00	4	216	0.103	13.000	0.600	11460	4722	36.8
		8.00	4	216	0.136	19.000	0.800	8595	4676	71.1
		10.00	4	216	0.171	23.000	1.000	6875	4703	108.2
		12.00	4	216	0.207	27.000	1.200	5730	4744	153.7
		16.00	4	216	0.228	32.000	1.600	4295	3917	200.6
		20.00	4	216	0.286	40.000	2.000	3440	3935	314.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	132	0.080	13.000	0.450	7005	2242	13.1
		8.00	4	132	0.106	19.000	0.600	5250	2226	25.4
		10.00	4	132	0.133	23.000	0.750	4200	2234	38.5
		12.00	4	132	0.159	27.000	0.900	3500	2226	54.1
		16.00	4	132	0.173	32.000	1.200	2625	1817	69.8
		20.00	4	132	0.222	40.000	1.500	2100	1865	111.9

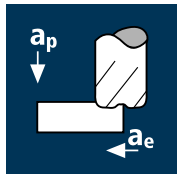


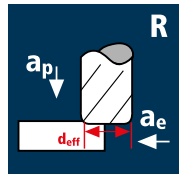


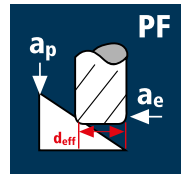












Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Corner radius end mills E-Cut

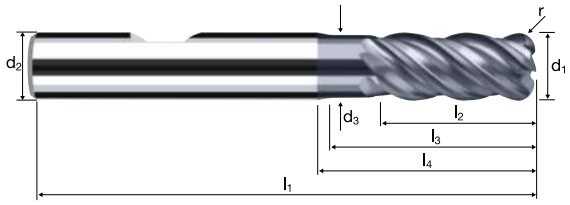
Smooth-edged, normal version, short neck

$l_2 = 2.2 \times d_1$

$l_3 = 3.0 \times d_1$

HM MG10 | λ 43° γ 6°

Vario



new!

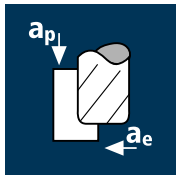
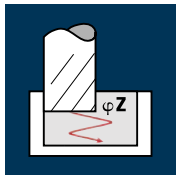
Roughing HDC | Roughing HPC | Finishing

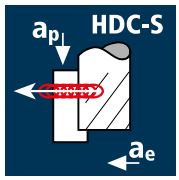
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

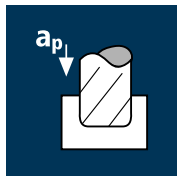
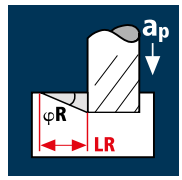
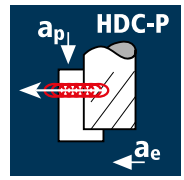
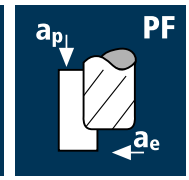
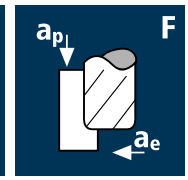
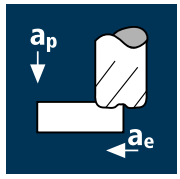
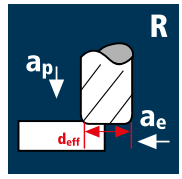
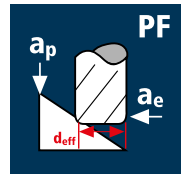
Example: **Order-N°.** Coating **P** | Article-N°. **8407** | ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8407	POLYCHROM P8307
302	6.00	6.00	5.50	57	13.50	18.00	19.85	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	18.00	24.00	26.35	1.000	0.0°	4		●
450	10.00	10.00	9.20	74	22.00	30.00	33.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	85	27.00	36.00	39.70	1.000	0.0°	4		●
608	16.00	16.00	15.00	102	36.00	48.00	52.27	1.000	0.0°	4		●
304	6.00	6.00	5.50	57	13.50	18.00	19.85	1.500	0.0°	4		●
393	8.00	8.00	7.40	63	18.00	24.00	26.35	1.500	0.0°	4		●
453	10.00	10.00	9.20	74	22.00	30.00	33.00	1.500	0.0°	4		●
503	12.00	12.00	11.00	85	27.00	36.00	39.70	1.500	0.0°	4		●
610	16.00	16.00	15.00	102	36.00	48.00	52.25	1.500	0.0°	4		●
306	6.00	6.00	5.50	57	13.50	18.00	19.85	2.000	0.0°	4		●
395	8.00	8.00	7.40	63	18.00	24.00	26.35	2.000	0.0°	4		●
455	10.00	10.00	9.20	74	22.00	30.00	33.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	85	27.00	36.00	39.70	2.000	0.0°	4		●
611	16.00	16.00	15.00	102	36.00	48.00	52.25	2.000	0.0°	4		●
683	20.00	20.00	19.00	115	44.00	60.00	64.77	2.000	0.0°	4		●
457	10.00	10.00	9.20	74	22.00	30.00	33.00	2.500	0.0°	4		●
506	12.00	12.00	11.00	85	27.00	36.00	39.70	2.500	0.0°	4		●
612	16.00	16.00	15.00	102	36.00	48.00	52.25	2.500	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	12.00	4	155	0.084	18.000	4.800	4110	1381	119.3	1.5°
		16.00	4	155	0.096	24.000	6.400	3085	1185	182.0	1.5°
		20.00	4	155	0.110	30.000	8.000	2465	1085	260.3	1.5°
	Steel 850 - 1100 N/mm²	12.00	4	135	0.078	18.000	4.800	3580	1117	96.5	2.0°
		16.00	4	135	0.088	24.000	6.400	2685	945	145.2	2.0°
		20.00	4	135	0.100	30.000	8.000	2150	860	206.4	2.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	12.00	4	90	0.054	18.000	4.800	2385	515	44.5	1.5°
		16.00	4	90	0.056	24.000	6.400	1790	401	61.6	1.5°
		20.00	4	90	0.070	30.000	8.000	1430	400	96.1	1.5°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	12.00	4	243	0.207	27.000	1.200	6445	5337	172.9
		16.00	4	243	0.228	32.000	1.600	4835	4410	225.8
		20.00	4	243	0.286	40.000	2.000	3865	4422	353.7
	Steel 850 - 1100 N/mm²	12.00	4	216	0.207	27.000	1.200	5730	4744	153.7
		16.00	4	216	0.228	32.000	1.600	4295	3917	200.6
		20.00	4	216	0.286	40.000	2.000	3440	3935	314.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	12.00	4	132	0.159	27.000	0.900	3500	2226	54.1
		16.00	4	132	0.173	32.000	1.200	2625	1817	69.8
		20.00	4	132	0.222	40.000	1.500	2100	1865	111.9

Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

Corner radius end mills E-Cut

Smooth-edged, normal version, short neck

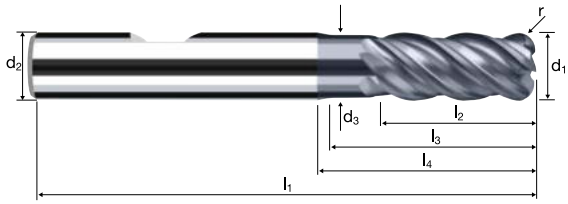
Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 3.0 \times d_1$

HM MG10 | λ 43° γ 6°

Vario



new!

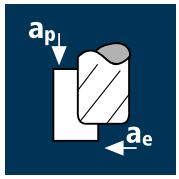
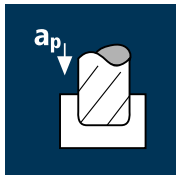
Roughing HDC | Roughing HPC | Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** | Article-N°. **8407** | ø-Code **508**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P8407	P8307
508	12.00	12.00	11.00	85	27.00	36.00	39.70	4.000	0.0°	4		●
614	16.00	16.00	15.00	102	36.00	48.00	52.25	4.000	0.0°	4		●
686	20.00	20.00	19.00	115	44.00	60.00	64.75	4.000	0.0°	4		●

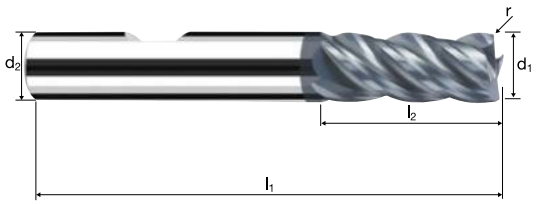
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	170	0.020	4.500	1.200	18040	1443	7.8
		4.00	4	170	0.025	6.000	1.600	13530	1353	13.0
		5.00	4	170	0.035	7.500	2.000	10825	1516	22.7
		6.00	4	170	0.040	9.000	2.400	9020	1443	31.2
		8.00	4	170	0.055	12.000	3.200	6765	1488	57.2
		10.00	4	170	0.070	15.000	4.000	5410	1515	90.9
		12.00	4	170	0.075	18.000	4.800	4510	1353	116.9
		16.00	4	170	0.100	24.000	6.400	3380	1352	207.7
		20.00	4	170	0.130	30.000	8.000	2705	1407	337.6
	Steel 850 - 1100 N/mm²	3.00	4	140	0.020	4.500	1.200	14855	1188	6.4
		4.00	4	140	0.025	6.000	1.600	11140	1114	10.7
		5.00	4	140	0.035	7.500	2.000	8915	1248	18.7
		6.00	4	140	0.040	9.000	2.400	7425	1188	25.7
		8.00	4	140	0.055	12.000	3.200	5570	1225	47.1
		10.00	4	140	0.070	15.000	4.000	4455	1247	74.8
		12.00	4	140	0.075	18.000	4.800	3715	1115	96.3
		16.00	4	140	0.100	24.000	6.400	2785	1114	171.1
		20.00	4	140	0.130	30.000	8.000	2230	1160	278.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	70	0.020	4.500	1.200	7425	594	3.2
		4.00	4	70	0.025	6.000	1.600	5570	557	5.3
		5.00	4	70	0.030	7.500	2.000	4455	535	8.0
		6.00	4	70	0.040	9.000	2.400	3715	594	12.8
		8.00	4	70	0.050	12.000	3.200	2785	557	21.4
		10.00	4	70	0.065	15.000	4.000	2230	580	34.8
		12.00	4	70	0.075	18.000	4.800	1855	557	48.1
		16.00	4	70	0.095	24.000	6.400	1395	530	81.4
		20.00	4	70	0.120	30.000	8.000	1115	535	128.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.015	4.500	1.200	9550	573	3.1
		4.00	4	90	0.020	6.000	1.600	7160	573	5.5
		5.00	4	90	0.020	7.500	2.000	5730	458	6.9
		6.00	4	90	0.030	9.000	2.400	4775	573	12.4
		8.00	4	90	0.035	12.000	3.200	3580	501	19.2
		10.00	4	90	0.045	15.000	4.000	2865	516	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.3
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.085	30.000	8.000	1430	486	116.7
	Steel < 850 N/mm²	3.00	4	135	0.015	3.000	3.000	14325	860	7.7
		4.00	4	135	0.020	4.000	4.000	10745	860	13.8
		5.00	4	135	0.030	5.000	5.000	8595	1031	25.8
		6.00	4	135	0.035	6.000	6.000	7160	1002	36.1
		8.00	4	135	0.045	8.000	8.000	5370	967	61.9
		10.00	4	135	0.055	10.000	10.000	4295	945	94.5
		12.00	4	135	0.060	12.000	12.000	3580	859	123.7
		16.00	4	135	0.075	8.000	16.000	2685	806	103.1
		20.00	4	135	0.095	10.000	20.000	2150	817	163.4
	Steel 850 - 1100 N/mm²	3.00	4	105	0.015	3.000	3.000	11140	668	6.0
		4.00	4	105	0.020	4.000	4.000	8355	668	10.7
		5.00	4	105	0.030	5.000	5.000	6685	802	20.1
		6.00	4	105	0.035	6.000	6.000	5570	780	28.1
		8.00	4	105	0.045	8.000	8.000	4180	752	48.2
		10.00	4	105	0.055	10.000	10.000	3340	735	73.5
		12.00	4	105	0.060	12.000	12.000	2785	668	96.2
		16.00	4	105	0.075	8.000	16.000	2090	627	80.3
		20.00	4	105	0.095	10.000	20.000	1670	635	126.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	55	0.015	3.000	3.000	5835	350	3.2
		4.00	4	55	0.020	4.000	4.000	4375	350	5.6
		5.00	4	55	0.030	5.000	5.000	3500	420	10.5
		6.00	4	55	0.035	6.000	6.000	2920	409	14.7
		8.00	4	55	0.045	8.000	8.000	2190	394	25.2
		10.00	4	55	0.055	10.000	10.000	1750	385	38.5
		12.00	4	55	0.060	12.000	12.000	1460	350	50.5
		16.00	4	55	0.075	8.000	16.000	1095	329	42.0
		20.00	4	55	0.095	10.000	20.000	875	333	66.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	70	0.010	3.000	3.000	7425	297	2.7
		4.00	4	70	0.015	4.000	4.000	5570	334	5.3
		5.00	4	70	0.025	5.000	5.000	4455	446	11.1
		6.00	4	70	0.030	6.000	6.000	3715	446	16.0
		8.00	4	70	0.035	8.000	8.000	2785	390	25.0
		10.00	4	70	0.045	10.000	10.000	2230	401	40.1
		12.00	4	70	0.050	12.000	12.000	1855	371	53.4
		16.00	4	70	0.060	8.000	16.000	1395	335	42.9
		20.00	4	70	0.075	10.000	20.000	1115	335	66.9

Corner radius end mills

Smooth-edged, normal version

HM MG10 | λ 40° γ 0°

Vario



Roughing

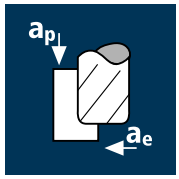
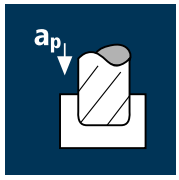
Finishing

ToolSchool P8107 / P8207 P8307 / P8407

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **15326** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15326	POLYCHROM P15226
180	3.00	6.00	57	8.00	15.56	0.500	6.0°	4	●	
220	4.00	6.00	57	11.00	16.89	0.500	4.0°	4	●	
260	5.00	6.00	57	13.00	17.22	0.500	2.0°	4	●	
300	6.00	6.00	57	13.00	-	0.500	0.0°	4	●	
388	8.00	8.00	63	19.00	-	0.500	0.0°	4	●	
448	10.00	10.00	72	22.00	-	0.500	0.0°	4	●	
498	12.00	12.00	83	26.00	-	0.500	0.0°	4	●	
302	6.00	6.00	57	13.00	-	1.000	0.0°	4	●	
391	8.00	8.00	63	19.00	-	1.000	0.0°	4	●	
450	10.00	10.00	72	22.00	-	1.000	0.0°	4	●	
501	12.00	12.00	83	26.00	-	1.000	0.0°	4	●	
608	16.00	16.00	92	32.00	-	1.000	0.0°	4	●	
680	20.00	20.00	104	38.00	-	1.000	0.0°	4	●	
453	10.00	10.00	72	22.00	-	1.500	0.0°	4	●	
503	12.00	12.00	83	26.00	-	1.500	0.0°	4	●	
610	16.00	16.00	92	32.00	-	1.500	0.0°	4	●	

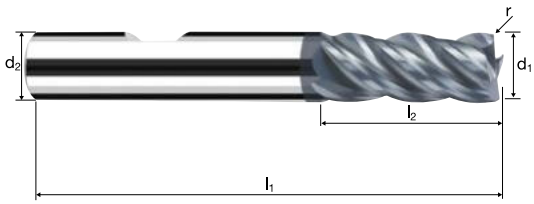
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	10.00	4	170	0.070	15.000	4.000	5410	1515	90.9
		12.00	4	170	0.075	18.000	4.800	4510	1353	116.9
		16.00	4	170	0.100	24.000	6.400	3380	1352	207.7
		20.00	4	170	0.130	30.000	8.000	2705	1407	337.6
	Steel 850 - 1100 N/mm²	10.00	4	140	0.070	15.000	4.000	4455	1247	74.8
		12.00	4	140	0.075	18.000	4.800	3715	1115	96.3
		16.00	4	140	0.100	24.000	6.400	2785	1114	171.1
		20.00	4	140	0.130	30.000	8.000	2230	1160	278.3
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	4	70	0.065	15.000	4.000	2230	580	34.8
		12.00	4	70	0.075	18.000	4.800	1855	557	48.1
		16.00	4	70	0.095	24.000	6.400	1395	530	81.4
		20.00	4	70	0.120	30.000	8.000	1115	535	128.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	10.00	4	90	0.045	15.000	4.000	2865	516	30.9
		12.00	4	90	0.055	18.000	4.800	2385	525	45.3
		16.00	4	90	0.065	24.000	6.400	1790	465	71.5
		20.00	4	90	0.085	30.000	8.000	1430	486	116.7
	Steel < 850 N/mm²	10.00	4	135	0.055	10.000	10.000	4295	945	94.5
		12.00	4	135	0.060	12.000	12.000	3580	859	123.7
		16.00	4	135	0.075	8.000	16.000	2685	806	103.1
		20.00	4	135	0.095	10.000	20.000	2150	817	163.4
	Steel 850 - 1100 N/mm²	10.00	4	105	0.055	10.000	10.000	3340	735	73.5
		12.00	4	105	0.060	12.000	12.000	2785	668	96.2
		16.00	4	105	0.075	8.000	16.000	2090	627	80.3
		20.00	4	105	0.095	10.000	20.000	1670	635	126.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	10.00	4	55	0.055	10.000	10.000	1750	385	38.5
		12.00	4	55	0.060	12.000	12.000	1460	350	50.5
		16.00	4	55	0.075	8.000	16.000	1095	329	42.0
		20.00	4	55	0.095	10.000	20.000	875	333	66.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	10.00	4	70	0.045	10.000	10.000	2230	401	40.1
		12.00	4	70	0.050	12.000	12.000	1855	371	53.4
		16.00	4	70	0.060	8.000	16.000	1395	335	42.9
		20.00	4	70	0.075	10.000	20.000	1115	335	66.9

Corner radius end mills

Smooth-edged, normal version

HM MG10 | λ 40° γ 0°

Vario



Roughing

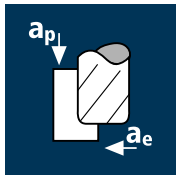
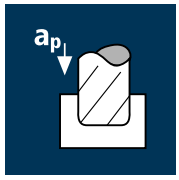
Finishing

ToolSchool P8107 / P8207 P8307 / P8407

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **15326** ø-Code **505**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P15326	POLYCHROM P15226
505	12.00	12.00	83	26.00	-	2.000	0.0°	4	●	
611	16.00	16.00	92	32.00	-	2.000	0.0°	4	●	
683	20.00	20.00	104	38.00	-	2.000	0.0°	4	●	
457	10.00	10.00	72	22.00	-	2.500	0.0°	4	●	
506	12.00	12.00	83	26.00	-	2.500	0.0°	4	●	
612	16.00	16.00	92	32.00	-	2.500	0.0°	4	●	
684	20.00	20.00	104	38.00	-	2.500	0.0°	4	●	
508	12.00	12.00	83	26.00	-	4.000	0.0°	4	●	
614	16.00	16.00	92	32.00	-	4.000	0.0°	4	●	
686	20.00	20.00	104	38.00	-	4.000	0.0°	4	●	

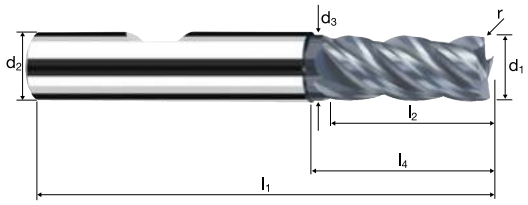
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	4	150	0.015	4.500	1.200	15915	955	5.2
		4.00	4	150	0.020	6.000	1.600	11935	955	9.2
		5.00	4	150	0.025	7.500	2.000	9550	955	14.3
		6.00	4	150	0.030	9.000	2.400	7960	955	20.6
		8.00	4	150	0.040	12.000	3.200	5970	955	36.7
		10.00	4	150	0.050	15.000	4.000	4775	955	57.3
		12.00	4	150	0.060	18.000	4.800	3980	955	82.5
		16.00	4	150	0.075	24.000	6.400	2985	896	137.5
		20.00	4	150	0.095	30.000	8.000	2385	906	217.5
	Steel 850 - 1100 N/mm²	3.00	4	120	0.015	4.500	1.200	12730	764	4.1
		4.00	4	120	0.020	6.000	1.600	9550	764	7.3
		5.00	4	120	0.025	7.500	2.000	7640	764	11.5
		6.00	4	120	0.030	9.000	2.400	6365	764	16.5
		8.00	4	120	0.040	12.000	3.200	4775	764	29.3
		10.00	4	120	0.050	15.000	4.000	3820	764	45.8
		12.00	4	120	0.060	18.000	4.800	3185	764	66.0
		16.00	4	120	0.075	24.000	6.400	2385	716	109.9
		20.00	4	120	0.095	30.000	8.000	1910	726	174.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	80	0.010	4.500	1.200	8490	340	1.8
		4.00	4	80	0.015	6.000	1.600	6365	382	3.7
		5.00	4	80	0.020	7.500	2.000	5095	408	6.1
		6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	382	14.7
		10.00	4	80	0.040	15.000	4.000	2545	407	24.4
		12.00	4	80	0.050	18.000	4.800	2120	424	36.6
		16.00	4	80	0.060	24.000	6.400	1590	382	58.6
		20.00	4	80	0.075	30.000	8.000	1275	383	91.8
	Cast iron (lamellar / spheroidal)	3.00	4	150	0.015	4.500	1.200	15915	955	5.2
		4.00	4	150	0.020	6.000	1.600	11935	955	9.2
		5.00	4	150	0.030	7.500	2.000	9550	1146	17.2
		6.00	4	150	0.035	9.000	2.400	7960	1114	24.1
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3
		10.00	4	150	0.055	15.000	4.000	4775	1051	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9
		20.00	4	150	0.105	30.000	8.000	2385	1002	240.4
	Steel < 850 N/mm²	3.00	4	125	0.010	3.000	3.000	13265	531	4.8
		4.00	4	125	0.015	4.000	4.000	9945	597	9.5
		5.00	4	125	0.020	5.000	5.000	7960	637	15.9
		6.00	4	125	0.025	6.000	6.000	6630	663	23.9
		8.00	4	125	0.030	8.000	8.000	4975	597	38.2
		10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.045	12.000	12.000	3315	597	85.9
		16.00	4	125	0.055	8.000	16.000	2485	547	70.0
		20.00	4	125	0.070	10.000	20.000	1990	557	111.4
	Steel 850 - 1100 N/mm²	3.00	4	95	0.010	3.000	3.000	10080	403	3.6
		4.00	4	95	0.015	4.000	4.000	7560	454	7.3
		5.00	4	95	0.020	5.000	5.000	6050	484	12.1
		6.00	4	95	0.025	6.000	6.000	5040	504	18.1
		8.00	4	95	0.030	8.000	8.000	3780	454	29.0
		10.00	4	95	0.040	10.000	10.000	3025	484	48.4
		12.00	4	95	0.045	12.000	12.000	2520	454	65.3
		16.00	4	95	0.055	8.000	16.000	1890	416	53.2
		20.00	4	95	0.070	10.000	20.000	1510	423	84.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	65	0.010	2.100	3.000	6895	276	1.7
		4.00	4	65	0.010	2.800	4.000	5175	207	2.3
		5.00	4	65	0.015	3.500	5.000	4140	248	4.3
		6.00	4	65	0.020	4.200	6.000	3450	276	7.0
		8.00	4	65	0.025	8.000	8.000	2585	259	16.5
		10.00	4	65	0.030	10.000	10.000	2070	248	24.8
		12.00	4	65	0.040	12.000	12.000	1725	276	39.7
		16.00	4	65	0.045	8.000	16.000	1295	233	29.8
		20.00	4	65	0.055	10.000	20.000	1035	228	45.5
	Cast iron (lamellar / spheroidal)	3.00	4	125	0.010	3.000	3.000	13265	531	4.8
		4.00	4	125	0.015	4.000	4.000	9945	597	9.5
		5.00	4	125	0.025	5.000	5.000	7960	796	19.9
		6.00	4	125	0.025	6.000	6.000	6630	663	23.9
		8.00	4	125	0.035	8.000	8.000	4975	697	44.6
		10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.050	12.000	12.000	3315	663	95.5
		16.00	4	125	0.065	8.000	16.000	2485	646	82.7
		20.00	4	125	0.080	10.000	20.000	1990	637	127.4

Corner radius end mills

Smooth-edged, normal version, short neck

HM MG10 | λ 40° γ 6°

Vario



Roughing

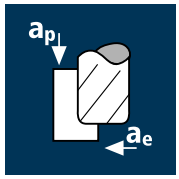
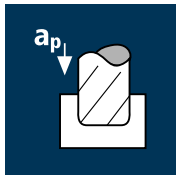
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **178**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	POLYCHROM P45219
178	3.00	6.00	2.80	57	8.00	14.00	20.63	0.200	4.5°	4		●
218	4.00	6.00	3.70	57	11.00	16.00	20.95	0.200	3.0°	4		●
258	5.00	6.00	4.60	57	13.00	18.00	21.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	57	13.00	19.34	20.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	63	19.00	25.29	26.00	0.200	0.0°	4		●
445	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
605	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.500	4.5°	4		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.500	3.0°	4		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	63	19.00	25.29	26.00	0.500	0.0°	4		●
448	10.00	10.00	9.20	72	22.00	30.20	31.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	83	26.00	36.13	37.00	0.500	0.0°	4		●
606	16.00	16.00	15.00	92	32.00	42.13	43.00	0.500	0.0°	4		●
678	20.00	20.00	19.00	104	38.00	52.13	53.00	0.500	0.0°	4		●

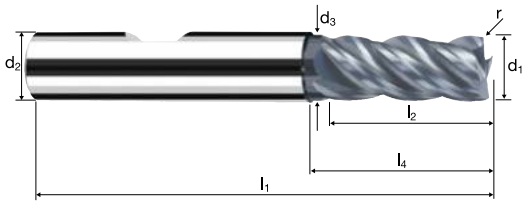
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	150	0.030	9.000	2.400	7960	955	20.6
		8.00	4	150	0.040	12.000	3.200	5970	955	36.7
		10.00	4	150	0.050	15.000	4.000	4775	955	57.3
		12.00	4	150	0.060	18.000	4.800	3980	955	82.5
		16.00	4	150	0.075	24.000	6.400	2985	896	137.5
		20.00	4	150	0.095	30.000	8.000	2385	906	217.5
	Steel 850 - 1100 N/mm²	6.00	4	120	0.030	9.000	2.400	6365	764	16.5
		8.00	4	120	0.040	12.000	3.200	4775	764	29.3
		10.00	4	120	0.050	15.000	4.000	3820	764	45.8
		12.00	4	120	0.060	18.000	4.800	3185	764	66.0
		16.00	4	120	0.075	24.000	6.400	2385	716	109.9
		20.00	4	120	0.095	30.000	8.000	1910	726	174.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	80	0.025	9.000	2.400	4245	425	9.2
		8.00	4	80	0.030	12.000	3.200	3185	382	14.7
		10.00	4	80	0.040	15.000	4.000	2545	407	24.4
		12.00	4	80	0.050	18.000	4.800	2120	424	36.6
		16.00	4	80	0.060	24.000	6.400	1590	382	58.6
		20.00	4	80	0.075	30.000	8.000	1275	383	91.8
	Cast iron (lamellar / spheroidal)	6.00	4	150	0.035	9.000	2.400	7960	1114	24.1
		8.00	4	150	0.045	12.000	3.200	5970	1075	41.3
		10.00	4	150	0.055	15.000	4.000	4775	1051	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9
		20.00	4	150	0.105	30.000	8.000	2385	1002	240.4
	Steel < 850 N/mm²	6.00	4	125	0.025	6.000	6.000	6630	663	23.9
		8.00	4	125	0.030	8.000	8.000	4975	597	38.2
		10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.045	12.000	12.000	3315	597	85.9
		16.00	4	125	0.055	8.000	16.000	2485	547	70.0
		20.00	4	125	0.070	10.000	20.000	1990	557	111.4
	Steel 850 - 1100 N/mm²	6.00	4	95	0.025	6.000	6.000	5040	504	18.1
		8.00	4	95	0.030	8.000	8.000	3780	454	29.0
		10.00	4	95	0.040	10.000	10.000	3025	484	48.4
		12.00	4	95	0.045	12.000	12.000	2520	454	65.3
		16.00	4	95	0.055	8.000	16.000	1890	416	53.2
		20.00	4	95	0.070	10.000	20.000	1510	423	84.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	65	0.020	4.200	6.000	3450	276	7.0
		8.00	4	65	0.025	8.000	8.000	2585	259	16.5
		10.00	4	65	0.030	10.000	10.000	2070	248	24.8
		12.00	4	65	0.040	12.000	12.000	1725	276	39.7
		16.00	4	65	0.045	8.000	16.000	1295	233	29.8
		20.00	4	65	0.055	10.000	20.000	1035	228	45.5
	Cast iron (lamellar / spheroidal)	6.00	4	125	0.025	6.000	6.000	6630	663	23.9
		8.00	4	125	0.035	8.000	8.000	4975	697	44.6
		10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.050	12.000	12.000	3315	663	95.5
		16.00	4	125	0.065	8.000	16.000	2485	646	82.7
		20.00	4	125	0.080	10.000	20.000	1990	637	127.4

Corner radius end mills

Smooth-edged, normal version, short neck

HM MG10 | λ 40° γ 6°

Vario



Roughing

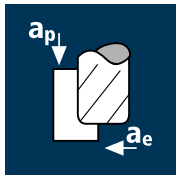
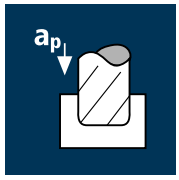
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **301**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	POLYCHROM P45219
301	6.00	6.00	5.50	57	13.00	19.34	20.00	0.800	0.0°	4		●
389	8.00	8.00	7.40	63	19.00	25.29	26.00	0.800	0.0°	4		●
449	10.00	10.00	9.20	72	22.00	30.20	31.00	0.800	0.0°	4		●
499	12.00	12.00	11.00	83	26.00	36.13	37.00	0.800	0.0°	4		●
302	6.00	6.00	5.50	57	13.00	19.34	20.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	92	32.00	42.13	43.00	1.000	0.0°	4		●
680	20.00	20.00	19.00	104	38.00	52.13	53.00	1.000	0.0°	4		●
304	6.00	6.00	5.50	57	13.00	19.34	20.00	1.500	0.0°	4		●
393	8.00	8.00	7.40	63	19.00	25.29	26.00	1.500	0.0°	4		●
453	10.00	10.00	9.20	72	22.00	30.20	31.00	1.500	0.0°	4		●
503	12.00	12.00	11.00	83	26.00	36.13	37.00	1.500	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	1.500	0.0°	4		●

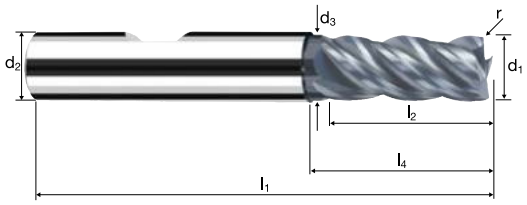
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	10.00	4	150	0.050	15.000	4.000	4775	955	57.3
		12.00	4	150	0.060	18.000	4.800	3980	955	82.5
		16.00	4	150	0.075	24.000	6.400	2985	896	137.5
		20.00	4	150	0.095	30.000	8.000	2385	906	217.5
	Steel 850 - 1100 N/mm²	10.00	4	120	0.050	15.000	4.000	3820	764	45.8
		12.00	4	120	0.060	18.000	4.800	3185	764	66.0
		16.00	4	120	0.075	24.000	6.400	2385	716	109.9
		20.00	4	120	0.095	30.000	8.000	1910	726	174.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	10.00	4	80	0.040	15.000	4.000	2545	407	24.4
		12.00	4	80	0.050	18.000	4.800	2120	424	36.6
		16.00	4	80	0.060	24.000	6.400	1590	382	58.6
		20.00	4	80	0.075	30.000	8.000	1275	383	91.8
	Cast iron (lamellar / spheroidal)	10.00	4	150	0.055	15.000	4.000	4775	1051	63.0
		12.00	4	150	0.065	18.000	4.800	3980	1035	89.4
		16.00	4	150	0.085	24.000	6.400	2985	1015	155.9
		20.00	4	150	0.105	30.000	8.000	2385	1002	240.4
	Steel < 850 N/mm²	10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.045	12.000	12.000	3315	597	85.9
		16.00	4	125	0.055	8.000	16.000	2485	547	70.0
		20.00	4	125	0.070	10.000	20.000	1990	557	111.4
	Steel 850 - 1100 N/mm²	10.00	4	95	0.040	10.000	10.000	3025	484	48.4
		12.00	4	95	0.045	12.000	12.000	2520	454	65.3
		16.00	4	95	0.055	8.000	16.000	1890	416	53.2
		20.00	4	95	0.070	10.000	20.000	1510	423	84.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	10.00	4	65	0.030	10.000	10.000	2070	248	24.8
		12.00	4	65	0.040	12.000	12.000	1725	276	39.7
		16.00	4	65	0.045	8.000	16.000	1295	233	29.8
		20.00	4	65	0.055	10.000	20.000	1035	228	45.5
	Cast iron (lamellar / spheroidal)	10.00	4	125	0.040	10.000	10.000	3980	637	63.7
		12.00	4	125	0.050	12.000	12.000	3315	663	95.5
		16.00	4	125	0.065	8.000	16.000	2485	646	82.7
		20.00	4	125	0.080	10.000	20.000	1990	637	127.4

Corner radius end mills

Smooth-edged, normal version, short neck

HM MG10 | λ 40° γ 6°

Vario



Roughing

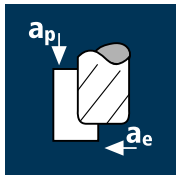
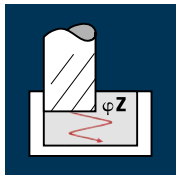
Finishing

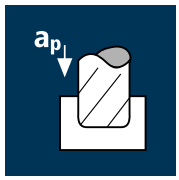
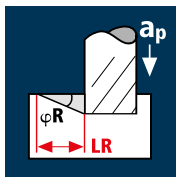
ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

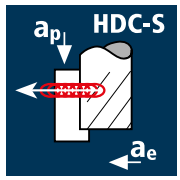
Example: **Order-N°.** Coating **P** Article-N°. **45319** ø-Code **306**

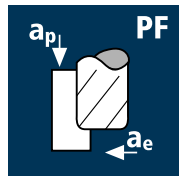
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P45319	POLYCHROM P45219
306	6.00	6.00	5.50	57	13.00	19.34	20.00	2.000	0.0°	4		●
395	8.00	8.00	7.40	63	19.00	25.29	26.00	2.000	0.0°	4		●
455	10.00	10.00	9.20	72	22.00	30.20	31.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	83	26.00	36.13	37.00	2.000	0.0°	4		●
611	16.00	16.00	15.00	92	32.00	42.13	43.00	2.000	0.0°	4		●
683	20.00	20.00	19.00	104	38.00	52.13	53.00	2.000	0.0°	4		●
457	10.00	10.00	9.20	72	22.00	30.20	31.00	2.500	0.0°	4		●
506	12.00	12.00	11.00	83	26.00	36.13	37.00	2.500	0.0°	4		●
612	16.00	16.00	15.00	92	32.00	42.13	43.00	2.500	0.0°	4		●
684	20.00	20.00	19.00	104	38.00	52.13	53.00	2.500	0.0°	4		●
508	12.00	12.00	11.00	83	26.00	36.13	37.00	4.000	0.0°	4		●
614	16.00	16.00	15.00	92	32.00	42.13	43.00	4.000	0.0°	4		●
686	20.00	20.00	19.00	104	38.00	52.13	53.00	4.000	0.0°	4		●

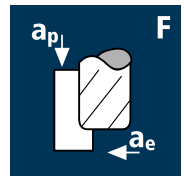
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC H	3.00	4	60	0.009	3.000	1.800	6365	229	1.2	5.0°
		4.00	4	60	0.013	4.000	2.400	4775	248	2.4	5.0°
		5.00	4	60	0.017	5.000	3.000	3820	260	3.9	5.0°
		6.00	4	60	0.021	7.500	3.600	3185	268	7.2	5.0°
		8.00	4	60	0.028	10.000	4.800	2385	267	12.8	5.0°
		10.00	4	60	0.035	12.500	6.000	1910	267	20.1	5.0°
		12.00	4	60	0.042	15.000	7.200	1590	267	28.8	5.0°
		16.00	4	60	0.050	20.000	9.600	1195	239	45.9	5.0°
	Hardened tool steel > 60 HRC H	3.00	4	25	0.004	3.000	1.800	2655	43	0.2	3.0°
		4.00	4	25	0.006	4.000	2.400	1990	48	0.5	4.0°
		5.00	4	25	0.008	5.000	3.000	1590	51	0.8	5.0°
		6.00	4	25	0.009	6.000	3.600	1325	48	1.0	5.0°
		8.00	4	25	0.011	8.000	4.800	995	44	1.7	5.0°
		10.00	4	25	0.015	10.000	6.000	795	48	2.9	5.0°
		12.00	4	25	0.018	12.000	7.200	665	48	4.1	5.0°
		16.00	4	25	0.023	16.000	9.600	495	46	7.0	5.0°
	High speed steel, hardened 64 - 70 HRC H	3.00	4	15	0.005	2.250	0.450	1590	32	0.0	3.0°
		4.00	4	15	0.006	3.000	0.600	1195	29	0.1	4.0°
		5.00	4	15	0.008	3.750	0.750	955	31	0.1	5.0°
		6.00	4	15	0.006	4.500	3.600	795	19	0.3	5.0°
		8.00	4	15	0.008	6.000	4.800	595	19	0.5	5.0°
		10.00	4	15	0.010	7.500	6.000	475	19	0.9	5.0°
		12.00	4	15	0.012	9.000	7.200	400	19	1.2	5.0°
		16.00	4	15	0.016	12.000	9.600	300	19	2.2	5.0°

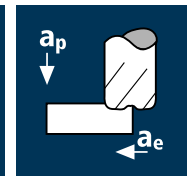
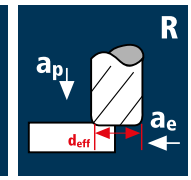
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC H	3.00	4	50	0.010	3.000	3.000	5305	212	1.9	5.0°	34.3
		4.00	4	50	0.013	4.000	4.000	3980	207	3.3	5.0°	45.7
		5.00	4	50	0.017	5.000	5.000	3185	217	5.4	5.0°	57.2
		6.00	4	50	0.021	6.000	6.000	2655	223	8.0	5.0°	68.6
		8.00	4	50	0.028	8.000	8.000	1990	223	14.3	5.0°	91.4
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3	5.0°	114.3
		12.00	4	50	0.042	12.000	12.000	1325	223	32.1	5.0°	137.2
		16.00	4	50	0.064	8.000	16.000	995	255	32.6	5.0°	91.4
	Hardened tool steel > 60 HRC H	3.00	4	20	0.004	3.000	3.000	2120	34	0.3	3.0°	57.2
		4.00	4	20	0.006	4.000	4.000	1590	38	0.6	4.0°	57.2
		5.00	4	20	0.008	5.000	5.000	1275	41	1.0	5.0°	57.2
		6.00	4	20	0.009	6.000	6.000	1060	38	1.4	5.0°	68.6
		8.00	4	20	0.011	8.000	8.000	795	35	2.2	5.0°	91.4
		10.00	4	20	0.015	10.000	10.000	635	38	3.8	5.0°	114.3
		12.00	4	20	0.020	12.000	12.000	530	42	6.1	5.0°	137.2
		16.00	4	20	0.032	8.000	16.000	400	51	6.6	5.0°	91.4
	High speed steel, hardened 64 - 70 HRC H	3.00	4	10	0.003	1.500	3.000	1060	13	0.1	3.0°	28.6
		4.00	4	10	0.004	2.000	4.000	795	13	0.1	4.0°	28.6
		5.00	4	10	0.005	2.500	5.000	635	13	0.2	5.0°	28.6
		6.00	4	10	0.006	3.000	6.000	530	13	0.2	5.0°	34.3
		8.00	4	10	0.008	4.000	8.000	400	13	0.4	5.0°	45.7
		10.00	4	10	0.010	5.000	10.000	320	13	0.6	5.0°	57.2
		12.00	4	10	0.012	6.000	12.000	265	13	0.9	5.0°	68.6
		16.00	4	10	0.016	8.000	16.000	200	13	1.6	5.0°	91.4

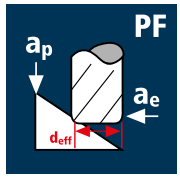
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

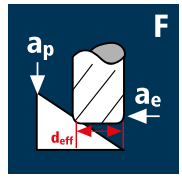


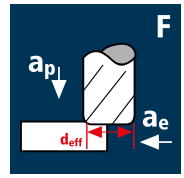


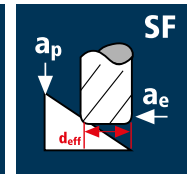








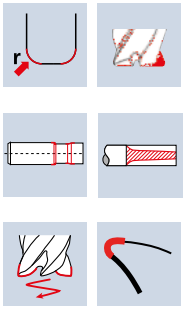


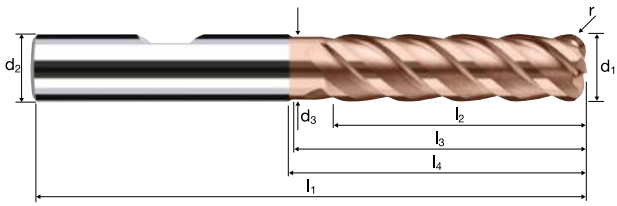
Corner radius end mills HX

Smooth-edged, medium length version, short neck
High-performance penetration edge

HM
XA

λ **45°**
γ **-10°**





Roughing HPC

Roughing HDC

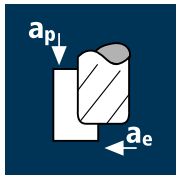
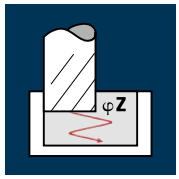
Finishing

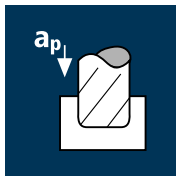
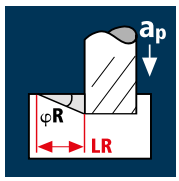
ReTool®

HRC 48-56 | **HRC** 56-60 | **HRC** > 60 | **HSS**

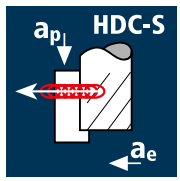
Example:
Order-N°. Coating **H** Article-N°. **8617** ø-Code **178**

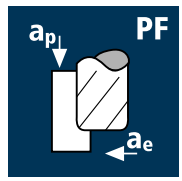
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si H8617	DURO-Si H8517
178	3.00	6.00	2.80	63	11.00	18.00	24.37	0.200	4.5°	4		●
218	4.00	6.00	3.70	63	13.00	22.00	26.82	0.200	3.5°	4		●
258	5.00	6.00	4.60	63	16.00	24.00	27.27	0.200	1.5°	4		●
297	6.00	6.00	5.50	63	21.00	25.34	26.00	0.200	0.0°	4		●
385	8.00	8.00	7.40	72	31.00	34.79	35.50	0.200	0.0°	4		●
445	10.00	10.00	9.20	84	37.00	42.20	43.00	0.200	0.0°	4		●
496	12.00	12.00	11.00	97	44.00	50.13	51.00	0.200	0.0°	4		●
605	16.00	16.00	15.00	108	53.00	58.13	59.00	0.200	0.0°	4		●
180	3.00	6.00	2.80	63	11.00	18.00	24.37	0.500	4.5°	4		●
220	4.00	6.00	3.70	63	13.00	22.00	26.82	0.500	3.5°	4		●
260	5.00	6.00	4.60	63	16.00	24.00	27.27	0.500	1.5°	4		●
300	6.00	6.00	5.50	63	21.00	25.34	26.00	0.500	0.0°	4		●
388	8.00	8.00	7.40	72	31.00	34.79	35.50	0.500	0.0°	4		●
448	10.00	10.00	9.20	84	37.00	42.20	43.00	0.500	0.0°	4		●
498	12.00	12.00	11.00	97	44.00	50.13	51.00	0.500	0.0°	4		●
606	16.00	16.00	15.00	108	53.00	58.13	59.00	0.500	0.0°	4		●

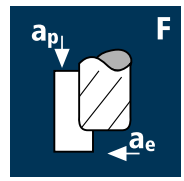
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Hardened tool steel 52 - 56 HRC H	6.00	4	60	0.021	7.500	3.600	3185	268	7.2	5.0°
		8.00	4	60	0.028	10.000	4.800	2385	267	12.8	5.0°
		10.00	4	60	0.035	12.500	6.000	1910	267	20.1	5.0°
		12.00	4	60	0.042	15.000	7.200	1590	267	28.8	5.0°
		16.00	4	60	0.050	20.000	9.600	1195	239	45.9	5.0°
	Hardened tool steel > 60 HRC H	6.00	4	25	0.009	6.000	3.600	1325	48	1.0	5.0°
		8.00	4	25	0.011	8.000	4.800	995	44	1.7	5.0°
		10.00	4	25	0.015	10.000	6.000	795	48	2.9	5.0°
		12.00	4	25	0.018	12.000	7.200	665	48	4.1	5.0°
		16.00	4	25	0.023	16.000	9.600	495	46	7.0	5.0°
	High speed steel, hardened 64 - 70 HRC H	6.00	4	15	0.006	4.500	3.600	795	19	0.3	5.0°
		8.00	4	15	0.008	6.000	4.800	595	19	0.5	5.0°
		10.00	4	15	0.010	7.500	6.000	475	19	0.9	5.0°
		12.00	4	15	0.012	9.000	7.200	400	19	1.2	5.0°
		16.00	4	15	0.016	12.000	9.600	300	19	2.2	5.0°

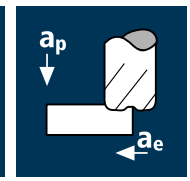
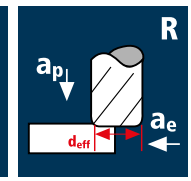
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Hardened tool steel 52 - 56 HRC H	6.00	4	50	0.021	6.000	6.000	2655	223	8.0	5.0°	68.6
		8.00	4	50	0.028	8.000	8.000	1990	223	14.3	5.0°	91.4
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3	5.0°	114.3
		12.00	4	50	0.042	12.000	12.000	1325	223	32.1	5.0°	137.2
		16.00	4	50	0.064	8.000	16.000	995	255	32.6	5.0°	91.4
	Hardened tool steel > 60 HRC H	6.00	4	20	0.009	6.000	6.000	1060	38	1.4	5.0°	68.6
		8.00	4	20	0.011	8.000	8.000	795	35	2.2	5.0°	91.4
		10.00	4	20	0.015	10.000	10.000	635	38	3.8	5.0°	114.3
		12.00	4	20	0.020	12.000	12.000	530	42	6.1	5.0°	137.2
		16.00	4	20	0.032	8.000	16.000	400	51	6.6	5.0°	91.4
	High speed steel, hardened 64 - 70 HRC H	6.00	4	10	0.006	3.000	6.000	530	13	0.2	5.0°	34.3
		8.00	4	10	0.008	4.000	8.000	400	13	0.4	5.0°	45.7
		10.00	4	10	0.010	5.000	10.000	320	13	0.6	5.0°	57.2
		12.00	4	10	0.012	6.000	12.000	265	13	0.9	5.0°	68.6
		16.00	4	10	0.016	8.000	16.000	200	13	1.6	5.0°	91.4

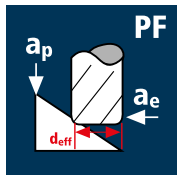
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

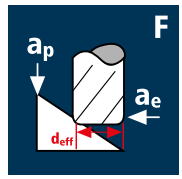


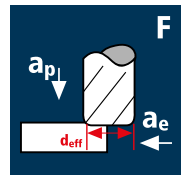


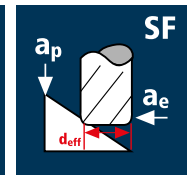










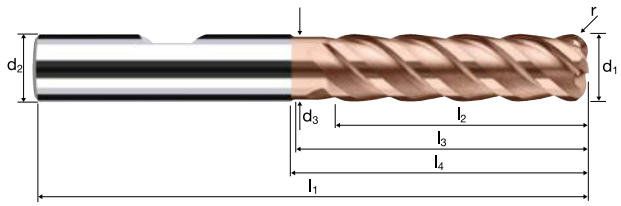
Corner radius end mills HX

Smooth-edged, medium length version, short neck
High-performance penetration edge

X-Generation

HM
XA

λ **45°**
γ **-10°**



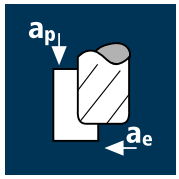
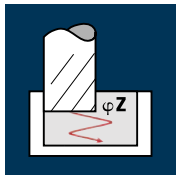
Roughing HPC | Roughing HDC | Finishing

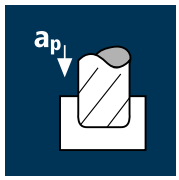
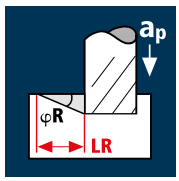
ReTool®

HRC 48-56 | **HRC** 56-60 | **HRC** > 60 | **HSS**

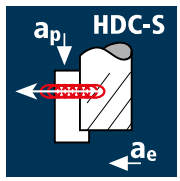
Example:
Order-N°. Coating **H** Article-N°. **8617** ø-Code **302**

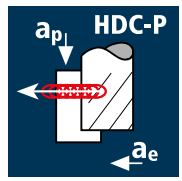
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	DURO-Si **H8617**	DURO-Si **H8517**
302	6.00	6.00	5.50	63	21.00	25.34	26.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	72	31.00	34.79	35.50	1.000	0.0°	4		●
450	10.00	10.00	9.20	84	37.00	42.20	43.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	97	44.00	50.13	51.00	1.000	0.0°	4		●
608	16.00	16.00	15.00	108	53.00	58.13	59.00	1.000	0.0°	4		●
304	6.00	6.00	5.50	63	21.00	25.34	26.00	1.500	0.0°	4		●
395	8.00	8.00	7.40	72	31.00	34.79	35.50	2.000	0.0°	4		●
457	10.00	10.00	9.20	84	37.00	42.20	43.00	2.500	0.0°	4		●
507	12.00	12.00	11.00	97	44.00	50.13	51.00	3.000	0.0°	4		●

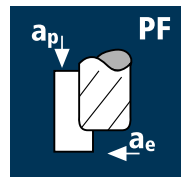
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	4.00	4	135	0.026	8.000	1.200	10745	1118	10.7	12.0°
		5.00	4	135	0.030	10.000	1.500	8595	1031	15.5	12.0°
		6.00	4	135	0.034	12.000	1.800	7160	974	21.0	12.0°
		8.00	4	135	0.043	16.000	2.400	5370	924	35.5	12.0°
		10.00	4	135	0.055	20.000	3.000	4295	945	56.7	12.0°
		12.00	4	135	0.064	24.000	3.600	3580	917	79.2	12.0°
		16.00	4	135	0.072	25.600	4.800	2685	773	95.0	12.0°
	Steel 1100 - 1300 N/mm²	4.00	4	105	0.021	8.000	1.200	8355	702	6.7	12.0°
		5.00	4	105	0.026	10.000	1.500	6685	695	10.4	12.0°
		6.00	4	105	0.030	12.000	1.800	5570	668	14.4	12.0°
		8.00	4	105	0.038	16.000	2.400	4180	635	24.4	12.0°
		10.00	4	105	0.047	20.000	3.000	3340	628	37.7	12.0°
		12.00	4	105	0.055	24.000	3.600	2785	613	52.9	12.0°
		16.00	4	105	0.064	25.600	4.800	2090	535	65.7	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	80	0.017	8.000	1.200	6365	433	4.2	8.0°
		5.00	4	80	0.021	10.000	1.500	5095	428	6.4	8.0°
		6.00	4	80	0.026	12.000	1.800	4245	442	9.5	8.0°
		8.00	4	80	0.030	16.000	2.400	3185	382	14.7	8.0°
		10.00	4	80	0.038	20.000	3.000	2545	387	23.2	8.0°
		12.00	4	80	0.047	24.000	3.600	2120	399	34.4	8.0°
		16.00	4	80	0.055	25.600	4.800	1590	350	43.0	8.0°

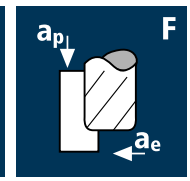
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4.00	4	110	0.017	6.000	4.000	8755	595	14.3	12.0°	28.2
		5.00	4	110	0.020	7.500	5.000	7005	560	21.0	12.0°	35.3
		6.00	4	110	0.022	9.000	6.000	5835	514	27.7	12.0°	42.3
		8.00	4	110	0.028	12.000	8.000	4375	490	47.0	12.0°	56.5
		10.00	4	110	0.036	15.000	10.000	3500	504	75.6	12.0°	70.6
		12.00	4	110	0.042	18.000	12.000	2920	491	106.0	12.0°	84.7
		16.00	4	110	0.047	24.000	16.000	2190	412	158.1	12.0°	112.9
	Steel 1100 - 1300 N/mm²	4.00	4	85	0.014	6.000	4.000	6765	379	9.1	12.0°	28.2
		5.00	4	85	0.017	7.500	5.000	5410	368	13.8	12.0°	35.3
		6.00	4	85	0.020	9.000	6.000	4510	361	19.5	12.0°	42.3
		8.00	4	85	0.025	12.000	8.000	3380	338	32.4	12.0°	56.5
		10.00	4	85	0.031	15.000	10.000	2705	335	50.3	12.0°	70.6
		12.00	4	85	0.036	18.000	12.000	2255	325	70.1	12.0°	84.7
		16.00	4	85	0.042	24.000	16.000	1690	284	109.0	12.0°	112.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	65	0.011	6.000	4.000	5175	228	5.5	12.0°	28.2
		5.00	4	65	0.014	7.500	5.000	4140	232	8.7	12.0°	35.3
		6.00	4	65	0.017	9.000	6.000	3450	235	12.7	12.0°	42.3
		8.00	4	65	0.020	12.000	8.000	2585	207	19.9	12.0°	56.5
		10.00	4	65	0.025	15.000	10.000	2070	207	31.1	12.0°	70.6
		12.00	4	65	0.031	18.000	12.000	1725	214	46.2	12.0°	84.7
		16.00	4	65	0.036	24.000	16.000	1295	187	71.6	12.0°	112.9

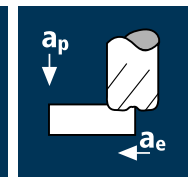
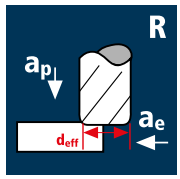
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

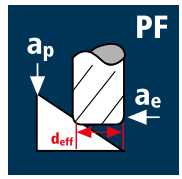








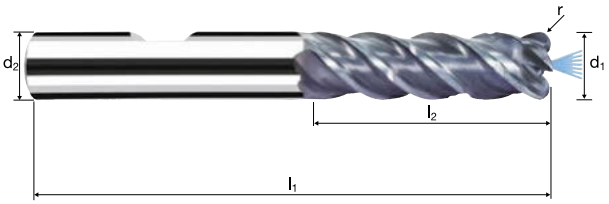


Corner radius end mills MFC

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

Vario



Roughing HPC | Roughing HDC | Finishing

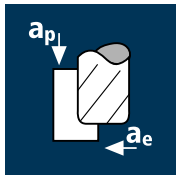
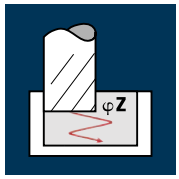
ReTool®

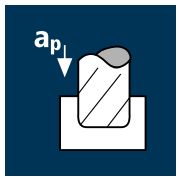
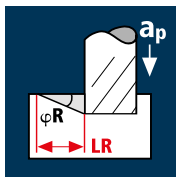
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** | Article-N°. **8217** | ø-Code **218**

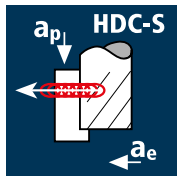
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P8217	POLYCHROM P8117
218*	4.00	6.00	63	13.00	19.59	0.200	3.5°	4		●
258*	5.00	6.00	63	16.00	20.72	0.200	1.5°	4		●
297	6.00	6.00	63	21.00	-	0.200	0.0°	4		●
385	8.00	8.00	72	31.00	-	0.200	0.0°	4		●
445	10.00	10.00	84	37.00	-	0.200	0.0°	4		●
496	12.00	12.00	97	44.00	-	0.200	0.0°	4		●
605	16.00	16.00	108	53.00	-	0.200	0.0°	4		●
220*	4.00	6.00	63	13.00	19.59	0.500	3.5°	4		●
260*	5.00	6.00	63	16.00	20.72	0.500	1.5°	4		●
300	6.00	6.00	63	21.00	-	0.500	0.0°	4		●
388	8.00	8.00	72	31.00	-	0.500	0.0°	4		●
448	10.00	10.00	84	37.00	-	0.500	0.0°	4		●
498	12.00	12.00	97	44.00	-	0.500	0.0°	4		●
606	16.00	16.00	108	53.00	-	0.500	0.0°	4		●
302	6.00	6.00	63	21.00	-	1.000	0.0°	4		●
391	8.00	8.00	72	31.00	-	1.000	0.0°	4		●
450	10.00	10.00	84	37.00	-	1.000	0.0°	4		●
501	12.00	12.00	97	44.00	-	1.000	0.0°	4		●
608	16.00	16.00	108	53.00	-	1.000	0.0°	4		●

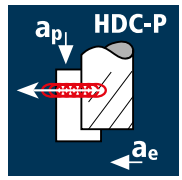
* without chip breaker only

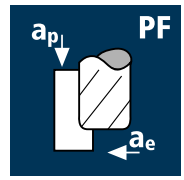
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel 850 - 1100 N/mm²	8.00	4	135	0.043	16.000	2.400	5370	924	35.5	12.0°
		10.00	4	135	0.055	20.000	3.000	4295	945	56.7	12.0°
		12.00	4	135	0.064	24.000	3.600	3580	917	79.2	12.0°
		16.00	4	135	0.072	25.600	4.800	2685	773	95.0	12.0°
	Steel 1100 - 1300 N/mm²	8.00	4	105	0.038	16.000	2.400	4180	635	24.4	12.0°
		10.00	4	105	0.047	20.000	3.000	3340	628	37.7	12.0°
		12.00	4	105	0.055	24.000	3.600	2785	613	52.9	12.0°
		16.00	4	105	0.064	25.600	4.800	2090	535	65.7	12.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	80	0.030	16.000	2.400	3185	382	14.7	8.0°
		10.00	4	80	0.038	20.000	3.000	2545	387	23.2	8.0°
		12.00	4	80	0.047	24.000	3.600	2120	399	34.4	8.0°
		16.00	4	80	0.055	25.600	4.800	1590	350	43.0	8.0°

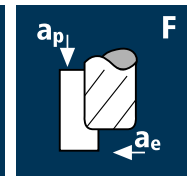
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	8.00	4	110	0.028	12.000	8.000	4375	490	47.0	12.0°	56.5
		10.00	4	110	0.036	15.000	10.000	3500	504	75.6	12.0°	70.6
		12.00	4	110	0.042	18.000	12.000	2920	491	106.0	12.0°	84.7
		16.00	4	110	0.047	24.000	16.000	2190	412	158.1	12.0°	112.9
	Steel 1100 - 1300 N/mm²	8.00	4	85	0.025	12.000	8.000	3380	338	32.4	12.0°	56.5
		10.00	4	85	0.031	15.000	10.000	2705	335	50.3	12.0°	70.6
		12.00	4	85	0.036	18.000	12.000	2255	325	70.1	12.0°	84.7
		16.00	4	85	0.042	24.000	16.000	1690	284	109.0	12.0°	112.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	65	0.020	12.000	8.000	2585	207	19.9	12.0°	56.5
		10.00	4	65	0.025	15.000	10.000	2070	207	31.1	12.0°	70.6
		12.00	4	65	0.031	18.000	12.000	1725	214	46.2	12.0°	84.7
		16.00	4	65	0.036	24.000	16.000	1295	187	71.6	12.0°	112.9

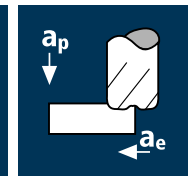
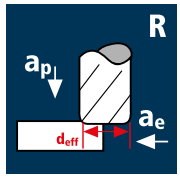
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

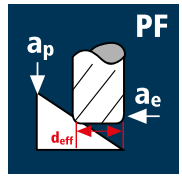








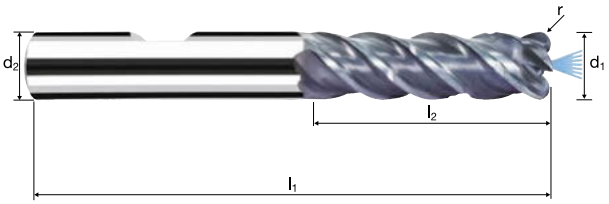


Corner radius end mills MFC

Smooth-edged, chip breaker, medium length version
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **45°** γ **10°**

Vario



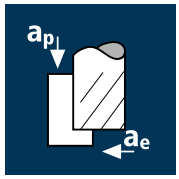
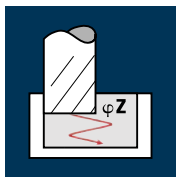
Roughing HPC | Roughing HDC | Finishing

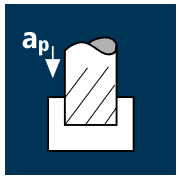
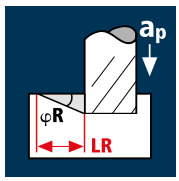
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8217** ø-Code **393**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r 0/+0.03	α	z	POLYCHROM P8217	POLYCHROM P8117
393	8.00	8.00	72	31.00	-	1.500	0.0°	4		●
453	10.00	10.00	84	37.00	-	1.500	0.0°	4		●
503	12.00	12.00	97	44.00	-	1.500	0.0°	4		●
610	16.00	16.00	108	53.00	-	1.500	0.0°	4		●
455	10.00	10.00	84	37.00	-	2.000	0.0°	4		●
505	12.00	12.00	97	44.00	-	2.000	0.0°	4		●
611	16.00	16.00	108	53.00	-	2.000	0.0°	4		●
506	12.00	12.00	97	44.00	-	2.500	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Steel < 850 N/mm²	4.00	3	160	0.020	6.000	2.400	12730	764	11.0	20.0°
		5.00	4	160	0.025	7.500	3.000	10185	1019	22.9	20.0°
		6.00	4	160	0.030	9.000	3.600	8490	1019	33.0	20.0°
		8.00	4	160	0.040	12.000	4.800	6365	1018	58.7	20.0°
		10.00	4	160	0.050	15.000	6.000	5095	1019	91.7	20.0°
		12.00	4	160	0.055	18.000	7.200	4245	934	121.0	20.0°
		16.00	4	160	0.055	24.000	9.600	3185	701	161.4	20.0°
		20.00	4	160	0.060	30.000	12.000	2545	611	219.9	20.0°
	Steel 850 - 1100 N/mm²	4.00	3	130	0.020	6.000	2.400	10345	621	8.9	18.0°
		5.00	4	130	0.025	7.500	3.000	8275	828	18.6	18.0°
		6.00	4	130	0.030	9.000	3.600	6895	827	26.8	18.0°
		8.00	4	130	0.040	12.000	4.800	5175	828	47.7	18.0°
		10.00	4	130	0.050	15.000	6.000	4140	828	74.5	18.0°
		12.00	4	130	0.055	18.000	7.200	3450	759	98.4	18.0°
		16.00	4	130	0.055	24.000	9.600	2585	569	131.0	18.0°
		20.00	4	130	0.060	30.000	12.000	2070	497	178.8	18.0°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	3	60	0.015	6.000	2.400	4775	215	3.1	12.0°
		5.00	4	60	0.020	7.500	3.000	3820	306	6.9	12.0°
		6.00	4	60	0.025	9.000	3.600	3185	319	10.3	12.0°
		8.00	4	60	0.030	12.000	4.800	2385	286	16.5	12.0°
		10.00	4	60	0.040	15.000	6.000	1910	306	27.5	12.0°
		12.00	4	60	0.045	18.000	7.200	1590	286	37.1	12.0°
		16.00	4	60	0.045	24.000	8.400	1195	215	43.4	12.0°
		20.00	4	60	0.050	30.000	12.000	955	191	68.8	12.0°
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	45	0.015	6.000	2.400	3580	161	2.3	12.0°
		5.00	4	45	0.020	7.500	3.000	2865	229	5.2	12.0°
		6.00	4	45	0.025	9.000	3.600	2385	239	7.7	12.0°
		8.00	4	45	0.030	12.000	4.800	1790	215	12.4	12.0°
		10.00	4	45	0.040	15.000	6.000	1430	229	20.6	12.0°
		12.00	4	45	0.045	18.000	7.200	1195	215	27.9	12.0°
		16.00	4	45	0.045	24.000	9.600	895	161	37.1	12.0°
		20.00	4	45	0.050	30.000	12.000	715	143	51.5	12.0°

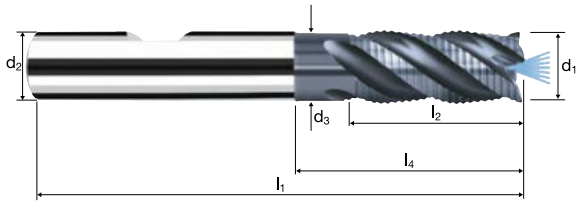
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	4.00	3	135	0.020	5.000	4.000	10745	645	12.9	20.0°	13.7
		5.00	4	135	0.025	6.300	5.000	8595	860	27.1	20.0°	17.3
		6.00	4	135	0.030	7.500	6.000	7160	859	38.7	20.0°	20.6
		8.00	4	135	0.040	10.000	8.000	5370	859	68.7	20.0°	27.5
		10.00	4	135	0.050	12.500	10.000	4295	859	107.4	20.0°	34.3
		12.00	4	135	0.055	15.000	12.000	3580	788	141.8	20.0°	41.2
		16.00	4	135	0.055	20.000	16.000	2685	591	189.0	20.0°	54.9
		20.00	4	135	0.060	25.000	20.000	2150	516	258.0	20.0°	68.7
	Steel 850 - 1100 N/mm²	4.00	3	80	0.020	5.000	4.000	6365	382	7.6	20.0°	13.7
		5.00	4	80	0.025	6.300	5.000	5095	510	16.0	20.0°	17.3
		6.00	4	80	0.030	7.500	6.000	4245	509	22.9	20.0°	20.6
		8.00	4	80	0.040	10.000	8.000	3185	510	40.8	20.0°	27.5
		10.00	4	80	0.050	12.500	10.000	2545	509	63.6	20.0°	34.3
		12.00	4	80	0.055	15.000	12.000	2120	466	84.0	20.0°	41.2
		16.00	4	80	0.055	20.000	16.000	1590	350	111.9	20.0°	54.9
		20.00	4	80	0.060	25.000	20.000	1275	306	153.0	20.0°	68.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	3	50	0.015	5.000	4.000	3980	179	3.6	14.0°	20.1
		5.00	4	50	0.020	6.300	5.000	3185	255	8.0	14.0°	25.3
		6.00	4	50	0.025	7.500	6.000	2655	266	11.9	14.0°	30.1
		8.00	4	50	0.030	10.000	8.000	1990	239	19.1	14.0°	40.1
		10.00	4	50	0.040	12.500	10.000	1590	254	31.8	14.0°	50.1
		12.00	4	50	0.045	15.000	12.000	1325	239	42.9	14.0°	60.2
		16.00	4	50	0.045	20.000	16.000	995	179	57.3	14.0°	80.2
		20.00	4	50	0.050	25.000	20.000	795	159	79.5	14.0°	100.3
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	35	0.015	5.000	4.000	2785	125	2.5	14.0°	20.1
		5.00	4	35	0.020	6.300	5.000	2230	178	5.6	14.0°	25.3
		6.00	4	35	0.025	7.500	6.000	1855	186	8.3	14.0°	30.1
		8.00	4	35	0.030	10.000	8.000	1395	167	13.4	14.0°	40.1
		10.00	4	35	0.040	12.500	10.000	1115	178	22.3	14.0°	50.1
		12.00	4	35	0.045	15.000	12.000	930	167	30.1	14.0°	60.2
		16.00	4	35	0.045	20.000	16.000	695	125	40.0	14.0°	80.2
		20.00	4	35	0.050	25.000	20.000	555	111	55.5	14.0°	100.3

Cylindrical end mills SupraCarb®

Profiled, normal version, short neck
High-performance penetration edge, central air/cooling channel

HM MG10 | λ **38°** γ **0°**

r



Roughing

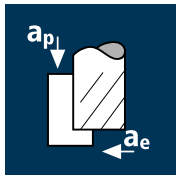
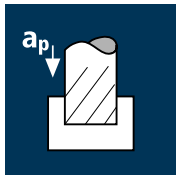
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)** Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8402** ø-Code **220**

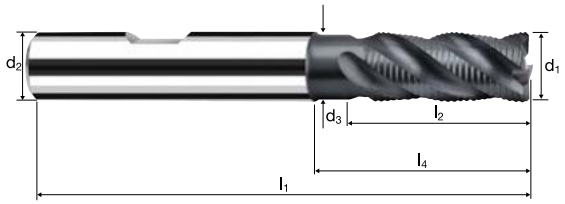
Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8402	P8302
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.100	3.0°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.200	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	160	0.015	3.600	1.800	16975	764	5.0
		4.00	3	160	0.020	4.800	2.400	12730	764	8.8
		5.00	4	160	0.025	6.000	3.000	10185	1019	18.3
		6.00	4	160	0.030	7.200	3.600	8490	1019	26.4
		8.00	4	160	0.040	9.600	4.800	6365	1018	46.9
		10.00	4	160	0.050	12.000	6.000	5095	1019	73.4
		12.00	4	160	0.055	14.400	7.200	4245	934	96.8
		16.00	4	160	0.055	19.200	9.600	3185	701	129.2
		20.00	4	160	0.060	24.000	12.000	2545	611	175.9
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.600	1.800	13795	621	4.0
		4.00	3	130	0.020	4.800	2.400	10345	621	7.2
		5.00	4	130	0.025	6.000	3.000	8275	828	14.9
		6.00	4	130	0.030	7.200	3.600	6895	827	21.4
		8.00	4	130	0.040	9.600	4.800	5175	828	38.2
		10.00	4	130	0.050	12.000	6.000	4140	828	59.6
		12.00	4	130	0.055	14.400	7.200	3450	759	78.7
		16.00	4	130	0.055	19.200	9.600	2585	569	104.8
		20.00	4	130	0.060	24.000	12.000	2070	497	143.1
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.010	3.600	1.800	4775	143	0.9
		4.00	3	45	0.015	4.800	2.400	3580	161	1.9
		5.00	4	45	0.020	6.000	3.000	2865	229	4.1
		6.00	4	45	0.025	7.200	3.600	2385	239	6.2
		8.00	4	45	0.030	9.600	4.800	1790	215	9.9
		10.00	4	45	0.040	12.000	6.000	1430	229	16.5
		12.00	4	45	0.045	14.400	7.200	1195	215	22.3
		16.00	4	45	0.045	19.200	9.600	895	161	29.7
		20.00	4	45	0.050	24.000	12.000	715	143	41.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	60	0.010	3.600	1.800	6365	191	1.2
		4.00	3	60	0.015	4.800	2.400	4775	215	2.5
		5.00	4	60	0.020	6.000	3.000	3820	306	5.5
		6.00	4	60	0.025	7.200	3.600	3185	319	8.3
		8.00	4	60	0.030	9.600	4.800	2385	286	13.2
		10.00	4	60	0.040	12.000	6.000	1910	306	22.0
		12.00	4	60	0.045	14.400	7.200	1590	286	29.7
		16.00	4	60	0.045	16.800	8.400	1195	215	30.4
		20.00	4	60	0.050	24.000	12.000	955	191	55.0
	Steel < 850 N/mm²	3.00	3	135	0.015	3.000	3.000	14325	645	5.8
		4.00	3	135	0.020	4.000	4.000	10745	645	10.3
		5.00	4	135	0.025	5.000	5.000	8595	860	21.5
		6.00	4	135	0.030	6.000	6.000	7160	859	30.9
		8.00	4	135	0.040	8.000	8.000	5370	859	55.0
		10.00	4	135	0.050	10.000	10.000	4295	859	85.9
		12.00	4	135	0.055	12.000	12.000	3580	788	113.4
		16.00	4	135	0.055	16.000	16.000	2685	591	151.2
		20.00	4	135	0.060	20.000	20.000	2150	516	206.4
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	382	3.4
		4.00	3	80	0.020	4.000	4.000	6365	382	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	509	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	509	50.9
		12.00	4	80	0.055	12.000	12.000	2120	466	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.5
		20.00	4	80	0.060	20.000	20.000	1275	306	122.4
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	112	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	178	4.5
		6.00	4	35	0.025	6.000	6.000	1855	186	6.7
		8.00	4	35	0.030	8.000	8.000	1395	167	10.7
		10.00	4	35	0.040	10.000	10.000	1115	178	17.8
		12.00	4	35	0.045	12.000	12.000	930	167	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.0
		20.00	4	35	0.050	20.000	20.000	555	111	44.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	50	0.010	3.000	3.000	5305	159	1.4
		4.00	3	50	0.015	4.000	4.000	3980	179	2.9
		5.00	4	50	0.020	5.000	5.000	3185	255	6.4
		6.00	4	50	0.025	6.000	6.000	2655	266	9.6
		8.00	4	50	0.030	8.000	8.000	1990	239	15.3
		10.00	4	50	0.040	10.000	10.000	1590	254	25.4
		12.00	4	50	0.045	12.000	12.000	1325	239	34.3
		16.00	4	50	0.045	16.000	16.000	995	179	45.8
		20.00	4	50	0.050	20.000	20.000	795	159	63.6

Cylindrical end mills SupraCarb®

Profiled, normal version, short neck

HM MG10	λ 38° γ 0°



Roughing

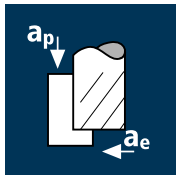
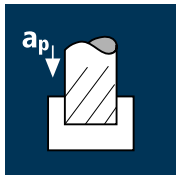
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15336** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	POLYCHROM P15336	P15236
180	3.00	6.00	2.80	57	8.00	14.00	20.63	0.20	4.5°	3		●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.25	3.0°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.30	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.30	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.40	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.50	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.50	0.0°	4		●
570	14.00	14.00	13.00	83	26.00	36.13	37.00	0.50	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.60	0.0°	4		●
612	16.00	16.00	15.00	92	32.00	42.13	43.00	0.60	0.0°	6		●
640	18.00	18.00	17.00	92	32.00	42.13	43.00	0.60	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.60	0.0°	4		●
684	20.00	20.00	19.00	104	38.00	52.13	53.00	0.60	0.0°	6		●

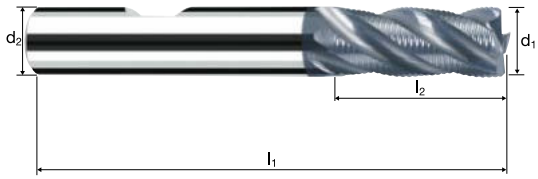
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	150	0.015	3.600	1.800	15915	716	4.6
		4.00	3	150	0.020	4.800	2.400	11935	716	8.2
		5.00	4	150	0.025	6.000	3.000	9550	955	17.2
		6.00	4	150	0.030	7.200	3.600	7960	955	24.8
		8.00	4	150	0.040	9.600	4.800	5970	955	44.0
		10.00	4	150	0.050	12.000	6.000	4775	955	68.8
		12.00	4	150	0.055	14.400	7.200	3980	876	90.8
		16.00	4	150	0.055	19.200	9.600	2985	657	121.0
		20.00	4	150	0.060	24.000	12.000	2385	572	164.9
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.600	1.800	13795	621	4.0
		4.00	3	130	0.020	4.800	2.400	10345	621	7.2
		5.00	4	130	0.025	6.000	3.000	8275	828	14.9
		6.00	4	130	0.030	7.200	3.600	6895	827	21.4
		8.00	4	130	0.040	9.600	4.800	5175	828	38.2
		10.00	4	130	0.050	12.000	6.000	4140	828	59.6
		12.00	4	130	0.055	14.400	7.200	3450	759	78.7
		16.00	4	130	0.055	19.200	9.600	2585	569	104.8
		20.00	4	130	0.060	24.000	12.000	2070	497	143.1
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.010	3.600	1.800	4775	143	0.9
		4.00	3	45	0.015	4.800	2.400	3580	161	1.9
		5.00	4	45	0.020	6.000	3.000	2865	229	4.1
		6.00	4	45	0.025	7.200	3.600	2385	239	6.2
		8.00	4	45	0.030	9.600	4.800	1790	215	9.9
		10.00	4	45	0.040	12.000	6.000	1430	229	16.5
		12.00	4	45	0.045	14.400	7.200	1195	215	22.3
		16.00	4	45	0.045	19.200	9.600	895	161	29.7
		20.00	4	45	0.050	24.000	12.000	715	143	41.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	55	0.010	3.600	1.800	5835	175	1.1
		4.00	3	55	0.015	4.800	2.400	4375	197	2.3
		5.00	4	55	0.020	6.000	3.000	3500	280	5.0
		6.00	4	55	0.025	7.200	3.600	2920	292	7.6
		8.00	4	55	0.030	9.600	4.800	2190	263	12.1
		10.00	4	55	0.040	12.000	6.000	1750	280	20.2
		12.00	4	55	0.045	14.400	7.200	1460	263	27.2
		16.00	4	55	0.045	19.200	9.600	1095	197	36.3
		20.00	4	55	0.050	24.000	12.000	875	175	50.4
	Steel < 850 N/mm²	3.00	3	135	0.015	3.000	3.000	14325	645	5.8
		4.00	3	135	0.020	4.000	4.000	10745	645	10.3
		5.00	4	135	0.025	5.000	5.000	8595	860	21.5
		6.00	4	135	0.030	6.000	6.000	7160	859	30.9
		8.00	4	135	0.040	8.000	8.000	5370	859	55.0
		10.00	4	135	0.050	10.000	10.000	4295	859	85.9
		12.00	4	135	0.055	12.000	12.000	3580	788	113.4
		16.00	4	135	0.055	16.000	16.000	2685	591	151.2
		20.00	4	135	0.060	20.000	20.000	2150	516	206.4
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	382	3.4
		4.00	3	80	0.020	4.000	4.000	6365	382	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	509	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	509	50.9
		12.00	4	80	0.055	12.000	12.000	2120	466	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.5
		20.00	4	80	0.060	20.000	20.000	1275	306	122.4
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	112	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	178	4.5
		6.00	4	35	0.025	6.000	6.000	1855	186	6.7
		8.00	4	35	0.030	8.000	8.000	1395	167	10.7
		10.00	4	35	0.040	10.000	10.000	1115	178	17.8
		12.00	4	35	0.045	12.000	12.000	930	167	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.0
		20.00	4	35	0.050	20.000	20.000	555	111	44.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	45	0.010	3.000	3.000	4775	143	1.3
		4.00	3	45	0.015	4.000	4.000	3580	161	2.6
		5.00	4	45	0.020	5.000	5.000	2865	229	5.7
		6.00	4	45	0.025	6.000	6.000	2385	239	8.6
		8.00	4	45	0.030	8.000	8.000	1790	215	13.7
		10.00	4	45	0.040	10.000	10.000	1430	229	22.9
		12.00	4	45	0.045	12.000	12.000	1195	215	31.0
		16.00	4	45	0.045	16.000	16.000	895	161	41.2
		20.00	4	45	0.050	20.000	20.000	715	143	57.2

Cylindrical end mills

Profiled, normal version

HM MG10 | λ **38°** γ **0°**

45°



Roughing

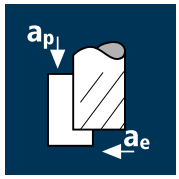
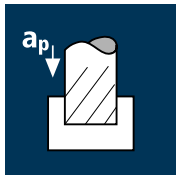
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)**

Example: **Order-N°.** Coating **P** Article-N°. **45371** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P45371
180	3.00	6.00	57	8.00	15.56	0.20	6.0°	3	●
220	4.00	6.00	57	11.00	16.89	0.25	4.0°	3	●
260	5.00	6.00	57	13.00	17.22	0.30	2.0°	4	●
300	6.00	6.00	57	13.00	-	0.30	0.0°	4	●
391	8.00	8.00	63	19.00	-	0.40	0.0°	4	●
450	10.00	10.00	72	22.00	-	0.50	0.0°	4	●
501	12.00	12.00	83	26.00	-	0.50	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.60	0.0°	4	●
612	16.00	16.00	92	32.00	-	0.60	0.0°	6	●
682	20.00	20.00	104	38.00	-	0.60	0.0°	4	●
684	20.00	20.00	104	38.00	-	0.60	0.0°	6	●

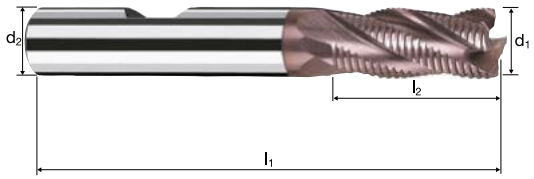
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	5.00	4	55	0.025	5.000	2.300	3500	350	4.0
		6.00	4	55	0.030	6.000	2.700	2920	350	5.7
		8.00	4	55	0.040	8.000	3.600	2190	350	10.1
		10.00	4	55	0.050	10.000	4.500	1750	350	15.8
		12.00	4	55	0.080	12.000	5.400	1460	467	30.3
		16.00	4	55	0.105	16.000	7.200	1095	460	53.0
		20.00	4	55	0.130	20.000	9.000	875	455	81.9
		22.00	4	55	0.145	22.000	9.900	795	461	100.4
		25.00	4	55	0.165	25.000	11.300	700	462	130.5
	Steel 1100 - 1300 N/mm²	5.00	4	42	0.025	5.000	2.300	2675	268	3.1
		6.00	4	42	0.030	6.000	2.700	2230	268	4.3
		8.00	4	42	0.040	8.000	3.600	1670	267	7.7
		10.00	4	42	0.050	10.000	4.500	1335	267	12.0
		12.00	4	42	0.080	12.000	5.400	1115	357	23.1
		16.00	4	42	0.105	16.000	7.200	835	351	40.4
		20.00	4	42	0.130	20.000	9.000	670	348	62.7
		22.00	4	42	0.145	22.000	9.900	610	354	77.1
		25.00	4	42	0.165	25.000	11.300	535	353	99.8
	Cold work tool steel (12% Cr), high alloyed [1.2379]	5.00	4	25	0.025	5.000	2.300	1590	159	1.8
		6.00	4	25	0.030	6.000	2.700	1325	159	2.6
		8.00	4	25	0.040	8.000	3.600	995	159	4.6
		10.00	4	25	0.050	10.000	4.500	795	159	7.2
		12.00	4	25	0.080	12.000	5.400	665	213	13.8
		16.00	4	25	0.105	16.000	7.200	495	208	24.0
		20.00	4	25	0.130	20.000	9.000	400	208	37.4
		22.00	4	25	0.145	22.000	9.900	360	209	45.5
		25.00	4	25	0.165	25.000	11.300	320	211	59.7
	Cast iron (lamellar / spheroidal)	5.00	4	47	0.025	5.000	2.300	2990	299	3.4
		6.00	4	47	0.030	6.000	2.700	2495	299	4.9
		8.00	4	47	0.040	8.000	3.600	1870	299	8.6
		10.00	4	47	0.050	10.000	4.500	1495	299	13.5
		12.00	4	47	0.080	12.000	5.400	1245	398	25.8
		16.00	4	47	0.105	16.000	7.200	935	393	45.2
		20.00	4	47	0.130	20.000	9.000	750	390	70.2
		22.00	4	47	0.145	22.000	9.900	680	394	85.9
		25.00	4	47	0.165	25.000	11.300	600	396	111.9
	Steel 850 - 1100 N/mm²	5.00	4	53	0.020	5.000	5.000	3375	270	6.8
		6.00	4	53	0.020	6.000	6.000	2810	225	8.1
		8.00	4	53	0.030	8.000	8.000	2110	253	16.2
		10.00	4	53	0.035	10.000	10.000	1685	236	23.6
		12.00	4	53	0.060	12.000	12.000	1405	337	48.6
		16.00	4	53	0.080	16.000	16.000	1055	338	86.4
		20.00	4	53	0.100	20.000	20.000	845	338	135.2
		22.00	4	53	0.110	22.000	22.000	765	337	162.9
		25.00	4	53	0.125	25.000	25.000	675	338	210.9
	Steel 1100 - 1300 N/mm²	5.00	4	40	0.020	5.000	5.000	2545	204	5.1
		6.00	4	40	0.020	6.000	6.000	2120	170	6.1
		8.00	4	40	0.030	8.000	8.000	1590	191	12.2
		10.00	4	40	0.035	10.000	10.000	1275	179	17.9
		12.00	4	40	0.060	12.000	12.000	1060	254	36.6
		16.00	4	40	0.080	16.000	16.000	795	254	65.1
		20.00	4	40	0.100	20.000	20.000	635	254	101.6
		22.00	4	40	0.110	22.000	22.000	580	255	123.5
		25.00	4	40	0.125	25.000	25.000	510	255	159.4
	Cold work tool steel (12% Cr), high alloyed [1.2379]	5.00	4	22	0.020	5.000	5.000	1400	112	2.8
		6.00	4	22	0.020	6.000	6.000	1165	93	3.4
		8.00	4	22	0.030	8.000	8.000	875	105	6.7
		10.00	4	22	0.035	10.000	10.000	700	98	9.8
		12.00	4	22	0.060	12.000	12.000	585	140	20.2
		16.00	4	22	0.080	16.000	16.000	440	141	36.0
		20.00	4	22	0.100	20.000	20.000	350	140	56.0
		22.00	4	22	0.110	22.000	22.000	320	141	68.1
		25.00	4	22	0.125	25.000	25.000	280	140	87.5
	Cast iron (lamellar / spheroidal)	5.00	4	42	0.020	5.000	5.000	2675	214	5.4
		6.00	4	42	0.020	6.000	6.000	2230	178	6.4
		8.00	4	42	0.030	8.000	8.000	1670	200	12.8
		10.00	4	42	0.035	10.000	10.000	1335	187	18.7
		12.00	4	42	0.060	12.000	12.000	1115	268	38.5
		16.00	4	42	0.080	16.000	16.000	835	267	68.4
		20.00	4	42	0.100	20.000	20.000	670	268	107.2
		22.00	4	42	0.110	22.000	22.000	610	268	129.9
		25.00	4	42	0.125	25.000	25.000	535	268	167.2

Cylindrical end mills

Profiled NRC, normal version

HSS PM/F	λ 30° γ 12°

45°



Roughing

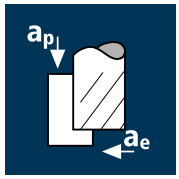
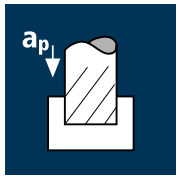
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0619** ø-Code **260**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0619
260	5.00	6.00	57	13.00	20.55	0.30	1.5°	4	●
300	6.00	6.00	57	13.00	-	0.30	0.0°	4	●
331	7.00	8.00	60	16.00	23.50	0.30	1.5°	4	●
391	8.00	8.00	63	19.00	-	0.30	0.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.30	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.30	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.30	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.30	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.30	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.30	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.40	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.40	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.40	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.60	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.60	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	62	0.030	9.000	2.400	3290	395	8.5
		8.00	4	62	0.040	12.000	3.200	2465	394	15.1
		10.00	4	62	0.050	15.000	4.000	1975	395	23.7
		12.00	4	62	0.080	18.000	4.800	1645	526	45.5
		16.00	4	62	0.105	24.000	6.400	1235	519	79.7
		20.00	4	62	0.130	30.000	8.000	985	512	122.9
		25.00	4	62	0.165	37.500	10.000	790	521	195.5
	Steel 850 - 1100 N/mm²	6.00	4	52	0.030	9.000	2.400	2760	331	7.2
		8.00	4	52	0.040	12.000	3.200	2070	331	12.7
		10.00	4	52	0.050	15.000	4.000	1655	331	19.9
		12.00	4	52	0.080	18.000	4.800	1380	442	38.2
		16.00	4	52	0.105	24.000	6.400	1035	435	66.8
		20.00	4	52	0.130	30.000	8.000	830	432	103.6
		25.00	4	52	0.165	37.500	10.000	660	436	163.4
	Steel 1100 - 1300 N/mm²	6.00	4	40	0.030	9.000	2.400	2120	254	5.5
		8.00	4	40	0.040	12.000	3.200	1590	254	9.8
		10.00	4	40	0.050	15.000	4.000	1275	255	15.3
		12.00	4	40	0.080	18.000	4.800	1060	339	29.3
		16.00	4	40	0.105	24.000	6.400	795	334	51.3
		20.00	4	40	0.130	30.000	8.000	635	330	79.2
		25.00	4	40	0.165	37.500	10.000	510	337	126.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	30	0.030	9.000	2.400	1590	191	4.1
		8.00	4	30	0.040	12.000	3.200	1195	191	7.3
		10.00	4	30	0.050	15.000	4.000	955	191	11.5
		12.00	4	30	0.080	18.000	4.800	795	254	22.0
		16.00	4	30	0.105	24.000	6.400	595	250	38.4
		20.00	4	30	0.130	30.000	8.000	475	247	59.3
		25.00	4	30	0.165	37.500	10.000	380	251	94.1
	Steel < 850 N/mm²	6.00	4	56	0.020	6.000	6.000	2970	238	8.6
		8.00	4	56	0.030	8.000	8.000	2230	268	17.1
		10.00	4	56	0.035	10.000	10.000	1785	250	25.0
		12.00	4	56	0.060	12.000	12.000	1485	356	51.3
		16.00	4	56	0.080	16.000	16.000	1115	357	91.3
		20.00	4	56	0.100	20.000	20.000	890	356	142.4
		25.00	4	56	0.125	25.000	25.000	715	358	223.4
	Steel 850 - 1100 N/mm²	6.00	4	50	0.020	6.000	6.000	2655	212	7.6
		8.00	4	50	0.030	8.000	8.000	1990	239	15.3
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3
		12.00	4	50	0.060	12.000	12.000	1325	318	45.8
		16.00	4	50	0.080	16.000	16.000	995	318	81.5
		20.00	4	50	0.100	20.000	20.000	795	318	127.2
		25.00	4	50	0.125	25.000	25.000	635	318	198.4
	Steel 1100 - 1300 N/mm²	6.00	4	37	0.020	6.000	6.000	1965	157	5.7
		8.00	4	37	0.030	8.000	8.000	1470	176	11.3
		10.00	4	37	0.035	10.000	10.000	1180	165	16.5
		12.00	4	37	0.060	12.000	12.000	980	235	33.9
		16.00	4	37	0.080	16.000	16.000	735	235	60.2
		20.00	4	37	0.100	20.000	20.000	590	236	94.4
		25.00	4	37	0.125	25.000	25.000	470	235	146.9
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	25	0.020	6.000	6.000	1325	106	3.8
		8.00	4	25	0.030	8.000	8.000	995	119	7.6
		10.00	4	25	0.035	10.000	10.000	795	111	11.1
		12.00	4	25	0.060	12.000	12.000	665	160	23.0
		16.00	4	25	0.080	16.000	16.000	495	158	40.6
		20.00	4	25	0.100	20.000	20.000	400	160	64.0
		25.00	4	25	0.125	25.000	25.000	320	160	100.0

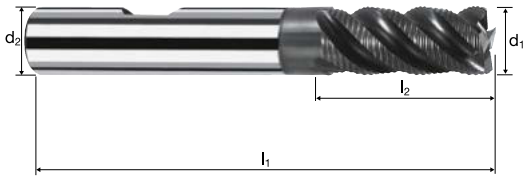
Cylindrical end mills

Profiled, normal version

HSS PM/F

λ **45°**
γ **2°**

45°



Roughing

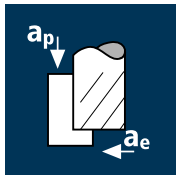
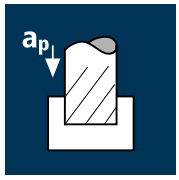
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless

Example: **Order-N°.** Coating **P** Article-N°. **0540** ø-Code **300**

Ø Code	d_1	d_2 h6	l_1	l_2	45°	z	POLYCHROM P0540
300	6.00	6.00	57	13.00	0.30	4	●
391	8.00	8.00	63	19.00	0.40	4	●
450	10.00	10.00	72	22.00	0.50	4	●
501	12.00	12.00	83	26.00	0.50	4	●
610	16.00	16.00	92	32.00	0.60	4	●
682	20.00	20.00	104	38.00	0.60	4	●
772	25.00	25.00	121	45.00	0.75	4	●

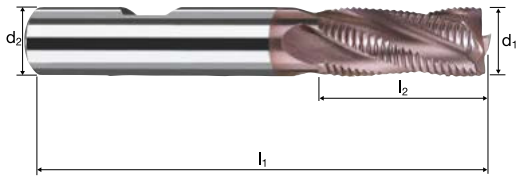
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	5.00	3	54	0.025	5.000	2.000	3440	258	2.6
		6.00	3	54	0.025	6.000	2.400	2865	215	3.1
		8.00	4	54	0.035	8.000	3.200	2150	301	7.7
		10.00	4	54	0.045	10.000	4.000	1720	310	12.4
		12.00	4	54	0.070	12.000	4.800	1430	400	23.1
		16.00	4	54	0.095	16.000	6.400	1075	409	41.8
		20.00	4	54	0.115	20.000	8.000	860	396	63.3
		22.00	4	54	0.130	22.000	8.800	780	406	78.5
		25.00	4	54	0.145	25.000	10.000	690	400	100.1
	Steel 850 - 1100 N/mm²	5.00	3	48	0.025	5.000	2.000	3055	229	2.3
		6.00	3	48	0.025	6.000	2.400	2545	191	2.7
		8.00	4	48	0.035	8.000	3.200	1910	267	6.8
		10.00	4	48	0.045	10.000	4.000	1530	275	11.0
		12.00	4	48	0.070	12.000	4.800	1275	357	20.6
		16.00	4	48	0.095	16.000	6.400	955	363	37.2
		20.00	4	48	0.115	20.000	8.000	765	352	56.3
		22.00	4	48	0.130	22.000	8.800	695	361	70.0
		25.00	4	48	0.145	25.000	10.000	610	354	88.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	5.00	3	25	0.025	5.000	2.000	1590	119	1.2
		6.00	3	25	0.025	6.000	2.400	1325	99	1.4
		8.00	4	25	0.035	8.000	3.200	995	139	3.6
		10.00	4	25	0.045	10.000	4.000	795	143	5.7
		12.00	4	25	0.070	12.000	4.800	665	186	10.7
		16.00	4	25	0.095	16.000	6.400	495	188	19.3
		20.00	4	25	0.115	20.000	8.000	400	184	29.4
		22.00	4	25	0.130	22.000	8.800	360	187	36.2
		25.00	4	25	0.145	25.000	10.000	320	186	46.4
	Cast iron (lamellar / spheroidal)	5.00	3	42	0.025	5.000	2.000	2675	201	2.0
		6.00	3	42	0.025	6.000	2.400	2230	167	2.4
		8.00	4	42	0.035	8.000	3.200	1670	234	6.0
		10.00	4	42	0.045	10.000	4.000	1335	240	9.6
		12.00	4	42	0.070	12.000	4.800	1115	312	18.0
		16.00	4	42	0.095	16.000	6.400	835	317	32.5
		20.00	4	42	0.115	20.000	8.000	670	308	49.3
		22.00	4	42	0.130	22.000	8.800	610	317	61.4
		25.00	4	42	0.145	25.000	10.000	535	310	77.6
	Steel < 850 N/mm²	5.00	3	50	0.015	5.000	5.000	3185	143	3.6
		6.00	3	50	0.020	6.000	6.000	2655	159	5.7
		8.00	4	50	0.025	8.000	8.000	1990	199	12.7
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3
		12.00	4	50	0.055	12.000	12.000	1325	292	42.0
		16.00	4	50	0.070	16.000	16.000	995	279	71.3
		20.00	4	50	0.090	20.000	20.000	795	286	114.5
		22.00	4	50	0.095	22.000	22.000	725	276	133.3
		25.00	4	50	0.110	25.000	25.000	635	279	174.6
	Steel 850 - 1100 N/mm²	5.00	3	45	0.015	5.000	5.000	2865	129	3.2
		6.00	3	45	0.020	6.000	6.000	2385	143	5.2
		8.00	4	45	0.025	8.000	8.000	1790	179	11.5
		10.00	4	45	0.035	10.000	10.000	1430	200	20.0
		12.00	4	45	0.055	12.000	12.000	1195	263	37.9
		16.00	4	45	0.070	16.000	16.000	895	251	64.2
		20.00	4	45	0.090	20.000	20.000	715	257	103.0
		22.00	4	45	0.095	22.000	22.000	650	247	119.5
		25.00	4	45	0.110	25.000	25.000	575	253	158.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	5.00	3	22	0.015	5.000	5.000	1400	63	1.6
		6.00	3	22	0.020	6.000	6.000	1165	70	2.5
		8.00	4	22	0.025	8.000	8.000	875	88	5.6
		10.00	4	22	0.035	10.000	10.000	700	98	9.8
		12.00	4	22	0.055	12.000	12.000	585	129	18.5
		16.00	4	22	0.070	16.000	16.000	440	123	31.5
		20.00	4	22	0.090	20.000	20.000	350	126	50.4
		22.00	4	22	0.095	22.000	22.000	320	122	58.9
		25.00	4	22	0.110	25.000	25.000	280	123	77.0
	Cast iron (lamellar / spheroidal)	5.00	3	36	0.015	5.000	5.000	2290	103	2.6
		6.00	3	36	0.020	6.000	6.000	1910	115	4.1
		8.00	4	36	0.025	8.000	8.000	1430	143	9.2
		10.00	4	36	0.035	10.000	10.000	1145	160	16.0
		12.00	4	36	0.055	12.000	12.000	955	210	30.3
		16.00	4	36	0.070	16.000	16.000	715	200	51.3
		20.00	4	36	0.090	20.000	20.000	575	207	82.8
		22.00	4	36	0.095	22.000	22.000	520	198	95.6
		25.00	4	36	0.110	25.000	25.000	460	202	126.5

Cylindrical end mills

Profiled NRF, normal version

HSS-E Co8 | λ **25°** γ **10°**

45°



Roughing

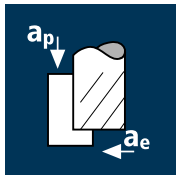
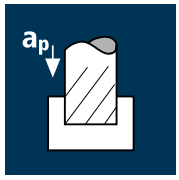
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0610** ø-Code **260**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0610
260	5.00	6.00	57	13.00	20.55	0.30	1.0°	3	●
300	6.00	6.00	57	13.00	-	0.30	0.0°	3	●
342	7.00	10.00	66	16.00	25.50	0.30	3.5°	3	●
391	8.00	8.00	63	19.00	-	0.30	0.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.30	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.30	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.30	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.30	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.30	0.0°	4	●
540	13.00	12.00	83	26.00	-	0.30	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.30	0.0°	4	●
581	15.00	12.00	83	26.00	-	0.40	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.40	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.40	0.0°	4	●
671	20.00	16.00	98	38.00	-	0.40	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.40	0.0°	4	●
710	22.00	20.00	104	38.00	-	0.60	0.0°	4	●
741	24.00	20.00	111	45.00	-	0.60	0.0°	4	●
761	25.00	20.00	111	45.00	-	0.60	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.60	0.0°	4	●

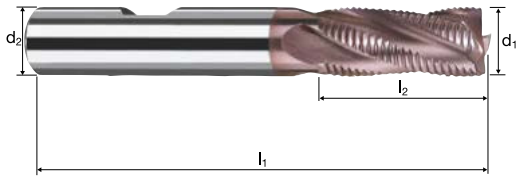
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	28.00	6	54	0.115	28.000	11.200	615	424	133.1
		30.00	6	54	0.120	30.000	12.000	575	414	149.0
		32.00	6	54	0.130	32.000	12.800	535	417	170.9
		36.00	6	54	0.145	36.000	14.400	475	413	214.3
		40.00	6	54	0.160	40.000	16.000	430	413	264.2
	Steel 850 - 1100 N/mm²	28.00	6	48	0.115	28.000	11.200	545	376	117.9
		30.00	6	48	0.120	30.000	12.000	510	367	132.2
		32.00	6	48	0.130	32.000	12.800	475	371	151.8
		36.00	6	48	0.145	36.000	14.400	425	370	191.7
		40.00	6	48	0.160	40.000	16.000	380	365	233.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	28.00	6	25	0.115	28.000	11.200	285	197	61.7
		30.00	6	25	0.120	30.000	12.000	265	191	68.7
		32.00	6	25	0.130	32.000	12.800	250	195	79.9
		36.00	6	25	0.145	36.000	14.400	220	191	99.2
		40.00	6	25	0.160	40.000	16.000	200	192	122.9
	Cast iron (lamellar / spheroidal)	28.00	6	42	0.115	28.000	11.200	475	328	102.8
		30.00	6	42	0.120	30.000	12.000	445	320	115.3
		32.00	6	42	0.130	32.000	12.800	420	328	134.2
		36.00	6	42	0.145	36.000	14.400	370	322	166.9
		40.00	6	42	0.160	40.000	16.000	335	322	205.8
	Steel < 850 N/mm²	28.00	6	50	0.085	28.000	28.000	570	291	227.9
		30.00	6	50	0.090	30.000	30.000	530	286	257.6
		32.00	6	50	0.095	32.000	32.000	495	282	289.0
		36.00	6	50	0.105	36.000	36.000	440	277	359.3
		40.00	6	50	0.120	40.000	40.000	400	288	460.8
	Steel 850 - 1100 N/mm²	28.00	6	45	0.085	28.000	28.000	510	260	203.9
		30.00	6	45	0.090	30.000	30.000	475	257	230.9
		32.00	6	45	0.095	32.000	32.000	450	257	262.7
		36.00	6	45	0.105	36.000	36.000	400	252	326.6
		40.00	6	45	0.120	40.000	40.000	360	259	414.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	28.00	6	22	0.085	28.000	28.000	250	128	100.0
		30.00	6	22	0.090	30.000	30.000	235	127	114.2
		32.00	6	22	0.095	32.000	32.000	220	125	128.4
		36.00	6	22	0.105	36.000	36.000	195	123	159.3
		40.00	6	22	0.120	40.000	40.000	175	126	201.6
	Cast iron (lamellar / spheroidal)	28.00	6	36	0.085	28.000	28.000	410	209	163.9
		30.00	6	36	0.090	30.000	30.000	380	205	184.7
		32.00	6	36	0.095	32.000	32.000	360	205	210.1
		36.00	6	36	0.105	36.000	36.000	320	202	261.3
		40.00	6	36	0.120	40.000	40.000	285	205	328.3

Cylindrical end mills

Profiled NRF, normal version

HSS-E Co8 | λ **25°** γ **10°**

45°



Roughing

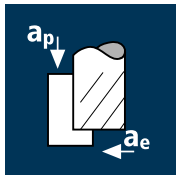
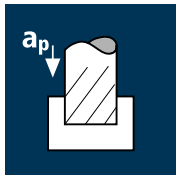
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0610** ø-Code **800**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0610
800	28.00	25.00	121	45.00	-	0.60	0.0°	6	●
810	30.00	25.00	121	45.00	-	0.60	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.60	0.0°	6	●
860	36.00	32.00	133	53.00	-	0.80	0.0°	6	●
881	40.00	32.00	143	63.00	-	0.80	0.0°	6	●

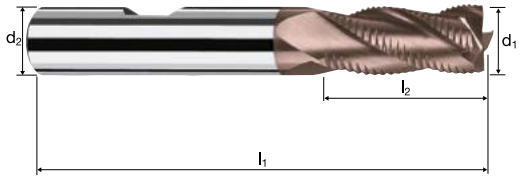
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	58	0.025	6.000	2.400	3075	308	4.4
		8.00	4	58	0.035	8.000	3.200	2310	323	8.3
		10.00	4	58	0.045	10.000	4.000	1845	332	13.3
		12.00	4	58	0.070	12.000	4.800	1540	431	24.8
		16.00	4	58	0.095	16.000	6.400	1155	439	44.9
		18.00	4	58	0.105	18.000	7.200	1025	431	55.8
		20.00	4	58	0.115	20.000	8.000	925	426	68.1
		25.00	6	58	0.145	25.000	10.000	740	644	161.0
		32.00	7	58	0.130	32.000	12.800	575	523	214.3
	Steel 850 - 1100 N/mm²	6.00	4	52	0.025	6.000	2.400	2760	276	4.0
		8.00	4	52	0.035	8.000	3.200	2070	290	7.4
		10.00	4	52	0.045	10.000	4.000	1655	298	11.9
		12.00	4	52	0.070	12.000	4.800	1380	386	22.3
		16.00	4	52	0.095	16.000	6.400	1035	393	40.3
		18.00	4	52	0.105	18.000	7.200	920	386	50.1
		20.00	4	52	0.115	20.000	8.000	830	382	61.1
		25.00	6	52	0.145	25.000	10.000	660	574	143.6
		32.00	7	52	0.130	32.000	12.800	515	469	192.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	26	0.025	6.000	2.400	1380	138	2.0
		8.00	4	26	0.035	8.000	3.200	1035	145	3.7
		10.00	4	26	0.045	10.000	4.000	830	149	6.0
		12.00	4	26	0.070	12.000	4.800	690	193	11.1
		16.00	4	26	0.095	16.000	6.400	515	196	20.0
		18.00	4	26	0.105	18.000	7.200	460	193	25.0
		20.00	4	26	0.115	20.000	8.000	415	191	30.5
		25.00	6	26	0.145	25.000	10.000	330	287	71.8
		32.00	7	26	0.130	32.000	12.800	260	237	96.9
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	4	22	0.025	6.000	2.400	1165	117	1.7
		8.00	4	22	0.035	8.000	3.200	875	123	3.1
		10.00	4	22	0.045	10.000	4.000	700	126	5.0
		12.00	4	22	0.070	12.000	4.800	585	164	9.4
		16.00	4	22	0.095	16.000	6.400	440	167	17.1
		18.00	4	22	0.105	18.000	7.200	390	164	21.2
		20.00	4	22	0.115	20.000	8.000	350	161	25.8
		25.00	6	22	0.145	25.000	10.000	280	244	60.9
		32.00	7	22	0.130	32.000	12.800	220	200	82.0
	Steel < 850 N/mm²	6.00	4	52	0.020	6.000	6.000	2760	221	7.9
		8.00	4	52	0.025	8.000	8.000	2070	207	13.2
		10.00	4	52	0.035	10.000	10.000	1655	232	23.2
		12.00	4	52	0.055	12.000	12.000	1380	304	43.7
		16.00	4	52	0.070	16.000	16.000	1035	290	74.2
		18.00	4	52	0.080	18.000	18.000	920	294	95.4
		20.00	4	52	0.090	20.000	20.000	830	299	119.5
	Steel 850 - 1100 N/mm²	6.00	4	48	0.020	6.000	6.000	2545	204	7.3
		8.00	4	48	0.025	8.000	8.000	1910	191	12.2
		10.00	4	48	0.035	10.000	10.000	1530	214	21.4
		12.00	4	48	0.055	12.000	12.000	1275	281	40.4
		16.00	4	48	0.070	16.000	16.000	955	267	68.5
		18.00	4	48	0.080	18.000	18.000	850	272	88.1
		20.00	4	48	0.090	20.000	20.000	765	275	110.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	23	0.020	6.000	6.000	1220	98	3.5
		8.00	4	23	0.025	8.000	8.000	915	92	5.9
		10.00	4	23	0.035	10.000	10.000	730	102	10.2
		12.00	4	23	0.055	12.000	12.000	610	134	19.3
		16.00	4	23	0.070	16.000	16.000	460	129	33.0
		18.00	4	23	0.080	18.000	18.000	405	130	42.0
		20.00	4	23	0.090	20.000	20.000	365	131	52.6
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.00	4	20	0.020	6.000	6.000	1060	85	3.1
		8.00	4	20	0.025	8.000	8.000	795	80	5.1
		10.00	4	20	0.035	10.000	10.000	635	89	8.9
		12.00	4	20	0.055	12.000	12.000	530	117	16.8
		16.00	4	20	0.070	16.000	16.000	400	112	28.7
		18.00	4	20	0.080	18.000	18.000	355	114	36.8
		20.00	4	20	0.090	20.000	20.000	320	115	46.1

Cylindrical end mills

Profiled NRF, normal version

HSS-E Co8 | λ **30°** γ **12°**

45°



Roughing

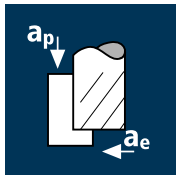
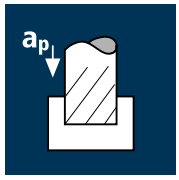
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0609** ø-Code **300**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0609
300	6.00	6.00	57	13.00	-	0.30	0.0°	4	●
342	7.00	10.00	66	16.00	25.50	0.30	3.0°	4	●
402	8.00	10.00	69	19.00	28.50	0.30	2.5°	4	●
420	9.00	10.00	69	19.00	28.50	0.30	1.5°	4	●
450	10.00	10.00	72	22.00	-	0.30	0.0°	4	●
470	11.00	12.00	79	22.00	33.50	0.30	1.0°	4	●
501	12.00	12.00	83	26.00	-	0.30	0.0°	4	●
540	13.00	12.00	83	26.00	-	0.30	0.0°	4	●
570	14.00	12.00	83	26.00	-	0.30	0.0°	4	●
592	15.00	16.00	86	26.00	37.50	0.40	1.0°	4	●
610	16.00	16.00	92	32.00	-	0.40	0.0°	4	●
640	18.00	16.00	92	32.00	-	0.40	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.40	0.0°	4	●
686	20.00	20.00	104	38.00	-	0.40	0.0°	6	●
710	22.00	20.00	104	38.00	-	0.60	0.0°	6	●
772	25.00	25.00	121	45.00	-	0.60	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.60	0.0°	7	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	8.00	4	58	0.035	8.000	3.200	2310	323	8.3
		10.00	4	58	0.045	10.000	4.000	1845	332	13.3
		12.00	4	58	0.070	12.000	4.800	1540	431	24.8
		16.00	4	58	0.095	16.000	6.400	1155	439	44.9
		20.00	4	58	0.115	20.000	8.000	925	426	68.1
		25.00	6	58	0.145	25.000	10.000	740	644	161.0
		32.00	7	58	0.130	32.000	12.800	575	523	214.3
	Steel 850 - 1100 N/mm²	8.00	4	54	0.035	8.000	3.200	2150	301	7.7
		10.00	4	54	0.045	10.000	4.000	1720	310	12.4
		12.00	4	54	0.070	12.000	4.800	1430	400	23.1
		16.00	4	54	0.095	16.000	6.400	1075	409	41.8
		20.00	4	54	0.115	20.000	8.000	860	396	63.3
		25.00	6	54	0.145	25.000	10.000	690	600	150.1
		32.00	7	54	0.130	32.000	12.800	535	487	199.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	28	0.035	8.000	3.200	1115	156	4.0
		10.00	4	28	0.045	10.000	4.000	890	160	6.4
		12.00	4	28	0.070	12.000	4.800	745	209	12.0
		16.00	4	28	0.095	16.000	6.400	555	211	21.6
		20.00	4	28	0.115	20.000	8.000	445	205	32.8
		25.00	6	28	0.145	25.000	10.000	355	309	77.2
		32.00	7	28	0.130	32.000	12.800	280	255	104.4
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	8.00	4	22	0.035	8.000	3.200	875	123	3.1
		10.00	4	22	0.045	10.000	4.000	700	126	5.0
		12.00	4	22	0.070	12.000	4.800	585	164	9.4
		16.00	4	22	0.095	16.000	6.400	440	167	17.1
		20.00	4	22	0.115	20.000	8.000	350	161	25.8
		25.00	6	22	0.145	25.000	10.000	280	244	60.9
		32.00	7	22	0.130	32.000	12.800	220	200	82.0
	Steel < 850 N/mm²	8.00	4	54	0.025	8.000	8.000	2150	215	13.8
		10.00	4	54	0.035	10.000	10.000	1720	241	24.1
		12.00	4	54	0.055	12.000	12.000	1430	315	45.3
		16.00	4	54	0.070	16.000	16.000	1075	301	77.1
		20.00	4	54	0.090	20.000	20.000	860	310	123.8
		25.00	6	54	0.110	25.000	25.000	690	455	284.6
		32.00	7	54	0.095	32.000	32.000	535	356	364.3
	Steel 850 - 1100 N/mm²	8.00	4	50	0.025	8.000	8.000	1990	199	12.7
		10.00	4	50	0.035	10.000	10.000	1590	223	22.3
		12.00	4	50	0.055	12.000	12.000	1325	292	42.0
		16.00	4	50	0.070	16.000	16.000	995	279	71.3
		20.00	4	50	0.090	20.000	20.000	795	286	114.5
		25.00	6	50	0.110	25.000	25.000	635	419	261.9
		32.00	7	50	0.095	32.000	32.000	495	329	337.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	4	25	0.025	8.000	8.000	995	100	6.4
		10.00	4	25	0.035	10.000	10.000	795	111	11.1
		12.00	4	25	0.055	12.000	12.000	665	146	21.1
		16.00	4	25	0.070	16.000	16.000	495	139	35.5
		20.00	4	25	0.090	20.000	20.000	400	144	57.6
		25.00	6	25	0.110	25.000	25.000	320	211	132.0
		32.00	7	25	0.095	32.000	32.000	250	166	170.3
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	8.00	4	20	0.025	8.000	8.000	795	80	5.1
		10.00	4	20	0.035	10.000	10.000	635	89	8.9
		12.00	4	20	0.055	12.000	12.000	530	117	16.8
		16.00	4	20	0.070	16.000	16.000	400	112	28.7
		20.00	4	20	0.090	20.000	20.000	320	115	46.1
		25.00	6	20	0.110	25.000	25.000	255	168	105.2
		32.00	7	20	0.095	32.000	32.000	200	133	136.2

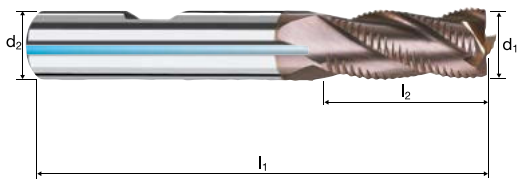
Cylindrical end mills

Profiled NRF, normal version, Pericool

HSS-E Co8

λ **30°**
γ **12°**

45°



Roughing

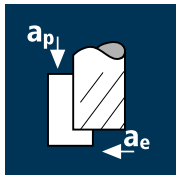
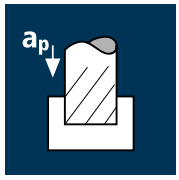
Finishing

ReTool®

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300					**Inox** Stainless	**Ti** Titanium	GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **0695** ø-Code **402**

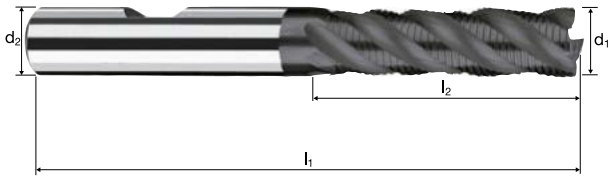
Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0695
402	8.00	10.00	69	19.00	69.00	0.30	1.0°	4	●
450	10.00	10.00	72	22.00	-	0.30	0.0°	4	●
501	12.00	12.00	83	26.00	-	0.30	0.0°	4	●
610	16.00	16.00	92	32.00	-	0.40	0.0°	4	●
682	20.00	20.00	104	38.00	-	0.40	0.0°	4	●
772	25.00	25.00	121	45.00	-	0.60	0.0°	6	●
832	32.00	32.00	133	53.00	-	0.60	0.0°	7	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	160	0.035	9.600	1.200	8490	1189	13.7
		8.00	4	160	0.045	12.800	1.600	6365	1146	23.5
		10.00	4	160	0.060	16.000	2.000	5095	1223	39.1
		12.00	4	160	0.070	19.200	2.400	4245	1189	54.8
		16.00	4	160	0.075	25.600	3.200	3185	956	78.3
		20.00	4	160	0.080	32.000	4.000	2545	814	104.2
	Steel 850 - 1100 N/mm²	6.00	4	130	0.035	9.600	1.200	6895	965	11.1
		8.00	4	130	0.045	12.800	1.600	5175	932	19.1
		10.00	4	130	0.060	16.000	2.000	4140	994	31.8
		12.00	4	130	0.070	19.200	2.400	3450	966	44.5
		16.00	4	130	0.075	25.600	3.200	2585	776	63.5
		20.00	4	130	0.080	32.000	4.000	2070	662	84.8
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	9.600	1.200	2385	239	2.7
		8.00	4	45	0.035	12.800	1.600	1790	251	5.1
		10.00	4	45	0.045	16.000	2.000	1430	257	8.2
		12.00	4	45	0.055	19.200	2.400	1195	263	12.1
		16.00	4	45	0.060	25.600	3.200	895	215	17.6
		20.00	4	45	0.065	32.000	4.000	715	186	23.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	60	0.025	9.600	1.200	3185	319	3.7
		8.00	4	60	0.035	12.800	1.600	2385	334	6.8
		10.00	4	60	0.045	16.000	2.000	1910	344	11.0
		12.00	4	60	0.055	19.200	2.400	1590	350	16.1
		16.00	4	60	0.060	25.600	3.200	1195	287	23.5
		20.00	4	60	0.065	32.000	4.000	955	248	31.8
	Steel < 850 N/mm²	6.00	4	135	0.030	3.300	6.000	7160	859	17.0
		8.00	4	135	0.040	4.400	8.000	5370	859	30.2
		10.00	4	135	0.050	5.500	10.000	4295	859	47.2
		12.00	4	135	0.055	6.600	12.000	3580	788	62.4
		16.00	4	135	0.055	8.800	16.000	2685	591	83.2
		20.00	4	135	0.060	11.000	20.000	2150	516	113.5
	Steel 850 - 1100 N/mm²	6.00	4	80	0.030	3.300	6.000	4245	509	10.1
		8.00	4	80	0.040	4.400	8.000	3185	510	17.9
		10.00	4	80	0.050	5.500	10.000	2545	509	28.0
		12.00	4	80	0.055	6.600	12.000	2120	466	36.9
		16.00	4	80	0.055	8.800	16.000	1590	350	49.3
		20.00	4	80	0.060	11.000	20.000	1275	306	67.3
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.025	3.300	6.000	1855	186	3.7
		8.00	4	35	0.030	4.400	8.000	1395	167	5.9
		10.00	4	35	0.040	5.500	10.000	1115	178	9.8
		12.00	4	35	0.045	6.600	12.000	930	167	13.3
		16.00	4	35	0.045	8.800	16.000	695	125	17.6
		20.00	4	35	0.050	11.000	20.000	555	111	24.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	50	0.025	3.300	6.000	2655	266	5.3
		8.00	4	50	0.030	4.400	8.000	1990	239	8.4
		10.00	4	50	0.040	5.500	10.000	1590	254	14.0
		12.00	4	50	0.045	6.600	12.000	1325	239	18.9
		16.00	4	50	0.045	8.800	16.000	995	179	25.2
		20.00	4	50	0.050	11.000	20.000	795	159	35.0

Cylindrical end mills SupraCarb®

Profiled, medium length version

HM MG10	λ 38° γ 0°



Roughing

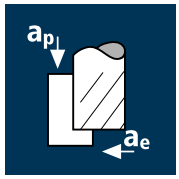
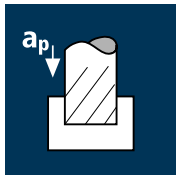
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15338** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	POLYCHROM P15338	POLYCHROM P15238
300	6.00	6.00	63	19.00	0.30	4	●	
391	8.00	8.00	72	28.00	0.40	4	●	
450	10.00	10.00	84	34.00	0.50	4	●	
501	12.00	12.00	97	40.00	0.50	4	●	
610	16.00	16.00	108	48.00	0.60	4	●	
682	20.00	20.00	122	56.00	0.60	4	●	

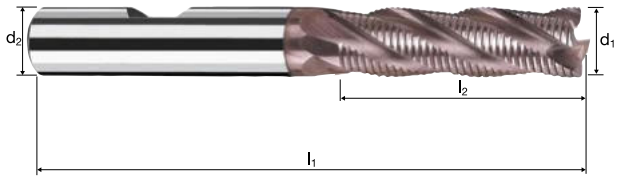
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	38	0.025	12.000	1.500	2015	202	3.6
		8.00	4	38	0.030	16.000	2.000	1510	181	5.8
		10.00	4	38	0.040	20.000	2.500	1210	194	9.7
		12.00	4	38	0.060	24.000	3.000	1010	242	17.5
		16.00	4	38	0.085	32.000	4.000	755	257	32.9
		20.00	4	38	0.105	40.000	5.000	605	254	50.8
		25.00	4	38	0.130	50.000	6.250	485	252	78.8
	Steel 1100 - 1300 N/mm²	6.00	4	30	0.025	12.000	1.500	1590	159	2.9
		8.00	4	30	0.030	16.000	2.000	1195	143	4.6
		10.00	4	30	0.040	20.000	2.500	955	153	7.6
		12.00	4	30	0.060	24.000	3.000	795	191	13.7
		16.00	4	30	0.085	32.000	4.000	595	202	25.9
		20.00	4	30	0.105	40.000	5.000	475	200	39.9
		25.00	4	30	0.130	50.000	6.250	380	198	61.8
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	24	0.025	12.000	1.500	1275	128	2.3
		8.00	4	24	0.030	16.000	2.000	955	115	3.7
		10.00	4	24	0.040	20.000	2.500	765	122	6.1
		12.00	4	24	0.060	24.000	3.000	635	152	11.0
		16.00	4	24	0.085	32.000	4.000	475	162	20.7
		20.00	4	24	0.105	40.000	5.000	380	160	31.9
		25.00	4	24	0.130	50.000	6.250	305	159	49.6
	Cast iron (lamellar / spheroidal)	6.00	4	34	0.025	12.000	1.500	1805	181	3.2
		8.00	4	34	0.030	16.000	2.000	1355	163	5.2
		10.00	4	34	0.040	20.000	2.500	1080	173	8.6
		12.00	4	34	0.060	24.000	3.000	900	216	15.6
		16.00	4	34	0.085	32.000	4.000	675	230	29.4
		20.00	4	34	0.105	40.000	5.000	540	227	45.4
		25.00	4	34	0.130	50.000	6.250	435	226	70.7
	Steel 850 - 1100 N/mm²	6.00	4	35	0.020	4.200	6.000	1855	148	3.7
		8.00	4	35	0.030	5.600	8.000	1395	167	7.5
		10.00	4	35	0.035	7.000	10.000	1115	156	10.9
		12.00	4	35	0.060	8.400	12.000	930	223	22.5
		16.00	4	35	0.080	11.200	16.000	695	222	39.9
		20.00	4	35	0.100	14.000	20.000	555	222	62.2
		25.00	4	35	0.125	17.500	25.000	445	223	97.3
	Steel 1100 - 1300 N/mm²	6.00	4	25	0.020	4.200	6.000	1325	106	2.7
		8.00	4	25	0.030	5.600	8.000	995	119	5.3
		10.00	4	25	0.035	7.000	10.000	795	111	7.8
		12.00	4	25	0.060	8.400	12.000	665	160	16.1
		16.00	4	25	0.080	11.200	16.000	495	158	28.4
		20.00	4	25	0.100	14.000	20.000	400	160	44.8
		25.00	4	25	0.125	17.500	25.000	320	160	70.0
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	18	0.020	4.200	6.000	955	76	1.9
		8.00	4	18	0.030	5.600	8.000	715	86	3.8
		10.00	4	18	0.035	7.000	10.000	575	81	5.6
		12.00	4	18	0.060	8.400	12.000	475	114	11.5
		16.00	4	18	0.080	11.200	16.000	360	115	20.6
		20.00	4	18	0.100	14.000	20.000	285	114	31.9
		25.00	4	18	0.125	17.500	25.000	230	115	50.3
	Cast iron (lamellar / spheroidal)	6.00	4	29	0.020	4.200	6.000	1540	123	3.1
		8.00	4	29	0.030	5.600	8.000	1155	139	6.2
		10.00	4	29	0.035	7.000	10.000	925	130	9.1
		12.00	4	29	0.060	8.400	12.000	770	185	18.6
		16.00	4	29	0.080	11.200	16.000	575	184	33.0
		20.00	4	29	0.100	14.000	20.000	460	184	51.5
		25.00	4	29	0.125	17.500	25.000	370	185	80.9

Cylindrical end mills

Profiled NRC, medium length version

HSS PM/F | λ **30°** γ **12°**

45°



Roughing

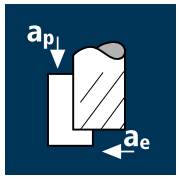
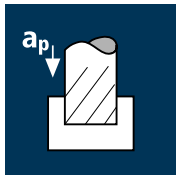
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0659** ø-Code **300**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	z	UNICUT-4X U0659
300	6.00	6.00	63	19.00	-	0.30	4	●
402	8.00	10.00	78	28.00	37.50	0.30	4	●
450	10.00	10.00	84	34.00	-	0.30	4	●
501	12.00	12.00	97	40.00	-	0.30	4	●
610	16.00	16.00	108	48.00	-	0.40	4	●
682	20.00	20.00	122	56.00	-	0.40	4	●
772	25.00	25.00	144	68.00	-	0.60	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	3	32	0.020	12.000	1.500	1700	102	1.8
		8.00	4	32	0.030	16.000	2.000	1275	153	4.9
		10.00	4	32	0.035	20.000	2.500	1020	143	7.1
		12.00	4	32	0.055	24.000	3.000	850	187	13.5
		16.00	4	32	0.075	32.000	4.000	635	191	24.4
		20.00	4	32	0.095	40.000	5.000	510	194	38.8
		25.00	4	32	0.115	50.000	6.250	405	186	58.2
		30.00	6	32	0.095	60.000	7.500	340	194	87.2
		32.00	6	32	0.105	64.000	8.000	320	202	103.2
	Steel 850 - 1100 N/mm²	6.00	3	30	0.020	12.000	1.500	1590	95	1.7
		8.00	4	30	0.030	16.000	2.000	1195	143	4.6
		10.00	4	30	0.035	20.000	2.500	955	134	6.7
		12.00	4	30	0.055	24.000	3.000	795	175	12.6
		16.00	4	30	0.075	32.000	4.000	595	179	22.8
		20.00	4	30	0.095	40.000	5.000	475	181	36.1
		25.00	4	30	0.115	50.000	6.250	380	175	54.6
		30.00	6	30	0.095	60.000	7.500	320	182	82.1
		32.00	6	30	0.105	64.000	8.000	300	189	96.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	3	15	0.020	12.000	1.500	795	48	0.9
		8.00	4	15	0.030	16.000	2.000	595	71	2.3
		10.00	4	15	0.035	20.000	2.500	475	67	3.3
		12.00	4	15	0.055	24.000	3.000	400	88	6.3
		16.00	4	15	0.075	32.000	4.000	300	90	11.5
		20.00	4	15	0.095	40.000	5.000	240	91	18.2
		25.00	4	15	0.115	50.000	6.250	190	87	27.3
		30.00	6	15	0.095	60.000	7.500	160	91	41.0
		32.00	6	15	0.105	64.000	8.000	150	95	48.4
	Cast iron (lamellar / spheroidal)	6.00	3	28	0.020	12.000	1.500	1485	89	1.6
		8.00	4	28	0.030	16.000	2.000	1115	134	4.3
		10.00	4	28	0.035	20.000	2.500	890	125	6.2
		12.00	4	28	0.055	24.000	3.000	745	164	11.8
		16.00	4	28	0.075	32.000	4.000	555	167	21.3
		20.00	4	28	0.095	40.000	5.000	445	169	33.8
		25.00	4	28	0.115	50.000	6.250	355	163	51.0
		30.00	6	28	0.095	60.000	7.500	295	168	75.7
		32.00	6	28	0.105	64.000	8.000	280	176	90.3
	Steel < 850 N/mm²	6.00	3	28	0.020	4.200	6.000	1485	89	2.2
		8.00	4	28	0.025	5.600	8.000	1115	112	5.0
		10.00	4	28	0.035	7.000	10.000	890	125	8.7
		12.00	4	28	0.055	8.400	12.000	745	164	16.5
		16.00	4	28	0.070	11.200	16.000	555	155	27.8
		20.00	4	28	0.090	14.000	20.000	445	160	44.9
		25.00	4	28	0.110	17.500	25.000	355	156	68.3
		30.00	6	28	0.090	21.000	30.000	295	159	100.4
		32.00	6	28	0.095	22.400	32.000	280	160	114.4
	Steel 850 - 1100 N/mm²	6.00	3	26	0.020	4.200	6.000	1380	83	2.1
		8.00	4	26	0.025	5.600	8.000	1035	104	4.6
		10.00	4	26	0.035	7.000	10.000	830	116	8.1
		12.00	4	26	0.055	8.400	12.000	690	152	15.3
		16.00	4	26	0.070	11.200	16.000	515	144	25.8
		20.00	4	26	0.090	14.000	20.000	415	149	41.8
		25.00	4	26	0.110	17.500	25.000	330	145	63.5
		30.00	6	26	0.090	21.000	30.000	275	149	93.6
		32.00	6	26	0.095	22.400	32.000	260	148	106.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	3	14	0.020	4.200	6.000	745	45	1.1
		8.00	4	14	0.025	5.600	8.000	555	56	2.5
		10.00	4	14	0.035	7.000	10.000	445	62	4.4
		12.00	4	14	0.055	8.400	12.000	370	81	8.2
		16.00	4	14	0.070	11.200	16.000	280	78	14.0
		20.00	4	14	0.090	14.000	20.000	225	81	22.7
		25.00	4	14	0.110	17.500	25.000	180	79	34.7
		30.00	6	14	0.090	21.000	30.000	150	81	51.0
		32.00	6	14	0.095	22.400	32.000	140	80	57.2
	Cast iron (lamellar / spheroidal)	6.00	3	22	0.020	4.200	6.000	1165	70	1.8
		8.00	4	22	0.025	5.600	8.000	875	88	3.9
		10.00	4	22	0.035	7.000	10.000	700	98	6.9
		12.00	4	22	0.055	8.400	12.000	585	129	13.0
		16.00	4	22	0.070	11.200	16.000	440	123	22.1
		20.00	4	22	0.090	14.000	20.000	350	126	35.3
		25.00	4	22	0.110	17.500	25.000	280	123	53.9
		30.00	6	22	0.090	21.000	30.000	235	127	79.9
		32.00	6	22	0.095	22.400	32.000	220	125	89.9

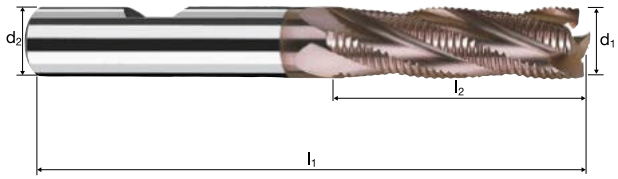
Cylindrical end mills

Profiled NRF, medium length version

HSS-E Co8

λ **25°**
γ **10°**

45°



Roughing

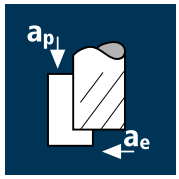
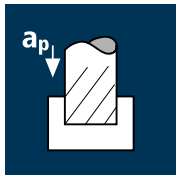
Finishing

ReTool®

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300					**Inox** Stainless	**Ti** Titanium	**GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0650** ø-Code **260**

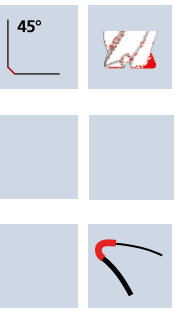
Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0650
260	5.00	6.00	63	19.00	26.55	0.30	1.5°	3	●
300	6.00	6.00	63	19.00	-	0.30	0.0°	3	●
402	8.00	10.00	78	28.00	37.50	0.30	2.0°	4	●
450	10.00	10.00	84	34.00	-	0.30	0.0°	4	●
501	12.00	12.00	97	40.00	-	0.30	0.0°	4	●
570	14.00	12.00	97	40.00	-	0.30	0.0°	4	●
610	16.00	16.00	108	48.00	-	0.40	0.0°	4	●
640	18.00	16.00	108	48.00	-	0.40	0.0°	4	●
682	20.00	20.00	122	56.00	-	0.40	0.0°	4	●
710	22.00	20.00	122	56.00	-	0.60	0.0°	4	●
772	25.00	25.00	144	68.00	-	0.60	0.0°	4	●
800	28.00	25.00	144	68.00	-	0.60	0.0°	6	●
810	30.00	25.00	144	68.00	-	0.60	0.0°	6	●
832	32.00	32.00	160	80.00	-	0.60	0.0°	6	●

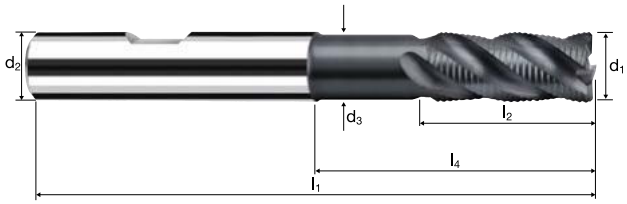
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	160	0.035	7.200	1.800	8490	1189	15.4
		8.00	4	160	0.045	9.600	2.400	6365	1146	26.4
		10.00	4	160	0.060	12.000	3.000	5095	1223	44.0
		12.00	4	160	0.070	14.400	3.600	4245	1189	61.6
		16.00	4	160	0.075	19.200	4.800	3185	956	88.1
		20.00	4	160	0.080	24.000	6.000	2545	814	117.3
	Steel 850 - 1100 N/mm²	6.00	4	130	0.035	7.200	1.800	6895	965	12.5
		8.00	4	130	0.045	9.600	2.400	5175	932	21.5
		10.00	4	130	0.060	12.000	3.000	4140	994	35.8
		12.00	4	130	0.070	14.400	3.600	3450	966	50.1
		16.00	4	130	0.075	19.200	4.800	2585	776	71.5
		20.00	4	130	0.080	24.000	6.000	2070	662	95.4
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	7.200	1.800	2385	239	3.1
		8.00	4	45	0.035	9.600	2.400	1790	251	5.8
		10.00	4	45	0.045	12.000	3.000	1430	257	9.3
		12.00	4	45	0.055	14.400	3.600	1195	263	13.6
		16.00	4	45	0.060	19.200	4.800	895	215	19.8
		20.00	4	45	0.065	24.000	6.000	715	186	26.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	60	0.025	7.200	1.800	3185	319	4.1
		8.00	4	60	0.035	9.600	2.400	2385	334	7.7
		10.00	4	60	0.045	12.000	3.000	1910	344	12.4
		12.00	4	60	0.055	14.400	3.600	1590	350	18.1
		16.00	4	60	0.060	19.200	4.800	1195	287	26.4
		20.00	4	60	0.065	24.000	6.000	955	248	35.8
	Steel < 850 N/mm²	6.00	4	135	0.030	3.600	6.000	7160	859	18.6
		8.00	4	135	0.040	4.800	8.000	5370	859	33.0
		10.00	4	135	0.050	6.000	10.000	4295	859	51.5
		12.00	4	135	0.055	7.200	12.000	3580	788	68.0
		16.00	4	135	0.055	9.600	16.000	2685	591	90.7
		20.00	4	135	0.060	12.000	20.000	2150	516	123.8
	Steel 850 - 1100 N/mm²	6.00	4	80	0.030	3.600	6.000	4245	509	11.0
		8.00	4	80	0.040	4.800	8.000	3185	510	19.6
		10.00	4	80	0.050	6.000	10.000	2545	509	30.5
		12.00	4	80	0.055	7.200	12.000	2120	466	40.3
		16.00	4	80	0.055	9.600	16.000	1590	350	53.7
		20.00	4	80	0.060	12.000	20.000	1275	306	73.4
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.025	3.600	6.000	1855	186	4.0
		8.00	4	35	0.030	4.800	8.000	1395	167	6.4
		10.00	4	35	0.040	6.000	10.000	1115	178	10.7
		12.00	4	35	0.045	7.200	12.000	930	167	14.5
		16.00	4	35	0.045	9.600	16.000	695	125	19.2
		20.00	4	35	0.050	12.000	20.000	555	111	26.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	50	0.025	3.600	6.000	2655	266	5.7
		8.00	4	50	0.030	4.800	8.000	1990	239	9.2
		10.00	4	50	0.040	6.000	10.000	1590	254	15.3
		12.00	4	50	0.045	7.200	12.000	1325	239	20.6
		16.00	4	50	0.045	9.600	16.000	995	179	27.5
		20.00	4	50	0.050	12.000	20.000	795	159	38.2

Cylindrical end mills SupraCarb®

Profiled, medium length version, neck

HM MG10 | λ 38° γ 0°





Roughing

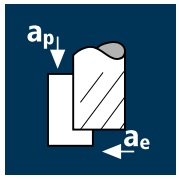
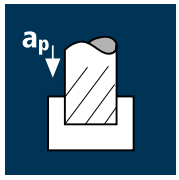
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G)** Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15339** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P15339	POLYCHROM P15239
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.30	4	●	
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.40	4	●	
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.50	4	●	
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.50	4	●	
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.60	4	●	
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.60	4	●	

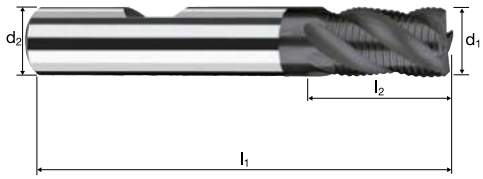
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	3.00	3	160	0.015	3.000	2.100	16975	764	4.8
		4.00	3	160	0.020	4.000	2.800	12730	764	8.6
		5.00	4	160	0.030	5.000	3.500	10185	1222	21.4
		6.00	4	160	0.035	6.000	4.200	8490	1189	30.0
		8.00	4	160	0.045	8.000	5.600	6365	1146	51.3
		10.00	4	160	0.055	10.000	7.000	5095	1121	78.5
		12.00	4	160	0.060	12.000	8.400	4245	1019	102.7
		16.00	4	160	0.065	16.000	11.200	3185	828	148.4
	Steel 850 - 1100 N/mm²	3.00	3	130	0.015	3.000	2.100	13795	621	3.9
		4.00	3	130	0.020	4.000	2.800	10345	621	7.0
		5.00	4	130	0.030	5.000	3.500	8275	993	17.4
		6.00	4	130	0.035	6.000	4.200	6895	965	24.3
		8.00	4	130	0.045	8.000	5.600	5175	932	41.7
		10.00	4	130	0.055	10.000	7.000	4140	911	63.8
		12.00	4	130	0.060	12.000	8.400	3450	828	83.5
		16.00	4	130	0.065	16.000	11.200	2585	672	120.4
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	45	0.015	3.000	2.100	4775	215	1.4
		4.00	3	45	0.020	4.000	2.800	3580	215	2.4
		5.00	4	45	0.020	5.000	3.500	2865	229	4.0
		6.00	4	45	0.025	6.000	4.200	2385	239	6.0
		8.00	4	45	0.035	8.000	5.600	1790	251	11.2
		10.00	4	45	0.045	10.000	7.000	1430	257	18.0
		12.00	4	45	0.050	12.000	8.400	1195	239	24.1
		16.00	4	45	0.050	16.000	11.200	895	179	32.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	60	0.015	3.000	2.100	6365	286	1.8
		4.00	3	60	0.020	4.000	2.800	4775	287	3.2
		5.00	4	60	0.020	5.000	3.500	3820	306	5.3
		6.00	4	60	0.025	6.000	4.200	3185	319	8.0
		8.00	4	60	0.035	8.000	5.600	2385	334	15.0
		10.00	4	60	0.045	10.000	7.000	1910	344	24.1
		12.00	4	60	0.050	12.000	8.400	1590	318	32.1
		16.00	4	60	0.050	16.000	11.200	1195	239	42.8
	Steel < 850 N/mm²	3.00	3	135	0.015	3.000	3.000	14325	645	5.8
		4.00	3	135	0.020	4.000	4.000	10745	645	10.3
		5.00	4	135	0.025	5.000	5.000	8595	860	21.5
		6.00	4	135	0.030	6.000	6.000	7160	859	30.9
		8.00	4	135	0.040	8.000	8.000	5370	859	55.0
		10.00	4	135	0.050	10.000	10.000	4295	859	85.9
		12.00	4	135	0.055	12.000	12.000	3580	788	113.4
		16.00	4	135	0.055	16.000	16.000	2685	591	151.2
	Steel 850 - 1100 N/mm²	3.00	3	80	0.015	3.000	3.000	8490	382	3.4
		4.00	3	80	0.020	4.000	4.000	6365	382	6.1
		5.00	4	80	0.025	5.000	5.000	5095	510	12.7
		6.00	4	80	0.030	6.000	6.000	4245	509	18.3
		8.00	4	80	0.040	8.000	8.000	3185	510	32.6
		10.00	4	80	0.050	10.000	10.000	2545	509	50.9
		12.00	4	80	0.055	12.000	12.000	2120	466	67.2
		16.00	4	80	0.055	16.000	16.000	1590	350	89.5
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	3	35	0.010	3.000	3.000	3715	112	1.0
		4.00	3	35	0.015	4.000	4.000	2785	125	2.0
		5.00	4	35	0.020	5.000	5.000	2230	178	4.5
		6.00	4	35	0.025	6.000	6.000	1855	186	6.7
		8.00	4	35	0.030	8.000	8.000	1395	167	10.7
		10.00	4	35	0.040	10.000	10.000	1115	178	17.8
		12.00	4	35	0.045	12.000	12.000	930	167	24.1
		16.00	4	35	0.045	16.000	16.000	695	125	32.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	3	50	0.010	3.000	3.000	5305	159	1.4
		4.00	3	50	0.015	4.000	4.000	3980	179	2.9
		5.00	4	50	0.020	5.000	5.000	3185	255	6.4
		6.00	4	50	0.025	6.000	6.000	2655	266	9.6
		8.00	4	50	0.030	8.000	8.000	1990	239	15.3
		10.00	4	50	0.040	10.000	10.000	1590	254	25.4
		12.00	4	50	0.045	12.000	12.000	1325	239	34.3
		16.00	4	50	0.045	16.000	16.000	995	179	45.8

Cylindrical end mills SupraCarb®

Profiled, short version

HM MG10	λ 38° γ 0°

45°



Roughing

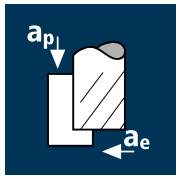
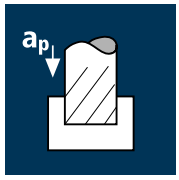
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15360** ø-Code **180**

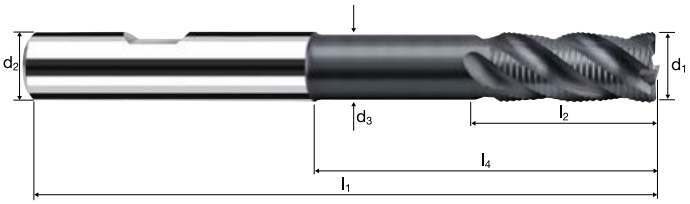
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	z	POLYCHROM P15360	P15260
180	3.00	6.00	50	5.00	12.56	0.20	3		●
220	4.00	6.00	54	8.00	14.09	0.25	3		●
260	5.00	6.00	54	9.00	13.22	0.30	4		●
300	6.00	6.00	54	10.00	-	0.30	4		●
391	8.00	8.00	58	12.00	-	0.40	4		●
450	10.00	10.00	66	14.00	-	0.50	4		●
501	12.00	12.00	73	16.00	-	0.50	4		●
610	16.00	16.00	82	22.00	-	0.60	4		●
612	16.00	16.00	82	22.00	-	0.60	6		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	4	160	0.030	7.200	1.500	8490	1019	11.0
		8.00	4	160	0.040	9.600	2.000	6365	1018	19.6
		10.00	4	160	0.055	12.000	2.500	5095	1121	33.6
		12.00	4	160	0.065	14.400	3.000	4245	1104	47.7
		16.00	4	160	0.070	19.200	4.000	3185	892	68.5
		20.00	4	160	0.075	24.000	5.000	2545	764	91.6
	Steel 850 - 1100 N/mm²	6.00	4	130	0.030	7.200	1.500	6895	827	8.9
		8.00	4	130	0.040	9.600	2.000	5175	828	15.9
		10.00	4	130	0.055	12.000	2.500	4140	911	27.3
		12.00	4	130	0.065	14.400	3.000	3450	897	38.8
		16.00	4	130	0.070	19.200	4.000	2585	724	55.6
		20.00	4	130	0.075	24.000	5.000	2070	621	74.5
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	45	0.025	7.200	1.500	2385	239	2.6
		8.00	4	45	0.035	9.600	2.000	1790	251	4.8
		10.00	4	45	0.045	12.000	2.500	1430	257	7.7
		12.00	4	45	0.055	14.400	3.000	1195	263	11.4
		16.00	4	45	0.060	19.200	4.000	895	215	16.5
		20.00	4	45	0.065	24.000	5.000	715	186	22.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	60	0.025	7.200	1.500	3185	319	3.4
		8.00	4	60	0.035	9.600	2.000	2385	334	6.4
		10.00	4	60	0.045	12.000	2.500	1910	344	10.3
		12.00	4	60	0.055	14.400	3.000	1590	350	15.1
		16.00	4	60	0.060	19.200	4.000	1195	287	22.0
		20.00	4	60	0.065	24.000	5.000	955	248	29.8
	Steel < 850 N/mm²	6.00	4	135	0.025	3.000	6.000	7160	716	12.9
		8.00	4	135	0.035	4.000	8.000	5370	752	24.1
		10.00	4	135	0.045	5.000	10.000	4295	773	38.7
		12.00	4	135	0.050	6.000	12.000	3580	716	51.6
		16.00	4	135	0.050	8.000	16.000	2685	537	68.7
		20.00	4	135	0.055	10.000	20.000	2150	473	94.6
	Steel 850 - 1100 N/mm²	6.00	4	80	0.025	3.000	6.000	4245	425	7.6
		8.00	4	80	0.035	4.000	8.000	3185	446	14.3
		10.00	4	80	0.045	5.000	10.000	2545	458	22.9
		12.00	4	80	0.050	6.000	12.000	2120	424	30.5
		16.00	4	80	0.050	8.000	16.000	1590	318	40.7
		20.00	4	80	0.055	10.000	20.000	1275	281	56.1
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	4	35	0.020	3.000	6.000	1855	148	2.7
		8.00	4	35	0.030	4.000	8.000	1395	167	5.4
		10.00	4	35	0.035	5.000	10.000	1115	156	7.8
		12.00	4	35	0.040	6.000	12.000	930	149	10.7
		16.00	4	35	0.040	8.000	16.000	695	111	14.2
		20.00	4	35	0.045	10.000	20.000	555	100	20.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	50	0.020	3.000	6.000	2655	212	3.8
		8.00	4	50	0.030	4.000	8.000	1990	239	7.6
		10.00	4	50	0.035	5.000	10.000	1590	223	11.1
		12.00	4	50	0.040	6.000	12.000	1325	212	15.3
		16.00	4	50	0.040	8.000	16.000	995	159	20.4
		20.00	4	50	0.045	10.000	20.000	795	143	28.6

Cylindrical end mills SupraCarb®

Profiled, long version, neck

HM MG10	λ 38° γ 0°



Roughing

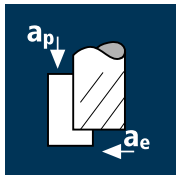
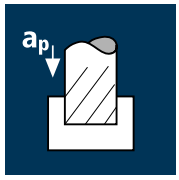
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15348** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	POLYCHROM P15348	POLYCHROM P15248
300	6.00	6.00	5.50	70	13.00	32.34	33.00	0.30	4		●
391	8.00	8.00	7.40	80	19.00	42.29	43.00	0.40	4		●
450	10.00	10.00	9.20	100	22.00	58.20	59.00	0.50	4		●
501	12.00	12.00	11.00	110	26.00	63.13	64.00	0.50	4		●
610	16.00	16.00	15.00	123	32.00	73.13	74.00	0.60	4		●
682	20.00	20.00	19.00	141	38.00	89.13	90.00	0.60	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	6.00	3	26	0.020	15.000	2.400	1380	83	3.0
		8.00	4	26	0.030	20.000	3.200	1035	124	7.9
		10.00	4	26	0.035	25.000	4.000	830	116	11.6
		12.00	4	26	0.055	30.000	4.800	690	152	21.9
		16.00	4	26	0.075	40.000	6.400	515	155	39.6
		20.00	4	26	0.095	50.000	8.000	415	158	63.1
		25.00	4	26	0.115	62.500	10.000	330	152	94.9
		32.00	6	26	0.105	80.000	12.800	260	164	167.7
		40.00	6	26	0.130	100.000	16.000	205	160	255.8
	Steel 850 - 1100 N/mm²	6.00	3	22	0.020	15.000	2.400	1165	70	2.5
		8.00	4	22	0.030	20.000	3.200	875	105	6.7
		10.00	4	22	0.035	25.000	4.000	700	98	9.8
		12.00	4	22	0.055	30.000	4.800	585	129	18.5
		16.00	4	22	0.075	40.000	6.400	440	132	33.8
		20.00	4	22	0.095	50.000	8.000	350	133	53.2
		25.00	4	22	0.115	62.500	10.000	280	129	80.5
		32.00	6	22	0.105	80.000	12.800	220	139	141.9
		40.00	6	22	0.130	100.000	16.000	175	137	218.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	3	11	0.020	15.000	2.400	585	35	1.3
		8.00	4	11	0.030	20.000	3.200	440	53	3.4
		10.00	4	11	0.035	25.000	4.000	350	49	4.9
		12.00	4	11	0.055	30.000	4.800	290	64	9.2
		16.00	4	11	0.075	40.000	6.400	220	66	16.9
		20.00	4	11	0.095	50.000	8.000	175	67	26.6
		25.00	4	11	0.115	62.500	10.000	140	64	40.3
		32.00	6	11	0.105	80.000	12.800	110	69	71.0
		40.00	6	11	0.130	100.000	16.000	90	70	112.3
	Cast iron (lamellar / spheroidal)	6.00	3	20	0.020	15.000	2.400	1060	64	2.3
		8.00	4	20	0.030	20.000	3.200	795	95	6.1
		10.00	4	20	0.035	25.000	4.000	635	89	8.9
		12.00	4	20	0.055	30.000	4.800	530	117	16.8
		16.00	4	20	0.075	40.000	6.400	400	120	30.7
		20.00	4	20	0.095	50.000	8.000	320	122	48.6
		25.00	4	20	0.115	62.500	10.000	255	117	73.3
		32.00	6	20	0.105	80.000	12.800	200	126	129.0
		40.00	6	20	0.130	100.000	16.000	160	125	199.7
	Steel < 850 N/mm²	6.00	3	22	0.020	3.000	6.000	1165	70	1.3
		8.00	4	22	0.025	4.000	8.000	875	88	2.8
		10.00	4	22	0.035	5.000	10.000	700	98	4.9
		12.00	4	22	0.055	6.000	12.000	585	129	9.3
		16.00	4	22	0.070	8.000	16.000	440	123	15.8
		20.00	4	22	0.090	10.000	20.000	350	126	25.2
		25.00	4	22	0.110	12.500	25.000	280	123	38.5
		32.00	6	22	0.095	16.000	32.000	220	125	64.2
		40.00	6	22	0.120	20.000	40.000	175	126	100.8
	Steel 850 - 1100 N/mm²	6.00	3	18	0.020	3.000	6.000	955	57	1.0
		8.00	4	18	0.025	4.000	8.000	715	72	2.3
		10.00	4	18	0.035	5.000	10.000	575	81	4.0
		12.00	4	18	0.055	6.000	12.000	475	105	7.5
		16.00	4	18	0.070	8.000	16.000	360	101	12.9
		20.00	4	18	0.090	10.000	20.000	285	103	20.5
		25.00	4	18	0.110	12.500	25.000	230	101	31.6
		32.00	6	18	0.095	16.000	32.000	180	103	52.5
		40.00	6	18	0.120	20.000	40.000	145	104	83.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	3	10	0.020	3.000	6.000	530	32	0.6
		8.00	4	10	0.025	4.000	8.000	400	40	1.3
		10.00	4	10	0.035	5.000	10.000	320	45	2.2
		12.00	4	10	0.055	6.000	12.000	265	58	4.2
		16.00	4	10	0.070	8.000	16.000	200	56	7.2
		20.00	4	10	0.090	10.000	20.000	160	58	11.5
		25.00	4	10	0.110	12.500	25.000	125	55	17.2
		32.00	6	10	0.095	16.000	32.000	100	57	29.2
		40.00	6	10	0.120	20.000	40.000	80	58	46.1
	Cast iron (lamellar / spheroidal)	6.00	3	16	0.020	3.000	6.000	850	51	0.9
		8.00	4	16	0.025	4.000	8.000	635	64	2.0
		10.00	4	16	0.035	5.000	10.000	510	71	3.6
		12.00	4	16	0.055	6.000	12.000	425	94	6.7
		16.00	4	16	0.070	8.000	16.000	320	90	11.5
		20.00	4	16	0.090	10.000	20.000	255	92	18.4
		25.00	4	16	0.110	12.500	25.000	205	90	28.2
		32.00	6	16	0.095	16.000	32.000	160	91	46.7
		40.00	6	16	0.120	20.000	40.000	125	90	72.0

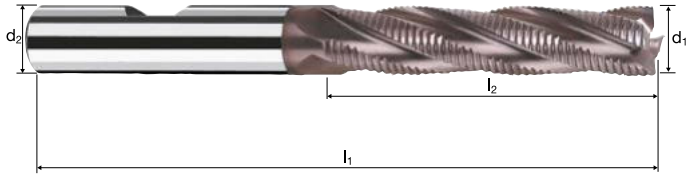
Cylindrical end mills

Profiled NRF, long version

HSS-E Co8

λ **25°**
γ **10°**

45°



Roughing

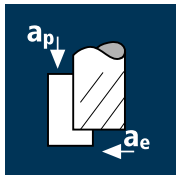
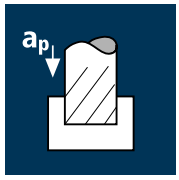
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0665** ø-Code **260**

Ø Code	d_1 k12	d_2 h6	l_1	l_2	l_4	45°	α	z	UNICUT-4X U0665
260	5.00	6.00	68	24.00	31.55	0.30	1.0°	3	●
300	6.00	6.00	68	24.00	-	0.30	0.0°	3	●
342	7.00	10.00	80	30.00	39.50	0.30	2.5°	3	●
391	8.00	8.00	82	38.00	-	0.30	0.0°	4	●
402	8.00	10.00	88	38.00	47.50	0.30	1.0°	4	●
420	9.00	10.00	88	38.00	47.50	0.30	0.0°	4	●
450	10.00	10.00	95	45.00	-	0.30	0.0°	4	●
470	11.00	12.00	102	45.00	56.50	0.30	0.0°	4	●
501	12.00	12.00	110	53.00	-	0.30	0.0°	4	●
540	13.00	12.00	110	53.00	-	0.30	0.0°	4	●
570	14.00	12.00	110	53.00	-	0.30	0.0°	4	●
610	16.00	16.00	123	63.00	-	0.40	0.0°	4	●
640	18.00	16.00	123	63.00	-	0.40	0.0°	4	●
682	20.00	20.00	141	75.00	-	0.40	0.0°	4	●
710	22.00	20.00	141	75.00	-	0.60	0.0°	4	●
772	25.00	25.00	166	90.00	-	0.60	0.0°	4	●
800	28.00	25.00	166	90.00	-	0.60	0.0°	6	●
810	30.00	25.00	166	90.00	-	0.60	0.0°	6	●
832	32.00	32.00	186	106.00	-	0.60	0.0°	6	●
860	36.00	32.00	186	106.00	-	0.80	0.0°	6	●
892	40.00	40.00	217	125.00	-	0.80	0.0°	6	●

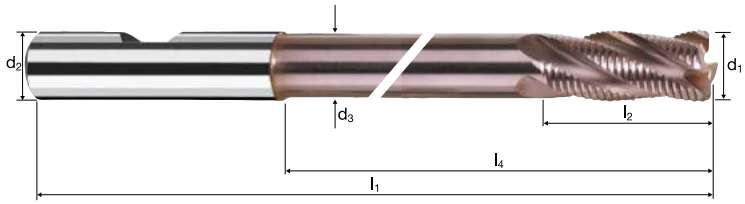
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	27	0.015	6.000	1.200	1430	86	0.6
		8.00	4	27	0.020	8.000	1.600	1075	86	1.1
		10.00	4	27	0.025	10.000	2.000	860	86	1.7
		12.00	4	27	0.035	12.000	2.400	715	100	2.9
		16.00	4	27	0.050	16.000	3.200	535	107	5.5
		20.00	4	27	0.060	20.000	4.000	430	103	8.3
		25.00	4	27	0.080	25.000	5.000	345	110	13.8
	Steel 1100 - 1300 N/mm²	6.00	4	22	0.015	6.000	1.200	1165	70	0.5
		8.00	4	22	0.020	8.000	1.600	875	70	0.9
		10.00	4	22	0.025	10.000	2.000	700	70	1.4
		12.00	4	22	0.035	12.000	2.400	585	82	2.4
		16.00	4	22	0.050	16.000	3.200	440	88	4.5
		20.00	4	22	0.060	20.000	4.000	350	84	6.7
		25.00	4	22	0.080	25.000	5.000	280	90	11.2
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	16	0.015	6.000	1.200	850	51	0.4
		8.00	4	16	0.020	8.000	1.600	635	51	0.7
		10.00	4	16	0.025	10.000	2.000	510	51	1.0
		12.00	4	16	0.035	12.000	2.400	425	60	1.7
		16.00	4	16	0.050	16.000	3.200	320	64	3.3
		20.00	4	16	0.060	20.000	4.000	255	61	4.9
		25.00	4	16	0.080	25.000	5.000	205	66	8.2
	Cast iron (lamellar / spheroidal)	6.00	4	24	0.015	6.000	1.200	1275	77	0.6
		8.00	4	24	0.020	8.000	1.600	955	76	1.0
		10.00	4	24	0.025	10.000	2.000	765	77	1.5
		12.00	4	24	0.035	12.000	2.400	635	89	2.6
		16.00	4	24	0.050	16.000	3.200	475	95	4.9
		20.00	4	24	0.060	20.000	4.000	380	91	7.3
		25.00	4	24	0.080	25.000	5.000	305	98	12.2
	Steel 850 - 1100 N/mm²	6.00	4	24	0.020	3.000	6.000	1275	102	1.8
		8.00	4	24	0.025	4.000	8.000	955	96	3.1
		10.00	4	24	0.030	5.000	10.000	765	92	4.6
		12.00	4	24	0.045	6.000	12.000	635	114	8.2
		16.00	4	24	0.065	8.000	16.000	475	124	15.8
		20.00	4	24	0.080	10.000	20.000	380	122	24.3
		25.00	4	24	0.100	12.500	25.000	305	122	38.1
	Steel 1100 - 1300 N/mm²	6.00	4	20	0.020	3.000	6.000	1060	85	1.5
		8.00	4	20	0.025	4.000	8.000	795	80	2.5
		10.00	4	20	0.030	5.000	10.000	635	76	3.8
		12.00	4	20	0.045	6.000	12.000	530	95	6.9
		16.00	4	20	0.065	8.000	16.000	400	104	13.3
		20.00	4	20	0.080	10.000	20.000	320	102	20.5
		25.00	4	20	0.100	12.500	25.000	255	102	31.9
	Cold work tool steel (12% Cr), high alloyed [1.2379]	6.00	4	14	0.020	3.000	6.000	745	60	1.1
		8.00	4	14	0.025	4.000	8.000	555	56	1.8
		10.00	4	14	0.030	5.000	10.000	445	53	2.7
		12.00	4	14	0.045	6.000	12.000	370	67	4.8
		16.00	4	14	0.065	8.000	16.000	280	73	9.3
		20.00	4	14	0.080	10.000	20.000	225	72	14.4
		25.00	4	14	0.100	12.500	25.000	180	72	22.5
	Cast iron (lamellar / spheroidal)	6.00	4	21	0.020	3.000	6.000	1115	89	1.6
		8.00	4	21	0.025	4.000	8.000	835	84	2.7
		10.00	4	21	0.030	5.000	10.000	670	80	4.0
		12.00	4	21	0.045	6.000	12.000	555	100	7.2
		16.00	4	21	0.065	8.000	16.000	420	109	14.0
		20.00	4	21	0.080	10.000	20.000	335	107	21.4
		25.00	4	21	0.100	12.500	25.000	265	106	33.1

Cylindrical end mills

Profiled NRC, extra-long version, neck

HSS PM/F | λ **30°** γ **12°**

45°



Roughing

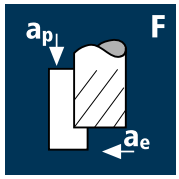
Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **GG(G)**

Example: **Order-N°.** Coating **U** Article-N°. **0621** ø-Code **300**

Ø Code	d_1 k8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	UNICUT-4X U0621
300	6.00	6.00	5.50	81	13.00	43.34	44.00	0.30	4	●
391	8.00	8.00	7.40	101	19.00	63.29	64.00	0.30	4	●
450	10.00	10.00	9.20	117	22.00	75.20	76.00	0.30	4	●
501	12.00	12.00	11.00	136	26.00	89.13	90.00	0.30	4	●
610	16.00	16.00	14.50	155	32.00	105.03	106.00	0.40	4	●
682	20.00	20.00	18.00	179	38.00	127.00	128.00	0.40	4	●
772	25.00	25.00	23.00	211	45.00	153.00	154.00	0.60	4	●

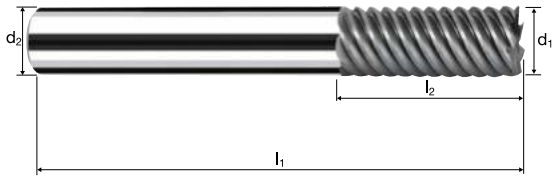
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	3.00	5	160	0.025	8.000	0.030	16975	2122
		4.00	5	160	0.029	11.000	0.030	12730	1846
		5.00	5	160	0.033	13.000	0.060	10185	1681
		6.00	5	160	0.036	13.000	0.060	8490	1528
		8.00	7	160	0.041	19.000	0.100	6365	1827
		10.00	7	160	0.046	22.000	0.100	5095	1641
		12.00	7	160	0.051	26.000	0.120	4245	1516
		16.00	7	160	0.059	32.000	0.120	3185	1315
		20.00	7	160	0.065	38.000	0.150	2545	1158
	Steel 1100 - 1300 N/mm²	3.00	5	140	0.025	8.000	0.030	14855	1857
		4.00	5	140	0.029	11.000	0.030	11140	1615
		5.00	5	140	0.033	13.000	0.060	8915	1471
		6.00	5	140	0.036	13.000	0.060	7425	1337
		8.00	7	140	0.041	19.000	0.100	5570	1599
		10.00	7	140	0.046	22.000	0.100	4455	1435
		12.00	7	140	0.051	26.000	0.120	3715	1326
		16.00	7	140	0.059	32.000	0.120	2785	1150
		20.00	7	140	0.065	38.000	0.150	2230	1015
	Hardened tool steel 52 - 56 HRC	3.00	5	85	0.020	8.000	0.040	9020	902
		4.00	5	85	0.023	11.000	0.040	6765	778
		5.00	5	85	0.026	13.000	0.060	5410	703
		6.00	5	85	0.028	13.000	0.060	4510	631
		8.00	7	100	0.021	19.000	0.080	3980	585
		10.00	7	100	0.024	22.000	0.080	3185	535
		12.00	7	100	0.026	26.000	0.100	2655	483
		16.00	7	100	0.030	32.000	0.100	1990	418
		20.00	7	100	0.033	38.000	0.120	1590	367
	Hardened tool steel 56 - 60 HRC	3.00	5	60	0.020	8.000	0.040	6365	637
		4.00	5	60	0.023	11.000	0.040	4775	549
		5.00	5	60	0.026	13.000	0.060	3820	497
		6.00	5	60	0.028	13.000	0.060	3185	446
		8.00	7	70	0.021	19.000	0.080	2785	409
		10.00	7	70	0.024	22.000	0.080	2230	375
		12.00	7	70	0.026	26.000	0.100	1855	338
		16.00	7	70	0.030	32.000	0.100	1395	293
		20.00	7	70	0.033	38.000	0.120	1115	258
	Wrought aluminium Construction aluminium	3.00	5	450	0.025	8.000	0.030	47745	5968
		4.00	5	450	0.029	11.000	0.030	35810	5193
		5.00	5	450	0.033	13.000	0.060	28650	4727
		6.00	5	450	0.036	13.000	0.060	23875	4298
		8.00	7	450	0.041	19.000	0.100	17905	5139
		10.00	7	450	0.046	22.000	0.100	14325	4613
		12.00	7	450	0.051	26.000	0.120	11935	4261
		16.00	7	450	0.059	32.000	0.120	8950	3696
		20.00	7	450	0.065	38.000	0.150	7160	3258
	Cast iron (lamellar / spheroidal)	3.00	5	180	0.025	8.000	0.030	19100	2388
		4.00	5	180	0.029	11.000	0.030	14325	2077
		5.00	5	180	0.033	13.000	0.060	11460	1891
		6.00	5	180	0.036	13.000	0.060	9550	1719
		8.00	7	180	0.041	19.000	0.100	7160	2055
		10.00	7	180	0.046	22.000	0.100	5730	1845
		12.00	7	180	0.051	26.000	0.120	4775	1705
		16.00	7	180	0.059	32.000	0.120	3580	1479
		20.00	7	180	0.065	38.000	0.150	2865	1304
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	5	70	0.025	8.000	0.030	7425	928
		4.00	5	70	0.029	11.000	0.030	5570	808
		5.00	5	70	0.033	13.000	0.060	4455	735
		6.00	5	70	0.036	13.000	0.060	3715	669
		8.00	7	70	0.041	19.000	0.100	2785	799
		10.00	7	70	0.046	22.000	0.100	2230	718
		12.00	7	70	0.051	26.000	0.120	1855	662
		16.00	7	70	0.059	32.000	0.120	1395	576
		20.00	7	70	0.065	38.000	0.150	1115	507
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	5	80	0.025	8.000	0.030	8490	1061
		4.00	5	80	0.029	11.000	0.030	6365	923
		5.00	5	80	0.033	13.000	0.060	5095	841
		6.00	5	80	0.036	13.000	0.060	4245	764
		8.00	7	80	0.041	19.000	0.100	3185	914
		10.00	7	80	0.046	22.000	0.100	2545	820
		12.00	7	80	0.051	26.000	0.120	2120	757
		16.00	7	80	0.059	32.000	0.120	1590	657
		20.00	7	80	0.065	38.000	0.150	1275	580

Cylindrical end mills MulticutXF

Finishing, normal version

HM XA | λ 65° γ 8°

45° | h5



Roughing

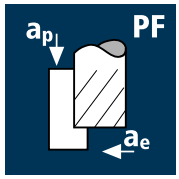
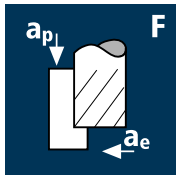
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15250** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	45°	α	z	DURO-Si H15250	POLYCHROM P15250
180	3.00	6.00	57	8.00	15.36	-	6.0°	5	●	●
220	4.00	6.00	57	11.00	16.79	-	4.0°	5	●	●
260	5.00	6.00	57	13.00	16.92	-	2.0°	5	●	●
300	6.00	6.00	57	13.00	-	0.10	0.0°	5	●	●
391	8.00	8.00	63	19.00	-	0.10	0.0°	7	●	●
450	10.00	10.00	72	22.00	-	0.15	0.0°	7	●	●
501	12.00	12.00	83	26.00	-	0.15	0.0°	7	●	●
610	16.00	16.00	92	32.00	-	0.15	0.0°	7	●	●
682	20.00	20.00	104	38.00	-	0.15	0.0°	7	●	●

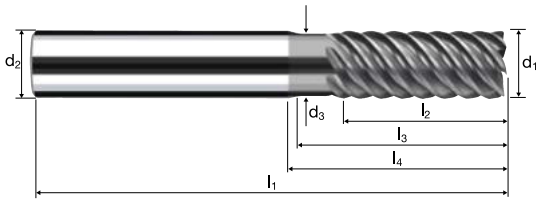
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	130	0.030	8.000	0.060	13795	1655
		4.00	5	130	0.035	11.000	0.060	10345	1810
		5.00	5	130	0.039	13.000	0.120	8275	1614
		6.00	6	130	0.043	13.000	0.120	6895	1779
		8.00	6	130	0.050	19.000	0.200	5175	1553
		10.00	7	130	0.056	23.000	0.200	4140	1623
		12.00	7	130	0.061	27.000	0.240	3450	1473
		16.00	8	130	0.070	32.000	0.240	2585	1448
		20.00	8	130	0.078	40.000	0.300	2070	1292
	Steel 850 - 1100 N/mm²	3.00	4	110	0.030	8.000	0.060	11670	1400
		4.00	5	110	0.035	11.000	0.060	8755	1532
		5.00	5	110	0.039	13.000	0.120	7005	1366
		6.00	6	110	0.043	13.000	0.120	5835	1505
		8.00	6	110	0.050	19.000	0.200	4375	1313
		10.00	7	110	0.056	23.000	0.200	3500	1372
		12.00	7	110	0.061	27.000	0.240	2920	1247
		16.00	8	110	0.070	32.000	0.240	2190	1226
		20.00	8	110	0.078	40.000	0.300	1750	1092
	Steel 1100 - 1300 N/mm²	3.00	4	105	0.030	8.000	0.060	11140	1337
		4.00	5	105	0.035	11.000	0.060	8355	1462
		5.00	5	105	0.039	13.000	0.120	6685	1304
		6.00	6	105	0.043	13.000	0.120	5570	1437
		8.00	6	105	0.050	19.000	0.200	4180	1254
		10.00	7	105	0.056	23.000	0.200	3340	1309
		12.00	7	105	0.061	27.000	0.240	2785	1189
		16.00	8	105	0.070	32.000	0.240	2090	1170
		20.00	8	105	0.078	40.000	0.300	1670	1042
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	55	0.030	8.000	0.060	5835	700
		4.00	5	55	0.035	11.000	0.060	4375	766
		5.00	5	55	0.039	13.000	0.120	3500	683
		6.00	6	55	0.043	13.000	0.120	2920	753
		8.00	6	55	0.050	19.000	0.200	2190	657
		10.00	7	55	0.056	23.000	0.200	1750	686
		12.00	7	55	0.061	27.000	0.240	1460	623
		16.00	8	55	0.070	32.000	0.240	1095	613
		20.00	8	55	0.078	40.000	0.300	875	546
	Steel < 850 N/mm²	3.00	4	160	0.025	8.000	0.030	16975	1698
		4.00	5	160	0.029	11.000	0.030	12730	1846
		5.00	5	160	0.033	13.000	0.060	10185	1681
		6.00	6	160	0.036	13.000	0.060	8490	1834
		8.00	6	160	0.041	19.000	0.100	6365	1566
		10.00	7	160	0.046	23.000	0.100	5095	1641
		12.00	7	160	0.051	27.000	0.120	4245	1516
		16.00	8	160	0.059	32.000	0.120	3185	1503
		20.00	8	160	0.065	40.000	0.150	2545	1323
	Steel 850 - 1100 N/mm²	3.00	4	140	0.025	8.000	0.030	14855	1486
		4.00	5	140	0.029	11.000	0.030	11140	1615
		5.00	5	140	0.033	13.000	0.060	8915	1471
		6.00	6	140	0.036	13.000	0.060	7425	1604
		8.00	6	140	0.041	19.000	0.100	5570	1370
		10.00	7	140	0.046	23.000	0.100	4455	1435
		12.00	7	140	0.051	27.000	0.120	3715	1326
		16.00	8	140	0.059	32.000	0.120	2785	1315
		20.00	8	140	0.065	40.000	0.150	2230	1160
	Steel 1100 - 1300 N/mm²	3.00	4	130	0.025	8.000	0.030	13795	1380
		4.00	5	130	0.029	11.000	0.030	10345	1500
		5.00	5	130	0.033	13.000	0.060	8275	1365
		6.00	6	130	0.036	13.000	0.060	6895	1489
		8.00	6	130	0.041	19.000	0.100	5175	1273
		10.00	7	130	0.046	23.000	0.100	4140	1333
		12.00	7	130	0.051	27.000	0.120	3450	1232
		16.00	8	130	0.059	32.000	0.120	2585	1220
		20.00	8	130	0.065	40.000	0.150	2070	1076
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	70	0.025	8.000	0.030	7425	743
		4.00	5	70	0.029	11.000	0.030	5570	808
		5.00	5	70	0.033	13.000	0.060	4455	735
		6.00	6	70	0.036	13.000	0.060	3715	802
		8.00	6	70	0.041	19.000	0.100	2785	685
		10.00	7	70	0.046	23.000	0.100	2230	718
		12.00	7	70	0.051	27.000	0.120	1855	662
		16.00	8	70	0.059	32.000	0.120	1395	658
		20.00	8	70	0.065	40.000	0.150	1115	580

Cylindrical end mills E-Cut

Finishing, normal version

HM MG10	λ 55° γ 10°

r



Roughing

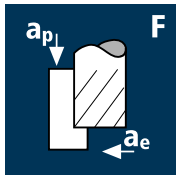
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8401** ø-Code **180**

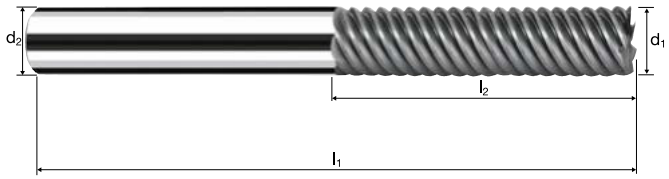
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8401	POLYCHROM P8301
180	3.00	6.00	2.80	57	8.00	14.00	20.37	0.050	4.5°	4	●	
220	4.00	6.00	3.70	57	11.00	16.00	20.82	0.100	3.0°	5	●	
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	5	●	
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	0.0°	6	●	
391	8.00	8.00	7.40	63	19.00	23.63	26.00	0.150	0.0°	6	●	
450	10.00	10.00	9.20	72	23.00	27.99	31.00	0.200	0.0°	7	●	
501	12.00	12.00	11.00	83	27.00	33.29	37.00	0.200	0.0°	7	●	
610	16.00	16.00	15.00	92	32.00	38.73	43.00	0.200	0.0°	8	●	
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.250	0.0°	8	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	3.00	5	130	0.021	14.000	0.030	13795	1449
		4.00	5	130	0.024	17.000	0.030	10345	1241
		5.00	5	130	0.027	19.000	0.060	8275	1117
		6.00	5	130	0.030	19.000	0.060	6895	1034
		8.00	7	130	0.034	28.000	0.100	5175	1232
		10.00	7	130	0.039	34.000	0.100	4140	1130
		12.00	7	130	0.042	40.000	0.120	3450	1014
		16.00	7	130	0.049	48.000	0.120	2585	887
		20.00	7	130	0.055	56.000	0.150	2070	797
	Steel 1100 - 1300 N/mm²	3.00	5	110	0.021	14.000	0.030	11670	1225
		4.00	5	110	0.024	17.000	0.030	8755	1051
		5.00	5	110	0.027	19.000	0.060	7005	946
		6.00	5	110	0.030	19.000	0.060	5835	875
		8.00	7	110	0.034	28.000	0.100	4375	1041
		10.00	7	110	0.039	34.000	0.100	3500	956
		12.00	7	110	0.042	40.000	0.120	2920	859
		16.00	7	110	0.049	48.000	0.120	2190	751
		20.00	7	110	0.055	56.000	0.150	1750	674
	Hardened tool steel 52 - 56 HRC	3.00	5	70	0.020	14.000	0.040	7425	743
		4.00	5	70	0.023	17.000	0.040	5570	641
		5.00	5	70	0.026	19.000	0.060	4455	579
		6.00	5	70	0.028	19.000	0.060	3715	520
		8.00	7	80	0.021	28.000	0.080	3185	468
		10.00	7	80	0.024	34.000	0.080	2545	428
		12.00	7	80	0.026	40.000	0.100	2120	386
		16.00	7	80	0.030	48.000	0.100	1590	334
		20.00	7	80	0.033	56.000	0.120	1275	295
	Hardened tool steel 56 - 60 HRC	3.00	5	50	0.020	14.000	0.040	5305	531
		4.00	5	50	0.023	17.000	0.040	3980	458
		5.00	5	50	0.026	19.000	0.060	3185	414
		6.00	5	50	0.028	19.000	0.060	2655	372
		8.00	7	55	0.021	28.000	0.080	2190	322
		10.00	7	55	0.024	34.000	0.080	1750	294
		12.00	7	55	0.026	40.000	0.100	1460	266
		16.00	7	55	0.030	48.000	0.100	1095	230
		20.00	7	55	0.033	56.000	0.120	875	202
	Wrought aluminium Construction aluminium	3.00	5	360	0.021	14.000	0.030	38195	4011
		4.00	5	360	0.024	17.000	0.030	28650	3438
		5.00	5	360	0.027	19.000	0.060	22920	3094
		6.00	5	360	0.030	19.000	0.060	19100	2865
		8.00	7	360	0.034	28.000	0.100	14325	3409
		10.00	7	360	0.039	34.000	0.100	11460	3129
		12.00	7	360	0.042	40.000	0.120	9550	2808
		16.00	7	360	0.049	48.000	0.120	7160	2456
		20.00	7	360	0.055	56.000	0.150	5730	2206
	Cast iron (lamellar / spheroidal)	3.00	5	140	0.021	14.000	0.030	14855	1560
		4.00	5	140	0.024	17.000	0.030	11140	1337
		5.00	5	140	0.027	19.000	0.060	8915	1204
		6.00	5	140	0.030	19.000	0.060	7425	1114
		8.00	7	140	0.034	28.000	0.100	5570	1326
		10.00	7	140	0.039	34.000	0.100	4455	1216
		12.00	7	140	0.042	40.000	0.120	3715	1092
		16.00	7	140	0.049	48.000	0.120	2785	955
		20.00	7	140	0.055	56.000	0.150	2230	859
	Titanium alloys > 300 HB [Ti6Al4V]	3.00	5	50	0.021	14.000	0.030	5305	557
		4.00	5	50	0.024	17.000	0.030	3980	478
		5.00	5	50	0.027	19.000	0.060	3185	430
		6.00	5	50	0.030	19.000	0.060	2655	398
		8.00	7	50	0.034	28.000	0.100	1990	474
		10.00	7	50	0.039	34.000	0.100	1590	434
		12.00	7	50	0.042	40.000	0.120	1325	390
		16.00	7	50	0.049	48.000	0.120	995	341
		20.00	7	50	0.055	56.000	0.150	795	306
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	5	60	0.021	14.000	0.030	6365	668
		4.00	5	60	0.024	17.000	0.030	4775	573
		5.00	5	60	0.027	19.000	0.060	3820	516
		6.00	5	60	0.030	19.000	0.060	3185	478
		8.00	7	60	0.034	28.000	0.100	2385	568
		10.00	7	60	0.039	34.000	0.100	1910	521
		12.00	7	60	0.042	40.000	0.120	1590	468
		16.00	7	60	0.049	48.000	0.120	1195	410
		20.00	7	60	0.055	56.000	0.150	955	368

Cylindrical end mills MulticutXF

Finishing, medium length version

HM XA	λ 65° γ 8°



Roughing

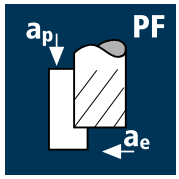
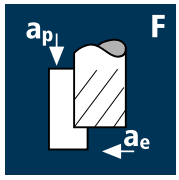
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15251** ø-Code **180**

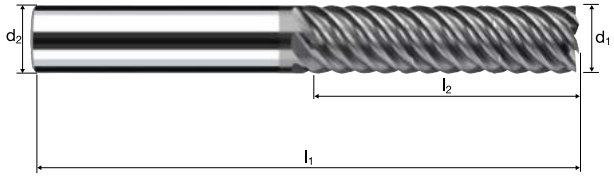
Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	45°	α	z	DURO-Si H15251	POLYCHROM P15251
180	3.00	6.00	63	14.00	21.56	-	4.5°	5	●	●
220	4.00	6.00	63	17.00	23.09	-	3.0°	5	●	●
260	5.00	6.00	63	19.00	23.22	-	1.5°	5	●	●
300	6.00	6.00	63	19.00	-	0.10	0.0°	5	●	●
391	8.00	8.00	72	28.00	-	0.10	0.0°	7	●	●
450	10.00	10.00	84	34.00	-	0.15	0.0°	7	●	●
501	12.00	12.00	97	40.00	-	0.15	0.0°	7	●	●
610	16.00	16.00	108	48.00	-	0.15	0.0°	7	●	●
682	20.00	20.00	122	56.00	-	0.15	0.0°	7	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	100	0.025	11.000	0.060	10610	1061
		4.00	5	100	0.029	13.000	0.060	7960	1154
		5.00	5	100	0.033	16.000	0.120	6365	1050
		6.00	6	100	0.036	21.000	0.120	5305	1146
		8.00	6	100	0.041	31.000	0.200	3980	979
		10.00	7	100	0.046	37.000	0.200	3185	1026
		12.00	7	100	0.051	44.000	0.240	2655	948
		16.00	8	100	0.059	53.000	0.240	1990	939
		20.00	8	100	0.066	62.000	0.300	1590	840
	Steel 850 - 1100 N/mm²	3.00	4	90	0.025	11.000	0.060	9550	955
		4.00	5	90	0.029	13.000	0.060	7160	1038
		5.00	5	90	0.033	16.000	0.120	5730	946
		6.00	6	90	0.036	21.000	0.120	4775	1031
		8.00	6	90	0.041	31.000	0.200	3580	881
		10.00	7	90	0.046	37.000	0.200	2865	923
		12.00	7	90	0.051	44.000	0.240	2385	851
		16.00	8	90	0.059	53.000	0.240	1790	845
		20.00	8	90	0.066	62.000	0.300	1430	755
	Steel 1100 - 1300 N/mm²	3.00	4	80	0.025	11.000	0.060	8490	849
		4.00	5	80	0.029	13.000	0.060	6365	923
		5.00	5	80	0.033	16.000	0.120	5095	841
		6.00	6	80	0.036	21.000	0.120	4245	917
		8.00	6	80	0.041	31.000	0.200	3185	784
		10.00	7	80	0.046	37.000	0.200	2545	820
		12.00	7	80	0.051	44.000	0.240	2120	757
		16.00	8	80	0.059	53.000	0.240	1590	751
		20.00	8	80	0.066	62.000	0.300	1275	673
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	40	0.025	11.000	0.060	4245	425
		4.00	5	40	0.029	13.000	0.060	3185	462
		5.00	5	40	0.033	16.000	0.120	2545	420
		6.00	6	40	0.036	21.000	0.120	2120	458
		8.00	6	40	0.041	31.000	0.200	1590	391
		10.00	7	40	0.046	37.000	0.200	1275	411
		12.00	7	40	0.051	44.000	0.240	1060	378
		16.00	8	40	0.059	53.000	0.240	795	375
		20.00	8	40	0.066	62.000	0.300	635	335
	Steel < 850 N/mm²	3.00	4	130	0.021	11.000	0.030	13795	1159
		4.00	5	130	0.024	13.000	0.030	10345	1241
		5.00	5	130	0.027	16.000	0.060	8275	1117
		6.00	6	130	0.030	21.000	0.060	6895	1241
		8.00	6	130	0.034	31.000	0.100	5175	1056
		10.00	7	130	0.039	37.000	0.100	4140	1130
		12.00	7	130	0.042	44.000	0.120	3450	1014
		16.00	8	130	0.049	53.000	0.120	2585	1013
		20.00	8	130	0.055	62.000	0.150	2070	911
	Steel 850 - 1100 N/mm²	3.00	4	110	0.021	11.000	0.030	11670	980
		4.00	5	110	0.024	13.000	0.030	8755	1051
		5.00	5	110	0.027	16.000	0.060	7005	946
		6.00	6	110	0.030	21.000	0.060	5835	1050
		8.00	6	110	0.034	31.000	0.100	4375	893
		10.00	7	110	0.039	37.000	0.100	3500	956
		12.00	7	110	0.042	44.000	0.120	2920	859
		16.00	8	110	0.049	53.000	0.120	2190	859
		20.00	8	110	0.055	62.000	0.150	1750	770
	Steel 1100 - 1300 N/mm²	3.00	4	100	0.021	11.000	0.030	10610	891
		4.00	5	100	0.024	13.000	0.030	7960	955
		5.00	5	100	0.027	16.000	0.060	6365	859
		6.00	6	100	0.030	21.000	0.060	5305	955
		8.00	6	100	0.034	31.000	0.100	3980	812
		10.00	7	100	0.039	37.000	0.100	3185	870
		12.00	7	100	0.042	44.000	0.120	2655	781
		16.00	8	100	0.049	53.000	0.120	1990	780
		20.00	8	100	0.055	62.000	0.150	1590	700
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	60	0.021	11.000	0.030	6365	535
		4.00	5	60	0.024	13.000	0.030	4775	573
		5.00	5	60	0.027	16.000	0.060	3820	516
		6.00	6	60	0.030	21.000	0.060	3185	573
		8.00	6	60	0.034	31.000	0.100	2385	487
		10.00	7	60	0.039	37.000	0.100	1910	521
		12.00	7	60	0.042	44.000	0.120	1590	468
		16.00	8	60	0.049	53.000	0.120	1195	468
		20.00	8	60	0.055	62.000	0.150	955	420

Cylindrical end mills E-Cut

Finishing, chip breaker, medium length version

HM MG10 | λ **55°** γ **10°**



Roughing

Finishing

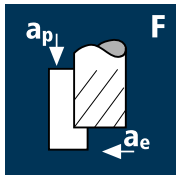
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8311** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r	α	z	POLYCHROM P8311
180*	3.00	6.00	63	11.00	20.26	0.050	4.5°	4	●
220*	4.00	6.00	63	13.00	21.39	0.100	3.5°	5	●
260*	5.00	6.00	63	16.00	23.52	0.100	1.5°	5	●
300	6.00	6.00	63	21.00	-	0.100	0.0°	6	●
391	8.00	8.00	72	31.00	-	0.150	0.0°	6	●
450	10.00	10.00	84	37.00	-	0.200	0.0°	7	●
501	12.00	12.00	97	44.00	-	0.200	0.0°	7	●
610	16.00	16.00	108	53.00	-	0.200	0.0°	8	●
682	20.00	20.00	122	62.00	-	0.250	0.0°	8	●

* without chip breaker only

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	5	100	0.028	26.000	0.060	5305	743
		8.00	7	100	0.032	36.000	0.100	3980	892
		10.00	7	100	0.036	45.000	0.100	3185	803
		12.00	7	100	0.039	53.000	0.120	2655	725
		16.00	7	100	0.045	63.000	0.120	1990	627
		20.00	7	100	0.050	75.000	0.150	1590	557
	Steel 1100 - 1300 N/mm²	6.00	5	90	0.028	26.000	0.060	4775	669
		8.00	7	90	0.032	36.000	0.100	3580	802
		10.00	7	90	0.036	45.000	0.100	2865	722
		12.00	7	90	0.039	53.000	0.120	2385	651
		16.00	7	90	0.045	63.000	0.120	1790	564
		20.00	7	90	0.050	75.000	0.150	1430	501
	Hardened tool steel 52 - 56 HRC	6.00	5	55	0.028	26.000	0.060	2920	409
		8.00	7	65	0.021	36.000	0.080	2585	380
		10.00	7	65	0.024	45.000	0.080	2070	348
		12.00	7	65	0.026	53.000	0.100	1725	314
		16.00	7	65	0.030	63.000	0.100	1295	272
		20.00	7	65	0.033	75.000	0.120	1035	239
	Hardened tool steel 56 - 60 HRC	6.00	5	40	0.028	26.000	0.060	2120	297
		8.00	7	45	0.021	36.000	0.080	1790	263
		10.00	7	45	0.024	45.000	0.080	1430	240
		12.00	7	45	0.026	53.000	0.100	1195	218
		16.00	7	45	0.030	63.000	0.100	895	188
		20.00	7	45	0.033	75.000	0.120	715	165
	Wrought aluminium Construction aluminium	6.00	5	290	0.028	26.000	0.060	15385	2154
		8.00	7	290	0.032	36.000	0.100	11540	2585
		10.00	7	290	0.036	45.000	0.100	9230	2326
		12.00	7	290	0.039	53.000	0.120	7690	2099
		16.00	7	290	0.045	63.000	0.120	5770	1818
		20.00	7	290	0.050	75.000	0.150	4615	1615
	Cast iron (lamellar / spheroidal)	6.00	5	110	0.028	26.000	0.060	5835	817
		8.00	7	110	0.032	36.000	0.100	4375	980
		10.00	7	110	0.036	45.000	0.100	3500	882
		12.00	7	110	0.039	53.000	0.120	2920	797
		16.00	7	110	0.045	63.000	0.120	2190	690
		20.00	7	110	0.050	75.000	0.150	1750	613
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	40	0.028	26.000	0.060	2120	297
		8.00	7	40	0.032	36.000	0.100	1590	356
		10.00	7	40	0.036	45.000	0.100	1275	321
		12.00	7	40	0.039	53.000	0.120	1060	289
		16.00	7	40	0.045	63.000	0.120	795	250
		20.00	7	40	0.050	75.000	0.150	635	222
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	50	0.028	26.000	0.060	2655	372
		8.00	7	50	0.032	36.000	0.100	1990	446
		10.00	7	50	0.036	45.000	0.100	1590	401
		12.00	7	50	0.039	53.000	0.120	1325	362
		16.00	7	50	0.045	63.000	0.120	995	313
		20.00	7	50	0.050	75.000	0.150	795	278

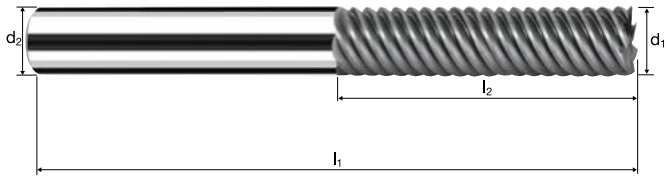
Cylindrical end mills MulticutXF

Finishing, long version

HM XA	λ 65° γ 8°

45°

h5



Roughing

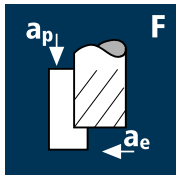
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15254** ø-Code **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	45°	z	DURO-Si H15254	POLYCHROM P15254
300	6.00	6.00	70	26.00	0.10	5	●	●
391	8.00	8.00	80	36.00	0.10	7	●	●
450	10.00	10.00	100	45.00	0.15	7	●	●
501	12.00	12.00	110	53.00	0.15	7	●	●
610	16.00	16.00	123	63.00	0.15	7	●	●
682	20.00	20.00	141	75.00	0.15	7	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel 850 - 1100 N/mm²	6.00	5	70	0.026	32.000	0.060	3715	483
		8.00	7	70	0.030	42.000	0.100	2785	585
		10.00	7	70	0.033	53.000	0.100	2230	515
		12.00	7	70	0.036	63.000	0.120	1855	468
		16.00	7	70	0.042	84.000	0.120	1395	410
		20.00	7	70	0.047	105.000	0.150	1115	367
	Steel 1100 - 1300 N/mm²	6.00	5	60	0.026	32.000	0.060	3185	414
		8.00	7	60	0.030	42.000	0.100	2385	501
		10.00	7	60	0.033	53.000	0.100	1910	441
		12.00	7	60	0.036	63.000	0.120	1590	401
		16.00	7	60	0.042	84.000	0.120	1195	351
		20.00	7	60	0.047	105.000	0.150	955	314
	Hardened tool steel 52 - 56 HRC	6.00	5	40	0.026	32.000	0.060	2120	276
		8.00	7	40	0.030	42.000	0.100	1590	334
		10.00	7	40	0.033	53.000	0.100	1275	295
		12.00	7	40	0.036	63.000	0.120	1060	267
		16.00	7	40	0.042	84.000	0.120	795	234
		20.00	7	40	0.047	105.000	0.150	635	209
	Hardened tool steel 56 - 60 HRC	6.00	5	30	0.028	32.000	0.060	1590	223
		8.00	7	35	0.021	42.000	0.080	1395	205
		10.00	7	35	0.024	53.000	0.080	1115	187
		12.00	7	35	0.026	63.000	0.100	930	169
		16.00	7	35	0.030	84.000	0.100	695	146
		20.00	7	35	0.033	105.000	0.120	555	128
	Wrought aluminium Construction aluminium	6.00	5	230	0.026	32.000	0.060	12200	1586
		8.00	7	230	0.030	42.000	0.100	9150	1922
		10.00	7	230	0.033	53.000	0.100	7320	1691
		12.00	7	230	0.036	63.000	0.120	6100	1537
		16.00	7	230	0.042	84.000	0.120	4575	1345
		20.00	7	230	0.047	105.000	0.150	3660	1204
	Cast iron (lamellar / spheroidal)	6.00	5	80	0.026	32.000	0.060	4245	552
		8.00	7	80	0.030	42.000	0.100	3185	669
		10.00	7	80	0.033	53.000	0.100	2545	588
		12.00	7	80	0.036	63.000	0.120	2120	534
		16.00	7	80	0.042	84.000	0.120	1590	468
		20.00	7	80	0.047	105.000	0.150	1275	420
	Titanium alloys > 300 HB [Ti6Al4V]	6.00	5	30	0.026	32.000	0.060	1590	207
		8.00	7	30	0.030	42.000	0.100	1195	251
		10.00	7	30	0.033	53.000	0.100	955	221
		12.00	7	30	0.036	63.000	0.120	795	200
		16.00	7	30	0.042	84.000	0.120	595	175
		20.00	7	30	0.047	105.000	0.150	475	156
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	5	40	0.026	32.000	0.060	2120	276
		8.00	7	40	0.030	42.000	0.100	1590	334
		10.00	7	40	0.033	53.000	0.100	1275	295
		12.00	7	40	0.036	63.000	0.120	1060	267
		16.00	7	40	0.042	84.000	0.120	795	234
		20.00	7	40	0.047	105.000	0.150	635	209

Cylindrical end mills MulticutXF

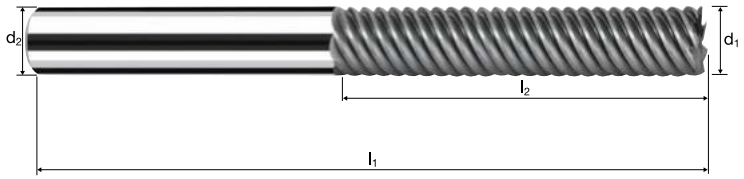
Finishing, extra-long version 5.2xd

HM XA

λ 65°
γ 8°

45°

h5



Roughing

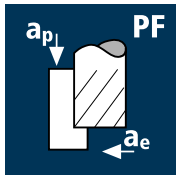
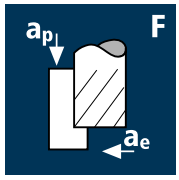
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8521** ø-Code **300**

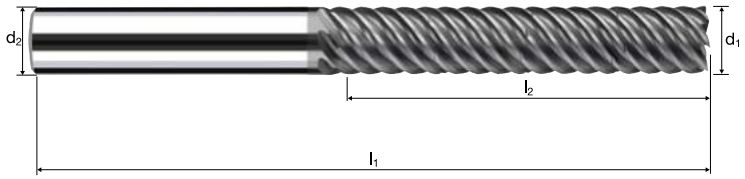
Ø Code	d_1 e8	d_2 h5	l_1	l_2	45°	z	DURO-Si H8521	POLYCHROM P8521
300	6.00	6.00	73	32.00	0.10	5	●	●
391	8.00	8.00	84	42.00	0.10	7	●	●
450	10.00	10.00	100	53.00	0.15	7	●	●
501	12.00	12.00	117	63.00	0.15	7	●	●
610	16.00	16.00	144	84.00	0.15	7	●	●
682	20.00	20.00	169	105.00	0.15	7	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	6	60	0.031	32.000	0.090	3185	592
		8.00	6	60	0.035	42.000	0.150	2385	501
		10.00	7	60	0.040	53.000	0.150	1910	535
		12.00	7	60	0.043	63.000	0.180	1590	479
		16.00	8	60	0.050	84.000	0.180	1195	478
		20.00	8	60	0.056	105.000	0.225	955	428
	Steel 850 - 1100 N/mm²	6.00	6	60	0.031	32.000	0.090	3185	592
		8.00	6	60	0.035	42.000	0.150	2385	501
		10.00	7	60	0.040	53.000	0.150	1910	535
		12.00	7	60	0.043	63.000	0.180	1590	479
		16.00	8	60	0.050	84.000	0.180	1195	478
		20.00	8	60	0.056	105.000	0.225	955	428
	Steel 1100 - 1300 N/mm²	6.00	6	50	0.031	32.000	0.090	2655	494
		8.00	6	50	0.035	42.000	0.150	1990	418
		10.00	7	50	0.040	53.000	0.150	1590	445
		12.00	7	50	0.043	63.000	0.180	1325	399
		16.00	8	50	0.050	84.000	0.180	995	398
		20.00	8	50	0.056	105.000	0.225	795	356
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	30	0.031	32.000	0.090	1590	296
		8.00	6	30	0.035	42.000	0.150	1195	251
		10.00	7	30	0.040	53.000	0.150	955	267
		12.00	7	30	0.043	63.000	0.180	795	239
		16.00	8	30	0.050	84.000	0.180	595	238
		20.00	8	30	0.056	105.000	0.225	475	213
	Steel < 850 N/mm²	6.00	6	80	0.026	32.000	0.060	4245	662
		8.00	6	80	0.030	42.000	0.100	3185	573
		10.00	7	80	0.033	53.000	0.100	2545	588
		12.00	7	80	0.036	63.000	0.120	2120	534
		16.00	8	80	0.042	84.000	0.120	1590	534
		20.00	8	80	0.047	105.000	0.150	1275	479
	Steel 850 - 1100 N/mm²	6.00	6	70	0.026	32.000	0.060	3715	580
		8.00	6	70	0.030	42.000	0.100	2785	501
		10.00	7	70	0.033	53.000	0.100	2230	515
		12.00	7	70	0.036	63.000	0.120	1855	468
		16.00	8	70	0.042	84.000	0.120	1395	469
		20.00	8	70	0.047	105.000	0.150	1115	419
	Steel 1100 - 1300 N/mm²	6.00	6	60	0.026	32.000	0.060	3185	497
		8.00	6	60	0.030	42.000	0.100	2385	429
		10.00	7	60	0.033	53.000	0.100	1910	441
		12.00	7	60	0.036	63.000	0.120	1590	401
		16.00	8	60	0.042	84.000	0.120	1195	402
		20.00	8	60	0.047	105.000	0.150	955	359
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	40	0.026	32.000	0.060	2120	331
		8.00	6	40	0.030	42.000	0.100	1590	286
		10.00	7	40	0.033	53.000	0.100	1275	295
		12.00	7	40	0.036	63.000	0.120	1060	267
		16.00	8	40	0.042	84.000	0.120	795	267
		20.00	8	40	0.047	105.000	0.150	635	239

Cylindrical end mills E-Cut

Finishing, chip breaker, extra-long version 5.2xd

HM MG10 | λ **55°** γ **10°**



Roughing

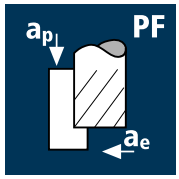
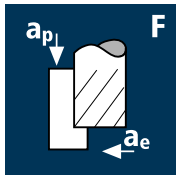
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8321** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z		POLYCHROM P8321
300	6.00	6.00	73	32.00	0.100	6		●
391	8.00	8.00	84	42.00	0.150	6		●
450	10.00	10.00	100	53.00	0.200	7		●
501	12.00	12.00	117	63.00	0.200	7		●
610	16.00	16.00	144	84.00	0.200	8		●
682	20.00	20.00	169	105.00	0.250	8		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	6	56	0.034	38.000	0.080	2970	606
		8.00	6	56	0.039	51.000	0.120	2230	522
		10.00	7	56	0.043	63.000	0.120	1785	537
		12.00	7	56	0.048	76.000	0.180	1485	499
		16.00	8	56	0.055	101.000	0.180	1115	491
		20.00	8	56	0.061	126.000	0.230	890	434
	Steel 850 - 1100 N/mm²	6.00	6	48	0.034	38.000	0.080	2545	519
		8.00	6	48	0.039	51.000	0.120	1910	447
		10.00	7	48	0.043	63.000	0.120	1530	461
		12.00	7	48	0.048	76.000	0.180	1275	428
		16.00	8	48	0.055	101.000	0.180	955	420
		20.00	8	48	0.061	126.000	0.230	765	373
	Steel 1100 - 1300 N/mm²	6.00	6	44	0.034	38.000	0.075	2335	476
		8.00	6	44	0.039	51.000	0.120	1750	410
		10.00	7	44	0.043	63.000	0.120	1400	421
		12.00	7	44	0.048	76.000	0.180	1165	391
		16.00	8	44	0.055	101.000	0.180	875	385
		20.00	8	44	0.061	126.000	0.225	700	342
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	24	0.034	38.000	0.080	1275	260
		8.00	6	24	0.039	51.000	0.120	955	224
		10.00	7	24	0.043	63.000	0.120	765	230
		12.00	7	24	0.048	76.000	0.180	635	213
		16.00	8	24	0.055	101.000	0.180	475	209
		20.00	8	24	0.061	126.000	0.230	380	185
	Steel < 850 N/mm²	6.00	6	70	0.024	38.000	0.050	3715	535
		8.00	6	70	0.028	51.000	0.080	2785	468
		10.00	7	70	0.031	63.000	0.080	2230	484
		12.00	7	70	0.036	76.000	0.120	1855	468
		16.00	8	70	0.039	101.000	0.120	1395	435
		20.00	8	70	0.044	126.000	0.150	1115	393
	Steel 850 - 1100 N/mm²	6.00	6	60	0.024	38.000	0.050	3185	459
		8.00	6	60	0.028	51.000	0.080	2385	401
		10.00	7	60	0.031	63.000	0.080	1910	415
		12.00	7	60	0.036	76.000	0.120	1590	401
		16.00	8	60	0.039	101.000	0.120	1195	373
		20.00	8	60	0.044	126.000	0.150	955	336
	Steel 1100 - 1300 N/mm²	6.00	6	55	0.024	38.000	0.050	2920	421
		8.00	6	55	0.028	51.000	0.080	2190	368
		10.00	7	55	0.031	63.000	0.080	1750	380
		12.00	7	55	0.036	76.000	0.120	1460	368
		16.00	8	55	0.039	101.000	0.120	1095	342
		20.00	8	55	0.044	126.000	0.150	875	308
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	30	0.024	38.000	0.050	1590	229
		8.00	6	30	0.028	51.000	0.080	1195	201
		10.00	7	30	0.031	63.000	0.080	955	207
		12.00	7	30	0.036	76.000	0.120	795	200
		16.00	8	30	0.039	101.000	0.120	595	186
		20.00	8	30	0.044	126.000	0.150	475	167

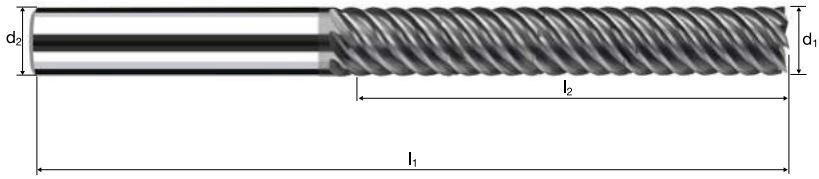
Cylindrical end mills E-Cut

Finishing, chip breaker, extra-long version 6.3xd

HM MG10

λ **55°**
γ **10°**

new!



Roughing

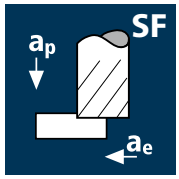
Finishing

ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8322** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z		POLYCHROM P8322
300	6.00	6.00	80	38.00	0.100	6		●
391	8.00	8.00	93	51.00	0.150	6		●
450	10.00	10.00	110	63.00	0.200	7		●
501	12.00	12.00	130	76.00	0.200	7		●
610	16.00	16.00	160	101.00	0.200	8		●
682	20.00	20.00	189	126.00	0.250	8		●

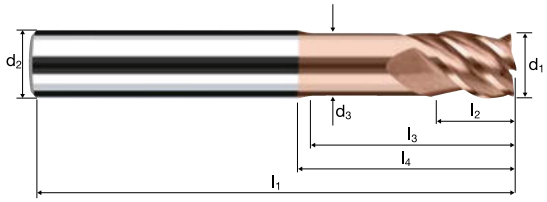
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Hardened tool steel 42 - 48 HRC H	3.00	4	180	0.005	0.050	1.800	19100	382
		4.00	4	180	0.006	0.050	2.400	14325	344
		5.00	4	180	0.007	0.075	3.000	11460	321
		6.00	4	180	0.008	0.075	3.600	9550	306
		8.00	4	180	0.009	0.100	4.800	7160	258
		10.00	4	180	0.010	0.100	6.000	5730	229
		12.00	4	180	0.011	0.150	7.200	4775	210
		16.00	4	180	0.013	0.150	9.600	3580	186
	Hardened tool steel 48 - 52 HRC H	3.00	4	180	0.005	0.050	1.800	19100	382
		4.00	4	180	0.006	0.050	2.400	14325	344
		5.00	4	180	0.007	0.075	3.000	11460	321
		6.00	4	180	0.008	0.075	3.600	9550	306
		8.00	4	180	0.009	0.100	4.800	7160	258
		10.00	4	180	0.010	0.100	6.000	5730	229
		12.00	4	180	0.011	0.150	7.200	4775	210
		16.00	4	180	0.013	0.150	9.600	3580	186
	Hardened tool steel 52 - 56 HRC H	3.00	4	160	0.005	0.050	1.800	16975	340
		4.00	4	160	0.006	0.050	2.400	12730	306
		5.00	4	160	0.007	0.075	3.000	10185	285
		6.00	4	160	0.008	0.075	3.600	8490	272
		8.00	4	160	0.009	0.100	4.800	6365	229
		10.00	4	160	0.010	0.100	6.000	5095	204
		12.00	4	160	0.011	0.150	7.200	4245	187
		16.00	4	160	0.013	0.150	9.600	3185	166
	Titanium alloys > 300 HB [Ti6Al4V] H	3.00	4	125	0.005	0.050	1.800	13265	265
		4.00	4	125	0.006	0.050	2.400	9945	239
		5.00	4	125	0.007	0.075	3.000	7960	223
		6.00	4	125	0.008	0.075	3.600	6630	212
		8.00	4	125	0.009	0.100	4.800	4975	179
		10.00	4	125	0.010	0.100	6.000	3980	159
		12.00	4	125	0.011	0.150	7.200	3315	146
		16.00	4	125	0.013	0.150	9.600	2485	129
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] H	3.00	4	250	0.005	0.050	1.800	26525	531
		4.00	4	250	0.006	0.050	2.400	19895	478
		5.00	4	250	0.007	0.075	3.000	15915	446
		6.00	4	250	0.008	0.075	3.600	13265	425
		8.00	4	250	0.009	0.100	4.800	9945	358
		10.00	4	250	0.010	0.100	6.000	7960	318
		12.00	4	250	0.011	0.150	7.200	6630	292
		16.00	4	250	0.013	0.150	9.600	4975	259
	Wrought aluminium Construction aluminium H	3.00	4	280	0.006	0.050	1.800	29710	713
		4.00	4	370	0.007	0.050	2.400	29445	825
		5.00	4	400	0.008	0.075	3.250	25465	815
		6.00	4	400	0.010	0.075	3.900	21220	849
		8.00	4	450	0.012	0.100	5.600	17905	859
		10.00	4	450	0.015	0.100	7.000	14325	860
		12.00	4	500	0.018	0.150	8.400	13265	955
		16.00	4	500	0.020	0.150	11.200	9945	796

Cylindrical end mills NX

Face finishing, normal version, neck

HM XA

λ **45°**
γ **10°**



h5

G 2.5

Roughing

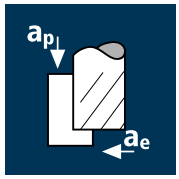
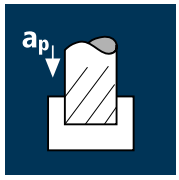
Finishing

ReTool®

Rm 1300-1500 | **HRC** 48-56 | **Inox** Stainless | **Ti** Titanium | **Aluminium Copper**

Example: **Order-N°.** Coating **H** Article-N°. **8502** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	45°$_{theo.}$	α	z	DURO-Si H8502
180	3.00	6.00	2.80	57	4.00	14.00	20.37	0.10	4.5°	4	●
220	4.00	6.00	3.70	57	5.00	16.00	20.82	0.10	3.0°	4	●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.10	1.5°	4	●
300	6.00	6.00	5.50	57	7.00	18.15	20.00	0.10	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	23.63	26.00	0.15	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	27.99	31.00	0.15	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	33.29	37.00	0.20	0.0°	4	●
610	16.00	16.00	15.00	92	17.00	38.73	43.00	0.20	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.100	0.040	41380	108	0.5
		0.30	2	40	0.002	0.150	0.060	42440	166	1.5
		0.40	2	53	0.003	0.200	0.080	42175	219	3.5
		0.50	2	66	0.003	0.300	0.200	42015	273	16.4
		0.60	2	79	0.004	0.360	0.240	41910	327	28.3
		0.80	2	90	0.005	0.480	0.320	35810	372	57.2
		1.00	2	90	0.007	0.600	0.400	28650	373	89.4
		1.50	2	90	0.010	1.500	0.900	19100	373	502.9
		2.00	2	90	0.013	2.000	1.200	14325	373	894.0
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.100	0.040	41380	91	0.4
		0.30	2	40	0.002	0.150	0.060	42440	140	1.3
		0.40	2	53	0.002	0.200	0.080	42175	186	3.0
		0.50	2	66	0.003	0.300	0.200	42015	231	13.9
		0.60	2	75	0.003	0.360	0.240	39790	263	22.7
		0.80	2	75	0.004	0.480	0.320	29840	263	40.4
		1.00	2	75	0.006	0.600	0.400	23875	263	63.0
		1.50	2	75	0.008	1.500	0.900	15915	263	354.5
		2.00	2	75	0.011	2.000	1.200	11935	263	630.3
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	40	0.002	0.150	0.060	42440	127	1.2
		0.40	2	45	0.002	0.200	0.080	35810	143	2.3
		0.50	2	45	0.003	0.300	0.200	28650	143	8.6
		0.60	2	45	0.003	0.360	0.240	23875	143	12.4
		0.80	2	45	0.004	0.480	0.320	17905	143	22.0
		1.00	2	45	0.005	0.600	0.400	14325	143	34.4
		1.50	2	45	0.008	1.500	0.900	9550	143	193.5
		2.00	2	45	0.010	2.000	1.200	7160	143	343.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	35	0.002	0.150	0.060	37135	111	1.0
		0.40	2	35	0.002	0.200	0.080	27850	111	1.8
		0.50	2	35	0.003	0.300	0.100	22280	111	3.4
		0.60	2	35	0.003	0.360	0.120	18570	111	4.8
		0.80	2	35	0.004	0.480	0.160	13925	111	8.6
		1.00	2	35	0.005	0.600	0.200	11140	111	13.4
		1.50	2	35	0.008	1.500	0.300	7425	111	50.2
		2.00	2	35	0.010	1.200	0.400	5570	111	53.5
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.040	0.200	41380	108	0.9
		0.30	2	40	0.002	0.060	0.300	42440	166	3.0
		0.40	2	53	0.003	0.080	0.400	42175	219	7.0
		0.50	2	66	0.003	0.150	0.500	42015	273	20.5
		0.60	2	77	0.004	0.180	0.600	40850	319	34.4
		0.80	2	77	0.005	0.240	0.800	30635	319	61.2
		1.00	2	77	0.007	0.300	1.000	24510	319	95.6
		1.50	2	77	0.010	0.750	1.500	16340	319	358.5
		2.00	2	77	0.013	1.000	2.000	12255	319	637.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.040	0.200	41380	91	0.8
		0.30	2	40	0.002	0.060	0.300	42440	140	2.5
		0.40	2	53	0.002	0.080	0.400	42175	186	6.0
		0.50	2	64	0.003	0.150	0.500	40745	224	16.8
		0.60	2	64	0.003	0.180	0.600	33955	224	24.2
		0.80	2	64	0.004	0.240	0.800	25465	224	43.1
		1.00	2	64	0.006	0.300	1.000	20370	224	67.3
		1.50	2	64	0.008	0.750	1.500	13580	224	252.1
		2.00	2	64	0.011	1.000	2.000	10185	224	448.2
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.30	2	38	0.002	0.060	0.300	40320	121	2.2
		0.40	2	38	0.002	0.080	0.400	30240	121	3.9
		0.50	2	38	0.003	0.150	0.500	24190	121	9.1
		0.60	2	38	0.003	0.180	0.600	20160	121	13.1
		0.80	2	38	0.004	0.240	0.800	15120	121	23.3
		1.00	2	38	0.005	0.300	1.000	12095	121	36.3
		1.50	2	38	0.008	0.750	1.500	8065	121	136.2
		2.00	2	38	0.010	1.000	2.000	6050	121	242.0
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.30	2	30	0.002	0.060	0.300	31830	96	1.7
		0.40	2	30	0.002	0.080	0.400	23875	96	3.1
		0.50	2	30	0.003	0.100	0.500	19100	96	4.8
		0.60	2	30	0.003	0.120	0.600	15915	96	6.9
		0.80	2	30	0.004	0.160	0.800	11935	96	12.2
		1.00	2	30	0.005	0.200	1.000	9550	96	19.1
		1.50	2	30	0.008	0.300	1.500	6365	96	43.0
		2.00	2	30	0.010	0.400	2.000	4775	96	76.4

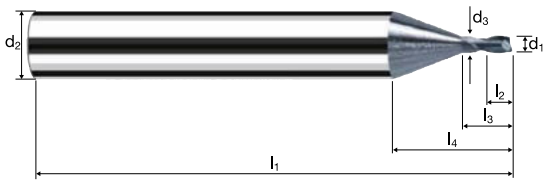
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 1xd

HM XA

λ 25°
γ -10°

45°

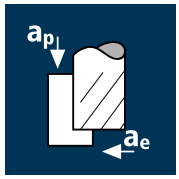
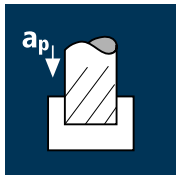


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6500** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL **X6500**
010	0.10	6.00	0.09	57	0.10	0.10	17.27	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.20	0.20	17.10	-	15.0°	2	●
030	0.30	6.00	0.25	57	0.30	0.30	16.94	-	15.0°	2	●
040	0.40	6.00	0.35	57	0.40	0.40	16.78	-	14.5°	2	●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	-	14.5°	2	●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	-	14.5°	2	●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	-	14.0°	2	●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.04	14.0°	2	●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.04	13.0°	2	●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	0.05	12.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.100	0.040	41380	108	0.5
		0.30	2	40	0.002	0.150	0.060	42440	166	1.5
		0.40	2	53	0.003	0.200	0.080	42175	219	3.5
		0.50	2	66	0.003	0.300	0.200	42015	273	16.4
		0.60	2	79	0.004	0.360	0.240	41910	327	28.3
		0.80	2	90	0.005	0.480	0.320	35810	372	57.2
		1.00	2	90	0.007	0.600	0.400	28650	373	89.4
		1.50	2	90	0.010	1.500	0.900	19100	373	502.9
		2.00	2	90	0.013	2.000	1.200	14325	373	894.0
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.100	0.040	41380	91	0.4
		0.30	2	40	0.002	0.150	0.060	42440	140	1.3
		0.40	2	53	0.002	0.200	0.080	42175	186	3.0
		0.50	2	66	0.003	0.300	0.200	42015	231	13.9
		0.60	2	75	0.003	0.360	0.240	39790	263	22.7
		0.80	2	75	0.004	0.480	0.320	29840	263	40.4
		1.00	2	75	0.006	0.600	0.400	23875	263	63.0
		1.50	2	75	0.008	1.500	0.900	15915	263	354.5
		2.00	2	75	0.011	2.000	1.200	11935	263	630.3
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	40	0.002	0.150	0.060	42440	127	1.2
		0.40	2	45	0.002	0.200	0.080	35810	143	2.3
		0.50	2	45	0.003	0.300	0.200	28650	143	8.6
		0.60	2	45	0.003	0.360	0.240	23875	143	12.4
		0.80	2	45	0.004	0.480	0.320	17905	143	22.0
		1.00	2	45	0.005	0.600	0.400	14325	143	34.4
		1.50	2	45	0.008	1.500	0.900	9550	143	193.5
		2.00	2	45	0.010	2.000	1.200	7160	143	343.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	35	0.002	0.150	0.060	37135	111	1.0
		0.40	2	35	0.002	0.200	0.080	27850	111	1.8
		0.50	2	35	0.003	0.300	0.100	22280	111	3.4
		0.60	2	35	0.003	0.360	0.120	18570	111	4.8
		0.80	2	35	0.004	0.480	0.160	13925	111	8.6
		1.00	2	35	0.005	0.600	0.200	11140	111	13.4
		1.50	2	35	0.008	1.500	0.300	7425	111	50.2
		2.00	2	35	0.010	1.200	0.400	5570	111	53.5
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.040	0.200	41380	108	0.9
		0.30	2	40	0.002	0.060	0.300	42440	166	3.0
		0.40	2	53	0.003	0.080	0.400	42175	219	7.0
		0.50	2	66	0.003	0.150	0.500	42015	273	20.5
		0.60	2	77	0.004	0.180	0.600	40850	319	34.4
		0.80	2	77	0.005	0.240	0.800	30635	319	61.2
		1.00	2	77	0.007	0.300	1.000	24510	319	95.6
		1.50	2	77	0.010	0.750	1.500	16340	319	358.5
		2.00	2	77	0.013	1.000	2.000	12255	319	637.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.040	0.200	41380	91	0.8
		0.30	2	40	0.002	0.060	0.300	42440	140	2.5
		0.40	2	53	0.002	0.080	0.400	42175	186	6.0
		0.50	2	64	0.003	0.150	0.500	40745	224	16.8
		0.60	2	64	0.003	0.180	0.600	33955	224	24.2
		0.80	2	64	0.004	0.240	0.800	25465	224	43.1
		1.00	2	64	0.006	0.300	1.000	20370	224	67.3
		1.50	2	64	0.008	0.750	1.500	13580	224	252.1
		2.00	2	64	0.011	1.000	2.000	10185	224	448.2
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.30	2	38	0.002	0.060	0.300	40320	121	2.2
		0.40	2	38	0.002	0.080	0.400	30240	121	3.9
		0.50	2	38	0.003	0.150	0.500	24190	121	9.1
		0.60	2	38	0.003	0.180	0.600	20160	121	13.1
		0.80	2	38	0.004	0.240	0.800	15120	121	23.3
		1.00	2	38	0.005	0.300	1.000	12095	121	36.3
		1.50	2	38	0.008	0.750	1.500	8065	121	136.2
		2.00	2	38	0.010	1.000	2.000	6050	121	242.0
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.30	2	30	0.002	0.060	0.300	31830	96	1.7
		0.40	2	30	0.002	0.080	0.400	23875	96	3.1
		0.50	2	30	0.003	0.150	0.500	19100	96	7.2
		0.60	2	30	0.003	0.180	0.600	15915	96	10.3
		0.80	2	30	0.004	0.240	0.800	11935	96	18.4
		1.00	2	30	0.005	0.300	1.000	9550	96	28.7
		1.50	2	30	0.008	0.750	1.500	6365	96	107.5
		2.00	2	30	0.010	1.000	2.000	4775	96	191.0

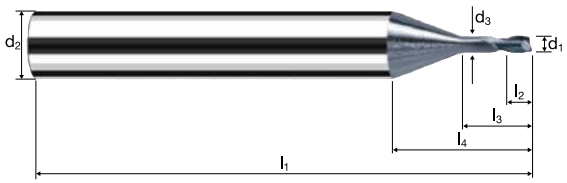
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 2xd

HM
XA

λ **25°**
γ **-10°**

45°

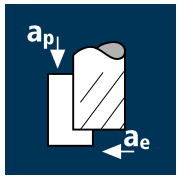
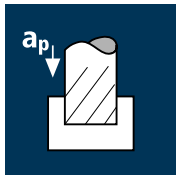


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6501** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL **X6501**
010	0.10	6.00	0.09	57	0.06	0.20	17.30	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.12	0.40	17.06	-	14.5°	2	●
030	0.30	6.00	0.25	57	0.18	0.60	16.97	-	14.5°	2	●
040	0.40	6.00	0.35	57	0.24	0.80	16.76	-	14.0°	2	●
050	0.50	6.00	0.45	57	0.30	1.00	11.51	-	14.0°	2	●
060	0.60	6.00	0.55	57	0.36	1.20	11.53	-	13.5°	2	●
080	0.80	6.00	0.75	57	0.48	1.60	11.55	-	13.0°	2	●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.04	12.5°	2	●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.04	11.5°	2	●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	0.05	10.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.100	0.040	41380	108	0.5
		0.40	2	53	0.003	0.200	0.080	42175	219	3.5
		0.50	2	66	0.003	0.300	0.200	42015	273	16.4
		0.80	2	90	0.005	0.480	0.320	35810	372	57.2
		1.00	2	90	0.007	0.600	0.400	28650	373	89.4
		1.50	2	90	0.010	1.500	0.900	19100	373	502.9
		2.00	2	90	0.013	2.000	1.200	14325	373	894.0
		2.50	2	90	0.016	2.500	1.500	11460	373	1396.9
		3.00	2	90	0.020	3.000	1.800	9550	373	2011.5
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.100	0.040	41380	91	0.4
		0.40	2	53	0.002	0.200	0.080	42175	186	3.0
		0.50	2	66	0.003	0.300	0.200	42015	231	13.9
		0.80	2	75	0.004	0.480	0.320	29840	263	40.4
		1.00	2	75	0.006	0.600	0.400	23875	263	63.0
		1.50	2	75	0.008	1.500	0.900	15915	263	354.5
		2.00	2	75	0.011	2.000	1.200	11935	263	630.3
		2.50	2	75	0.014	2.500	1.500	9550	263	984.8
		3.00	2	75	0.017	3.000	1.800	7960	263	1418.6
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.40	2	45	0.002	0.200	0.080	35810	143	2.3
		0.50	2	45	0.003	0.300	0.200	28650	143	8.6
		0.80	2	45	0.004	0.480	0.320	17905	143	22.0
		1.00	2	45	0.005	0.600	0.400	14325	143	34.4
		1.50	2	45	0.008	1.500	0.900	9550	143	193.5
		2.00	2	45	0.010	2.000	1.200	7160	143	343.7
		2.50	2	45	0.013	2.500	1.500	5730	143	537.4
		3.00	2	45	0.015	3.000	1.800	4775	143	773.8
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.40	2	35	0.002	0.200	0.080	27850	111	1.8
		0.50	2	35	0.003	0.300	0.100	22280	111	3.4
		0.80	2	35	0.004	0.480	0.160	13925	111	8.6
		1.00	2	35	0.005	0.600	0.200	11140	111	13.4
		1.50	2	35	0.008	1.500	0.300	7425	111	50.2
		2.00	2	35	0.010	2.000	0.400	5570	111	89.1
		2.50	2	35	0.013	2.500	0.500	4455	111	139.3
		3.00	2	35	0.015	3.000	0.600	3715	112	200.7
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.040	0.200	41380	86	0.7
		0.40	2	53	0.002	0.080	0.400	42175	175	5.6
		0.50	2	66	0.003	0.150	0.500	42015	219	16.4
		0.80	2	77	0.004	0.240	0.800	30635	255	49.0
		1.00	2	77	0.005	0.300	1.000	24510	255	76.5
		1.50	2	77	0.008	0.750	1.500	16340	255	286.8
		2.00	2	77	0.010	1.000	2.000	12255	255	509.8
		2.50	2	77	0.013	1.250	2.500	9805	255	796.6
		3.00	2	77	0.016	1.500	3.000	8170	255	1147.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.040	0.200	41380	73	0.6
		0.40	2	53	0.002	0.080	0.400	42175	149	4.8
		0.50	2	64	0.002	0.150	0.500	40745	179	13.5
		0.80	2	64	0.004	0.240	0.800	25465	179	34.5
		1.00	2	64	0.004	0.300	1.000	20370	179	53.8
		1.50	2	64	0.007	0.750	1.500	13580	179	201.7
		2.00	2	64	0.009	1.000	2.000	10185	179	358.6
		2.50	2	64	0.011	1.250	2.500	8150	179	560.3
		3.00	2	64	0.013	1.500	3.000	6790	179	806.9
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.040	0.200	41380	66	0.6
		0.40	2	38	0.002	0.080	0.400	30240	97	3.1
		0.50	2	38	0.002	0.150	0.500	24190	97	7.3
		0.80	2	38	0.003	0.240	0.800	15120	97	18.6
		1.00	2	38	0.004	0.300	1.000	12095	97	29.1
		1.50	2	38	0.006	0.750	1.500	8065	97	108.9
		2.00	2	38	0.008	1.000	2.000	6050	97	193.6
		2.50	2	38	0.010	1.250	2.500	4840	97	302.5
		3.00	2	38	0.012	1.500	3.000	4030	97	435.2
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.040	0.200	41380	66	0.6
		0.40	2	30	0.002	0.080	0.400	23875	76	2.5
		0.50	2	30	0.002	0.100	0.500	19100	76	3.8
		0.80	2	30	0.003	0.160	0.800	11935	76	9.8
		1.00	2	30	0.004	0.200	1.000	9550	76	15.3
		1.50	2	30	0.006	0.300	1.500	6365	76	34.4
		2.00	2	30	0.008	0.400	2.000	4775	76	61.1
		2.50	2	30	0.010	0.500	2.500	3820	76	95.5
		3.00	2	30	0.012	0.600	3.000	3185	76	137.5

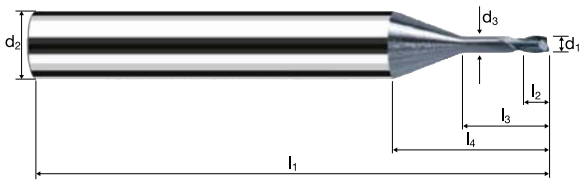
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

HM
XA

λ **25°**
γ **-10°**

45°

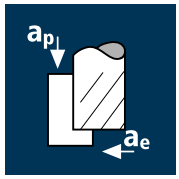
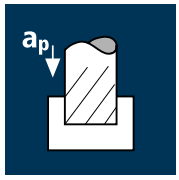


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6502** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL
											X6502
010	0.10	6.00	0.09	57	0.06	0.30	17.30	-	15.0°	2	●
020	0.20	6.00	0.18	57	0.12	0.60	17.22	-	14.5°	2	●
030	0.30	6.00	0.25	57	0.18	0.90	17.14	-	14.0°	2	●
040	0.40	6.00	0.35	57	0.24	1.20	17.16	-	14.0°	2	●
050	0.50	6.00	0.45	57	0.30	1.50	12.01	-	13.5°	2	●
060	0.60	6.00	0.55	57	0.36	1.80	12.13	-	13.0°	2	●
080	0.80	6.00	0.75	57	0.48	2.40	12.35	-	12.5°	2	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.07	11.5°	2	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.07	11.0°	2	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.07	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.10	8.5°	2	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.10	7.5°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.10	6.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.100	0.040	41380	108	0.5
		0.30	2	40	0.002	0.150	0.060	42440	166	1.5
		0.40	2	53	0.003	0.200	0.080	42175	219	3.5
		0.50	2	66	0.003	0.300	0.200	42015	273	16.4
		0.60	2	79	0.004	0.360	0.240	41910	327	28.3
		0.80	2	86	0.005	0.480	0.320	34220	356	54.7
		1.00	2	86	0.007	0.600	0.400	27375	356	85.4
		1.50	2	86	0.010	1.200	0.900	18250	356	384.4
		2.00	2	86	0.013	1.600	1.200	13685	356	683.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.100	0.040	41380	91	0.4
		0.30	2	40	0.002	0.150	0.060	42440	140	1.3
		0.40	2	53	0.002	0.200	0.080	42175	186	3.0
		0.50	2	66	0.003	0.300	0.200	42015	231	13.9
		0.60	2	71	0.003	0.360	0.240	37665	249	21.5
		0.80	2	71	0.004	0.480	0.320	28250	249	38.2
		1.00	2	71	0.006	0.600	0.400	22600	249	59.7
		1.50	2	71	0.008	1.200	0.900	15065	249	268.5
		2.00	2	71	0.011	1.600	1.200	11300	249	477.3
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	40	0.002	0.150	0.060	42440	127	1.2
		0.40	2	43	0.002	0.200	0.080	34220	137	2.2
		0.50	2	43	0.003	0.300	0.200	27375	137	8.2
		0.60	2	43	0.003	0.360	0.240	22810	137	11.9
		0.80	2	43	0.004	0.480	0.320	17110	137	21.1
		1.00	2	43	0.005	0.600	0.400	13685	137	32.9
		1.50	2	43	0.008	1.200	0.900	9125	137	147.9
		2.00	2	43	0.010	1.600	1.200	6845	137	262.9
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.100	0.040	41380	83	0.4
		0.30	2	33	0.002	0.150	0.060	35015	105	1.0
		0.40	2	33	0.002	0.200	0.080	26260	105	1.7
		0.50	2	33	0.003	0.300	0.100	21010	105	3.2
		0.60	2	33	0.003	0.360	0.120	17505	105	4.6
		0.80	2	33	0.004	0.480	0.160	13130	105	8.1
		1.00	2	33	0.005	0.600	0.200	10505	105	12.6
		1.50	2	33	0.008	1.200	0.300	7005	105	37.9
		2.00	2	33	0.010	1.200	0.400	5250	105	50.4
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.040	0.200	41380	97	0.8
		0.30	2	40	0.002	0.060	0.300	42440	149	2.7
		0.40	2	53	0.002	0.080	0.400	42175	197	6.3
		0.50	2	66	0.003	0.150	0.500	42015	246	18.5
		0.60	2	77	0.004	0.180	0.600	40850	287	31.0
		0.80	2	77	0.005	0.240	0.800	30635	287	55.1
		1.00	2	77	0.006	0.300	1.000	24510	287	86.1
		1.50	2	77	0.009	0.750	1.500	16340	287	322.7
		2.00	2	77	0.012	1.000	2.000	12255	287	573.6
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.040	0.200	41380	82	0.7
		0.30	2	40	0.001	0.060	0.300	42440	126	2.3
		0.40	2	53	0.002	0.080	0.400	42175	167	5.4
		0.50	2	64	0.002	0.150	0.500	40745	202	15.2
		0.60	2	64	0.003	0.180	0.600	33955	202	21.8
		0.80	2	64	0.004	0.240	0.800	25465	202	38.8
		1.00	2	64	0.005	0.300	1.000	20370	202	60.5
		1.50	2	64	0.007	0.750	1.500	13580	202	226.9
		2.00	2	64	0.010	1.000	2.000	10185	202	403.4
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.040	0.200	41380	75	0.6
		0.30	2	38	0.001	0.060	0.300	40320	109	2.0
		0.40	2	38	0.002	0.080	0.400	30240	109	3.5
		0.50	2	38	0.002	0.150	0.500	24190	109	8.2
		0.60	2	38	0.003	0.180	0.600	20160	109	11.8
		0.80	2	38	0.004	0.240	0.800	15120	109	20.9
		1.00	2	38	0.005	0.300	1.000	12095	109	32.7
		1.50	2	38	0.007	0.750	1.500	8065	109	122.5
		2.00	2	38	0.009	1.000	2.000	6050	109	217.8
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.040	0.200	41380	75	0.6
		0.30	2	30	0.001	0.060	0.300	31830	86	1.6
		0.40	2	30	0.002	0.080	0.400	23875	86	2.8
		0.50	2	30	0.002	0.100	0.500	19100	86	4.3
		0.60	2	30	0.003	0.120	0.600	15915	86	6.2
		0.80	2	30	0.004	0.160	0.800	11935	86	11.0
		1.00	2	30	0.005	0.200	1.000	9550	86	17.2
		1.50	2	30	0.007	0.300	1.500	6365	86	38.7
		2.00	2	30	0.009	0.400	2.000	4775	86	68.8

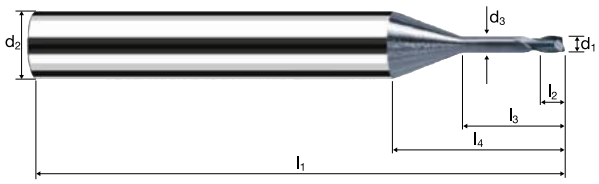
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 4xd

HM
XA

λ **25°**
γ **-10°**

45°

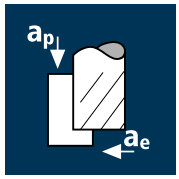
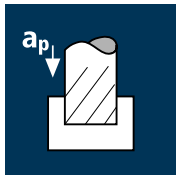


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6503** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	**X6503**
010	0.10	6.00	0.09	57	0.06	0.40	17.38	-	14.5°	2		●
020	0.20	6.00	0.18	57	0.12	0.80	17.42	-	14.5°	2		●
030	0.30	6.00	0.25	57	0.18	1.20	17.44	-	14.0°	2		●
040	0.40	6.00	0.35	57	0.24	1.60	17.56	-	13.5°	2		●
050	0.50	6.00	0.45	57	0.30	2.00	12.51	-	13.0°	2		●
060	0.60	6.00	0.55	57	0.36	2.40	12.73	-	12.5°	2		●
080	0.80	6.00	0.75	57	0.48	3.20	13.15	-	11.5°	2		●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.04	11.0°	2		●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.04	9.0°	2		●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	0.05	7.5°	2		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.080	0.040	41380	108	0.4
		0.40	2	53	0.003	0.160	0.080	42175	219	2.8
		0.50	2	66	0.003	0.250	0.200	42015	273	13.7
		0.80	2	86	0.005	0.400	0.320	34220	356	45.6
		1.00	2	86	0.007	0.500	0.400	27375	356	71.2
		1.50	2	86	0.010	1.050	0.750	18250	356	280.3
		2.00	2	86	0.013	1.400	1.000	13685	356	498.1
		2.50	2	86	0.016	1.750	1.250	10950	356	778.6
		3.00	2	86	0.020	2.100	1.500	9125	356	1121.1
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.080	0.040	41380	91	0.3
		0.40	2	53	0.002	0.160	0.080	42175	186	2.4
		0.50	2	66	0.003	0.250	0.200	42015	231	11.6
		0.80	2	71	0.004	0.400	0.320	28250	249	31.8
		1.00	2	71	0.006	0.500	0.400	22600	249	49.7
		1.50	2	71	0.008	1.050	0.750	15065	249	195.8
		2.00	2	71	0.011	1.400	1.000	11300	249	348.1
		2.50	2	71	0.014	1.750	1.250	9040	249	543.8
		3.00	2	71	0.017	2.100	1.500	7535	249	783.4
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.080	0.040	41380	83	0.3
		0.40	2	43	0.002	0.160	0.080	34220	137	1.8
		0.50	2	43	0.003	0.250	0.200	27375	137	6.9
		0.80	2	43	0.004	0.400	0.320	17110	137	17.5
		1.00	2	43	0.005	0.500	0.400	13685	137	27.4
		1.50	2	43	0.008	1.050	0.750	9125	137	107.8
		2.00	2	43	0.010	1.400	1.000	6845	137	191.7
		2.50	2	43	0.013	1.750	1.250	5475	137	299.5
		3.00	2	43	0.015	2.100	1.500	4560	137	430.9
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.080	0.040	41380	83	0.3
		0.40	2	33	0.002	0.160	0.080	26260	105	1.4
		0.50	2	33	0.003	0.250	0.100	21010	105	2.7
		0.80	2	33	0.004	0.400	0.160	13130	105	6.7
		1.00	2	33	0.005	0.500	0.200	10505	105	10.5
		1.50	2	33	0.008	1.050	0.300	7005	105	33.1
		2.00	2	33	0.010	1.400	0.400	5250	105	58.8
		2.50	2	33	0.013	1.750	0.500	4200	105	91.9
		3.00	2	33	0.015	2.100	0.600	3500	105	132.3
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.040	0.200	41380	108	0.9
		0.40	2	53	0.003	0.080	0.400	42175	219	7.0
		0.50	2	66	0.003	0.125	0.500	42015	273	17.1
		0.80	2	77	0.005	0.200	0.800	30635	319	51.0
		1.00	2	77	0.007	0.250	1.000	24510	319	79.7
		1.50	2	77	0.010	0.450	1.500	16340	319	215.1
		2.00	2	77	0.013	0.600	2.000	12255	319	382.3
		2.50	2	77	0.016	0.750	2.500	9805	319	597.6
		3.00	2	77	0.020	0.900	3.000	8170	319	860.2
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.040	0.200	41380	91	0.8
		0.40	2	53	0.002	0.080	0.400	42175	186	6.0
		0.50	2	64	0.003	0.125	0.500	40745	224	14.0
		0.80	2	64	0.004	0.200	0.800	25465	224	35.9
		1.00	2	64	0.006	0.250	1.000	20370	224	56.1
		1.50	2	64	0.008	0.450	1.500	13580	224	151.3
		2.00	2	64	0.011	0.600	2.000	10185	224	268.9
		2.50	2	64	0.014	0.750	2.500	8150	224	420.2
		3.00	2	64	0.017	0.900	3.000	6790	224	605.1
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.40	2	38	0.002	0.080	0.400	30240	121	3.9
		0.50	2	38	0.003	0.125	0.500	24190	121	7.6
		0.80	2	38	0.004	0.200	0.800	15120	121	19.4
		1.00	2	38	0.005	0.250	1.000	12095	121	30.3
		1.50	2	38	0.008	0.450	1.500	8065	121	81.7
		2.00	2	38	0.010	0.600	2.000	6050	121	145.2
		2.50	2	38	0.013	0.750	2.500	4840	121	226.9
		3.00	2	38	0.015	0.900	3.000	4030	121	326.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.40	2	30	0.002	0.080	0.400	23875	96	3.1
		0.50	2	30	0.003	0.100	0.500	19100	96	4.8
		0.80	2	30	0.004	0.160	0.800	11935	96	12.2
		1.00	2	30	0.005	0.200	1.000	9550	96	19.1
		1.50	2	30	0.008	0.300	1.500	6365	96	43.0
		2.00	2	30	0.010	0.400	2.000	4775	96	76.4
		2.50	2	30	0.013	0.500	2.500	3820	96	119.4
		3.00	2	30	0.015	0.600	3.000	3185	96	172.1

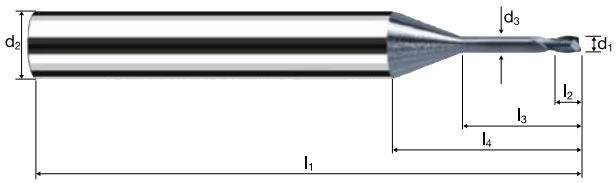
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

HM
XA

λ **25°**
γ **-10°**

45°

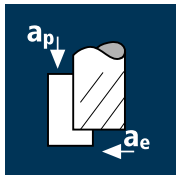
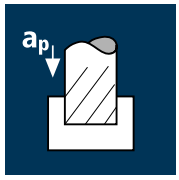


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6504** ø-Code **010**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6504
010	0.10	6.00	0.09	57	0.06	0.50	17.48	-	14.5°	2		●
020	0.20	6.00	0.18	57	0.12	1.00	17.62	-	14.0°	2		●
030	0.30	6.00	0.25	57	0.18	1.50	17.74	-	13.5°	2		●
040	0.40	6.00	0.35	57	0.24	2.00	17.96	-	13.0°	2		●
050	0.50	6.00	0.45	57	0.30	2.50	13.01	-	12.5°	2		●
060	0.60	6.00	0.55	57	0.36	3.00	13.33	-	12.0°	2		●
080	0.80	6.00	0.75	57	0.48	4.00	13.95	-	11.0°	2		●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.07	10.0°	2		●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.07	9.5°	2		●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.07	8.5°	2		●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.10	7.0°	2		●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.10	5.5°	2		●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.10	4.5°	2		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.060	0.040	41380	97	0.3
		0.30	2	40	0.002	0.090	0.060	42440	149	0.8
		0.40	2	53	0.002	0.120	0.080	42175	197	1.9
		0.50	2	66	0.003	0.200	0.150	42015	246	7.4
		0.60	2	77	0.004	0.240	0.180	40850	287	12.4
		0.80	2	77	0.005	0.320	0.240	30635	287	22.0
		1.00	2	77	0.006	0.400	0.300	24510	287	34.4
		1.50	2	77	0.009	0.750	0.600	16340	287	129.1
		2.00	2	77	0.012	1.000	0.800	12255	287	229.5
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.060	0.040	41380	82	0.2
		0.30	2	40	0.001	0.090	0.060	42440	126	0.7
		0.40	2	53	0.002	0.120	0.080	42175	167	1.6
		0.50	2	64	0.002	0.200	0.150	40745	202	6.1
		0.60	2	64	0.003	0.240	0.180	33955	202	8.7
		0.80	2	64	0.004	0.320	0.240	25465	202	15.5
		1.00	2	64	0.005	0.400	0.300	20370	202	24.2
		1.50	2	64	0.007	0.750	0.600	13580	202	90.8
		2.00	2	64	0.010	1.000	0.800	10185	202	161.4
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.060	0.040	41380	75	0.2
		0.30	2	38	0.001	0.090	0.060	40320	109	0.6
		0.40	2	38	0.002	0.120	0.080	30240	109	1.1
		0.50	2	38	0.002	0.200	0.150	24190	109	3.3
		0.60	2	38	0.003	0.240	0.180	20160	109	4.7
		0.80	2	38	0.004	0.320	0.240	15120	109	8.4
		1.00	2	38	0.005	0.400	0.300	12095	109	13.1
		1.50	2	38	0.007	0.750	0.600	8065	109	49.0
		2.00	2	38	0.009	1.000	0.800	6050	109	87.1
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.060	0.040	41380	75	0.2
		0.30	2	30	0.001	0.090	0.060	31830	86	0.5
		0.40	2	30	0.002	0.120	0.080	23875	86	0.9
		0.50	2	30	0.002	0.200	0.100	19100	86	1.7
		0.60	2	30	0.003	0.240	0.120	15915	86	2.5
		0.80	2	30	0.004	0.320	0.160	11935	86	4.4
		1.00	2	30	0.005	0.400	0.200	9550	86	6.9
		1.50	2	30	0.007	0.750	0.300	6365	86	19.4
		2.00	2	30	0.009	0.800	0.400	4775	86	27.5
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.030	0.200	41380	87	0.5
		0.30	2	40	0.002	0.045	0.300	42440	134	1.8
		0.40	2	53	0.002	0.060	0.400	42175	178	4.3
		0.50	2	62	0.003	0.100	0.500	39470	208	10.4
		0.60	2	62	0.003	0.120	0.600	32890	208	15.0
		0.80	2	62	0.004	0.160	0.800	24670	208	26.6
		1.00	2	62	0.005	0.200	1.000	19735	208	41.6
		1.50	2	62	0.008	0.375	1.500	13155	208	116.9
		2.00	2	62	0.011	0.500	2.000	9870	208	207.9
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.030	0.200	41380	74	0.5
		0.30	2	40	0.001	0.045	0.300	42440	113	1.6
		0.40	2	51	0.002	0.060	0.400	40585	145	3.5
		0.50	2	51	0.002	0.100	0.500	32470	145	7.3
		0.60	2	51	0.003	0.120	0.600	27055	145	10.4
		0.80	2	51	0.004	0.160	0.800	20290	145	18.5
		1.00	2	51	0.004	0.200	1.000	16235	145	29.0
		1.50	2	51	0.007	0.375	1.500	10825	145	81.4
		2.00	2	51	0.009	0.500	2.000	8115	145	144.6
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.030	0.200	41380	67	0.4
		0.30	2	31	0.001	0.045	0.300	32890	80	1.1
		0.40	2	31	0.002	0.060	0.400	24670	80	1.9
		0.50	2	31	0.002	0.100	0.500	19735	80	4.0
		0.60	2	31	0.002	0.120	0.600	16445	80	5.8
		0.80	2	31	0.003	0.160	0.800	12335	80	10.3
		1.00	2	31	0.004	0.200	1.000	9870	80	16.0
		1.50	2	31	0.006	0.375	1.500	6580	80	45.0
		2.00	2	31	0.008	0.500	2.000	4935	80	79.9
	Hardened tool steel 56 - 60 HRC	0.20	2	24	0.001	0.030	0.200	38195	62	0.4
		0.30	2	24	0.001	0.045	0.300	25465	62	0.9
		0.40	2	24	0.002	0.060	0.400	19100	62	1.5
		0.50	2	24	0.002	0.100	0.500	15280	62	3.1
		0.60	2	24	0.002	0.120	0.600	12730	62	4.5
		0.80	2	24	0.003	0.160	0.800	9550	62	7.9
		1.00	2	24	0.004	0.200	1.000	7640	62	12.4
		1.50	2	24	0.006	0.375	1.500	5095	62	34.8
		2.00	2	24	0.008	0.500	2.000	3820	62	61.9

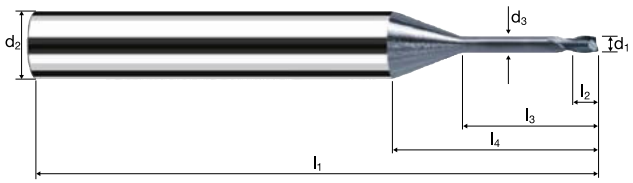
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 6xd

HM
XA

λ **25°**
γ **-10°**

45°

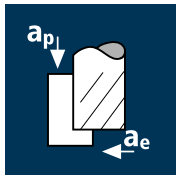
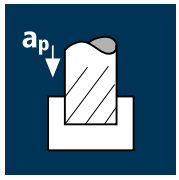


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6505** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL **X6505**
020	0.20	6.00	0.18	57	0.12	1.20	17.82	-	14.0°	2	●
030	0.30	6.00	0.25	57	0.18	1.80	18.04	-	13.0°	2	●
040	0.40	6.00	0.35	57	0.24	2.40	18.36	-	12.5°	2	●
050	0.50	6.00	0.45	57	0.30	3.00	13.51	-	12.0°	2	●
060	0.60	6.00	0.55	57	0.36	3.60	13.93	-	11.5°	2	●
080	0.80	6.00	0.75	57	0.48	4.80	14.75	-	10.5°	2	●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.04	9.5°	2	●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.04	7.5°	2	●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	0.05	6.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.020	0.020	41380	87	0.1
		0.40	2	53	0.002	0.040	0.040	42175	178	0.3
		0.50	2	66	0.003	0.100	0.050	42015	221	1.1
		0.80	2	69	0.004	0.160	0.080	27455	231	3.0
		1.00	2	69	0.005	0.200	0.100	21965	231	4.7
		1.50	2	69	0.008	0.450	0.150	14640	231	15.6
		2.00	2	69	0.011	0.600	0.200	10980	231	27.8
		2.50	2	69	0.013	0.750	0.250	8785	231	43.4
		3.00	2	69	0.016	0.900	0.300	7320	231	62.4
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.020	0.020	41380	74	0.1
		0.40	2	53	0.002	0.040	0.040	42175	150	0.3
		0.50	2	58	0.002	0.100	0.050	36925	165	0.8
		0.80	2	58	0.004	0.160	0.080	23075	165	2.1
		1.00	2	58	0.004	0.200	0.100	18460	165	3.3
		1.50	2	58	0.007	0.450	0.150	12310	165	11.1
		2.00	2	58	0.009	0.600	0.200	9230	165	19.8
		2.50	2	58	0.011	0.750	0.250	7385	165	30.9
		3.00	2	58	0.013	0.900	0.300	6155	165	44.4
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.020	0.020	41380	67	0.1
		0.40	2	35	0.002	0.040	0.040	27850	90	0.2
		0.50	2	35	0.002	0.100	0.050	22280	90	0.5
		0.80	2	35	0.003	0.160	0.080	13925	90	1.2
		1.00	2	35	0.004	0.200	0.100	11140	90	1.8
		1.50	2	35	0.006	0.450	0.150	7425	90	6.1
		2.00	2	35	0.008	0.600	0.200	5570	90	10.8
		2.50	2	35	0.010	0.750	0.250	4455	90	16.9
		3.00	2	35	0.012	0.900	0.300	3715	90	24.4
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.020	0.020	41380	75	0.1
		0.40	2	30	0.002	0.040	0.040	23875	86	0.2
		0.50	2	30	0.002	0.100	0.050	19100	86	0.5
		0.80	2	30	0.004	0.160	0.080	11935	86	1.1
		1.00	2	30	0.005	0.200	0.100	9550	86	1.7
		1.50	2	30	0.007	0.450	0.150	6365	86	5.8
		2.00	2	30	0.009	0.600	0.200	4775	86	10.3
		2.50	2	30	0.011	0.750	0.250	3820	86	16.2
		3.00	2	30	0.014	0.900	0.300	3185	86	23.2
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.010	0.200	41380	78	0.2
		0.40	2	53	0.002	0.020	0.400	42175	160	1.3
		0.50	2	62	0.002	0.038	0.500	39470	187	3.5
		0.80	2	62	0.004	0.060	0.800	24670	187	9.0
		1.00	2	62	0.005	0.075	1.000	19735	187	14.1
		1.50	2	62	0.007	0.150	1.500	13155	187	42.1
		2.00	2	62	0.009	0.200	2.000	9870	187	74.9
		2.50	2	62	0.012	0.250	2.500	7895	187	117.0
		3.00	2	62	0.014	0.300	3.000	6580	187	168.4
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.010	0.200	41380	66	0.2
		0.40	2	52	0.002	0.020	0.400	41380	133	1.1
		0.50	2	52	0.002	0.038	0.500	33105	133	2.5
		0.80	2	52	0.003	0.060	0.800	20690	133	6.4
		1.00	2	52	0.004	0.075	1.000	16550	133	10.0
		1.50	2	52	0.006	0.150	1.500	11035	133	29.9
		2.00	2	52	0.008	0.200	2.000	8275	133	53.1
		2.50	2	52	0.010	0.250	2.500	6620	133	83.0
		3.00	2	52	0.012	0.300	3.000	5515	133	119.5
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.010	0.200	41380	60	0.1
		0.40	2	31	0.001	0.020	0.400	24670	72	0.6
		0.50	2	31	0.002	0.038	0.500	19735	72	1.4
		0.80	2	31	0.003	0.060	0.800	12335	72	3.5
		1.00	2	31	0.004	0.075	1.000	9870	72	5.4
		1.50	2	31	0.005	0.150	1.500	6580	72	16.2
		2.00	2	31	0.007	0.200	2.000	4935	72	28.8
		2.50	2	31	0.009	0.250	2.500	3945	72	45.0
		3.00	2	31	0.011	0.300	3.000	3290	72	64.8
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.010	0.200	41380	67	0.2
		0.40	2	27	0.002	0.020	0.400	21485	70	0.6
		0.50	2	27	0.002	0.038	0.500	17190	70	1.3
		0.80	2	27	0.003	0.060	0.800	10745	70	3.4
		1.00	2	27	0.004	0.075	1.000	8595	70	5.2
		1.50	2	27	0.006	0.150	1.500	5730	70	15.7
		2.00	2	27	0.008	0.200	2.000	4295	70	27.9
		2.50	2	27	0.010	0.250	2.500	3440	70	43.6
		3.00	2	27	0.012	0.300	3.000	2865	70	62.7

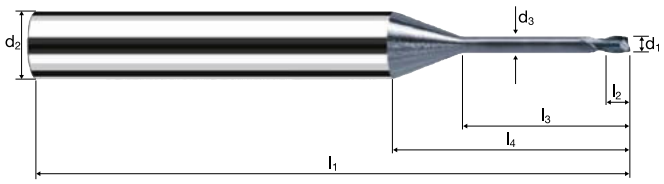
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

HM
XA

λ **25°**
γ **-10°**

45°

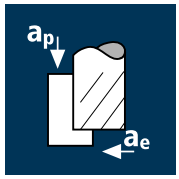
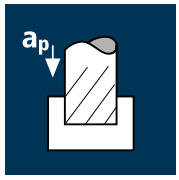


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6506** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL **X6506**
020	0.20	6.00	0.18	57	0.12	1.60	18.22	-	13.5°	2	●
030	0.30	6.00	0.25	57	0.18	2.40	18.64	-	12.5°	2	●
040	0.40	6.00	0.35	57	0.24	3.20	19.16	-	12.0°	2	●
050	0.50	6.00	0.45	57	0.30	4.00	14.51	-	11.0°	2	●
060	0.60	6.00	0.55	57	0.36	4.80	15.13	-	10.5°	2	●
080	0.80	6.00	0.75	57	0.48	6.40	16.35	-	9.5°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.07	8.5°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.07	7.5°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.07	6.5°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	0.10	5.0°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	0.10	4.0°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	0.10	3.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.020	0.020	41380	78	0.1
		0.40	2	53	0.002	0.040	0.040	42175	160	0.3
		0.50	2	62	0.002	0.100	0.050	39470	187	1.0
		0.80	2	62	0.004	0.160	0.080	24670	187	2.4
		1.00	2	62	0.005	0.200	0.100	19735	187	3.8
		1.50	2	62	0.007	0.450	0.150	13155	187	12.6
		2.00	2	62	0.009	0.600	0.200	9870	187	22.5
		2.50	2	62	0.012	0.750	0.250	7895	187	35.1
		3.00	2	62	0.014	0.900	0.300	6580	187	50.5
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.020	0.020	41380	66	0.1
		0.40	2	52	0.002	0.040	0.040	41380	133	0.2
		0.50	2	52	0.002	0.100	0.050	33105	133	0.7
		0.80	2	52	0.003	0.160	0.080	20690	133	1.7
		1.00	2	52	0.004	0.200	0.100	16550	133	2.7
		1.50	2	52	0.006	0.450	0.150	11035	133	9.0
		2.00	2	52	0.008	0.600	0.200	8275	133	15.9
		2.50	2	52	0.010	0.750	0.250	6620	133	24.9
		3.00	2	52	0.012	0.900	0.300	5515	133	35.9
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.020	0.020	41380	60	0.0
		0.40	2	31	0.001	0.040	0.040	24670	72	0.1
		0.50	2	31	0.002	0.100	0.050	19735	72	0.4
		0.80	2	31	0.003	0.160	0.080	12335	72	0.9
		1.00	2	31	0.004	0.200	0.100	9870	72	1.5
		1.50	2	31	0.005	0.450	0.150	6580	72	4.9
		2.00	2	31	0.007	0.600	0.200	4935	72	8.7
		2.50	2	31	0.009	0.750	0.250	3945	72	13.5
		3.00	2	31	0.011	0.900	0.300	3290	72	19.5
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.020	0.020	41380	75	0.1
		0.40	2	30	0.002	0.040	0.040	23875	86	0.2
		0.50	2	30	0.002	0.100	0.050	19100	86	0.5
		0.80	2	30	0.004	0.160	0.080	11935	86	1.1
		1.00	2	30	0.005	0.200	0.100	9550	86	1.7
		1.50	2	30	0.007	0.450	0.150	6365	86	5.8
		2.00	2	30	0.009	0.600	0.200	4775	86	10.3
		2.50	2	30	0.011	0.750	0.250	3820	86	16.2
		3.00	2	30	0.014	0.900	0.300	3185	86	23.2
	Hardened tool steel 42 - 48 HRC	0.20	2	26	0.001	0.010	0.200	41380	71	0.2
		0.40	2	53	0.002	0.020	0.400	42175	144	1.2
		0.50	2	56	0.002	0.038	0.500	35650	152	2.9
		0.80	2	56	0.003	0.060	0.800	22280	152	7.3
		1.00	2	56	0.004	0.075	1.000	17825	152	11.4
		1.50	2	56	0.006	0.150	1.500	11885	152	34.2
		2.00	2	56	0.009	0.200	2.000	8915	152	60.9
		2.50	2	56	0.011	0.250	2.500	7130	152	95.0
		3.00	2	56	0.013	0.300	3.000	5940	152	136.8
	Hardened tool steel 48 - 52 HRC	0.20	2	26	0.001	0.010	0.200	41380	60	0.1
		0.40	2	47	0.001	0.020	0.400	37400	108	0.9
		0.50	2	47	0.002	0.038	0.500	29920	108	2.1
		0.80	2	47	0.003	0.060	0.800	18700	108	5.2
		1.00	2	47	0.004	0.075	1.000	14960	108	8.1
		1.50	2	47	0.005	0.150	1.500	9975	108	24.3
		2.00	2	47	0.007	0.200	2.000	7480	108	43.2
		2.50	2	47	0.009	0.250	2.500	5985	108	67.5
		3.00	2	47	0.011	0.300	3.000	4985	108	97.1
	Hardened tool steel 52 - 56 HRC	0.20	2	26	0.001	0.010	0.200	41380	54	0.1
		0.40	2	28	0.001	0.020	0.400	22280	59	0.5
		0.50	2	28	0.002	0.038	0.500	17825	59	1.1
		0.80	2	28	0.003	0.060	0.800	11140	59	2.8
		1.00	2	28	0.003	0.075	1.000	8915	59	4.4
		1.50	2	28	0.005	0.150	1.500	5940	59	13.2
		2.00	2	28	0.007	0.200	2.000	4455	59	23.4
		2.50	2	28	0.008	0.250	2.500	3565	59	36.6
		3.00	2	28	0.010	0.300	3.000	2970	59	52.7
	Hardened tool steel 56 - 60 HRC	0.20	2	26	0.001	0.010	0.200	41380	67	0.2
		0.40	2	27	0.002	0.020	0.400	21485	70	0.6
		0.50	2	27	0.002	0.038	0.500	17190	70	1.3
		0.80	2	27	0.003	0.060	0.800	10745	70	3.4
		1.00	2	27	0.004	0.075	1.000	8595	70	5.2
		1.50	2	27	0.006	0.150	1.500	5730	70	15.7
		2.00	2	27	0.008	0.200	2.000	4295	70	27.9
		2.50	2	27	0.010	0.250	2.500	3440	70	43.6
		3.00	2	27	0.012	0.300	3.000	2865	70	62.7

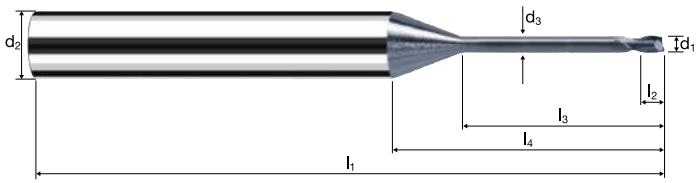
Cylindrical end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

HM
XA

λ **25°**
γ **-10°**

45°

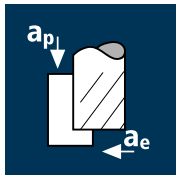
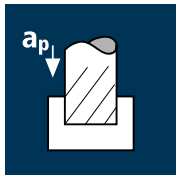


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6508** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6508
020	0.20	6.00	0.18	57	0.12	2.00	18.62	-	13.0°	2		●
030	0.30	6.00	0.25	57	0.18	3.00	19.24	-	12.0°	2		●
040	0.40	6.00	0.35	57	0.24	4.00	19.96	-	11.0°	2		●
050	0.50	6.00	0.45	57	0.30	5.00	15.51	-	10.5°	2		●
060	0.60	6.00	0.55	57	0.36	6.00	16.33	-	10.0°	2		●
080	0.80	6.00	0.75	61	0.48	8.00	17.95	-	8.5°	2		●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.04	7.5°	2		●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.04	5.5°	2		●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	0.05	4.5°	2		●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	0.05	3.5°	2		●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	0.05	2.5°	2		●

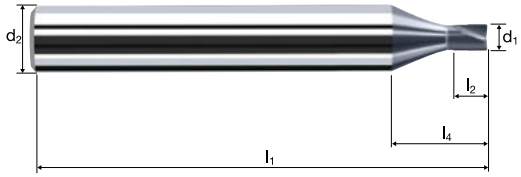
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.100	0.020	41380	116	0.3
		0.30	2	40	0.002	0.150	0.030	42440	178	0.8
		0.40	2	53	0.003	0.200	0.040	42175	236	1.9
		0.50	2	66	0.004	0.350	0.100	42015	294	10.3
		0.60	2	79	0.004	0.420	0.120	41910	352	17.8
		0.80	2	106	0.006	0.560	0.160	42175	472	42.4
		1.00	2	130	0.007	0.700	0.200	41380	579	81.1
		1.50	2	130	0.011	1.500	0.450	27585	579	391.1
		2.00	2	130	0.014	2.000	0.600	20690	579	695.2
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.100	0.020	41380	99	0.2
		0.30	2	40	0.002	0.150	0.030	42440	153	0.7
		0.40	2	53	0.002	0.200	0.040	42175	202	1.6
		0.50	2	66	0.003	0.350	0.100	42015	252	8.8
		0.60	2	79	0.004	0.420	0.120	41910	302	15.2
		0.80	2	100	0.005	0.560	0.160	39790	382	34.3
		1.00	2	100	0.006	0.700	0.200	31830	382	53.5
		1.50	2	100	0.009	1.500	0.450	21220	382	257.9
		2.00	2	100	0.012	2.000	0.600	15915	382	458.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.100	0.020	41380	83	0.2
		0.30	2	40	0.002	0.150	0.030	42440	127	0.6
		0.40	2	53	0.002	0.200	0.040	42175	169	1.4
		0.50	2	66	0.003	0.350	0.100	42015	210	7.4
		0.60	2	79	0.003	0.420	0.120	41910	252	12.7
		0.80	2	80	0.004	0.560	0.160	31830	255	22.8
		1.00	2	80	0.005	0.700	0.200	25465	255	35.7
		1.50	2	80	0.008	1.500	0.450	16975	255	171.9
		2.00	2	80	0.010	2.000	0.600	12730	255	305.5
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.100	0.020	41380	83	0.2
		0.30	2	40	0.002	0.150	0.030	42440	127	0.6
		0.40	2	50	0.002	0.200	0.040	39790	159	1.3
		0.50	2	50	0.003	0.350	0.100	31830	159	5.6
		0.60	2	50	0.003	0.420	0.120	26525	159	8.0
		0.80	2	50	0.004	0.560	0.160	19895	159	14.3
		1.00	2	50	0.005	0.700	0.200	15915	159	22.3
		1.50	2	50	0.008	1.500	0.450	10610	159	107.5
		2.00	2	50	0.010	2.000	0.600	7960	159	191.1
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.050	0.200	41380	91	0.9
		0.30	2	40	0.002	0.080	0.300	42440	144	3.5
		0.40	2	53	0.002	0.100	0.400	42175	186	7.4
		0.50	2	66	0.003	0.250	0.500	42015	235	29.4
		0.60	2	79	0.003	0.300	0.600	41910	285	51.3
		0.80	2	106	0.005	0.400	0.800	42175	380	121.5
		1.00	2	117	0.006	0.500	1.000	37240	417	208.6
		1.50	2	117	0.008	0.750	1.500	24830	417	469.3
		2.00	2	117	0.011	1.000	2.000	18620	417	834.2
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.050	0.200	41380	83	0.9
		0.30	2	40	0.001	0.080	0.300	42440	119	2.9
		0.40	2	53	0.002	0.100	0.400	42175	160	6.4
		0.50	2	66	0.002	0.250	0.500	42015	202	25.2
		0.60	2	79	0.003	0.300	0.600	41910	243	43.8
		0.80	2	90	0.004	0.400	0.800	35810	272	87.1
		1.00	2	90	0.005	0.500	1.000	28650	275	137.5
		1.50	2	90	0.007	0.750	1.500	19100	275	309.4
		2.00	2	90	0.010	1.000	2.000	14325	275	550.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.050	0.200	41380	66	0.7
		0.30	2	40	0.001	0.080	0.300	42440	102	2.5
		0.40	2	53	0.002	0.100	0.400	42175	135	5.4
		0.50	2	66	0.002	0.250	0.500	42015	168	21.0
		0.60	2	72	0.002	0.300	0.600	38195	183	33.0
		0.80	2	72	0.003	0.400	0.800	28650	183	58.7
		1.00	2	72	0.004	0.500	1.000	22920	183	91.7
		1.50	2	72	0.006	0.750	1.500	15280	183	206.4
		2.00	2	72	0.008	1.000	2.000	11460	183	366.8
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.050	0.200	41380	66	0.7
		0.30	2	40	0.001	0.080	0.300	42440	102	2.5
		0.40	2	45	0.002	0.100	0.400	35810	115	4.6
		0.50	2	45	0.002	0.250	0.500	28650	115	14.4
		0.60	2	45	0.002	0.300	0.600	23875	115	20.7
		0.80	2	45	0.003	0.400	0.800	17905	115	36.7
		1.00	2	45	0.004	0.500	1.000	14325	115	57.3
		1.50	2	45	0.006	0.750	1.500	9550	115	129.0
		2.00	2	45	0.008	1.000	2.000	7160	115	229.2

Cylindrical end mills Microcut

Shank ø 4mm, 1xd

HM XA	λ 0° γ 0°

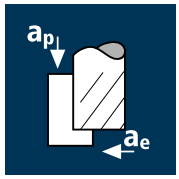
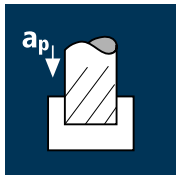
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6800** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	l_1	l_2	l_4	45°	α	z	X-AL	X6800
020	0.20	4.00	50	0.16	11.39	-	9.7°	2		●
030	0.30	4.00	50	0.24	11.21	-	9.6°	2		●
040	0.40	4.00	50	0.32	11.03	-	9.5°	2		●
050	0.50	4.00	50	0.40	7.67	-	13.1°	2		●
060	0.60	4.00	50	0.48	7.58	-	12.8°	2		●
080	0.80	4.00	50	0.64	7.41	-	12.4°	2		●
100	1.00	4.00	50	1.20	7.66	0.04	11.3°	2		●
120	1.50	4.00	50	1.80	7.42	0.04	9.8°	2		●
140	2.00	4.00	50	2.40	7.19	0.07	8.1°	2		●

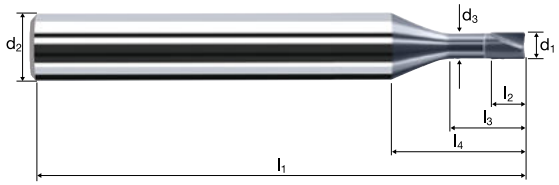
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.100	0.020	41380	116	0.3
		0.40	2	53	0.003	0.200	0.040	42175	236	1.9
		0.50	2	66	0.004	0.350	0.100	42015	294	10.3
		0.80	2	106	0.006	0.560	0.160	42175	472	42.4
		1.00	2	130	0.007	0.700	0.200	41380	579	81.1
		1.50	2	130	0.011	1.500	0.450	27585	579	391.1
		2.00	2	130	0.014	2.000	0.600	20690	579	695.2
		2.50	2	130	0.018	2.500	0.750	16550	579	1086.2
		3.00	2	130	0.021	3.000	0.900	13795	579	1564.4
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.100	0.020	41380	99	0.2
		0.40	2	53	0.002	0.200	0.040	42175	202	1.6
		0.50	2	66	0.003	0.350	0.100	42015	252	8.8
		0.80	2	100	0.005	0.560	0.160	39790	382	34.3
		1.00	2	100	0.006	0.700	0.200	31830	382	53.5
		1.50	2	100	0.009	1.500	0.450	21220	382	257.9
		2.00	2	100	0.012	2.000	0.600	15915	382	458.4
		2.50	2	100	0.015	2.500	0.750	12730	382	716.1
		3.00	2	100	0.018	3.000	0.900	10610	382	1031.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.100	0.020	41380	83	0.2
		0.40	2	53	0.002	0.200	0.040	42175	169	1.4
		0.50	2	66	0.003	0.350	0.100	42015	210	7.4
		0.80	2	80	0.004	0.560	0.160	31830	255	22.8
		1.00	2	80	0.005	0.700	0.200	25465	255	35.7
		1.50	2	80	0.008	1.500	0.450	16975	255	171.9
		2.00	2	80	0.010	2.000	0.600	12730	255	305.5
		2.50	2	80	0.013	2.500	0.750	10185	255	477.4
		3.00	2	80	0.015	3.000	0.900	8490	255	687.7
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.100	0.020	41380	83	0.2
		0.40	2	50	0.002	0.200	0.040	39790	159	1.3
		0.50	2	50	0.003	0.350	0.100	31830	159	5.6
		0.80	2	50	0.004	0.560	0.160	19895	159	14.3
		1.00	2	50	0.005	0.700	0.200	15915	159	22.3
		1.50	2	50	0.008	1.500	0.450	10610	159	107.5
		2.00	2	50	0.010	2.000	0.600	7960	159	191.1
		2.50	2	50	0.013	2.500	0.750	6365	159	298.3
		3.00	2	50	0.015	3.000	0.900	5305	159	429.9
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.040	0.200	41380	91	0.8
		0.40	2	53	0.002	0.080	0.400	42175	186	6.0
		0.50	2	66	0.003	0.150	0.500	42015	235	17.7
		0.80	2	106	0.005	0.240	0.800	42175	380	72.9
		1.00	2	111	0.006	0.300	1.000	35330	396	118.7
		1.50	2	111	0.008	0.600	1.500	23555	396	356.2
		2.00	2	111	0.011	0.800	2.000	17665	396	633.1
		2.50	2	111	0.014	1.000	2.500	14135	396	989.5
		3.00	2	111	0.017	1.200	3.000	11775	396	1424.2
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.040	0.200	41380	83	0.7
		0.40	2	53	0.002	0.080	0.400	42175	160	5.2
		0.50	2	66	0.002	0.150	0.500	42015	202	15.2
		0.80	2	85	0.004	0.240	0.800	33820	257	49.4
		1.00	2	85	0.005	0.300	1.000	27055	260	77.9
		1.50	2	85	0.007	0.600	1.500	18040	260	233.8
		2.00	2	85	0.010	0.800	2.000	13530	260	415.7
		2.50	2	85	0.012	1.000	2.500	10825	260	649.5
		3.00	2	85	0.014	1.200	3.000	9020	260	935.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.040	0.200	41380	66	0.6
		0.40	2	53	0.002	0.080	0.400	42175	135	4.3
		0.50	2	66	0.002	0.150	0.500	42015	168	12.6
		0.80	2	68	0.003	0.240	0.800	27055	173	33.3
		1.00	2	68	0.004	0.300	1.000	21645	173	52.0
		1.50	2	68	0.006	0.600	1.500	14430	173	155.9
		2.00	2	68	0.008	0.800	2.000	10825	173	277.1
		2.50	2	68	0.010	1.000	2.500	8660	173	433.0
		3.00	2	68	0.012	1.200	3.000	7215	173	623.5
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.040	0.200	41380	66	0.6
		0.40	2	43	0.002	0.080	0.400	34220	110	3.5
		0.50	2	43	0.002	0.150	0.500	27375	110	8.2
		0.80	2	43	0.003	0.240	0.800	17110	110	21.0
		1.00	2	43	0.004	0.300	1.000	13685	110	32.9
		1.50	2	43	0.006	0.600	1.500	9125	110	98.6
		2.00	2	43	0.008	0.800	2.000	6845	110	175.2
		2.50	2	43	0.010	1.000	2.500	5475	110	273.8
		3.00	2	43	0.012	1.200	3.000	4560	109	393.9

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 3xd

HM XA	λ 0° γ 0°

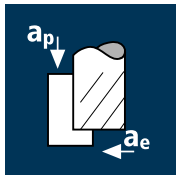
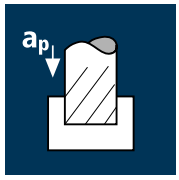
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6802** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6802
020	0.20	4.00	0.18	50	0.16	0.60	11.55	-	9.5°	2		●
030	0.30	4.00	0.25	50	0.24	0.90	11.47	-	9.4°	2		●
040	0.40	4.00	0.35	50	0.32	1.20	11.49	-	9.1°	2		●
050	0.50	4.00	0.45	50	0.40	1.50	8.28	-	12.1°	2		●
060	0.60	4.00	0.55	50	0.48	1.80	8.40	-	11.6°	2		●
080	0.80	4.00	0.75	50	0.64	2.40	8.62	-	10.7°	2		●
100	1.00	4.00	0.95	50	1.20	3.00	8.85	0.04	9.8°	2		●
108	1.20	4.00	1.10	50	1.44	3.60	8.96	0.04	9.1°	2		●
120	1.50	4.00	1.40	50	1.80	4.50	9.30	0.04	7.9°	2		●
140	2.00	4.00	1.90	50	2.40	6.00	9.87	0.07	6.0°	2		●
160	2.50	4.00	2.30	50	3.00	7.50	10.34	0.07	4.3°	2		●
180	3.00	4.00	2.80	50	3.60	9.00	10.91	0.07	2.8°	2		●

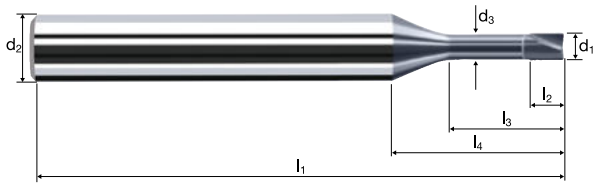
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.050	0.020	41380	116	0.1
		0.40	2	53	0.003	0.100	0.040	42175	236	1.0
		0.50	2	66	0.004	0.250	0.100	42015	294	7.4
		0.80	2	104	0.006	0.400	0.160	41380	464	29.7
		1.00	2	104	0.007	0.500	0.200	33105	464	46.4
		1.50	2	104	0.011	1.050	0.450	22070	464	219.0
		2.00	2	104	0.014	1.400	0.600	16550	463	389.3
		2.50	2	104	0.018	1.750	0.750	13240	463	608.2
		3.00	2	104	0.021	2.100	0.900	11035	464	876.0
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.050	0.020	41380	99	0.1
		0.40	2	53	0.002	0.100	0.040	42175	202	0.8
		0.50	2	66	0.003	0.250	0.100	42015	252	6.3
		0.80	2	80	0.005	0.400	0.160	31830	306	19.6
		1.00	2	80	0.006	0.500	0.200	25465	306	30.6
		1.50	2	80	0.009	1.050	0.450	16975	306	144.4
		2.00	2	80	0.012	1.400	0.600	12730	306	256.6
		2.50	2	80	0.015	1.750	0.750	10185	306	401.1
		3.00	2	80	0.018	2.100	0.900	8490	306	577.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.050	0.020	41380	83	0.1
		0.40	2	53	0.002	0.100	0.040	42175	169	0.7
		0.50	2	64	0.003	0.250	0.100	40745	204	5.1
		0.80	2	64	0.004	0.400	0.160	25465	204	13.1
		1.00	2	64	0.005	0.500	0.200	20370	204	20.4
		1.50	2	64	0.008	1.050	0.450	13580	204	96.3
		2.00	2	64	0.010	1.400	0.600	10185	204	171.1
		2.50	2	64	0.013	1.750	0.750	8150	204	267.5
		3.00	2	64	0.015	2.100	0.900	6790	204	385.0
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.050	0.020	41380	83	0.1
		0.40	2	40	0.002	0.100	0.040	31830	127	0.5
		0.50	2	40	0.003	0.250	0.100	25465	127	3.2
		0.80	2	40	0.004	0.400	0.160	15915	127	8.2
		1.00	2	40	0.005	0.500	0.200	12730	127	12.8
		1.50	2	40	0.008	1.050	0.450	8490	127	60.2
		2.00	2	40	0.010	1.400	0.600	6365	127	107.0
		2.50	2	40	0.013	1.750	0.750	5095	127	167.2
		3.00	2	40	0.015	2.100	0.900	4245	127	240.8
	Steel 850 - 1100 N/mm²	0.20	2	26	0.001	0.020	0.200	41380	91	0.4
		0.40	2	53	0.002	0.040	0.400	42175	186	3.0
		0.50	2	66	0.003	0.100	0.500	42015	235	11.8
		0.80	2	88	0.005	0.160	0.800	35015	315	40.4
		1.00	2	88	0.006	0.200	1.000	28010	314	62.8
		1.50	2	88	0.008	0.450	1.500	18675	314	211.8
		2.00	2	88	0.011	0.600	2.000	14005	314	376.5
		2.50	2	88	0.014	0.750	2.500	11205	314	588.2
		3.00	2	88	0.017	0.900	3.000	9335	314	847.0
	Steel 1100 - 1300 N/mm²	0.20	2	26	0.001	0.020	0.200	41380	83	0.4
		0.40	2	53	0.002	0.040	0.400	42175	160	2.6
		0.50	2	66	0.002	0.100	0.500	42015	202	10.1
		0.80	2	68	0.004	0.160	0.800	27055	206	26.3
		1.00	2	68	0.005	0.200	1.000	21645	208	41.6
		1.50	2	68	0.007	0.450	1.500	14430	208	140.3
		2.00	2	68	0.010	0.600	2.000	10825	208	249.4
		2.50	2	68	0.012	0.750	2.500	8660	208	389.7
		3.00	2	68	0.014	0.900	3.000	7215	208	561.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	26	0.001	0.020	0.200	41380	66	0.3
		0.40	2	53	0.002	0.040	0.400	42175	135	2.2
		0.50	2	54	0.002	0.100	0.500	34375	138	6.9
		0.80	2	54	0.003	0.160	0.800	21485	138	17.6
		1.00	2	54	0.004	0.200	1.000	17190	138	27.5
		1.50	2	54	0.006	0.450	1.500	11460	138	92.8
		2.00	2	54	0.008	0.600	2.000	8595	138	165.0
		2.50	2	54	0.010	0.750	2.500	6875	138	257.8
		3.00	2	54	0.012	0.900	3.000	5730	138	371.3
	Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	26	0.001	0.020	0.200	41380	66	0.3
		0.40	2	34	0.002	0.040	0.400	27055	87	1.4
		0.50	2	34	0.002	0.100	0.500	21645	87	4.4
		0.80	2	34	0.003	0.160	0.800	13530	87	11.1
		1.00	2	34	0.004	0.200	1.000	10825	87	17.3
		1.50	2	34	0.006	0.450	1.500	7215	87	58.5
		2.00	2	34	0.008	0.600	2.000	5410	87	103.9
		2.50	2	34	0.010	0.750	2.500	4330	87	162.4
		3.00	2	34	0.012	0.900	3.000	3610	87	233.8

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 5xd

HM	λ	0°
XA	γ	0°

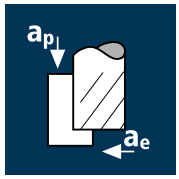
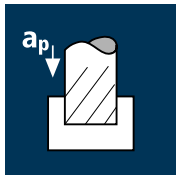
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6804** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6804
020	0.20	4.00	0.18	50	0.16	1.00	11.95	-	9.2°	2		●
030	0.30	4.00	0.25	50	0.24	1.50	12.07	-	8.9°	2		●
040	0.40	4.00	0.35	50	0.32	2.00	12.29	-	8.5°	2		●
050	0.50	4.00	0.45	50	0.40	2.50	9.28	-	10.9°	2		●
060	0.60	4.00	0.55	50	0.48	3.00	9.60	-	10.2°	2		●
080	0.80	4.00	0.75	50	0.64	4.00	10.22	-	9.1°	2		●
100	1.00	4.00	0.95	50	1.20	5.00	10.85	0.04	8.1°	2		●
108	1.20	4.00	1.10	50	1.44	6.00	11.36	0.04	7.2°	2		●
120	1.50	4.00	1.40	50	1.80	7.50	12.30	0.04	6.0°	2		●
140	2.00	4.00	1.90	50	2.40	10.00	13.87	0.07	4.3°	2		●
160	2.50	4.00	2.30	50	3.00	12.50	15.34	0.07	3.0°	2		●
180	3.00	4.00	2.80	50	3.60	15.00	16.91	0.07	1.9°	2		●

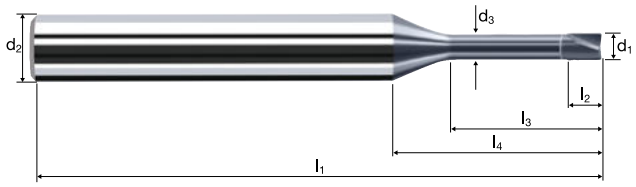
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	66	0.004	0.100	0.050	42015	294	1.5
		0.60	2	73	0.004	0.120	0.060	38730	325	2.4
		0.80	2	73	0.006	0.160	0.080	29045	325	4.2
		1.00	2	73	0.007	0.200	0.100	23235	325	6.5
		1.20	2	73	0.008	0.360	0.120	19365	325	14.1
		1.50	2	73	0.011	0.450	0.150	15490	325	22.0
		2.00	2	73	0.014	0.600	0.200	11620	325	39.1
		2.50	2	73	0.018	0.750	0.250	9295	325	61.0
		3.00	2	73	0.021	0.900	0.300	7745	325	87.9
	Steel 1100 - 1300 N/mm²	0.50	2	56	0.003	0.100	0.050	35650	214	1.1
		0.60	2	56	0.004	0.120	0.060	29710	214	1.6
		0.80	2	56	0.005	0.160	0.080	22280	214	2.8
		1.00	2	56	0.006	0.200	0.100	17825	214	4.3
		1.20	2	56	0.007	0.360	0.120	14855	214	9.3
		1.50	2	56	0.009	0.450	0.150	11885	214	14.5
		2.00	2	56	0.012	0.600	0.200	8915	214	25.7
		2.50	2	56	0.015	0.750	0.250	7130	214	40.1
		3.00	2	56	0.018	0.900	0.300	5940	214	57.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	45	0.002	0.100	0.050	28650	129	0.7
		0.60	2	45	0.003	0.120	0.060	23875	129	1.0
		0.80	2	45	0.004	0.160	0.080	17905	129	1.7
		1.00	2	45	0.005	0.200	0.100	14325	129	2.6
		1.20	2	45	0.005	0.360	0.120	11935	129	5.6
		1.50	2	45	0.007	0.450	0.150	9550	129	8.7
		2.00	2	45	0.009	0.600	0.200	7160	129	15.5
		2.50	2	45	0.011	0.750	0.250	5730	129	24.2
		3.00	2	45	0.014	0.900	0.300	4775	129	34.8
	Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	28	0.002	0.100	0.050	17825	80	0.4
		0.60	2	28	0.003	0.120	0.060	14855	80	0.6
		0.80	2	28	0.004	0.160	0.080	11140	80	1.1
		1.00	2	28	0.005	0.200	0.100	8915	80	1.6
		1.20	2	28	0.005	0.360	0.120	7425	80	3.5
		1.50	2	28	0.007	0.450	0.150	5940	80	5.4
		2.00	2	28	0.009	0.600	0.200	4455	80	9.6
		2.50	2	28	0.011	0.750	0.250	3565	80	15.1
		3.00	2	28	0.014	0.900	0.300	2970	80	21.7
	Steel 850 - 1100 N/mm²	0.50	2	66	0.003	0.050	0.500	42015	235	5.9
		0.60	2	66	0.003	0.060	0.600	35015	235	8.5
		0.80	2	66	0.004	0.080	0.800	26260	235	15.1
		1.00	2	66	0.006	0.100	1.000	21010	235	23.6
		1.20	2	66	0.007	0.120	1.200	17505	235	33.9
		1.50	2	66	0.008	0.150	1.500	14005	235	53.0
		2.00	2	66	0.011	0.200	2.000	10505	235	94.1
		2.50	2	66	0.014	0.250	2.500	8405	235	147.1
		3.00	2	66	0.017	0.300	3.000	7005	235	211.9
	Steel 1100 - 1300 N/mm²	0.50	2	50	0.002	0.050	0.500	31830	153	3.8
		0.60	2	50	0.003	0.060	0.600	26525	153	5.5
		0.80	2	50	0.004	0.080	0.800	19895	153	9.8
		1.00	2	50	0.005	0.100	1.000	15915	153	15.3
		1.20	2	50	0.006	0.120	1.200	13265	153	22.0
		1.50	2	50	0.007	0.150	1.500	10610	153	34.4
		2.00	2	50	0.010	0.200	2.000	7960	153	61.1
		2.50	2	50	0.012	0.250	2.500	6365	153	95.5
		3.00	2	50	0.014	0.300	3.000	5305	153	137.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	40	0.002	0.050	0.500	25465	92	2.3
		0.60	2	40	0.002	0.060	0.600	21220	92	3.3
		0.80	2	40	0.003	0.080	0.800	15915	92	5.9
		1.00	2	40	0.004	0.100	1.000	12730	92	9.2
		1.20	2	40	0.004	0.120	1.200	10610	92	13.2
		1.50	2	40	0.005	0.150	1.500	8490	92	20.7
		2.00	2	40	0.007	0.200	2.000	6365	92	36.7
		2.50	2	40	0.009	0.250	2.500	5095	92	57.3
		3.00	2	40	0.011	0.300	3.000	4245	92	82.6
	Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	25	0.002	0.050	0.500	15915	57	1.5
		0.60	2	25	0.002	0.060	0.600	13265	57	2.1
		0.80	2	25	0.003	0.080	0.800	9945	57	3.7
		1.00	2	25	0.004	0.100	1.000	7960	57	5.8
		1.20	2	25	0.004	0.120	1.200	6630	57	8.3
		1.50	2	25	0.005	0.150	1.500	5305	57	12.9
		2.00	2	25	0.007	0.200	2.000	3980	57	22.9
		2.50	2	25	0.009	0.250	2.500	3185	57	35.8
		3.00	2	25	0.011	0.300	3.000	2655	57	51.6

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 8xd

HM	λ	0°
XA	γ	0°

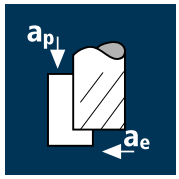
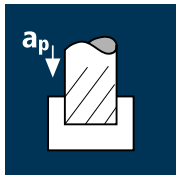
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6807** ø-Code **050**

Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	45°	α	z	X-AL
											X6807
050	0.50	4.00	0.45	50	0.40	4.00	10.78	-	9.4°	2	●
060	0.60	4.00	0.55	50	0.48	4.80	11.40	-	8.7°	2	●
080	0.80	4.00	0.75	50	0.64	6.40	12.62	-	7.4°	2	●
100	1.00	4.00	0.95	50	1.20	8.00	13.85	0.04	6.4°	2	●
108	1.20	4.00	1.10	50	1.44	9.60	14.96	0.04	5.5°	2	●
120	1.50	4.00	1.40	50	1.80	12.00	16.80	0.04	4.5°	2	●
140	2.00	4.00	1.90	50	2.40	16.00	19.87	0.07	3.1°	2	●
160	2.50	4.00	2.30	57	3.00	20.00	22.84	0.07	2.1°	2	●
180	3.00	4.00	2.80	57	3.60	24.00	25.91	0.07	1.3°	2	●

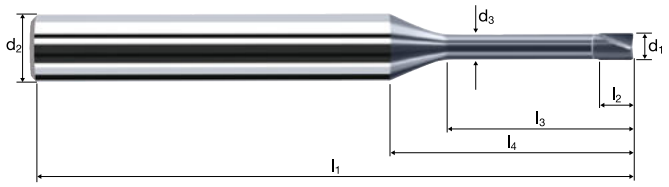
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	66	0.004	0.100	0.050	42015	294	1.5
		0.60	2	66	0.004	0.120	0.060	35015	294	2.1
		0.80	2	66	0.006	0.160	0.080	26260	294	3.8
		1.00	2	66	0.007	0.200	0.100	21010	294	5.9
		1.50	2	66	0.011	0.300	0.150	14005	294	13.3
		2.00	2	66	0.014	0.400	0.200	10505	294	23.6
		2.50	2	66	0.018	0.500	0.250	8405	294	36.8
		3.00	2	66	0.021	0.600	0.300	7005	294	53.0
	Steel 1100 - 1300 N/mm²	0.50	2	50	0.003	0.100	0.050	31830	191	1.0
		0.60	2	50	0.004	0.120	0.060	26525	191	1.4
		0.80	2	50	0.005	0.160	0.080	19895	191	2.5
		1.00	2	50	0.006	0.200	0.100	15915	191	3.8
		1.50	2	50	0.009	0.300	0.150	10610	191	8.6
		2.00	2	50	0.012	0.400	0.200	7960	191	15.3
		2.50	2	50	0.015	0.500	0.250	6365	191	23.9
		3.00	2	50	0.018	0.600	0.300	5305	191	34.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	40	0.002	0.100	0.050	25465	115	0.6
		0.60	2	40	0.003	0.120	0.060	21220	115	0.9
		0.80	2	40	0.004	0.160	0.080	15915	115	1.5
		1.00	2	40	0.005	0.200	0.100	12730	115	2.3
		1.50	2	40	0.007	0.300	0.150	8490	115	5.2
		2.00	2	40	0.009	0.400	0.200	6365	115	9.2
		2.50	2	40	0.011	0.500	0.250	5095	115	14.4
		3.00	2	40	0.014	0.600	0.300	4245	115	20.7
	Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	25	0.002	0.100	0.050	15915	72	0.4
		0.60	2	25	0.003	0.120	0.060	13265	72	0.5
		0.80	2	25	0.004	0.160	0.080	9945	72	0.9
		1.00	2	25	0.005	0.200	0.100	7960	72	1.5
		1.50	2	25	0.007	0.300	0.150	5305	72	3.2
		2.00	2	25	0.009	0.400	0.200	3980	72	5.8
		2.50	2	25	0.011	0.500	0.250	3185	72	9.0
		3.00	2	25	0.014	0.600	0.300	2655	72	12.9
	Steel 850 - 1100 N/mm²	0.50	2	59	0.003	0.050	0.500	37560	210	5.3
		0.60	2	59	0.003	0.060	0.600	31300	210	7.6
		0.80	2	59	0.004	0.080	0.800	23475	210	13.5
		1.00	2	59	0.006	0.100	1.000	18780	210	21.1
		1.50	2	59	0.008	0.150	1.500	12520	210	47.3
		2.00	2	59	0.011	0.200	2.000	9390	210	84.1
		2.50	2	59	0.014	0.250	2.500	7510	210	131.5
		3.00	2	59	0.017	0.300	3.000	6260	210	189.3
	Steel 1100 - 1300 N/mm²	0.50	2	45	0.002	0.050	0.500	28650	138	3.5
		0.60	2	45	0.003	0.060	0.600	23875	138	5.0
		0.80	2	45	0.004	0.080	0.800	17905	138	8.8
		1.00	2	45	0.005	0.100	1.000	14325	138	13.8
		1.50	2	45	0.007	0.150	1.500	9550	138	31.0
		2.00	2	45	0.010	0.200	2.000	7160	138	55.0
		2.50	2	45	0.012	0.250	2.500	5730	138	86.0
		3.00	2	45	0.014	0.300	3.000	4775	138	123.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	36	0.002	0.050	0.500	22920	83	2.1
		0.60	2	36	0.002	0.060	0.600	19100	83	3.0
		0.80	2	36	0.003	0.080	0.800	14325	83	5.3
		1.00	2	36	0.004	0.100	1.000	11460	83	8.3
		1.50	2	36	0.005	0.150	1.500	7640	83	18.6
		2.00	2	36	0.007	0.200	2.000	5730	83	33.0
		2.50	2	36	0.009	0.250	2.500	4585	83	51.6
		3.00	2	36	0.011	0.300	3.000	3820	83	74.3
	Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	23	0.002	0.050	0.500	14640	53	1.3
		0.60	2	23	0.002	0.060	0.600	12200	53	1.9
		0.80	2	23	0.003	0.080	0.800	9150	53	3.4
		1.00	2	23	0.004	0.100	1.000	7320	53	5.3
		1.50	2	23	0.005	0.150	1.500	4880	53	11.9
		2.00	2	23	0.007	0.200	2.000	3660	53	21.1
		2.50	2	23	0.009	0.250	2.500	2930	53	33.0
		3.00	2	23	0.011	0.300	3.000	2440	53	47.5

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 10xd

HM XA	λ 0° γ 0°

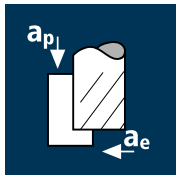
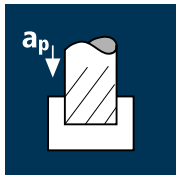
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6809** ø-Code **050**

Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	45°	α	z	X-AL X6809
050	0.50	4.00	0.45	50	0.40	5.00	11.78	-	8.6°	2	●
060	0.60	4.00	0.55	50	0.48	6.00	12.60	-	7.9°	2	●
080	0.80	4.00	0.75	50	0.64	8.00	14.22	-	6.6°	2	●
100	1.00	4.00	0.95	50	1.20	10.00	15.85	0.04	5.6°	2	●
120	1.50	4.00	1.40	50	1.80	15.00	19.80	0.04	3.8°	2	●
140	2.00	4.00	1.90	57	2.40	20.00	23.87	0.07	2.6°	2	●
160	2.50	4.00	2.30	57	3.00	25.00	27.84	0.07	1.7°	2	●
180	3.00	4.00	2.80	61	3.60	30.00	31.91	0.07	1.1°	2	●

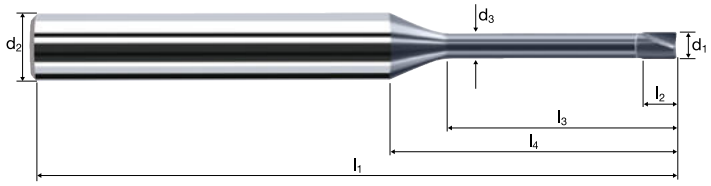
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.00	2	59	0.007	0.200	0.100	18780	263	5.3
		1.50	2	59	0.011	0.300	0.150	12520	263	11.9
		2.00	2	59	0.014	0.400	0.200	9390	263	21.1
		3.00	2	59	0.021	0.600	0.300	6260	263	47.3
	Steel 1100 - 1300 N/mm²	1.00	2	45	0.006	0.200	0.100	14325	172	3.5
		1.50	2	45	0.009	0.300	0.150	9550	172	7.8
		2.00	2	45	0.012	0.400	0.200	7160	172	13.8
		3.00	2	45	0.018	0.600	0.300	4775	172	31.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	36	0.005	0.200	0.100	11460	103	2.1
		1.50	2	36	0.007	0.300	0.150	7640	103	4.7
		2.00	2	36	0.009	0.400	0.200	5730	103	8.3
		3.00	2	36	0.014	0.600	0.300	3820	103	18.6
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	23	0.005	0.200	0.100	7320	66	1.3
		1.50	2	23	0.007	0.300	0.150	4880	66	3.0
		2.00	2	23	0.009	0.400	0.200	3660	66	5.3
		3.00	2	23	0.014	0.600	0.300	2440	66	11.9
	Steel 850 - 1100 N/mm²	1.00	2	53	0.006	0.100	1.000	16870	189	18.9
		1.50	2	53	0.008	0.150	1.500	11245	189	42.5
		2.00	2	53	0.011	0.200	2.000	8435	189	75.6
		3.00	2	53	0.017	0.300	3.000	5625	189	170.1
	Steel 1100 - 1300 N/mm²	1.00	2	41	0.005	0.100	1.000	13050	125	12.6
		1.50	2	41	0.007	0.150	1.500	8700	125	28.2
		2.00	2	41	0.010	0.200	2.000	6525	125	50.1
		3.00	2	41	0.014	0.300	3.000	4350	125	112.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	33	0.004	0.100	1.000	10505	76	7.6
		1.50	2	33	0.005	0.150	1.500	7005	76	17.1
		2.00	2	33	0.007	0.200	2.000	5250	76	30.3
		3.00	2	33	0.011	0.300	3.000	3500	76	68.1
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	20	0.004	0.100	1.000	6365	46	4.6
		1.50	2	20	0.005	0.150	1.500	4245	46	10.3
		2.00	2	20	0.007	0.200	2.000	3185	46	18.4
		3.00	2	20	0.011	0.300	3.000	2120	46	41.2

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 12xd

HM XA	λ 0° γ 0°

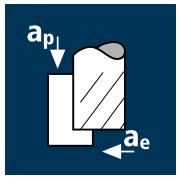
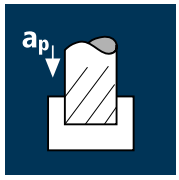
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6810** ø-Code **100**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6810
100	1.00	4.00	0.95	50	1.20	12.00	17.85	0.04	5.0°	2		●
120	1.50	4.00	1.40	57	1.80	18.00	22.80	0.04	3.3°	2		●
140	2.00	4.00	1.90	57	2.40	24.00	27.87	0.07	2.3°	2		●
180	3.00	4.00	2.80	75	3.60	36.00	37.91	0.07	1.0°	2		●

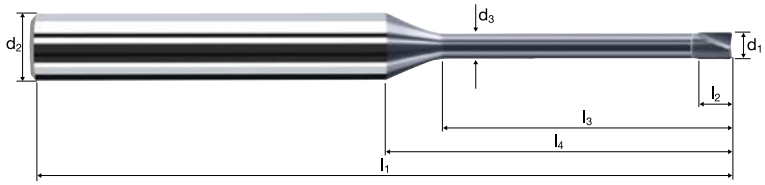
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.00	2	53	0.007	0.200	0.100	16870	236	4.7
		1.50	2	53	0.011	0.300	0.150	11245	236	10.6
		2.00	2	53	0.014	0.400	0.200	8435	236	18.9
		3.00	2	53	0.021	0.600	0.300	5625	236	42.6
	Steel 1100 - 1300 N/mm²	1.00	2	41	0.006	0.200	0.100	13050	157	3.2
		1.50	2	41	0.009	0.300	0.150	8700	157	7.1
		2.00	2	41	0.012	0.400	0.200	6525	157	12.6
		3.00	2	41	0.018	0.600	0.300	4350	157	28.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	33	0.005	0.200	0.100	10505	95	1.9
		1.50	2	33	0.007	0.300	0.150	7005	95	4.3
		2.00	2	33	0.009	0.400	0.200	5250	95	7.6
		3.00	2	33	0.014	0.600	0.300	3500	95	17.0
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	20	0.005	0.200	0.100	6365	57	1.2
		1.50	2	20	0.007	0.300	0.150	4245	57	2.6
		2.00	2	20	0.009	0.400	0.200	3185	57	4.6
		3.00	2	20	0.014	0.600	0.300	2120	57	10.3
	Steel 850 - 1100 N/mm²	1.00	2	48	0.006	0.100	1.000	15280	171	17.1
		1.50	2	48	0.008	0.150	1.500	10185	171	38.5
		2.00	2	48	0.011	0.200	2.000	7640	171	68.5
		3.00	2	48	0.017	0.300	3.000	5095	171	154.1
	Steel 1100 - 1300 N/mm²	1.00	2	37	0.005	0.100	1.000	11775	113	11.3
		1.50	2	37	0.007	0.150	1.500	7850	113	25.5
		2.00	2	37	0.010	0.200	2.000	5890	113	45.3
		3.00	2	37	0.014	0.300	3.000	3925	113	101.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	29	0.004	0.100	1.000	9230	67	6.7
		1.50	2	29	0.005	0.150	1.500	6155	67	15.0
		2.00	2	29	0.007	0.200	2.000	4615	67	26.6
		3.00	2	29	0.011	0.300	3.000	3075	66	59.8
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	18	0.004	0.100	1.000	5730	41	4.2
		1.50	2	18	0.005	0.150	1.500	3820	41	9.3
		2.00	2	18	0.007	0.200	2.000	2865	41	16.5
		3.00	2	18	0.011	0.300	3.000	1910	41	37.2

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 15xd

HM XA	λ 0° γ 0°

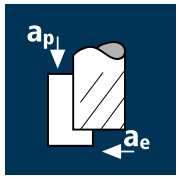
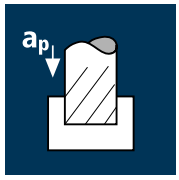
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6811** ø-Code **100**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6811
100	1.00	4.00	0.95	50	1.20	15.00	20.85	0.04	4.3°	2		●
120	1.50	4.00	1.40	57	1.80	22.50	27.30	0.04	2.8°	2		●
140	2.00	4.00	1.90	61	2.40	30.00	33.87	0.07	1.9°	2		●
180	3.00	4.00	2.80	75	3.60	45.00	46.91	0.07	0.8°	2		●

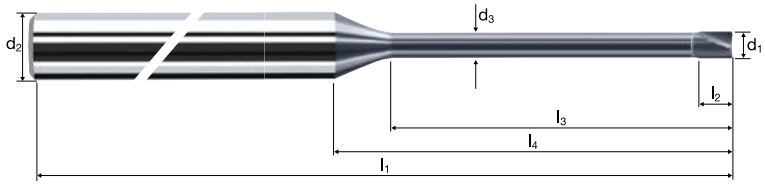
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.00	2	48	0.007	0.200	0.100	15280	214	4.3
		1.50	2	48	0.011	0.300	0.150	10185	214	9.7
		2.00	2	48	0.014	0.400	0.200	7640	214	17.1
		3.00	2	48	0.021	0.600	0.300	5095	214	38.5
	Steel 1100 - 1300 N/mm²	1.00	2	37	0.006	0.200	0.100	11775	141	2.9
		1.50	2	37	0.009	0.300	0.150	7850	141	6.4
		2.00	2	37	0.012	0.400	0.200	5890	141	11.3
		3.00	2	37	0.018	0.600	0.300	3925	141	25.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	29	0.005	0.200	0.100	9230	83	1.7
		1.50	2	29	0.007	0.300	0.150	6155	83	3.8
		2.00	2	29	0.009	0.400	0.200	4615	83	6.7
		3.00	2	29	0.014	0.600	0.300	3075	83	15.0
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	18	0.005	0.200	0.100	5730	52	1.1
		1.50	2	18	0.007	0.300	0.150	3820	52	2.3
		2.00	2	18	0.009	0.400	0.200	2865	52	4.2
		3.00	2	18	0.014	0.600	0.300	1910	52	9.3
	Steel 850 - 1100 N/mm²	1.00	2	43	0.007	0.100	1.000	13685	192	19.2
		1.50	2	43	0.011	0.150	1.500	9125	192	43.1
		2.00	2	43	0.014	0.200	2.000	6845	192	76.7
		3.00	2	43	0.021	0.300	3.000	4560	192	172.4
	Steel 1100 - 1300 N/mm²	1.00	2	33	0.006	0.100	1.000	10505	126	12.6
		1.50	2	33	0.009	0.150	1.500	7005	126	28.4
		2.00	2	33	0.012	0.200	2.000	5250	126	50.4
		3.00	2	33	0.018	0.300	3.000	3500	126	113.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	26	0.005	0.100	1.000	8275	75	7.5
		1.50	2	26	0.007	0.150	1.500	5515	75	16.8
		2.00	2	26	0.009	0.200	2.000	4140	75	29.8
		3.00	2	26	0.014	0.300	3.000	2760	75	67.1
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	17	0.005	0.100	1.000	5410	49	4.9
		1.50	2	17	0.007	0.150	1.500	3610	49	11.0
		2.00	2	17	0.009	0.200	2.000	2705	49	19.5
		3.00	2	17	0.014	0.300	3.000	1805	49	43.9

Cylindrical end mills Microcut

Shank ø 4mm, cylindrical neck, 20xd

HM XA	λ 0° γ 0°

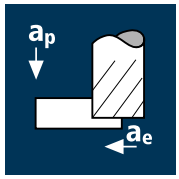
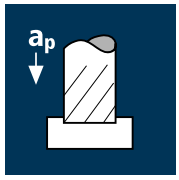
45°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6812** ø-Code **100**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	45°	α	z	X-AL	X6812
100	1.00	4.00	0.95	57	1.20	20.00	25.85	0.04	3.5°	2		●
120	1.50	4.00	1.40	66	1.80	30.00	34.80	0.04	2.3°	2		●
140	2.00	4.00	1.90	75	2.40	40.00	43.87	0.07	1.5°	2		●
180	3.00	4.00	2.80	100	3.60	60.00	61.91	0.07	0.7°	2		●

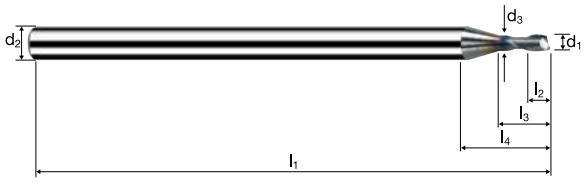
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.20	2	180	0.004	0.160	0.030	60000	480	2.3
		0.50	2	180	0.012	0.400	0.080	60000	1440	46.1
		0.80	2	180	0.018	0.640	0.120	60000	2160	165.9
		1.00	2	180	0.022	0.800	0.150	57295	2521	302.5
		1.20	2	180	0.026	0.960	0.180	47745	2483	429.0
		1.50	2	180	0.034	1.200	0.230	38195	2597	716.9
		2.00	2	180	0.044	1.600	0.300	28650	2521	1210.2
		2.50	2	180	0.056	2.000	0.380	22920	2567	1950.9
		3.00	2	180	0.066	2.400	0.450	19100	2521	2722.9
	Steel 1100 - 1300 N/mm²	0.20	2	160	0.004	0.160	0.030	60000	480	2.3
		0.50	2	160	0.010	0.400	0.080	60000	1200	38.4
		0.80	2	160	0.016	0.640	0.120	60000	1920	147.5
		1.00	2	160	0.020	0.800	0.150	50930	2037	244.5
		1.20	2	160	0.024	0.960	0.180	42440	2037	352.0
		1.50	2	160	0.030	1.200	0.230	33955	2037	562.3
		2.00	2	160	0.040	1.600	0.300	25465	2037	977.9
		2.50	2	160	0.050	2.000	0.380	20370	2037	1548.1
		3.00	2	160	0.060	2.400	0.450	16975	2037	2200.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	80	0.004	0.160	0.030	60000	480	2.3
		0.50	2	80	0.010	0.400	0.080	50930	1019	32.6
		0.80	2	80	0.014	0.640	0.120	31830	891	68.4
		1.00	2	80	0.018	0.800	0.150	25465	917	110.0
		1.20	2	80	0.020	0.960	0.180	21220	849	146.7
		1.50	2	80	0.028	1.200	0.230	16975	951	262.4
		2.00	2	80	0.036	1.600	0.300	12730	917	440.0
		2.50	2	80	0.044	2.000	0.380	10185	896	681.2
		3.00	2	80	0.052	2.400	0.450	8490	883	953.6
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.20	2	60	0.002	0.160	0.030	60000	240	1.2
		0.50	2	60	0.008	0.400	0.080	38195	611	19.6
		0.80	2	60	0.012	0.640	0.120	23875	573	44.0
		1.00	2	60	0.016	0.800	0.150	19100	611	73.3
		1.20	2	60	0.018	0.960	0.180	15915	573	99.0
		1.50	2	60	0.024	1.200	0.230	12730	611	168.6
		2.00	2	60	0.030	1.600	0.300	9550	573	275.0
		2.50	2	60	0.040	2.000	0.380	7640	611	464.5
		3.00	2	60	0.046	2.400	0.450	6365	586	632.4
	Steel 850 - 1100 N/mm²	0.20	2	160	0.004	0.020	0.200	60000	480	1.9
		0.50	2	160	0.010	0.060	0.500	60000	1200	36.0
		0.80	2	160	0.014	0.100	0.800	60000	1680	134.4
		1.00	2	160	0.018	0.120	1.000	50930	1834	220.0
		1.20	2	160	0.022	0.140	1.200	42440	1867	313.7
		1.50	2	160	0.028	0.180	1.500	33955	1902	513.4
		2.00	2	160	0.036	0.240	2.000	25465	1834	880.1
		2.50	2	160	0.046	0.300	2.500	20370	1874	1405.5
		3.00	2	160	0.054	0.360	3.000	16975	1833	1980.0
	Steel 1100 - 1300 N/mm²	0.20	2	140	0.004	0.020	0.200	60000	480	1.9
		0.50	2	140	0.010	0.060	0.500	60000	1200	36.0
		0.80	2	140	0.014	0.100	0.800	55705	1560	124.8
		1.00	2	140	0.018	0.120	1.000	44565	1604	192.5
		1.20	2	140	0.020	0.140	1.200	37135	1485	249.5
		1.50	2	140	0.026	0.180	1.500	29710	1545	417.1
		2.00	2	140	0.034	0.240	2.000	22280	1515	727.2
		2.50	2	140	0.044	0.300	2.500	17825	1569	1176.5
		3.00	2	140	0.052	0.360	3.000	14855	1545	1668.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	70	0.004	0.020	0.200	60000	480	1.9
		0.50	2	70	0.008	0.060	0.500	44565	713	21.4
		0.80	2	70	0.012	0.100	0.800	27850	668	53.5
		1.00	2	70	0.016	0.120	1.000	22280	713	85.6
		1.20	2	70	0.020	0.140	1.200	18570	743	124.8
		1.50	2	70	0.024	0.180	1.500	14855	713	192.5
		2.00	2	70	0.032	0.240	2.000	11140	713	342.2
		2.50	2	70	0.040	0.300	2.500	8915	713	534.9
		3.00	2	70	0.048	0.360	3.000	7425	713	769.8
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.20	2	50	0.004	0.020	0.200	60000	480	1.9
		0.50	2	50	0.008	0.060	0.500	31830	509	15.3
		0.80	2	50	0.012	0.100	0.800	19895	478	38.2
		1.00	2	50	0.014	0.120	1.000	15915	446	53.5
		1.20	2	50	0.018	0.140	1.200	13265	478	80.2
		1.50	2	50	0.022	0.180	1.500	10610	467	126.0
		2.00	2	50	0.028	0.240	2.000	7960	446	214.0
		2.50	2	50	0.036	0.300	2.500	6365	458	343.7
		3.00	2	50	0.044	0.360	3.000	5305	467	504.1

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 3xd

HM MG10 | λ 25° γ 6°

45°

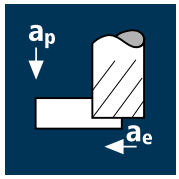
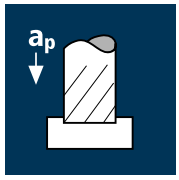


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5712** ø-Code **020**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5712
020	0.20	3.00	0.18	40	0.24	0.60	8.86	-	9.5°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	-	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	-	9.0°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	-	11.5°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	-	11.0°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	-	10.0°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.04	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.04	7.5°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.04	6.0°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.05	4.0°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.05	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.05	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	3	80	0.010	0.400	0.080	50930	1528	48.9
		0.60	3	80	0.012	0.480	0.090	42440	1528	66.0
		0.80	3	80	0.016	0.640	0.120	31830	1528	117.3
		1.00	3	80	0.020	0.800	0.150	25465	1528	183.3
		1.20	3	80	0.024	0.960	0.180	21220	1528	264.0
		1.50	3	80	0.030	1.200	0.230	16975	1528	421.7
		2.00	3	80	0.040	1.600	0.300	12730	1528	733.2
		2.50	3	80	0.050	2.000	0.380	10185	1528	1161.1
		3.00	3	80	0.060	2.400	0.450	8490	1528	1650.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	50	0.008	0.400	0.080	31830	764	24.4
		0.60	3	50	0.010	0.480	0.090	26525	796	34.4
		0.80	3	50	0.012	0.640	0.120	19895	716	55.0
		1.00	3	50	0.016	0.800	0.150	15915	764	91.7
		1.20	3	50	0.020	0.960	0.180	13265	796	137.5
		1.50	3	50	0.024	1.200	0.230	10610	764	210.8
		2.00	3	50	0.032	1.600	0.300	7960	764	366.8
		2.50	3	50	0.040	2.000	0.380	6365	764	580.5
		3.00	3	50	0.048	2.400	0.450	5305	764	825.0
	Gold	0.50	3	180	0.012	0.400	0.080	60000	2160	69.1
		0.60	3	180	0.014	0.480	0.090	60000	2520	108.9
		0.80	3	180	0.020	0.640	0.120	60000	3600	276.5
		1.00	3	180	0.024	0.800	0.150	57295	4125	495.0
		1.20	3	180	0.028	0.960	0.180	47745	4011	693.0
		1.50	3	180	0.036	1.200	0.230	38195	4125	1138.5
		2.00	3	180	0.048	1.600	0.300	28650	4126	1980.3
		2.50	3	180	0.060	2.000	0.380	22920	4126	3135.5
		3.00	3	180	0.072	2.400	0.450	19100	4126	4455.6
	Steel850 - 1300 N/mm^2	0.50	3	66	0.010	0.400	0.080	42015	1261	40.3
		0.60	3	79	0.012	0.480	0.090	41910	1509	65.2
		0.80	3	106	0.016	0.640	0.120	42175	2024	155.5
		1.00	3	120	0.020	0.800	0.150	38195	2292	275.0
		1.20	3	120	0.024	0.960	0.180	31830	2292	396.0
		1.50	3	120	0.030	1.200	0.230	25465	2292	632.6
		2.00	3	120	0.040	1.600	0.300	19100	2292	1100.2
		2.50	3	120	0.050	2.000	0.380	15280	2292	1741.9
		3.00	3	120	0.060	2.400	0.450	12730	2291	2474.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	3	60	0.008	0.060	0.500	38195	917	27.5
		0.60	3	60	0.008	0.070	0.600	31830	764	32.1
		0.80	3	60	0.012	0.100	0.800	23875	860	68.8
		1.00	3	60	0.014	0.120	1.000	19100	802	96.3
		1.20	3	60	0.018	0.140	1.200	15915	859	144.4
		1.50	3	60	0.022	0.180	1.500	12730	840	226.9
		2.00	3	60	0.028	0.240	2.000	9550	802	385.1
		2.50	3	60	0.036	0.300	2.500	7640	825	618.8
		3.00	3	60	0.042	0.360	3.000	6365	802	866.2
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	40	0.006	0.060	0.500	25465	458	13.8
		0.60	3	40	0.006	0.070	0.600	21220	382	16.0
		0.80	3	40	0.010	0.100	0.800	15915	478	38.2
		1.00	3	40	0.012	0.120	1.000	12730	458	55.0
		1.20	3	40	0.014	0.140	1.200	10610	446	74.9
		1.50	3	40	0.018	0.180	1.500	8490	459	123.8
		2.00	3	40	0.022	0.240	2.000	6365	420	201.6
		2.50	3	40	0.028	0.300	2.500	5095	428	321.0
		3.00	3	40	0.034	0.360	3.000	4245	433	467.6
	Gold	0.50	3	160	0.010	0.060	0.500	60000	1800	54.0
		0.60	3	160	0.010	0.070	0.600	60000	1800	75.6
		0.80	3	160	0.014	0.100	0.800	60000	2520	201.6
		1.00	3	160	0.016	0.120	1.000	50930	2445	293.4
		1.20	3	160	0.022	0.140	1.200	42440	2801	470.6
		1.50	3	160	0.026	0.180	1.500	33955	2649	715.1
		2.00	3	160	0.034	0.240	2.000	25465	2597	1246.8
		2.50	3	160	0.044	0.300	2.500	20370	2689	2016.6
		3.00	3	160	0.050	0.360	3.000	16975	2546	2750.0
	Steel850 - 1300 N/mm^2	0.50	3	66	0.008	0.060	0.500	42015	1008	30.3
		0.60	3	79	0.008	0.070	0.600	41910	1006	42.2
		0.80	3	100	0.012	0.100	0.800	39790	1432	114.6
		1.00	3	100	0.014	0.120	1.000	31830	1337	160.4
		1.20	3	100	0.018	0.140	1.200	26525	1432	240.6
		1.50	3	100	0.022	0.180	1.500	21220	1401	378.1
		2.00	3	100	0.028	0.240	2.000	15915	1337	641.7
		2.50	3	100	0.036	0.300	2.500	12730	1375	1031.1
		3.00	3	100	0.042	0.360	3.000	10610	1337	1443.9

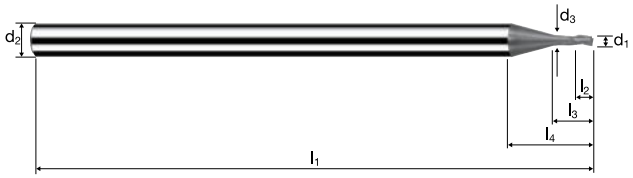
Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 3xd

HM
XA

λ 25°
γ -10°

90°

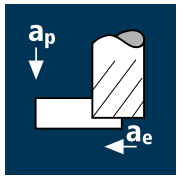
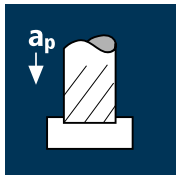


ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15752** ø-Code **050**

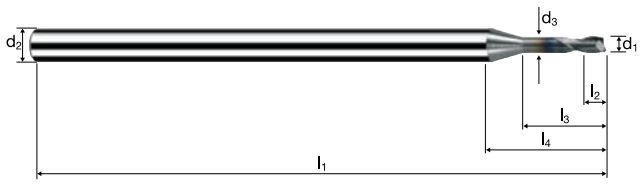
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	MICRO M15752
050	0.50	3.00	0.45	40	0.60	1.50	6.65	11.5°	3	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	11.0°	3	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	10.0°	3	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	8.5°	3	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	7.5°	3	●
120	1.50	3.00	1.40	60	1.80	4.50	7.88	6.0°	3	●
140	2.00	3.00	1.90	60	2.40	6.00	8.45	4.0°	3	●
160	2.50	3.00	2.30	60	3.00	7.50	9.20	2.0°	3	●
180	3.00	3.00	2.80	60	3.60	8.56	9.00	0.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	180	0.012	0.400	0.070	60000	1440	40.3
		0.60	2	180	0.014	0.480	0.080	60000	1680	64.5
		0.80	2	180	0.018	0.640	0.100	60000	2160	138.2
		1.00	2	180	0.022	0.800	0.130	57295	2521	262.2
		1.20	2	180	0.026	0.960	0.160	47745	2483	381.3
		1.50	2	180	0.034	1.200	0.200	38195	2597	623.4
		2.00	2	180	0.044	1.600	0.260	28650	2521	1048.8
		2.50	2	180	0.056	2.000	0.330	22920	2567	1694.2
		3.00	2	180	0.066	2.400	0.390	19100	2521	2359.8
	Steel 1100 - 1300 N/mm²	0.50	2	160	0.010	0.400	0.070	60000	1200	33.6
		0.60	2	160	0.012	0.480	0.080	60000	1440	55.3
		0.80	2	160	0.016	0.640	0.100	60000	1920	122.9
		1.00	2	160	0.020	0.800	0.130	50930	2037	211.9
		1.20	2	160	0.024	0.960	0.160	42440	2037	312.9
		1.50	2	160	0.030	1.200	0.200	33955	2037	489.0
		2.00	2	160	0.040	1.600	0.260	25465	2037	847.5
		2.50	2	160	0.050	2.000	0.330	20370	2037	1344.4
		3.00	2	160	0.060	2.400	0.390	16975	2037	1906.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	80	0.010	0.400	0.070	50930	1019	28.5
		0.60	2	80	0.012	0.480	0.080	42440	1019	39.1
		0.80	2	80	0.014	0.640	0.100	31830	891	57.0
		1.00	2	80	0.018	0.800	0.130	25465	917	95.3
		1.20	2	80	0.020	0.960	0.160	21220	849	130.4
		1.50	2	80	0.028	1.200	0.200	16975	951	228.1
		2.00	2	80	0.036	1.600	0.260	12730	917	381.3
		2.50	2	80	0.044	2.000	0.330	10185	896	591.6
		3.00	2	80	0.052	2.400	0.390	8490	883	826.5
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	0.50	2	65	0.010	0.400	0.070	41380	828	23.2
		0.60	2	65	0.012	0.480	0.080	34485	828	31.8
		0.80	2	65	0.014	0.640	0.100	25865	724	46.3
		1.00	2	65	0.018	0.800	0.130	20690	745	77.5
		1.20	2	65	0.020	0.960	0.160	17240	690	105.9
		1.50	2	65	0.028	1.200	0.200	13795	773	185.4
		2.00	2	65	0.036	1.600	0.260	10345	745	309.8
		2.50	2	65	0.044	2.000	0.330	8275	728	480.6
		3.00	2	65	0.052	2.400	0.390	6895	717	671.2
	Steel 850 - 1100 N/mm²	0.50	2	160	0.010	0.060	0.500	60000	1200	36.0
		0.60	2	160	0.010	0.070	0.600	60000	1200	50.4
		0.80	2	160	0.014	0.090	0.800	60000	1680	121.0
		1.00	2	160	0.018	0.110	1.000	50930	1834	201.7
		1.20	2	160	0.022	0.130	1.200	42440	1867	291.3
		1.50	2	160	0.028	0.170	1.500	33955	1902	484.9
		2.00	2	160	0.036	0.220	2.000	25465	1834	806.7
		2.50	2	160	0.046	0.280	2.500	20370	1874	1311.8
		3.00	2	160	0.054	0.330	3.000	16975	1833	1815.0
	Steel 1100 - 1300 N/mm²	0.50	2	140	0.010	0.060	0.500	60000	1200	36.0
		0.60	2	140	0.010	0.070	0.600	60000	1200	50.4
		0.80	2	140	0.014	0.090	0.800	55705	1560	112.3
		1.00	2	140	0.018	0.110	1.000	44565	1604	176.5
		1.20	2	140	0.020	0.130	1.200	37135	1485	231.7
		1.50	2	140	0.026	0.170	1.500	29710	1545	393.9
		2.00	2	140	0.034	0.220	2.000	22280	1515	666.6
		2.50	2	140	0.044	0.280	2.500	17825	1569	1098.0
		3.00	2	140	0.052	0.330	3.000	14855	1545	1529.5
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	70	0.008	0.060	0.500	44565	713	21.4
		0.60	2	70	0.008	0.070	0.600	37135	594	25.0
		0.80	2	70	0.012	0.090	0.800	27850	668	48.1
		1.00	2	70	0.016	0.110	1.000	22280	713	78.4
		1.20	2	70	0.020	0.130	1.200	18570	743	115.9
		1.50	2	70	0.024	0.170	1.500	14855	713	181.8
		2.00	2	70	0.032	0.220	2.000	11140	713	313.7
		2.50	2	70	0.040	0.280	2.500	8915	713	499.2
		3.00	2	70	0.048	0.330	3.000	7425	713	705.7
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	0.50	2	55	0.008	0.060	0.500	35015	560	16.8
		0.60	2	55	0.008	0.070	0.600	29180	467	19.6
		0.80	2	55	0.012	0.090	0.800	21885	525	37.8
		1.00	2	55	0.016	0.110	1.000	17505	560	61.6
		1.20	2	55	0.020	0.130	1.200	14590	584	91.0
		1.50	2	55	0.024	0.170	1.500	11670	560	142.9
		2.00	2	55	0.032	0.220	2.000	8755	560	246.5
		2.50	2	55	0.040	0.280	2.500	7005	560	392.3
		3.00	2	55	0.048	0.330	3.000	5835	560	554.6

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 25° γ 6°
45°	

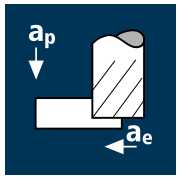
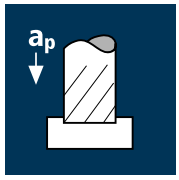


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5714** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5714
050	0.50	3.00	0.45	40	0.60	2.50	7.65	-	10.0°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	-	9.5°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	-	8.5°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	-	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	-	7.5°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.04	7.0°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.04	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.04	4.5°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.04	3.5°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.05	2.5°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	0.05	2.0°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.05	1.5°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	0.05	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.05	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	3	80	0.010	0.400	0.070	50930	1528	42.8
		0.60	3	80	0.010	0.480	0.080	42440	1273	48.9
		0.80	3	80	0.014	0.640	0.100	31830	1337	85.6
		1.00	3	80	0.018	0.800	0.130	25465	1375	143.0
		1.20	3	80	0.022	0.960	0.160	21220	1401	215.1
		1.50	3	80	0.028	1.200	0.200	16975	1426	342.2
		2.00	3	80	0.036	1.600	0.260	12730	1375	571.9
		2.50	3	80	0.046	2.000	0.330	10185	1406	927.6
		3.00	3	80	0.054	2.400	0.390	8490	1375	1287.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	50	0.008	0.400	0.070	31830	764	21.4
		0.60	3	50	0.008	0.480	0.080	26525	637	24.4
		0.80	3	50	0.012	0.640	0.100	19895	716	45.8
		1.00	3	50	0.014	0.800	0.130	15915	668	69.5
		1.20	3	50	0.018	0.960	0.160	13265	716	110.0
		1.50	3	50	0.022	1.200	0.200	10610	700	168.1
		2.00	3	50	0.028	1.600	0.260	7960	669	278.1
		2.50	3	50	0.036	2.000	0.330	6365	687	453.7
		3.00	3	50	0.044	2.400	0.390	5305	700	655.5
	Gold	0.50	3	180	0.012	0.400	0.070	60000	2160	60.5
		0.60	3	180	0.012	0.480	0.080	60000	2160	82.9
		0.80	3	180	0.016	0.640	0.100	60000	2880	184.3
		1.00	3	180	0.022	0.800	0.130	57295	3782	393.3
		1.20	3	180	0.026	0.960	0.160	47745	3724	572.0
		1.50	3	180	0.034	1.200	0.200	38195	3896	935.0
		2.00	3	180	0.044	1.600	0.260	28650	3782	1573.2
		2.50	3	180	0.056	2.000	0.330	22920	3851	2541.4
		3.00	3	180	0.064	2.400	0.390	19100	3667	3432.5
	Steel850 - 1300 N/mm²	0.50	3	66	0.010	0.400	0.070	42015	1261	35.3
		0.60	3	79	0.010	0.480	0.080	41910	1257	48.3
		0.80	3	106	0.014	0.640	0.100	42175	1771	113.4
		1.00	3	120	0.018	0.800	0.130	38195	2063	214.5
		1.20	3	120	0.022	0.960	0.160	31830	2101	322.7
		1.50	3	120	0.028	1.200	0.200	25465	2139	513.4
		2.00	3	120	0.036	1.600	0.260	19100	2063	858.1
		2.50	3	120	0.046	2.000	0.330	15280	2109	1391.7
		3.00	3	120	0.054	2.400	0.390	12730	2062	1930.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	3	60	0.006	0.050	0.500	38195	688	17.2
		0.60	3	60	0.008	0.060	0.600	31830	764	27.5
		0.80	3	60	0.010	0.080	0.800	23875	716	45.8
		1.00	3	60	0.014	0.100	1.000	19100	802	80.2
		1.20	3	60	0.016	0.120	1.200	15915	764	110.0
		1.50	3	60	0.020	0.150	1.500	12730	764	171.9
		2.00	3	60	0.026	0.200	2.000	9550	745	298.0
		2.50	3	60	0.034	0.250	2.500	7640	779	487.1
		3.00	3	60	0.040	0.300	3.000	6365	764	687.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	3	40	0.004	0.050	0.500	25465	306	7.6
		0.60	3	40	0.006	0.060	0.600	21220	382	13.8
		0.80	3	40	0.008	0.080	0.800	15915	382	24.4
		1.00	3	40	0.012	0.100	1.000	12730	458	45.8
		1.20	3	40	0.012	0.120	1.200	10610	382	55.0
		1.50	3	40	0.016	0.150	1.500	8490	408	91.7
		2.00	3	40	0.020	0.200	2.000	6365	382	152.8
		2.50	3	40	0.028	0.250	2.500	5095	428	267.5
		3.00	3	40	0.032	0.300	3.000	4245	408	366.8
	Gold	0.50	3	160	0.008	0.050	0.500	60000	1440	36.0
		0.60	3	160	0.010	0.060	0.600	60000	1800	64.8
		0.80	3	160	0.012	0.080	0.800	60000	2160	138.2
		1.00	3	160	0.016	0.100	1.000	50930	2445	244.5
		1.20	3	160	0.020	0.120	1.200	42440	2546	366.7
		1.50	3	160	0.024	0.150	1.500	33955	2445	550.1
		2.00	3	160	0.032	0.200	2.000	25465	2445	977.8
		2.50	3	160	0.040	0.250	2.500	20370	2444	1527.8
		3.00	3	160	0.048	0.300	3.000	16975	2444	2200.0
	Steel850 - 1300 N/mm²	0.50	3	66	0.006	0.050	0.500	42015	756	18.9
		0.60	3	79	0.008	0.060	0.600	41910	1006	36.2
		0.80	3	100	0.010	0.080	0.800	39790	1194	76.4
		1.00	3	100	0.014	0.100	1.000	31830	1337	133.7
		1.20	3	100	0.016	0.120	1.200	26525	1273	183.3
		1.50	3	100	0.020	0.150	1.500	21220	1273	286.5
		2.00	3	100	0.026	0.200	2.000	15915	1241	496.6
		2.50	3	100	0.034	0.250	2.500	12730	1299	811.6
		3.00	3	100	0.040	0.300	3.000	10610	1273	1145.9

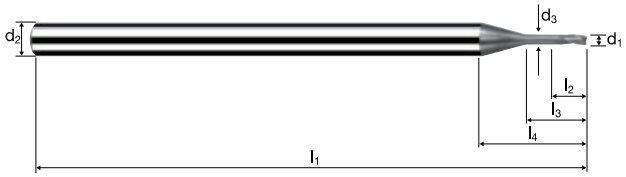
Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM XA

λ 25°
γ -10°

90°

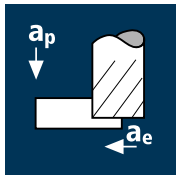
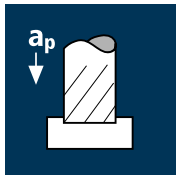


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15754** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	MICRO
										M15754
050	0.50	3.00	0.45	40	0.60	2.50	7.65	10.0°	3	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	9.5°	3	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	8.0°	3	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	7.0°	3	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	5.5°	3	●
120	1.50	3.00	1.40	60	1.80	7.50	10.88	4.5°	3	●
140	2.00	3.00	1.90	60	2.40	10.00	12.45	2.5°	3	●
160	2.50	3.00	2.30	60	3.00	12.50	14.20	1.5°	3	●
180	3.00	3.00	2.80	60	3.60	14.56	15.00	0.0°	3	●

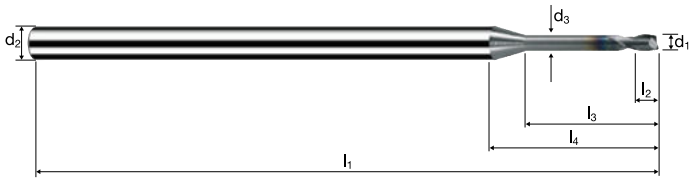
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.50	2	180	0.012	0.300	0.060	60000	1440	25.9
		0.60	2	180	0.014	0.360	0.070	60000	1680	42.3
		0.80	2	180	0.018	0.480	0.090	60000	2160	93.3
		1.00	2	180	0.022	0.600	0.110	57295	2521	166.4
		1.20	2	180	0.026	0.720	0.130	47745	2483	232.4
		1.50	2	180	0.034	0.900	0.170	38195	2597	397.4
		2.00	2	180	0.044	1.200	0.220	28650	2521	665.6
		2.50	2	180	0.056	1.500	0.280	22920	2567	1078.1
		3.00	2	180	0.066	1.800	0.330	19100	2521	1497.6
	Steel 1100 - 1300 N/mm²	0.50	2	160	0.010	0.300	0.060	60000	1200	21.6
		0.60	2	160	0.012	0.360	0.070	60000	1440	36.3
		0.80	2	160	0.016	0.480	0.090	60000	1920	82.9
		1.00	2	160	0.020	0.600	0.110	50930	2037	134.5
		1.20	2	160	0.024	0.720	0.130	42440	2037	190.7
		1.50	2	160	0.030	0.900	0.170	33955	2037	311.7
		2.00	2	160	0.040	1.200	0.220	25465	2037	537.8
		2.50	2	160	0.050	1.500	0.280	20370	2037	855.5
		3.00	2	160	0.060	1.800	0.330	16975	2037	1210.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	80	0.010	0.300	0.060	50930	1019	18.3
		0.60	2	80	0.012	0.360	0.070	42440	1019	25.7
		0.80	2	80	0.014	0.480	0.090	31830	891	38.5
		1.00	2	80	0.018	0.600	0.110	25465	917	60.5
		1.20	2	80	0.020	0.720	0.130	21220	849	79.4
		1.50	2	80	0.028	0.900	0.170	16975	951	145.4
		2.00	2	80	0.036	1.200	0.220	12730	917	242.0
		2.50	2	80	0.044	1.500	0.280	10185	896	376.4
		3.00	2	80	0.052	1.800	0.330	8490	883	524.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	60	0.008	0.300	0.060	38195	611	11.0
		0.60	2	60	0.010	0.360	0.070	31830	637	16.0
		0.80	2	60	0.012	0.480	0.090	23875	573	24.8
		1.00	2	60	0.016	0.600	0.110	19100	611	40.3
		1.20	2	60	0.018	0.720	0.130	15915	573	53.6
		1.50	2	60	0.024	0.900	0.170	12730	611	93.5
		2.00	2	60	0.030	1.200	0.220	9550	573	151.3
		2.50	2	60	0.040	1.500	0.280	7640	611	256.7
		3.00	2	60	0.046	1.800	0.330	6365	586	347.8
	Steel 850 - 1100 N/mm²	0.50	2	160	0.010	0.050	0.500	60000	1200	30.0
		0.60	2	160	0.010	0.060	0.600	60000	1200	43.2
		0.80	2	160	0.014	0.080	0.800	60000	1680	107.5
		1.00	2	160	0.018	0.100	1.000	50930	1834	183.4
		1.20	2	160	0.022	0.120	1.200	42440	1867	268.9
		1.50	2	160	0.028	0.150	1.500	33955	1902	427.8
		2.00	2	160	0.036	0.200	2.000	25465	1834	733.4
		2.50	2	160	0.046	0.250	2.500	20370	1874	1171.3
		3.00	2	160	0.054	0.300	3.000	16975	1833	1650.0
	Steel 1100 - 1300 N/mm²	0.50	2	140	0.010	0.050	0.500	60000	1200	30.0
		0.60	2	140	0.010	0.060	0.600	60000	1200	43.2
		0.80	2	140	0.014	0.080	0.800	55705	1560	99.8
		1.00	2	140	0.018	0.100	1.000	44565	1604	160.4
		1.20	2	140	0.020	0.120	1.200	37135	1485	213.9
		1.50	2	140	0.026	0.150	1.500	29710	1545	347.6
		2.00	2	140	0.034	0.200	2.000	22280	1515	606.0
		2.50	2	140	0.044	0.250	2.500	17825	1569	980.4
		3.00	2	140	0.052	0.300	3.000	14855	1545	1390.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	70	0.008	0.050	0.500	44565	713	17.8
		0.60	2	70	0.008	0.060	0.600	37135	594	21.4
		0.80	2	70	0.012	0.080	0.800	27850	668	42.8
		1.00	2	70	0.016	0.100	1.000	22280	713	71.3
		1.20	2	70	0.020	0.120	1.200	18570	743	107.0
		1.50	2	70	0.024	0.150	1.500	14855	713	160.4
		2.00	2	70	0.032	0.200	2.000	11140	713	285.2
		2.50	2	70	0.040	0.250	2.500	8915	713	445.8
		3.00	2	70	0.048	0.300	3.000	7425	713	641.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	50	0.008	0.050	0.500	31830	509	12.7
		0.60	2	50	0.008	0.060	0.600	26525	424	15.3
		0.80	2	50	0.012	0.080	0.800	19895	478	30.6
		1.00	2	50	0.014	0.100	1.000	15915	446	44.6
		1.20	2	50	0.018	0.120	1.200	13265	478	68.8
		1.50	2	50	0.022	0.150	1.500	10610	467	105.0
		2.00	2	50	0.028	0.200	2.000	7960	446	178.3
		2.50	2	50	0.036	0.250	2.500	6365	458	286.4
		3.00	2	50	0.044	0.300	3.000	5305	467	420.1

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10 | λ 25° γ 6°

45°

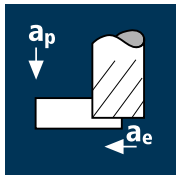
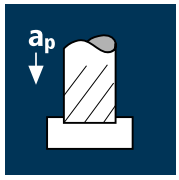


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5716** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	MICRO M5716
050	0.50	3.00	0.45	40	0.60	4.00	9.15	-	8.5°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	-	7.5°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	-	6.0°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.04	5.0°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.04	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.04	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.05	2.0°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.05	1.0°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.05	0.0°	2	●

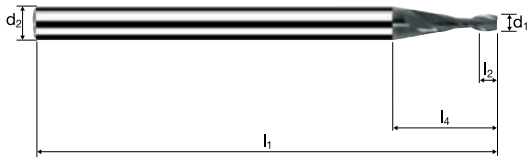
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel < 850 N/mm²	0.30	2	180	0.006	0.240	0.050	60000	720	8.6
		0.50	2	180	0.010	0.400	0.080	60000	1200	38.4
		0.60	2	180	0.010	0.480	0.090	60000	1200	51.8
		0.80	2	180	0.014	0.640	0.120	60000	1680	129.0
		1.00	2	180	0.018	0.800	0.150	57295	2063	247.5
		1.20	2	180	0.022	0.960	0.180	47745	2101	363.0
		1.50	2	180	0.028	1.200	0.230	38195	2139	590.3
		1.80	2	180	0.032	1.440	0.270	31830	2037	792.0
		2.00	2	180	0.036	1.600	0.300	28650	2063	990.1
	Steel 850 - 1100 N/mm²	0.30	2	160	0.006	0.240	0.050	60000	720	8.6
		0.50	2	160	0.010	0.400	0.080	60000	1200	38.4
		0.60	2	160	0.010	0.480	0.090	60000	1200	51.8
		0.80	2	160	0.012	0.640	0.120	60000	1440	110.6
		1.00	2	160	0.016	0.800	0.150	50930	1630	195.6
		1.20	2	160	0.020	0.960	0.180	42440	1698	293.3
		1.50	2	160	0.026	1.200	0.230	33955	1766	487.3
		1.80	2	160	0.028	1.440	0.270	28295	1585	616.1
		2.00	2	160	0.032	1.600	0.300	25465	1630	782.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.30	2	70	0.004	0.240	0.050	60000	480	5.8
		0.50	2	70	0.008	0.400	0.080	44565	713	22.8
		0.60	2	70	0.008	0.480	0.090	37135	594	25.7
		0.80	2	70	0.012	0.640	0.120	27850	668	51.3
		1.00	2	70	0.014	0.800	0.150	22280	624	74.9
		1.20	2	70	0.018	0.960	0.180	18570	669	115.5
		1.50	2	70	0.022	1.200	0.230	14855	654	180.4
		1.80	2	70	0.026	1.440	0.270	12380	644	250.3
		2.00	2	70	0.028	1.600	0.300	11140	624	299.4
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	60	0.004	0.240	0.050	60000	480	5.8
		0.50	2	60	0.008	0.400	0.080	38195	611	19.6
		0.60	2	60	0.008	0.480	0.090	31830	509	22.0
		0.80	2	60	0.010	0.640	0.120	23875	478	36.7
		1.00	2	60	0.012	0.800	0.150	19100	458	55.0
		1.20	2	60	0.016	0.960	0.180	15915	509	88.0
		1.50	2	60	0.020	1.200	0.230	12730	509	140.5
		1.80	2	60	0.022	1.440	0.270	10610	467	181.5
		2.00	2	60	0.026	1.600	0.300	9550	497	238.4
	Steel < 850 N/mm²	0.30	2	160	0.006	0.040	0.300	60000	720	8.6
		0.50	2	160	0.008	0.060	0.500	60000	960	28.8
		0.60	2	160	0.010	0.070	0.600	60000	1200	50.4
		0.80	2	160	0.014	0.100	0.800	60000	1680	134.4
		1.00	2	160	0.016	0.120	1.000	50930	1630	195.6
		1.20	2	160	0.020	0.140	1.200	42440	1698	285.2
		1.50	2	160	0.026	0.180	1.500	33955	1766	476.7
		1.80	2	160	0.030	0.220	1.800	28295	1698	672.3
		2.00	2	160	0.034	0.240	2.000	25465	1732	831.2
	Steel 850 - 1100 N/mm²	0.30	2	140	0.006	0.040	0.300	60000	720	8.6
		0.50	2	140	0.008	0.060	0.500	60000	960	28.8
		0.60	2	140	0.010	0.070	0.600	60000	1200	50.4
		0.80	2	140	0.014	0.100	0.800	55705	1560	124.8
		1.00	2	140	0.016	0.120	1.000	44565	1426	171.1
		1.20	2	140	0.020	0.140	1.200	37135	1485	249.5
		1.50	2	140	0.024	0.180	1.500	29710	1426	385.0
		1.80	2	140	0.028	0.220	1.800	24755	1386	549.0
		2.00	2	140	0.032	0.240	2.000	22280	1426	684.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.30	2	60	0.006	0.040	0.300	60000	720	8.6
		0.50	2	60	0.008	0.060	0.500	38195	611	18.3
		0.60	2	60	0.008	0.070	0.600	31830	509	21.4
		0.80	2	60	0.012	0.100	0.800	23875	573	45.8
		1.00	2	60	0.014	0.120	1.000	19100	535	64.2
		1.20	2	60	0.018	0.140	1.200	15915	573	96.2
		1.50	2	60	0.022	0.180	1.500	12730	560	151.2
		1.80	2	60	0.026	0.220	1.800	10610	552	218.5
		2.00	2	60	0.030	0.240	2.000	9550	573	275.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	50	0.004	0.040	0.300	53050	424	5.1
		0.50	2	50	0.006	0.060	0.500	31830	382	11.5
		0.60	2	50	0.008	0.070	0.600	26525	424	17.8
		0.80	2	50	0.012	0.100	0.800	19895	478	38.2
		1.00	2	50	0.012	0.120	1.000	15915	382	45.8
		1.20	2	50	0.016	0.140	1.200	13265	425	71.3
		1.50	2	50	0.020	0.180	1.500	10610	424	114.6
		1.80	2	50	0.024	0.220	1.800	8840	424	168.0
		2.00	2	50	0.028	0.240	2.000	7960	446	214.0

Cylindrical end mills

Shank ø 3mm, 3xd

Favora® F

HM MG10	λ 30° γ 12°
90°	

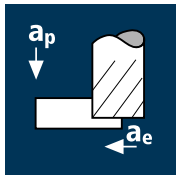
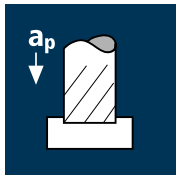


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **030**

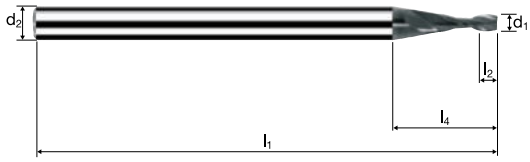
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45710
030	0.30	3.00	40	1.00	8.97	9.0°	2	●
040	0.40	3.00	40	1.00	8.69	9.0°	2	●
050	0.50	3.00	40	1.50	8.90	8.5°	2	●
060	0.60	3.00	40	1.50	8.62	8.5°	2	●
070	0.70	3.00	40	2.00	8.83	8.0°	2	●
080	0.80	3.00	40	2.00	8.55	8.0°	2	●
090	0.90	3.00	40	2.50	8.77	7.5°	2	●
100	1.00	3.00	40	3.00	8.98	7.0°	2	●
104	1.10	3.00	40	3.00	8.75	6.5°	2	●
108	1.20	3.00	40	4.00	9.47	6.0°	2	●
112	1.30	3.00	40	4.00	9.18	5.5°	2	●
116	1.40	3.00	40	4.00	8.90	5.5°	2	●
120	1.50	3.00	40	4.00	8.62	5.5°	2	●
123	1.60	3.00	40	5.00	9.33	4.5°	2	●
126	1.70	3.00	40	5.00	7.41	5.5°	2	●
130	1.80	3.00	40	5.00	7.28	5.5°	2	●
135	1.90	3.00	40	5.00	7.14	5.0°	2	●
140	2.00	3.00	40	5.00	7.00	4.5°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	2.10	2	180	0.038	1.680	0.320	27285	2074	1114.8
		2.20	2	180	0.040	1.760	0.330	26045	2084	1210.2
		2.30	2	180	0.042	1.840	0.350	24910	2092	1347.5
		2.40	2	180	0.044	1.920	0.360	23875	2101	1452.2
		2.50	2	180	0.046	2.000	0.380	22920	2109	1602.5
		3.00	2	180	0.054	2.400	0.450	19100	2063	2227.8
	Steel 850 - 1100 N/mm²	2.10	2	160	0.034	1.680	0.320	24250	1649	886.5
		2.20	2	160	0.036	1.760	0.330	23150	1667	968.1
		2.30	2	160	0.038	1.840	0.350	22145	1683	1083.9
		2.40	2	160	0.040	1.920	0.360	21220	1698	1173.4
		2.50	2	160	0.042	2.000	0.380	20370	1711	1300.4
		3.00	2	160	0.048	2.400	0.450	16975	1630	1760.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.10	2	70	0.030	1.680	0.320	10610	637	342.2
		2.20	2	70	0.032	1.760	0.330	10130	648	376.5
		2.30	2	70	0.034	1.840	0.350	9690	659	424.3
		2.40	2	70	0.036	1.920	0.360	9285	669	462.1
		2.50	2	70	0.036	2.000	0.380	8915	642	487.8
		3.00	2	70	0.044	2.400	0.450	7425	653	705.7
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.10	2	60	0.026	1.680	0.320	9095	473	254.2
		2.20	2	60	0.028	1.760	0.330	8680	486	282.3
		2.30	2	60	0.030	1.840	0.350	8305	498	320.9
		2.40	2	60	0.030	1.920	0.360	7960	478	330.1
		2.50	2	60	0.032	2.000	0.380	7640	489	371.6
		3.00	2	60	0.038	2.400	0.450	6365	484	522.4
	Steel < 850 N/mm²	2.10	2	160	0.036	0.250	2.100	24250	1746	916.7
		2.20	2	160	0.036	0.260	2.200	23150	1667	953.4
		2.30	2	160	0.038	0.280	2.300	22145	1683	1083.9
		2.40	2	160	0.040	0.290	2.400	21220	1698	1181.5
		2.50	2	160	0.042	0.300	2.500	20370	1711	1283.3
		3.00	2	160	0.050	0.360	3.000	16975	1698	1833.3
	Steel 850 - 1100 N/mm²	2.10	2	140	0.034	0.250	2.100	21220	1443	757.6
		2.20	2	140	0.034	0.260	2.200	20255	1377	787.8
		2.30	2	140	0.036	0.280	2.300	19375	1395	898.4
		2.40	2	140	0.038	0.290	2.400	18570	1411	982.3
		2.50	2	140	0.040	0.300	2.500	17825	1426	1069.5
		3.00	2	140	0.048	0.360	3.000	14855	1426	1540.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.10	2	60	0.032	0.250	2.100	9095	582	305.6
		2.20	2	60	0.032	0.260	2.200	8680	556	317.7
		2.30	2	60	0.034	0.280	2.300	8305	565	363.7
		2.40	2	60	0.036	0.290	2.400	7960	573	398.9
		2.50	2	60	0.036	0.300	2.500	7640	550	412.6
		3.00	2	60	0.044	0.360	3.000	6365	560	604.9
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.10	2	50	0.028	0.250	2.100	7580	425	222.9
		2.20	2	50	0.028	0.260	2.200	7235	405	231.8
		2.30	2	50	0.030	0.280	2.300	6920	415	267.4
		2.40	2	50	0.032	0.290	2.400	6630	424	295.3
		2.50	2	50	0.034	0.300	2.500	6365	433	324.6
		3.00	2	50	0.040	0.360	3.000	5305	424	458.4

Cylindrical end mills

Shank ø 3mm, 3xd

HM MG10	λ 30° γ 12°
90°	

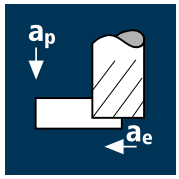
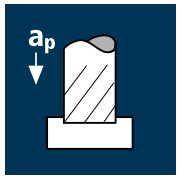


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **143**

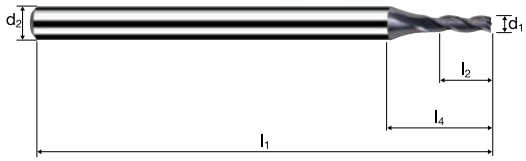
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45710
143	2.10	3.00	40	6.00	7.87	4.0°	2	●
146	2.20	3.00	40	6.00	7.73	3.5°	2	●
150	2.30	3.00	40	6.00	7.59	3.0°	2	●
155	2.40	3.00	40	6.00	7.45	2.5°	2	●
160	2.50	3.00	40	7.00	8.32	2.0°	2	●
180	3.00	4.00	44	10.00	12.36	2.5°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.40	3	180	0.004	0.480	0.040	60000	720	13.8
		0.60	3	180	0.008	0.720	0.060	60000	1440	62.2
		0.80	3	180	0.010	0.960	0.080	60000	1800	138.2
		1.00	3	180	0.012	1.200	0.100	57295	2063	247.5
		1.20	3	180	0.014	1.440	0.120	47745	2005	346.5
		1.40	3	180	0.016	1.680	0.140	40925	1964	462.0
		1.60	3	180	0.018	1.920	0.160	35810	1934	594.0
		1.80	3	180	0.022	2.160	0.180	31830	2101	816.8
		2.00	3	180	0.024	2.400	0.200	28650	2063	990.1
	Short-chipping brass [CuZn]	0.40	3	190	0.004	0.480	0.040	60000	720	13.8
		0.60	3	190	0.008	0.720	0.060	60000	1440	62.2
		0.80	3	190	0.012	0.960	0.080	60000	2160	165.9
		1.00	3	190	0.014	1.200	0.100	60000	2520	302.4
		1.20	3	190	0.016	1.440	0.120	50400	2419	418.0
		1.40	3	190	0.018	1.680	0.140	43200	2333	548.7
		1.60	3	190	0.020	1.920	0.160	37800	2268	696.7
		1.80	3	190	0.024	2.160	0.180	33600	2419	940.6
		2.00	3	190	0.026	2.400	0.200	30240	2359	1132.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.40	3	70	0.004	0.480	0.040	55705	669	12.8
		0.60	3	70	0.006	0.720	0.060	37135	668	28.9
		0.80	3	70	0.008	0.960	0.080	27850	668	51.3
		1.00	3	70	0.010	1.200	0.100	22280	668	80.2
		1.20	3	70	0.012	1.440	0.120	18570	669	115.5
		1.40	3	70	0.012	1.680	0.140	15915	573	134.7
		1.60	3	70	0.014	1.920	0.160	13925	585	179.7
		1.80	3	70	0.018	2.160	0.180	12380	669	259.9
		2.00	3	70	0.020	2.400	0.200	11140	668	320.8
	Titanium alloys > 300 HB [Ti6Al4V]	0.40	3	50	0.002	0.480	0.040	39790	239	4.6
		0.60	3	50	0.006	0.720	0.060	26525	478	20.6
		0.80	3	50	0.008	0.960	0.080	19895	478	36.7
		1.00	3	50	0.008	1.200	0.100	15915	382	45.8
		1.20	3	50	0.010	1.440	0.120	13265	398	68.8
		1.40	3	50	0.012	1.680	0.140	11370	409	96.3
		1.60	3	50	0.012	1.920	0.160	9945	358	110.0
		1.80	3	50	0.016	2.160	0.180	8840	424	165.0
		2.00	3	50	0.016	2.400	0.200	7960	382	183.4
	Steel < 850 N/mm²	0.40	3	160	0.004	0.050	0.400	60000	720	14.4
		0.60	3	160	0.006	0.070	0.600	60000	1080	45.4
		0.80	3	160	0.008	0.100	0.800	60000	1440	115.2
		1.00	3	160	0.012	0.120	1.000	50930	1834	220.0
		1.20	3	160	0.014	0.140	1.200	42440	1783	299.5
		1.40	3	160	0.016	0.170	1.400	36380	1746	415.6
		1.60	3	160	0.018	0.190	1.600	31830	1719	522.5
		1.80	3	160	0.020	0.220	1.800	28295	1698	672.3
		2.00	3	160	0.022	0.240	2.000	25465	1681	806.7
	Short-chipping brass [CuZn]	0.40	3	170	0.004	0.050	0.400	60000	720	14.4
		0.60	3	170	0.006	0.070	0.600	60000	1080	45.4
		0.80	3	170	0.008	0.100	0.800	60000	1440	115.2
		1.00	3	170	0.012	0.120	1.000	54115	1948	233.8
		1.20	3	170	0.014	0.140	1.200	45095	1894	318.2
		1.40	3	170	0.016	0.170	1.400	38650	1855	441.5
		1.60	3	170	0.018	0.190	1.600	33820	1826	555.2
		1.80	3	170	0.022	0.220	1.800	30065	1984	785.8
		2.00	3	170	0.024	0.240	2.000	27055	1948	935.0
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.40	3	60	0.004	0.050	0.400	47745	573	11.5
		0.60	3	60	0.006	0.070	0.600	31830	573	24.1
		0.80	3	60	0.008	0.100	0.800	23875	573	45.8
		1.00	3	60	0.010	0.120	1.000	19100	573	68.8
		1.20	3	60	0.012	0.140	1.200	15915	573	96.2
		1.40	3	60	0.014	0.170	1.400	13640	573	136.4
		1.60	3	60	0.016	0.190	1.600	11935	573	174.2
		1.80	3	60	0.018	0.220	1.800	10610	573	226.9
		2.00	3	60	0.020	0.240	2.000	9550	573	275.0
	Titanium alloys > 300 HB [Ti6Al4V]	0.40	3	40	0.004	0.050	0.400	31830	382	7.6
		0.60	3	40	0.004	0.070	0.600	21220	255	10.7
		0.80	3	40	0.006	0.100	0.800	15915	287	22.9
		1.00	3	40	0.010	0.120	1.000	12730	382	45.8
		1.20	3	40	0.012	0.140	1.200	10610	382	64.2
		1.40	3	40	0.012	0.170	1.400	9095	327	77.9
		1.60	3	40	0.014	0.190	1.600	7960	334	101.6
		1.80	3	40	0.016	0.220	1.800	7075	340	134.5
		2.00	3	40	0.018	0.240	2.000	6365	344	165.0

Cylindrical end mills

Shank ø 3mm, 3xd

HM MG10	λ 30° γ 8°
90°	

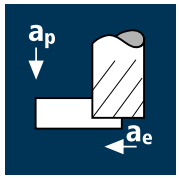
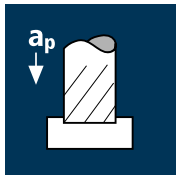


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **040**

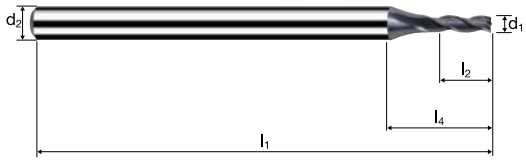
Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45713
040	0.40	3.00	40	1.20	6.50	12.5°	3	●
050	0.50	3.00	40	1.50	6.61	11.5°	3	●
060	0.60	3.00	40	1.80	6.72	11.0°	3	●
070	0.70	3.00	40	2.10	6.84	10.5°	3	●
080	0.80	3.00	40	2.40	6.95	10.0°	3	●
090	0.90	3.00	40	2.70	7.06	9.0°	3	●
100	1.00	3.00	40	3.00	7.18	8.5°	3	●
104	1.10	3.00	40	3.30	7.34	8.0°	3	●
108	1.20	3.00	40	3.60	7.45	7.5°	3	●
112	1.30	3.00	40	3.90	7.57	7.0°	3	●
116	1.40	3.00	40	4.20	7.68	6.5°	3	●
120	1.50	3.00	40	4.50	7.79	6.0°	3	●
123	1.60	3.00	40	4.80	7.91	5.5°	3	●
126	1.70	3.00	40	5.10	8.02	5.0°	3	●
130	1.80	3.00	40	5.40	8.13	4.5°	3	●
135	1.90	3.00	40	5.70	8.25	4.5°	3	●
140	2.00	3.00	40	6.00	8.36	4.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel < 850 N/mm²	2.10	3	180	0.024	2.520	0.210	27285	1965	1039.6
		2.20	3	180	0.026	2.640	0.220	26045	2032	1179.9
		2.30	3	180	0.028	2.760	0.230	24910	2092	1328.3
		2.40	3	180	0.028	2.880	0.240	23875	2006	1386.2
		2.50	3	180	0.030	3.000	0.250	22920	2063	1547.1
		2.60	3	180	0.030	3.120	0.260	22035	1983	1608.8
		2.70	3	180	0.032	3.240	0.270	21220	2037	1782.1
		2.80	3	180	0.032	3.360	0.280	20465	1965	1848.3
		2.90	3	180	0.034	3.480	0.290	19755	2015	2033.5
	Short-chipping brass [CuZn]	2.10	3	190	0.026	2.520	0.210	28800	2246	1188.8
		2.20	3	190	0.028	2.640	0.220	27490	2309	1341.2
		2.30	3	190	0.030	2.760	0.230	26295	2367	1502.3
		2.40	3	190	0.030	2.880	0.240	25200	2268	1567.6
		2.50	3	190	0.034	3.000	0.250	24190	2467	1850.6
		2.60	3	190	0.034	3.120	0.260	23260	2373	1924.6
		2.70	3	190	0.036	3.240	0.270	22400	2419	2116.3
		2.80	3	190	0.036	3.360	0.280	21600	2333	2194.7
		2.90	3	190	0.038	3.480	0.290	20855	2378	2399.4
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.10	3	70	0.020	2.520	0.210	10610	637	336.9
		2.20	3	70	0.020	2.640	0.220	10130	608	353.0
		2.30	3	70	0.022	2.760	0.230	9690	640	406.0
		2.40	3	70	0.022	2.880	0.240	9285	613	423.6
		2.50	3	70	0.024	3.000	0.250	8915	642	481.4
		2.60	3	70	0.024	3.120	0.260	8570	617	500.5
		2.70	3	70	0.026	3.240	0.270	8250	644	562.9
		2.80	3	70	0.026	3.360	0.280	7960	621	584.1
		2.90	3	70	0.028	3.480	0.290	7685	646	651.4
	Titanium alloys > 300 HB [Ti6Al4V]	2.10	3	50	0.016	2.520	0.210	7580	364	192.5
		2.20	3	50	0.018	2.640	0.220	7235	391	226.9
		2.30	3	50	0.020	2.760	0.230	6920	415	263.6
		2.40	3	50	0.020	2.880	0.240	6630	398	275.0
		2.50	3	50	0.022	3.000	0.250	6365	420	315.1
		2.60	3	50	0.022	3.120	0.260	6120	404	327.6
		2.70	3	50	0.022	3.240	0.270	5895	389	340.4
		2.80	3	50	0.022	3.360	0.280	5685	375	353.0
		2.90	3	50	0.024	3.480	0.290	5490	395	398.9
	Steel < 850 N/mm²	2.10	3	160	0.024	0.250	2.100	24250	1746	916.7
		2.20	3	160	0.024	0.260	2.200	23150	1667	953.4
		2.30	3	160	0.026	0.280	2.300	22145	1727	1112.4
		2.40	3	160	0.026	0.290	2.400	21220	1655	1152.0
		2.50	3	160	0.028	0.300	2.500	20370	1711	1283.3
		2.60	3	160	0.028	0.310	2.600	19590	1646	1326.4
		2.70	3	160	0.030	0.320	2.700	18865	1698	1467.0
		2.80	3	160	0.032	0.340	2.800	18190	1746	1662.4
		2.90	3	160	0.032	0.350	2.900	17560	1686	1711.1
	Short-chipping brass [CuZn]	2.10	3	170	0.026	0.250	2.100	25770	2010	1055.3
		2.20	3	170	0.026	0.260	2.200	24595	1918	1097.3
		2.30	3	170	0.028	0.280	2.300	23525	1976	1272.6
		2.40	3	170	0.028	0.290	2.400	22545	1894	1318.1
		2.50	3	170	0.030	0.300	2.500	21645	1948	1461.1
		2.60	3	170	0.030	0.310	2.600	20815	1873	1510.0
		2.70	3	170	0.032	0.320	2.700	20040	1924	1662.2
		2.80	3	170	0.034	0.340	2.800	19325	1971	1876.6
		2.90	3	170	0.034	0.350	2.900	18660	1903	1931.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.10	3	60	0.022	0.250	2.100	9095	600	315.2
		2.20	3	60	0.022	0.260	2.200	8680	573	327.7
		2.30	3	60	0.022	0.280	2.300	8305	548	353.0
		2.40	3	60	0.022	0.290	2.400	7960	525	365.7
		2.50	3	60	0.024	0.300	2.500	7640	550	412.6
		2.60	3	60	0.024	0.310	2.600	7345	529	426.2
		2.70	3	60	0.026	0.320	2.700	7075	552	476.8
		2.80	3	60	0.028	0.340	2.800	6820	573	545.4
		2.90	3	60	0.028	0.350	2.900	6585	553	561.4
	Titanium alloys > 300 HB [Ti6Al4V]	2.10	3	40	0.020	0.250	2.100	6065	364	191.0
		2.20	3	40	0.020	0.260	2.200	5785	347	198.5
		2.30	3	40	0.020	0.280	2.300	5535	332	213.9
		2.40	3	40	0.020	0.290	2.400	5305	318	221.5
		2.50	3	40	0.022	0.300	2.500	5095	336	252.2
		2.60	3	40	0.022	0.310	2.600	4895	323	260.4
		2.70	3	40	0.024	0.320	2.700	4715	340	293.3
		2.80	3	40	0.026	0.340	2.800	4545	355	337.5
		2.90	3	40	0.026	0.350	2.900	4390	342	347.5

Cylindrical end mills

Shank ø 3mm, 3xd

HM MG10	λ 30° γ 8°
90°	

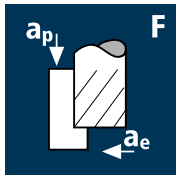


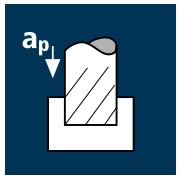
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **143**

Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	α	z	MICRO M45713
143	2.10	3.00	40	6.30	8.47	3.5°	3	●
146	2.20	3.00	40	6.60	8.59	3.0°	3	●
150	2.30	3.00	40	6.90	8.70	2.5°	3	●
155	2.40	3.00	40	7.20	8.81	2.5°	3	●
160	2.50	3.00	40	7.50	8.93	2.0°	3	●
165	2.60	3.00	45	7.80	9.04	1.5°	3	●
170	2.70	3.00	45	8.10	9.15	1.0°	3	●
172	2.80	3.00	45	8.40	9.27	1.0°	3	●
176	2.90	3.00	45	8.70	9.38	0.5°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	3	115	0.005	2.000	0.300	18305	275
		3.00	3	115	0.010	3.000	0.500	12200	366
		4.00	3	115	0.015	4.000	0.600	9150	412
		5.00	3	115	0.015	5.000	0.800	7320	329
		6.00	3	115	0.020	6.000	0.900	6100	366
		8.00	3	115	0.025	8.000	1.200	4575	343
		10.00	3	115	0.035	10.000	1.500	3660	384
	Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.300	11935	179
		3.00	3	75	0.010	3.000	0.500	7960	239
		4.00	3	75	0.015	4.000	0.600	5970	269
		5.00	3	75	0.015	5.000	0.800	4775	215
		6.00	3	75	0.020	6.000	0.900	3980	239
		8.00	3	75	0.025	8.000	1.200	2985	224
		10.00	3	75	0.035	10.000	1.500	2385	250
	Titanium alloys > 300 HB [Ti6Al4V]	2.00	3	50	0.005	2.000	0.300	7960	119
		3.00	3	50	0.010	3.000	0.500	5305	159
		4.00	3	50	0.015	4.000	0.600	3980	179
		5.00	3	50	0.015	5.000	0.800	3185	143
		6.00	3	50	0.020	6.000	0.900	2655	159
		8.00	3	50	0.025	8.000	1.200	1990	149
		10.00	3	50	0.035	10.000	1.500	1590	167
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	80	0.005	2.000	0.300	12730	191
		3.00	3	80	0.010	3.000	0.500	8490	255
		4.00	3	80	0.015	4.000	0.600	6365	286
		5.00	3	80	0.015	5.000	0.800	5095	229
		6.00	3	80	0.020	6.000	0.900	4245	255
		8.00	3	80	0.025	8.000	1.200	3185	239
		10.00	3	80	0.035	10.000	1.500	2545	267

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.00	3	85	0.005	1.600	2.000	13530	203	0.6
		3.00	3	85	0.010	2.400	3.000	9020	271	1.9
		4.00	3	85	0.010	3.200	4.000	6765	203	2.6
		5.00	3	85	0.015	4.000	5.000	5410	244	4.9
		6.00	3	85	0.015	4.800	6.000	4510	203	5.8
		8.00	3	85	0.020	6.400	8.000	3380	203	10.4
		10.00	3	85	0.030	8.000	10.000	2705	244	19.5
	Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.600	2.000	9550	143	0.5
		3.00	3	60	0.010	2.400	3.000	6365	191	1.4
		4.00	3	60	0.010	3.200	4.000	4775	143	1.8
		5.00	3	60	0.015	4.000	5.000	3820	172	3.4
		6.00	3	60	0.015	4.800	6.000	3185	143	4.1
		8.00	3	60	0.020	6.400	8.000	2385	143	7.3
		10.00	3	60	0.025	8.000	10.000	1910	143	11.5
	Titanium alloys > 300 HB [Ti6Al4V]	2.00	3	40	0.005	1.600	2.000	6365	96	0.3
		3.00	3	40	0.010	2.400	3.000	4245	127	0.9
		4.00	3	40	0.010	3.200	4.000	3185	96	1.2
		5.00	3	40	0.015	4.000	5.000	2545	115	2.3
		6.00	3	40	0.015	4.800	6.000	2120	95	2.7
		8.00	3	40	0.020	6.400	8.000	1590	95	4.9
		10.00	3	40	0.025	8.000	10.000	1275	96	7.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	55	0.005	1.600	2.000	8755	131	0.4
		3.00	3	55	0.010	2.400	3.000	5835	175	1.3
		4.00	3	55	0.010	3.200	4.000	4375	131	1.7
		5.00	3	55	0.015	4.000	5.000	3500	158	3.2
		6.00	3	55	0.015	4.800	6.000	2920	131	3.8
		8.00	3	55	0.020	6.400	8.000	2190	131	6.7
		10.00	3	55	0.025	8.000	10.000	1750	131	10.5

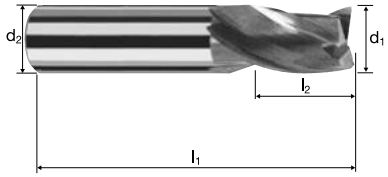
Cylindrical end mills

Smooth-edged, short-shank version

HM MG10 | λ **30°** γ **12°**

90°

Vario



Roughing

Finishing

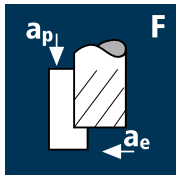
ReTool®

Rm < 850 | **Rm** 850-1100 | **Aluminium Copper / CuZn Brass Gold**

Example: **Order-N°.** Coating **P** Article-N°. **15232** ø-Code **120**

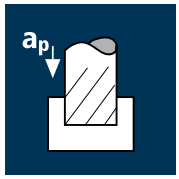
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	15232	POLYCHROM P15232
120	1.50	6.00	38	3.00	11.92	11.5°	3	●	●
140	2.00	6.00	38	3.00	11.15	11.0°	3	●	●
160	2.50	6.00	38	3.00	10.88	10.0°	3	●	●
180	3.00	6.00	38	4.00	11.96	8.0°	3	●	●
200	3.50	6.00	38	4.00	11.02	7.0°	3	●	●
220	4.00	6.00	38	5.00	11.59	5.5°	3	●	●
240	4.50	6.00	38	5.00	10.66	4.5°	3	●	●
260	5.00	6.00	38	6.00	10.72	3.0°	3	●	●
300	6.00	6.00	38	7.00	-	0.0°	3	●	●
391	8.00	8.00	41	9.00	-	0.0°	3	●	●
450	10.00	10.00	48	11.00	-	0.0°	3	●	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	105	0.005	2.000	0.200	16710	251
	3.00	3	105	0.010	3.000	0.300	11140	334
	4.00	3	105	0.015	4.000	0.400	8355	376
	5.00	3	105	0.015	5.000	0.500	6685	301
	6.00	3	105	0.020	6.000	0.600	5570	334
	8.00	3	105	0.025	8.000	0.800	4180	314
	10.00	3	105	0.035	10.000	1.000	3340	351
Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.200	11935	179
	3.00	3	75	0.010	3.000	0.300	7960	239
	4.00	3	75	0.015	4.000	0.400	5970	269
	5.00	3	75	0.015	5.000	0.500	4775	215
	6.00	3	75	0.020	6.000	0.600	3980	239
	8.00	3	75	0.025	8.000	0.800	2985	224
	10.00	3	75	0.035	10.000	1.000	2385	250
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	40	0.005	2.000	0.200	6365	96
	3.00	3	40	0.010	3.000	0.300	4245	127
	4.00	3	40	0.015	4.000	0.400	3185	143
	5.00	3	40	0.015	5.000	0.500	2545	115
	6.00	3	40	0.020	6.000	0.600	2120	127
	8.00	3	40	0.025	8.000	0.800	1590	119
	10.00	3	40	0.035	10.000	1.000	1275	134
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	80	0.005	2.000	0.200	12730	191
	3.00	3	80	0.010	3.000	0.300	8490	255
	4.00	3	80	0.015	4.000	0.400	6365	286
	5.00	3	80	0.015	5.000	0.500	5095	229
	6.00	3	80	0.020	6.000	0.600	4245	255
	8.00	3	80	0.025	8.000	0.800	3185	239
	10.00	3	80	0.035	10.000	1.000	2545	267

Application



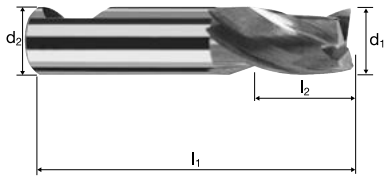
Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	75	0.005	1.000	2.000	11935	179	0.4
	3.00	3	75	0.010	1.500	3.000	7960	239	1.1
	4.00	3	75	0.010	2.000	4.000	5970	179	1.4
	5.00	3	75	0.015	2.500	5.000	4775	215	2.7
	6.00	3	75	0.015	3.000	6.000	3980	179	3.2
	8.00	3	75	0.020	4.000	8.000	2985	179	5.7
	10.00	3	75	0.030	5.000	10.000	2385	215	10.7
Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.000	2.000	9550	143	0.3
	3.00	3	60	0.010	1.500	3.000	6365	191	0.9
	4.00	3	60	0.010	2.000	4.000	4775	143	1.1
	5.00	3	60	0.015	2.500	5.000	3820	172	2.1
	6.00	3	60	0.015	3.000	6.000	3185	143	2.6
	8.00	3	60	0.020	4.000	8.000	2385	143	4.6
	10.00	3	60	0.025	5.000	10.000	1910	143	7.2
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	30	0.005	1.000	2.000	4775	72	0.1
	3.00	3	30	0.010	1.500	3.000	3185	96	0.4
	4.00	3	30	0.010	2.000	4.000	2385	72	0.6
	5.00	3	30	0.015	2.500	5.000	1910	86	1.1
	6.00	3	30	0.015	3.000	6.000	1590	72	1.3
	8.00	3	30	0.020	4.000	8.000	1195	72	2.3
	10.00	3	30	0.025	5.000	10.000	955	72	3.6
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	55	0.005	1.000	2.000	8755	131	0.3
	3.00	3	55	0.010	1.500	3.000	5835	175	0.8
	4.00	3	55	0.010	2.000	4.000	4375	131	1.1
	5.00	3	55	0.015	2.500	5.000	3500	158	2.0
	6.00	3	55	0.015	3.000	6.000	2920	131	2.4
	8.00	3	55	0.020	4.000	8.000	2190	131	4.2
	10.00	3	55	0.025	5.000	10.000	1750	131	6.6

Cylindrical end mills

Smooth-edged, short-shank version

Favora® F

HM MG10	λ 30° γ 12°
90°	



Roughing

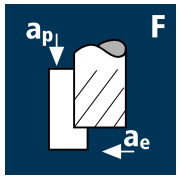
Finishing

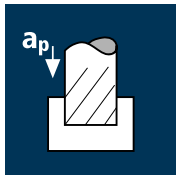
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **5336** ø-Code **120**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5336	POLYCHROM P5236
120	1.50	6.00	38	3.00	11.92	11.5°	3		●
140	2.00	6.00	38	3.00	11.15	11.0°	3		●
160	2.50	6.00	38	3.00	10.88	10.0°	3		●
180	3.00	6.00	38	4.00	11.96	8.0°	3		●
200	3.50	6.00	38	4.00	11.02	7.0°	3		●
220	4.00	6.00	38	5.00	11.59	5.5°	3		●
240	4.50	6.00	38	5.00	10.66	4.5°	3		●
260	5.00	6.00	38	6.00	10.72	3.0°	3		●
300	6.00	6.00	38	7.00	-	0.0°	3		●
331	7.00	8.00	41	8.00	12.72	2.5°	3		●
391	8.00	8.00	41	9.00	-	0.0°	3		●
420	9.00	10.00	48	10.00	14.72	2.5°	3		●
450	10.00	10.00	48	11.00	-	0.0°	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	3	105	0.005	2.000	0.200	16710	251
		3.00	3	105	0.010	3.000	0.300	11140	334
		4.00	3	105	0.015	4.000	0.400	8355	376
		5.00	3	105	0.015	5.000	0.500	6685	301
		6.00	3	105	0.020	6.000	0.600	5570	334
		8.00	3	105	0.025	8.000	0.800	4180	314
		10.00	3	105	0.035	10.000	1.000	3340	351
	Steel 850 - 1100 N/mm²	2.00	3	75	0.005	2.000	0.200	11935	179
		3.00	3	75	0.010	3.000	0.300	7960	239
		4.00	3	75	0.015	4.000	0.400	5970	269
		5.00	3	75	0.015	5.000	0.500	4775	215
		6.00	3	75	0.020	6.000	0.600	3980	239
		8.00	3	75	0.025	8.000	0.800	2985	224
		10.00	3	75	0.035	10.000	1.000	2385	250
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	40	0.005	2.000	0.200	6365	96
		3.00	3	40	0.010	3.000	0.300	4245	127
		4.00	3	40	0.015	4.000	0.400	3185	143
		5.00	3	40	0.015	5.000	0.500	2545	115
		6.00	3	40	0.020	6.000	0.600	2120	127
		8.00	3	40	0.025	8.000	0.800	1590	119
		10.00	3	40	0.035	10.000	1.000	1275	134
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	80	0.005	2.000	0.200	12730	191
		3.00	3	80	0.010	3.000	0.300	8490	255
		4.00	3	80	0.015	4.000	0.400	6365	286
		5.00	3	80	0.015	5.000	0.500	5095	229
		6.00	3	80	0.020	6.000	0.600	4245	255
		8.00	3	80	0.025	8.000	0.800	3185	239
		10.00	3	80	0.035	10.000	1.000	2545	267

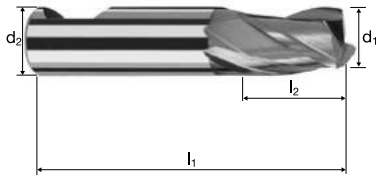
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	2.00	3	75	0.005	1.000	2.000	11935	179	0.4
		3.00	3	75	0.010	1.500	3.000	7960	239	1.1
		4.00	3	75	0.010	2.000	4.000	5970	179	1.4
		5.00	3	75	0.015	2.500	5.000	4775	215	2.7
		6.00	3	75	0.015	3.000	6.000	3980	179	3.2
		8.00	3	75	0.020	4.000	8.000	2985	179	5.7
		10.00	3	75	0.030	5.000	10.000	2385	215	10.7
	Steel 850 - 1100 N/mm²	2.00	3	60	0.005	1.000	2.000	9550	143	0.3
		3.00	3	60	0.010	1.500	3.000	6365	191	0.9
		4.00	3	60	0.010	2.000	4.000	4775	143	1.1
		5.00	3	60	0.015	2.500	5.000	3820	172	2.1
		6.00	3	60	0.015	3.000	6.000	3185	143	2.6
		8.00	3	60	0.020	4.000	8.000	2385	143	4.6
		10.00	3	60	0.025	5.000	10.000	1910	143	7.2
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	30	0.005	1.000	2.000	4775	72	0.1
		3.00	3	30	0.010	1.500	3.000	3185	96	0.4
		4.00	3	30	0.010	2.000	4.000	2385	72	0.6
		5.00	3	30	0.015	2.500	5.000	1910	86	1.1
		6.00	3	30	0.015	3.000	6.000	1590	72	1.3
		8.00	3	30	0.020	4.000	8.000	1195	72	2.3
		10.00	3	30	0.025	5.000	10.000	955	72	3.6
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	55	0.005	1.000	2.000	8755	131	0.3
		3.00	3	55	0.010	1.500	3.000	5835	175	0.8
		4.00	3	55	0.010	2.000	4.000	4375	131	1.1
		5.00	3	55	0.015	2.500	5.000	3500	158	2.0
		6.00	3	55	0.015	3.000	6.000	2920	131	2.4
		8.00	3	55	0.020	4.000	8.000	2190	131	4.2
		10.00	3	55	0.025	5.000	10.000	1750	131	6.6

Cylindrical end mills

Smooth-edged, short-shank version

HM MG10	λ 30° γ 12°

45°



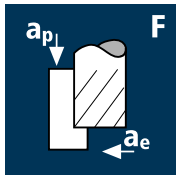
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **5335** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	POLYCHROM P5335
140	2.00	6.00	38	3.00	11.15	0.05	11.0°	3	●
180	3.00	6.00	38	4.00	11.96	0.05	8.0°	3	●
220	4.00	6.00	38	5.00	11.59	0.05	5.5°	3	●
260	5.00	6.00	38	6.00	10.72	0.10	3.0°	3	●
300	6.00	6.00	38	7.00	-	0.10	0.0°	3	●
391	8.00	8.00	41	9.00	-	0.10	0.0°	3	●
450	10.00	10.00	48	11.00	-	0.15	0.0°	3	●

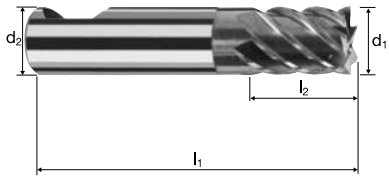
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	140	0.010	3.000	0.150	14855	594
		4.00	4	140	0.010	4.000	0.200	11140	446
		5.00	4	140	0.015	5.000	0.250	8915	535
		6.00	6	140	0.015	6.000	0.300	7425	668
		8.00	6	140	0.025	8.000	0.400	5570	836
		10.00	6	140	0.030	10.000	0.500	4455	802
	Steel 850 - 1100 N/mm²	3.00	4	100	0.010	3.000	0.150	10610	424
		4.00	4	100	0.010	4.000	0.200	7960	318
		5.00	4	100	0.015	5.000	0.250	6365	382
		6.00	6	100	0.015	6.000	0.300	5305	478
		8.00	6	100	0.025	8.000	0.400	3980	597
		10.00	6	100	0.030	10.000	0.500	3185	573
	Steel 1100 - 1300 N/mm²	3.00	4	75	0.010	3.000	0.150	7960	318
		4.00	4	75	0.010	4.000	0.200	5970	239
		5.00	4	75	0.015	5.000	0.250	4775	287
		6.00	6	75	0.015	6.000	0.300	3980	358
		8.00	6	75	0.025	8.000	0.400	2985	448
		10.00	6	75	0.030	10.000	0.500	2385	429
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	90	0.010	3.000	0.150	9550	382
		4.00	4	90	0.010	4.000	0.200	7160	286
		5.00	4	90	0.015	5.000	0.250	5730	344
		6.00	6	90	0.015	6.000	0.300	4775	430
		8.00	6	90	0.025	8.000	0.400	3580	537
		10.00	6	90	0.030	10.000	0.500	2865	516
	Cast iron (lamellar / spheroidal)	3.00	4	120	0.010	3.000	0.150	12730	509
		4.00	4	120	0.010	4.000	0.200	9550	382
		5.00	4	120	0.015	5.000	0.250	7640	458
		6.00	6	120	0.015	6.000	0.300	6365	573
		8.00	6	120	0.025	8.000	0.400	4775	716
		10.00	6	120	0.030	10.000	0.500	3820	688
	Cold work tool steel (12% Cr), high alloyed [1.2379]	3.00	4	65	0.010	3.000	0.150	6895	276
		4.00	4	65	0.010	4.000	0.200	5175	207
		5.00	4	65	0.015	5.000	0.250	4140	248
		6.00	6	65	0.015	6.000	0.300	3450	311
		8.00	6	65	0.025	8.000	0.400	2585	388
		10.00	6	65	0.030	10.000	0.500	2070	373
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	3.00	4	95	0.010	3.000	0.150	10080	403
		4.00	4	95	0.010	4.000	0.200	7560	302
		5.00	4	95	0.015	5.000	0.250	6050	363
		6.00	6	95	0.015	6.000	0.300	5040	454
		8.00	6	95	0.025	8.000	0.400	3780	567
		10.00	6	95	0.030	10.000	0.500	3025	545
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	3.00	4	50	0.010	3.000	0.150	5305	212
		4.00	4	50	0.010	4.000	0.200	3980	159
		5.00	4	50	0.015	5.000	0.250	3185	191
		6.00	6	50	0.015	6.000	0.300	2655	239
		8.00	6	50	0.025	8.000	0.400	1990	299
		10.00	6	50	0.030	10.000	0.500	1590	286

Cylindrical end mills

Finishing, short-shank version

HM MG10 | λ **45°** γ **10°**

90°



Roughing

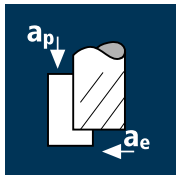
Finishing

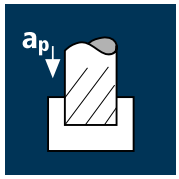
ReTool®

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **5337** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	α	z	POLYCHROM P5337	POLYCHROM P5237
180	3.00	6.00	38	4.00	11.96	8.0°	4		●
220	4.00	6.00	38	5.00	11.59	5.5°	4		●
260	5.00	6.00	38	6.00	10.72	3.0°	4		●
300	6.00	6.00	38	7.00	-	0.0°	6		●
391	8.00	8.00	41	9.00	-	0.0°	6		●
450	10.00	10.00	48	11.00	-	0.0°	6		●

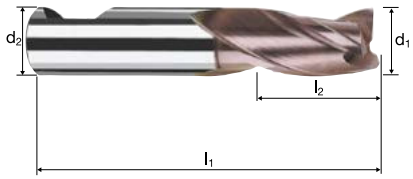
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	1.00	3	54	0.005	1.000	0.100	17190	258
		2.00	3	54	0.010	2.000	0.200	8595	258
		2.50	3	54	0.010	2.500	0.250	6875	206
		3.00	3	54	0.010	3.000	0.300	5730	172
		3.50	3	54	0.015	3.500	0.350	4910	221
		4.00	3	54	0.015	4.000	0.400	4295	193
		5.00	3	54	0.020	5.000	0.500	3440	206
		5.50	3	54	0.020	5.500	0.550	3125	188
		6.00	3	54	0.025	6.000	0.600	2865	215
	Steel 850 - 1100 N/mm²	1.00	3	48	0.005	1.000	0.100	15280	229
		2.00	3	48	0.010	2.000	0.200	7640	229
		2.50	3	48	0.010	2.500	0.250	6110	183
		3.00	3	48	0.010	3.000	0.300	5095	153
		3.50	3	48	0.015	3.500	0.350	4365	196
		4.00	3	48	0.015	4.000	0.400	3820	172
		5.00	3	48	0.020	5.000	0.500	3055	183
		5.50	3	48	0.020	5.500	0.550	2780	167
		6.00	3	48	0.025	6.000	0.600	2545	191
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	3	25	0.005	1.000	0.100	7960	119
		2.00	3	25	0.010	2.000	0.200	3980	119
		2.50	3	25	0.010	2.500	0.250	3185	96
		3.00	3	25	0.010	3.000	0.300	2655	80
		3.50	3	25	0.015	3.500	0.350	2275	102
		4.00	3	25	0.015	4.000	0.400	1990	90
		5.00	3	25	0.020	5.000	0.500	1590	95
		5.50	3	25	0.020	5.500	0.550	1445	87
		6.00	3	25	0.025	6.000	0.600	1325	99
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	1.00	3	22	0.005	1.000	0.100	7005	105
		2.00	3	22	0.010	2.000	0.200	3500	105
		2.50	3	22	0.010	2.500	0.250	2800	84
		3.00	3	22	0.010	3.000	0.300	2335	70
		3.50	3	22	0.015	3.500	0.350	2000	90
		4.00	3	22	0.015	4.000	0.400	1750	79
		5.00	3	22	0.020	5.000	0.500	1400	84
		5.50	3	22	0.020	5.500	0.550	1275	77
		6.00	3	22	0.025	6.000	0.600	1165	87

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm²	1.00	3	50	0.005	0.500	1.000	15915	239	0.1
		2.00	3	50	0.010	1.000	2.000	7960	239	0.5
		2.50	3	50	0.010	1.250	2.500	6365	191	0.6
		3.00	3	50	0.010	1.500	3.000	5305	159	0.7
		3.50	3	50	0.015	1.750	3.500	4545	205	1.3
		4.00	3	50	0.015	2.000	4.000	3980	179	1.4
		5.00	3	50	0.020	2.500	5.000	3185	191	2.4
		5.50	3	50	0.020	2.750	5.500	2895	174	2.6
		6.00	3	50	0.025	3.000	6.000	2655	199	3.6
	Steel 850 - 1100 N/mm²	1.00	3	45	0.005	0.500	1.000	14325	215	0.1
		2.00	3	45	0.010	1.000	2.000	7160	215	0.4
		2.50	3	45	0.010	1.250	2.500	5730	172	0.5
		3.00	3	45	0.010	1.500	3.000	4775	143	0.6
		3.50	3	45	0.015	1.750	3.500	4095	184	1.1
		4.00	3	45	0.015	2.000	4.000	3580	161	1.3
		5.00	3	45	0.020	2.500	5.000	2865	172	2.1
		5.50	3	45	0.020	2.750	5.500	2605	156	2.4
		6.00	3	45	0.025	3.000	6.000	2385	179	3.2
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	3	22	0.005	0.500	1.000	7005	105	0.1
		2.00	3	22	0.010	1.000	2.000	3500	105	0.2
		2.50	3	22	0.010	1.250	2.500	2800	84	0.3
		3.00	3	22	0.010	1.500	3.000	2335	70	0.3
		3.50	3	22	0.015	1.750	3.500	2000	90	0.6
		4.00	3	22	0.015	2.000	4.000	1750	79	0.6
		5.00	3	22	0.020	2.500	5.000	1400	84	1.1
		5.50	3	22	0.020	2.750	5.500	1275	77	1.2
		6.00	3	22	0.025	3.000	6.000	1165	87	1.6
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	1.00	3	20	0.005	0.500	1.000	6365	96	0.0
		2.00	3	20	0.010	1.000	2.000	3185	96	0.2
		2.50	3	20	0.010	1.250	2.500	2545	76	0.2
		3.00	3	20	0.010	1.500	3.000	2120	64	0.3
		3.50	3	20	0.015	1.750	3.500	1820	82	0.5
		4.00	3	20	0.015	2.000	4.000	1590	72	0.6
		5.00	3	20	0.020	2.500	5.000	1275	77	1.0
		5.50	3	20	0.020	2.750	5.500	1155	69	1.0
		6.00	3	20	0.025	3.000	6.000	1060	80	1.4

Cylindrical end mills

Smooth-edged, short-shank version

HSS-E Co8	λ 30° γ 15°
90°	



Roughing

Finishing

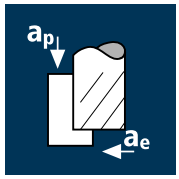
ReTool®

Rm < 850	Rm 850-1100						Inox Stainless		Copper

Example: **Order-N°.** Coating **U** Article-N°. **0400** ø-Code **100**

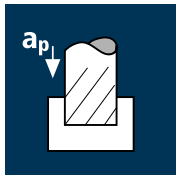
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0400
100	1.00	6.00	34	3.00	10.48	14.0°	3	●
120	1.50	6.00	34	3.00	9.99	13.0°	3	●
130	1.80	6.00	35	4.00	10.78	11.5°	3	●
140	2.00	6.00	35	4.00	10.61	11.0°	3	●
150	2.30	6.00	36	5.00	12.00	9.0°	3	●
160	2.50	6.00	36	5.00	12.00	8.5°	3	●
170	2.80	6.00	36	5.00	12.00	8.0°	3	●
180	3.00	6.00	36	5.00	12.00	7.5°	3	●
190	3.30	6.00	37	6.00	13.00	6.0°	3	●
200	3.50	6.00	37	6.00	13.00	5.5°	3	●
210	3.80	6.00	38	7.00	14.00	4.5°	3	●
220	4.00	6.00	38	7.00	14.00	4.5°	3	●
230	4.30	6.00	38	7.00	14.00	3.5°	3	●
240	4.50	6.00	38	7.00	14.00	3.5°	3	●
250	4.80	6.00	39	8.00	15.00	2.5°	3	●
260	5.00	6.00	39	8.00	15.00	2.0°	3	●
270	5.30	6.00	39	8.00	15.00	1.5°	3	●
280	5.50	6.00	39	8.00	15.00	1.0°	3	●
290	5.75	6.00	39	8.00	15.00	0.0°	3	●
300	6.00	6.00	39	8.00	-	0.0°	3	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	6.50	3	54	0.025	6.500	0.650	2645	198
	7.00	3	54	0.030	7.000	0.700	2455	221
	7.50	3	54	0.030	7.500	0.750	2290	206
	8.00	3	54	0.030	8.000	0.800	2150	194
	8.50	3	54	0.035	8.500	0.850	2020	212
	9.00	3	54	0.035	9.000	0.900	1910	201
	9.50	3	54	0.040	9.500	0.950	1810	217
	10.00	3	54	0.040	10.000	1.000	1720	206
Steel 850 - 1100 N/mm²	6.50	3	48	0.025	6.500	0.650	2350	176
	7.00	3	48	0.030	7.000	0.700	2185	197
	7.50	3	48	0.030	7.500	0.750	2035	183
	8.00	3	48	0.030	8.000	0.800	1910	172
	8.50	3	48	0.035	8.500	0.850	1800	189
	9.00	3	48	0.035	9.000	0.900	1700	179
	9.50	3	48	0.040	9.500	0.950	1610	193
	10.00	3	48	0.040	10.000	1.000	1530	184
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.50	3	25	0.025	6.500	0.650	1225	92
	7.00	3	25	0.030	7.000	0.700	1135	102
	7.50	3	25	0.030	7.500	0.750	1060	95
	8.00	3	25	0.030	8.000	0.800	995	90
	8.50	3	25	0.035	8.500	0.850	935	98
	9.00	3	25	0.035	9.000	0.900	885	93
	9.50	3	25	0.040	9.500	0.950	840	101
	10.00	3	25	0.040	10.000	1.000	795	95
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.50	3	22	0.025	6.500	0.650	1075	81
	7.00	3	22	0.030	7.000	0.700	1000	90
	7.50	3	22	0.030	7.500	0.750	935	84
	8.00	3	22	0.030	8.000	0.800	875	79
	8.50	3	22	0.035	8.500	0.850	825	87
	9.00	3	22	0.035	9.000	0.900	780	82
	9.50	3	22	0.040	9.500	0.950	735	88
	10.00	3	22	0.040	10.000	1.000	700	84

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	6.50	3	50	0.025	3.250	6.500	2450	184	3.9
	7.00	3	50	0.030	3.500	7.000	2275	205	5.0
	7.50	3	50	0.030	3.750	7.500	2120	191	5.4
	8.00	3	50	0.030	4.000	8.000	1990	179	5.7
	8.50	3	50	0.035	4.250	8.500	1870	196	7.1
	9.00	3	50	0.035	4.500	9.000	1770	186	7.5
	9.50	3	50	0.040	4.750	9.500	1675	201	9.1
	10.00	3	50	0.040	5.000	10.000	1590	191	9.5
Steel 850 - 1100 N/mm²	6.50	3	45	0.025	3.250	6.500	2205	165	3.5
	7.00	3	45	0.030	3.500	7.000	2045	184	4.5
	7.50	3	45	0.030	3.750	7.500	1910	172	4.8
	8.00	3	45	0.030	4.000	8.000	1790	161	5.2
	8.50	3	45	0.035	4.250	8.500	1685	177	6.4
	9.00	3	45	0.035	4.500	9.000	1590	167	6.8
	9.50	3	45	0.040	4.750	9.500	1510	181	8.2
	10.00	3	45	0.040	5.000	10.000	1430	172	8.6
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.50	3	22	0.025	3.250	6.500	1075	81	1.7
	7.00	3	22	0.030	3.500	7.000	1000	90	2.2
	7.50	3	22	0.030	3.750	7.500	935	84	2.4
	8.00	3	22	0.030	4.000	8.000	875	79	2.5
	8.50	3	22	0.035	4.250	8.500	825	87	3.1
	9.00	3	22	0.035	4.500	9.000	780	82	3.3
	9.50	3	22	0.040	4.750	9.500	735	88	4.0
	10.00	3	22	0.040	5.000	10.000	700	84	4.2
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	6.50	3	20	0.025	3.250	6.500	980	74	1.6
	7.00	3	20	0.030	3.500	7.000	910	82	2.0
	7.50	3	20	0.030	3.750	7.500	850	77	2.2
	8.00	3	20	0.030	4.000	8.000	795	72	2.3
	8.50	3	20	0.035	4.250	8.500	750	79	2.8
	9.00	3	20	0.035	4.500	9.000	705	74	3.0
	9.50	3	20	0.040	4.750	9.500	670	80	3.6
	10.00	3	20	0.040	5.000	10.000	635	76	3.8

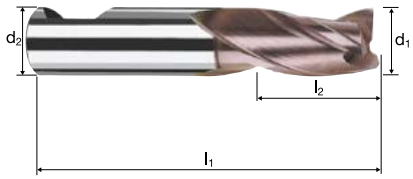
Cylindrical end mills

Smooth-edged, short-shank version

HSS-E Co8

λ **30°**
γ **15°**

90°



Roughing

Finishing

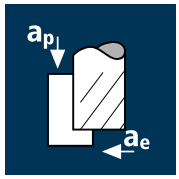
ReTool®

Rm < 850	**Rm** 850-1100						**Inox** Stainless		**Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0400** ø-Code **311**

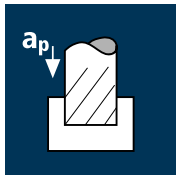
Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z		UNICUT-4X U0400
311	6.50	8.00	42	10.00	17.50	2.5°	3		●
331	7.00	8.00	42	10.00	17.50	2.0°	3		●
351	7.50	8.00	42	10.00	17.50	1.0°	3		●
391	8.00	8.00	43	11.00	-	0.0°	3		●
410	8.50	10.00	48	11.00	20.50	2.5°	3		●
420	9.00	10.00	48	11.00	20.50	1.5°	3		●
430	9.50	10.00	48	11.00	20.50	1.0°	3		●
450	10.00	10.00	50	13.00	-	0.0°	3		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Steel < 850 N/mm²	2.00	3	54	0.005	3.000	0.200	8595	129
	3.00	3	54	0.010	4.500	0.300	5730	172
	4.00	3	54	0.015	6.000	0.400	4295	193
	5.00	3	54	0.015	7.500	0.500	3440	155
	6.00	3	54	0.020	9.000	0.600	2865	172
	7.00	3	54	0.025	10.500	0.700	2455	184
	8.00	3	54	0.025	12.000	0.800	2150	161
	9.00	3	54	0.030	13.500	0.900	1910	172
	10.00	3	54	0.035	15.000	1.000	1720	181
Steel 850 - 1100 N/mm²	2.00	3	48	0.005	3.000	0.200	7640	115
	3.00	3	48	0.010	4.500	0.300	5095	153
	4.00	3	48	0.015	6.000	0.400	3820	172
	5.00	3	48	0.015	7.500	0.500	3055	138
	6.00	3	48	0.020	9.000	0.600	2545	153
	7.00	3	48	0.025	10.500	0.700	2185	164
	8.00	3	48	0.025	12.000	0.800	1910	143
	9.00	3	48	0.030	13.500	0.900	1700	153
	10.00	3	48	0.035	15.000	1.000	1530	161
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	25	0.005	3.000	0.200	3980	60
	3.00	3	25	0.010	4.500	0.300	2655	80
	4.00	3	25	0.015	6.000	0.400	1990	90
	5.00	3	25	0.015	7.500	0.500	1590	72
	6.00	3	25	0.020	9.000	0.600	1325	80
	7.00	3	25	0.025	10.500	0.700	1135	85
	8.00	3	25	0.025	12.000	0.800	995	75
	9.00	3	25	0.030	13.500	0.900	885	80
	10.00	3	25	0.035	15.000	1.000	795	84
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	2.00	3	22	0.005	3.000	0.200	3500	53
	3.00	3	22	0.010	4.500	0.300	2335	70
	4.00	3	22	0.015	6.000	0.400	1750	79
	5.00	3	22	0.015	7.500	0.500	1400	63
	6.00	3	22	0.020	9.000	0.600	1165	70
	7.00	3	22	0.025	10.500	0.700	1000	75
	8.00	3	22	0.025	12.000	0.800	875	66
	9.00	3	22	0.030	13.500	0.900	780	70
	10.00	3	22	0.035	15.000	1.000	700	74

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	2.00	3	50	0.005	1.000	2.000	7960	119	0.2
	3.00	3	50	0.010	1.500	3.000	5305	159	0.7
	4.00	3	50	0.010	2.000	4.000	3980	119	1.0
	5.00	3	50	0.015	2.500	5.000	3185	143	1.8
	6.00	3	50	0.015	3.000	6.000	2655	120	2.2
	7.00	3	50	0.020	3.500	7.000	2275	137	3.3
	8.00	3	50	0.025	4.000	8.000	1990	149	4.8
	9.00	3	50	0.025	4.500	9.000	1770	133	5.4
	10.00	3	50	0.030	5.000	10.000	1590	143	7.2
Steel 850 - 1100 N/mm²	2.00	3	45	0.005	1.000	2.000	7160	107	0.2
	3.00	3	45	0.010	1.500	3.000	4775	143	0.6
	4.00	3	45	0.010	2.000	4.000	3580	107	0.9
	5.00	3	45	0.015	2.500	5.000	2865	129	1.6
	6.00	3	45	0.015	3.000	6.000	2385	107	1.9
	7.00	3	45	0.020	3.500	7.000	2045	123	3.0
	8.00	3	45	0.025	4.000	8.000	1790	134	4.3
	9.00	3	45	0.025	4.500	9.000	1590	119	4.8
	10.00	3	45	0.030	5.000	10.000	1430	129	6.4
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	22	0.005	1.000	2.000	3500	53	0.1
	3.00	3	22	0.010	1.500	3.000	2335	70	0.3
	4.00	3	22	0.010	2.000	4.000	1750	53	0.4
	5.00	3	22	0.015	2.500	5.000	1400	63	0.8
	6.00	3	22	0.015	3.000	6.000	1165	52	0.9
	7.00	3	22	0.020	3.500	7.000	1000	60	1.5
	8.00	3	22	0.025	4.000	8.000	875	66	2.1
	9.00	3	22	0.025	4.500	9.000	780	59	2.4
	10.00	3	22	0.030	5.000	10.000	700	63	3.2
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	2.00	3	20	0.005	1.000	2.000	3185	48	0.1
	3.00	3	20	0.010	1.500	3.000	2120	64	0.3
	4.00	3	20	0.010	2.000	4.000	1590	48	0.4
	5.00	3	20	0.015	2.500	5.000	1275	57	0.7
	6.00	3	20	0.015	3.000	6.000	1060	48	0.9
	7.00	3	20	0.020	3.500	7.000	910	55	1.3
	8.00	3	20	0.025	4.000	8.000	795	60	1.9
	9.00	3	20	0.025	4.500	9.000	705	53	2.1
	10.00	3	20	0.030	5.000	10.000	635	57	2.9

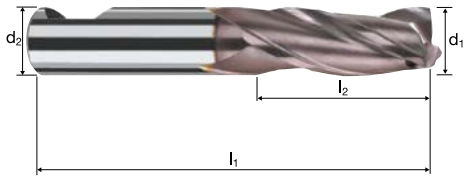
Cylindrical end mills

Smooth-edged, short-shank version

HSS-E Co8

λ **30°**
γ **15°**

90°



Roughing

Finishing

ReTool®

Rm < 850 | **Rm** 850-1100 | **Inox** Stainless | **Copper**

Example: **Order-N°.** Coating **U** Article-N°. **0410** ø-Code **140**

Ø Code	d_1 f8	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U0410
140	2.00	6.00	38	7.00	13.61	8.5°	3	●
160	2.50	6.00	39	8.00	15.00	7.0°	3	●
180	3.00	6.00	39	8.00	15.00	6.0°	3	●
200	3.50	6.00	41	10.00	17.00	4.5°	3	●
220	4.00	6.00	42	11.00	18.00	3.5°	3	●
240	4.50	6.00	42	11.00	18.00	2.5°	3	●
260	5.00	6.00	44	13.00	20.00	1.5°	3	●
280	5.50	6.00	44	13.00	20.00	1.0°	3	●
300	6.00	6.00	44	13.00	-	0.0°	3	●
311	6.50	8.00	48	16.00	23.50	2.0°	3	●
331	7.00	8.00	48	16.00	23.50	1.5°	3	●
351	7.50	8.00	48	16.00	23.50	1.0°	3	●
391	8.00	8.00	51	19.00	-	0.0°	3	●
410	8.50	10.00	56	19.00	28.50	2.0°	3	●
420	9.00	10.00	56	19.00	28.50	1.5°	3	●
430	9.50	10.00	56	19.00	28.50	1.0°	3	●
450	10.00	10.00	59	22.00	-	0.0°	3	●

passion
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End milling tools for 3D machining
Ball nose

Tolerance r ±0.003

N° 7500	**SpheroX**	X-Generation X	3xd F SF	d_1 1 – 12	Rm 1100-1500	HRC 48- >60	Ti Titanium	329

Tolerance r ±0.005

N° 7470	**SpheroX**	X-Generation X	3xd R F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	HSS / Ti	331
N° 7490	**SpheroX**	X-Generation X	3xd HDC R/F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	HSS / Ti	333
N° 7400	**SpheroX**	X-Generation X	3xd R F	d_1 1 – 12	Rm 1100-1500	HRC 48- >60	Ti Titanium	335
N° 7460	**SpheroX**	X-Generation X	3xd F SF	d_1 6 – 12	Rm 1100-1500	HRC 48- >60	Ti Titanium	337
N° 7540	**Sphericut**	Base-X B	3xd PF F	d_1 1 – 16	Rm <850-1500	Inox Stainless		339
N° 7550	**Sphericut**	Base-X B	3xd HDC R/F	d_1 2 – 20	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	341
N° 7472	**SpheroX**	X-Generation X	4.5xd R F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	HSS / Ti	343
N° 7492	**SpheroX**	X-Generation X	4.5xd HDC R/F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	HSS / Ti	345
N° 7402	**SpheroX**	X-Generation X	4.5xd R F	d_1 1 – 12	Rm 1100-1500	HRC 48- >60	Ti Titanium	347

End milling tools for 3D machining
Ball nose

Tolerance r ±0.005

N° 7474	**SpheroX**	X-Generation X	6xd R F	d_1 1 – 16	Rm 1300-1500	HRC 48->60	HSS / Ti	349
N° 7494	**SpheroX**	X-Generation X	6xd HDC R/F	d_1 1 – 16	Rm 1300-1500	HRC 48->60	HSS / Ti	351
N° 7404	**SpheroX**	X-Generation X	6xd R F	d_1 1 – 12	Rm 1100-1500	HRC 48->60	Ti Titanium	353
N° 7544	**Sphericut**	Base-X B	6xd PF F	d_1 1 – 16	Rm <850-1500	Inox Stainless		355
N° 7554	**Sphericut**	Base-X B	6xd HDC R/F	d_1 3 – 16	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	357
N° 7478	**SpheroX**	X-Generation X	9xd F SF	d_1 1 – 16	Rm 1300-1500	HRC 48->60	HSS / Ti	359

End milling tools for 3D machining
Ball nose

Tolerance r f8 (-/-)

N° 5286

Sphericut

Base-X B	3xd PF F	d_1 1 – 16	Rm 1100-1500	HRC 48-56		361

N° 45298

Favora® F	3xd PF F	d_1 3 – 12	Rm 850-1300			363

End milling tools for 3D machining
Circular arc milling cutter

Spherical

N° 8530

ArCutX

X-Generation | PF | F | r_1 2, 3, 4 r_2 750, 1000 | HRC <48-56 | Inox / Ti | Al Aluminium Alloy | 365

Spherical, micro

N° 8535

ArCutX

X-Generation | PF | F | r_1 0.5, 1, 2 r_2 250, 350 | HRC <48-56 | Inox / Ti | Al Aluminium Alloy | 367

Toric

N° 8540

ArCutX

X-Generation | PF | F | r_1 1.25, 2, 3.5 r_2 30, 40, 50 | HRC <48-56 | Inox / Ti | Al Aluminium Alloy | 369

Flat surfaces

N° 8550

ArCutX

X-Generation | PF | F | r_1 1 r_2 250 | HRC <48-56 | Inox / Ti | Al Aluminium Alloy | 371

End milling tools for 3D machining
Corner radius

Tolerance r 0/+0.015

N° 7210	**XSpeed-H**	X-Generation X	3xd HDC R/F	r 0.2, 0.5	HRC 56- >60	HSS		373
N° 7200	**XSpeed**	X-Generation X	3xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48-60		375
N° 7100	**ToroX**	X-Generation X	3xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1100-1500	HRC 48-60		379
N° 7212	**XSpeed-H**	X-Generation X	4.5xd HDC R/F	r 0.2, 0.5	HRC 56- >60	HSS		383
N° 7204	**XSpeed**	X-Generation X	6xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48-60		385
N° 7104	**ToroX**	X-Generation X	6xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1100-1500	HRC 48-60		389

Tolerance r 0/+0.03

N° 5250	**Multispeed**	X-Generation X	3xd PF F	r 0.5, 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		393
N° 7340	**Torocut**	Base-X B	3xd R PF	r 0.2, 0.5, 1.0, 1.5, 2.0	Rm <850-1500	Inox Stainless		395
N° 5252	**Multispeed**	X-Generation X	5xd PF F	r 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		399
N° 7344	**Torocut**	Base-X B	6xd R PF	r 0.2, 0.5, 1.0	Rm <850-1500	Inox Stainless		401

End milling tools for 3D machining
Corner radius

N° 8507 / 8607		HX	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0	HRC 48- >60	HSS		153
N° 8107 / 8207		MFC	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	Rm <850-1500	HRC 48-56	Inox / Ti	167
N° 8307 / 8407	new!	E-Cut	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 2.5, 4.0	Rm <850-1500	Inox Stainless		171
$l_2 = 2.2xd_1$ $l_3 = 3.0xd_1$									
N° 8517 / 8617		HX	X-Generation X	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0	HRC 48- >60	HSS		187
N° 8117 / 8217		MFC	Base-X B	Roughing HPC Roughing HDC Finishing	r 0.2, 0.5, 1.0, 1.5, 2.0, 2.5	Rm <850-1500	HRC 48-56	Inox / Ti	191

End milling tools for 3D machining
HFC

Cylindrical neck

N° 7610		XFeed-H	X-Generation X	3xd R	d_1 1 – 16	HRC 56- >60	HSS		405
N° 7630	new!	XFeed	X-Generation X	3xd R	d_1 1 – 16	Rm 850-1500	HRC 48-56		407
N° 7600	ToolSchool	XFeed	X-Generation X	3xd R	d_1 1 – 16	Rm 850-1500	HRC 48- >60		409
N° 7620		XFeed	X-Generation X	3xd R	d_1 6 – 16	Rm 1100-1500	HRC 48-56		411
N° 7612		XFeed-H	X-Generation X	4.5xd R	d_1 1 – 16	HRC 56- >60	HSS		413
N° 7632	new!	XFeed	X-Generation X	4.5xd R	d_1 1 – 16	Rm 850-1500	HRC 48-56		415
N° 7614		XFeed-H	X-Generation X	6xd R	d_1 3 – 16	HRC 56- >60	HSS		417
N° 7634	new!	XFeed	X-Generation X	6xd R	d_1 3 – 16	Rm 850-1500	HRC 48-56		419
N° 7604	ToolSchool	XFeed	X-Generation X	6xd R	d_1 3 – 16	Rm 850-1500	HRC 48- >60		421
N° 7624		XFeed	X-Generation X	6xd R	d_1 6 – 16	Rm 1100-1500	HRC 48-56		423
N° 7608		XFeed	X-Generation X	9xd R	d_1 3 – 16	Rm 850-1500	HRC 48- >60		425

Ball nose

N° 5580

X-Generation | 3xd | F | SF | d_1 1 – 12 | HM <1200 HV | HM <1600 HV | 427

End milling tools for 3D machining
CBN

Ball nose

N° 31700

X-Generation X | 3xd | SF | d_1 4 – 12 | HRC 56- >60 | 429

Corner radius

N° 31420

X-Generation X | 3xd | SF | r 0.5 | HRC 56- >60 | 431

N° 31410

X-Generation X | 3xd | SF | r 1.0, 1.25, 1.5, 2.0, 2.5, 3.0 | HRC 56- >60 | 433

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm

N° 6460	**MicroHX**	X-Generation	**1xd**	d_1 0.4 – 2.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	435
N° 6461	**MicroHX**	X-Generation	**2xd**	d_1 0.4 – 2.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	437
N° 6481	**MicroHX**	X-Generation	**2.5xd**	d_1 0.4 – 1.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	439
N° 6462	**MicroHX**	X-Generation	**3xd**	d_1 0.4 – 3.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	441
N° 6482	**MicroHX**	X-Generation	**3.5xd**	d_1 0.4 – 1.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	443
N° 6463	**MicroHX**	X-Generation	**4xd**	d_1 0.4 – 2.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	445
N° 6483	**MicroHX**	X-Generation	**4.5xd**	d_1 0.4 – 1.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	447
N° 6464	**MicroHX**	X-Generation	**5xd**	d_1 0.4 – 3.0	**Rm** 1300-1500	**HRC** 48- >60	**HSS**	449

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm

N° 6560	MicroX	X-Generation X	1xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	451
N° 6561	MicroX	X-Generation X	2xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	453
N° 6581	MicroX	X-Generation X	2.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	455
N° 6562	MicroX	X-Generation X	3xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	457
N° 6582	MicroX	X-Generation X	3.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	459
N° 6563	MicroX	X-Generation X	4xd	d_1 0.1 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	461
N°6583	MicroX	X-Generation X	4.5xd	d_1 0.1 – 1.0	Rm 850-1500	HRC 48-60	Inox / Ti	463
N° 6564	MicroX	X-Generation X	5xd	d_1 0.1 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	465
N° 6565	MicroX	X-Generation X	6xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	467
N° 6579	MicroX	X-Generation X	7xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	469
N° 6566	MicroX	X-Generation X	8xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	471
N° 6567	MicroX	X-Generation X	9xd	d_1 0.2 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	473
N° 6568	MicroX	X-Generation X	10xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	475

End milling tools for 3D machining
Micro with ball nose

Shank ø 6mm, conical neck 0.9°

N° 6765	**MicroX**	X-Generation X	**6xd**	d_1 0.5 – 2.0	Rm 850-1500	HRC 48-60	Inox / Ti	477
N° 6766	**MicroX**	X-Generation X	**8xd**	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	479
N° 6768	**MicroX**	X-Generation X	**10xd**	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	481
N° 6770	**MicroX**	X-Generation X	**12xd**	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	483
N° 6772	**MicroX**	X-Generation X	**15xd**	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	485
N° 6774	**MicroX**	X-Generation X	**20xd**	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	487

End milling tools for 3D machining
Micro with ball nose

Shank ø 4mm

N° 6832	**Microcut**	Base-X B	**1xd**	d_1 0.2 – 2.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	489
N° 6836	**Microcut**	Base-X B	**3xd**	d_1 0.2 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	491
N° 6840	**Microcut**	Base-X B	**5xd**	d_1 0.2 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	493
N° 6844	**Microcut**	Base-X B	**8xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	495
N° 6846	**Microcut**	Base-X B	**10xd**	d_1 0.5 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	497
N° 6847	**Microcut**	Base-X B	**12xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	499
N° 6848	**Microcut**	Base-X B	**15xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	501
N° 6849	**Microcut**	Base-X B	**20xd**	d_1 1.0 – 3.0	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	503

End milling tools for 3D machining
Micro with ball nose

Shank ø 3mm

N° 5782	**Microcut**	Base-X B	**3xd**	d_1 0.2 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	505
N° 5784	**Microcut**	Base-X B	**5xd**	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	507
N° 5786	**Microcut**	Base-X B	**8xd**	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	509
N° 45785		Forvra® F	**3xd**	d_1 0.3 – 3.0	**Rm** <850-1100			511

End milling tools for 3D machining
Micro with corner radius

Shank ø 6mm

N° 6531	MicroX	X-Generation X	2xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	513
N° 6532	MicroX	X-Generation X	3xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	515
N° 6533	MicroX	X-Generation X	4xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	519
N° 6534	MicroX	X-Generation X	5xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	521
N° 6535	MicroX	X-Generation X	6xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	525
N° 6536	MicroX	X-Generation X	8xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	527
N° 6538	MicroX	X-Generation X	10xd	r 0.05, 0.1, 0.2, 0.3, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	531

Shank ø 6mm, conical neck 0.9°

N° 6735	MicroX	X-Generation X	6xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	535
N° 6736	MicroX	X-Generation X	8xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	537
N° 6738	MicroX	X-Generation X	10xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	539
N° 6740	MicroX	X-Generation X	12xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	541
N° 6742	MicroX	X-Generation X	15xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	543
N° 6744	MicroX	X-Generation X	20xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	545

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End milling tools for 3D machining
Micro with corner radius

Shank ø 6mm, Z4

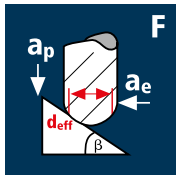
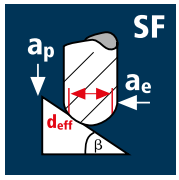
N° 6632	**MicroX**	X-Generation X	**3xd**	r 0.1, 0.2, 0.5	**Rm** 1100-1500	**HRC** 48-60		547
N° 6634	**MicroX**	X-Generation X	**5xd**	r 0.1, 0.2, 0.5	**Rm** 1100-1500	**HRC** 48-60		549

Shank ø 4mm

N° 6816	**Microcut**	Base-X B	**1xd**	r 0.1, 0.2	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	551
N° 6818	**Microcut**	Base-X B	**3xd**	r 0.1, 0.2	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	553
N° 6820	**Microcut**	Base-X B	**5xd**	r 0.1, 0.2	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	555
N° 6823	**Microcut**	Base-X B	**8xd**	r 0.1, 0.2	**Rm** <850-1500	**HRC** 48-56	**Inox** / **Ti**	557

Shank ø 3mm

N° 5752	**Microcut**	Base-X B	**3xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	559
N° 5754	**Microcut**	Base-X B	**5xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	561
N° 5756	**Microcut**	Base-X B	**8xd**	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	563

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	300	0.030	0.050	0.050	0.94	60000	3600	45°
		2.00	2	300	0.035	0.070	0.070	1.84	51898	3633	45°
		3.00	2	300	0.040	0.100	0.100	2.74	34851	2788	45°
		4.00	2	300	0.070	0.120	0.120	3.62	26379	3693	45°
		5.00	2	300	0.080	0.150	0.150	4.53	21080	3373	45°
		6.00	2	300	0.085	0.150	0.150	5.36	17816	3029	45°
		8.00	2	300	0.095	0.170	0.170	7.05	13545	2574	45°
		10.00	2	300	0.100	0.200	0.200	8.77	10889	2178	45°
		12.00	2	300	0.105	0.250	0.250	10.56	9043	1899	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	250	0.030	0.050	0.050	0.94	60000	3600	45°
		2.00	2	250	0.035	0.070	0.070	1.84	43249	3027	45°
		3.00	2	250	0.040	0.100	0.100	2.74	29043	2323	45°
		4.00	2	250	0.065	0.120	0.120	3.62	21983	2858	45°
		5.00	2	250	0.075	0.150	0.150	4.53	17567	2635	45°
		6.00	2	250	0.080	0.150	0.150	5.36	14847	2376	45°
		8.00	2	250	0.090	0.170	0.170	7.05	11288	2032	45°
		10.00	2	250	0.095	0.200	0.200	8.77	9074	1724	45°
		12.00	2	250	0.100	0.250	0.250	10.56	7536	1507	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
		2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
		3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
		4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
		5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
		6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
		8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
		10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
		12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
		2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
		3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
		4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
		5.00	2	150	0.070	0.150	0.150	4.53	10540	1476	45°
		6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
		8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
		10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
		12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	400	0.025	0.020	0.020	0.88	60000	3000	45°
		2.00	2	400	0.030	0.020	0.020	1.67	60000	3600	45°
		3.00	2	400	0.035	0.030	0.030	2.50	50930	3565	45°
		4.00	2	400	0.050	0.030	0.030	3.27	38937	3894	45°
		5.00	2	400	0.055	0.030	0.030	4.04	31516	3467	45°
		6.00	2	400	0.060	0.030	0.030	4.80	26526	3183	45°
		8.00	2	400	0.065	0.030	0.030	6.31	20178	2623	45°
		10.00	2	400	0.070	0.040	0.040	7.91	16097	2254	45°
		12.00	2	400	0.075	0.040	0.040	9.41	13531	2030	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	350	0.025	0.020	0.020	0.88	60000	3000	45°
		2.00	2	350	0.030	0.020	0.020	1.67	60000	3600	45°
		3.00	2	350	0.035	0.030	0.030	2.50	44563	3119	45°
		4.00	2	350	0.050	0.030	0.030	3.27	34070	3407	45°
		5.00	2	350	0.050	0.030	0.030	4.04	27576	2758	45°
		6.00	2	350	0.055	0.030	0.030	4.80	23210	2553	45°
		8.00	2	350	0.060	0.030	0.030	6.31	17656	2119	45°
		10.00	2	350	0.065	0.040	0.040	7.91	14085	1831	45°
		12.00	2	350	0.070	0.040	0.040	9.41	11839	1658	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	280	0.025	0.020	0.020	0.88	60000	3000	45°
		2.00	2	280	0.025	0.020	0.020	1.67	53369	2669	45°
		3.00	2	280	0.030	0.030	0.030	2.50	35651	2139	45°
		4.00	2	280	0.045	0.030	0.030	3.27	27256	2453	45°
		5.00	2	280	0.050	0.030	0.030	4.04	22061	2206	45°
		6.00	2	280	0.055	0.030	0.030	4.80	18568	2043	45°
		8.00	2	280	0.060	0.030	0.030	6.31	14125	1695	45°
		10.00	2	280	0.065	0.040	0.040	7.91	11268	1465	45°
		12.00	2	280	0.070	0.040	0.040	9.41	9471	1326	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	180	0.020	0.020	0.020	0.88	60000	2400	45°
		2.00	2	180	0.025	0.020	0.020	1.67	34309	1716	45°
		3.00	2	180	0.030	0.030	0.030	2.50	22918	1375	45°
		4.00	2	180	0.045	0.030	0.030	3.27	17522	1577	45°
		5.00	2	180	0.045	0.030	0.030	4.04	14182	1276	45°
		6.00	2	180	0.050	0.030	0.030	4.80	11937	1194	45°
		8.00	2	180	0.055	0.030	0.030	6.31	9080	999	45°
		10.00	2	180	0.060	0.040	0.040	7.91	7243	869	45°
		12.00	2	180	0.065	0.040	0.040	9.41	6089	792	45°

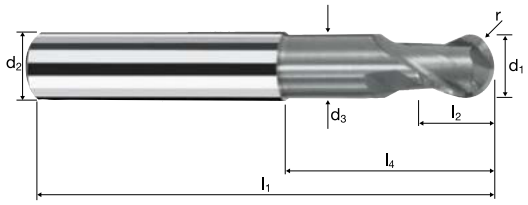
Ball nose end mills SpheroX

Tolerance r ±0.003, 3xd

X-Generation

II

HM XA	λ 30° γ -10°



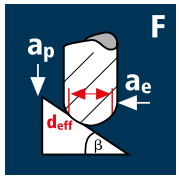
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **X** Article-N°. **7500** ø-Code **100**

Ø Code	d1	d2 h4	d3	l1	l2	l3	l4	r ±0.003	α	z	X-AL X7500
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

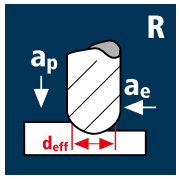
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC									
1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Hardened tool steel 56 - 60 HRC									
1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°
Hardened tool steel > 60 HRC									
1.00	2	90	0.020	0.040	0.040	0.93	30804	1232	45°
2.00	2	90	0.025	0.055	0.055	1.80	15915	796	45°
3.00	2	90	0.030	0.075	0.075	2.68	10690	641	45°
4.00	2	90	0.050	0.090	0.090	3.54	8093	809	45°
5.00	2	90	0.055	0.115	0.115	4.43	6467	711	45°
6.00	2	90	0.060	0.115	0.115	5.24	5467	656	45°
8.00	2	90	0.070	0.130	0.130	6.90	4152	581	45°
10.00	2	90	0.070	0.150	0.150	8.58	3339	468	45°
12.00	2	90	0.075	0.190	0.190	10.34	2771	416	45°
High speed steel, hardened 64 - 70 HRC									
1.00	2	60	0.015	0.025	0.025	0.89	21459	644	45°
2.00	2	60	0.020	0.035	0.035	1.74	10976	439	45°
3.00	2	60	0.020	0.050	0.050	2.59	7374	295	45°
4.00	2	60	0.035	0.060	0.060	3.43	5568	390	45°
5.00	2	60	0.040	0.075	0.075	4.29	4452	356	45°
6.00	2	60	0.040	0.075	0.075	5.08	3760	301	45°
8.00	2	60	0.050	0.085	0.085	6.70	2851	285	45°
10.00	2	60	0.050	0.100	0.100	8.34	2290	229	45°
12.00	2	60	0.055	0.125	0.125	10.03	1904	209	45°

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC									
1.00	2	100	0.028	0.180	0.200	0.77	41339	2315	0.1
2.00	2	111	0.048	0.280	0.400	1.39	25419	2440	0.3
3.00	2	111	0.060	0.360	0.600	1.95	18119	2174	0.5
4.00	2	111	0.072	0.480	0.800	2.60	13589	1957	0.8
5.00	2	111	0.080	0.600	1.000	3.25	10872	1740	1.0
6.00	2	111	0.086	0.720	1.200	3.90	9060	1558	1.3
8.00	2	111	0.106	0.960	1.600	5.20	6795	1441	2.2
10.00	2	111	0.120	1.200	2.000	6.50	5436	1305	3.1
12.00	2	111	0.125	1.440	2.400	7.80	4530	1133	3.9
Hardened tool steel 56 - 60 HRC									
1.00	2	68	0.017	0.160	0.200	0.73	29651	1008	0.0
2.00	2	68	0.029	0.250	0.400	1.32	16398	951	0.1
3.00	2	68	0.036	0.320	0.600	1.85	11700	842	0.2
4.00	2	68	0.043	0.430	0.800	2.48	8728	751	0.3
5.00	2	68	0.048	0.540	1.000	3.10	6982	670	0.4
6.00	2	68	0.052	0.650	1.200	3.73	5803	604	0.5
8.00	2	68	0.063	0.860	1.600	4.96	4364	550	0.8
10.00	2	68	0.072	1.080	2.000	6.21	3486	502	1.1
12.00	2	68	0.075	1.300	2.400	7.46	2901	435	1.4
Hardened tool steel > 60 HRC									
1.00	2	51	0.014	0.130	0.200	0.67	24230	678	0.0
2.00	2	51	0.023	0.200	0.400	1.20	13528	622	0.0
3.00	2	51	0.029	0.250	0.600	1.66	9779	567	0.1
4.00	2	51	0.035	0.340	0.800	2.23	7280	510	0.1
5.00	2	51	0.038	0.420	1.000	2.77	5861	445	0.2
6.00	2	51	0.041	0.500	1.200	3.32	4890	401	0.2
8.00	2	51	0.051	0.670	1.600	4.43	3665	374	0.4
10.00	2	51	0.058	0.840	2.000	5.55	2925	339	0.6
12.00	2	51	0.060	1.010	2.400	6.66	2438	293	0.7
High speed steel, hardened 64 - 70 HRC									
1.00	2	34	0.011	0.130	0.200	0.67	16153	355	0.0
2.00	2	34	0.018	0.200	0.400	1.20	9019	325	0.0
3.00	2	34	0.023	0.250	0.600	1.66	6520	300	0.0
4.00	2	34	0.028	0.340	0.800	2.23	4853	272	0.1
5.00	2	34	0.031	0.420	1.000	2.77	3907	242	0.1
6.00	2	34	0.033	0.500	1.200	3.32	3260	215	0.1
8.00	2	34	0.041	0.670	1.600	4.43	2443	200	0.2
10.00	2	34	0.046	0.840	2.000	5.55	1950	179	0.3
12.00	2	34	0.048	1.010	2.400	6.66	1625	156	0.4

Ball nose end mills SpheroX

Tolerance r ±0.005, 3xd

X-Generation X

II

HM XA

λ 30°
γ -10°

h4

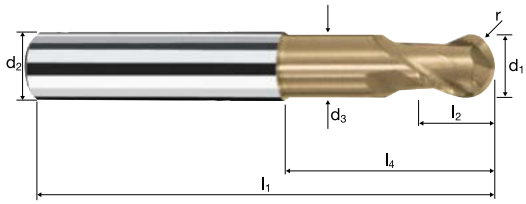
sc

d1

r

R

F

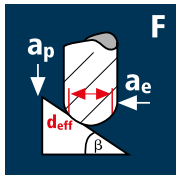
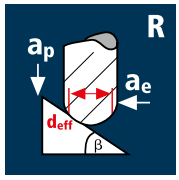


ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **V** Article-N°. **7470** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V
											V7470
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	4	160	0.014	0.030	0.090	0.91	55967	3134	45°
		2.00	4	160	0.022	0.030	0.120	1.72	29610	2606	45°
		3.00	4	200	0.034	0.050	0.150	2.59	24580	3343	45°
		4.00	4	200	0.042	0.050	0.180	3.39	18779	3155	45°
		5.00	4	200	0.048	0.050	0.210	4.17	15267	2931	45°
		6.00	4	200	0.052	0.050	0.230	4.94	12887	2681	45°
		8.00	4	200	0.056	0.080	0.280	6.67	9545	2138	45°
		10.00	4	200	0.060	0.080	0.310	8.22	7745	1859	45°
		12.00	4	200	0.066	0.100	0.340	9.89	6437	1699	45°
	Hardened tool steel 56 - 60 HRC	1.00	4	120	0.014	0.030	0.090	0.91	41975	2351	45°
		2.00	4	120	0.022	0.030	0.120	1.72	22208	1954	45°
		3.00	4	150	0.034	0.050	0.150	2.59	18435	2507	45°
		4.00	4	150	0.042	0.050	0.180	3.39	14085	2366	45°
		5.00	4	150	0.048	0.050	0.210	4.17	11450	2198	45°
		6.00	4	150	0.052	0.050	0.230	4.94	9665	2010	45°
		8.00	4	150	0.056	0.080	0.280	6.67	7158	1603	45°
		10.00	4	150	0.060	0.080	0.310	8.22	5809	1394	45°
		12.00	4	150	0.066	0.100	0.340	9.89	4828	1275	45°
	Hardened tool steel > 60 HRC	1.00	4	80	0.014	0.030	0.090	0.91	27983	1567	45°
		2.00	4	80	0.022	0.030	0.120	1.72	14805	1303	45°
		3.00	4	100	0.034	0.050	0.150	2.59	12290	1671	45°
		4.00	4	100	0.042	0.050	0.180	3.39	9390	1578	45°
		5.00	4	100	0.048	0.050	0.210	4.17	7633	1466	45°
		6.00	4	100	0.052	0.050	0.230	4.94	6444	1340	45°
		8.00	4	100	0.056	0.080	0.280	6.67	4772	1069	45°
		10.00	4	100	0.060	0.080	0.310	8.22	3872	929	45°
		12.00	4	100	0.066	0.100	0.340	9.89	3219	850	45°
	High speed steel, hardened 64 - 70 HRC	1.00	4	50	0.014	0.030	0.090	0.91	17490	979	45°
		2.00	4	50	0.022	0.030	0.120	1.72	9253	814	45°
		3.00	4	60	0.034	0.050	0.150	2.59	7374	1003	45°
		4.00	4	60	0.042	0.050	0.180	3.39	5634	947	45°
		5.00	4	60	0.048	0.050	0.210	4.17	4580	879	45°
		6.00	4	60	0.052	0.050	0.230	4.94	3866	804	45°
		8.00	4	60	0.056	0.080	0.280	6.67	2863	641	45°
		10.00	4	60	0.060	0.080	0.310	8.22	2323	558	45°
		12.00	4	60	0.066	0.100	0.340	9.89	1931	510	45°
	Hardened tool steel 52 - 56 HRC	1.00	4	130	0.023	0.180	0.180	0.99	41798	3845	30°
		2.00	4	130	0.039	0.280	0.280	1.92	21552	3362	30°
		3.00	4	130	0.049	0.360	0.360	2.83	14622	2866	30°
		4.00	4	130	0.058	0.480	0.480	3.77	10976	2546	30°
		5.00	4	130	0.065	0.600	0.600	4.71	8786	2284	30°
		6.00	4	130	0.070	0.720	0.720	5.66	7311	2047	30°
		8.00	4	130	0.086	0.960	0.960	7.54	5488	1888	30°
		10.00	4	130	0.098	1.200	1.200	9.43	4388	1720	30°
		12.00	4	130	0.101	1.440	1.440	11.31	3659	1478	30°
	Hardened tool steel 56 - 60 HRC	1.00	4	80	0.014	0.162	0.162	0.98	25984	1455	30°
		2.00	4	80	0.023	0.252	0.252	1.90	13403	1233	30°
		3.00	4	80	0.029	0.324	0.324	2.79	9127	1059	30°
		4.00	4	80	0.035	0.432	0.432	3.72	6845	958	30°
		5.00	4	80	0.039	0.540	0.540	4.65	5476	854	30°
		6.00	4	80	0.042	0.648	0.648	5.58	4564	767	30°
		8.00	4	80	0.051	0.864	0.864	7.44	3423	698	30°
		10.00	4	80	0.058	1.080	1.080	9.30	2738	635	30°
		12.00	4	80	0.061	1.296	1.296	11.16	2282	557	30°
	Hardened tool steel > 60 HRC	1.00	4	60	0.011	0.126	0.126	0.95	20104	885	30°
		2.00	4	60	0.019	0.196	0.196	1.83	10436	793	30°
		3.00	4	60	0.023	0.252	0.252	2.69	7100	653	30°
		4.00	4	60	0.028	0.336	0.336	3.59	5320	596	30°
		5.00	4	60	0.031	0.420	0.420	4.48	4263	529	30°
		6.00	4	60	0.034	0.504	0.504	5.38	3550	483	30°
		8.00	4	60	0.041	0.672	0.672	7.17	2664	437	30°
		10.00	4	60	0.047	0.840	0.840	8.96	2132	401	30°
		12.00	4	60	0.049	1.008	1.008	10.76	1775	348	30°
	High speed steel, hardened 64 - 70 HRC	1.00	4	40	0.009	0.126	0.126	0.95	13403	483	30°
		2.00	4	40	0.015	0.196	0.196	1.83	6958	418	30°
		3.00	4	40	0.019	0.252	0.252	2.69	4733	360	30°
		4.00	4	40	0.023	0.336	0.336	3.59	3547	326	30°
		5.00	4	40	0.025	0.420	0.420	4.48	2842	284	30°
		6.00	4	40	0.027	0.504	0.504	5.38	2367	256	30°
		8.00	4	40	0.033	0.672	0.672	7.17	1776	234	30°
		10.00	4	40	0.037	0.840	0.840	8.96	1421	210	30°
		12.00	4	40	0.039	1.008	1.008	10.76	1183	185	30°

Ball nose end mills SpheroX

Tolerance r ±0.005, 3xd

HM XA

λ 40°
γ 0°

h4

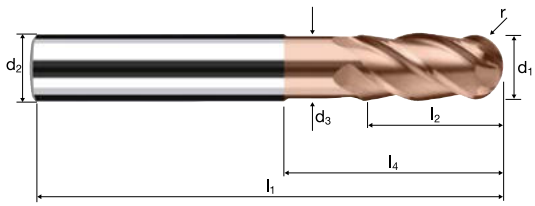
sc

Vario

r

R

F



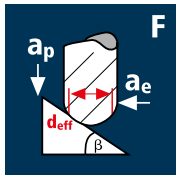
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **H** Article-N°. **7490** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Si H7490
100	1.00	6.00	0.95	57	2.00	3.10	13.18	0.500	11.8°	4	●
140	2.00	6.00	1.90	57	4.00	6.00	14.31	1.000	9.0°	4	●
180	3.00	6.00	2.80	57	6.00	9.00	15.63	1.500	6.4°	4	●
220	4.00	6.00	3.70	57	8.00	12.00	16.95	2.000	4.0°	4	●
260	5.00	6.00	4.60	57	10.00	15.00	18.27	2.500	2.0°	4	●
300	6.00	6.00	5.50	57	12.00	19.34	20.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	63	16.00	25.29	26.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	72	20.00	30.20	31.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	83	24.00	36.13	37.00	6.000	0.0°	4	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	8.000	0.0°	4	●

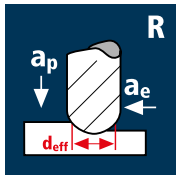
Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	300	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	300	0.035	0.070	0.070	1.84	51898	3633	45°
	3.00	2	300	0.040	0.100	0.100	2.74	34851	2788	45°
	4.00	2	300	0.070	0.120	0.120	3.62	26379	3693	45°
	5.00	2	300	0.080	0.150	0.150	4.53	21080	3373	45°
	6.00	2	300	0.085	0.150	0.150	5.36	17816	3029	45°
	8.00	2	300	0.095	0.170	0.170	7.05	13545	2574	45°
	10.00	2	300	0.100	0.200	0.200	8.77	10889	2178	45°
	12.00	2	300	0.105	0.250	0.250	10.56	9043	1899	45°
Hardened tool steel 48 - 52 HRC	1.00	2	250	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	250	0.035	0.070	0.070	1.84	43249	3027	45°
	3.00	2	250	0.040	0.100	0.100	2.74	29043	2323	45°
	4.00	2	250	0.065	0.120	0.120	3.62	21983	2858	45°
	5.00	2	250	0.075	0.150	0.150	4.53	17567	2635	45°
	6.00	2	250	0.080	0.150	0.150	5.36	14847	2376	45°
	8.00	2	250	0.090	0.170	0.170	7.05	11288	2032	45°
	10.00	2	250	0.095	0.200	0.200	8.77	9074	1724	45°
	12.00	2	250	0.100	0.250	0.250	10.56	7536	1507	45°
Hardened tool steel 52 - 56 HRC	1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
	2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
	3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
	4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
	5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
	6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
	8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
	10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
	12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
	2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
	3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
	4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
	5.00	2	150	0.070	0.150	0.150	4.53	10540	1476	45°
	6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
	8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
	10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
	12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°

Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 42 - 48 HRC	1.00	2	100	0.034	0.180	0.200	0.77	41339	2811	0.1
	2.00	2	170	0.058	0.280	0.400	1.39	38930	4516	0.5
	3.00	2	170	0.073	0.360	0.600	1.95	27750	4052	0.9
	4.00	2	170	0.087	0.480	0.800	2.60	20813	3622	1.4
	5.00	2	170	0.097	0.600	1.000	3.25	16650	3230	1.9
	6.00	2	170	0.105	0.720	1.200	3.90	13875	2914	2.5
	8.00	2	170	0.128	0.960	1.600	5.20	10406	2664	4.1
	10.00	2	170	0.145	1.200	2.000	6.50	8325	2414	5.8
	12.00	2	170	0.151	1.440	2.400	7.80	6938	2095	7.2
Hardened tool steel 48 - 52 HRC	1.00	2	100	0.031	0.180	0.200	0.77	41339	2563	0.1
	2.00	2	136	0.053	0.280	0.400	1.39	31144	3301	0.4
	3.00	2	136	0.066	0.360	0.600	1.95	22200	2930	0.6
	4.00	2	136	0.079	0.480	0.800	2.60	16650	2631	1.0
	5.00	2	136	0.088	0.600	1.000	3.25	13320	2344	1.4
	6.00	2	136	0.095	0.720	1.200	3.90	11100	2109	1.8
	8.00	2	136	0.116	0.960	1.600	5.20	8325	1931	3.0
	10.00	2	136	0.132	1.200	2.000	6.50	6660	1758	4.2
	12.00	2	136	0.137	1.440	2.400	7.80	5550	1521	5.3
Hardened tool steel 52 - 56 HRC	1.00	2	100	0.028	0.180	0.200	0.77	41339	2315	0.1
	2.00	2	111	0.048	0.280	0.400	1.39	25419	2440	0.3
	3.00	2	111	0.060	0.360	0.600	1.95	18119	2174	0.5
	4.00	2	111	0.072	0.480	0.800	2.60	13589	1957	0.8
	5.00	2	111	0.080	0.600	1.000	3.25	10872	1740	1.0
	6.00	2	111	0.086	0.720	1.200	3.90	9060	1558	1.3
	8.00	2	111	0.106	0.960	1.600	5.20	6795	1441	2.2
	10.00	2	111	0.120	1.200	2.000	6.50	5436	1305	3.1
	12.00	2	111	0.125	1.440	2.400	7.80	4530	1133	3.9
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	85	0.031	0.180	0.200	0.77	35138	2179	0.1
	2.00	2	85	0.053	0.280	0.400	1.39	19465	2063	0.2
	3.00	2	85	0.066	0.360	0.600	1.95	13875	1832	0.4
	4.00	2	85	0.079	0.480	0.800	2.60	10406	1644	0.6
	5.00	2	85	0.088	0.600	1.000	3.25	8325	1465	0.9
	6.00	2	85	0.095	0.720	1.200	3.90	6938	1318	1.1
	8.00	2	85	0.116	0.960	1.600	5.20	5203	1207	1.9
	10.00	2	85	0.132	1.200	2.000	6.50	4163	1099	2.6
	12.00	2	85	0.137	1.440	2.400	7.80	3469	951	3.3

Ball nose end mills SpheroX

Tolerance r ±0.005, 3xd

X-Generation X

II

HM XA

λ 30°
γ -10°

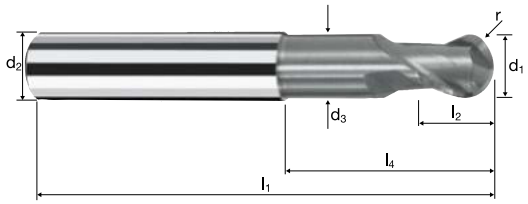
h4

d1

r

R

F

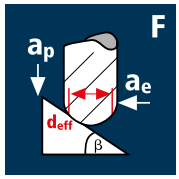
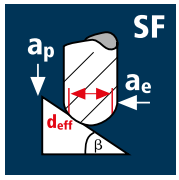


ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **X** Article-N°. **7400** ø-Code **100**

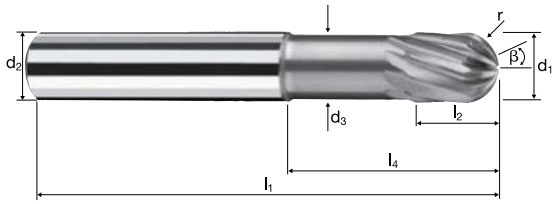
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X7400
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2		●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2		●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2		●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2		●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2		●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6.00	8	300	0.055	0.120	0.120	5.26	18155	7988	45°
		8.00	10	300	0.060	0.140	0.140	6.94	13760	8256	45°
		10.00	12	300	0.065	0.160	0.160	8.62	11078	8641	45°
		12.00	16	300	0.070	0.180	0.180	10.29	9280	10394	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	250	0.050	0.120	0.120	5.26	15129	6052	45°
		8.00	10	250	0.055	0.140	0.140	6.94	11466	6306	45°
		10.00	12	250	0.060	0.160	0.160	8.62	9232	6647	45°
		12.00	16	250	0.065	0.180	0.180	10.29	7733	8042	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	200	0.050	0.120	0.120	5.26	12103	4841	45°
		8.00	10	200	0.055	0.140	0.140	6.94	9173	5045	45°
		10.00	12	200	0.060	0.160	0.160	8.62	7385	5317	45°
		12.00	16	200	0.065	0.180	0.180	10.29	6187	6435	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	150	0.045	0.120	0.120	5.26	9077	3268	45°
		8.00	10	150	0.050	0.140	0.140	6.94	6880	3440	45°
		10.00	12	150	0.055	0.160	0.160	8.62	5539	3656	45°
		12.00	16	150	0.060	0.180	0.180	10.29	4640	4454	45°
	Hardened tool steel 42 - 48 HRC	6.00	8	400	0.030	0.030	0.030	4.80	26526	6366	45°
		8.00	10	400	0.035	0.030	0.030	6.31	20178	7062	45°
		10.00	12	400	0.035	0.040	0.040	7.91	16097	6761	45°
		12.00	16	400	0.040	0.040	0.040	9.41	13531	8660	45°
	Hardened tool steel 48 - 52 HRC	6.00	8	350	0.030	0.030	0.030	4.80	23210	5570	45°
		8.00	10	350	0.035	0.030	0.030	6.31	17656	6180	45°
		10.00	12	350	0.035	0.040	0.040	7.91	14085	5916	45°
		12.00	16	350	0.040	0.040	0.040	9.41	11839	7577	45°
	Hardened tool steel 52 - 56 HRC	6.00	8	280	0.025	0.030	0.030	4.80	18568	3714	45°
		8.00	10	280	0.030	0.030	0.030	6.31	14125	4238	45°
		10.00	12	280	0.030	0.040	0.040	7.91	11268	4057	45°
		12.00	16	280	0.035	0.040	0.040	9.41	9471	5304	45°
	Hardened tool steel 56 - 60 HRC	6.00	8	180	0.025	0.030	0.030	4.80	11937	2387	45°
		8.00	10	180	0.030	0.030	0.030	6.31	9080	2724	45°
		10.00	12	180	0.030	0.040	0.040	7.91	7243	2608	45°
		12.00	16	180	0.035	0.040	0.040	9.41	6089	3410	45°

Ball nose end mills SpheroX

Tolerance r ±0.005, 3xd

HM XA	λ 30° γ -10°

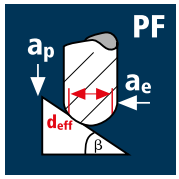
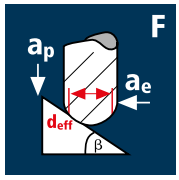


ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **X** Article-N°. **7460** ø-Code **300**

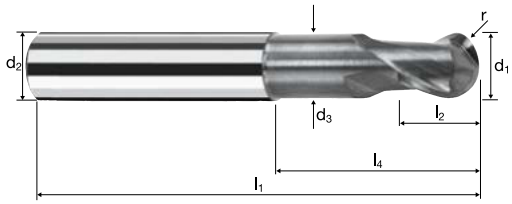
Ø Code	d1	d2 h4	d3	l1	l2	l3	l4	r ±0.005	β [°]	z	X-AL X7460
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	25°	8	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	25°	10	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	25°	12	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	25°	16	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	1.00	2	128	0.048	0.090	0.090	0.98	41575	3991	45°
		2.00	2	156	0.085	0.140	0.140	1.94	25596	4351	45°
		3.00	2	156	0.105	0.180	0.180	2.87	17302	3633	45°
		4.00	2	156	0.127	0.240	0.240	3.83	12965	3293	45°
		5.00	2	156	0.138	0.300	0.300	4.79	10367	2861	45°
		6.00	2	156	0.150	0.360	0.360	5.75	8636	2591	45°
		8.00	2	156	0.187	0.480	0.480	7.66	6483	2425	45°
		10.00	2	156	0.210	0.600	0.600	9.58	5183	2177	45°
		12.00	2	156	0.220	0.720	0.720	11.50	4318	1900	45°
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	1.00	2	118	0.046	0.090	0.090	0.98	38327	3526	45°
		2.00	2	118	0.081	0.140	0.140	1.94	19361	3137	45°
		3.00	2	118	0.100	0.180	0.180	2.87	13087	2617	45°
		4.00	2	118	0.121	0.240	0.240	3.83	9807	2373	45°
		5.00	2	118	0.131	0.300	0.300	4.79	7841	2054	45°
		6.00	2	118	0.142	0.360	0.360	5.75	6532	1855	45°
		8.00	2	118	0.178	0.480	0.480	7.66	4903	1746	45°
		10.00	2	118	0.199	0.600	0.600	9.58	3921	1561	45°
		12.00	2	118	0.209	0.720	0.720	11.50	3266	1365	45°
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	1.00	2	94	0.042	0.090	0.090	0.98	30532	2565	45°
		2.00	2	94	0.078	0.140	0.140	1.94	15423	2406	45°
		3.00	2	94	0.095	0.180	0.180	2.87	10425	1981	45°
		4.00	2	94	0.115	0.240	0.240	3.83	7812	1797	45°
		5.00	2	94	0.126	0.300	0.300	4.79	6247	1574	45°
		6.00	2	94	0.138	0.360	0.360	5.75	5204	1436	45°
		8.00	2	94	0.166	0.480	0.480	7.66	3906	1297	45°
		10.00	2	94	0.190	0.600	0.600	9.58	3123	1187	45°
		12.00	2	94	0.200	0.720	0.720	11.50	2602	1041	45°
	Steel < 850 N/mm² P P	1.00	2	128	0.071	0.090	0.090	0.98	41575	5904	45°
		2.00	2	255	0.120	0.140	0.140	1.94	41840	10042	45°
		3.00	2	336	0.151	0.180	0.180	2.87	37266	11254	45°
		4.00	2	336	0.181	0.240	0.240	3.83	27925	10109	45°
		5.00	2	336	0.203	0.300	0.300	4.79	22328	9065	45°
		6.00	2	336	0.220	0.360	0.360	5.75	18600	8184	45°
		8.00	2	336	0.268	0.480	0.480	7.66	13962	7484	45°
		10.00	2	336	0.308	0.600	0.600	9.58	11164	6877	45°
		12.00	2	336	0.316	0.720	0.720	11.50	9300	5878	45°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	1.00	2	140	0.025	0.050	0.050	0.94	47408	2370	45°
		2.00	2	140	0.030	0.070	0.070	1.84	24219	1453	45°
		3.00	2	140	0.035	0.090	0.090	2.72	16384	1147	45°
		4.00	2	140	0.055	0.110	0.110	3.60	12379	1362	45°
		5.00	2	140	0.060	0.130	0.130	4.48	9947	1194	45°
		6.00	2	140	0.065	0.150	0.150	5.36	8314	1081	45°
		8.00	2	140	0.075	0.170	0.170	7.05	6321	948	45°
		10.00	2	140	0.080	0.200	0.200	8.77	5081	813	45°
		12.00	2	140	0.085	0.250	0.250	10.56	4220	717	45°
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	1.00	2	125	0.022	0.050	0.050	0.94	42328	1862	45°
		2.00	2	125	0.028	0.070	0.070	1.84	21624	1211	45°
		3.00	2	125	0.032	0.090	0.090	2.72	14628	936	45°
		4.00	2	125	0.050	0.110	0.110	3.60	11052	1105	45°
		5.00	2	125	0.054	0.130	0.130	4.48	8881	959	45°
		6.00	2	125	0.058	0.150	0.150	5.36	7423	861	45°
		8.00	2	125	0.068	0.170	0.170	7.05	5644	768	45°
		10.00	2	125	0.072	0.200	0.200	8.77	4537	653	45°
		12.00	2	125	0.076	0.250	0.250	10.56	3768	573	45°
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	1.00	2	70	0.025	0.050	0.050	0.94	23704	1185	45°
		2.00	2	70	0.025	0.070	0.070	1.84	12110	606	45°
		3.00	2	70	0.030	0.090	0.090	2.72	8192	492	45°
		4.00	2	70	0.050	0.110	0.110	3.60	6189	619	45°
		5.00	2	70	0.055	0.130	0.130	4.48	4974	547	45°
		6.00	2	70	0.060	0.150	0.150	5.36	4157	499	45°
		8.00	2	70	0.070	0.170	0.170	7.05	3161	443	45°
		10.00	2	70	0.070	0.200	0.200	8.77	2541	356	45°
		12.00	2	70	0.075	0.250	0.250	10.56	2110	317	45°
	Steel < 850 N/mm² P P	1.00	2	360	0.030	0.050	0.050	0.94	60000	3600	45°
		2.00	2	360	0.035	0.070	0.070	1.84	60000	4200	45°
		3.00	2	360	0.040	0.090	0.090	2.72	42129	3370	45°
		4.00	2	360	0.065	0.110	0.110	3.60	31831	4138	45°
		5.00	2	360	0.070	0.130	0.130	4.48	25578	3581	45°
		6.00	2	360	0.080	0.150	0.150	5.36	21379	3421	45°
		8.00	2	360	0.090	0.170	0.170	7.05	16254	2926	45°
		10.00	2	360	0.095	0.200	0.200	8.77	13066	2483	45°
		12.00	2	360	0.100	0.250	0.250	10.56	10851	2170	45°

Ball nose end mills Sphericut

Tolerance r ±0.005, 3xd

HM MG10	λ 30° γ 5°



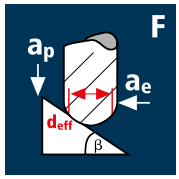
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7540** ø-Code **100**

Ø Code	d_1	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	POLYCHROM P7540
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

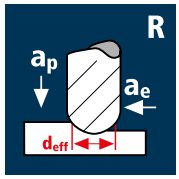
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Wrought aluminium Construction aluminium									
2.00	2	250	0.055	0.050	0.120	1.79	44457	4890	45°
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	490	0.070	0.050	0.180	3.39	46009	6441	45°
5.00	2	610	0.075	0.050	0.200	4.17	46563	6985	45°
6.00	2	730	0.085	0.075	0.230	5.08	45741	7776	45°
8.00	2	810	0.090	0.075	0.250	6.64	38830	6989	45°
10.00	2	810	0.100	0.100	0.300	8.34	30915	6183	45°
12.00	2	810	0.105	0.100	0.350	9.89	26070	5475	45°
16.00	2	810	0.115	0.120	0.400	13.10	19682	4527	45°
Unalloyed copper									
2.00	2	250	0.055	0.050	0.120	1.79	44457	4890	45°
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	490	0.070	0.050	0.180	3.39	46009	6441	45°
5.00	2	540	0.075	0.050	0.200	4.17	41220	6183	45°
6.00	2	540	0.085	0.075	0.230	5.08	33836	5752	45°
8.00	2	540	0.090	0.075	0.250	6.64	25887	4660	45°
10.00	2	540	0.100	0.100	0.300	8.34	20610	4122	45°
12.00	2	540	0.105	0.100	0.350	9.89	17380	3650	45°
16.00	2	540	0.115	0.120	0.400	13.10	13121	3018	45°
Thermoplastics									
2.00	2	250	0.055	0.050	0.120	1.79	44457	4890	45°
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	490	0.070	0.050	0.180	3.39	46009	6441	45°
5.00	2	610	0.075	0.050	0.200	4.17	46563	6985	45°
6.00	2	730	0.085	0.075	0.230	5.08	45741	7776	45°
8.00	2	955	0.090	0.075	0.250	6.64	45781	8241	45°
10.00	2	1195	0.100	0.100	0.300	8.34	45609	9122	45°
12.00	2	1430	0.105	0.100	0.350	9.89	46025	9665	45°
16.00	2	1800	0.115	0.120	0.400	13.10	43737	10060	45°
Cast aluminium									
2.00	2	250	0.055	0.050	0.120	1.79	44457	4890	45°
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	490	0.070	0.050	0.180	3.39	46009	6441	45°
5.00	2	610	0.075	0.050	0.200	4.17	46563	6985	45°
6.00	2	648	0.085	0.075	0.230	5.08	40603	6903	45°
8.00	2	648	0.090	0.075	0.250	6.64	31064	5592	45°
10.00	2	648	0.100	0.100	0.300	8.34	24732	4946	45°
12.00	2	648	0.105	0.100	0.350	9.89	20856	4380	45°
16.00	2	648	0.115	0.120	0.400	13.10	15745	3621	45°

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Wrought aluminium Construction aluminium									
2.00	2	210	0.065	0.400	0.800	1.60	41778	5431	1.7
3.00	2	315	0.082	0.600	1.200	2.40	41778	6852	4.9
4.00	2	405	0.090	0.800	1.600	3.20	40286	7252	9.3
5.00	2	405	0.100	1.000	2.000	4.00	32229	6446	12.9
6.00	2	405	0.120	1.200	2.400	4.80	26857	6446	18.6
8.00	2	405	0.140	1.600	3.200	6.40	20143	5640	28.9
10.00	2	405	0.150	2.000	4.000	8.00	16114	4834	38.7
12.00	2	405	0.180	2.400	4.800	9.60	13429	4834	55.7
16.00	2	405	0.200	3.200	6.400	12.80	10072	4029	82.5
Unalloyed copper									
2.00	2	210	0.062	0.400	0.800	1.60	41778	5181	1.7
3.00	2	270	0.078	0.600	1.200	2.40	35810	5586	4.0
4.00	2	270	0.084	0.800	1.600	3.20	26857	4512	5.8
5.00	2	270	0.092	1.000	2.000	4.00	21486	3953	7.9
6.00	2	270	0.111	1.200	2.400	4.80	17905	3975	11.4
8.00	2	270	0.128	1.600	3.200	6.40	13429	3438	17.6
10.00	2	270	0.135	2.000	4.000	8.00	10743	2901	23.2
12.00	2	270	0.162	2.400	4.800	9.60	8952	2900	33.4
16.00	2	270	0.176	3.200	6.400	12.80	6714	2363	48.4
Thermoplastics									
2.00	2	210	0.065	0.400	0.800	1.60	41778	5431	1.7
3.00	2	315	0.082	0.600	1.200	2.40	41778	6852	4.9
4.00	2	420	0.090	0.800	1.600	3.20	41778	7520	9.6
5.00	2	520	0.100	1.000	2.000	4.00	41380	8276	16.6
6.00	2	630	0.120	1.200	2.400	4.80	41778	10027	28.9
8.00	2	830	0.140	1.600	3.200	6.40	41281	11559	59.2
10.00	2	900	0.150	2.000	4.000	8.00	35810	10743	85.9
12.00	2	900	0.180	2.400	4.800	9.60	29842	10743	123.8
16.00	2	900	0.200	3.200	6.400	12.80	22381	8952	183.3
Cast aluminium									
2.00	2	210	0.065	0.400	0.800	1.60	41778	5431	1.7
3.00	2	315	0.082	0.600	1.200	2.40	41778	6852	4.9
4.00	2	324	0.090	0.800	1.600	3.20	32229	5801	7.4
5.00	2	324	0.100	1.000	2.000	4.00	25783	5157	10.3
6.00	2	324	0.120	1.200	2.400	4.80	21486	5157	14.9
8.00	2	324	0.140	1.600	3.200	6.40	16114	4512	23.1
10.00	2	324	0.150	2.000	4.000	8.00	12892	3868	30.9
12.00	2	324	0.180	2.400	4.800	9.60	10743	3868	44.6
16.00	2	324	0.200	3.200	6.400	12.80	8057	3223	66.0

Ball nose end mills Sphericut

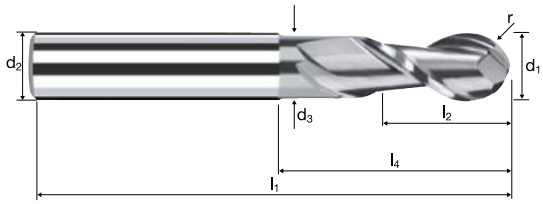
Tolerance r ±0.005, 3xd

HM MG10 | λ 40° γ 20°

h4

r

R F



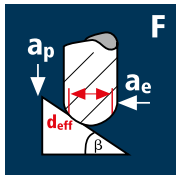
ReTool®

Al Aluminium > 99% | Al Aluminium Alloy | Al Aluminium Cast | Cu Copper | Plastic Thermoplast

Example: **Order-N°.** Coating **7550** Article-N°. ø-Code **140**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	7550
140	2.00	6.00	1.90	57	4.00	6.00	14.31	1.000	8.2°	2	●
180	3.00	6.00	2.80	57	6.00	9.00	15.63	1.500	5.7°	2	●
220	4.00	6.00	3.70	57	8.00	12.00	16.95	2.000	3.6°	2	●
260	5.00	6.00	4.60	57	10.00	15.00	18.27	2.500	1.8°	2	●
300	6.00	6.00	5.50	57	12.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	16.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	20.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	24.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	8.000	0.0°	2	●
682	20.00	20.00	19.00	104	40.00	52.13	53.00	10.000	0.0°	2	●

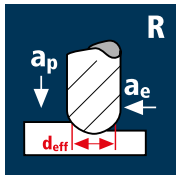
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC V									
1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Hardened tool steel 56 - 60 HRC V									
1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°
Hardened tool steel > 60 HRC V									
1.00	2	90	0.020	0.040	0.040	0.93	30804	1232	45°
2.00	2	90	0.025	0.055	0.055	1.80	15915	796	45°
3.00	2	90	0.030	0.075	0.075	2.68	10690	641	45°
4.00	2	90	0.050	0.090	0.090	3.54	8093	809	45°
5.00	2	90	0.055	0.115	0.115	4.43	6467	711	45°
6.00	2	90	0.060	0.115	0.115	5.24	5467	656	45°
8.00	2	90	0.070	0.130	0.130	6.90	4152	581	45°
10.00	2	90	0.070	0.150	0.150	8.58	3339	468	45°
12.00	2	90	0.075	0.190	0.190	10.34	2771	416	45°
High speed steel, hardened 64 - 70 HRC V									
1.00	2	60	0.015	0.025	0.025	0.89	21459	644	45°
2.00	2	60	0.020	0.035	0.035	1.74	10976	439	45°
3.00	2	60	0.020	0.050	0.050	2.59	7374	295	45°
4.00	2	60	0.035	0.060	0.060	3.43	5568	390	45°
5.00	2	60	0.040	0.075	0.075	4.29	4452	356	45°
6.00	2	60	0.040	0.075	0.075	5.08	3760	301	45°
8.00	2	60	0.050	0.085	0.085	6.70	2851	285	45°
10.00	2	60	0.050	0.100	0.100	8.34	2290	229	45°
12.00	2	60	0.055	0.125	0.125	10.03	1904	209	45°

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC V									
1.00	2	100	0.028	0.180	0.200	0.77	41339	2315	0.1
2.00	2	100	0.048	0.280	0.400	1.39	22900	2198	0.2
3.00	2	100	0.060	0.360	0.600	1.95	16324	1959	0.4
4.00	2	100	0.072	0.480	0.800	2.60	12243	1763	0.7
5.00	2	100	0.080	0.600	1.000	3.25	9794	1567	0.9
6.00	2	100	0.086	0.720	1.200	3.90	8162	1404	1.2
8.00	2	100	0.106	0.960	1.600	5.20	6121	1298	2.0
10.00	2	100	0.120	1.200	2.000	6.50	4897	1175	2.8
12.00	2	100	0.125	1.440	2.400	7.80	4081	1020	3.5
Hardened tool steel 56 - 60 HRC V									
1.00	2	61	0.017	0.160	0.200	0.73	26598	904	0.0
2.00	2	61	0.029	0.250	0.400	1.32	14710	853	0.1
3.00	2	61	0.036	0.320	0.600	1.85	10496	756	0.1
4.00	2	61	0.043	0.430	0.800	2.48	7829	673	0.2
5.00	2	61	0.048	0.540	1.000	3.10	6264	601	0.3
6.00	2	61	0.052	0.650	1.200	3.73	5206	541	0.4
8.00	2	61	0.063	0.860	1.600	4.96	3915	493	0.7
10.00	2	61	0.072	1.080	2.000	6.21	3127	450	1.0
12.00	2	61	0.075	1.300	2.400	7.46	2603	391	1.2
Hardened tool steel > 60 HRC V									
1.00	2	46	0.014	0.130	0.200	0.67	21854	612	0.0
2.00	2	46	0.023	0.200	0.400	1.20	12202	561	0.0
3.00	2	46	0.029	0.250	0.600	1.66	8821	512	0.1
4.00	2	46	0.035	0.340	0.800	2.23	6566	460	0.1
5.00	2	46	0.038	0.420	1.000	2.77	5286	402	0.2
6.00	2	46	0.041	0.500	1.200	3.32	4410	362	0.2
8.00	2	46	0.051	0.670	1.600	4.43	3305	337	0.4
10.00	2	46	0.058	0.840	2.000	5.55	2638	306	0.5
12.00	2	46	0.060	1.010	2.400	6.66	2199	264	0.6
High speed steel, hardened 64 - 70 HRC V									
1.00	2	31	0.011	0.130	0.200	0.67	14728	324	0.0
2.00	2	31	0.018	0.200	0.400	1.20	8223	296	0.0
3.00	2	31	0.023	0.250	0.600	1.66	5944	273	0.0
4.00	2	31	0.028	0.340	0.800	2.23	4425	248	0.1
5.00	2	31	0.031	0.420	1.000	2.77	3562	221	0.1
6.00	2	31	0.033	0.500	1.200	3.32	2972	196	0.1
8.00	2	31	0.041	0.670	1.600	4.43	2227	183	0.2
10.00	2	31	0.046	0.840	2.000	5.55	1778	164	0.3
12.00	2	31	0.048	1.010	2.400	6.66	1482	142	0.3

Ball nose end mills SpheroX

Tolerance r ±0.005, 4.5xd

X-Generation X

II

HM XA

λ 30°
γ -10°

h4

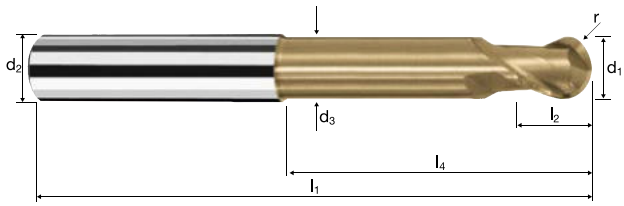
sc

d1

r

R

F

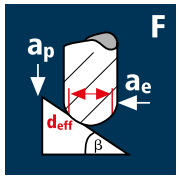
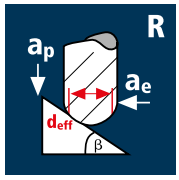


ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **V** Article-N°. **7472** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V
											V7472
100	1.00	6.00	0.95	61	1.50	4.50	14.58	0.500	10.0°	2	●
140	2.00	6.00	1.90	61	3.00	9.00	17.31	1.000	6.8°	2	●
180	3.00	6.00	2.80	61	4.00	13.50	20.13	1.500	4.5°	2	●
220	4.00	6.00	3.70	66	5.00	18.00	22.95	2.000	2.7°	2	●
260	5.00	6.00	4.60	66	6.00	22.50	25.77	2.500	1.4°	2	●
300	6.00	6.00	5.50	69	7.00	30.34	31.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	80	9.00	39.29	40.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	90	11.00	47.20	48.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	105	13.00	54.13	55.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	125	17.00	74.13	75.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC H	1.00	4	140	0.014	0.030	0.090	0.91	48971	2742	45°
		2.00	4	140	0.022	0.030	0.120	1.72	25909	2280	45°
		3.00	4	180	0.034	0.050	0.150	2.59	22122	3009	45°
		4.00	4	180	0.042	0.050	0.180	3.39	16901	2839	45°
		5.00	4	180	0.048	0.050	0.210	4.17	13740	2638	45°
		6.00	4	180	0.052	0.050	0.230	4.94	11598	2412	45°
		8.00	4	180	0.056	0.080	0.280	6.67	8590	1924	45°
		10.00	4	180	0.060	0.080	0.310	8.22	6970	1673	45°
		12.00	4	180	0.066	0.100	0.340	9.89	5793	1529	45°
	Hardened tool steel 56 - 60 HRC H	1.00	4	110	0.014	0.030	0.090	0.91	38477	2155	45°
		2.00	4	110	0.022	0.030	0.120	1.72	20357	1791	45°
		3.00	4	140	0.034	0.050	0.150	2.59	17206	2340	45°
		4.00	4	140	0.042	0.050	0.180	3.39	13146	2209	45°
		5.00	4	140	0.048	0.050	0.210	4.17	10687	2052	45°
		6.00	4	140	0.052	0.050	0.230	4.94	9021	1876	45°
		8.00	4	140	0.056	0.080	0.280	6.67	6681	1497	45°
		10.00	4	140	0.060	0.080	0.310	8.22	5421	1301	45°
		12.00	4	140	0.066	0.100	0.340	9.89	4506	1190	45°
	Hardened tool steel > 60 HRC H	1.00	4	70	0.014	0.030	0.090	0.91	24485	1371	45°
		2.00	4	70	0.022	0.030	0.120	1.72	12954	1140	45°
		3.00	4	90	0.034	0.050	0.150	2.59	11061	1504	45°
		4.00	4	90	0.042	0.050	0.180	3.39	8451	1420	45°
		5.00	4	90	0.048	0.050	0.210	4.17	6870	1319	45°
		6.00	4	90	0.052	0.050	0.230	4.94	5799	1206	45°
		8.00	4	90	0.056	0.080	0.280	6.67	4295	962	45°
		10.00	4	90	0.060	0.080	0.310	8.22	3485	836	45°
		12.00	4	90	0.066	0.100	0.340	9.89	2897	765	45°
	High speed steel, hardened 64 - 70 HRC H	1.00	4	40	0.014	0.030	0.090	0.91	13992	784	45°
		2.00	4	40	0.022	0.030	0.120	1.72	7403	652	45°
		3.00	4	50	0.034	0.050	0.150	2.59	6145	836	45°
		4.00	4	50	0.042	0.050	0.180	3.39	4695	789	45°
		5.00	4	50	0.048	0.050	0.210	4.17	3817	733	45°
		6.00	4	50	0.052	0.050	0.230	4.94	3222	670	45°
		8.00	4	50	0.056	0.080	0.280	6.67	2386	535	45°
		10.00	4	50	0.060	0.080	0.310	8.22	1936	465	45°
		12.00	4	50	0.066	0.100	0.340	9.89	1609	425	45°
	Hardened tool steel 52 - 56 HRC H	1.00	4	104	0.023	0.180	0.180	0.99	33439	3076	30°
		2.00	4	104	0.039	0.280	0.280	1.92	17242	2690	30°
		3.00	4	104	0.049	0.360	0.360	2.83	11698	2293	30°
		4.00	4	104	0.058	0.480	0.480	3.77	8781	2037	30°
		5.00	4	104	0.065	0.600	0.600	4.71	7028	1827	30°
		6.00	4	104	0.070	0.720	0.720	5.66	5849	1638	30°
		8.00	4	104	0.086	0.960	0.960	7.54	4390	1510	30°
		10.00	4	104	0.098	1.200	1.200	9.43	3511	1376	30°
		12.00	4	104	0.101	1.440	1.440	11.31	2927	1183	30°
	Hardened tool steel 56 - 60 HRC H	1.00	4	64	0.014	0.160	0.160	0.97	21002	1176	30°
		2.00	4	64	0.023	0.250	0.250	1.90	10722	986	30°
		3.00	4	64	0.029	0.320	0.320	2.78	7328	850	30°
		4.00	4	64	0.035	0.430	0.430	3.72	5476	767	30°
		5.00	4	64	0.039	0.540	0.540	4.65	4381	683	30°
		6.00	4	64	0.042	0.650	0.650	5.58	3651	613	30°
		8.00	4	64	0.051	0.860	0.860	7.43	2742	559	30°
		10.00	4	64	0.058	1.080	1.080	9.30	2191	508	30°
		12.00	4	64	0.061	1.300	1.300	11.16	1825	445	30°
	Hardened tool steel > 60 HRC H	1.00	4	48	0.011	0.130	0.130	0.95	16083	708	30°
		2.00	4	48	0.019	0.200	0.200	1.84	8304	631	30°
		3.00	4	48	0.023	0.250	0.250	2.69	5680	523	30°
		4.00	4	48	0.028	0.340	0.340	3.59	4256	477	30°
		5.00	4	48	0.031	0.420	0.420	4.48	3410	423	30°
		6.00	4	48	0.034	0.500	0.500	5.37	2845	387	30°
		8.00	4	48	0.041	0.670	0.670	7.17	2131	350	30°
		10.00	4	48	0.047	0.840	0.840	8.96	1705	321	30°
		12.00	4	48	0.049	1.010	1.010	10.76	1420	278	30°
	High speed steel, hardened 64 - 70 HRC H	1.00	4	24	0.007	0.130	0.130	0.95	8042	225	30°
		2.00	4	24	0.012	0.200	0.200	1.84	4152	199	30°
		3.00	4	24	0.015	0.250	0.250	2.69	2840	170	30°
		4.00	4	24	0.018	0.340	0.340	3.59	2128	153	30°
		5.00	4	24	0.020	0.420	0.420	4.48	1705	136	30°
		6.00	4	24	0.022	0.500	0.500	5.37	1423	125	30°
		8.00	4	24	0.026	0.670	0.670	7.17	1065	111	30°
		10.00	4	24	0.030	0.840	0.840	8.96	853	102	30°
		12.00	4	24	0.031	1.010	1.010	10.76	710	88	30°

Ball nose end mills SpheroX

Tolerance r ±0.005, 4.5xd

X-Generation X

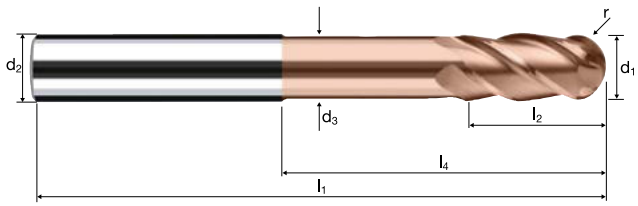
II

HM XA | λ 40° γ 0°

h4 | sc

Vario | r

R | F



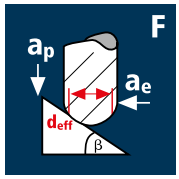
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **H** Article-N°. **7492** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Si H7492
100	1.00	6.00	0.95	61	2.00	4.50	14.58	0.500	10.0°	4	●
140	2.00	6.00	1.90	61	4.00	9.00	17.31	1.000	6.8°	4	●
180	3.00	6.00	2.80	61	6.00	13.50	20.13	1.500	4.5°	4	●
220	4.00	6.00	3.70	66	8.00	18.00	22.95	2.000	2.7°	4	●
260	5.00	6.00	4.60	66	10.00	22.50	25.77	2.500	1.4°	4	●
300	6.00	6.00	5.50	69	12.00	30.34	31.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	80	16.00	39.29	40.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	90	20.00	47.20	48.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	105	24.00	54.13	55.00	6.000	0.0°	4	●
610	16.00	16.00	15.00	125	32.00	74.13	75.00	8.000	0.0°	4	●

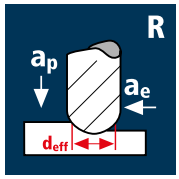
Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	300	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	300	0.035	0.070	0.070	1.84	51898	3633	45°
	3.00	2	300	0.040	0.100	0.100	2.74	34851	2788	45°
	4.00	2	300	0.070	0.120	0.120	3.62	26379	3693	45°
	5.00	2	300	0.080	0.150	0.150	4.53	21080	3373	45°
	6.00	2	300	0.085	0.150	0.150	5.36	17816	3029	45°
	8.00	2	300	0.095	0.170	0.170	7.05	13545	2574	45°
	10.00	2	300	0.100	0.200	0.200	8.77	10889	2178	45°
	12.00	2	300	0.105	0.250	0.250	10.56	9043	1899	45°
Hardened tool steel 48 - 52 HRC	1.00	2	250	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	250	0.035	0.070	0.070	1.84	43249	3027	45°
	3.00	2	250	0.040	0.100	0.100	2.74	29043	2323	45°
	4.00	2	250	0.065	0.120	0.120	3.62	21983	2858	45°
	5.00	2	250	0.075	0.150	0.150	4.53	17567	2635	45°
	6.00	2	250	0.080	0.150	0.150	5.36	14847	2376	45°
	8.00	2	250	0.090	0.170	0.170	7.05	11288	2032	45°
	10.00	2	250	0.095	0.200	0.200	8.77	9074	1724	45°
	12.00	2	250	0.100	0.250	0.250	10.56	7536	1507	45°
Hardened tool steel 52 - 56 HRC	1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
	2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
	3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
	4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
	5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
	6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
	8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
	10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
	12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
	2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
	3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
	4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
	5.00	2	150	0.070	0.150	0.150	4.53	10540	1476	45°
	6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
	8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
	10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
	12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°

Application



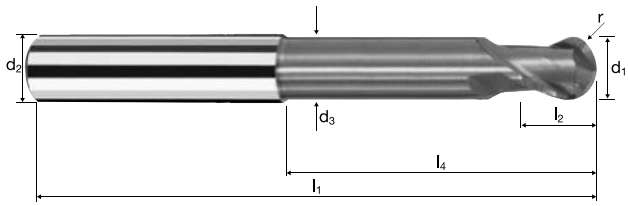
Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 42 - 48 HRC	1.00	2	100	0.034	0.180	0.200	0.77	41339	2811	0.1
	2.00	2	153	0.058	0.280	0.400	1.39	35037	4064	0.5
	3.00	2	153	0.073	0.360	0.600	1.95	24975	3646	0.8
	4.00	2	153	0.087	0.480	0.800	2.60	18731	3259	1.3
	5.00	2	153	0.097	0.600	1.000	3.25	14985	2907	1.7
	6.00	2	153	0.105	0.720	1.200	3.90	12488	2623	2.3
	8.00	2	153	0.128	0.960	1.600	5.20	9366	2398	3.7
	10.00	2	153	0.145	1.200	2.000	6.50	7493	2173	5.2
	12.00	2	153	0.151	1.440	2.400	7.80	6244	1886	6.5
Hardened tool steel 48 - 52 HRC	1.00	2	100	0.031	0.180	0.200	0.77	41339	2563	0.1
	2.00	2	122	0.053	0.280	0.400	1.39	27938	2961	0.3
	3.00	2	122	0.066	0.360	0.600	1.95	19915	2629	0.6
	4.00	2	122	0.079	0.480	0.800	2.60	14936	2360	0.9
	5.00	2	122	0.088	0.600	1.000	3.25	11949	2103	1.3
	6.00	2	122	0.095	0.720	1.200	3.90	9957	1892	1.6
	8.00	2	122	0.116	0.960	1.600	5.20	7468	1733	2.7
	10.00	2	122	0.132	1.200	2.000	6.50	5974	1577	3.8
	12.00	2	122	0.137	1.440	2.400	7.80	4979	1364	4.7
Hardened tool steel 52 - 56 HRC	1.00	2	100	0.028	0.180	0.200	0.77	41339	2315	0.1
	2.00	2	100	0.048	0.280	0.400	1.39	22900	2198	0.2
	3.00	2	100	0.060	0.360	0.600	1.95	16324	1959	0.4
	4.00	2	100	0.072	0.480	0.800	2.60	12243	1763	0.7
	5.00	2	100	0.080	0.600	1.000	3.25	9794	1567	0.9
	6.00	2	100	0.086	0.720	1.200	3.90	8162	1404	1.2
	8.00	2	100	0.106	0.960	1.600	5.20	6121	1298	2.0
	10.00	2	100	0.120	1.200	2.000	6.50	4897	1175	2.8
	12.00	2	100	0.125	1.440	2.400	7.80	4081	1020	3.5
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	77	0.031	0.180	0.200	0.77	31831	1974	0.1
	2.00	2	77	0.053	0.280	0.400	1.39	17633	1869	0.2
	3.00	2	77	0.066	0.360	0.600	1.95	12569	1659	0.4
	4.00	2	77	0.079	0.480	0.800	2.60	9427	1490	0.6
	5.00	2	77	0.088	0.600	1.000	3.25	7541	1327	0.8
	6.00	2	77	0.095	0.720	1.200	3.90	6285	1194	1.0
	8.00	2	77	0.116	0.960	1.600	5.20	4713	1093	1.7
	10.00	2	77	0.132	1.200	2.000	6.50	3771	996	2.4
	12.00	2	77	0.137	1.440	2.400	7.80	3142	861	3.0

Ball nose end mills SpheroX

Tolerance r ±0.005, 4.5xd

HM XA	λ 30° γ -10°



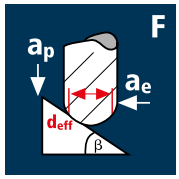
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **X** Article-N°. **7402** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X7402
100	1.00	6.00	0.95	61	1.50	4.50	14.58	0.500	10.0°	2		●
140	2.00	6.00	1.90	61	3.00	9.00	17.31	1.000	6.8°	2		●
180	3.00	6.00	2.80	61	4.00	13.50	20.13	1.500	4.5°	2		●
220	4.00	6.00	3.70	66	5.00	18.00	22.95	2.000	2.7°	2		●
260	5.00	6.00	4.60	66	6.00	22.50	25.77	2.500	1.4°	2		●
300	6.00	6.00	5.50	69	7.00	30.34	31.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	80	9.00	39.29	40.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	90	11.00	47.20	48.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	105	13.00	54.13	55.00	6.000	0.0°	2		●

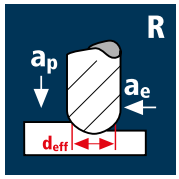
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC									
1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Hardened tool steel 56 - 60 HRC									
1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
5.00	2	150	0.065	0.150	0.150	4.53	10540	1370	45°
6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°
Hardened tool steel > 60 HRC									
1.00	2	90	0.020	0.040	0.040	0.93	30804	1232	45°
2.00	2	90	0.025	0.055	0.055	1.80	15915	796	45°
3.00	2	90	0.030	0.075	0.075	2.68	10690	641	45°
4.00	2	90	0.050	0.090	0.090	3.54	8093	809	45°
5.00	2	90	0.055	0.115	0.115	4.43	6467	711	45°
6.00	2	90	0.060	0.115	0.115	5.24	5467	656	45°
8.00	2	90	0.070	0.130	0.130	6.90	4152	581	45°
10.00	2	90	0.070	0.150	0.150	8.58	3339	468	45°
12.00	2	90	0.075	0.190	0.190	10.34	2771	416	45°
High speed steel, hardened 64 - 70 HRC									
1.00	2	60	0.015	0.025	0.025	0.89	21459	644	45°
2.00	2	60	0.020	0.035	0.035	1.74	10976	439	45°
3.00	2	60	0.020	0.050	0.050	2.59	7374	295	45°
4.00	2	60	0.035	0.060	0.060	3.43	5568	390	45°
5.00	2	60	0.040	0.075	0.075	4.29	4452	356	45°
6.00	2	60	0.040	0.075	0.075	5.08	3760	301	45°
8.00	2	60	0.050	0.085	0.085	6.70	2851	285	45°
10.00	2	60	0.050	0.100	0.100	8.34	2290	229	45°
12.00	2	60	0.055	0.125	0.125	10.03	1904	209	45°

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC									
1.00	2	78	0.028	0.180	0.200	0.77	32244	1806	0.1
2.00	2	78	0.048	0.280	0.400	1.39	17862	1715	0.2
3.00	2	78	0.060	0.360	0.600	1.95	12732	1528	0.3
4.00	2	78	0.072	0.480	0.800	2.60	9549	1375	0.5
5.00	2	78	0.080	0.600	1.000	3.25	7639	1222	0.7
6.00	2	78	0.086	0.720	1.200	3.90	6366	1095	0.9
8.00	2	78	0.106	0.960	1.600	5.20	4775	1012	1.6
10.00	2	78	0.120	1.200	2.000	6.50	3820	917	2.2
12.00	2	78	0.125	1.440	2.400	7.80	3183	796	2.8
Hardened tool steel 56 - 60 HRC									
1.00	2	34	0.017	0.160	0.200	0.73	14825	504	0.0
2.00	2	34	0.029	0.250	0.400	1.32	8199	476	0.0
3.00	2	34	0.036	0.320	0.600	1.85	5850	421	0.1
4.00	2	34	0.043	0.430	0.800	2.48	4364	375	0.1
5.00	2	34	0.048	0.540	1.000	3.10	3491	335	0.2
6.00	2	34	0.052	0.650	1.200	3.73	2901	302	0.2
8.00	2	34	0.063	0.860	1.600	4.96	2182	275	0.4
10.00	2	34	0.072	1.080	2.000	6.21	1743	251	0.5
12.00	2	34	0.075	1.300	2.400	7.46	1451	218	0.7
Hardened tool steel > 60 HRC									
1.00	2	26	0.014	0.130	0.200	0.67	12352	346	0.0
2.00	2	26	0.023	0.200	0.400	1.20	6897	317	0.0
3.00	2	26	0.029	0.250	0.600	1.66	4986	289	0.0
4.00	2	26	0.035	0.340	0.800	2.23	3711	260	0.1
5.00	2	26	0.038	0.420	1.000	2.77	2988	227	0.1
6.00	2	26	0.041	0.500	1.200	3.32	2493	204	0.1
8.00	2	26	0.051	0.670	1.600	4.43	1868	191	0.2
10.00	2	26	0.058	0.840	2.000	5.55	1491	173	0.3
12.00	2	26	0.060	1.010	2.400	6.66	1243	149	0.4
High speed steel, hardened 64 - 70 HRC									
1.00	2	17	0.011	0.130	0.200	0.67	8077	178	0.0
2.00	2	17	0.018	0.200	0.400	1.20	4509	162	0.0
3.00	2	17	0.023	0.250	0.600	1.66	3260	150	0.0
4.00	2	17	0.028	0.340	0.800	2.23	2427	136	0.0
5.00	2	17	0.031	0.420	1.000	2.77	1954	121	0.1
6.00	2	17	0.033	0.500	1.200	3.32	1630	108	0.1
8.00	2	17	0.041	0.670	1.600	4.43	1222	100	0.1
10.00	2	17	0.046	0.840	2.000	5.55	975	90	0.2
12.00	2	17	0.048	1.010	2.400	6.66	813	78	0.2

Ball nose end mills SpheroX

Tolerance r ±0.005, 6xd

HM
XA

λ 30°
γ -10°

h4

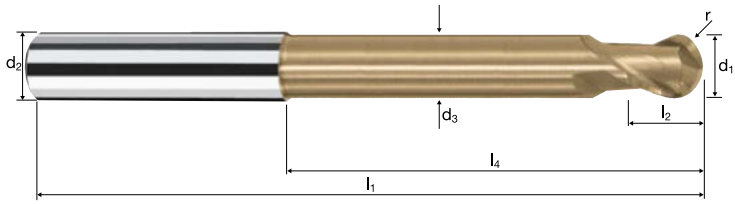
sc

d1

r

R

F

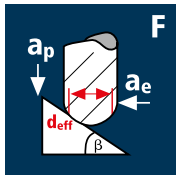
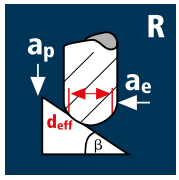


ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **V** Article-N°. **7474** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V
											V7474
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	17.00	85.13	86.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC H	1.00	4	130	0.014	0.030	0.090	0.91	45473	2547	45°
		2.00	4	130	0.022	0.030	0.120	1.72	24058	2117	45°
		3.00	4	160	0.034	0.050	0.150	2.59	19664	2674	45°
		4.00	4	160	0.042	0.050	0.180	3.39	15023	2524	45°
		5.00	4	160	0.048	0.050	0.210	4.17	12213	2345	45°
		6.00	4	160	0.052	0.050	0.230	4.94	10310	2145	45°
		8.00	4	160	0.056	0.080	0.280	6.67	7636	1711	45°
		10.00	4	160	0.060	0.080	0.310	8.22	6196	1487	45°
		12.00	4	160	0.066	0.100	0.340	9.89	5150	1360	45°
	Hardened tool steel 56 - 60 HRC H	1.00	4	100	0.014	0.030	0.090	0.91	34979	1959	45°
		2.00	4	100	0.022	0.030	0.120	1.72	18506	1629	45°
		3.00	4	130	0.034	0.050	0.150	2.59	15977	2173	45°
		4.00	4	130	0.042	0.050	0.180	3.39	12207	2051	45°
		5.00	4	130	0.048	0.050	0.210	4.17	9923	1905	45°
		6.00	4	130	0.052	0.050	0.230	4.94	8377	1742	45°
		8.00	4	130	0.056	0.080	0.280	6.67	6204	1390	45°
		10.00	4	130	0.060	0.080	0.310	8.22	5034	1208	45°
		12.00	4	130	0.066	0.100	0.340	9.89	4184	1105	45°
	Hardened tool steel > 60 HRC H	1.00	4	60	0.014	0.030	0.090	0.91	20987	1175	45°
		2.00	4	60	0.022	0.030	0.120	1.72	11104	977	45°
		3.00	4	80	0.034	0.050	0.150	2.59	9832	1337	45°
		4.00	4	80	0.042	0.050	0.180	3.39	7512	1262	45°
		5.00	4	80	0.048	0.050	0.210	4.17	6107	1173	45°
		6.00	4	80	0.052	0.050	0.230	4.94	5155	1072	45°
		8.00	4	80	0.056	0.080	0.280	6.67	3818	855	45°
		10.00	4	80	0.060	0.080	0.310	8.22	3098	744	45°
		12.00	4	80	0.066	0.100	0.340	9.89	2575	680	45°
	High speed steel, hardened 64 - 70 HRC H	1.00	4	40	0.014	0.030	0.090	0.91	13992	784	45°
		2.00	4	40	0.022	0.030	0.120	1.72	7403	652	45°
		3.00	4	50	0.034	0.050	0.150	2.59	6145	836	45°
		4.00	4	50	0.042	0.050	0.180	3.39	4695	789	45°
		5.00	4	50	0.048	0.050	0.210	4.17	3817	733	45°
		6.00	4	50	0.052	0.050	0.230	4.94	3222	670	45°
		8.00	4	50	0.056	0.080	0.280	6.67	2386	535	45°
		10.00	4	50	0.060	0.080	0.310	8.22	1936	465	45°
		12.00	4	50	0.066	0.100	0.340	9.89	1609	425	45°
	Hardened tool steel 52 - 56 HRC H	1.00	4	52	0.023	0.130	0.130	0.95	17423	1603	30°
		2.00	4	52	0.039	0.200	0.200	1.84	8996	1403	30°
		3.00	4	52	0.049	0.250	0.250	2.69	6153	1206	30°
		4.00	4	52	0.058	0.340	0.340	3.59	4611	1070	30°
		5.00	4	52	0.065	0.420	0.420	4.48	3695	961	30°
		6.00	4	52	0.070	0.500	0.500	5.37	3082	863	30°
		8.00	4	52	0.086	0.670	0.670	7.17	2309	794	30°
		10.00	4	52	0.098	0.840	0.840	8.96	1847	724	30°
		12.00	4	52	0.101	1.010	1.010	10.76	1538	621	30°
	Hardened tool steel 56 - 60 HRC H	1.00	4	24	0.014	0.130	0.130	0.95	8042	450	30°
		2.00	4	24	0.023	0.200	0.200	1.84	4152	382	30°
		3.00	4	24	0.029	0.250	0.250	2.69	2840	329	30°
		4.00	4	24	0.035	0.340	0.340	3.59	2128	298	30°
		5.00	4	24	0.039	0.420	0.420	4.48	1705	266	30°
		6.00	4	24	0.042	0.500	0.500	5.37	1423	239	30°
		8.00	4	24	0.051	0.670	0.670	7.17	1065	217	30°
		10.00	4	24	0.058	0.840	0.840	8.96	853	198	30°
		12.00	4	24	0.061	1.010	1.010	10.76	710	173	30°
	Hardened tool steel > 60 HRC H	1.00	4	18	0.011	0.130	0.130	0.95	6031	265	30°
		2.00	4	18	0.019	0.200	0.200	1.84	3114	237	30°
		3.00	4	18	0.023	0.250	0.250	2.69	2130	196	30°
		4.00	4	18	0.028	0.340	0.340	3.59	1596	179	30°
		5.00	4	18	0.031	0.420	0.420	4.48	1279	159	30°
		6.00	4	18	0.034	0.500	0.500	5.37	1067	145	30°
		8.00	4	18	0.041	0.670	0.670	7.17	799	131	30°
		10.00	4	18	0.047	0.840	0.840	8.96	639	120	30°
		12.00	4	18	0.049	1.010	1.010	10.76	532	104	30°
	High speed steel, hardened 64 - 70 HRC H	1.00	4	12	0.007	0.130	0.130	0.95	4021	113	30°
		2.00	4	12	0.012	0.200	0.200	1.84	2076	100	30°
		3.00	4	12	0.015	0.250	0.250	2.69	1420	85	30°
		4.00	4	12	0.018	0.340	0.340	3.59	1064	77	30°
		5.00	4	12	0.020	0.420	0.420	4.48	853	68	30°
		6.00	4	12	0.022	0.500	0.500	5.37	711	63	30°
		8.00	4	12	0.026	0.670	0.670	7.17	533	55	30°
		10.00	4	12	0.030	0.840	0.840	8.96	426	51	30°
		12.00	4	12	0.031	1.010	1.010	10.76	355	44	30°

Ball nose end mills SpheroX

Tolerance r ±0.005, 6xd

X-Generation X

II

HM XA

λ 40°
γ 0°

h4

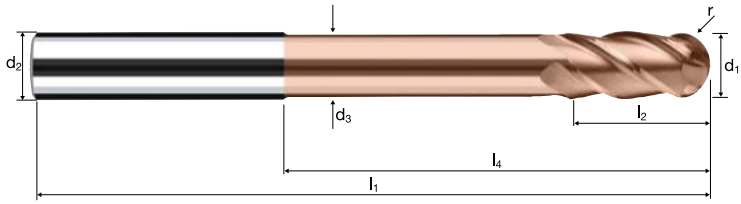
sc

Vario

r

R

F



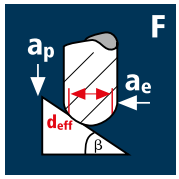
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **H** Article-N°. **7494** ø-Code **100**

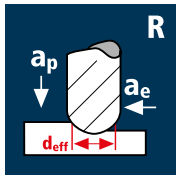
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Si
											H7494
100	1.00	6.00	0.95	66	2.00	6.00	16.08	0.500	9.5°	4	●
140	2.00	6.00	1.90	66	4.00	12.00	20.31	1.000	6.1°	4	●
180	3.00	6.00	2.80	66	6.00	18.00	24.63	1.500	3.9°	4	●
220	4.00	6.00	3.70	69	8.00	24.00	28.95	2.000	2.2°	4	●
260	5.00	6.00	4.60	75	10.00	30.00	33.27	2.500	1.0°	4	●
300	6.00	6.00	5.50	80	12.00	42.34	43.00	3.000	0.0°	4	●
391	8.00	8.00	7.40	90	16.00	52.29	53.00	4.000	0.0°	4	●
450	10.00	10.00	9.20	105	20.00	63.20	64.00	5.000	0.0°	4	●
501	12.00	12.00	11.00	120	24.00	73.13	74.00	6.000	0.0°	4	●
610	16.00	16.00	15.00	135	32.00	85.13	86.00	8.000	0.0°	4	●

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	300	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	300	0.035	0.070	0.070	1.84	51898	3633	45°
	3.00	2	300	0.040	0.100	0.100	2.74	34851	2788	45°
	4.00	2	300	0.070	0.120	0.120	3.62	26379	3693	45°
	5.00	2	300	0.080	0.150	0.150	4.53	21080	3373	45°
	6.00	2	300	0.085	0.150	0.150	5.36	17816	3029	45°
	8.00	2	300	0.095	0.170	0.170	7.05	13545	2574	45°
	10.00	2	300	0.100	0.200	0.200	8.77	10889	2178	45°
	12.00	2	300	0.105	0.250	0.250	10.56	9043	1899	45°
Hardened tool steel 48 - 52 HRC	1.00	2	250	0.030	0.050	0.050	0.94	60000	3600	45°
	2.00	2	250	0.035	0.070	0.070	1.84	43249	3027	45°
	3.00	2	250	0.040	0.100	0.100	2.74	29043	2323	45°
	4.00	2	250	0.065	0.120	0.120	3.62	21983	2858	45°
	5.00	2	250	0.075	0.150	0.150	4.53	17567	2635	45°
	6.00	2	250	0.080	0.150	0.150	5.36	14847	2376	45°
	8.00	2	250	0.090	0.170	0.170	7.05	11288	2032	45°
	10.00	2	250	0.095	0.200	0.200	8.77	9074	1724	45°
	12.00	2	250	0.100	0.250	0.250	10.56	7536	1507	45°
Hardened tool steel 52 - 56 HRC	1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
	2.00	2	200	0.030	0.070	0.070	1.84	34599	2076	45°
	3.00	2	200	0.035	0.100	0.100	2.74	23234	1626	45°
	4.00	2	200	0.065	0.120	0.120	3.62	17586	2286	45°
	5.00	2	200	0.070	0.150	0.150	4.53	14053	1967	45°
	6.00	2	200	0.075	0.150	0.150	5.36	11877	1782	45°
	8.00	2	200	0.085	0.170	0.170	7.05	9030	1535	45°
	10.00	2	200	0.090	0.200	0.200	8.77	7259	1307	45°
	12.00	2	200	0.095	0.250	0.250	10.56	6029	1146	45°
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	150	0.025	0.050	0.050	0.94	50794	2540	45°
	2.00	2	150	0.030	0.070	0.070	1.84	25949	1557	45°
	3.00	2	150	0.035	0.100	0.100	2.74	17426	1220	45°
	4.00	2	150	0.060	0.120	0.120	3.62	13190	1583	45°
	5.00	2	150	0.070	0.150	0.150	4.53	10540	1476	45°
	6.00	2	150	0.070	0.150	0.150	5.36	8908	1247	45°
	8.00	2	150	0.080	0.170	0.170	7.05	6773	1084	45°
	10.00	2	150	0.085	0.200	0.200	8.77	5444	926	45°
	12.00	2	150	0.090	0.250	0.250	10.56	4521	814	45°

Application R

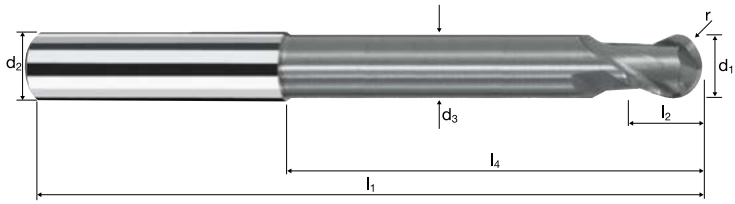


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 42 - 48 HRC	1.00	2	100	0.034	0.180	0.200	0.77	41339	2811	0.1
	2.00	2	119	0.058	0.280	0.400	1.39	27251	3161	0.4
	3.00	2	119	0.073	0.360	0.600	1.95	19425	2836	0.6
	4.00	2	119	0.087	0.480	0.800	2.60	14569	2535	1.0
	5.00	2	119	0.097	0.600	1.000	3.25	11655	2261	1.4
	6.00	2	119	0.105	0.720	1.200	3.90	9713	2040	1.8
	8.00	2	119	0.128	0.960	1.600	5.20	7284	1865	2.9
	10.00	2	119	0.145	1.200	2.000	6.50	5828	1690	4.1
	12.00	2	119	0.151	1.440	2.400	7.80	4856	1467	5.1
Hardened tool steel 48 - 52 HRC	1.00	2	95	0.031	0.180	0.200	0.77	39272	2435	0.1
	2.00	2	95	0.053	0.280	0.400	1.39	21755	2306	0.3
	3.00	2	95	0.066	0.360	0.600	1.95	15507	2047	0.4
	4.00	2	95	0.079	0.480	0.800	2.60	11631	1838	0.7
	5.00	2	95	0.088	0.600	1.000	3.25	9304	1638	1.0
	6.00	2	95	0.095	0.720	1.200	3.90	7754	1473	1.3
	8.00	2	95	0.116	0.960	1.600	5.20	5815	1349	2.1
	10.00	2	95	0.132	1.200	2.000	6.50	4652	1228	2.9
	12.00	2	95	0.137	1.440	2.400	7.80	3877	1062	3.7
Hardened tool steel 52 - 56 HRC	1.00	2	78	0.028	0.180	0.200	0.77	32244	1806	0.1
	2.00	2	78	0.048	0.280	0.400	1.39	17862	1715	0.2
	3.00	2	78	0.060	0.360	0.600	1.95	12732	1528	0.3
	4.00	2	78	0.072	0.480	0.800	2.60	9549	1375	0.5
	5.00	2	78	0.080	0.600	1.000	3.25	7639	1222	0.7
	6.00	2	78	0.086	0.720	1.200	3.90	6366	1095	0.9
	8.00	2	78	0.106	0.960	1.600	5.20	4775	1012	1.6
	10.00	2	78	0.120	1.200	2.000	6.50	3820	917	2.2
	12.00	2	78	0.125	1.440	2.400	7.80	3183	796	2.8
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	60	0.031	0.180	0.200	0.77	24803	1538	0.1
	2.00	2	60	0.053	0.280	0.400	1.39	13740	1456	0.2
	3.00	2	60	0.066	0.360	0.600	1.95	9794	1293	0.3
	4.00	2	60	0.079	0.480	0.800	2.60	7346	1161	0.4
	5.00	2	60	0.088	0.600	1.000	3.25	5876	1034	0.6
	6.00	2	60	0.095	0.720	1.200	3.90	4897	930	0.8
	8.00	2	60	0.116	0.960	1.600	5.20	3673	852	1.3
	10.00	2	60	0.132	1.200	2.000	6.50	2938	776	1.9
	12.00	2	60	0.137	1.440	2.400	7.80	2449	671	2.3

Ball nose end mills SpheroX

Tolerance r ±0.005, 6xd

HM XA	λ 30° γ -10°

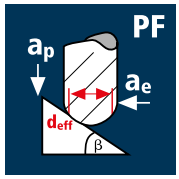
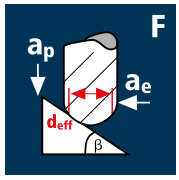


ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **X** Article-N°. **7404** ø-Code **100**

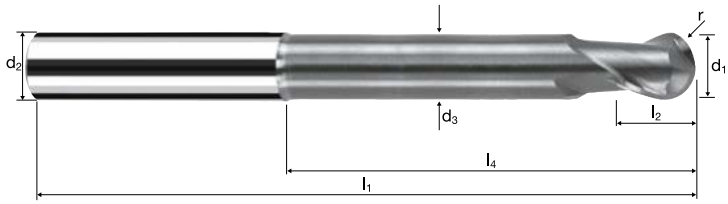
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X7404
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2		●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2		●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2		●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2		●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2		●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	1.00	2	94	0.048	0.070	0.070	0.97	30847	2961	45°
		2.00	2	94	0.085	0.110	0.110	1.90	15748	2677	45°
		3.00	2	94	0.105	0.140	0.140	2.82	10610	2228	45°
		4.00	2	94	0.127	0.190	0.190	3.76	7958	2021	45°
		5.00	2	94	0.138	0.240	0.240	4.71	6353	1753	45°
		6.00	2	94	0.150	0.290	0.290	5.65	5296	1589	45°
		8.00	2	94	0.187	0.380	0.380	7.53	3974	1486	45°
		10.00	2	94	0.210	0.480	0.480	9.42	3176	1334	45°
		12.00	2	94	0.220	0.580	0.580	11.30	2648	1165	45°
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	1.00	2	71	0.046	0.070	0.070	0.97	23299	2144	45°
		2.00	2	71	0.081	0.110	0.110	1.90	11895	1927	45°
		3.00	2	71	0.100	0.140	0.140	2.82	8014	1603	45°
		4.00	2	71	0.121	0.190	0.190	3.76	6011	1455	45°
		5.00	2	71	0.131	0.240	0.240	4.71	4798	1257	45°
		6.00	2	71	0.142	0.290	0.290	5.65	4000	1136	45°
		8.00	2	71	0.178	0.380	0.380	7.53	3001	1068	45°
		10.00	2	71	0.199	0.480	0.480	9.42	2399	955	45°
		12.00	2	71	0.209	0.580	0.580	11.30	2000	836	45°
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	1.00	2	56	0.042	0.070	0.070	0.97	18377	1544	45°
		2.00	2	56	0.078	0.110	0.110	1.90	9382	1464	45°
		3.00	2	56	0.095	0.140	0.140	2.82	6321	1201	45°
		4.00	2	56	0.115	0.190	0.190	3.76	4741	1090	45°
		5.00	2	56	0.126	0.240	0.240	4.71	3785	954	45°
		6.00	2	56	0.138	0.290	0.290	5.65	3155	871	45°
		8.00	2	56	0.166	0.380	0.380	7.53	2367	786	45°
		10.00	2	56	0.190	0.480	0.480	9.42	1892	719	45°
		12.00	2	56	0.200	0.580	0.580	11.30	1577	631	45°
	Steel < 850 N/mm² P P	1.00	2	128	0.071	0.070	0.070	0.97	42004	5965	45°
		2.00	2	187	0.120	0.110	0.110	1.90	31328	7519	45°
		3.00	2	202	0.151	0.140	0.140	2.82	22801	6886	45°
		4.00	2	202	0.181	0.190	0.190	3.76	17101	6191	45°
		5.00	2	202	0.203	0.240	0.240	4.71	13652	5543	45°
		6.00	2	202	0.220	0.290	0.290	5.65	11380	5007	45°
		8.00	2	202	0.268	0.380	0.380	7.53	8539	4577	45°
		10.00	2	202	0.308	0.480	0.480	9.42	6826	4205	45°
		12.00	2	202	0.316	0.580	0.580	11.30	5690	3596	45°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	1.00	2	140	0.025	0.050	0.050	0.94	47408	2370	45°
		2.00	2	140	0.030	0.070	0.070	1.84	24219	1453	45°
		3.00	2	140	0.030	0.090	0.090	2.72	16384	983	45°
		4.00	2	140	0.050	0.110	0.110	3.60	12379	1238	45°
		5.00	2	140	0.055	0.130	0.130	4.48	9947	1094	45°
		6.00	2	140	0.060	0.150	0.150	5.36	8314	998	45°
		8.00	2	140	0.065	0.170	0.170	7.05	6321	822	45°
		10.00	2	140	0.070	0.200	0.200	8.77	5081	711	45°
		12.00	2	140	0.075	0.250	0.250	10.56	4220	633	45°
	Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	1.00	2	125	0.022	0.050	0.050	0.94	42328	1862	45°
		2.00	2	125	0.028	0.070	0.070	1.84	21624	1211	45°
		3.00	2	125	0.028	0.090	0.090	2.72	14628	819	45°
		4.00	2	125	0.046	0.110	0.110	3.60	11052	1017	45°
		5.00	2	125	0.050	0.130	0.130	4.48	8881	888	45°
		6.00	2	125	0.054	0.150	0.150	5.36	7423	802	45°
		8.00	2	125	0.058	0.170	0.170	7.05	5644	655	45°
		10.00	2	125	0.064	0.200	0.200	8.77	4537	581	45°
		12.00	2	125	0.068	0.250	0.250	10.56	3768	512	45°
	Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	1.00	2	70	0.025	0.050	0.050	0.94	23704	1185	45°
		2.00	2	70	0.025	0.070	0.070	1.84	12110	606	45°
		3.00	2	70	0.025	0.090	0.090	2.72	8192	410	45°
		4.00	2	70	0.045	0.110	0.110	3.60	6189	557	45°
		5.00	2	70	0.050	0.130	0.130	4.48	4974	497	45°
		6.00	2	70	0.055	0.150	0.150	5.36	4157	457	45°
		8.00	2	70	0.060	0.170	0.170	7.05	3161	379	45°
		10.00	2	70	0.065	0.200	0.200	8.77	2541	330	45°
		12.00	2	70	0.070	0.250	0.250	10.56	2110	295	45°
	Steel < 850 N/mm² P P	1.00	2	360	0.030	0.050	0.050	0.94	60000	3600	45°
		2.00	2	360	0.035	0.070	0.070	1.84	60000	4200	45°
		3.00	2	360	0.035	0.090	0.090	2.72	42129	2949	45°
		4.00	2	360	0.060	0.110	0.110	3.60	31831	3820	45°
		5.00	2	360	0.065	0.130	0.130	4.48	25578	3325	45°
		6.00	2	360	0.070	0.150	0.150	5.36	21379	2993	45°
		8.00	2	360	0.080	0.170	0.170	7.05	16254	2601	45°
		10.00	2	360	0.085	0.200	0.200	8.77	13066	2221	45°
		12.00	2	360	0.090	0.250	0.250	10.56	10851	1953	45°

Ball nose end mills Sphericut

Tolerance r ±0.005, 6xd

HM MG10	λ 30° γ 5°



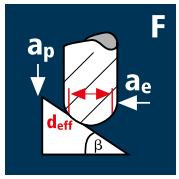
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7544** ø-Code **100**

Ø Code	d_1	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	POLYCHROM **P7544**
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	70	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	17.00	85.13	86.00	8.000	0.0°	2	●

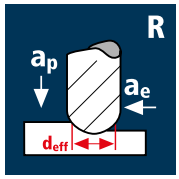
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Wrought aluminium Construction aluminium									
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	486	0.070	0.050	0.180	3.39	45634	6389	45°
5.00	2	486	0.075	0.050	0.200	4.17	37098	5565	45°
6.00	2	486	0.085	0.075	0.230	5.08	30452	5177	45°
8.00	2	486	0.090	0.075	0.250	6.64	23298	4194	45°
10.00	2	486	0.100	0.100	0.300	8.34	18549	3710	45°
12.00	2	486	0.105	0.100	0.350	9.89	15642	3285	45°
16.00	2	486	0.115	0.120	0.400	13.10	11809	2716	45°
Unalloyed copper									
3.00	2	324	0.060	0.050	0.150	2.59	39819	4778	45°
4.00	2	324	0.070	0.050	0.180	3.39	30423	4259	45°
5.00	2	324	0.075	0.050	0.200	4.17	24732	3710	45°
6.00	2	324	0.085	0.075	0.230	5.08	20302	3451	45°
8.00	2	324	0.090	0.075	0.250	6.64	15532	2796	45°
10.00	2	324	0.100	0.100	0.300	8.34	12366	2473	45°
12.00	2	324	0.105	0.100	0.350	9.89	10428	2190	45°
16.00	2	324	0.115	0.120	0.400	13.10	7873	1811	45°
Thermoplastics									
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	490	0.070	0.050	0.180	3.39	46009	6441	45°
5.00	2	610	0.075	0.050	0.200	4.17	46563	6985	45°
6.00	2	730	0.085	0.075	0.230	5.08	45741	7776	45°
8.00	2	955	0.090	0.075	0.250	6.64	45781	8241	45°
10.00	2	1080	0.100	0.100	0.300	8.34	41220	8244	45°
12.00	2	1080	0.105	0.100	0.350	9.89	34760	7300	45°
16.00	2	1080	0.115	0.120	0.400	13.10	26242	6036	45°
Cast aluminium									
3.00	2	370	0.060	0.050	0.150	2.59	45473	5457	45°
4.00	2	389	0.070	0.050	0.180	3.39	36526	5114	45°
5.00	2	389	0.075	0.050	0.200	4.17	29694	4454	45°
6.00	2	389	0.085	0.075	0.230	5.08	24375	4144	45°
8.00	2	389	0.090	0.075	0.250	6.64	18648	3357	45°
10.00	2	389	0.100	0.100	0.300	8.34	14847	2969	45°
12.00	2	389	0.105	0.100	0.350	9.89	12520	2629	45°
16.00	2	389	0.115	0.120	0.400	13.10	9452	2174	45°

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Wrought aluminium Construction aluminium									
3.00	2	227	0.082	0.450	0.900	2.14	33765	5538	2.2
4.00	2	227	0.090	0.600	1.200	2.86	25264	4548	3.3
5.00	2	227	0.100	0.750	1.500	3.57	20240	4048	4.6
6.00	2	227	0.120	0.900	1.800	4.28	16882	4052	6.6
8.00	2	227	0.140	1.200	2.400	5.71	12654	3543	10.2
10.00	2	227	0.150	1.500	3.000	7.14	10120	3036	13.7
12.00	2	227	0.180	1.800	3.600	8.57	8431	3035	19.7
16.00	2	227	0.200	2.400	4.800	11.43	6322	2529	29.1
Unalloyed copper									
3.00	2	151	0.078	0.450	0.900	2.14	22460	3504	1.4
4.00	2	151	0.084	0.600	1.200	2.86	16806	2823	2.0
5.00	2	151	0.092	0.750	1.500	3.57	13464	2477	2.8
6.00	2	151	0.111	0.900	1.800	4.28	11230	2493	4.0
8.00	2	151	0.128	1.200	2.400	5.71	8418	2155	6.2
10.00	2	151	0.135	1.500	3.000	7.14	6732	1818	8.2
12.00	2	151	0.162	1.800	3.600	8.57	5608	1817	11.8
16.00	2	151	0.176	2.400	4.800	11.43	4205	1480	17.1
Thermoplastics									
3.00	2	273	0.082	0.450	0.900	2.14	40607	6660	2.7
4.00	2	361	0.090	0.600	1.200	2.86	40178	7232	5.2
5.00	2	455	0.100	0.750	1.500	3.57	40569	8114	9.1
6.00	2	504	0.120	0.900	1.800	4.28	37483	8996	14.6
8.00	2	504	0.140	1.200	2.400	5.71	28096	7867	22.7
10.00	2	504	0.150	1.500	3.000	7.14	22469	6741	30.3
12.00	2	504	0.180	1.800	3.600	8.57	18720	6739	43.7
16.00	2	504	0.200	2.400	4.800	11.43	14036	5614	64.7
Cast aluminium									
3.00	2	181	0.082	0.450	0.900	2.14	26922	4415	1.8
4.00	2	181	0.090	0.600	1.200	2.86	20145	3626	2.6
5.00	2	181	0.100	0.750	1.500	3.57	16138	3228	3.6
6.00	2	181	0.120	0.900	1.800	4.28	13461	3231	5.2
8.00	2	181	0.140	1.200	2.400	5.71	10090	2825	8.1
10.00	2	181	0.150	1.500	3.000	7.14	8069	2421	10.9
12.00	2	181	0.180	1.800	3.600	8.57	6723	2420	15.7
16.00	2	181	0.200	2.400	4.800	11.43	5041	2016	23.2

Ball nose end mills Sphericut

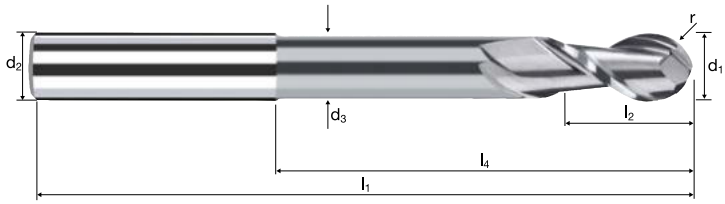
Tolerance r ±0.005, 6xd

HM MG10 | λ 40° γ 20°

h4

r

R F

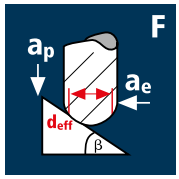
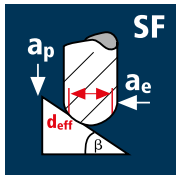


ReTool®

Al Aluminium > 99% | Al Aluminium Alloy | Al Aluminium Cast | Cu Copper | Plastic Thermoplast

Example: **Order-N°.** Coating **7554** Article-N°. **180** ø-Code

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	7554
180	3.00	6.00	2.80	66	6.00	18.00	24.63	1.500	3.7°	2	●
220	4.00	6.00	3.70	69	8.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	10.00	30.00	33.27	2.500	1.1°	2	●
300	6.00	6.00	5.50	80	12.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	16.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	20.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	24.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	32.00	85.13	86.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	1.00	2	140	0.025	0.050	0.050	0.94	47408	2370	45°
		2.00	2	140	0.025	0.070	0.070	1.84	24219	1211	45°
		3.00	2	140	0.030	0.100	0.100	2.74	16264	976	45°
		4.00	2	140	0.055	0.120	0.120	3.62	12310	1354	45°
		5.00	2	140	0.060	0.150	0.150	4.53	9837	1180	45°
		6.00	2	140	0.065	0.150	0.150	5.36	8314	1081	45°
		8.00	2	140	0.070	0.170	0.170	7.05	6321	885	45°
		10.00	2	140	0.075	0.200	0.200	8.77	5081	762	45°
		12.00	2	140	0.080	0.250	0.250	10.56	4220	675	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	100	0.025	0.050	0.050	0.94	33863	1693	45°
		2.00	2	100	0.025	0.070	0.070	1.84	17299	865	45°
		3.00	2	100	0.030	0.100	0.100	2.74	11617	697	45°
		4.00	2	100	0.050	0.120	0.120	3.62	8793	879	45°
		5.00	2	100	0.055	0.150	0.150	4.53	7027	773	45°
		6.00	2	100	0.060	0.150	0.150	5.36	5939	713	45°
		8.00	2	100	0.065	0.170	0.170	7.05	4515	587	45°
		10.00	2	100	0.070	0.200	0.200	8.77	3630	508	45°
		12.00	2	100	0.075	0.250	0.250	10.56	3014	452	45°
	Hardened tool steel > 60 HRC	1.00	2	70	0.020	0.040	0.040	0.93	23959	958	45°
		2.00	2	70	0.020	0.055	0.055	1.80	12379	495	45°
		3.00	2	70	0.025	0.075	0.075	2.68	8314	416	45°
		4.00	2	70	0.045	0.090	0.090	3.54	6294	567	45°
		5.00	2	70	0.045	0.115	0.115	4.43	5030	453	45°
		6.00	2	70	0.050	0.115	0.115	5.24	4252	425	45°
		8.00	2	70	0.055	0.130	0.130	6.90	3229	355	45°
		10.00	2	70	0.060	0.150	0.150	8.58	2597	312	45°
		12.00	2	70	0.065	0.190	0.190	10.34	2155	280	45°
	High speed steel, hardened 64 - 70 HRC	1.00	2	45	0.015	0.025	0.025	0.89	16094	483	45°
		2.00	2	45	0.015	0.035	0.035	1.74	8232	247	45°
		3.00	2	45	0.020	0.050	0.050	2.59	5530	221	45°
		4.00	2	45	0.030	0.060	0.060	3.43	4176	251	45°
		5.00	2	45	0.035	0.075	0.075	4.29	3339	234	45°
		6.00	2	45	0.035	0.075	0.075	5.08	2820	197	45°
		8.00	2	45	0.040	0.085	0.085	6.70	2138	171	45°
		10.00	2	45	0.040	0.100	0.100	8.34	1717	137	45°
		12.00	2	45	0.045	0.125	0.125	10.03	1428	129	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	200	0.020	0.020	0.020	0.88	60000	2400	45°
		2.00	2	200	0.025	0.020	0.020	1.67	38121	1906	45°
		3.00	2	200	0.025	0.030	0.030	2.50	25465	1273	45°
		4.00	2	200	0.035	0.030	0.030	3.27	19468	1363	45°
		5.00	2	200	0.040	0.030	0.030	4.04	15758	1261	45°
		6.00	2	200	0.045	0.030	0.030	4.80	13263	1194	45°
		8.00	2	200	0.050	0.030	0.030	6.31	10089	1009	45°
		10.00	2	200	0.050	0.040	0.040	7.91	8048	805	45°
		12.00	2	200	0.055	0.040	0.040	9.41	6765	744	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	120	0.015	0.020	0.020	0.88	43406	1302	45°
		2.00	2	120	0.020	0.020	0.020	1.67	22873	915	45°
		3.00	2	120	0.020	0.030	0.030	2.50	15279	611	45°
		4.00	2	120	0.035	0.030	0.030	3.27	11681	818	45°
		5.00	2	120	0.040	0.030	0.030	4.04	9455	756	45°
		6.00	2	120	0.045	0.030	0.030	4.80	7958	716	45°
		8.00	2	120	0.045	0.030	0.030	6.31	6053	545	45°
		10.00	2	120	0.045	0.040	0.040	7.91	4829	435	45°
		12.00	2	120	0.050	0.040	0.040	9.41	4059	406	45°
	Hardened tool steel > 60 HRC	1.00	2	85	0.010	0.010	0.020	0.83	32598	652	45°
		2.00	2	85	0.010	0.010	0.020	1.60	16910	338	45°
		3.00	2	85	0.010	0.020	0.030	2.44	11089	222	45°
		4.00	2	85	0.020	0.020	0.030	3.20	8455	338	45°
		5.00	2	85	0.025	0.020	0.030	3.95	6850	343	45°
		6.00	2	85	0.025	0.020	0.030	4.70	5757	288	45°
		8.00	2	85	0.025	0.020	0.030	6.19	4371	219	45°
		10.00	2	85	0.025	0.020	0.040	7.67	3528	176	45°
		12.00	2	85	0.030	0.020	0.040	9.15	2957	177	45°
	High speed steel, hardened 64 - 70 HRC	1.00	2	55	0.010	0.010	0.020	0.83	21093	422	45°
		2.00	2	55	0.010	0.010	0.020	1.60	10942	219	45°
		3.00	2	55	0.010	0.020	0.030	2.44	7175	144	45°
		4.00	2	55	0.015	0.020	0.030	3.20	5471	164	45°
		5.00	2	55	0.020	0.020	0.030	3.95	4432	177	45°
		6.00	2	55	0.020	0.020	0.030	4.70	3725	149	45°
		8.00	2	55	0.020	0.020	0.030	6.19	2828	113	45°
		10.00	2	55	0.020	0.020	0.040	7.67	2283	91	45°
		12.00	2	55	0.025	0.020	0.040	9.15	1913	96	45°

Ball nose end mills SpheroX

Tolerance r ±0.005, 9xd

X-Generation X

II

HM XA

λ 30°
γ -10°

h4

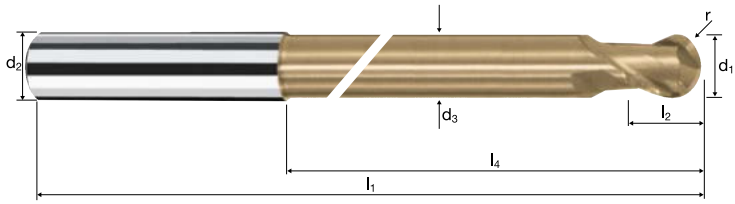
sc

d1

r

R

F

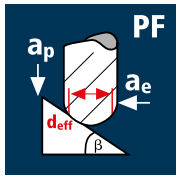
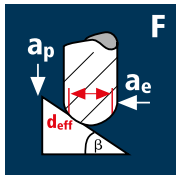


ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS ToolSteel

Example: **Order-N°.** Coating **V** Article-N°. **7478** ø-Code **100**

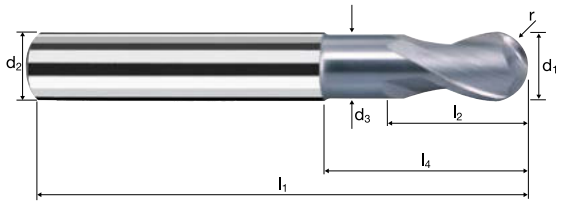
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-V
											V7478
100	1.00	6.00	0.95	69	1.50	9.00	19.08	0.500	8.0°	2	●
140	2.00	6.00	1.90	69	3.00	18.00	26.31	1.000	4.7°	2	●
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	2	●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	2	●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	2	●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	180	17.00	130.13	131.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm²	1.00	2	180	0.040	0.100	0.100	0.99	57875	4630	45°
		2.00	2	180	0.065	0.200	0.200	1.98	28937	3762	45°
		3.00	2	180	0.075	0.300	0.300	2.97	19292	2894	45°
		4.00	2	180	0.090	0.400	0.400	3.96	14469	2604	45°
		6.00	2	180	0.090	0.400	0.400	5.79	9896	1781	45°
		8.00	2	180	0.090	0.400	0.400	7.56	7579	1364	45°
		10.00	2	180	0.090	0.400	0.400	9.28	6174	1111	45°
		12.00	2	180	0.090	0.400	0.400	10.97	5223	940	45°
		16.00	2	180	0.090	0.400	0.400	14.28	4012	722	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	160	0.035	0.100	0.100	0.99	51444	3601	45°
		2.00	2	160	0.060	0.200	0.200	1.98	25722	3087	45°
		3.00	2	160	0.070	0.300	0.300	2.97	17148	2401	45°
		4.00	2	160	0.085	0.400	0.400	3.96	12861	2186	45°
		6.00	2	160	0.100	0.600	0.600	5.94	8574	1715	45°
		8.00	2	160	0.115	0.800	0.800	7.92	6431	1479	45°
		10.00	2	160	0.135	1.000	1.000	9.90	5144	1389	45°
		12.00	2	160	0.140	1.200	1.200	11.88	4287	1200	45°
		16.00	2	160	0.165	1.600	1.600	15.84	3215	1061	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	140	0.035	0.120	0.120	1.00	44563	3119	45°
		2.00	2	140	0.055	0.150	0.150	1.95	22853	2514	45°
		3.00	2	140	0.065	0.180	0.180	2.87	15527	2019	45°
		4.00	2	140	0.075	0.200	0.200	3.78	11789	1768	45°
		6.00	2	140	0.095	0.300	0.300	5.67	7860	1493	45°
		8.00	2	140	0.105	0.400	0.400	7.56	5895	1238	45°
		10.00	2	140	0.125	0.500	0.500	9.45	4716	1179	45°
		12.00	2	140	0.130	0.600	0.600	11.34	3930	1022	45°
		16.00	2	140	0.155	0.800	0.800	15.11	2949	914	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	100	0.030	0.120	0.120	1.00	31831	1910	45°
		2.00	2	100	0.050	0.150	0.150	1.95	16324	1632	45°
		3.00	2	100	0.060	0.180	0.180	2.87	11091	1331	45°
		4.00	2	100	0.070	0.200	0.200	3.78	8421	1179	45°
		6.00	2	100	0.090	0.300	0.300	5.67	5614	1011	45°
		8.00	2	100	0.100	0.400	0.400	7.56	4210	842	45°
		10.00	2	100	0.115	0.500	0.500	9.45	3368	775	45°
		12.00	2	100	0.120	0.600	0.600	11.34	2807	674	45°
		16.00	2	100	0.145	0.800	0.800	15.11	2107	611	45°
	Steel 1100 - 1300 N/mm²	1.00	2	280	0.025	0.050	0.050	0.94	60000	3000	45°
		2.00	2	280	0.030	0.070	0.070	1.84	48438	2906	45°
		3.00	2	280	0.035	0.100	0.100	2.74	32528	2277	45°
		4.00	2	280	0.055	0.120	0.120	3.62	24621	2708	45°
		6.00	2	280	0.065	0.150	0.150	5.36	16628	2162	45°
		8.00	2	280	0.075	0.170	0.170	7.05	12642	1896	45°
		10.00	2	280	0.080	0.200	0.200	8.77	10163	1626	45°
		12.00	2	280	0.085	0.250	0.250	10.56	8440	1435	45°
		16.00	2	280	0.100	0.280	0.280	13.88	6421	1284	45°
	Hardened tool steel 42 - 48 HRC	1.00	2	250	0.025	0.050	0.050	0.94	60000	3000	45°
		2.00	2	250	0.030	0.070	0.070	1.84	43249	2595	45°
		3.00	2	250	0.035	0.100	0.100	2.74	29043	2033	45°
		4.00	2	250	0.050	0.120	0.120	3.62	21983	2198	45°
		6.00	2	250	0.060	0.150	0.150	5.36	14847	1782	45°
		8.00	2	250	0.070	0.170	0.170	7.05	11288	1580	45°
		10.00	2	250	0.075	0.200	0.200	8.77	9074	1361	45°
		12.00	2	250	0.080	0.250	0.250	10.56	7536	1206	45°
		16.00	2	250	0.095	0.280	0.280	13.88	5733	1089	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	200	0.025	0.050	0.050	0.94	60000	3000	45°
		2.00	2	200	0.025	0.070	0.070	1.84	34599	1730	45°
		3.00	2	200	0.030	0.100	0.100	2.74	23234	1394	45°
		4.00	2	200	0.050	0.120	0.120	3.62	17586	1759	45°
		6.00	2	200	0.060	0.150	0.150	5.36	11877	1425	45°
		8.00	2	200	0.070	0.170	0.170	7.05	9030	1264	45°
		10.00	2	200	0.070	0.200	0.200	8.77	7259	1016	45°
		12.00	2	200	0.075	0.250	0.250	10.56	6029	904	45°
		16.00	2	200	0.090	0.280	0.280	13.88	4587	826	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	150	0.020	0.050	0.050	0.94	50794	2032	45°
		2.00	2	150	0.025	0.070	0.070	1.84	25949	1298	45°
		3.00	2	150	0.030	0.100	0.100	2.74	17426	1046	45°
		4.00	2	150	0.045	0.120	0.120	3.62	13190	1187	45°
		6.00	2	150	0.055	0.150	0.150	5.36	8908	980	45°
		8.00	2	150	0.065	0.170	0.170	7.05	6773	881	45°
		10.00	2	150	0.070	0.200	0.200	8.77	5444	762	45°
		12.00	2	150	0.070	0.250	0.250	10.56	4521	633	45°
		16.00	2	150	0.085	0.280	0.280	13.88	3440	585	45°

Ball nose end mills Sphericut

Tolerance r f8 (-/-), 3xd

HM Plus	λ 30° γ -10°

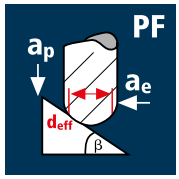
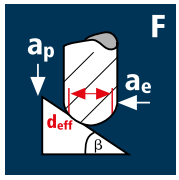


ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60				GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5286** ø-Code **100**

Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r f8	α	z	POLYCHROM P5286
100	1.00	3.00	-	40	1.00	-	5.93	0.500	13.2°	2	●
120	1.50	3.00	-	40	2.00	-	5.99	0.750	10.4°	2	●
138	2.00	3.00	-	40	2.50	-	5.96	1.000	8.3°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
178	3.00	3.00	-	40	4.00	-	-	1.500	0.0°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	3.00	2	200	0.070	0.240	0.240	2.93	21728	3042	45°
		4.00	2	200	0.080	0.320	0.320	3.91	16282	2605	45°
		5.00	2	200	0.090	0.400	0.400	4.89	13019	2343	45°
		6.00	2	200	0.100	0.480	0.480	5.87	10845	2169	45°
		8.00	2	200	0.110	0.640	0.640	7.82	8141	1791	45°
		10.00	2	200	0.130	0.800	0.800	9.78	6509	1692	45°
		12.00	2	200	0.135	0.960	0.960	11.73	5427	1465	45°
	Steel 1100 - 1300 N/mm²	3.00	2	160	0.065	0.240	0.240	2.93	17382	2260	45°
		4.00	2	160	0.075	0.320	0.320	3.91	13025	1954	45°
		5.00	2	160	0.085	0.400	0.400	4.89	10415	1771	45°
		6.00	2	160	0.090	0.480	0.480	5.87	8676	1562	45°
		8.00	2	160	0.100	0.640	0.640	7.82	6513	1303	45°
		10.00	2	160	0.120	0.800	0.800	9.78	5208	1250	45°
		12.00	2	160	0.125	0.960	0.960	11.73	4342	1086	45°
	Steel 1300 - 1500 N/mm²	3.00	2	140	0.060	0.240	0.240	2.93	15209	1825	45°
		4.00	2	140	0.070	0.320	0.320	3.91	11397	1596	45°
		5.00	2	140	0.075	0.400	0.400	4.89	9113	1367	45°
		6.00	2	140	0.085	0.480	0.480	5.87	7592	1291	45°
		8.00	2	140	0.095	0.640	0.640	7.82	5699	1083	45°
		10.00	2	140	0.110	0.800	0.800	9.78	4557	1003	45°
		12.00	2	140	0.115	0.960	0.960	11.73	3799	874	45°
	Steel 1500 - 1800 N/mm²	3.00	2	80	0.055	0.190	0.190	2.89	8811	969	45°
		4.00	2	80	0.065	0.260	0.260	3.86	6597	858	45°
		5.00	2	80	0.070	0.320	0.320	4.81	5294	741	45°
		6.00	2	80	0.080	0.380	0.380	5.77	4413	706	45°
		8.00	2	80	0.090	0.510	0.510	7.70	3307	595	45°
		10.00	2	80	0.105	0.640	0.640	9.63	2644	555	45°
		12.00	2	80	0.110	0.770	0.770	11.55	2205	485	45°
	Steel 850 - 1100 N/mm²	3.00	2	300	0.025	0.100	0.100	2.74	34851	1743	45°
		4.00	2	300	0.050	0.120	0.120	3.62	26379	2638	45°
		5.00	2	300	0.055	0.130	0.130	4.48	21315	2345	45°
		6.00	2	300	0.060	0.150	0.150	5.36	17816	2138	45°
		8.00	2	300	0.065	0.170	0.170	7.05	13545	1761	45°
		10.00	2	300	0.070	0.200	0.200	8.77	10889	1525	45°
		12.00	2	300	0.075	0.250	0.250	10.56	9043	1357	45°
	Steel 1100 - 1300 N/mm²	3.00	2	260	0.025	0.100	0.100	2.74	30205	1510	45°
		4.00	2	260	0.050	0.120	0.120	3.62	22862	2286	45°
		5.00	2	260	0.050	0.130	0.130	4.48	18473	1847	45°
		6.00	2	260	0.055	0.150	0.150	5.36	15440	1698	45°
		8.00	2	260	0.060	0.170	0.170	7.05	11739	1409	45°
		10.00	2	260	0.065	0.200	0.200	8.77	9437	1227	45°
		12.00	2	260	0.070	0.250	0.250	10.56	7837	1097	45°
	Steel 1300 - 1500 N/mm²	3.00	2	200	0.025	0.100	0.100	2.74	23234	1162	45°
		4.00	2	200	0.045	0.120	0.120	3.62	17586	1583	45°
		5.00	2	200	0.050	0.130	0.130	4.48	14210	1421	45°
		6.00	2	200	0.055	0.150	0.150	5.36	11877	1307	45°
		8.00	2	200	0.060	0.170	0.170	7.05	9030	1084	45°
		10.00	2	200	0.065	0.200	0.200	8.77	7259	944	45°
		12.00	2	200	0.070	0.250	0.250	10.56	6029	844	45°
	Steel 1500 - 1800 N/mm²	3.00	2	100	0.020	0.080	0.080	2.69	11833	473	45°
		4.00	2	100	0.045	0.100	0.100	3.57	8916	802	45°
		5.00	2	100	0.045	0.110	0.110	4.42	7202	648	45°
		6.00	2	100	0.050	0.130	0.130	5.29	6017	602	45°
		8.00	2	100	0.055	0.150	0.150	6.98	4560	502	45°
		10.00	2	100	0.060	0.180	0.180	8.70	3659	439	45°
		12.00	2	100	0.065	0.220	0.220	10.45	3046	396	45°

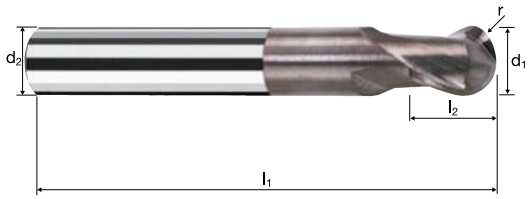
Ball nose end mills

Tolerance r f8 (-/-), 3xd

Favora® F

II

HM MG10	λ 30° γ -10°



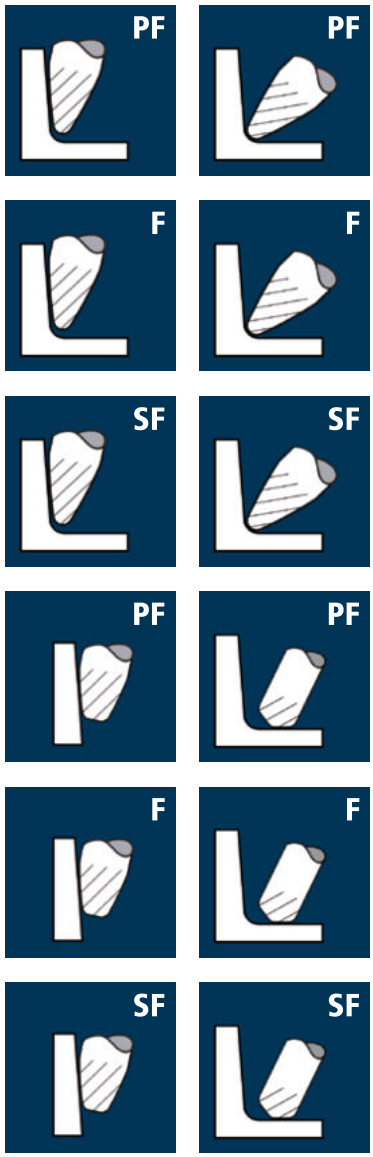
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **45298** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r f8	α	z	UNICUT-4X U45298
180	3.00	6.00	57	4.00	11.76	1.500	10.4°	2	●
220	4.00	6.00	57	5.00	11.39	2.000	8.3°	2	●
260	5.00	6.00	57	6.00	10.52	2.500	5.3°	2	●
300	6.00	6.00	57	7.00	-	3.000	0.0°	2	●
391	8.00	8.00	63	9.00	-	4.000	0.0°	2	●
450	10.00	10.00	72	11.00	-	5.000	0.0°	2	●
501	12.00	12.00	83	13.00	-	6.000	0.0°	2	●

Applications



Cutting data calculator ToolExpert ArCutX

Perfect finishing tool whenever an excellent surface quality is demanded: ToolExpert ArCutX

With the ArCutX tool concept, FRAISA offers a range of conical end mills in various designs which cover a broad spectrum of finishing processes.

In combination with the respective tool characteristics, the technologies facilitate a wide range of applications in a variety of materials.

Optimize your finishing processes with the ToolExpert ArCutX.

This way to the cutting data calculator **ToolExpert ArCutX** or the FRAISA website

www.fraisa.com/en/toolexpert-arcut-x

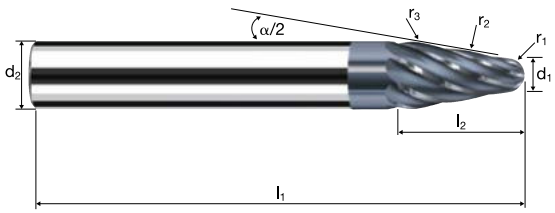
Circular arc milling cutter ArCutX

Spherical, form tolerance ±0.010

X-Generation X

II

HM MG10	λ 30° γ 10°



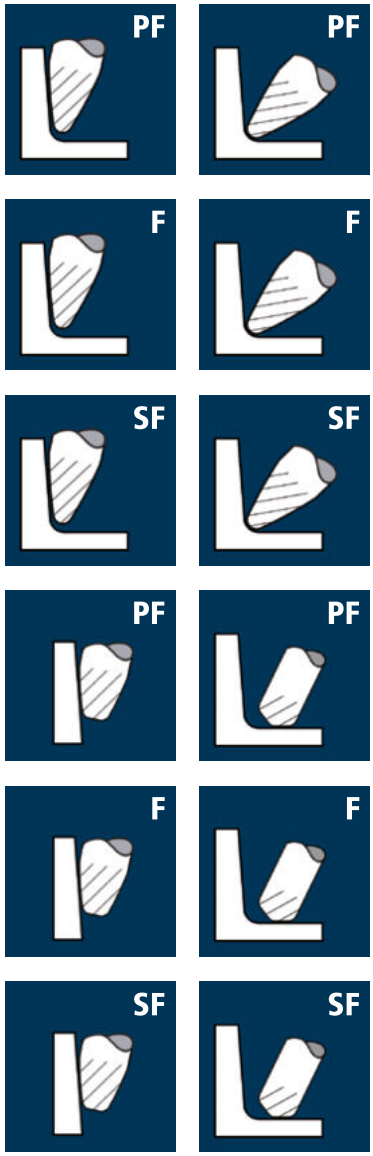
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8530** ø-Code **220**

Ø Code	d_1	α/2	d_2 h5	l_1	l_2	r1	r2	r3	z	POLYCHROM P8530
220	4.00	30.0°	16.00	108	14.50	2.00	750	3.00	4	●
221	4.00	30.0°	16.00	108	14.50	2.00	750	3.00	6	●
300	6.00	20.0°	16.00	108	18.50	3.00	1000	5.00	4	●
301	6.00	20.0°	16.00	108	18.50	3.00	1000	5.00	8	●
388	8.00	10.0°	16.00	108	28.50	4.00	1000	5.00	4	●
389	8.00	10.0°	16.00	108	28.50	4.00	1000	5.00	8	●
391	8.00	6.0°	16.00	123	44.00	4.00	1000	5.00	4	●
393	8.00	6.0°	16.00	123	44.00	4.00	1000	5.00	8	●

Applications



Cutting data calculator ToolExpert ArCutX

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This way to the cutting data calculator **ToolExpert ArCutX** or the FRAISA website

www.fraisa.com/en/toolexpert-arcut-x

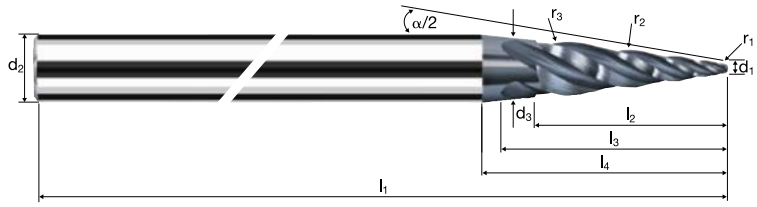
Circular arc milling cutter ArCutX

Spherical, form tolerance ±0.005

X-Generation

II

HM MG10	λ 30° γ 10°



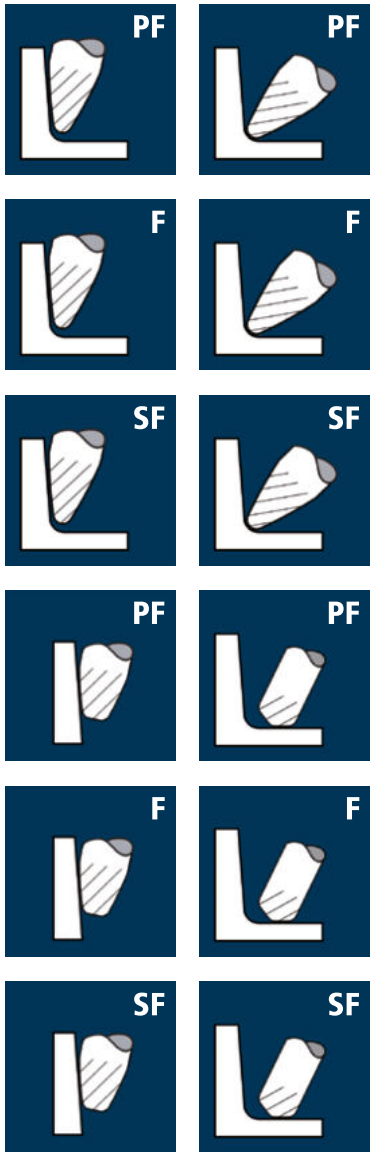
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8535** ø-Code **100**

Ø Code	d_1	α/2	d_2 h5	d_3	l_1	l_2	l_3	l_4	r1	r2	r3	z	POLYCHROM P8535
100	1.00	8.0°	6.00	5.00	70	16.00	17.50	22.50	0.50	350	1.00	4	●
140	2.00	15.0°	8.00	7.00	80	11.50	17.50	22.50	1.00	350	1.00	4	●
145	2.00	30.0°	8.00	-	80	8.00	-	-	1.00	250	1.00	4	●
220	4.00	14.0°	12.00	9.00	97	13.50	17.50	22.50	2.00	350	1.00	4	●

Applications



Cutting data calculator ToolExpert ArCutX

Perfect finishing tool whenever an excellent surface quality is demanded: ToolExpert ArCutX

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Optimize your finishing processes with the ToolExpert ArCutX.

This way to the cutting data calculator **ToolExpert ArCutX** or the FRAISA website

www.fraisa.com/en/toolexpert-arcut-x

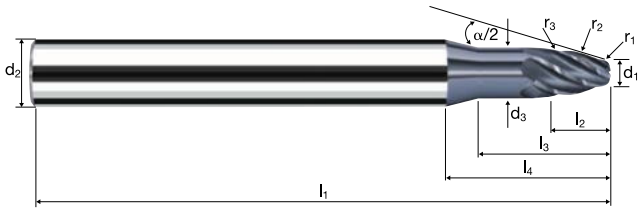
Circular arc milling cutter ArCutX

Toric, form tolerance ±0.010

X-Generation X

II

HM MG10	λ 30° γ 10°



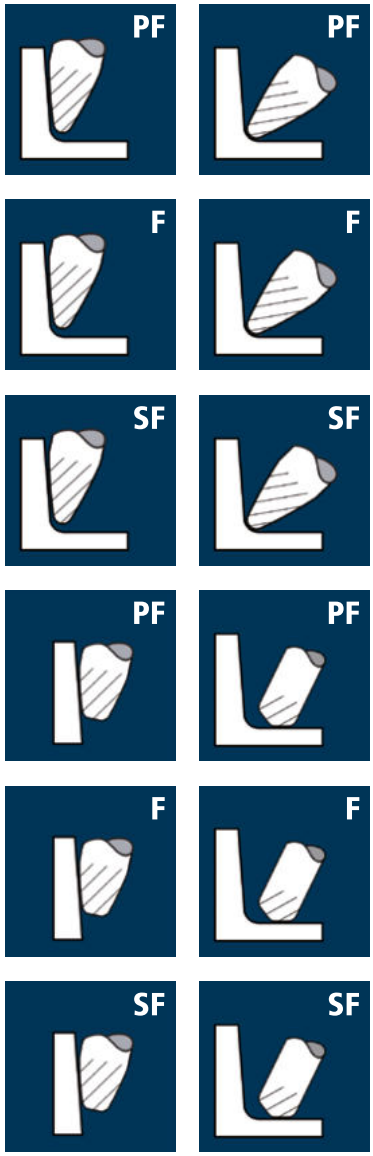
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **8540** ø-Code **220**

Ø Code	d_1	α/2	d_2 h5	d_3	l_1	l_2	l_3	l_4	r1	r2	r3	z	POLYCHROM P8540
220	4.00	12.5°	10.00	7.50	84	11.00	20.00	25.00	1.25	30	1.00	4	●
221	4.00	12.5°	10.00	7.50	84	11.00	20.00	25.00	1.25	30	1.00	6	●
300	6.00	15.0°	12.00	-	97	15.00	-	-	2.00	40	2.00	4	●
301	6.00	15.0°	12.00	-	97	15.00	-	-	2.00	40	2.00	6	●
450	10.00	17.5°	16.00	-	108	15.00	-	-	3.50	50	2.00	4	●
453	10.00	17.5°	16.00	-	108	15.00	-	-	3.50	50	2.00	8	●

Applications



Cutting data calculator ToolExpert ArCutX

Perfect finishing tool whenever an excellent surface quality is demanded: ToolExpert ArCutX

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Optimize your finishing processes with the ToolExpert ArCutX.

This way to the cutting data calculator **ToolExpert ArCutX** or the FRAISA website

www.fraisa.com/en/toolexpert-arcut-x

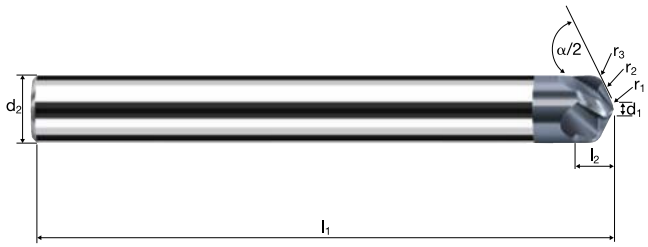
Circular arc milling cutter ArCutX

Flat surfaces, form tolerance ±0.010

X-Generation

II

HM MG10	λ 30° γ 10°

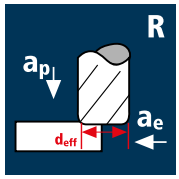


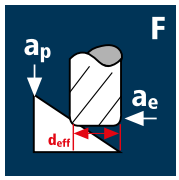
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

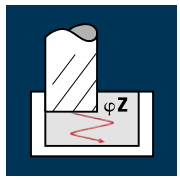
Example: **Order-N°.** Coating **P** Article-N°. **8550** ø-Code **140**

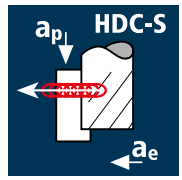
Ø Code	d_1	α/2	d_2 h5	l_1	l_2	r1	r2	r3	z	POLYCHROM P8550
140	2.00	65.0°	10.00	84	4.00	1.00	250	1.75	4	●
300	6.00	70.0°	20.00	104	5.50	1.00	250	1.00	8	●

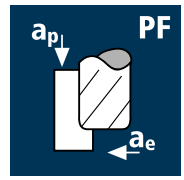
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 56 - 60 HRC	2.00	6	80	0.014	0.200	1.200	1.80	14147	1188	0.500
		3.00	6	80	0.021	0.250	1.800	2.87	8873	1118	0.500
		4.00	6	80	0.028	0.250	2.400	3.87	6580	1105	0.500
		5.00	6	80	0.035	0.250	3.000	4.87	5229	1098	0.500
		6.00	8	80	0.042	0.200	3.600	5.80	4390	1475	0.500
		8.00	8	80	0.056	0.200	4.800	7.80	3265	1463	0.500
		10.00	8	80	0.070	0.200	6.000	9.80	2598	1455	0.500
		12.00	8	80	0.084	0.200	7.200	11.80	2158	1450	0.500
	Hardened tool steel > 60 HRC	2.00	6	50	0.007	0.200	1.200	1.80	8842	371	0.500
		3.00	6	50	0.010	0.250	1.800	2.87	5545	333	0.500
		4.00	6	50	0.014	0.250	2.400	3.87	4113	346	0.500
		5.00	6	50	0.018	0.250	3.000	4.87	3268	353	0.500
		6.00	8	50	0.021	0.200	3.600	5.80	2744	461	0.500
		8.00	8	50	0.028	0.200	4.800	7.80	2040	457	0.500
		10.00	8	50	0.035	0.200	6.000	9.80	1624	455	0.500
		12.00	8	50	0.042	0.200	7.200	11.80	1349	453	0.500
	High speed steel, hardened 64 - 70 HRC	2.00	6	20	0.004	0.200	1.200	1.80	3537	85	0.500
		3.00	6	20	0.006	0.250	1.800	2.87	2218	80	0.500
		4.00	6	20	0.008	0.250	2.400	3.87	1645	79	0.500
		5.00	6	20	0.010	0.250	3.000	4.87	1307	78	0.500
		6.00	8	20	0.012	0.200	3.600	5.80	1098	105	0.500
		8.00	8	20	0.016	0.200	4.800	7.80	816	104	0.500
		10.00	8	20	0.020	0.200	6.000	9.80	650	104	0.500
		12.00	8	20	0.024	0.200	7.200	11.80	540	104	0.500

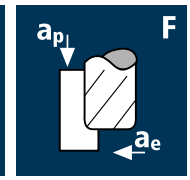
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 56 - 60 HRC	2.00	6	180	0.020	0.090	0.030	1.98	28937	3472	45°
		3.00	6	180	0.028	0.090	0.030	2.98	19227	3230	45°
		4.00	6	180	0.035	0.090	0.050	3.98	14396	3023	45°
		5.00	6	180	0.041	0.090	0.050	4.98	11505	2830	45°
		6.00	8	180	0.042	0.090	0.075	5.98	9581	3219	45°
		8.00	8	180	0.048	0.090	0.075	7.98	7180	2757	45°
		10.00	8	180	0.050	0.090	0.100	9.98	5741	2296	45°
		12.00	8	180	0.048	0.090	0.100	11.98	4783	1837	45°
	Hardened tool steel > 60 HRC	2.00	6	120	0.020	0.090	0.030	1.98	19292	2315	45°
		3.00	6	120	0.028	0.090	0.030	2.98	12818	2153	45°
		4.00	6	120	0.035	0.090	0.050	3.98	9597	2015	45°
		5.00	6	120	0.041	0.090	0.050	4.98	7670	1887	45°
		6.00	8	120	0.042	0.090	0.075	5.98	6387	2146	45°
		8.00	8	120	0.048	0.090	0.075	7.98	4787	1838	45°
		10.00	8	120	0.050	0.090	0.100	9.98	3827	1531	45°
		12.00	8	120	0.048	0.090	0.100	11.98	3188	1224	45°
	High speed steel, hardened 64 - 70 HRC	2.00	6	80	0.020	0.090	0.030	1.98	12861	1543	45°
		3.00	6	80	0.028	0.090	0.030	2.98	8545	1436	45°
		4.00	6	80	0.035	0.090	0.050	3.98	6398	1344	45°
		5.00	6	80	0.041	0.090	0.050	4.98	5113	1258	45°
		6.00	8	80	0.042	0.090	0.075	5.98	4258	1431	45°
		8.00	8	80	0.048	0.090	0.075	7.98	3191	1225	45°
		10.00	8	80	0.050	0.090	0.100	9.98	2552	1021	45°
		12.00	8	80	0.048	0.090	0.100	11.98	2126	816	45°

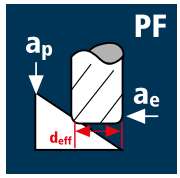
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert®**

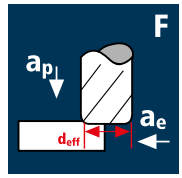


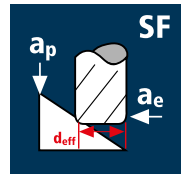












Corner radius end mills XSpeed-H

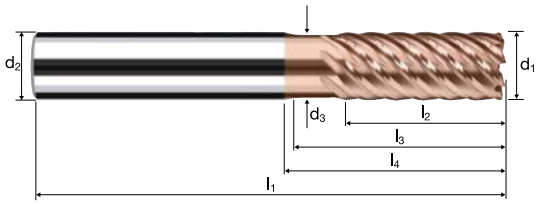
Tolerance r 0/+0.015, 3xd

X-Generation X

II

HM
XA

λ 45°
γ -10°



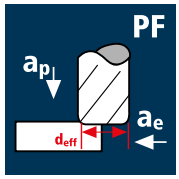
ReTool®

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **H** Article-N°. **7210** ø-Code **138**

Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	r 0/+0.015	α	z	DURO-Si H7210
138	2.00	6.00	1.90	57	5.00	6.00	14.31	0.200	8.2°	6	●
178	3.00	6.00	2.80	57	8.00	9.00	15.63	0.200	5.7°	6	●
218	4.00	6.00	3.70	57	11.00	12.00	16.95	0.200	3.6°	6	●
258	5.00	6.00	4.60	57	13.00	15.00	18.27	0.200	1.8°	6	●
297	6.00	6.00	5.50	57	13.00	19.34	20.00	0.200	0.0°	8	●
385	8.00	8.00	7.40	63	19.00	25.29	26.00	0.200	0.0°	8	●
445	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	8	●
496	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	8	●
140	2.00	6.00	1.90	57	5.00	6.00	14.31	0.500	8.2°	6	●
180	3.00	6.00	2.80	57	8.00	9.00	15.63	0.500	5.7°	6	●
220	4.00	6.00	3.70	57	11.00	12.00	16.95	0.500	3.6°	6	●
260	5.00	6.00	4.60	57	13.00	15.00	18.27	0.500	1.8°	6	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.500	0.0°	8	●
388	8.00	8.00	7.40	63	19.00	25.29	26.00	0.500	0.0°	8	●
448	10.00	10.00	9.20	72	22.00	30.20	31.00	0.500	0.0°	8	●
498	12.00	12.00	11.00	83	26.00	36.13	37.00	0.500	0.0°	8	●

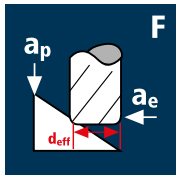
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
2.00	4	150	0.030	0.120	0.700	1.65	28937	3472	0.500
3.00	4	150	0.045	0.150	1.050	2.71	17619	3171	0.500
4.00	4	150	0.050	0.170	1.400	3.75	12732	2546	0.500
5.00	4	150	0.055	0.190	1.750	4.78	9989	2198	0.500
6.00	4	150	0.065	0.200	2.700	5.80	8232	2140	0.500
8.00	4	150	0.080	0.220	3.600	7.83	6098	1951	0.500
10.00	4	150	0.105	0.240	4.500	9.85	4847	2036	0.500
12.00	4	150	0.125	0.250	5.400	11.87	4022	2011	0.500
16.00	6	150	0.130	0.280	5.600	15.90	3003	2342	0.500
Hardened tool steel 52 - 56 HRC									
2.00	4	120	0.025	0.120	0.700	1.65	23150	2315	0.500
3.00	4	120	0.040	0.150	1.050	2.71	14095	2255	0.500
4.00	4	120	0.045	0.170	1.400	3.75	10186	1834	0.500
5.00	4	120	0.050	0.190	1.750	4.78	7991	1598	0.500
6.00	4	120	0.060	0.200	2.700	5.80	6586	1581	0.500
8.00	4	120	0.070	0.220	3.600	7.83	4878	1366	0.500
10.00	4	120	0.095	0.240	4.500	9.85	3878	1474	0.500
12.00	4	120	0.115	0.250	5.400	11.87	3218	1480	0.500
16.00	6	120	0.115	0.280	5.600	15.90	2402	1657	0.500
Hardened tool steel 56 - 60 HRC									
2.00	4	80	0.025	0.120	0.700	1.65	15433	1543	0.500
3.00	4	80	0.035	0.150	1.050	2.71	9397	1316	0.500
4.00	4	80	0.040	0.170	1.400	3.75	6791	1087	0.500
5.00	4	80	0.045	0.190	1.750	4.78	5327	959	0.500
6.00	4	80	0.055	0.200	2.700	5.80	4390	966	0.500
8.00	4	80	0.065	0.220	3.600	7.83	3252	846	0.500
10.00	4	80	0.085	0.240	4.500	9.85	2585	879	0.500
12.00	4	80	0.105	0.250	5.400	11.87	2145	901	0.500
16.00	6	80	0.105	0.280	5.600	15.90	1602	1009	0.500
Hardened tool steel > 60 HRC									
2.00	4	40	0.015	0.120	0.700	1.65	7717	463	0.500
3.00	4	40	0.025	0.150	1.050	2.71	4698	470	0.500
4.00	4	40	0.030	0.170	1.400	3.75	3395	407	0.500
5.00	4	40	0.030	0.190	1.750	4.78	2664	320	0.500
6.00	4	40	0.040	0.200	2.700	5.80	2195	351	0.500
8.00	4	40	0.045	0.220	3.600	7.83	1626	293	0.500
10.00	4	40	0.060	0.240	4.500	9.85	1293	310	0.500
12.00	4	40	0.075	0.250	5.400	11.87	1073	322	0.500
16.00	6	40	0.075	0.280	5.600	15.90	801	361	0.500

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
2.00	4	300	0.020	0.050	0.050	1.94	49223	3938	45°
3.00	4	300	0.025	0.050	0.050	2.94	32481	3248	45°
4.00	4	300	0.030	0.060	0.060	3.96	24114	2894	45°
5.00	4	300	0.035	0.060	0.060	4.96	19253	2695	45°
6.00	4	300	0.040	0.080	0.080	5.98	15969	2555	45°
8.00	4	300	0.045	0.080	0.080	7.98	11967	2154	45°
10.00	4	300	0.050	0.100	0.100	9.99	9559	1912	45°
12.00	4	300	0.055	0.100	0.100	11.99	7964	1752	45°
16.00	6	300	0.065	0.120	0.120	16.00	5968	2328	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	250	0.020	0.050	0.050	1.94	41019	3282	45°
3.00	4	250	0.025	0.050	0.050	2.94	27067	2707	45°
4.00	4	250	0.030	0.060	0.060	3.96	20095	2411	45°
5.00	4	250	0.035	0.060	0.060	4.96	16044	2246	45°
6.00	4	250	0.040	0.080	0.080	5.98	13307	2129	45°
8.00	4	250	0.045	0.080	0.080	7.98	9972	1795	45°
10.00	4	250	0.050	0.100	0.100	9.99	7966	1593	45°
12.00	4	250	0.050	0.100	0.100	11.99	6637	1327	45°
16.00	6	250	0.060	0.120	0.120	16.00	4974	1791	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	180	0.015	0.050	0.050	1.94	29534	1772	45°
3.00	4	180	0.020	0.050	0.050	2.94	19488	1559	45°
4.00	4	180	0.025	0.060	0.060	3.96	14469	1447	45°
5.00	4	180	0.030	0.060	0.060	4.96	11552	1386	45°
6.00	4	180	0.035	0.080	0.080	5.98	9581	1341	45°
8.00	4	180	0.040	0.080	0.080	7.98	7180	1149	45°
10.00	4	180	0.045	0.100	0.100	9.99	5735	1032	45°
12.00	4	180	0.045	0.100	0.100	11.99	4779	860	45°
16.00	6	180	0.055	0.120	0.120	16.00	3581	1182	45°
Hardened tool steel > 60 HRC									
2.00	4	100	0.010	0.050	0.050	1.94	16408	656	45°
3.00	4	100	0.015	0.050	0.050	2.94	10827	650	45°
4.00	4	100	0.015	0.060	0.060	3.96	8038	482	45°
5.00	4	100	0.020	0.060	0.060	4.96	6418	513	45°
6.00	4	100	0.020	0.080	0.080	5.98	5323	426	45°
8.00	4	100	0.025	0.080	0.080	7.98	3989	399	45°
10.00	4	100	0.025	0.100	0.100	9.99	3186	319	45°
12.00	4	100	0.030	0.100	0.100	11.99	2655	319	45°
16.00	6	100	0.035	0.120	0.120	16.00	1989	418	45°

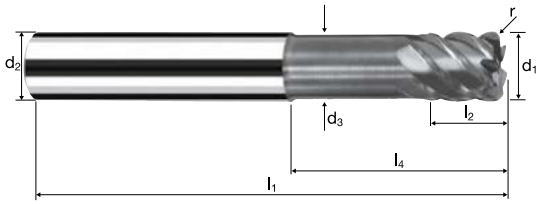
Corner radius end mills XSpeed

Tolerance r 0/+0.015, 3xd

X-Generation X

II

HM XT	λ 55° γ -10°



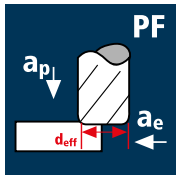
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **140**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7200
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
295	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	6	●
386	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	6	●
440	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	6	●
491	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	6	●
606	16.00	16.00	15.00	92	17.00	42.13	43.00	0.500	0.0°	6	●

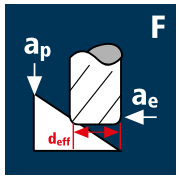
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
4.00	4	150	0.045	0.340	1.400	3.50	13642	2456	1.000
5.00	4	150	0.050	0.380	1.750	4.57	10448	2090	1.000
6.00	4	150	0.065	0.400	2.700	5.60	8526	2217	1.000
8.00	4	150	0.080	0.440	3.600	7.66	6233	1995	1.000
10.00	4	150	0.095	0.480	4.500	9.71	4917	1869	1.000
12.00	4	150	0.115	0.500	5.400	11.73	4070	1872	1.000
16.00	6	150	0.130	0.560	5.600	15.80	3022	2357	1.000
Hardened tool steel 52 - 56 HRC									
4.00	4	120	0.040	0.340	1.400	3.50	10913	1746	1.000
5.00	4	120	0.045	0.380	1.750	4.57	8358	1504	1.000
6.00	4	120	0.060	0.400	2.700	5.60	6821	1637	1.000
8.00	4	120	0.070	0.440	3.600	7.66	4987	1396	1.000
10.00	4	120	0.085	0.480	4.500	9.71	3934	1338	1.000
12.00	4	120	0.105	0.500	5.400	11.73	3256	1368	1.000
16.00	6	120	0.115	0.560	5.600	15.80	2418	1668	1.000
Hardened tool steel 56 - 60 HRC									
4.00	4	80	0.035	0.340	1.400	3.50	7276	1019	1.000
5.00	4	80	0.040	0.380	1.750	4.57	5572	892	1.000
6.00	4	80	0.055	0.400	2.700	5.60	4547	1000	1.000
8.00	4	80	0.065	0.440	3.600	7.66	3324	864	1.000
10.00	4	80	0.080	0.480	4.500	9.71	2623	839	1.000
12.00	4	80	0.095	0.500	5.400	11.73	2171	825	1.000
16.00	6	80	0.105	0.560	5.600	15.80	1612	1016	1.000
Hardened tool steel > 60 HRC									
4.00	4	40	0.025	0.340	1.400	3.50	3638	364	1.000
5.00	4	40	0.030	0.380	1.750	4.57	2786	334	1.000
6.00	4	40	0.040	0.400	2.700	5.60	2274	364	1.000
8.00	4	40	0.045	0.440	3.600	7.66	1662	299	1.000
10.00	4	40	0.055	0.480	4.500	9.71	1311	288	1.000
12.00	4	40	0.065	0.500	5.400	11.73	1085	282	1.000
16.00	6	40	0.075	0.560	5.600	15.80	806	363	1.000

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
4.00	4	300	0.030	0.080	0.080	3.86	24739	2969	45°
5.00	4	300	0.035	0.080	0.080	4.86	19649	2751	45°
6.00	4	300	0.040	0.110	0.110	5.90	16185	2590	45°
8.00	4	300	0.045	0.110	0.110	7.90	12088	2176	45°
10.00	4	300	0.050	0.140	0.140	9.94	9607	1921	45°
12.00	4	300	0.055	0.140	0.140	11.94	7998	1760	45°
16.00	6	300	0.065	0.160	0.160	15.96	5983	2333	45°
Hardened tool steel 52 - 56 HRC									
4.00	4	250	0.030	0.080	0.080	3.86	20616	2474	45°
5.00	4	250	0.035	0.080	0.080	4.86	16374	2292	45°
6.00	4	250	0.040	0.110	0.110	5.90	13488	2158	45°
8.00	4	250	0.045	0.110	0.110	7.90	10073	1813	45°
10.00	4	250	0.050	0.140	0.140	9.94	8006	1601	45°
12.00	4	250	0.050	0.140	0.140	11.94	6665	1333	45°
16.00	6	250	0.060	0.160	0.160	15.96	4986	1795	45°
Hardened tool steel 56 - 60 HRC									
4.00	4	180	0.025	0.080	0.080	3.86	14843	1484	45°
5.00	4	180	0.030	0.080	0.080	4.86	11789	1415	45°
6.00	4	180	0.035	0.110	0.110	5.90	9711	1360	45°
8.00	4	180	0.040	0.110	0.110	7.90	7253	1161	45°
10.00	4	180	0.045	0.140	0.140	9.94	5764	1038	45°
12.00	4	180	0.045	0.140	0.140	11.94	4799	864	45°
16.00	6	180	0.055	0.160	0.160	15.96	3590	1185	45°
Hardened tool steel > 60 HRC									
4.00	4	100	0.015	0.080	0.080	3.86	8246	495	45°
5.00	4	100	0.020	0.080	0.080	4.86	6550	524	45°
6.00	4	100	0.020	0.110	0.110	5.90	5395	432	45°
8.00	4	100	0.025	0.110	0.110	7.90	4029	403	45°
10.00	4	100	0.025	0.140	0.140	9.94	3202	320	45°
12.00	4	100	0.030	0.140	0.140	11.94	2666	320	45°
16.00	6	100	0.035	0.160	0.160	15.96	1994	419	45°

Corner radius end mills XSpeed

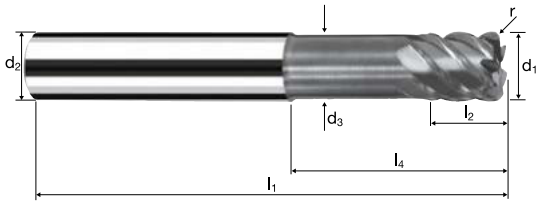
Tolerance r 0/+0.015, 3xd

X-Generation

II

HM
XT

λ 55°
γ -10°



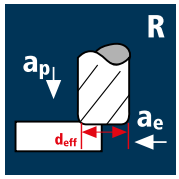
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **218**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7200
218	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
293	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	6	●
384	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	6	●
435	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	6	●
486	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	6	●
608	16.00	16.00	15.00	92	17.00	42.13	43.00	1.000	0.0°	6	●

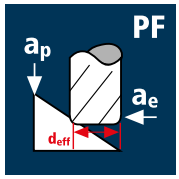
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
2.00	4	150	0.020	0.400	1.200	1.98	24114	1929	0.500
3.00	4	150	0.030	0.400	1.800	2.98	16022	1923	0.500
4.00	4	150	0.040	0.400	2.400	3.98	11997	1920	0.500
5.00	4	150	0.050	0.400	3.000	4.98	9588	1918	0.500
6.00	4	150	0.060	0.400	3.600	5.98	7984	1916	0.500
8.00	4	150	0.080	0.400	4.800	7.98	5983	1915	0.500
10.00	4	150	0.100	0.400	6.000	9.98	4784	1914	0.500
12.00	4	150	0.120	0.400	7.200	11.98	3986	1913	0.500
Hardened tool steel 48 - 52 HRC									
2.00	4	150	0.024	0.400	1.200	1.98	24114	2315	0.500
3.00	4	150	0.036	0.400	1.800	2.98	16022	2307	0.500
4.00	4	150	0.048	0.400	2.400	3.98	11997	2303	0.500
5.00	4	150	0.060	0.400	3.000	4.98	9588	2301	0.500
6.00	4	150	0.072	0.400	3.600	5.98	7984	2299	0.500
8.00	4	150	0.096	0.400	4.800	7.98	5983	2298	0.500
10.00	4	150	0.120	0.400	6.000	9.98	4784	2296	0.500
12.00	4	150	0.144	0.400	7.200	11.98	3986	2296	0.500
Hardened tool steel 52 - 56 HRC									
2.00	4	140	0.020	0.400	1.200	1.98	22507	1801	0.500
3.00	4	140	0.030	0.400	1.800	2.98	14954	1795	0.500
4.00	4	140	0.040	0.400	2.400	3.98	11197	1792	0.500
5.00	4	140	0.050	0.400	3.000	4.98	8948	1790	0.500
6.00	4	140	0.060	0.400	3.600	5.98	7452	1789	0.500
8.00	4	140	0.080	0.400	4.800	7.98	5584	1787	0.500
10.00	4	140	0.100	0.400	6.000	9.98	4465	1786	0.500
12.00	4	140	0.120	0.400	7.200	11.98	3720	1786	0.500
Hardened tool steel 56 - 60 HRC									
2.00	4	70	0.013	0.400	1.200	1.98	11253	567	0.500
3.00	4	70	0.019	0.400	1.800	2.98	7477	565	0.500
4.00	4	70	0.025	0.400	2.400	3.98	5598	564	0.500
5.00	4	70	0.032	0.400	3.000	4.98	4474	564	0.500
6.00	4	70	0.038	0.400	3.600	5.98	3726	563	0.500
8.00	4	70	0.050	0.400	4.800	7.98	2792	563	0.500
10.00	4	70	0.063	0.400	6.000	9.98	2233	563	0.500
12.00	4	70	0.076	0.400	7.200	11.98	1860	563	0.500

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
2.00	4	225	0.034	0.180	0.060	2.00	35810	4870	45°
3.00	4	225	0.051	0.180	0.090	3.00	23873	4870	45°
4.00	4	225	0.068	0.180	0.120	4.00	17905	4870	45°
5.00	4	225	0.085	0.180	0.150	5.00	14324	4870	45°
6.00	4	225	0.102	0.180	0.180	6.00	11937	4870	45°
8.00	4	225	0.136	0.180	0.240	8.00	8952	4870	45°
10.00	4	225	0.170	0.180	0.300	10.00	7162	4870	45°
12.00	4	225	0.204	0.180	0.360	12.00	5968	4870	45°
Hardened tool steel 48 - 52 HRC									
2.00	4	225	0.041	0.180	0.060	2.00	35810	5844	45°
3.00	4	225	0.061	0.180	0.090	3.00	23873	5844	45°
4.00	4	225	0.082	0.180	0.120	4.00	17905	5844	45°
5.00	4	225	0.102	0.180	0.150	5.00	14324	5844	45°
6.00	4	225	0.122	0.180	0.180	6.00	11937	5844	45°
8.00	4	225	0.163	0.180	0.240	8.00	8952	5844	45°
10.00	4	225	0.204	0.180	0.300	10.00	7162	5844	45°
12.00	4	225	0.245	0.180	0.360	12.00	5968	5844	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	210	0.036	0.180	0.060	2.00	33423	4813	45°
3.00	4	210	0.054	0.180	0.090	3.00	22282	4813	45°
4.00	4	210	0.072	0.180	0.120	4.00	16711	4813	45°
5.00	4	210	0.090	0.180	0.150	5.00	13369	4813	45°
6.00	4	210	0.108	0.180	0.180	6.00	11141	4813	45°
8.00	4	210	0.144	0.180	0.240	8.00	8356	4813	45°
10.00	4	210	0.180	0.180	0.300	10.00	6685	4813	45°
12.00	4	210	0.216	0.180	0.360	12.00	5570	4813	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	125	0.028	0.180	0.060	2.00	19894	2212	45°
3.00	4	125	0.042	0.180	0.090	3.00	13263	2206	45°
4.00	4	125	0.055	0.180	0.120	4.00	9947	2206	45°
5.00	4	125	0.069	0.180	0.150	5.00	7958	2206	45°
6.00	4	125	0.083	0.180	0.180	6.00	6631	2206	45°
8.00	4	125	0.111	0.180	0.240	8.00	4974	2206	45°
10.00	4	125	0.139	0.180	0.300	10.00	3979	2206	45°
12.00	4	125	0.166	0.180	0.360	12.00	3316	2206	45°

Corner radius end mills ToroX

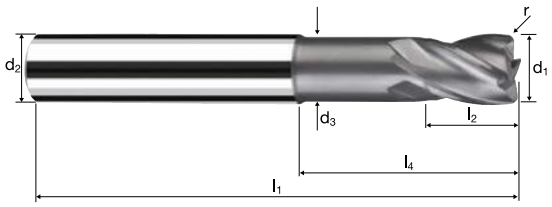
Tolerance r 0/+0.015, 3xd

X-Generation X

II

HM XT

λ 30°
γ -5°

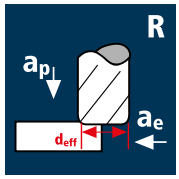


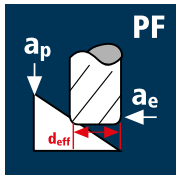
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **138**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7100
138	2.00	6.00	1.90	57	3.00	6.00	14.31	0.200	8.5°	4	●
178	3.00	6.00	2.80	57	4.00	9.00	15.63	0.200	5.8°	4	●
218	4.00	6.00	3.70	57	5.00	12.00	16.95	0.200	3.6°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	0.200	1.7°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	63	9.00	25.29	26.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	4.00	4	130	0.032	0.600	2.400	3.83	10804	1383	1.000
		5.00	4	130	0.040	0.600	3.000	4.83	8567	1371	1.000
		6.00	4	130	0.048	0.600	3.600	5.83	7098	1363	1.000
		8.00	4	130	0.064	0.600	4.800	7.83	5285	1353	1.000
		10.00	4	130	0.080	0.600	6.000	9.83	4210	1347	1.000
		12.00	4	130	0.096	0.600	7.200	11.83	3498	1343	1.000
	Hardened tool steel 48 - 52 HRC	4.00	4	130	0.034	0.600	2.400	3.83	10804	1452	1.000
		5.00	4	130	0.042	0.600	3.000	4.83	8567	1439	1.000
		6.00	4	130	0.050	0.600	3.600	5.83	7098	1431	1.000
		8.00	4	130	0.067	0.600	4.800	7.83	5285	1421	1.000
		10.00	4	130	0.084	0.600	6.000	9.83	4210	1415	1.000
		12.00	4	130	0.101	0.600	7.200	11.83	3498	1410	1.000
	Hardened tool steel 52 - 56 HRC	4.00	4	120	0.028	0.600	2.400	3.83	9973	1117	1.000
		5.00	4	120	0.035	0.600	3.000	4.83	7908	1107	1.000
		6.00	4	120	0.042	0.600	3.600	5.83	6552	1101	1.000
		8.00	4	120	0.056	0.600	4.800	7.83	4878	1093	1.000
		10.00	4	120	0.070	0.600	6.000	9.83	3886	1088	1.000
		12.00	4	120	0.084	0.600	7.200	11.83	3229	1085	1.000
	Hardened tool steel 56 - 60 HRC	4.00	4	55	0.018	0.600	2.400	3.83	4571	323	1.000
		5.00	4	55	0.022	0.600	3.000	4.83	3625	320	1.000
		6.00	4	55	0.026	0.600	3.600	5.83	3003	318	1.000
		8.00	4	55	0.035	0.600	4.800	7.83	2236	316	1.000
		10.00	4	55	0.044	0.600	6.000	9.83	1781	314	1.000
		12.00	4	55	0.053	0.600	7.200	11.83	1480	313	1.000

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	4.00	4	225	0.068	0.240	0.120	3.99	17950	4882	45°
		5.00	4	225	0.085	0.240	0.150	4.99	14353	4880	45°
		6.00	4	225	0.102	0.240	0.180	5.99	11957	4879	45°
		8.00	4	225	0.136	0.240	0.240	7.99	8964	4876	45°
		10.00	4	225	0.170	0.240	0.300	9.99	7169	4875	45°
		12.00	4	225	0.204	0.240	0.360	11.99	5973	4874	45°
	Hardened tool steel 48 - 52 HRC	4.00	4	225	0.082	0.240	0.120	3.99	17950	5859	45°
		5.00	4	225	0.102	0.240	0.150	4.99	14353	5856	45°
		6.00	4	225	0.122	0.240	0.180	5.99	11957	5854	45°
		8.00	4	225	0.163	0.240	0.240	7.99	8964	5852	45°
		10.00	4	225	0.204	0.240	0.300	9.99	7169	5850	45°
		12.00	4	225	0.245	0.240	0.360	11.99	5973	5849	45°
	Hardened tool steel 52 - 56 HRC	4.00	4	210	0.072	0.240	0.120	3.99	16753	4825	45°
		5.00	4	210	0.090	0.240	0.150	4.99	13396	4823	45°
		6.00	4	210	0.108	0.240	0.180	5.99	11159	4821	45°
		8.00	4	210	0.144	0.240	0.240	7.99	8366	4819	45°
		10.00	4	210	0.180	0.240	0.300	9.99	6691	4818	45°
		12.00	4	210	0.216	0.240	0.360	11.99	5575	4817	45°
	Hardened tool steel 56 - 60 HRC	4.00	4	125	0.055	0.240	0.120	3.99	9972	2211	45°
		5.00	4	125	0.069	0.240	0.150	4.99	7974	2210	45°
		6.00	4	125	0.083	0.240	0.180	5.99	6643	2210	45°
		8.00	4	125	0.111	0.240	0.240	7.99	4980	2209	45°
		10.00	4	125	0.139	0.240	0.300	9.99	3983	2208	45°
		12.00	4	125	0.166	0.240	0.360	11.99	3318	2207	45°

Corner radius end mills ToroX

Tolerance r 0/+0.015, 3xd

X-Generation X

II

HM XT

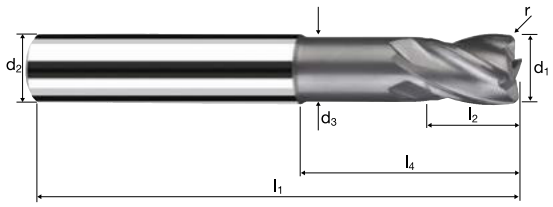
λ 30°
γ -5°

h4

d1

r

R



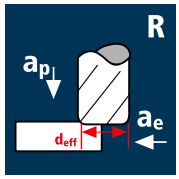
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **222**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7100
222	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
262	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
302	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
395	8.00	8.00	7.40	63	9.00	25.29	26.00	2.000	0.0°	4	●
455	10.00	10.00	9.20	72	11.00	30.20	31.00	2.000	0.0°	4	●
505	12.00	12.00	11.00	83	13.00	36.13	37.00	2.000	0.0°	4	●

Application



Material

Hardened tool steel 56 - 60 HRC

H

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
2.00	6	54	0.014	0.200	1.200	1.80	9549	802	0.500
3.00	6	54	0.021	0.250	1.800	2.87	5989	755	0.500
4.00	6	54	0.028	0.250	2.400	3.87	4442	746	0.500
5.00	6	54	0.035	0.250	3.000	4.87	3530	741	0.500
6.00	8	54	0.042	0.200	3.600	5.80	2964	996	0.500
8.00	8	54	0.056	0.200	4.800	7.80	2204	987	0.500
10.00	8	54	0.070	0.200	6.000	9.80	1754	982	0.500
12.00	8	54	0.084	0.200	7.200	11.80	1457	979	0.500

Hardened tool steel > 60 HRC

H

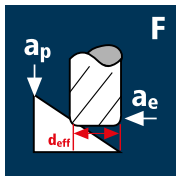
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
2.00	6	45	0.007	0.200	1.200	1.80	7958	334	0.500
3.00	6	45	0.011	0.250	1.800	2.87	4991	314	0.500
4.00	6	45	0.014	0.250	2.400	3.87	3701	311	0.500
5.00	6	45	0.018	0.250	3.000	4.87	2941	309	0.500
6.00	8	45	0.021	0.200	3.600	5.80	2470	415	0.500
8.00	8	45	0.028	0.200	4.800	7.80	1836	411	0.500
10.00	8	45	0.035	0.200	6.000	9.80	1462	409	0.500
12.00	8	45	0.042	0.200	7.200	11.80	1214	408	0.500

High speed steel, hardened 64 - 70 HRC

H

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
2.00	6	16	0.004	0.200	1.200	1.80	2829	68	0.500
3.00	6	16	0.006	0.250	1.800	2.87	1775	64	0.500
4.00	6	16	0.008	0.250	2.400	3.87	1316	63	0.500
5.00	6	16	0.010	0.250	3.000	4.87	1046	63	0.500
6.00	8	16	0.012	0.200	3.600	5.80	878	84	0.500
8.00	8	16	0.016	0.200	4.800	7.80	653	84	0.500
10.00	8	16	0.020	0.200	6.000	9.80	520	83	0.500
12.00	8	16	0.024	0.200	7.200	11.80	432	83	0.500

Application



Material

Hardened tool steel 56 - 60 HRC

H

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
2.00	6	160	0.020	0.090	0.030	1.98	25722	3087	45°
3.00	6	160	0.028	0.090	0.030	2.98	17090	2871	45°
4.00	6	160	0.035	0.090	0.050	3.98	12796	2687	45°
5.00	6	160	0.041	0.090	0.050	4.98	10227	2516	45°
6.00	8	160	0.042	0.090	0.075	5.98	8517	2862	45°
8.00	8	160	0.048	0.090	0.075	7.98	6382	2451	45°
10.00	8	160	0.050	0.090	0.100	9.98	5103	2041	45°
12.00	8	160	0.048	0.090	0.100	11.98	4251	1632	45°

Hardened tool steel > 60 HRC

H

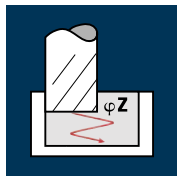
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
2.00	6	110	0.020	0.090	0.030	1.98	17684	2122	45°
3.00	6	110	0.028	0.090	0.030	2.98	11750	1974	45°
4.00	6	110	0.035	0.090	0.050	3.98	8798	1848	45°
5.00	6	110	0.041	0.090	0.050	4.98	7031	1730	45°
6.00	8	110	0.042	0.090	0.075	5.98	5855	1967	45°
8.00	8	110	0.048	0.090	0.075	7.98	4388	1685	45°
10.00	8	110	0.050	0.090	0.100	9.98	3508	1403	45°
12.00	8	110	0.048	0.090	0.100	11.98	2923	1122	45°

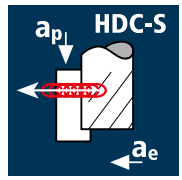
High speed steel, hardened 64 - 70 HRC

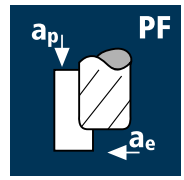
H

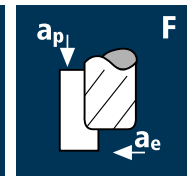
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
2.00	6	70	0.020	0.090	0.030	1.98	11253	1350	45°
3.00	6	70	0.028	0.090	0.030	2.98	7477	1256	45°
4.00	6	70	0.035	0.090	0.050	3.98	5598	1176	45°
5.00	6	70	0.041	0.090	0.050	4.98	4474	1101	45°
6.00	8	70	0.042	0.090	0.075	5.98	3726	1252	45°
8.00	8	70	0.048	0.090	0.075	7.98	2792	1072	45°
10.00	8	70	0.050	0.090	0.100	9.98	2233	893	45°
12.00	8	70	0.048	0.090	0.100	11.98	1860	714	45°

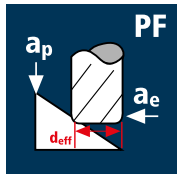
Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert**

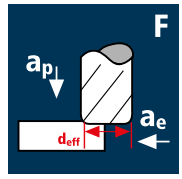


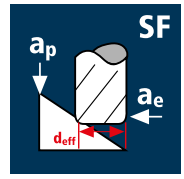












Corner radius end mills XSpeed-H

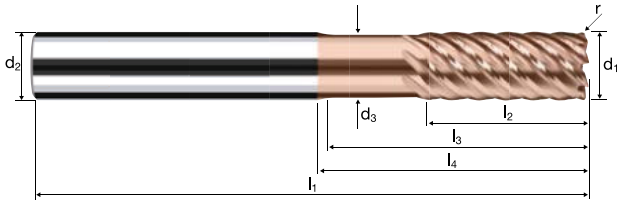
Tolerance r 0/+0.015, 4.5xd

X-Generation X

II

HM
XA

λ 45°
γ -10°



ReTool®

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example:
Order-N°.

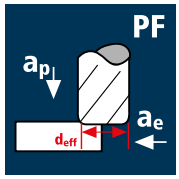
Coating	Article-N°.	ø-Code
H	7212	138

DURO-Si

H7212

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	
138	2.00	6.00	1.90	61	5.00	9.00	17.31	0.200	6.8°	6	●
178	3.00	6.00	2.80	61	8.00	13.50	20.13	0.200	4.5°	6	●
218	4.00	6.00	3.70	66	11.00	18.00	22.95	0.200	2.7°	6	●
258	5.00	6.00	4.60	66	13.00	22.50	25.77	0.200	1.3°	6	●
297	6.00	6.00	5.50	69	13.00	30.34	31.00	0.200	0.0°	8	●
385	8.00	8.00	7.40	80	19.00	39.29	40.00	0.200	0.0°	8	●
445	10.00	10.00	9.20	90	22.00	47.20	48.00	0.200	0.0°	8	●
496	12.00	12.00	11.00	105	26.00	54.13	55.00	0.200	0.0°	8	●
140	2.00	6.00	1.90	61	5.00	9.00	17.31	0.500	6.8°	6	●
180	3.00	6.00	2.80	61	8.00	13.50	20.13	0.500	4.5°	6	●
220	4.00	6.00	3.70	66	11.00	18.00	22.95	0.500	2.7°	6	●
260	5.00	6.00	4.60	66	13.00	22.50	25.77	0.500	1.3°	6	●
300	6.00	6.00	5.50	69	13.00	30.34	31.00	0.500	0.0°	8	●
388	8.00	8.00	7.40	80	19.00	39.29	40.00	0.500	0.0°	8	●
448	10.00	10.00	9.20	90	22.00	47.20	48.00	0.500	0.0°	8	●
498	12.00	12.00	11.00	105	26.00	54.13	55.00	0.500	0.0°	8	●

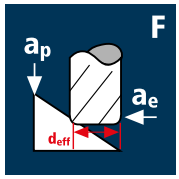
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
2.00	4	150	0.025	0.100	0.440	1.60	29842	2984	0.500
3.00	4	150	0.040	0.120	0.660	2.65	18018	2883	0.500
4.00	4	150	0.045	0.150	0.880	3.71	12870	2317	0.500
5.00	4	150	0.050	0.160	1.100	4.73	10094	2019	0.500
6.00	4	150	0.060	0.170	2.100	5.75	8304	1993	0.500
8.00	4	150	0.070	0.190	2.800	7.78	6137	1718	0.500
10.00	4	150	0.090	0.200	3.500	9.80	4872	1754	0.500
12.00	4	150	0.110	0.220	4.200	11.83	4036	1776	0.500
16.00	6	150	0.120	0.240	3.520	15.85	3012	2169	0.500
Hardened tool steel 52 - 56 HRC									
2.00	4	120	0.025	0.100	0.440	1.60	23873	2387	0.500
3.00	4	120	0.035	0.120	0.660	2.65	14414	2018	0.500
4.00	4	120	0.040	0.150	0.880	3.71	10296	1647	0.500
5.00	4	120	0.045	0.160	1.100	4.73	8076	1454	0.500
6.00	4	120	0.055	0.170	2.100	5.75	6643	1462	0.500
8.00	4	120	0.065	0.190	2.800	7.78	4910	1277	0.500
10.00	4	120	0.080	0.200	3.500	9.80	3898	1247	0.500
12.00	4	120	0.100	0.220	4.200	11.83	3229	1292	0.500
16.00	6	120	0.110	0.240	3.520	15.85	2410	1591	0.500
Hardened tool steel 56 - 60 HRC									
2.00	4	80	0.020	0.100	0.440	1.60	15915	1273	0.500
3.00	4	80	0.035	0.120	0.660	2.65	9609	1345	0.500
4.00	4	80	0.035	0.150	0.880	3.71	6864	961	0.500
5.00	4	80	0.040	0.160	1.100	4.73	5384	861	0.500
6.00	4	80	0.050	0.170	2.100	5.75	4429	886	0.500
8.00	4	80	0.055	0.190	2.800	7.78	3273	720	0.500
10.00	4	80	0.075	0.200	3.500	9.80	2598	779	0.500
12.00	4	80	0.090	0.220	4.200	11.83	2153	775	0.500
16.00	6	80	0.100	0.240	3.520	15.85	1607	964	0.500
Hardened tool steel > 60 HRC									
2.00	4	40	0.015	0.100	0.440	1.60	7958	478	0.500
3.00	4	40	0.025	0.120	0.660	2.65	4805	481	0.500
4.00	4	40	0.025	0.150	0.880	3.71	3432	343	0.500
5.00	4	40	0.030	0.160	1.100	4.73	2692	323	0.500
6.00	4	40	0.035	0.170	2.100	5.75	2214	310	0.500
8.00	4	40	0.040	0.190	2.800	7.78	1637	262	0.500
10.00	4	40	0.050	0.200	3.500	9.80	1299	260	0.500
12.00	4	40	0.065	0.220	4.200	11.83	1076	280	0.500
16.00	6	40	0.070	0.240	3.520	15.85	803	337	0.500

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
2.00	4	300	0.020	0.050	0.050	1.94	49223	3938	45°
3.00	4	300	0.025	0.050	0.050	2.94	32481	3248	45°
4.00	4	300	0.030	0.060	0.060	3.96	24114	2894	45°
5.00	4	300	0.035	0.060	0.060	4.96	19253	2695	45°
6.00	4	300	0.040	0.080	0.080	5.98	15969	2555	45°
8.00	4	300	0.045	0.080	0.080	7.98	11967	2154	45°
10.00	4	300	0.050	0.100	0.100	9.99	9559	1912	45°
12.00	4	300	0.055	0.100	0.100	11.99	7964	1752	45°
16.00	6	300	0.065	0.120	0.120	16.00	5968	2328	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	250	0.020	0.050	0.050	1.94	41019	3282	45°
3.00	4	250	0.025	0.050	0.050	2.94	27067	2707	45°
4.00	4	250	0.030	0.060	0.060	3.96	20095	2411	45°
5.00	4	250	0.035	0.060	0.060	4.96	16044	2246	45°
6.00	4	250	0.040	0.080	0.080	5.98	13307	2129	45°
8.00	4	250	0.045	0.080	0.080	7.98	9972	1795	45°
10.00	4	250	0.050	0.100	0.100	9.99	7966	1593	45°
12.00	4	250	0.050	0.100	0.100	11.99	6637	1327	45°
16.00	6	250	0.060	0.120	0.120	16.00	4974	1791	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	180	0.015	0.050	0.050	1.94	29534	1772	45°
3.00	4	180	0.020	0.050	0.050	2.94	19488	1559	45°
4.00	4	180	0.025	0.060	0.060	3.96	14469	1447	45°
5.00	4	180	0.030	0.060	0.060	4.96	11552	1386	45°
6.00	4	180	0.035	0.080	0.080	5.98	9581	1341	45°
8.00	4	180	0.040	0.080	0.080	7.98	7180	1149	45°
10.00	4	180	0.045	0.100	0.100	9.99	5735	1032	45°
12.00	4	180	0.045	0.100	0.100	11.99	4779	860	45°
16.00	6	180	0.055	0.120	0.120	16.00	3581	1182	45°
Hardened tool steel > 60 HRC									
2.00	4	100	0.010	0.050	0.050	1.94	16408	656	45°
3.00	4	100	0.015	0.050	0.050	2.94	10827	650	45°
4.00	4	100	0.015	0.060	0.060	3.96	8038	482	45°
5.00	4	100	0.020	0.060	0.060	4.96	6418	513	45°
6.00	4	100	0.020	0.080	0.080	5.98	5323	426	45°
8.00	4	100	0.025	0.080	0.080	7.98	3989	399	45°
10.00	4	100	0.025	0.100	0.100	9.99	3186	319	45°
12.00	4	100	0.030	0.100	0.100	11.99	2655	319	45°
16.00	6	100	0.035	0.120	0.120	16.00	1989	418	45°

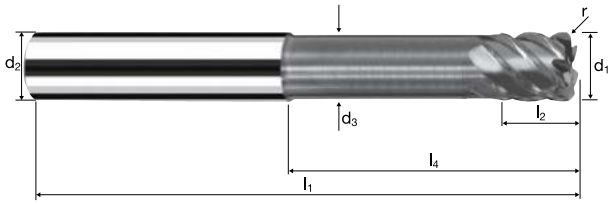
Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

X-Generation X

II

HM XT	λ 55° γ -10°



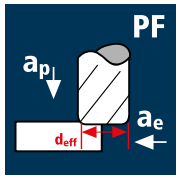
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7204** ø-Code **140**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL	X7204
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4		●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4		●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	0.500	2.1°	4		●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4		●
295	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4		●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	6		●
386	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4		●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	6		●
440	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4		●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	6		●
491	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4		●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	6		●
606	16.00	16.00	15.00	135	17.00	85.13	86.00	0.500	0.0°	6		●

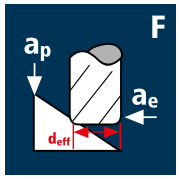
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 48 - 52 HRC									
4.00	4	150	0.040	0.180	0.880	3.14	15206	2433	1.000
5.00	4	150	0.045	0.220	1.100	4.25	11234	2022	1.000
6.00	4	150	0.055	0.260	2.100	5.35	8925	1964	1.000
8.00	4	150	0.065	0.320	2.800	7.47	6392	1662	1.000
10.00	4	150	0.085	0.380	3.500	9.57	4989	1696	1.000
12.00	4	150	0.100	0.450	4.200	11.67	4091	1636	1.000
16.00	6	150	0.105	0.500	3.520	15.73	3035	1912	1.000
Hardened tool steel 52 - 56 HRC									
4.00	4	120	0.035	0.180	0.880	3.14	12165	1703	1.000
5.00	4	120	0.040	0.220	1.100	4.25	8988	1438	1.000
6.00	4	120	0.050	0.260	2.100	5.35	7140	1428	1.000
8.00	4	120	0.060	0.320	2.800	7.47	5113	1227	1.000
10.00	4	120	0.075	0.380	3.500	9.57	3991	1197	1.000
12.00	4	120	0.090	0.450	4.200	11.67	3273	1178	1.000
16.00	6	120	0.095	0.500	3.520	15.73	2428	1384	1.000
Hardened tool steel 56 - 60 HRC									
4.00	4	80	0.035	0.180	0.880	3.14	8110	1135	1.000
5.00	4	80	0.035	0.220	1.100	4.25	5992	839	1.000
6.00	4	80	0.045	0.260	2.100	5.35	4760	857	1.000
8.00	4	80	0.055	0.320	2.800	7.47	3409	750	1.000
10.00	4	80	0.070	0.380	3.500	9.57	2661	745	1.000
12.00	4	80	0.080	0.450	4.200	11.67	2182	698	1.000
16.00	6	80	0.085	0.500	3.520	15.73	1619	826	1.000
Hardened tool steel > 60 HRC									
4.00	4	40	0.025	0.180	0.880	3.14	4055	406	1.000
5.00	4	40	0.025	0.220	1.100	4.25	2996	300	1.000
6.00	4	40	0.030	0.260	2.100	5.35	2380	286	1.000
8.00	4	40	0.040	0.320	2.800	7.47	1704	273	1.000
10.00	4	40	0.050	0.380	3.500	9.57	1330	266	1.000
12.00	4	40	0.060	0.450	4.200	11.67	1091	262	1.000
16.00	6	40	0.060	0.500	3.520	15.73	809	291	1.000

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 48 - 52 HRC									
4.00	4	300	0.030	0.080	0.080	3.86	24739	2969	45°
5.00	4	300	0.035	0.080	0.080	4.86	19649	2751	45°
6.00	4	300	0.040	0.110	0.110	5.90	16185	2590	45°
8.00	4	300	0.045	0.110	0.110	7.90	12088	2176	45°
10.00	4	300	0.050	0.140	0.140	9.94	9607	1921	45°
12.00	4	300	0.055	0.140	0.140	11.94	7998	1760	45°
16.00	6	300	0.065	0.160	0.160	15.96	5983	2333	45°
Hardened tool steel 52 - 56 HRC									
4.00	4	250	0.030	0.080	0.080	3.86	20616	2474	45°
5.00	4	250	0.035	0.080	0.080	4.86	16374	2292	45°
6.00	4	250	0.040	0.110	0.110	5.90	13488	2158	45°
8.00	4	250	0.045	0.110	0.110	7.90	10073	1813	45°
10.00	4	250	0.050	0.140	0.140	9.94	8006	1601	45°
12.00	4	250	0.050	0.140	0.140	11.94	6665	1333	45°
16.00	6	250	0.060	0.160	0.160	15.96	4986	1795	45°
Hardened tool steel 56 - 60 HRC									
4.00	4	180	0.025	0.080	0.080	3.86	14843	1484	45°
5.00	4	180	0.030	0.080	0.080	4.86	11789	1415	45°
6.00	4	180	0.035	0.110	0.110	5.90	9711	1360	45°
8.00	4	180	0.040	0.110	0.110	7.90	7253	1161	45°
10.00	4	180	0.045	0.140	0.140	9.94	5764	1038	45°
12.00	4	180	0.045	0.140	0.140	11.94	4799	864	45°
16.00	6	180	0.055	0.160	0.160	15.96	3590	1185	45°
Hardened tool steel > 60 HRC									
4.00	4	100	0.015	0.080	0.080	3.86	8246	495	45°
5.00	4	100	0.020	0.080	0.080	4.86	6550	524	45°
6.00	4	100	0.020	0.110	0.110	5.90	5395	432	45°
8.00	4	100	0.025	0.110	0.110	7.90	4029	403	45°
10.00	4	100	0.025	0.140	0.140	9.94	3202	320	45°
12.00	4	100	0.030	0.140	0.140	11.94	2666	320	45°
16.00	6	100	0.035	0.160	0.160	15.96	1994	419	45°

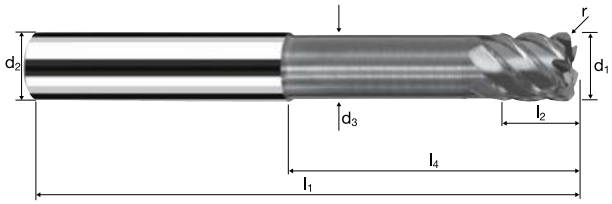
Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

X-Generation X

II

HM XT	λ 55° γ -10°



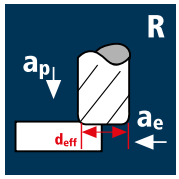
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7204** ø-Code **218**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL	X7204
218	4.00	6.00	3.70	69	5.00	24.00	28.95	1.000	2.1°	4		●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4		●
293	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4		●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	6		●
384	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4		●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	6		●
435	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4		●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	6		●
486	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4		●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	6		●
608	16.00	16.00	15.00	135	17.00	85.13	86.00	1.000	0.0°	6		●

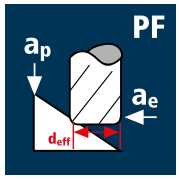
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC								
2.00	4	105	0.024	0.200	1.200	18568	1783	0.500
3.00	4	105	0.036	0.200	1.800	11937	1719	0.500
4.00	4	105	0.048	0.200	2.400	8795	1689	0.500
5.00	4	105	0.060	0.200	3.000	6963	1671	0.500
6.00	4	105	0.072	0.200	3.600	5763	1660	0.500
8.00	4	105	0.096	0.200	4.800	4285	1645	0.500
10.00	4	105	0.120	0.200	6.000	3410	1637	0.500
12.00	4	105	0.144	0.200	7.200	2832	1631	0.500
Hardened tool steel 48 - 52 HRC								
2.00	4	90	0.024	0.200	1.200	15915	1528	0.500
3.00	4	90	0.036	0.200	1.800	10231	1473	0.500
4.00	4	90	0.048	0.200	2.400	7539	1448	0.500
5.00	4	90	0.060	0.200	3.000	5968	1432	0.500
6.00	4	90	0.072	0.200	3.600	4939	1422	0.500
8.00	4	90	0.096	0.200	4.800	3673	1410	0.500
10.00	4	90	0.120	0.200	6.000	2923	1403	0.500
12.00	4	90	0.144	0.200	7.200	2428	1399	0.500
Hardened tool steel 52 - 56 HRC								
2.00	4	85	0.020	0.200	1.200	15031	1203	0.500
3.00	4	85	0.030	0.200	1.800	9663	1160	0.500
4.00	4	85	0.040	0.200	2.400	7120	1139	0.500
5.00	4	85	0.050	0.200	3.000	5637	1127	0.500
6.00	4	85	0.060	0.200	3.600	4665	1120	0.500
8.00	4	85	0.080	0.200	4.800	3469	1110	0.500
10.00	4	85	0.100	0.200	6.000	2761	1104	0.500
12.00	4	85	0.120	0.200	7.200	2293	1101	0.500
Hardened tool steel 56 - 60 HRC								
2.00	4	60	0.013	0.200	1.200	10610	535	0.500
3.00	4	60	0.019	0.200	1.800	6821	516	0.500
4.00	4	60	0.025	0.200	2.400	5026	507	0.500
5.00	4	60	0.032	0.200	3.000	3979	501	0.500
6.00	4	60	0.038	0.200	3.600	3293	498	0.500
8.00	4	60	0.050	0.200	4.800	2449	494	0.500
10.00	4	60	0.063	0.200	6.000	1949	491	0.500
12.00	4	60	0.076	0.200	7.200	1619	490	0.500

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
2.00	4	158	0.041	0.180	0.060	2.00	25146	4124	45°
3.00	4	158	0.061	0.180	0.090	3.00	16764	4090	45°
4.00	4	158	0.082	0.180	0.120	4.00	12573	4124	45°
5.00	4	158	0.102	0.180	0.150	5.00	10059	4104	45°
6.00	4	158	0.122	0.180	0.180	6.00	8382	4090	45°
8.00	4	158	0.163	0.180	0.240	8.00	6287	4099	45°
10.00	4	158	0.204	0.180	0.300	10.00	5029	4104	45°
12.00	4	158	0.245	0.180	0.360	12.00	4191	4107	45°
Hardened tool steel 48 - 52 HRC									
2.00	4	135	0.041	0.180	0.060	2.00	21486	3524	45°
3.00	4	135	0.061	0.180	0.090	3.00	14324	3495	45°
4.00	4	135	0.082	0.180	0.120	4.00	10743	3524	45°
5.00	4	135	0.102	0.180	0.150	5.00	8594	3506	45°
6.00	4	135	0.122	0.180	0.180	6.00	7162	3495	45°
8.00	4	135	0.163	0.180	0.240	8.00	5371	3502	45°
10.00	4	135	0.204	0.180	0.300	10.00	4297	3506	45°
12.00	4	135	0.245	0.180	0.360	12.00	3581	3509	45°
Hardened tool steel 52 - 56 HRC									
2.00	4	128	0.036	0.180	0.060	2.00	20372	2934	45°
3.00	4	128	0.054	0.180	0.090	3.00	13581	2934	45°
4.00	4	128	0.072	0.180	0.120	4.00	10186	2934	45°
5.00	4	128	0.090	0.180	0.150	5.00	8149	2934	45°
6.00	4	128	0.108	0.180	0.180	6.00	6791	2934	45°
8.00	4	128	0.144	0.180	0.240	8.00	5093	2934	45°
10.00	4	128	0.180	0.180	0.300	10.00	4074	2933	45°
12.00	4	128	0.216	0.180	0.360	12.00	3395	2933	45°
Hardened tool steel 56 - 60 HRC									
2.00	4	105	0.028	0.180	0.060	2.00	16711	1872	45°
3.00	4	105	0.042	0.180	0.090	3.00	11141	1872	45°
4.00	4	105	0.055	0.180	0.120	4.00	8356	1838	45°
5.00	4	105	0.069	0.180	0.150	5.00	6685	1845	45°
6.00	4	105	0.083	0.180	0.180	6.00	5570	1849	45°
8.00	4	105	0.111	0.180	0.240	8.00	4178	1855	45°
10.00	4	105	0.139	0.180	0.300	10.00	3342	1858	45°
12.00	4	105	0.166	0.180	0.360	12.00	2785	1849	45°

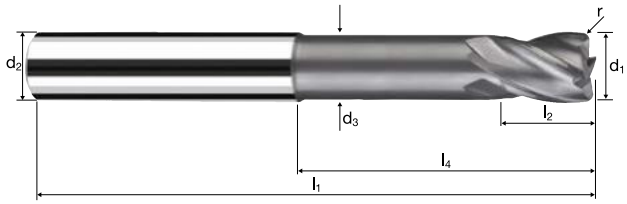
Corner radius end mills ToroX

Tolerance r 0/+0.015, 6xd

X-Generation X

II

HM XT	λ 30° γ -5°

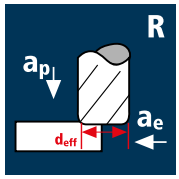


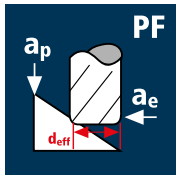
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **138**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL X7104
138	2.00	6.00	1.90	66	3.00	12.00	20.31	0.200	5.9°	4	●
178	3.00	6.00	2.80	66	4.00	18.00	24.63	0.200	3.7°	4	●
218	4.00	6.00	3.70	69	5.00	24.00	28.95	0.200	2.1°	4	●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	0.200	0.9°	4	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	90	9.00	52.29	53.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	0.500	2.1°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	4.00	4	95	0.055	0.200	2.400	9450	2087	1.000
		5.00	4	95	0.069	0.200	3.000	7200	1987	1.000
		6.00	4	95	0.083	0.200	3.600	5815	1926	1.000
		8.00	4	95	0.110	0.200	4.800	4200	1855	1.000
		10.00	4	95	0.138	0.200	6.000	3287	1814	1.000
		12.00	4	95	0.166	0.200	7.200	2700	1789	1.000
	Hardened tool steel 48 - 52 HRC	4.00	4	81	0.055	0.200	2.400	8057	1779	1.000
		5.00	4	81	0.069	0.200	3.000	6139	1694	1.000
		6.00	4	81	0.083	0.200	3.600	4958	1642	1.000
		8.00	4	81	0.110	0.200	4.800	3581	1581	1.000
		10.00	4	81	0.138	0.200	6.000	2803	1547	1.000
		12.00	4	81	0.166	0.200	7.200	2302	1525	1.000
	Hardened tool steel 52 - 56 HRC	4.00	4	74	0.046	0.200	2.400	7361	1354	1.000
		5.00	4	74	0.058	0.200	3.000	5608	1290	1.000
		6.00	4	74	0.069	0.200	3.600	4530	1250	1.000
		8.00	4	74	0.092	0.200	4.800	3272	1204	1.000
		10.00	4	74	0.115	0.200	6.000	2560	1178	1.000
		12.00	4	74	0.138	0.200	7.200	2103	1161	1.000
	Hardened tool steel 56 - 60 HRC	4.00	4	55	0.029	0.200	2.400	5471	634	1.000
		5.00	4	55	0.036	0.200	3.000	4168	604	1.000
		6.00	4	55	0.043	0.200	3.600	3367	586	1.000
		8.00	4	55	0.058	0.200	4.800	2432	564	1.000
		10.00	4	55	0.072	0.200	6.000	1903	552	1.000
		12.00	4	55	0.087	0.200	7.200	1563	544	1.000

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	4.00	4	158	0.082	0.240	0.120	3.99	12605	4134	45°
		5.00	4	158	0.102	0.240	0.150	4.99	10079	4112	45°
		6.00	4	158	0.122	0.240	0.180	5.99	8396	4097	45°
		8.00	4	158	0.163	0.240	0.240	7.99	6294	4104	45°
		10.00	4	158	0.204	0.240	0.300	9.99	5034	4108	45°
		12.00	4	158	0.245	0.240	0.360	11.99	4195	4111	45°
	Hardened tool steel 48 - 52 HRC	4.00	4	135	0.082	0.240	0.120	3.99	10770	3533	45°
		5.00	4	135	0.102	0.240	0.150	4.99	8612	3514	45°
		6.00	4	135	0.122	0.240	0.180	5.99	7174	3501	45°
		8.00	4	135	0.163	0.240	0.240	7.99	5378	3507	45°
		10.00	4	135	0.204	0.240	0.300	9.99	4301	3510	45°
		12.00	4	135	0.245	0.240	0.360	11.99	3584	3512	45°
	Hardened tool steel 52 - 56 HRC	4.00	4	128	0.072	0.240	0.120	3.99	10211	2941	45°
		5.00	4	128	0.090	0.240	0.150	4.99	8165	2939	45°
		6.00	4	128	0.108	0.240	0.180	5.99	6802	2939	45°
		8.00	4	128	0.144	0.240	0.240	7.99	5099	2937	45°
		10.00	4	128	0.180	0.240	0.300	9.99	4078	2936	45°
		12.00	4	128	0.216	0.240	0.360	11.99	3398	2936	45°
	Hardened tool steel 56 - 60 HRC	4.00	4	105	0.055	0.240	0.120	3.99	8377	1843	45°
		5.00	4	105	0.069	0.240	0.150	4.99	6698	1849	45°
		6.00	4	105	0.083	0.240	0.180	5.99	5580	1853	45°
		8.00	4	105	0.111	0.240	0.240	7.99	4183	1857	45°
		10.00	4	105	0.139	0.240	0.300	9.99	3346	1860	45°
		12.00	4	105	0.166	0.240	0.360	11.99	2788	1851	45°

Corner radius end mills ToroX

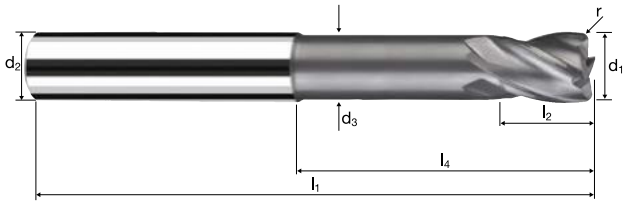
Tolerance r 0/+0.015, 6xd

X-Generation X

II

HM XT

λ 30°
γ -5°



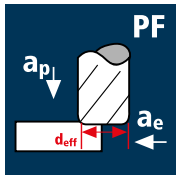
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G) Tool Steel HSS

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **222**

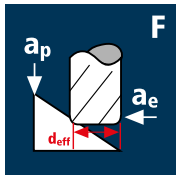
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	X-AL	X7104
222	4.00	6.00	3.70	69	5.00	24.00	28.95	1.000	2.1°	4		●
262	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4		●
302	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4		●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4		●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4		●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4		●
395	8.00	8.00	7.40	90	9.00	52.29	53.00	2.000	0.0°	4		●
455	10.00	10.00	9.20	105	11.00	63.20	64.00	2.000	0.0°	4		●
505	12.00	12.00	11.00	120	13.00	73.13	74.00	2.000	0.0°	4		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel < 850 N/mm²	3.00	4	200	0.040	0.150	0.900	2.71	23492	3759	0.500
	4.00	4	200	0.050	0.180	1.200	3.77	16886	3377	0.500
	5.00	4	200	0.055	0.200	1.500	4.80	13263	2918	0.500
	6.00	6	200	0.060	0.220	1.800	5.83	10920	3931	0.500
	8.00	6	200	0.075	0.250	2.400	7.87	8089	3640	0.500
	10.00	6	200	0.090	0.280	3.000	9.90	6431	3473	0.500
	12.00	6	200	0.110	0.300	3.600	11.92	5341	3525	0.500
	16.00	6	200	0.120	0.650	4.800	15.47	4115	2963	1.500
Steel 850 - 1100 N/mm²	3.00	4	180	0.040	0.150	0.900	2.71	21142	3383	0.500
	4.00	4	180	0.050	0.180	1.200	3.77	15198	3040	0.500
	5.00	4	180	0.050	0.200	1.500	4.80	11937	2387	0.500
	6.00	6	180	0.055	0.220	1.800	5.83	9828	3243	0.500
	8.00	6	180	0.070	0.250	2.400	7.87	7280	3058	0.500
	10.00	6	180	0.085	0.280	3.000	9.90	5787	2951	0.500
	12.00	6	180	0.105	0.300	3.600	11.92	4807	3028	0.500
	16.00	6	180	0.115	0.650	4.800	15.47	3704	2556	1.500
Steel 1100 - 1300 N/mm²	3.00	4	180	0.035	0.150	0.900	2.71	21142	2960	0.500
	4.00	4	180	0.045	0.180	1.200	3.77	15198	2736	0.500
	5.00	4	180	0.050	0.200	1.500	4.80	11937	2387	0.500
	6.00	6	180	0.055	0.220	1.800	5.83	9828	3243	0.500
	8.00	6	180	0.065	0.250	2.400	7.87	7280	2839	0.500
	10.00	6	180	0.080	0.280	3.000	9.90	5787	2778	0.500
	12.00	6	180	0.095	0.300	3.600	11.92	4807	2740	0.500
	16.00	6	180	0.105	0.650	4.800	15.47	3704	2334	1.500
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	60	0.025	0.150	0.700	2.71	7047	705	0.500
	4.00	4	60	0.030	0.180	1.000	3.77	5066	608	0.500
	5.00	4	60	0.035	0.200	1.200	4.80	3979	557	0.500
	6.00	6	60	0.040	0.220	1.400	5.83	3276	786	0.500
	8.00	6	60	0.050	0.250	1.900	7.87	2427	728	0.500
	10.00	6	60	0.055	0.280	2.400	9.90	1929	637	0.500
	12.00	6	60	0.070	0.300	2.900	11.92	1602	673	0.500
	16.00	6	60	0.075	0.650	3.800	15.47	1235	556	1.500

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	3.00	4	420	0.025	0.050	0.050	2.94	45473	4547	45°
	4.00	4	420	0.030	0.060	0.060	3.96	33760	4051	45°
	5.00	4	420	0.035	0.060	0.060	4.96	26954	3774	45°
	6.00	6	420	0.040	0.080	0.080	5.98	22356	5365	45°
	8.00	6	420	0.045	0.080	0.080	7.98	16753	4523	45°
	10.00	6	420	0.050	0.100	0.100	9.99	13382	4015	45°
	12.00	6	420	0.055	0.100	0.100	11.99	11150	3680	45°
	16.00	6	420	0.065	0.180	0.180	15.87	8424	3285	45°
Steel 850 - 1100 N/mm²	3.00	4	360	0.025	0.050	0.050	2.94	38977	3898	45°
	4.00	4	360	0.030	0.060	0.060	3.96	28937	3472	45°
	5.00	4	360	0.035	0.060	0.060	4.96	23103	3234	45°
	6.00	6	360	0.040	0.080	0.080	5.98	19162	4599	45°
	8.00	6	360	0.045	0.080	0.080	7.98	14360	3877	45°
	10.00	6	360	0.050	0.100	0.100	9.99	11471	3441	45°
	12.00	6	360	0.050	0.100	0.100	11.99	9557	2867	45°
	16.00	6	360	0.060	0.180	0.180	15.87	7221	2600	45°
Steel 1100 - 1300 N/mm²	3.00	4	320	0.020	0.050	0.050	2.94	34646	2772	45°
	4.00	4	320	0.025	0.060	0.060	3.96	25722	2572	45°
	5.00	4	320	0.030	0.060	0.060	4.96	20536	2464	45°
	6.00	6	320	0.035	0.080	0.080	5.98	17033	3577	45°
	8.00	6	320	0.040	0.080	0.080	7.98	12764	3063	45°
	10.00	6	320	0.045	0.100	0.100	9.99	10196	2753	45°
	12.00	6	320	0.050	0.100	0.100	11.99	8495	2549	45°
	16.00	6	320	0.055	0.180	0.180	15.87	6418	2118	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	145	0.020	0.050	0.050	2.94	15699	1256	45°
	4.00	4	145	0.025	0.060	0.060	3.96	11655	1166	45°
	5.00	4	145	0.030	0.060	0.060	4.96	9305	1117	45°
	6.00	6	145	0.030	0.080	0.080	5.98	7718	1389	45°
	8.00	6	145	0.035	0.080	0.080	7.98	5784	1215	45°
	10.00	6	145	0.040	0.100	0.100	9.99	4620	1109	45°
	12.00	6	145	0.045	0.100	0.100	11.99	3849	1039	45°
	16.00	6	145	0.050	0.180	0.180	15.87	2908	872	45°

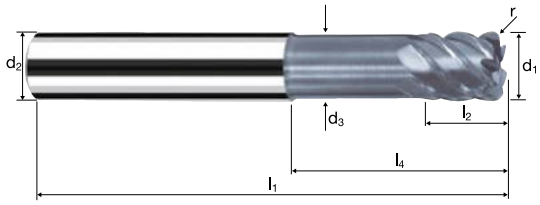
Corner radius end mills Multispeed

Tolerance r 0/+0.03, 3xd

X-Generation

II

HM MG10	λ 45° γ 5°



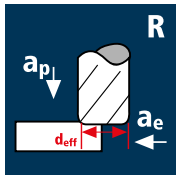
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5250** ø-Code **180**

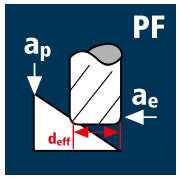
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P5250
180	3.00	6.00	2.80	57	4.00	14.00	20.63	0.500	4.4°	4	●
220	4.00	6.00	3.70	57	5.00	16.00	20.95	0.500	2.9°	4	●
260	5.00	6.00	4.60	57	6.00	18.00	21.27	0.500	1.5°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	6	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	6	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	6	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	6	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.800	0.0°	6	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	6	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	6	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.500	0.0°	6	●
610	16.00	16.00	15.00	92	17.00	42.13	43.00	1.500	0.0°	6	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	4	115	0.018	0.400	1.200	18488	1331	0.500
	3.00	4	115	0.027	0.400	1.800	12284	1327	0.500
	4.00	4	115	0.036	0.400	2.400	9197	1324	0.500
	5.00	4	115	0.045	0.400	3.000	7351	1323	0.500
	6.00	4	115	0.054	0.400	3.600	6121	1322	0.500
	8.00	4	115	0.072	0.400	4.800	4587	1321	0.500
	10.00	4	115	0.090	0.400	6.000	3668	1321	0.500
	12.00	4	115	0.108	0.400	7.200	3056	1320	0.500
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	2.00	4	70	0.017	0.400	1.200	11253	765	0.500
	3.00	4	70	0.026	0.400	1.800	7477	778	0.500
	4.00	4	70	0.034	0.400	2.400	5598	761	0.500
	5.00	4	70	0.043	0.400	3.000	4474	770	0.500
	6.00	4	70	0.051	0.400	3.600	3726	760	0.500
	8.00	4	70	0.068	0.400	4.800	2792	759	0.500
	10.00	4	70	0.085	0.400	6.000	2233	759	0.500
	12.00	4	70	0.103	0.400	7.200	1860	766	0.500
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	2.00	4	60	0.016	0.400	1.200	9646	617	0.500
	3.00	4	60	0.024	0.400	1.800	6409	615	0.500
	4.00	4	60	0.032	0.400	2.400	4799	614	0.500
	5.00	4	60	0.041	0.400	3.000	3835	629	0.500
	6.00	4	60	0.049	0.400	3.600	3194	626	0.500
	8.00	4	60	0.065	0.400	4.800	2393	622	0.500
	10.00	4	60	0.081	0.400	6.000	1914	620	0.500
	12.00	4	60	0.097	0.400	7.200	1594	619	0.500
Steel < 850 N/mm²	2.00	4	240	0.026	0.400	1.200	38583	4013	0.500
	3.00	4	240	0.039	0.400	1.800	25636	3999	0.500
	4.00	4	240	0.052	0.400	2.400	19195	3993	0.500
	5.00	4	240	0.065	0.400	3.000	15340	3988	0.500
	6.00	4	240	0.078	0.400	3.600	12775	3986	0.500
	8.00	4	240	0.104	0.400	4.800	9573	3982	0.500
	10.00	4	240	0.130	0.400	6.000	7655	3981	0.500
	12.00	4	240	0.156	0.400	7.200	6377	3979	0.500

Application



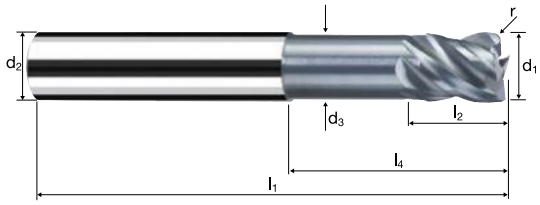
Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	4	215	0.031	0.180	0.060	2.00	34218	4243	45°
	3.00	4	215	0.046	0.180	0.090	3.00	22812	4197	45°
	4.00	4	215	0.061	0.180	0.120	4.00	17109	4175	45°
	5.00	4	215	0.077	0.180	0.150	5.00	13687	4216	45°
	6.00	4	215	0.092	0.180	0.180	6.00	11406	4197	45°
	8.00	4	215	0.122	0.180	0.240	8.00	8555	4175	45°
	10.00	4	215	0.153	0.180	0.300	10.00	6844	4189	45°
	12.00	4	215	0.184	0.180	0.360	12.00	5703	4197	45°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	2.00	4	130	0.029	0.180	0.060	2.00	20690	2400	45°
	3.00	4	130	0.044	0.180	0.090	3.00	13793	2428	45°
	4.00	4	130	0.058	0.180	0.120	4.00	10345	2400	45°
	5.00	4	130	0.073	0.180	0.150	5.00	8276	2417	45°
	6.00	4	130	0.087	0.180	0.180	6.00	6897	2400	45°
	8.00	4	130	0.116	0.180	0.240	8.00	5173	2400	45°
	10.00	4	130	0.145	0.180	0.300	10.00	4138	2400	45°
	12.00	4	130	0.175	0.180	0.360	12.00	3448	2414	45°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	2.00	4	110	0.027	0.180	0.060	2.00	17507	1891	45°
	3.00	4	110	0.041	0.180	0.090	3.00	11671	1914	45°
	4.00	4	110	0.054	0.180	0.120	4.00	8754	1891	45°
	5.00	4	110	0.070	0.180	0.150	5.00	7003	1961	45°
	6.00	4	110	0.083	0.180	0.180	6.00	5836	1938	45°
	8.00	4	110	0.111	0.180	0.240	8.00	4377	1943	45°
	10.00	4	110	0.138	0.180	0.300	10.00	3501	1933	45°
	12.00	4	110	0.165	0.180	0.360	12.00	2918	1926	45°
Steel < 850 N/mm²	2.00	4	258	0.039	0.180	0.060	2.00	41062	6406	45°
	3.00	4	360	0.059	0.180	0.090	3.00	38197	8938	45°
	4.00	4	360	0.078	0.180	0.120	4.00	28648	8938	45°
	5.00	4	360	0.098	0.180	0.150	5.00	22918	8938	45°
	6.00	4	360	0.117	0.180	0.180	6.00	19099	8938	45°
	8.00	4	360	0.156	0.180	0.240	8.00	14324	8938	45°
	10.00	4	360	0.195	0.180	0.300	10.00	11459	8938	45°
	12.00	4	360	0.234	0.180	0.360	12.00	9549	8938	45°

Corner radius end mills Torocut

Tolerance r 0/+0.03, 3xd

HM MG10	λ 40° γ 5°

Vario



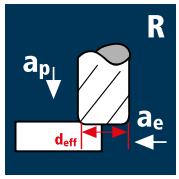
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **138**

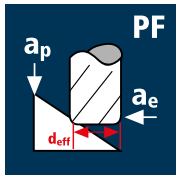
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7340
138	2.00	6.00	1.90	57	3.00	6.00	14.31	0.200	8.5°	4	●
178	3.00	6.00	2.80	57	4.00	9.00	15.63	0.200	5.8°	4	●
218	4.00	6.00	3.70	57	5.00	12.00	16.95	0.200	3.6°	4	●
258	5.00	6.00	4.60	57	6.00	15.00	18.27	0.200	1.7°	4	●
297	6.00	6.00	5.50	57	7.00	19.34	20.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	63	9.00	25.29	26.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	72	11.00	30.20	31.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	83	13.00	36.13	37.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	0.500	8.7°	4	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	0.500	6.0°	4	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	0.500	3.7°	4	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	0.500	1.7°	4	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	63	9.00	25.29	26.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	72	11.00	30.20	31.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	83	13.00	36.13	37.00	0.500	0.0°	4	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	105	0.029	0.600	2.400	8727	1012	1.000
	5.00	4	105	0.036	0.600	3.000	6920	997	1.000
	6.00	4	105	0.043	0.600	3.600	5733	986	1.000
	8.00	4	105	0.058	0.600	4.800	4269	990	1.000
	10.00	4	105	0.072	0.600	6.000	3400	979	1.000
	12.00	4	105	0.086	0.600	7.200	2825	972	1.000
	16.00	4	105	0.072	1.200	9.600	2133	614	2.000
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	4.00	4	65	0.027	0.600	2.400	5402	583	1.000
	5.00	4	65	0.034	0.600	3.000	4284	583	1.000
	6.00	4	65	0.041	0.600	3.600	3549	582	1.000
	8.00	4	65	0.054	0.600	4.800	2642	571	1.000
	10.00	4	65	0.068	0.600	6.000	2105	573	1.000
	12.00	4	65	0.082	0.600	7.200	1749	574	1.000
	16.00	4	65	0.068	1.200	9.600	1320	359	2.000
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	4.00	4	55	0.026	0.600	2.400	4571	475	1.000
	5.00	4	55	0.033	0.600	3.000	3625	479	1.000
	6.00	4	55	0.039	0.600	3.600	3003	469	1.000
	8.00	4	55	0.052	0.600	4.800	2236	465	1.000
	10.00	4	55	0.065	0.600	6.000	1781	463	1.000
	12.00	4	55	0.078	0.600	7.200	1480	462	1.000
	16.00	4	55	0.065	1.200	9.600	1117	290	2.000
Steel < 850 N/mm²	4.00	4	220	0.042	0.600	2.400	18284	3072	1.000
	5.00	4	220	0.052	0.600	3.000	14499	3016	1.000
	6.00	4	220	0.062	0.600	3.600	12012	2979	1.000
	8.00	4	220	0.083	0.600	4.800	8944	2969	1.000
	10.00	4	220	0.104	0.600	6.000	7124	2964	1.000
	12.00	4	220	0.125	0.600	7.200	5920	2960	1.000
	16.00	4	220	0.104	1.200	9.600	4469	1859	2.000

Application



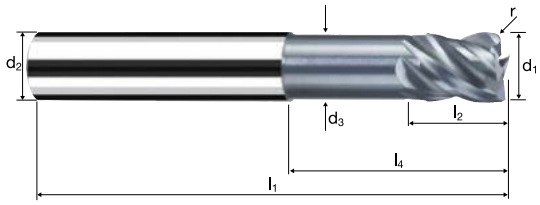
Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	4	215	0.061	0.240	0.120	3.99	17152	4185	45°
	5.00	4	215	0.077	0.240	0.150	4.99	13715	4224	45°
	6.00	4	215	0.092	0.240	0.180	5.99	11425	4204	45°
	8.00	4	215	0.122	0.240	0.240	7.99	8565	4180	45°
	10.00	4	215	0.153	0.240	0.300	9.99	6851	4193	45°
	12.00	4	215	0.184	0.240	0.360	11.99	5708	4201	45°
	16.00	4	215	0.245	0.360	0.480	15.94	4293	4207	45°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	4.00	4	130	0.058	0.240	0.120	3.99	10371	2406	45°
	5.00	4	130	0.073	0.240	0.150	4.99	8293	2422	45°
	6.00	4	130	0.087	0.240	0.180	5.99	6908	2404	45°
	8.00	4	130	0.116	0.240	0.240	7.99	5179	2403	45°
	10.00	4	130	0.145	0.240	0.300	9.99	4142	2402	45°
	12.00	4	130	0.175	0.240	0.360	11.99	3451	2416	45°
	16.00	4	130	0.234	0.360	0.480	15.94	2596	2430	45°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	4.00	4	110	0.054	0.240	0.120	3.99	8775	1895	45°
	5.00	4	110	0.070	0.240	0.150	4.99	7017	1965	45°
	6.00	4	110	0.083	0.240	0.180	5.99	5845	1941	45°
	8.00	4	110	0.111	0.240	0.240	7.99	4382	1946	45°
	10.00	4	110	0.138	0.240	0.300	9.99	3505	1935	45°
	12.00	4	110	0.165	0.240	0.360	11.99	2920	1927	45°
	16.00	4	110	0.221	0.360	0.480	15.94	2197	1942	45°
Steel < 850 N/mm²	4.00	4	360	0.078	0.240	0.120	3.99	28720	8961	45°
	5.00	4	360	0.098	0.240	0.150	4.99	22964	8956	45°
	6.00	4	360	0.117	0.240	0.180	5.99	19130	8953	45°
	8.00	4	360	0.156	0.240	0.240	7.99	14342	8949	45°
	10.00	4	360	0.195	0.240	0.300	9.99	11471	8947	45°
	12.00	4	360	0.234	0.240	0.360	11.99	9557	8945	45°
	16.00	4	360	0.312	0.360	0.480	15.94	7189	8972	45°

Corner radius end mills Torocut

Tolerance r 0/+0.03, 3xd

HM MG10	λ 40° γ 5°

Vario



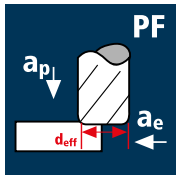
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **222**

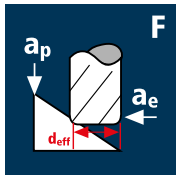
Ø Code	d1 e8	d2 h6	d3	l1	l2	l3	l4	r 0/+0.03	α	z	POLYCHROM P7340
222	4.00	6.00	3.70	57	5.00	12.00	16.95	1.000	3.8°	4	●
262	5.00	6.00	4.60	57	6.00	15.00	18.27	1.000	1.8°	4	●
302	6.00	6.00	5.50	57	7.00	19.34	20.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	1.000	0.0°	4	●
453	10.00	10.00	9.20	72	11.00	30.20	31.00	1.500	0.0°	4	●
503	12.00	12.00	11.00	83	13.00	36.13	37.00	1.500	0.0°	4	●
611	16.00	16.00	15.00	92	17.00	42.13	43.00	2.000	0.0°	4	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Steel < 850 N/mm²	6.00	6	200	0.050	0.150	1.320	5.33	11944	3583	0.800
	8.00	6	200	0.065	0.180	1.760	7.14	8916	3477	1.000
	10.00	6	200	0.080	0.200	2.200	9.20	6920	3322	1.000
	12.00	6	200	0.090	0.220	2.640	10.56	6029	3256	1.500
	16.00	6	200	0.115	0.250	3.520	14.66	4343	2997	1.500
Steel 850 - 1100 N/mm²	6.00	6	180	0.050	0.150	1.320	5.33	10750	3225	0.800
	8.00	6	180	0.060	0.180	1.760	7.14	8025	2889	1.000
	10.00	6	180	0.075	0.200	2.200	9.20	6228	2803	1.000
	12.00	6	180	0.085	0.220	2.640	10.56	5426	2767	1.500
	16.00	6	180	0.110	0.250	3.520	14.66	3908	2579	1.500
Steel 1100 - 1300 N/mm²	6.00	6	150	0.045	0.150	1.320	5.33	8958	2419	0.800
	8.00	6	150	0.055	0.180	1.760	7.14	6687	2207	1.000
	10.00	6	150	0.070	0.200	2.200	9.20	5190	2180	1.000
	12.00	6	150	0.080	0.220	2.640	10.56	4521	2170	1.500
	16.00	6	150	0.100	0.250	3.520	14.66	3257	1954	1.500
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	60	0.040	0.120	1.060	5.24	3645	875	0.800
	8.00	6	60	0.050	0.144	1.400	7.03	2717	815	1.000
	10.00	6	60	0.065	0.160	1.760	9.09	2101	819	1.000
	12.00	6	60	0.070	0.176	2.120	10.41	1835	771	1.500
	16.00	6	60	0.090	0.200	2.820	14.50	1317	711	1.500

Application

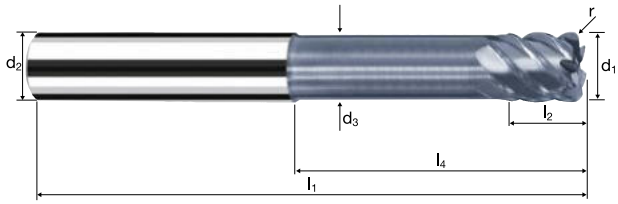


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	6.00	6	420	0.040	0.100	0.100	5.94	22507	5402	45°
	8.00	6	420	0.045	0.110	0.110	7.90	16923	4569	45°
	10.00	6	420	0.050	0.140	0.140	9.94	13450	4035	45°
	12.00	6	420	0.055	0.170	0.170	11.86	11272	3720	45°
	16.00	6	420	0.065	0.180	0.180	15.87	8424	3285	45°
Steel 850 - 1100 N/mm²	6.00	6	360	0.040	0.100	0.100	5.94	19292	4630	45°
	8.00	6	360	0.045	0.110	0.110	7.90	14505	3916	45°
	10.00	6	360	0.050	0.140	0.140	9.94	11528	3458	45°
	12.00	6	360	0.050	0.170	0.170	11.86	9662	2899	45°
	16.00	6	360	0.060	0.180	0.180	15.87	7221	2600	45°
Steel 1100 - 1300 N/mm²	6.00	6	320	0.035	0.100	0.100	5.94	17148	3601	45°
	8.00	6	320	0.040	0.110	0.110	7.90	12894	3095	45°
	10.00	6	320	0.045	0.140	0.140	9.94	10247	2767	45°
	12.00	6	320	0.050	0.170	0.170	11.86	8588	2576	45°
	16.00	6	320	0.055	0.180	0.180	15.87	6418	2118	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	6	145	0.030	0.100	0.100	5.94	7770	1399	45°
	8.00	6	145	0.035	0.110	0.110	7.90	5842	1227	45°
	10.00	6	145	0.040	0.140	0.140	9.94	4643	1114	45°
	12.00	6	145	0.045	0.170	0.170	11.86	3892	1051	45°
	16.00	6	145	0.050	0.180	0.180	15.87	2908	872	45°

Corner radius end mills Multispeed

Tolerance r 0/+0.03, 5xd

HM MG10	λ 45° γ 5°



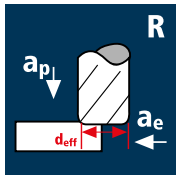
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5252** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	POLYCHROM P5252
300	6.00	6.00	5.50	70	7.00	32.34	33.00	0.800	6	●
391	8.00	8.00	7.40	80	9.00	42.29	43.00	1.000	6	●
450	10.00	10.00	9.20	84	11.00	42.20	43.00	1.000	6	●
501	12.00	12.00	11.00	97	13.00	50.13	51.00	1.500	6	●
610	16.00	16.00	15.00	115	17.00	65.13	66.00	1.500	6	●

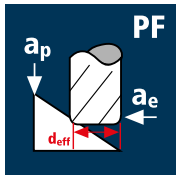
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]								
2.00	4	104	0.023	0.200	1.200	18391	1692	0.500
3.00	4	104	0.035	0.200	1.800	11823	1655	0.500
4.00	4	104	0.047	0.200	2.400	8712	1638	0.500
5.00	4	104	0.058	0.200	3.000	6897	1600	0.500
6.00	4	104	0.070	0.200	3.600	5708	1598	0.500
8.00	4	104	0.094	0.200	4.800	4244	1596	0.500
10.00	4	104	0.117	0.200	6.000	3378	1581	0.500
12.00	4	104	0.140	0.200	7.200	2805	1571	0.500
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]								
2.00	4	63	0.022	0.200	1.200	11141	980	0.500
3.00	4	63	0.034	0.200	1.800	7162	974	0.500
4.00	4	63	0.044	0.200	2.400	5277	929	0.500
5.00	4	63	0.056	0.200	3.000	4178	936	0.500
6.00	4	63	0.066	0.200	3.600	3458	913	0.500
8.00	4	63	0.088	0.200	4.800	2571	905	0.500
10.00	4	63	0.111	0.200	6.000	2046	908	0.500
12.00	4	63	0.134	0.200	7.200	1699	911	0.500
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]								
2.00	4	54	0.021	0.200	1.200	9549	802	0.500
3.00	4	54	0.031	0.200	1.800	6139	761	0.500
4.00	4	54	0.042	0.200	2.400	4523	760	0.500
5.00	4	54	0.053	0.200	3.000	3581	759	0.500
6.00	4	54	0.064	0.200	3.600	2964	759	0.500
8.00	4	54	0.085	0.200	4.800	2204	749	0.500
10.00	4	54	0.105	0.200	6.000	1754	737	0.500
12.00	4	54	0.126	0.200	7.200	1457	734	0.500
Steel < 850 N/mm²								
2.00	4	167	0.036	0.200	1.200	29532	4253	0.500
3.00	4	167	0.055	0.200	1.800	18985	4177	0.500
4.00	4	167	0.073	0.200	2.400	13989	4085	0.500
5.00	4	167	0.091	0.200	3.000	11075	4031	0.500
6.00	4	167	0.109	0.200	3.600	9165	3996	0.500
8.00	4	167	0.146	0.200	4.800	6815	3980	0.500
10.00	4	167	0.182	0.200	6.000	5424	3949	0.500
12.00	4	167	0.218	0.200	7.200	4505	3928	0.500

Application



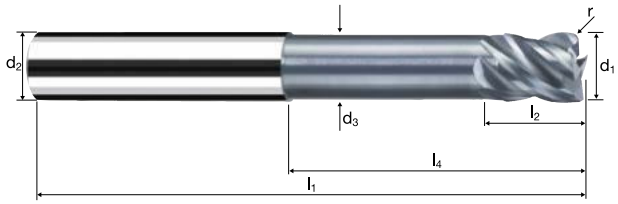
Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
2.00	4	192	0.039	0.180	0.060	2.00	30558	4767	45°
3.00	4	192	0.060	0.180	0.090	3.00	20372	4889	45°
4.00	4	192	0.080	0.180	0.120	4.00	15279	4889	45°
5.00	4	192	0.099	0.180	0.150	5.00	12223	4840	45°
6.00	4	192	0.119	0.180	0.180	6.00	10186	4849	45°
8.00	4	192	0.160	0.180	0.240	8.00	7639	4889	45°
10.00	4	192	0.199	0.180	0.300	10.00	6112	4865	45°
12.00	4	192	0.238	0.180	0.360	12.00	5093	4849	45°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]									
2.00	4	117	0.037	0.180	0.060	2.00	18621	2756	45°
3.00	4	117	0.058	0.180	0.090	3.00	12414	2880	45°
4.00	4	117	0.075	0.180	0.120	4.00	9311	2793	45°
5.00	4	117	0.095	0.180	0.150	5.00	7448	2830	45°
6.00	4	117	0.112	0.180	0.180	6.00	6207	2781	45°
8.00	4	117	0.150	0.180	0.240	8.00	4655	2793	45°
10.00	4	117	0.189	0.180	0.300	10.00	3724	2815	45°
12.00	4	117	0.228	0.180	0.360	12.00	3104	2831	45°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]									
2.00	4	100	0.036	0.180	0.060	2.00	15915	2292	45°
3.00	4	100	0.053	0.180	0.090	3.00	10610	2249	45°
4.00	4	100	0.071	0.180	0.120	4.00	7958	2260	45°
5.00	4	100	0.090	0.180	0.150	5.00	6366	2292	45°
6.00	4	100	0.109	0.180	0.180	6.00	5305	2313	45°
8.00	4	100	0.145	0.180	0.240	8.00	3979	2308	45°
10.00	4	100	0.179	0.180	0.300	10.00	3183	2279	45°
12.00	4	100	0.214	0.180	0.360	12.00	2653	2271	45°
Steel < 850 N/mm²									
2.00	4	251	0.054	0.180	0.060	2.00	39948	8629	45°
3.00	4	251	0.083	0.180	0.090	3.00	26632	8842	45°
4.00	4	251	0.109	0.180	0.120	4.00	19974	8709	45°
5.00	4	251	0.137	0.180	0.150	5.00	15979	8757	45°
6.00	4	251	0.164	0.180	0.180	6.00	13316	8735	45°
8.00	4	251	0.219	0.180	0.240	8.00	9987	8749	45°
10.00	4	251	0.273	0.180	0.300	10.00	7990	8725	45°
12.00	4	251	0.327	0.180	0.360	12.00	6658	8709	45°

Corner radius end mills Torocut

Tolerance r 0/+0.03, 6xd

HM MG10	λ 40° γ 5°
Vario	



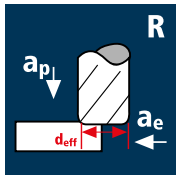
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7344** ø-Code **138**

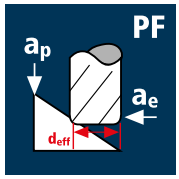
Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7344
138	2.00	6.00	1.90	66	3.00	12.00	20.31	0.200	5.9°	4	●
178	3.00	6.00	2.80	66	4.00	18.00	24.63	0.200	3.7°	4	●
218	4.00	6.00	3.70	70	5.00	24.00	28.95	0.200	2.1°	4	●
258	5.00	6.00	4.60	75	6.00	30.00	33.27	0.200	0.9°	4	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	0.200	0.0°	4	●
385	8.00	8.00	7.40	90	9.00	52.29	53.00	0.200	0.0°	4	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	0.200	0.0°	4	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	0.200	0.0°	4	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	0.500	6.0°	4	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	0.500	3.7°	4	●
220	4.00	6.00	3.70	70	5.00	24.00	28.95	0.500	2.1°	4	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	0.500	0.9°	4	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	0.0°	4	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	0.0°	4	●
448	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	0.0°	4	●
498	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	0.0°	4	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	4.00	4	98	0.054	0.200	2.400	9748	2106	1.000
	5.00	4	98	0.067	0.200	3.000	7427	1990	1.000
	6.00	4	98	0.081	0.200	3.600	5999	1944	1.000
	8.00	4	98	0.108	0.200	4.800	4333	1872	1.000
	10.00	4	98	0.135	0.200	6.000	3391	1831	1.000
	12.00	4	98	0.161	0.200	7.200	2785	1794	1.000
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	4.00	4	60	0.051	0.200	2.400	5968	1218	1.000
	5.00	4	60	0.064	0.200	3.000	4547	1164	1.000
	6.00	4	60	0.076	0.200	3.600	3673	1117	1.000
	8.00	4	60	0.101	0.200	4.800	2653	1072	1.000
	10.00	4	60	0.128	0.200	6.000	2076	1063	1.000
	12.00	4	60	0.154	0.200	7.200	1705	1050	1.000
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	4.00	4	51	0.048	0.200	2.400	5073	974	1.000
	5.00	4	51	0.061	0.200	3.000	3865	943	1.000
	6.00	4	51	0.074	0.200	3.600	3122	924	1.000
	8.00	4	51	0.098	0.200	4.800	2255	884	1.000
	10.00	4	51	0.121	0.200	6.000	1765	854	1.000
	12.00	4	51	0.145	0.200	7.200	1449	840	1.000
Steel < 850 N/mm² P P	4.00	4	154	0.084	0.200	2.400	15319	5147	1.000
	5.00	4	154	0.105	0.200	3.000	11671	4902	1.000
	6.00	4	154	0.125	0.200	3.600	9427	4714	1.000
	8.00	4	154	0.168	0.200	4.800	6808	4575	1.000
	10.00	4	154	0.209	0.200	6.000	5328	4454	1.000
	12.00	4	154	0.251	0.200	7.200	4377	4395	1.000

Application

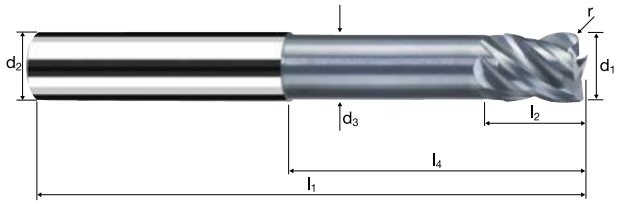


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] P	4.00	4	192	0.080	0.240	0.120	3.99	15317	4901	45°
	5.00	4	192	0.099	0.240	0.150	4.99	12248	4850	45°
	6.00	4	192	0.119	0.240	0.180	5.99	10203	4857	45°
	8.00	4	192	0.160	0.240	0.240	7.99	7649	4895	45°
	10.00	4	192	0.199	0.240	0.300	9.99	6118	4870	45°
	12.00	4	192	0.238	0.240	0.360	11.99	5097	4852	45°
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH] P	4.00	4	117	0.075	0.240	0.120	3.99	9334	2800	45°
	5.00	4	117	0.095	0.240	0.150	4.99	7463	2836	45°
	6.00	4	117	0.112	0.240	0.180	5.99	6217	2785	45°
	8.00	4	117	0.150	0.240	0.240	7.99	4661	2797	45°
	10.00	4	117	0.189	0.240	0.300	9.99	3728	2818	45°
	12.00	4	117	0.228	0.240	0.360	11.99	3106	2833	45°
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841] P	4.00	4	100	0.071	0.240	0.120	3.99	7978	2266	45°
	5.00	4	100	0.090	0.240	0.150	4.99	6379	2296	45°
	6.00	4	100	0.109	0.240	0.180	5.99	5314	2317	45°
	8.00	4	100	0.145	0.240	0.240	7.99	3984	2311	45°
	10.00	4	100	0.179	0.240	0.300	9.99	3186	2281	45°
	12.00	4	100	0.214	0.240	0.360	11.99	2655	2273	45°
Steel < 850 N/mm² P P	4.00	4	251	0.109	0.240	0.120	3.99	20024	8731	45°
	5.00	4	251	0.137	0.240	0.150	4.99	16011	8774	45°
	6.00	4	251	0.164	0.240	0.180	5.99	13338	8750	45°
	8.00	4	251	0.219	0.240	0.240	7.99	9999	8759	45°
	10.00	4	251	0.273	0.240	0.300	9.99	7998	8734	45°
	12.00	4	251	0.327	0.240	0.360	11.99	6664	8717	45°

Corner radius end mills Torocut

Tolerance r 0/+0.03, 6xd

HM MG10	λ 40° γ 5°
Vario	

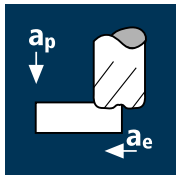


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56			Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7344** ø-Code **222**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	POLYCHROM P7344
222	4.00	6.00	3.70	70	5.00	24.00	28.95	1.000	2.1°	4	●
262	5.00	6.00	4.60	75	6.00	30.00	33.27	1.000	1.0°	4	●
302	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	0.0°	4	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	0.0°	4	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 48 - 52 HRC H	2.00	4	140	0.070	0.060	1.500	22280	6238	0.6
		3.00	4	140	0.105	0.089	2.250	14855	6239	1.3
		4.00	4	140	0.140	0.140	3.000	11140	6238	2.6
		5.00	4	140	0.175	0.175	3.750	8915	6241	4.1
		6.00	6	105	0.147	0.210	4.500	5570	4913	4.6
		8.00	6	105	0.196	0.280	6.000	4180	4916	8.3
		10.00	6	105	0.245	0.350	7.500	3340	4910	12.9
		12.00	6	105	0.294	0.420	9.000	2785	4913	18.6
		16.00	6	105	0.392	0.560	12.000	2090	4916	33.0
	Hardened tool steel 52 - 56 HRC H	2.00	4	120	0.070	0.060	1.500	19100	5348	0.5
		3.00	4	120	0.105	0.089	2.250	12730	5347	1.1
		4.00	4	120	0.140	0.140	3.000	9550	5348	2.2
		5.00	4	120	0.175	0.175	3.750	7640	5348	3.5
		6.00	6	90	0.147	0.210	4.500	4775	4212	4.0
		8.00	6	90	0.196	0.280	6.000	3580	4210	7.1
		10.00	6	90	0.245	0.350	7.500	2865	4212	11.1
		12.00	6	90	0.294	0.420	9.000	2385	4207	15.9
		16.00	6	90	0.392	0.560	12.000	1790	4210	28.3
	Hardened tool steel 56 - 60 HRC H	2.00	4	90	0.054	0.051	1.500	14325	3094	0.2
		3.00	4	90	0.081	0.077	2.250	9550	3094	0.5
		4.00	4	90	0.108	0.120	3.000	7160	3093	1.1
		5.00	4	90	0.135	0.150	3.750	5730	3094	1.7
		6.00	6	80	0.144	0.180	4.500	4245	3668	3.0
		8.00	6	70	0.168	0.240	6.000	2785	2807	4.0
		10.00	6	60	0.180	0.300	7.500	1910	2063	4.6
		12.00	6	60	0.216	0.360	9.000	1590	2061	6.7
		16.00	6	50	0.240	0.480	12.000	995	1433	8.3
	Hardened tool steel > 60 HRC H	2.00	4	70	0.045	0.050	1.500	11140	2005	0.2
		3.00	4	70	0.068	0.075	2.250	7425	2005	0.3
		4.00	4	70	0.090	0.100	3.000	5570	2005	0.6
		5.00	4	70	0.113	0.125	3.750	4455	2005	0.9
		6.00	6	65	0.120	0.150	4.500	3450	2484	1.7
		8.00	6	55	0.140	0.200	6.000	2190	1840	2.2
		10.00	6	50	0.150	0.250	7.500	1590	1431	2.7
		12.00	6	50	0.180	0.300	9.000	1325	1431	3.9
		16.00	6	40	0.200	0.400	12.000	795	954	4.6
	High speed steel, hardened 64 - 70 HRC H	2.00	4	40	0.024	0.040	1.500	6365	611	0.0
		3.00	4	40	0.036	0.060	2.250	4245	611	0.1
		4.00	4	40	0.048	0.080	3.000	3185	612	0.1
		5.00	4	40	0.060	0.100	3.750	2545	611	0.2
		6.00	6	35	0.063	0.120	4.500	1855	701	0.4
		8.00	6	30	0.072	0.160	6.000	1195	516	0.5
		10.00	6	30	0.090	0.200	7.500	955	516	0.8
		12.00	6	30	0.108	0.240	9.000	795	515	1.1
		16.00	6	25	0.120	0.320	12.000	495	356	1.4

High feed end mills XFeed-H

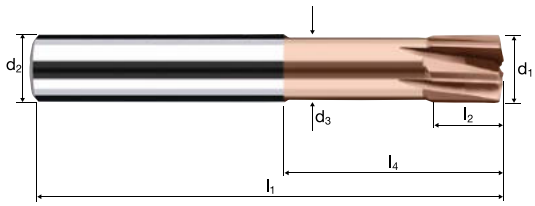
Cylindrical neck, 3xd

X-Generation

II

HM XA	λ 0° γ 0°

HFC

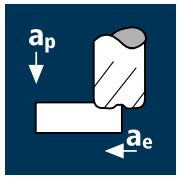


ReTool®

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **H** Article-N°. **7610** ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	DURO-Si H7610
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.04	0.09	11.5°	4	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.08	0.18	8.5°	4	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.12	0.27	6.0°	4	●
220	4.00	6.00	3.70	57	4.00	12.00	16.95	0.16	0.36	3.8°	4	●
260	5.00	6.00	4.60	57	5.00	15.00	18.27	0.20	0.45	1.8°	4	●
300	6.00	6.00	5.50	57	6.00	19.34	20.00	0.25	0.54	0.0°	6	●
391	8.00	8.00	7.40	63	8.00	25.29	26.00	0.33	0.72	0.0°	6	●
450	10.00	10.00	9.20	72	10.00	30.20	31.00	0.41	0.90	0.0°	6	●
501	12.00	12.00	11.00	83	12.00	36.13	37.00	0.50	1.08	0.0°	6	●
610	16.00	16.00	15.00	92	16.00	42.13	43.00	0.69	1.44	0.0°	6	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	2.00	3	130	0.100	0.120	1.500	20690	6207	1.1
		3.00	3	130	0.150	0.180	2.250	13795	6208	2.5
		4.00	4	170	0.200	0.220	3.000	13530	10824	7.1
		5.00	4	170	0.250	0.275	3.750	10825	10825	11.2
		6.00	4	180	0.300	0.330	4.500	9550	11460	17.0
		8.00	4	180	0.400	0.440	6.000	7160	11456	30.2
		10.00	4	180	0.500	0.550	7.500	5730	11460	47.3
		12.00	4	180	0.540	0.660	9.000	4775	10314	61.3
		16.00	4	180	0.560	0.880	12.000	3580	8019	84.7
	Steel 850 - 1100 N/mm²	2.00	3	130	0.100	0.120	1.500	20690	6207	1.1
		3.00	3	130	0.150	0.180	2.250	13795	6208	2.5
		4.00	4	150	0.200	0.220	3.000	11935	9548	6.3
		5.00	4	150	0.250	0.275	3.750	9550	9550	9.8
		6.00	4	160	0.300	0.330	4.500	8490	10188	15.1
		8.00	4	160	0.400	0.440	6.000	6365	10184	26.9
		10.00	4	160	0.500	0.550	7.500	5095	10190	42.0
		12.00	4	160	0.540	0.660	9.000	4245	9169	54.5
		16.00	4	160	0.560	0.880	12.000	3185	7134	75.3
	Steel 1100 - 1300 N/mm²	2.00	3	120	0.100	0.120	1.500	19100	5730	1.0
		3.00	3	120	0.150	0.180	2.250	12730	5729	2.3
		4.00	4	140	0.200	0.220	3.000	11140	8912	5.9
		5.00	4	140	0.250	0.275	3.750	8915	8915	9.2
		6.00	4	150	0.300	0.330	4.500	7960	9552	14.2
		8.00	4	150	0.400	0.440	6.000	5970	9552	25.2
		10.00	4	150	0.500	0.550	7.500	4775	9550	39.4
		12.00	4	150	0.540	0.660	9.000	3980	8597	51.1
		16.00	4	150	0.560	0.880	12.000	2985	6686	70.6
	Hardened tool steel 42 - 48 HRC	2.00	3	120	0.085	0.120	1.500	19100	4871	0.9
		3.00	3	120	0.128	0.180	2.250	12730	4869	2.0
		4.00	4	140	0.150	0.220	3.000	11140	6684	4.4
		5.00	4	140	0.188	0.275	3.750	8915	6686	6.9
		6.00	4	150	0.225	0.330	4.500	7960	7164	10.6
		8.00	4	150	0.300	0.440	6.000	5970	7164	18.9
		10.00	4	150	0.325	0.550	7.500	4775	6208	25.6
		12.00	4	150	0.330	0.660	9.000	3980	5254	31.2
		16.00	4	150	0.400	0.880	12.000	2985	4776	50.4
	Hardened tool steel 48 - 52 HRC	2.00	3	120	0.085	0.140	1.500	19100	4871	1.0
		3.00	3	120	0.128	0.210	2.250	12730	4869	2.3
		4.00	4	120	0.150	0.240	3.000	9550	5730	4.1
		5.00	4	120	0.188	0.300	3.750	7640	5730	6.4
		6.00	4	110	0.225	0.360	4.500	5835	5252	8.5
		8.00	4	110	0.300	0.480	6.000	4375	5250	15.1
		10.00	4	100	0.325	0.600	7.500	3185	4141	18.6
		12.00	4	100	0.330	0.720	9.000	2655	3505	22.7
		16.00	4	100	0.400	0.800	12.000	1990	3184	30.6
	Hardened tool steel 52 - 56 HRC	2.00	3	120	0.075	0.140	1.500	19100	4298	0.9
		3.00	3	120	0.113	0.210	2.250	12730	4316	2.0
		4.00	4	120	0.130	0.240	3.000	9550	4966	3.6
		5.00	4	120	0.163	0.300	3.750	7640	4981	5.6
		6.00	4	110	0.195	0.360	4.500	5835	4551	7.4
		8.00	4	110	0.260	0.480	6.000	4375	4550	13.1
		10.00	4	100	0.275	0.600	7.500	3185	3504	15.8
		12.00	4	100	0.300	0.720	9.000	2655	3186	20.6
		16.00	4	100	0.320	0.800	12.000	1990	2547	24.5

High feed end mills XFeed

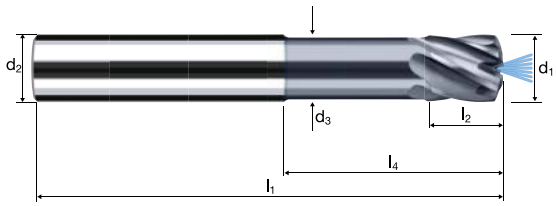
Cylindrical neck, 3xd, central air/cooling channel

X-Generation

II

HM MG10 | λ 30° γ 0°

HFC



new!

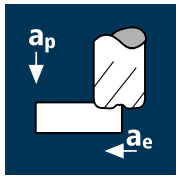
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56					GG(G) Tool Steel

Example: **Order-N°.** Coating **X** Article-N°. **7630** ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL X7630
100*	1.00	6.00	0.95	57	1.00	3.00	13.08	0.09	0.13	11.5°	3	●
140*	2.00	6.00	1.90	57	2.00	6.00	14.31	0.17	0.25	8.5°	3	●
180*	3.00	6.00	2.80	57	3.00	9.00	15.63	0.26	0.38	6.0°	3	●
220*	4.00	6.00	3.70	57	4.00	12.00	16.95	0.34	0.51	3.8°	4	●
260*	5.00	6.00	4.60	57	5.00	15.00	18.27	0.43	0.64	1.8°	4	●
300	6.00	6.00	5.50	57	6.00	19.34	20.00	0.52	0.76	0.0°	4	●
391	8.00	8.00	7.30	63	8.00	25.29	26.00	0.69	1.02	0.0°	4	●
450	10.00	10.00	9.20	72	10.00	30.20	31.00	0.86	1.27	0.0°	4	●
453	10.00	10.00	9.20	72	10.00	30.20	31.00	0.86	1.27	0.0°	6	●
501	12.00	12.00	11.00	83	12.00	36.13	37.00	1.03	1.52	0.0°	4	●
503	12.00	12.00	11.00	83	12.00	36.13	37.00	1.03	1.52	0.0°	6	●
610	16.00	16.00	15.00	92	16.00	42.13	43.00	1.37	2.03	0.0°	4	●
612	16.00	16.00	15.00	92	16.00	42.13	43.00	1.37	2.03	0.0°	6	●

* without internal cooling

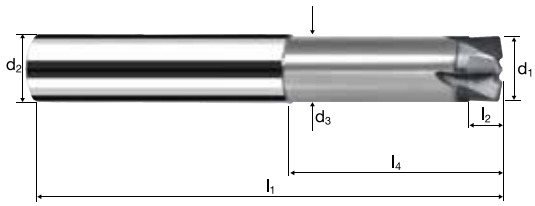
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	2.00	4	130	0.120	0.070	1.200	20690	9931	0.8
		3.00	4	130	0.180	0.105	1.800	13795	9932	1.9
		4.00	4	160	0.240	0.140	2.400	12730	12221	4.1
		5.00	4	160	0.300	0.175	3.000	10185	12222	6.4
		6.00	4	180	0.360	0.210	3.600	9550	13752	10.4
		8.00	4	180	0.480	0.280	4.800	7160	13747	18.5
		10.00	4	180	0.600	0.350	6.000	5730	13752	28.9
		12.00	4	180	0.660	0.420	7.200	4775	12606	38.1
		16.00	4	180	0.800	0.560	9.600	3580	11456	61.6
	Steel 1100 - 1300 N/mm²	2.00	4	110	0.110	0.070	1.200	17505	7702	0.6
		3.00	4	110	0.165	0.105	1.800	11670	7702	1.5
		4.00	4	140	0.220	0.140	2.400	11140	9803	3.3
		5.00	4	140	0.275	0.175	3.000	8915	9807	5.1
		6.00	4	160	0.330	0.210	3.600	8490	11207	8.5
		8.00	4	160	0.440	0.280	4.800	6365	11202	15.1
		10.00	4	160	0.550	0.350	6.000	5095	11209	23.5
		12.00	4	160	0.600	0.420	7.200	4245	10188	30.8
		16.00	4	160	0.720	0.560	9.600	3185	9173	49.3
	Steel 1300 - 1500 N/mm²	2.00	4	105	0.110	0.070	1.200	16710	7352	0.6
		3.00	4	105	0.165	0.105	1.800	11140	7352	1.4
		4.00	4	115	0.220	0.140	2.400	9150	8052	2.7
		5.00	4	115	0.275	0.175	3.000	7320	8052	4.2
		6.00	4	130	0.330	0.210	3.600	6895	9101	6.9
		8.00	4	130	0.440	0.280	4.800	5175	9108	12.2
		10.00	4	130	0.550	0.350	6.000	4140	9108	19.1
		12.00	4	130	0.600	0.420	7.200	3450	8280	25.0
		16.00	4	130	0.720	0.560	9.600	2585	7445	40.0
	Hardened tool steel 48 - 52 HRC	2.00	4	100	0.120	0.070	1.200	15915	7639	0.6
		3.00	4	100	0.180	0.105	1.800	10610	7639	1.4
		4.00	4	100	0.220	0.140	2.400	7960	7005	2.4
		5.00	4	100	0.275	0.175	3.000	6365	7002	3.7
		6.00	4	100	0.330	0.210	3.600	5305	7003	5.3
		8.00	4	100	0.440	0.280	4.800	3980	7005	9.4
		10.00	4	100	0.525	0.350	6.000	3185	6689	14.0
		12.00	4	100	0.570	0.420	7.200	2655	6053	18.3
		16.00	4	100	0.600	0.560	9.600	1990	4776	25.7
	Hardened tool steel 52 - 56 HRC	2.00	4	100	0.120	0.070	1.200	15915	7639	0.6
		3.00	4	100	0.180	0.105	1.800	10610	7639	1.4
		4.00	4	100	0.220	0.140	2.400	7960	7005	2.4
		5.00	4	100	0.275	0.175	3.000	6365	7002	3.7
		6.00	4	100	0.330	0.210	3.600	5305	7003	5.3
		8.00	4	100	0.440	0.280	4.800	3980	7005	9.4
		10.00	4	100	0.525	0.350	6.000	3185	6689	14.0
		12.00	4	100	0.570	0.420	7.200	2655	6053	18.3
		16.00	4	100	0.600	0.560	9.600	1990	4776	25.7
	Hardened tool steel 56 - 60 HRC	2.00	4	100	0.030	0.060	1.200	15915	1910	0.1
		3.00	4	100	0.045	0.090	1.800	10610	1910	0.3
		4.00	4	100	0.060	0.120	2.400	7960	1910	0.6
		5.00	4	100	0.075	0.150	3.000	6365	1910	0.9
		6.00	4	100	0.090	0.180	3.600	5305	1910	1.2
		8.00	4	100	0.120	0.240	4.800	3980	1910	2.2
		10.00	4	100	0.150	0.300	6.000	3185	1911	3.4
		12.00	4	100	0.180	0.360	7.200	2655	1912	5.0
		16.00	4	100	0.240	0.480	9.600	1990	1910	8.8
	Hardened tool steel > 60 HRC	2.00	4	60	0.020	0.050	1.200	9550	764	0.0
		3.00	4	60	0.030	0.075	1.800	6365	764	0.1
		4.00	4	60	0.040	0.100	2.400	4775	764	0.2
		5.00	4	60	0.050	0.125	3.000	3820	764	0.3
		6.00	4	60	0.060	0.150	3.600	3185	764	0.4
		8.00	4	60	0.080	0.200	4.800	2385	763	0.7
		10.00	4	60	0.100	0.250	6.000	1910	764	1.1
		12.00	4	60	0.120	0.300	7.200	1590	763	1.6
		16.00	4	60	0.160	0.400	9.600	1195	765	2.9
	Cast iron (lamellar / spheroidal)	2.00	4	130	0.120	0.070	1.200	20690	9931	0.8
		3.00	4	130	0.180	0.105	1.800	13795	9932	1.9
		4.00	4	160	0.240	0.140	2.400	12730	12221	4.1
		5.00	4	160	0.300	0.175	3.000	10185	12222	6.4
		6.00	4	180	0.360	0.210	3.600	9550	13752	10.4
		8.00	4	180	0.480	0.280	4.800	7160	13747	18.5
		10.00	4	180	0.600	0.350	6.000	5730	13752	28.9
		12.00	4	180	0.660	0.420	7.200	4775	12606	38.1
		16.00	4	180	0.800	0.560	9.600	3580	11456	61.6

High feed end mills XFeed

Cylindrical neck, 3xd

HM XT	λ 0° γ 0°

HFC

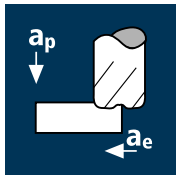


ToolSchool X7630 H7610

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7600** ø-Code **100**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL X7600
100	1.00	6.00	0.95	57	0.50	3.00	13.08	0.04	0.09	11.5°	4	●
140	2.00	6.00	1.90	57	1.00	6.00	14.31	0.08	0.18	8.5°	4	●
180	3.00	6.00	2.80	57	1.50	9.00	15.63	0.12	0.27	6.0°	4	●
220	4.00	6.00	3.70	57	2.00	12.00	16.95	0.16	0.36	3.8°	4	●
260	5.00	6.00	4.60	57	2.50	15.00	18.27	0.20	0.45	1.8°	4	●
300	6.00	6.00	5.50	57	3.00	19.34	20.00	0.25	0.54	0.0°	4	●
391	8.00	8.00	7.40	63	4.00	25.29	26.00	0.33	0.72	0.0°	4	●
450	10.00	10.00	9.20	72	5.00	30.20	31.00	0.41	0.90	0.0°	4	●
501	12.00	12.00	11.00	83	6.00	36.13	37.00	0.50	1.08	0.0°	4	●
610	16.00	16.00	15.00	92	8.00	42.13	43.00	0.69	1.44	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	250	0.315	0.240	3.600	13265	16714	14.4
		8.00	4	250	0.420	0.320	4.800	9945	16708	25.7
		10.00	4	250	0.525	0.400	6.000	7960	16716	40.1
		12.00	4	250	0.630	0.480	7.200	6630	16708	57.7
		16.00	4	250	0.695	0.560	9.600	4975	13831	74.4
	Steel 1100 - 1300 N/mm²	6.00	4	220	0.270	0.240	3.600	11670	12604	10.9
		8.00	4	220	0.355	0.320	4.800	8755	12432	19.1
		10.00	4	220	0.445	0.400	6.000	7005	12469	29.9
		12.00	4	220	0.535	0.480	7.200	5835	12487	43.2
		16.00	4	220	0.590	0.560	9.600	4375	10325	55.5
	Steel 1300 - 1500 N/mm²	6.00	4	200	0.245	0.220	3.600	10610	10398	8.2
		8.00	4	200	0.330	0.290	4.800	7960	10507	14.6
		10.00	4	200	0.410	0.360	6.000	6365	10439	22.5
		12.00	4	200	0.490	0.430	7.200	5305	10398	32.2
		16.00	4	200	0.540	0.500	9.600	3980	8597	41.3
	Hardened tool steel 48 - 52 HRC	6.00	4	160	0.180	0.210	3.600	8490	6113	4.6
		8.00	4	160	0.240	0.280	4.800	6365	6110	8.2
		10.00	4	160	0.300	0.350	6.000	5095	6114	12.8
		12.00	4	160	0.360	0.420	7.200	4245	6113	18.5
		16.00	4	160	0.480	0.560	9.600	3185	6115	32.9
	Hardened tool steel 52 - 56 HRC	6.00	4	140	0.150	0.210	3.600	7425	4455	3.4
		8.00	4	140	0.200	0.280	4.800	5570	4456	6.0
		10.00	4	140	0.250	0.350	6.000	4455	4455	9.4
		12.00	4	140	0.300	0.420	7.200	3715	4458	13.5
		16.00	4	140	0.400	0.560	9.600	2785	4456	24.0
	Hardened tool steel 56 - 60 HRC	6.00	4	100	0.090	0.180	3.600	5305	1910	1.2
		8.00	4	100	0.120	0.240	4.800	3980	1910	2.2
		10.00	4	100	0.150	0.300	6.000	3185	1911	3.4
		12.00	4	100	0.180	0.360	7.200	2655	1912	5.0
		16.00	4	100	0.240	0.480	9.600	1990	1910	8.8

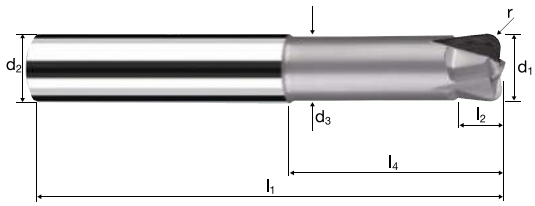
High feed end mills XFeed

Cylindrical neck, 3xd

X-Generation

II

HM XT	λ 0° γ -10°
	HFC

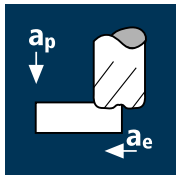


ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7620** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	z	X-AL **X7620**
300	6.00	6.00	5.50	57	3.00	19.34	20.00	1.000	4	●
304	6.00	6.00	5.50	57	3.00	19.34	20.00	1.500	4	●
391	8.00	8.00	7.40	63	4.00	25.29	26.00	1.500	4	●
395	8.00	8.00	7.40	63	4.00	25.29	26.00	2.000	4	●
450	10.00	10.00	9.20	72	5.00	30.20	31.00	2.000	4	●
457	10.00	10.00	9.20	72	5.00	30.20	31.00	2.500	4	●
501	12.00	12.00	11.00	83	6.00	36.13	37.00	2.500	4	●
507	12.00	12.00	11.00	83	6.00	36.13	37.00	3.000	4	●
610	16.00	16.00	15.00	92	8.00	42.13	43.00	3.000	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 48 - 52 HRC H	2.00	4	130	0.070	0.060	1.500	20690	5793	0.5
		3.00	4	130	0.105	0.089	2.250	13795	5794	1.2
		4.00	4	130	0.140	0.140	3.000	10345	5793	2.4
		5.00	4	130	0.175	0.175	3.750	8275	5793	3.8
		6.00	6	95	0.147	0.210	4.500	5040	4445	4.2
		8.00	6	95	0.196	0.280	6.000	3780	4445	7.5
		10.00	6	95	0.245	0.350	7.500	3025	4447	11.7
		12.00	6	95	0.294	0.420	9.000	2520	4445	16.8
		16.00	6	95	0.392	0.560	12.000	1890	4445	29.9
	Hardened tool steel 52 - 56 HRC H	2.00	4	110	0.070	0.060	1.500	17505	4901	0.4
		3.00	4	110	0.105	0.089	2.250	11670	4901	1.0
		4.00	4	110	0.140	0.140	3.000	8755	4903	2.1
		5.00	4	110	0.175	0.175	3.750	7005	4904	3.2
		6.00	6	80	0.147	0.210	4.500	4245	3744	3.5
		8.00	6	80	0.196	0.280	6.000	3185	3746	6.3
		10.00	6	80	0.245	0.350	7.500	2545	3741	9.8
		12.00	6	80	0.294	0.420	9.000	2120	3740	14.1
		16.00	6	80	0.392	0.560	12.000	1590	3740	25.1
	Hardened tool steel 56 - 60 HRC H	2.00	4	65	0.054	0.051	1.500	10345	2235	0.2
		3.00	4	65	0.081	0.077	2.250	6895	2234	0.4
		4.00	4	65	0.108	0.120	3.000	5175	2236	0.8
		5.00	4	65	0.135	0.150	3.750	4140	2236	1.3
		6.00	6	65	0.144	0.180	4.500	3450	2981	2.4
		8.00	6	65	0.168	0.240	6.000	2585	2606	3.8
		10.00	6	65	0.180	0.300	7.500	2070	2236	5.0
		12.00	6	65	0.216	0.360	9.000	1725	2236	7.2
		16.00	6	50	0.240	0.480	12.000	995	1433	8.3
	Hardened tool steel > 60 HRC H	2.00	4	50	0.045	0.040	1.500	7960	1433	0.1
		3.00	4	50	0.068	0.075	2.250	5305	1432	0.2
		4.00	4	50	0.090	0.100	3.000	3980	1433	0.4
		5.00	4	50	0.113	0.125	3.750	3185	1433	0.7
		6.00	6	50	0.120	0.150	4.500	2655	1912	1.3
		8.00	6	50	0.140	0.200	6.000	1990	1672	2.0
		10.00	6	50	0.150	0.250	7.500	1590	1431	2.7
		12.00	6	50	0.180	0.300	9.000	1325	1431	3.9
		16.00	6	40	0.200	0.400	12.000	795	954	4.6
	High speed steel, hardened 64 - 70 HRC H	2.00	4	30	0.024	0.032	1.500	4775	458	0.0
		3.00	4	30	0.036	0.060	2.250	3185	459	0.1
		4.00	4	30	0.048	0.080	3.000	2385	458	0.1
		5.00	4	30	0.060	0.100	3.750	1910	458	0.2
		6.00	6	30	0.063	0.120	4.500	1590	601	0.3
		8.00	6	30	0.072	0.160	6.000	1195	516	0.5
		10.00	6	30	0.090	0.200	7.500	955	516	0.8
		12.00	6	30	0.108	0.240	9.000	795	515	1.1
		16.00	6	25	0.120	0.320	12.000	495	356	1.4

High feed end mills XFeed-H

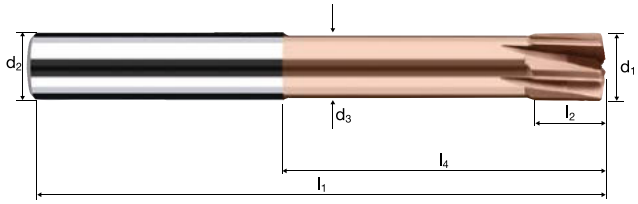
Cylindrical neck, 4.5xd

X-Generation X

II

HM XA	λ 0° γ 0°

HFC

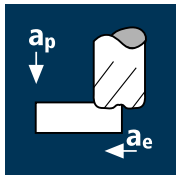


ReTool®

			HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **H** Article-N°. **7612** ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	DURO-Si H7612
100	1.00	6.00	0.95	61	1.00	4.50	14.58	0.04	0.09	10.0°	4	●
140	2.00	6.00	1.90	61	2.00	9.00	17.31	0.08	0.18	6.8°	4	●
180	3.00	6.00	2.80	61	3.00	13.50	20.13	0.12	0.27	4.5°	4	●
220	4.00	6.00	3.70	66	4.00	18.00	22.95	0.16	0.36	2.7°	4	●
260	5.00	6.00	4.60	66	5.00	22.50	25.77	0.20	0.45	1.3°	4	●
300	6.00	6.00	5.50	69	6.00	30.34	31.00	0.25	0.54	0.0°	6	●
391	8.00	8.00	7.40	80	8.00	39.29	40.00	0.33	0.72	0.0°	6	●
450	10.00	10.00	9.20	90	10.00	47.20	48.00	0.41	0.90	0.0°	6	●
501	12.00	12.00	11.00	105	12.00	54.13	55.00	0.50	1.08	0.0°	6	●
610	16.00	16.00	15.00	125	16.00	74.13	75.00	0.69	1.44	0.0°	6	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	2.00	3	130	0.100	0.120	1.500	20690	6207	1.1
		3.00	3	130	0.150	0.180	2.250	13795	6208	2.5
		4.00	4	155	0.200	0.220	3.000	12335	9868	6.5
		5.00	4	155	0.250	0.275	3.750	9870	9870	10.2
		6.00	4	160	0.300	0.330	4.500	8490	10188	15.1
		8.00	4	160	0.400	0.440	6.000	6365	10184	26.9
		10.00	4	160	0.500	0.550	7.500	5095	10190	42.0
		12.00	4	160	0.540	0.660	9.000	4245	9169	54.5
		16.00	4	160	0.560	0.880	12.000	3185	7134	75.3
	Steel 850 - 1100 N/mm²	2.00	3	130	0.100	0.120	1.500	20690	6207	1.1
		3.00	3	130	0.150	0.180	2.250	13795	6208	2.5
		4.00	4	135	0.200	0.220	3.000	10745	8596	5.7
		5.00	4	135	0.250	0.275	3.750	8595	8595	8.9
		6.00	4	145	0.300	0.330	4.500	7690	9228	13.7
		8.00	4	145	0.400	0.440	6.000	5770	9232	24.4
		10.00	4	145	0.500	0.550	7.500	4615	9230	38.1
		12.00	4	145	0.540	0.660	9.000	3845	8305	49.3
		16.00	4	145	0.560	0.880	12.000	2885	6462	68.2
	Steel 1100 - 1300 N/mm²	2.00	3	120	0.100	0.120	1.500	19100	5730	1.0
		3.00	3	120	0.150	0.180	2.250	12730	5729	2.3
		4.00	4	125	0.200	0.220	3.000	9945	7956	5.3
		5.00	4	125	0.250	0.275	3.750	7960	7960	8.2
		6.00	4	135	0.300	0.330	4.500	7160	8592	12.8
		8.00	4	135	0.400	0.440	6.000	5370	8592	22.7
		10.00	4	135	0.500	0.550	7.500	4295	8590	35.4
		12.00	4	135	0.540	0.660	9.000	3580	7733	45.9
		16.00	4	135	0.560	0.880	12.000	2685	6014	63.5
	Hardened tool steel 42 - 48 HRC	2.00	3	120	0.085	0.120	1.500	19100	4871	0.9
		3.00	3	120	0.128	0.180	2.250	12730	4869	2.0
		4.00	4	125	0.150	0.220	3.000	9945	5967	3.9
		5.00	4	125	0.188	0.275	3.750	7960	5970	6.2
		6.00	4	135	0.225	0.330	4.500	7160	6444	9.6
		8.00	4	135	0.300	0.440	6.000	5370	6444	17.0
		10.00	4	135	0.325	0.550	7.500	4295	5584	23.0
		12.00	4	135	0.330	0.660	9.000	3580	4726	28.1
		16.00	4	135	0.400	0.880	12.000	2685	4296	45.4
	Hardened tool steel 48 - 52 HRC	2.00	3	120	0.085	0.140	1.500	19100	4871	1.0
		3.00	3	120	0.128	0.210	2.250	12730	4869	2.3
		4.00	4	110	0.150	0.240	3.000	8755	5253	3.8
		5.00	4	110	0.188	0.300	3.750	7005	5254	5.9
		6.00	4	100	0.225	0.360	4.500	5305	4775	7.7
		8.00	4	100	0.300	0.480	6.000	3980	4776	13.8
		10.00	4	90	0.325	0.500	7.500	2865	3725	14.0
		12.00	4	90	0.330	0.600	9.000	2385	3148	17.0
		16.00	4	90	0.400	0.480	12.000	1790	2864	16.5
	Hardened tool steel 52 - 56 HRC	2.00	3	120	0.075	0.140	1.500	19100	4298	0.9
		3.00	3	120	0.113	0.210	2.250	12730	4316	2.0
		4.00	4	110	0.130	0.240	3.000	8755	4553	3.3
		5.00	4	110	0.163	0.300	3.750	7005	4567	5.1
		6.00	4	100	0.195	0.360	4.500	5305	4138	6.7
		8.00	4	100	0.260	0.480	6.000	3980	4139	11.9
		10.00	4	90	0.275	0.500	7.500	2865	3152	11.8
		12.00	4	90	0.300	0.600	9.000	2385	2862	15.5
		16.00	4	90	0.320	0.480	12.000	1790	2291	13.2

High feed end mills XFeed

Cylindrical neck, 4.5xd, central air/cooling channel

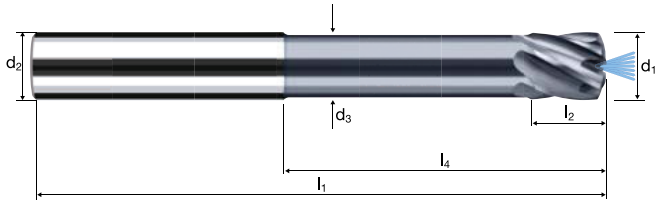
X-Generation

II

HM MG10 | λ 30° γ 0°

HFC

new!



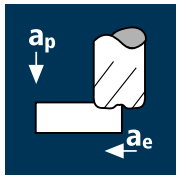
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56					GG(G) Tool Steel

Example: **Order-N°.** Coating **X** | Article-N°. **7632** | ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL X7632
100*	1.00	6.00	0.95	61	1.00	4.50	14.58	0.09	0.13	10.0°	3	●
140*	2.00	6.00	1.90	61	2.00	9.00	17.31	0.17	0.25	6.8°	3	●
180*	3.00	6.00	2.80	61	3.00	13.50	20.13	0.26	0.38	4.5°	3	●
220*	4.00	6.00	3.70	66	4.00	18.00	22.95	0.34	0.51	2.7°	4	●
260*	5.00	6.00	4.60	66	5.00	22.50	25.77	0.43	0.64	1.3°	4	●
300	6.00	6.00	5.50	69	6.00	30.34	31.00	0.52	0.76	0.0°	4	●
391	8.00	8.00	7.30	80	8.00	39.29	40.00	0.69	1.02	0.0°	4	●
450	10.00	10.00	9.20	90	10.00	47.20	48.00	0.86	1.27	0.0°	4	●
453	10.00	10.00	9.20	90	10.00	47.20	48.00	0.86	1.27	0.0°	6	●
501	12.00	12.00	11.00	105	12.00	54.13	55.00	1.03	1.52	0.0°	4	●
503	12.00	12.00	11.00	105	12.00	54.13	55.00	1.03	1.52	0.0°	6	●
610	16.00	16.00	15.00	125	16.00	74.13	75.00	1.37	2.03	0.0°	4	●
612	16.00	16.00	15.00	125	16.00	74.13	75.00	1.37	2.03	0.0°	6	●

* without internal cooling

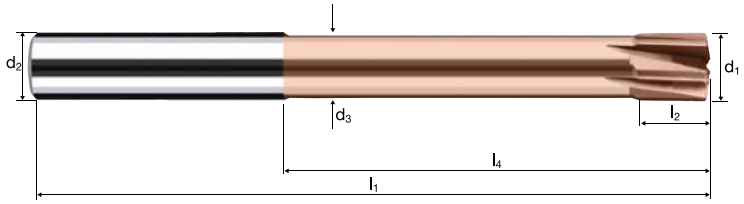
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Hardened tool steel 48 - 52 HRC	3.00	4	112	0.105	0.069	2.250	11885	4992	0.8
		4.00	4	112	0.140	0.108	3.000	8915	4992	1.6
		5.00	4	112	0.175	0.135	3.750	7130	4991	2.5
		6.00	6	75	0.147	0.162	4.500	3980	3510	2.6
		8.00	6	75	0.196	0.216	6.000	2985	3510	4.5
		10.00	6	75	0.245	0.270	7.500	2385	3506	7.1
		12.00	6	75	0.294	0.324	9.000	1990	3510	10.2
		16.00	6	75	0.392	0.432	12.000	1490	3505	18.2
	Hardened tool steel 52 - 56 HRC	3.00	4	90	0.105	0.069	2.250	9550	4011	0.6
		4.00	4	90	0.140	0.108	3.000	7160	4010	1.3
		5.00	4	90	0.175	0.135	3.750	5730	4011	2.0
		6.00	6	60	0.147	0.162	4.500	3185	2809	2.0
		8.00	6	60	0.196	0.216	6.000	2385	2805	3.6
		10.00	6	60	0.245	0.270	7.500	1910	2808	5.7
		12.00	6	60	0.294	0.324	9.000	1590	2805	8.2
		16.00	6	60	0.392	0.432	12.000	1195	2811	14.6
	Hardened tool steel 56 - 60 HRC	3.00	4	65	0.081	0.059	2.250	6895	2234	0.3
		4.00	4	65	0.108	0.092	3.000	5175	2236	0.6
		5.00	4	65	0.135	0.115	3.750	4140	2236	1.0
		6.00	6	65	0.144	0.138	4.500	3450	2981	1.9
		8.00	6	65	0.168	0.184	6.000	2585	2606	2.9
		10.00	6	65	0.180	0.230	7.500	2070	2236	3.9
		12.00	6	65	0.216	0.276	9.000	1725	2236	5.6
		16.00	6	50	0.240	0.368	12.000	995	1433	6.3
	Hardened tool steel > 60 HRC	3.00	4	50	0.068	0.057	2.250	5305	1432	0.2
		4.00	4	50	0.090	0.076	3.000	3980	1433	0.3
		5.00	4	50	0.113	0.095	3.750	3185	1433	0.5
		6.00	6	50	0.120	0.114	4.500	2655	1912	1.0
		8.00	6	50	0.140	0.152	6.000	1990	1672	1.5
		10.00	6	50	0.150	0.190	7.500	1590	1431	2.0
		12.00	6	50	0.180	0.228	9.000	1325	1431	2.9
		16.00	6	30	0.200	0.304	12.000	595	714	2.6
	High speed steel, hardened 64 - 70 HRC	3.00	4	30	0.036	0.027	2.250	3185	459	0.0
		4.00	4	30	0.048	0.036	3.000	2385	458	0.0
		5.00	4	30	0.060	0.045	3.750	1910	458	0.1
		6.00	6	30	0.063	0.054	4.500	1590	601	0.1
		8.00	6	30	0.072	0.072	6.000	1195	516	0.2
		10.00	6	30	0.090	0.070	7.500	955	516	0.3
		12.00	6	30	0.108	0.084	9.000	795	515	0.4
		16.00	6	25	0.120	0.112	12.000	495	356	0.5

High feed end mills XFeed-H

Cylindrical neck, 6xd

HM XA	λ 0° γ 0°

HFC

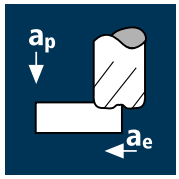


ReTool®

				HRC 48-56	HRC 56-60	HRC > 60			HSS

Example: **Order-N°.** Coating **H** Article-N°. **7614** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	DURO-Si H7614
180	3.00	6.00	2.80	66	3.00	18.00	24.63	0.12	0.27	3.7°	4	●
220	4.00	6.00	3.70	69	4.00	24.00	28.95	0.16	0.36	2.1°	4	●
260	5.00	6.00	4.60	75	5.00	30.00	33.27	0.20	0.45	1.0°	4	●
300	6.00	6.00	5.50	80	6.00	42.34	43.00	0.25	0.54	0.0°	6	●
391	8.00	8.00	7.40	90	8.00	52.29	53.00	0.33	0.72	0.0°	6	●
450	10.00	10.00	9.20	105	10.00	63.20	64.00	0.41	0.90	0.0°	6	●
501	12.00	12.00	11.00	120	12.00	73.13	74.00	0.50	1.08	0.0°	6	●
610	16.00	16.00	15.00	135	16.00	85.13	86.00	0.69	1.44	0.0°	6	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 500 - 850 N/mm²	3.00	3	105	0.150	0.090	2.250	11140	5013	1.0
		4.00	4	125	0.200	0.100	3.000	9945	7956	2.4
		5.00	4	125	0.250	0.125	3.750	7960	7960	3.7
		6.00	4	130	0.300	0.150	4.500	6895	8274	5.6
		8.00	4	130	0.400	0.200	6.000	5175	8280	9.9
		10.00	6	125	0.275	0.250	7.500	3980	6567	12.3
		12.00	6	125	0.270	0.300	9.000	3315	5370	14.5
		16.00	6	125	0.280	0.400	12.000	2485	4175	20.0
	Steel 850 - 1100 N/mm²	3.00	3	105	0.150	0.090	2.250	11140	5013	1.0
		4.00	4	110	0.200	0.100	3.000	8755	7004	2.1
		5.00	4	110	0.250	0.125	3.750	7005	7005	3.3
		6.00	4	115	0.300	0.150	4.500	6100	7320	4.9
		8.00	4	115	0.400	0.200	6.000	4575	7320	8.8
		10.00	6	110	0.275	0.250	7.500	3500	5775	10.8
		12.00	6	110	0.270	0.300	9.000	2920	4730	12.8
		16.00	6	110	0.280	0.400	12.000	2190	3679	17.7
	Steel 1100 - 1300 N/mm²	3.00	3	95	0.150	0.090	2.250	10080	4536	0.9
		4.00	4	100	0.200	0.100	3.000	7960	6368	1.9
		5.00	4	100	0.250	0.125	3.750	6365	6365	3.0
		6.00	4	110	0.300	0.150	4.500	5835	7002	4.7
		8.00	4	110	0.400	0.200	6.000	4375	7000	8.4
		10.00	6	100	0.275	0.250	7.500	3185	5255	9.9
		12.00	6	100	0.270	0.300	9.000	2655	4301	11.6
		16.00	6	100	0.280	0.400	12.000	1990	3343	16.0
	Hardened tool steel 42 - 48 HRC	3.00	3	95	0.128	0.090	2.250	10080	3856	0.8
		4.00	4	100	0.150	0.100	3.000	7960	4776	1.4
		5.00	4	100	0.188	0.125	3.750	6365	4774	2.2
		6.00	4	110	0.225	0.150	4.500	5835	5252	3.5
		8.00	4	110	0.300	0.200	6.000	4375	5250	6.3
		10.00	6	100	0.275	0.250	7.500	3185	5255	9.9
		12.00	6	100	0.270	0.300	9.000	2655	4301	11.6
		16.00	6	100	0.280	0.400	12.000	1990	3343	16.0
	Hardened tool steel 48 - 52 HRC	3.00	3	100	0.128	0.120	2.250	10610	4058	1.1
		4.00	4	90	0.150	0.140	3.000	7160	4296	1.8
		5.00	4	90	0.188	0.175	3.750	5730	4298	2.8
		6.00	4	90	0.225	0.210	4.500	4775	4298	4.1
		8.00	4	90	0.300	0.280	6.000	3580	4296	7.2
		10.00	6	80	0.275	0.300	7.500	2545	4199	9.4
		12.00	6	80	0.270	0.360	9.000	2120	3434	11.1
		16.00	6	80	0.280	0.400	12.000	1590	2671	12.8
	Hardened tool steel 52 - 56 HRC	3.00	3	100	0.113	0.120	2.250	10610	3597	1.0
		4.00	4	90	0.130	0.140	3.000	7160	3723	1.6
		5.00	4	90	0.163	0.175	3.750	5730	3736	2.5
		6.00	4	90	0.195	0.210	4.500	4775	3725	3.5
		8.00	4	90	0.260	0.280	6.000	3580	3723	6.3
		10.00	6	80	0.220	0.300	7.500	2545	3359	7.6
		12.00	6	80	0.240	0.360	9.000	2120	3053	9.9
		16.00	6	80	0.256	0.400	12.000	1590	2442	11.7

High feed end mills XFeed

Cylindrical neck, 6xd, central air/cooling channel

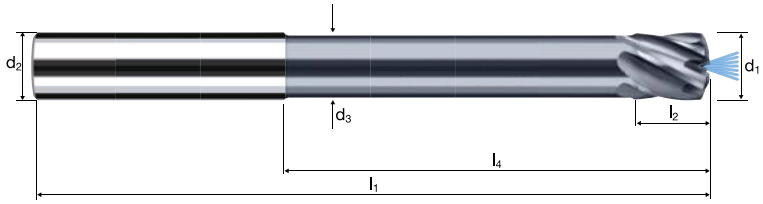
X-Generation

II

HM MG10	λ 30° γ 0°

HFC

new!



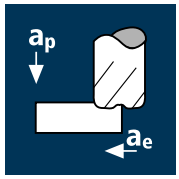
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56					GG(G) Tool Steel

Example: **Order-N°.** Coating **X** Article-N°. **7634** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL	X7634
180*	3.00	6.00	2.80	66	3.00	18.00	24.63	0.13	0.29	3.7°	3		●
220*	4.00	6.00	3.70	70	4.00	24.00	28.95	0.17	0.39	2.1°	4		●
260*	5.00	6.00	4.60	75	5.00	30.00	33.27	0.21	0.49	1.0°	4		●
300	6.00	6.00	5.50	80	6.00	42.34	43.00	0.26	0.59	0.0°	4		●
391	8.00	8.00	7.40	90	8.00	52.29	53.00	0.34	0.79	0.0°	4		●
453	10.00	10.00	9.20	105	10.00	63.20	64.00	0.43	0.98	0.0°	6		●
503	12.00	12.00	11.00	120	12.00	73.13	74.00	0.51	1.18	0.0°	6		●
612	16.00	16.00	15.00	135	16.00	85.13	86.00	0.68	1.57	0.0°	6		●

* without internal cooling

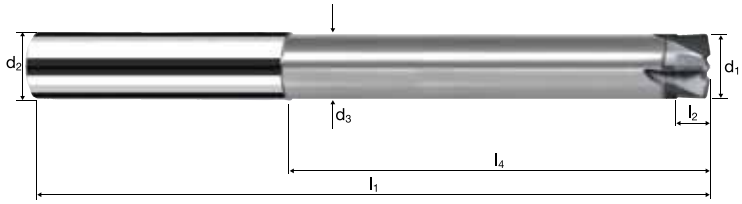
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	3.00	4	100	0.200	0.080	1.800	10610	8488	1.2
		4.00	4	100	0.265	0.120	2.400	7960	8438	2.4
		5.00	4	100	0.335	0.160	3.000	6365	8529	4.1
		6.00	4	100	0.400	0.200	3.600	5305	8488	6.1
		8.00	4	100	0.535	0.250	4.800	3980	8517	10.2
		10.00	4	100	0.665	0.320	6.000	3185	8472	16.3
		12.00	4	100	0.800	0.400	7.200	2655	8496	24.5
		16.00	4	100	1.065	0.480	9.600	1990	8477	39.1
	Steel 1100 - 1300 N/mm²	3.00	4	95	0.170	0.080	1.800	10080	6854	1.0
		4.00	4	95	0.225	0.120	2.400	7560	6804	2.0
		5.00	4	95	0.285	0.160	3.000	6050	6897	3.3
		6.00	4	95	0.340	0.200	3.600	5040	6854	4.9
		8.00	4	95	0.455	0.250	4.800	3780	6880	8.3
		10.00	4	95	0.565	0.320	6.000	3025	6837	13.1
		12.00	4	95	0.680	0.400	7.200	2520	6854	19.7
		16.00	4	95	0.905	0.480	9.600	1890	6842	31.5
	Steel 1300 - 1500 N/mm²	3.00	4	90	0.155	0.070	1.800	9550	5921	0.7
		4.00	4	90	0.205	0.110	2.400	7160	5871	1.6
		5.00	4	90	0.260	0.140	3.000	5730	5959	2.5
		6.00	4	90	0.310	0.180	3.600	4775	5921	3.8
		8.00	4	90	0.415	0.230	4.800	3580	5943	6.6
		10.00	4	90	0.520	0.290	6.000	2865	5959	10.4
		12.00	4	90	0.625	0.360	7.200	2385	5963	15.5
		16.00	4	90	0.830	0.430	9.600	1790	5943	24.5
	Hardened tool steel 48 - 52 HRC	3.00	4	85	0.120	0.060	1.800	9020	4330	0.5
		4.00	4	85	0.160	0.100	2.400	6765	4330	1.0
		5.00	4	85	0.200	0.130	3.000	5410	4328	1.7
		6.00	4	85	0.240	0.160	3.600	4510	4330	2.5
		8.00	4	85	0.320	0.200	4.800	3380	4326	4.2
		10.00	4	85	0.400	0.260	6.000	2705	4328	6.8
		12.00	4	85	0.480	0.320	7.200	2255	4330	10.0
		16.00	4	85	0.640	0.380	9.600	1690	4326	15.8
	Hardened tool steel 52 - 56 HRC	3.00	4	80	0.090	0.060	1.800	8490	3056	0.3
		4.00	4	80	0.120	0.080	2.400	6365	3055	0.6
		5.00	4	80	0.150	0.110	3.000	5095	3057	1.0
		6.00	4	80	0.180	0.140	3.600	4245	3056	1.5
		8.00	4	80	0.240	0.180	4.800	3185	3058	2.6
		10.00	4	80	0.300	0.220	6.000	2545	3054	4.0
		12.00	4	80	0.360	0.280	7.200	2120	3053	6.2
		16.00	4	80	0.480	0.340	9.600	1590	3053	10.0
	Hardened tool steel 56 - 60 HRC	3.00	4	65	0.055	0.050	1.800	6895	1517	0.1
		4.00	4	65	0.075	0.080	2.400	5175	1553	0.3
		5.00	4	65	0.095	0.100	3.000	4140	1573	0.5
		6.00	4	65	0.110	0.130	3.600	3450	1518	0.7
		8.00	4	65	0.150	0.160	4.800	2585	1551	1.2
		10.00	4	65	0.185	0.210	6.000	2070	1532	1.9
		12.00	4	65	0.225	0.260	7.200	1725	1553	2.9
		16.00	4	65	0.300	0.310	9.600	1295	1554	4.6
	Hardened tool steel > 60 HRC	3.00	4	40	0.045	0.050	1.800	4245	764	0.1
		4.00	4	40	0.060	0.070	2.400	3185	764	0.1
		5.00	4	40	0.075	0.100	3.000	2545	764	0.2
		6.00	4	40	0.090	0.120	3.600	2120	763	0.3
		8.00	4	40	0.120	0.150	4.800	1590	763	0.5
		10.00	4	40	0.145	0.190	6.000	1275	740	0.8
		12.00	4	40	0.175	0.240	7.200	1060	742	1.3
		16.00	4	40	0.235	0.290	9.600	795	747	2.1
	Cast iron (lamellar / spheroidal)	3.00	4	120	0.200	0.080	1.800	12730	10184	1.5
		4.00	4	120	0.265	0.120	2.400	9550	10123	2.9
		5.00	4	120	0.335	0.160	3.000	7640	10238	4.9
		6.00	4	120	0.400	0.200	3.600	6365	10184	7.3
		8.00	4	120	0.535	0.250	4.800	4775	10219	12.3
		10.00	4	120	0.665	0.320	6.000	3820	10161	19.5
		12.00	4	120	0.800	0.400	7.200	3185	10192	29.4
		16.00	4	120	1.065	0.480	9.600	2385	10160	46.8

High feed end mills XFeed

Cylindrical neck, 6xd

HM XT	λ 0° γ 0°

HFC

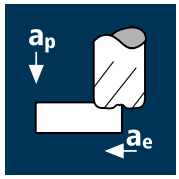


ToolSchool X7632 X7634 H7612 H7614

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7604** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL	X7604
180	3.00	6.00	2.80	66	1.50	18.00	24.63	0.12	0.27	3.7°	4		●
220	4.00	6.00	3.70	69	2.00	24.00	28.95	0.16	0.36	2.1°	4		●
260	5.00	6.00	4.60	75	2.50	30.00	33.27	0.20	0.45	1.0°	4		●
300	6.00	6.00	5.50	80	3.00	42.34	43.00	0.25	0.54	0.0°	4		●
391	8.00	8.00	7.40	90	4.00	52.29	53.00	0.33	0.72	0.0°	4		●
450	10.00	10.00	9.20	105	5.00	63.20	64.00	0.41	0.90	0.0°	4		●
501	12.00	12.00	11.00	120	6.00	73.13	74.00	0.50	1.08	0.0°	4		●
610	16.00	16.00	15.00	135	8.00	85.13	86.00	0.69	1.44	0.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	6.00	4	85	0.315	0.240	3.600	4510	5683	4.9
		8.00	4	85	0.420	0.320	4.800	3380	5678	8.7
		10.00	4	85	0.525	0.400	6.000	2705	5681	13.6
		12.00	4	85	0.630	0.480	7.200	2255	5683	19.6
		16.00	4	85	0.695	0.560	9.600	1690	4698	25.3
	Steel 1100 - 1300 N/mm²	6.00	4	80	0.270	0.240	3.600	4245	4585	4.0
		8.00	4	80	0.355	0.320	4.800	3185	4523	6.9
		10.00	4	80	0.445	0.400	6.000	2545	4530	10.9
		12.00	4	80	0.535	0.480	7.200	2120	4537	15.7
		16.00	4	80	0.590	0.560	9.600	1590	3752	20.2
	Steel 1300 - 1500 N/mm²	6.00	4	75	0.245	0.220	3.600	3980	3900	3.1
		8.00	4	75	0.330	0.290	4.800	2985	3940	5.5
		10.00	4	75	0.410	0.360	6.000	2385	3911	8.4
		12.00	4	75	0.490	0.430	7.200	1990	3900	12.1
		16.00	4	75	0.540	0.500	9.600	1490	3218	15.4
	Hardened tool steel 48 - 52 HRC	6.00	4	70	0.190	0.190	3.600	3715	2823	1.9
		8.00	4	70	0.250	0.260	4.800	2785	2785	3.5
		10.00	4	70	0.315	0.320	6.000	2230	2810	5.4
		12.00	4	70	0.380	0.380	7.200	1855	2820	7.7
		16.00	4	70	0.415	0.450	9.600	1395	2316	10.0
	Hardened tool steel 52 - 56 HRC	6.00	4	65	0.140	0.170	3.600	3450	1932	1.2
		8.00	4	65	0.190	0.220	4.800	2585	1965	2.1
		10.00	4	65	0.235	0.280	6.000	2070	1946	3.3
		12.00	4	65	0.285	0.340	7.200	1725	1967	4.8
		16.00	4	65	0.315	0.390	9.600	1295	1632	6.1
	Hardened tool steel 56 - 60 HRC	6.00	4	55	0.090	0.160	3.600	2920	1051	0.6
		8.00	4	55	0.120	0.210	4.800	2190	1051	1.1
		10.00	4	55	0.145	0.260	6.000	1750	1015	1.6
		12.00	4	55	0.175	0.310	7.200	1460	1022	2.3
		16.00	4	55	0.195	0.360	9.600	1095	854	3.0

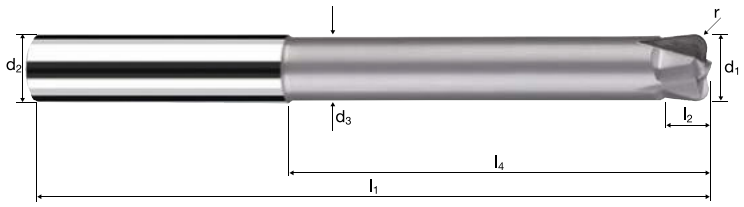
High feed end mills XFeed

Cylindrical neck, 6xd

X-Generation

II

HM XT	λ 0° γ -10°
	HFC

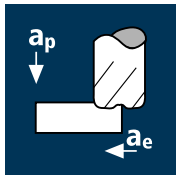


ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7624** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r	α	z	X-AL **X7624**
300	6.00	6.00	5.50	80	3.00	42.34	43.00	1.000	0.0°	4	●
391	8.00	8.00	7.40	90	4.00	52.29	53.00	1.500	0.0°	4	●
450	10.00	10.00	9.20	105	5.00	63.20	64.00	2.000	0.0°	4	●
501	12.00	12.00	11.00	120	6.00	73.13	74.00	2.500	0.0°	4	●
610	16.00	16.00	15.00	135	8.00	85.13	86.00	3.000	0.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel 850 - 1100 N/mm²	3.00	4	80	0.200	0.040	1.800	8490	6792	0.5
		4.00	4	80	0.265	0.060	2.400	6365	6747	1.0
		5.00	4	80	0.335	0.080	3.000	5095	6827	1.6
		6.00	4	80	0.400	0.100	3.600	4245	6792	2.4
		8.00	4	80	0.535	0.130	4.800	3185	6816	4.3
		10.00	4	80	0.665	0.160	6.000	2545	6770	6.5
		12.00	4	80	0.800	0.200	7.200	2120	6784	9.8
		16.00	4	80	1.065	0.240	9.600	1590	6773	15.6
	Steel 1100 - 1300 N/mm²	3.00	4	75	0.170	0.040	1.800	7960	5413	0.4
		4.00	4	75	0.225	0.060	2.400	5970	5373	0.8
		5.00	4	75	0.285	0.080	3.000	4775	5444	1.3
		6.00	4	75	0.340	0.100	3.600	3980	5413	1.9
		8.00	4	75	0.455	0.130	4.800	2985	5433	3.4
		10.00	4	75	0.565	0.160	6.000	2385	5390	5.2
		12.00	4	75	0.680	0.200	7.200	1990	5413	7.8
		16.00	4	75	0.905	0.240	9.600	1490	5394	12.4
	Steel 1300 - 1500 N/mm²	3.00	4	70	0.155	0.040	1.800	7425	4604	0.3
		4.00	4	70	0.205	0.060	2.400	5570	4567	0.7
		5.00	4	70	0.260	0.070	3.000	4455	4633	1.0
		6.00	4	70	0.310	0.090	3.600	3715	4607	1.5
		8.00	4	70	0.415	0.120	4.800	2785	4623	2.7
		10.00	4	70	0.520	0.150	6.000	2230	4638	4.2
		12.00	4	70	0.625	0.180	7.200	1855	4638	6.0
		16.00	4	70	0.830	0.220	9.600	1395	4631	9.8
	Hardened tool steel 48 - 52 HRC	3.00	4	65	0.120	0.030	1.800	6895	3310	0.2
		4.00	4	65	0.160	0.050	2.400	5175	3312	0.4
		5.00	4	65	0.200	0.070	3.000	4140	3312	0.7
		6.00	4	65	0.240	0.080	3.600	3450	3312	1.0
		8.00	4	65	0.320	0.100	4.800	2585	3309	1.6
		10.00	4	65	0.400	0.130	6.000	2070	3312	2.6
		12.00	4	65	0.480	0.160	7.200	1725	3312	3.8
		16.00	4	65	0.640	0.190	9.600	1295	3315	6.0
	Hardened tool steel 52 - 56 HRC	3.00	4	60	0.090	0.030	1.800	6365	2291	0.1
		4.00	4	60	0.120	0.040	2.400	4775	2292	0.2
		5.00	4	60	0.150	0.060	3.000	3820	2292	0.4
		6.00	4	60	0.180	0.070	3.600	3185	2293	0.6
		8.00	4	60	0.240	0.090	4.800	2385	2290	1.0
		10.00	4	60	0.300	0.110	6.000	1910	2292	1.5
		12.00	4	60	0.360	0.140	7.200	1590	2290	2.3
		16.00	4	60	0.480	0.170	9.600	1195	2294	3.7
	Hardened tool steel 56 - 60 HRC	3.00	4	55	0.055	0.030	1.800	5835	1284	0.1
		4.00	4	55	0.075	0.040	2.400	4375	1313	0.1
		5.00	4	55	0.095	0.050	3.000	3500	1330	0.2
		6.00	4	55	0.110	0.070	3.600	2920	1285	0.3
		8.00	4	55	0.150	0.080	4.800	2190	1314	0.5
		10.00	4	55	0.185	0.110	6.000	1750	1295	0.9
		12.00	4	55	0.225	0.130	7.200	1460	1314	1.2
		16.00	4	55	0.300	0.160	9.600	1095	1314	2.0
	Hardened tool steel > 60 HRC	3.00	4	30	0.045	0.030	1.800	3185	573	0.0
		4.00	4	30	0.060	0.040	2.400	2385	572	0.1
		5.00	4	30	0.075	0.050	3.000	1910	573	0.1
		6.00	4	30	0.090	0.060	3.600	1590	572	0.1
		8.00	4	30	0.120	0.080	4.800	1195	574	0.2
		10.00	4	30	0.145	0.100	6.000	955	554	0.3
		12.00	4	30	0.175	0.120	7.200	795	557	0.5
		16.00	4	30	0.235	0.150	9.600	595	559	0.8
	Cast iron (lamellar / spheroidal)	3.00	4	95	0.200	0.040	1.800	10080	8064	0.6
		4.00	4	95	0.265	0.060	2.400	7560	8014	1.2
		5.00	4	95	0.335	0.080	3.000	6050	8107	1.9
		6.00	4	95	0.400	0.100	3.600	5040	8064	2.9
		8.00	4	95	0.535	0.130	4.800	3780	8089	5.0
		10.00	4	95	0.665	0.160	6.000	3025	8047	7.7
		12.00	4	95	0.800	0.200	7.200	2520	8064	11.6
		16.00	4	95	1.065	0.240	9.600	1890	8051	18.6

High feed end mills XFeed

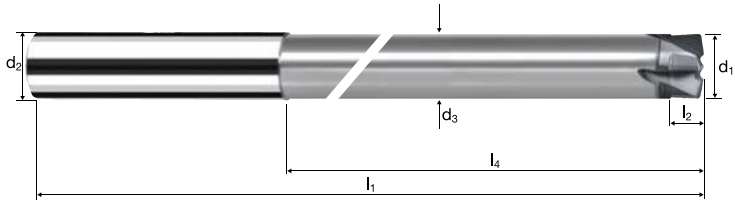
Cylindrical neck, 9xd

X-Generation X

II

HM XT	λ 0° γ 0°

HFC



ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

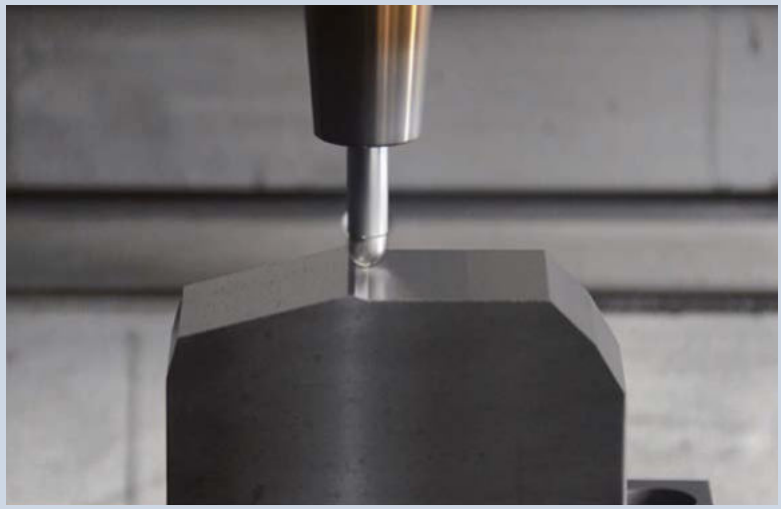
Example: **Order-N°.** Coating **X** Article-N°. **7608** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	ap_{max}	$R_{theo.}$	α	z	X-AL	X7608
180	3.00	6.00	2.80	75	1.50	27.00	33.63	0.12	0.27	2.7°	4		●
220	4.00	6.00	3.70	80	2.00	36.00	40.95	0.16	0.36	1.5°	4		●
260	5.00	6.00	4.60	87	2.50	45.00	48.27	0.20	0.45	0.7°	4		●
300	6.00	6.00	5.50	100	3.00	62.34	63.00	0.25	0.54	0.0°	4		●
391	8.00	8.00	7.40	120	4.00	82.29	83.00	0.33	0.72	0.0°	4		●
450	10.00	10.00	9.20	135	5.00	93.20	94.00	0.41	0.90	0.0°	4		●
501	12.00	12.00	11.00	160	6.00	113.13	114.00	0.50	1.08	0.0°	4		●
610	16.00	16.00	15.00	180	8.00	130.13	131.00	0.69	1.44	0.0°	4		●

Application data for high-performance milling of carbides

Always up to date

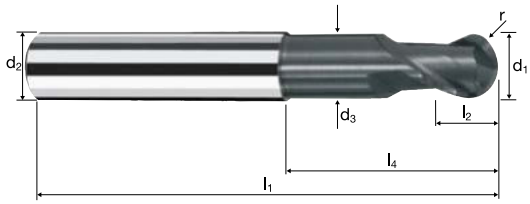
Please contact us for the latest application know-how in the field of high-performance milling of carbide and the current cutting data for SpheroCarb. The FRAISA application engineers will be happy to advise you.



Ball nose end mills

Tolerance r js8 (±), 3xd

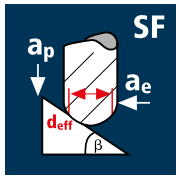
HM XA	λ 30° γ -10°



Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite		HM < 1200 HV	HM < 1600 HV		Ceramics

Example: **Order-N°.** Coating **B** Article-N°. **5580** ø-Code **100**

Ø Code	d_1 ±	d_2 h6	d_3	l_1	l_2	l_3	l_4	r js8	α	z	DIA-C B5580
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●
120	1.50	6.00	1.40	57	2.00	4.50	13.74	0.750	10.4°	2	●
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●
160	2.50	6.00	2.30	57	3.50	7.50	15.06	1.250	7.6°	2	●
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●

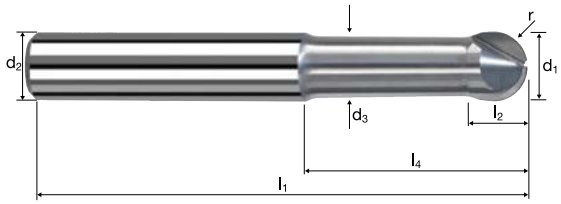
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	4.00	2	700	0.020	0.018	0.018	3.18	60000	2400	45°
		5.00	2	700	0.025	0.020	0.020	3.95	56409	2821	45°
		6.00	2	700	0.030	0.022	0.022	4.72	47207	2832	45°
		8.00	2	700	0.040	0.026	0.026	6.26	35594	2848	45°
		10.00	2	700	0.040	0.028	0.028	7.78	28640	2291	45°
		12.00	2	700	0.050	0.032	0.032	9.32	23907	2391	45°
	Hardened tool steel 56 - 60 HRC	4.00	2	650	0.020	0.018	0.018	3.18	60000	2400	45°
		5.00	2	650	0.025	0.020	0.020	3.95	52380	2619	45°
		6.00	2	650	0.025	0.022	0.022	4.72	43835	2192	45°
		8.00	2	650	0.035	0.026	0.026	6.26	33051	2314	45°
		10.00	2	650	0.035	0.028	0.028	7.78	26594	1862	45°
		12.00	2	650	0.045	0.032	0.032	9.32	22200	1998	45°
	Hardened tool steel > 60 HRC	4.00	2	600	0.015	0.018	0.018	3.18	60000	1800	45°
		5.00	2	600	0.020	0.020	0.020	3.95	48351	1934	45°
		6.00	2	600	0.025	0.022	0.022	4.72	40463	2023	45°
		8.00	2	600	0.030	0.026	0.026	6.26	30509	1831	45°
		10.00	2	600	0.030	0.028	0.028	7.78	24548	1473	45°
		12.00	2	600	0.040	0.032	0.032	9.32	20492	1639	45°

Ball nose end mills

Cylindrical neck, 3xd

CVD

λ 0°
γ 0°



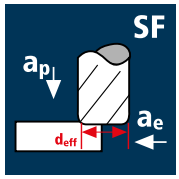
R

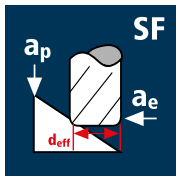
F

HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **31700** Article-N°. ø-Code **220**

Ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	l4	r ±0.005	β [°]	z	31700
220	4.00	6.00	3.70	80	3.20	12.00	16.95	2.000	4°	2	●
260	5.00	6.00	4.60	80	4.00	15.00	18.27	2.500	2°	2	●
300	6.00	6.00	5.50	80	4.80	20.00	-	3.000	0°	2	●
391	8.00	8.00	7.40	100	6.40	26.00	-	4.000	0°	2	●
450	10.00	10.00	9.20	100	8.00	31.00	-	5.000	0°	2	●
501	12.00	12.00	11.00	120	9.60	37.00	-	6.000	0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 52 - 56 HRC	4.00	2	650	0.020	0.020	0.040	3.28	60000	2400	0.500
		5.00	2	650	0.025	0.026	0.050	4.32	47894	2395	0.500
		6.00	2	650	0.030	0.030	0.060	5.34	38746	2325	0.500
		8.00	2	650	0.040	0.040	0.080	7.39	27997	2240	0.500
		10.00	2	650	0.050	0.030	0.100	9.34	22152	2215	0.500
		12.00	2	650	0.060	0.036	0.120	11.37	18197	2184	0.500
	Hardened tool steel 56 - 60 HRC	4.00	2	620	0.020	0.020	0.040	3.28	60000	2400	0.500
		5.00	2	620	0.025	0.026	0.050	4.32	45683	2284	0.500
		6.00	2	620	0.030	0.030	0.060	5.34	36957	2217	0.500
		8.00	2	620	0.040	0.040	0.080	7.39	26705	2136	0.500
		10.00	2	620	0.050	0.030	0.100	9.34	21130	2113	0.500
		12.00	2	620	0.060	0.036	0.120	11.37	17357	2083	0.500
	Hardened tool steel > 60 HRC	4.00	2	580	0.020	0.020	0.040	3.28	56287	2252	0.500
		5.00	2	580	0.025	0.026	0.050	4.32	42736	2137	0.500
		6.00	2	580	0.030	0.030	0.060	5.34	34573	2074	0.500
		8.00	2	580	0.040	0.040	0.080	7.39	24982	1999	0.500
		10.00	2	580	0.050	0.030	0.100	9.34	19767	1977	0.500
		12.00	2	580	0.060	0.036	0.120	11.37	16237	1948	0.500

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	4.00	2	700	0.020	0.016	0.016	3.86	57725	2309	45°
		5.00	2	700	0.025	0.020	0.020	4.88	45659	2283	45°
		6.00	2	700	0.030	0.022	0.022	5.88	37894	2274	45°
		8.00	2	700	0.040	0.024	0.024	7.89	28240	2259	45°
		10.00	2	700	0.050	0.026	0.026	9.90	22507	2251	45°
		12.00	2	700	0.060	0.032	0.032	11.91	18708	2245	45°
	Hardened tool steel 56 - 60 HRC	4.00	2	650	0.020	0.016	0.016	3.86	53601	2144	45°
		5.00	2	650	0.025	0.020	0.020	4.88	42398	2120	45°
		6.00	2	650	0.030	0.022	0.022	5.88	35187	2111	45°
		8.00	2	650	0.040	0.024	0.024	7.89	26223	2098	45°
		10.00	2	650	0.050	0.026	0.026	9.90	20899	2090	45°
		12.00	2	650	0.060	0.032	0.032	11.91	17372	2085	45°
	Hardened tool steel > 60 HRC	4.00	2	600	0.020	0.016	0.016	3.86	49478	1979	45°
		5.00	2	600	0.025	0.020	0.020	4.88	39136	1957	45°
		6.00	2	600	0.030	0.022	0.022	5.88	32481	1949	45°
		8.00	2	600	0.040	0.024	0.024	7.89	24206	1937	45°
		10.00	2	600	0.050	0.026	0.026	9.90	19292	1929	45°
		12.00	2	600	0.060	0.032	0.032	11.91	16036	1924	45°

Corner radius end mills

Cylindrical neck, 3xd

CBN

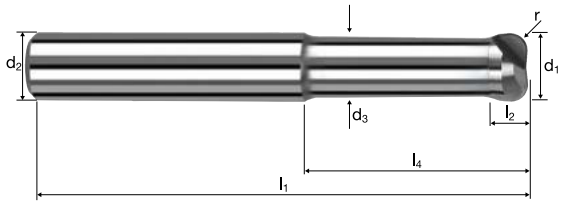
λ 0°
γ 0°

h5

d1

r

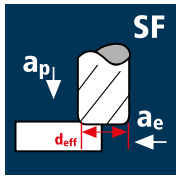
F

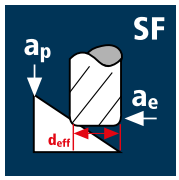


HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **31420** Article-N°. **220** ø-Code

Ø Code	d_1 0/-0.01	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.015	α	z	31420
220	4.00	6.00	3.70	80	1.90	12.00	16.95	0.500	3.7°	2	●
260	5.00	6.00	4.60	80	2.50	15.00	18.27	0.500	1.7°	2	●
300	6.00	6.00	5.50	80	3.00	20.00	-	0.500	0.0°	2	●
391	8.00	8.00	7.40	100	4.00	26.00	-	0.500	0.0°	2	●
450	10.00	10.00	9.20	100	5.00	31.00	-	0.500	0.0°	2	●
501	12.00	12.00	11.00	120	6.00	37.00	-	0.500	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 52 - 56 HRC	4.00	2	650	0.020	0.020	0.040	2.40	60000	2400	1.000
		5.00	2	650	0.025	0.026	0.050	3.01	60000	3000	1.250
		6.00	2	650	0.030	0.030	0.060	3.60	57473	3448	1.500
		8.00	2	650	0.040	0.040	0.080	4.80	43104	3448	2.000
		10.00	2	650	0.050	0.030	0.100	5.77	35858	3586	2.500
		12.00	2	650	0.060	0.036	0.120	6.93	29856	3583	3.000
	Hardened tool steel 56 - 60 HRC	4.00	2	620	0.020	0.020	0.040	2.40	60000	2400	1.000
		5.00	2	620	0.025	0.026	0.050	3.01	60000	3000	1.250
		6.00	2	620	0.030	0.030	0.060	3.60	54820	3289	1.500
		8.00	2	620	0.040	0.040	0.080	4.80	41115	3289	2.000
		10.00	2	620	0.050	0.030	0.100	5.77	34203	3420	2.500
		12.00	2	620	0.060	0.036	0.120	6.93	28478	3417	3.000
	Hardened tool steel > 60 HRC	4.00	2	580	0.020	0.020	0.040	2.40	60000	2400	1.000
		5.00	2	580	0.025	0.026	0.050	3.01	60000	3000	1.250
		6.00	2	580	0.030	0.030	0.060	3.60	51283	3077	1.500
		8.00	2	580	0.040	0.040	0.080	4.80	38462	3077	2.000
		10.00	2	580	0.050	0.030	0.100	5.77	31996	3200	2.500
		12.00	2	580	0.060	0.036	0.120	6.93	26641	3197	3.000

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	4.00	2	700	0.020	0.016	0.016	3.64	60000	2400	45°
		5.00	2	700	0.025	0.020	0.020	4.55	48971	2449	45°
		6.00	2	700	0.030	0.022	0.022	5.45	40884	2453	45°
		8.00	2	700	0.040	0.024	0.024	7.23	30818	2465	45°
		10.00	2	700	0.050	0.026	0.026	9.01	24730	2473	45°
		12.00	2	700	0.060	0.032	0.032	10.82	20593	2471	45°
	Hardened tool steel 56 - 60 HRC	4.00	2	650	0.020	0.016	0.016	3.64	56841	2274	45°
		5.00	2	650	0.025	0.020	0.020	4.55	45473	2274	45°
		6.00	2	650	0.030	0.022	0.022	5.45	37964	2278	45°
		8.00	2	650	0.040	0.024	0.024	7.23	28617	2289	45°
		10.00	2	650	0.050	0.026	0.026	9.01	22964	2296	45°
		12.00	2	650	0.060	0.032	0.032	10.82	19122	2295	45°
	Hardened tool steel > 60 HRC	4.00	2	600	0.020	0.016	0.016	3.64	52469	2099	45°
		5.00	2	600	0.025	0.020	0.020	4.55	41975	2099	45°
		6.00	2	600	0.030	0.022	0.022	5.45	35043	2103	45°
		8.00	2	600	0.040	0.024	0.024	7.23	26416	2113	45°
		10.00	2	600	0.050	0.026	0.026	9.01	21197	2120	45°
		12.00	2	600	0.060	0.032	0.032	10.82	17651	2118	45°

Corner radius end mills

Cylindrical neck, 3xd

CBN

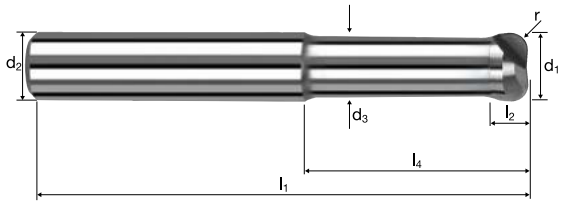
λ 0°
γ 0°

h5

d1

r

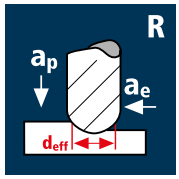
F

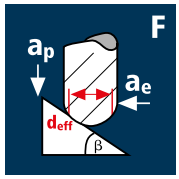


HRC 48-56 | HRC 56-60 | HRC > 60 | HSS

Example: **Order-N°.** Coating **31410** Article-N°. ø-Code **220**

Ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	l4	r 0/+0.015	α	z	31410
220	4.00	6.00	3.70	80	1.90	12.00	16.95	1.000	3.8°	2	●
260	5.00	6.00	4.60	80	2.50	15.00	18.27	1.250	1.8°	2	●
300	6.00	6.00	5.50	80	3.00	20.00	-	1.500	0.0°	2	●
391	8.00	8.00	7.40	100	4.00	26.00	-	2.000	0.0°	2	●
450	10.00	10.00	9.20	100	5.00	31.00	-	2.500	0.0°	2	●
501	12.00	12.00	11.00	120	6.00	37.00	-	3.000	0.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 52 - 56 HRC	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
		0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
		0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
		0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
		1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
		1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
		2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
	Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
		0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
		0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
		0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
		1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
		1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
		2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6
	Hardened tool steel > 60 HRC	0.40	2	27	0.003	0.028	0.120	0.20	42972	281	1.0
		0.50	2	40	0.005	0.050	0.125	0.30	42441	407	2.6
		0.60	2	48	0.006	0.060	0.150	0.36	42441	489	4.4
		0.80	2	50	0.008	0.080	0.200	0.48	33157	509	8.2
		1.00	2	50	0.010	0.100	0.250	0.60	26526	509	12.8
		1.50	2	50	0.016	0.180	0.300	0.97	16408	512	27.7
		2.00	2	50	0.021	0.240	0.400	1.30	12243	509	48.9
	High speed steel, hardened 64 - 70 HRC	0.40	2	27	0.002	0.028	0.120	0.20	42972	211	0.7
		0.50	2	35	0.004	0.050	0.125	0.30	37136	267	1.7
		0.60	2	35	0.004	0.060	0.150	0.36	30947	267	2.4
		0.80	2	35	0.006	0.080	0.200	0.48	23210	267	4.3
		1.00	2	35	0.007	0.100	0.250	0.60	18568	267	6.7
		1.50	2	35	0.012	0.180	0.300	0.97	11485	269	14.5
		2.00	2	35	0.016	0.240	0.400	1.30	8570	267	25.7

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
		2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
	Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
		0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
		1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
		1.50	2	80	0.053	0.020	0.105	1.28	19894	2109	45°
		2.00	2	80	0.060	0.020	0.120	1.67	15248	1830	45°
	Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	48	0.035	0.010	0.070	0.52	29382	2057	45°
		0.80	2	48	0.040	0.010	0.080	0.68	22469	1798	45°
		1.00	2	60	0.045	0.020	0.090	0.88	21703	1953	45°
		1.50	2	60	0.053	0.020	0.105	1.28	14921	1582	45°
		2.00	2	60	0.060	0.020	0.120	1.67	11436	1372	45°
	High speed steel, hardened 64 - 70 HRC	0.40	2	32	0.029	0.010	0.057	0.36	28294	1641	45°
		0.50	2	32	0.033	0.010	0.065	0.44	23150	1528	45°
		0.60	2	32	0.035	0.010	0.070	0.52	19588	1371	45°
		0.80	2	32	0.040	0.010	0.080	0.68	14979	1198	45°
		1.00	2	40	0.045	0.020	0.090	0.88	14469	1302	45°
		1.50	2	40	0.053	0.020	0.105	1.28	9947	1054	45°
		2.00	2	40	0.060	0.020	0.120	1.67	7624	915	45°

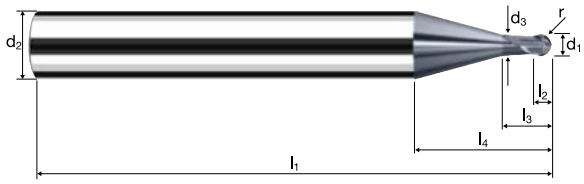
Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 1xd

HM XA | λ 30° γ -10°

h4

d1 | r

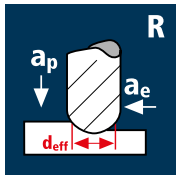


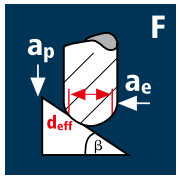
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** | Article-N°. **6460** | ø-Code **040**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6460
040	0.40	6.00	0.35	57	0.40	0.40	16.78	0.200	14.6°	2	●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	0.250	14.5°	2	●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	0.300	14.5°	2	●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	0.400	14.3°	2	●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.500	14.1°	2	●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.750	13.5°	2	●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	1.000	12.9°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 52 - 56 HRC	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
		0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
		0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
		0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
		1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
		1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
		2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
	Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
		0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
		0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
		0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
		1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
		1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
		2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6
	Hardened tool steel > 60 HRC	0.40	2	27	0.003	0.028	0.120	0.20	42972	281	1.0
		0.50	2	40	0.005	0.050	0.125	0.30	42441	407	2.6
		0.60	2	48	0.006	0.060	0.150	0.36	42441	489	4.4
		0.80	2	50	0.008	0.080	0.200	0.48	33157	509	8.2
		1.00	2	50	0.010	0.100	0.250	0.60	26526	509	12.8
		1.50	2	50	0.016	0.180	0.300	0.97	16408	512	27.7
		2.00	2	50	0.021	0.240	0.400	1.30	12243	509	48.9
	High speed steel, hardened 64 - 70 HRC	0.40	2	27	0.002	0.028	0.120	0.20	42972	211	0.7
		0.50	2	35	0.004	0.050	0.125	0.30	37136	267	1.7
		0.60	2	35	0.004	0.060	0.150	0.36	30947	267	2.4
		0.80	2	35	0.006	0.080	0.200	0.48	23210	267	4.3
		1.00	2	35	0.007	0.100	0.250	0.60	18568	267	6.7
		1.50	2	35	0.012	0.180	0.300	0.97	11485	269	14.5
		2.00	2	35	0.016	0.240	0.400	1.30	8570	267	25.7

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
		2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
	Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
		0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
		1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
		1.50	2	80	0.053	0.020	0.105	1.28	19894	2109	45°
		2.00	2	80	0.060	0.020	0.120	1.67	15248	1830	45°
	Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	48	0.035	0.010	0.070	0.52	29382	2057	45°
		0.80	2	48	0.040	0.010	0.080	0.68	22469	1798	45°
		1.00	2	60	0.045	0.020	0.090	0.88	21703	1953	45°
		1.50	2	60	0.053	0.020	0.105	1.28	14921	1582	45°
		2.00	2	60	0.060	0.020	0.120	1.67	11436	1372	45°
	High speed steel, hardened 64 - 70 HRC	0.40	2	32	0.029	0.010	0.057	0.36	28294	1641	45°
		0.50	2	32	0.033	0.010	0.065	0.44	23150	1528	45°
		0.60	2	32	0.035	0.010	0.070	0.52	19588	1371	45°
		0.80	2	32	0.040	0.010	0.080	0.68	14979	1198	45°
		1.00	2	40	0.045	0.020	0.090	0.88	14469	1302	45°
		1.50	2	40	0.053	0.020	0.105	1.28	9947	1054	45°
		2.00	2	40	0.060	0.020	0.120	1.67	7624	915	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 2xd

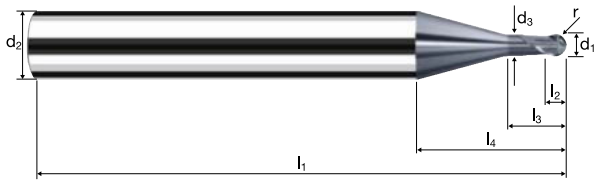
HM
XA

λ 30°
γ -10°

h4

d1

r

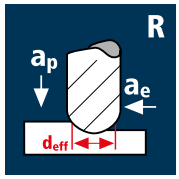


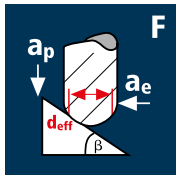
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6461** ø-Code **040**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al
											Y6461
040	0.40	6.00	0.35	57	0.24	0.80	16.76	0.200	14.1°	2	●
050	0.50	6.00	0.45	57	0.30	1.00	11.51	0.250	13.9°	2	●
060	0.60	6.00	0.55	57	0.36	1.20	11.53	0.300	13.7°	2	●
080	0.80	6.00	0.75	57	0.48	1.60	11.55	0.400	13.3°	2	●
100	1.00	6.00	0.95	57	0.60	2.00	11.58	0.500	12.9°	2	●
120	1.50	6.00	1.40	57	0.90	3.00	11.53	0.750	11.7°	2	●
140	2.00	6.00	1.90	57	1.20	4.00	11.60	1.000	10.6°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 52 - 56 HRC	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
		0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
		0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
		0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
		1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
		0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
		0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
		0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
		1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	Hardened tool steel > 60 HRC	0.40	2	27	0.003	0.028	0.120	0.20	42972	281	1.0
		0.50	2	40	0.005	0.050	0.125	0.30	42441	407	2.6
		0.60	2	48	0.006	0.060	0.150	0.36	42441	489	4.4
		0.80	2	50	0.008	0.080	0.200	0.48	33157	509	8.2
		1.00	2	50	0.010	0.100	0.250	0.60	26526	509	12.8
	High speed steel, hardened 64 - 70 HRC	0.40	2	27	0.002	0.028	0.120	0.20	42972	211	0.7
		0.50	2	35	0.004	0.050	0.125	0.30	37136	267	1.7
		0.60	2	35	0.004	0.060	0.150	0.36	30947	267	2.4
		0.80	2	35	0.006	0.080	0.200	0.48	23210	267	4.3
		1.00	2	35	0.007	0.100	0.250	0.60	18568	267	6.7

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
		0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
		1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
	Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	48	0.035	0.010	0.070	0.52	29382	2057	45°
		0.80	2	48	0.040	0.010	0.080	0.68	22469	1798	45°
		1.00	2	60	0.045	0.020	0.090	0.88	21703	1953	45°
	High speed steel, hardened 64 - 70 HRC	0.40	2	32	0.029	0.010	0.057	0.36	28294	1641	45°
		0.50	2	32	0.033	0.010	0.065	0.44	23150	1528	45°
		0.60	2	32	0.035	0.010	0.070	0.52	19588	1371	45°
		0.80	2	32	0.040	0.010	0.080	0.68	14979	1198	45°
		1.00	2	40	0.045	0.020	0.090	0.88	14469	1302	45°

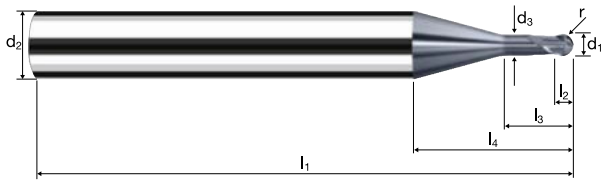
Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 2.5xd

X-Generation

II

HM XA	λ 30° γ -10°



h4

d1

r

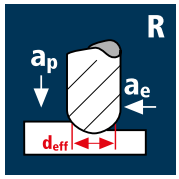
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6481** ø-Code **040**

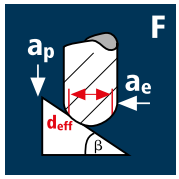
Ø Code	d1	d2 h4	d3	l1	l2	l3	l4	r ±0.005	α	z	DURO-Al Y6481
040	0.40	6.00	0.35	57	0.24	1.00	16.96	0.200	13.9°	2	●
050	0.50	6.00	0.45	57	0.30	1.25	11.76	0.250	13.6°	2	●
060	0.60	6.00	0.55	57	0.36	1.50	11.83	0.300	13.4°	2	●
080	0.80	6.00	0.75	57	0.48	2.00	11.95	0.400	12.8°	2	●
100	1.00	6.00	0.95	57	0.60	2.50	12.08	0.500	12.3°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 52 - 56 HRC	0.40	2	32	0.006	0.040	0.140	0.24	42441	509	2.9
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
	2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
	2.50	2	110	0.048	0.450	0.625	1.92	18237	1752	492.7
	3.00	2	110	0.058	0.540	0.750	2.31	15158	1747	707.6
Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
	2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6
	2.50	2	70	0.032	0.300	0.500	1.62	13754	894	134.1
	3.00	2	70	0.039	0.360	0.600	1.95	11427	891	192.5
Hardened tool steel > 60 HRC	0.40	2	27	0.003	0.028	0.120	0.20	42972	281	1.0
	0.50	2	40	0.005	0.050	0.125	0.30	42441	407	2.6
	0.60	2	48	0.006	0.060	0.150	0.36	42441	489	4.4
	0.80	2	50	0.008	0.080	0.200	0.48	33157	509	8.2
	1.00	2	50	0.010	0.100	0.250	0.60	26526	509	12.8
	1.50	2	50	0.016	0.180	0.300	0.97	16408	512	27.7
	2.00	2	50	0.021	0.240	0.400	1.30	12243	509	48.9
	2.50	2	50	0.026	0.300	0.500	1.62	9824	511	76.6
	3.00	2	50	0.031	0.360	0.600	1.95	8162	509	110.0
High speed steel, hardened 64 - 70 HRC	0.40	2	27	0.002	0.028	0.120	0.20	42972	211	0.7
	0.50	2	35	0.004	0.050	0.125	0.30	37136	267	1.7
	0.60	2	35	0.004	0.060	0.150	0.36	30947	267	2.4
	0.80	2	35	0.006	0.080	0.200	0.48	23210	267	4.3
	1.00	2	35	0.007	0.100	0.250	0.60	18568	267	6.7
	1.50	2	35	0.012	0.180	0.300	0.97	11485	269	14.5
	2.00	2	35	0.016	0.240	0.400	1.30	8570	267	25.7
	2.50	2	35	0.019	0.300	0.500	1.62	6877	268	40.3
	3.00	2	35	0.023	0.360	0.600	1.95	5713	267	57.8

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
	2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
	2.50	2	160	0.088	0.040	0.135	2.15	23688	4169	45°
	3.00	2	160	0.098	0.050	0.150	2.59	19664	3854	45°
Hardened tool steel 56 - 60 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	64	0.052	0.020	0.080	0.71	28693	2984	45°
	1.00	2	80	0.058	0.030	0.090	0.91	27983	3246	45°
	1.50	2	80	0.068	0.030	0.105	1.32	19292	2624	45°
	2.00	2	80	0.078	0.040	0.120	1.75	14551	2270	45°
	2.50	2	80	0.088	0.040	0.135	2.15	11844	2085	45°
	3.00	2	80	0.098	0.050	0.150	2.59	9832	1927	45°
Hardened tool steel > 60 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	48	0.042	0.020	0.065	0.46	33215	2790	45°
	0.60	2	48	0.046	0.020	0.070	0.55	27780	2556	45°
	0.80	2	48	0.052	0.020	0.080	0.71	21520	2238	45°
	1.00	2	60	0.058	0.030	0.090	0.91	20987	2435	45°
	1.50	2	60	0.068	0.030	0.105	1.32	14469	1968	45°
	2.00	2	60	0.078	0.040	0.120	1.75	10913	1702	45°
	2.50	2	60	0.088	0.040	0.135	2.15	8883	1563	45°
	3.00	2	60	0.098	0.050	0.150	2.59	7374	1445	45°
High speed steel, hardened 64 - 70 HRC	0.40	2	32	0.037	0.010	0.057	0.36	28294	2094	45°
	0.50	2	32	0.042	0.020	0.065	0.46	22143	1860	45°
	0.60	2	32	0.046	0.020	0.070	0.55	18520	1704	45°
	0.80	2	32	0.052	0.020	0.080	0.71	14346	1492	45°
	1.00	2	40	0.058	0.030	0.090	0.91	13992	1623	45°
	1.50	2	40	0.068	0.030	0.105	1.32	9646	1312	45°
	2.00	2	40	0.078	0.040	0.120	1.75	7276	1135	45°
	2.50	2	40	0.088	0.040	0.135	2.15	5922	1042	45°
	3.00	2	40	0.098	0.050	0.150	2.59	4916	964	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 3xd

X-Generation

II

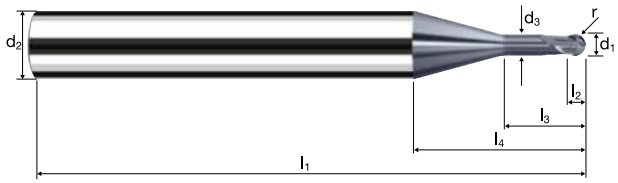
HM
XA

λ 30°
γ -10°

h4

d1

r

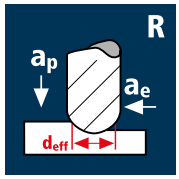


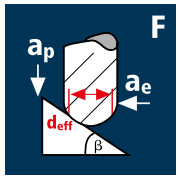
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6462** ø-Code **040**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6462
040	0.40	6.00	0.35	57	0.24	1.20	17.16	0.200	13.7°	2	●
050	0.50	6.00	0.45	57	0.30	1.50	12.01	0.250	13.3°	2	●
060	0.60	6.00	0.55	57	0.36	1.80	12.13	0.300	13.0°	2	●
080	0.80	6.00	0.75	57	0.48	2.40	12.35	0.400	12.4°	2	●
100	1.00	6.00	0.95	57	0.60	3.00	12.58	0.500	11.8°	2	●
108	1.20	6.00	1.10	57	0.72	3.60	12.69	0.600	11.2°	2	●
120	1.50	6.00	1.40	57	0.90	4.50	13.03	0.750	10.3°	2	●
140	2.00	6.00	1.90	57	1.20	6.00	13.60	1.000	9.0°	2	●
160	2.50	6.00	2.40	57	1.50	7.50	14.07	1.250	7.6°	2	●
180	3.00	6.00	2.90	57	1.80	9.00	14.64	1.500	6.4°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 52 - 56 HRC	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
		0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
		0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
		0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
		1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
		0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
		0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
		0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
		1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	Hardened tool steel > 60 HRC	0.40	2	27	0.003	0.028	0.120	0.20	42972	281	1.0
		0.50	2	40	0.005	0.050	0.125	0.30	42441	407	2.6
		0.60	2	48	0.006	0.060	0.150	0.36	42441	489	4.4
		0.80	2	50	0.008	0.080	0.200	0.48	33157	509	8.2
		1.00	2	50	0.010	0.100	0.250	0.60	26526	509	12.8
	High speed steel, hardened 64 - 70 HRC	0.40	2	27	0.002	0.028	0.120	0.20	42972	211	0.7
		0.50	2	35	0.004	0.050	0.125	0.30	37136	267	1.7
		0.60	2	35	0.004	0.060	0.150	0.36	30947	267	2.4
		0.80	2	35	0.006	0.080	0.200	0.48	23210	267	4.3
		1.00	2	35	0.007	0.100	0.250	0.60	18568	267	6.7

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
		0.80	2	62	0.040	0.010	0.080	0.68	29022	2322	45°
		1.00	2	78	0.045	0.020	0.090	0.88	28214	2539	45°
	Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	47	0.035	0.010	0.070	0.52	28770	2014	45°
		0.80	2	47	0.040	0.010	0.080	0.68	22001	1760	45°
		1.00	2	59	0.045	0.020	0.090	0.88	21341	1921	45°
	High speed steel, hardened 64 - 70 HRC	0.40	2	31	0.029	0.010	0.057	0.36	27410	1590	45°
		0.50	2	31	0.033	0.010	0.065	0.44	22426	1480	45°
		0.60	2	31	0.035	0.010	0.070	0.52	18976	1328	45°
		0.80	2	31	0.040	0.010	0.080	0.68	14511	1161	45°
		1.00	2	39	0.045	0.020	0.090	0.88	14107	1270	45°

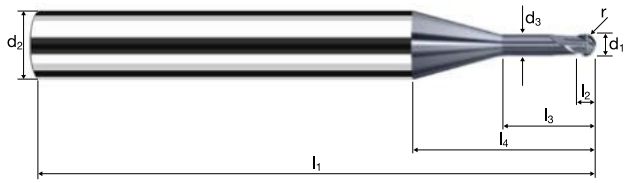
Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 3.5xd

X-Generation

II

HM XA	λ 30° γ -10°

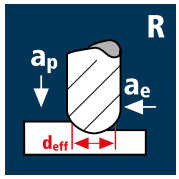


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6482** ø-Code **040**

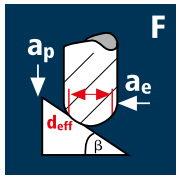
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al
											Y6482
040	0.40	6.00	0.35	57	0.24	1.40	17.36	0.200	13.4°	2	●
050	0.50	6.00	0.45	57	0.30	1.75	12.26	0.250	13.1°	2	●
060	0.60	6.00	0.55	57	0.36	2.10	12.43	0.300	12.7°	2	●
080	0.80	6.00	0.75	57	0.48	2.80	12.75	0.400	12.0°	2	●
100	1.00	6.00	0.95	57	0.60	3.50	13.08	0.500	11.4°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 52 - 56 HRC	0.40	2	38	0.009	0.060	0.120	0.29	41710	786	5.7
	0.50	2	47	0.012	0.075	0.150	0.36	41557	979	11.0
	0.60	2	57	0.014	0.090	0.180	0.43	42195	1193	19.4
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1579	45.5
	1.00	2	80	0.024	0.150	0.300	0.71	35866	1691	76.1
	1.50	2	80	0.038	0.270	0.375	1.15	22143	1684	170.6
	2.00	2	27	0.004	0.028	0.120	0.47	18286	149	0.5
Hardened tool steel 56 - 60 HRC	0.40	2	35	0.006	0.050	0.125	0.26	42849	514	3.2
	0.50	2	35	0.007	0.060	0.150	0.32	34815	501	4.5
	0.60	2	35	0.010	0.080	0.200	0.41	27173	522	8.4
	0.80	2	35	0.012	0.100	0.250	0.53	21020	505	12.6
	1.00	2	35	0.019	0.180	0.300	0.77	14469	564	30.5
	1.50	2	35	0.026	0.240	0.400	1.10	10128	527	50.6
	2.00	2	25	0.003	0.028	0.120	0.47	16931	111	0.4
Hardened tool steel > 60 HRC	0.40	2	25	0.005	0.050	0.125	0.26	30607	294	1.9
	0.50	2	25	0.006	0.060	0.150	0.32	24868	287	2.6
	0.60	2	25	0.008	0.080	0.200	0.41	19409	298	4.8
	0.80	2	25	0.010	0.100	0.250	0.53	15015	288	7.2
	1.00	2	25	0.016	0.180	0.300	0.77	10335	322	17.4
	1.50	2	25	0.021	0.240	0.400	1.10	7234	301	28.9
	2.00	2	20	0.002	0.028	0.120	0.47	13545	66	0.2
High speed steel, hardened 64 - 70 HRC	0.40	2	20	0.004	0.050	0.125	0.26	24485	176	1.1
	0.50	2	20	0.004	0.060	0.150	0.32	19894	172	1.6
	0.60	2	20	0.006	0.080	0.200	0.41	15527	179	2.9
	0.80	2	20	0.007	0.100	0.250	0.53	12012	173	4.4
	1.00	2	20	0.012	0.180	0.300	0.77	8268	193	10.5
	1.50	2	20	0.016	0.240	0.400	1.10	5787	181	17.4
	2.00	2	23	0.006	0.020	0.120	0.40	18303	236	0.6

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	152	0.068	0.030	0.105	1.32	36654	4985	45°
	2.00	2	152	0.078	0.040	0.120	1.75	27647	4313	45°
Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	61	0.040	0.010	0.080	0.68	28554	2284	45°
	1.00	2	76	0.045	0.020	0.090	0.88	27490	2474	45°
	1.50	2	76	0.053	0.020	0.105	1.28	18900	2003	45°
	2.00	2	76	0.060	0.020	0.120	1.67	14486	1738	45°
Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	46	0.035	0.010	0.070	0.52	28158	1971	45°
	0.80	2	46	0.040	0.010	0.080	0.68	21533	1723	45°
	1.00	2	57	0.045	0.020	0.090	0.88	20618	1856	45°
	1.50	2	57	0.053	0.020	0.105	1.28	14175	1503	45°
	2.00	2	57	0.060	0.020	0.120	1.67	10864	1304	45°
High speed steel, hardened 64 - 70 HRC	0.40	2	30	0.029	0.010	0.057	0.36	26526	1539	45°
	0.50	2	30	0.033	0.010	0.065	0.44	21703	1432	45°
	0.60	2	30	0.035	0.010	0.070	0.52	18364	1286	45°
	0.80	2	30	0.040	0.010	0.080	0.68	14043	1123	45°
	1.00	2	38	0.045	0.020	0.090	0.88	13745	1237	45°
	1.50	2	38	0.053	0.020	0.105	1.28	9450	1002	45°
	2.00	2	38	0.060	0.020	0.120	1.67	7243	869	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 4xd

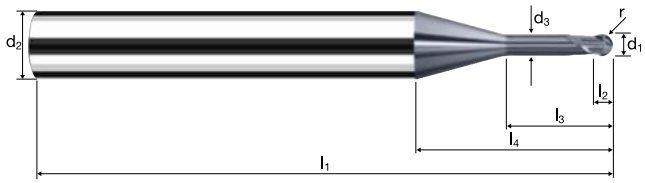
X-Generation

II

HM
XA

λ 30°
γ -10°

h4



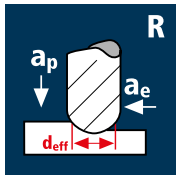
ReTool®

Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60 | Inox Stainless | Ti Titanium | HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6463** ø-Code **040**

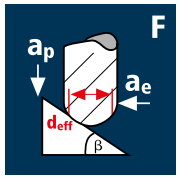
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6463
040	0.40	6.00	0.35	57	0.24	1.60	17.56	0.200	13.2°	2	●
050	0.50	6.00	0.45	57	0.30	2.00	12.51	0.250	12.8°	2	●
060	0.60	6.00	0.55	57	0.36	2.40	12.73	0.300	12.4°	2	●
080	0.80	6.00	0.75	57	0.48	3.20	13.15	0.400	11.7°	2	●
100	1.00	6.00	0.95	57	0.60	4.00	13.58	0.500	11.0°	2	●
120	1.50	6.00	1.40	57	0.90	6.00	14.53	0.750	9.2°	2	●
140	2.00	6.00	1.90	57	1.20	8.00	15.60	1.000	7.8°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 52 - 56 HRC	0.40	2	38	0.009	0.060	0.120	0.29	41710	786	5.7
	0.50	2	47	0.012	0.075	0.150	0.36	41557	979	11.0
	0.60	2	57	0.014	0.090	0.180	0.43	42195	1193	19.4
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1579	45.5
	1.00	2	84	0.024	0.150	0.300	0.71	37659	1775	79.9
Hardened tool steel 56 - 60 HRC	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	37	0.006	0.050	0.125	0.30	39258	471	3.0
	0.60	2	37	0.007	0.060	0.150	0.36	32715	471	4.3
	0.80	2	37	0.010	0.080	0.200	0.48	24536	471	7.6
	1.00	2	37	0.012	0.100	0.250	0.60	19629	471	11.8
Hardened tool steel > 60 HRC	0.40	2	26	0.003	0.028	0.120	0.20	41380	270	0.9
	0.50	2	26	0.005	0.050	0.125	0.30	27587	265	1.7
	0.60	2	26	0.006	0.060	0.150	0.36	22989	265	2.4
	0.80	2	26	0.008	0.080	0.200	0.48	17242	265	4.3
	1.00	2	26	0.010	0.100	0.250	0.60	13793	265	6.6
High speed steel, hardened 64 - 70 HRC	0.40	2	21	0.002	0.028	0.120	0.20	33423	164	0.6
	0.50	2	21	0.004	0.050	0.125	0.30	22282	160	1.0
	0.60	2	21	0.004	0.060	0.150	0.36	18568	160	1.5
	0.80	2	21	0.006	0.080	0.200	0.48	13926	160	2.6
	1.00	2	21	0.007	0.100	0.250	0.60	11141	160	4.0

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 56 - 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	59	0.040	0.010	0.080	0.68	27618	2209	45°
	1.00	2	74	0.045	0.020	0.090	0.88	26767	2409	45°
Hardened tool steel > 60 HRC	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	44	0.033	0.010	0.065	0.44	31831	2101	45°
	0.60	2	44	0.035	0.010	0.070	0.52	26934	1885	45°
	0.80	2	44	0.040	0.010	0.080	0.68	20597	1648	45°
	1.00	2	56	0.045	0.020	0.090	0.88	20256	1823	45°
High speed steel, hardened 64 - 70 HRC	0.40	2	30	0.029	0.010	0.057	0.36	26526	1539	45°
	0.50	2	30	0.033	0.010	0.065	0.44	21703	1432	45°
	0.60	2	30	0.035	0.010	0.070	0.52	18364	1286	45°
	0.80	2	30	0.040	0.010	0.080	0.68	14043	1123	45°
	1.00	2	37	0.045	0.020	0.090	0.88	13383	1205	45°

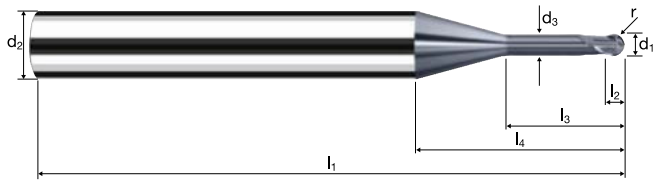
Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 4.5xd

X-Generation X

II

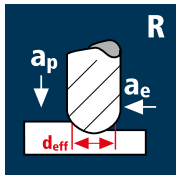
HM XA	λ 30° γ -10°

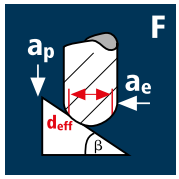


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6483** ø-Code **040**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al	Y6483
040	0.40	6.00	0.35	57	0.24	1.80	17.76	0.200	13.0°	2	●	●
050	0.50	6.00	0.45	57	0.30	2.25	12.76	0.250	12.6°	2	●	●
060	0.60	6.00	0.55	57	0.36	2.70	13.03	0.300	12.1°	2	●	●
080	0.80	6.00	0.75	57	0.48	3.60	13.55	0.400	11.3°	2	●	●
100	1.00	6.00	0.95	57	0.60	4.50	14.08	0.500	10.6°	2	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 52 - 56 HRC	0.40	2	29	0.007	0.032	0.160	0.22	41959	601	3.1
		0.50	2	43	0.011	0.060	0.175	0.32	42773	917	9.7
		0.60	2	51	0.013	0.072	0.210	0.39	41625	1071	16.2
		0.80	2	69	0.017	0.096	0.280	0.52	42237	1449	39.0
		1.00	2	80	0.021	0.120	0.350	0.65	39177	1681	70.6
		1.50	2	80	0.035	0.225	0.450	1.07	23799	1683	170.4
		2.00	2	80	0.047	0.300	0.600	1.43	17808	1679	302.2
		2.50	2	80	0.059	0.375	0.750	1.79	14226	1676	471.5
		3.00	2	80	0.071	0.450	0.900	2.14	11899	1683	681.4
	Hardened tool steel 56 - 60 HRC	0.40	2	23	0.003	0.020	0.120	0.17	43065	300	0.7
		0.50	2	35	0.005	0.040	0.125	0.27	41262	448	2.3
		0.60	2	35	0.007	0.048	0.150	0.33	33760	440	3.2
		0.80	2	35	0.009	0.064	0.200	0.43	25909	450	5.8
		1.00	2	35	0.011	0.080	0.250	0.54	20631	448	9.0
		1.50	2	35	0.019	0.180	0.300	0.97	11485	448	24.2
		2.00	2	35	0.026	0.240	0.400	1.30	8570	446	42.8
		2.50	2	35	0.032	0.300	0.500	1.62	6877	447	67.1
		3.00	2	35	0.039	0.360	0.600	1.95	5713	446	96.3
	Hardened tool steel > 60 HRC	0.40	2	23	0.003	0.020	0.120	0.17	43065	240	0.6
		0.50	2	25	0.004	0.040	0.125	0.27	29473	256	1.3
		0.60	2	25	0.005	0.048	0.150	0.33	24114	251	1.8
		0.80	2	25	0.007	0.064	0.200	0.43	18506	257	3.3
		1.00	2	25	0.009	0.080	0.250	0.54	14737	256	5.1
		1.50	2	25	0.016	0.180	0.300	0.97	8204	256	13.8
		2.00	2	25	0.021	0.240	0.400	1.30	6121	255	24.5
		2.50	2	25	0.026	0.300	0.500	1.62	4912	255	38.3
		3.00	2	25	0.031	0.360	0.600	1.95	4081	255	55.0
	High speed steel, hardened 64 - 70 HRC	0.40	2	20	0.002	0.020	0.120	0.17	37448	157	0.4
		0.50	2	20	0.003	0.040	0.125	0.27	23579	154	0.8
		0.60	2	20	0.004	0.048	0.150	0.33	19292	151	1.1
		0.80	2	20	0.005	0.064	0.200	0.43	14805	154	2.0
		1.00	2	20	0.007	0.080	0.250	0.54	11789	154	3.1
		1.50	2	20	0.012	0.180	0.300	0.97	6563	154	8.3
		2.00	2	20	0.016	0.240	0.400	1.30	4897	153	14.7
		2.50	2	20	0.019	0.300	0.500	1.62	3930	153	23.0
		3.00	2	20	0.023	0.360	0.600	1.95	3265	153	33.0

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
		2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
		2.50	2	144	0.088	0.040	0.135	2.15	21319	3752	45°
		3.00	2	144	0.098	0.050	0.150	2.59	17698	3469	45°
	Hardened tool steel 56 - 60 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	58	0.046	0.020	0.070	0.55	33567	3088	45°
		0.80	2	58	0.052	0.020	0.080	0.71	26003	2704	45°
		1.00	2	72	0.058	0.030	0.090	0.91	25185	2922	45°
		1.50	2	72	0.068	0.030	0.105	1.32	17362	2361	45°
		2.00	2	72	0.078	0.040	0.120	1.75	13096	2043	45°
		2.50	2	72	0.088	0.040	0.135	2.15	10660	1876	45°
		3.00	2	72	0.098	0.050	0.150	2.59	8849	1734	45°
	Hardened tool steel > 60 HRC	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	43	0.042	0.020	0.065	0.46	29755	2499	45°
		0.60	2	43	0.046	0.020	0.070	0.55	24886	2290	45°
		0.80	2	43	0.052	0.020	0.080	0.71	19278	2005	45°
		1.00	2	54	0.058	0.030	0.090	0.91	18889	2191	45°
		1.50	2	54	0.068	0.030	0.105	1.32	13022	1771	45°
		2.00	2	54	0.078	0.040	0.120	1.75	9822	1532	45°
		2.50	2	54	0.088	0.040	0.135	2.15	7995	1407	45°
		3.00	2	54	0.098	0.050	0.150	2.59	6637	1301	45°
	High speed steel, hardened 64 - 70 HRC	0.40	2	29	0.037	0.010	0.057	0.36	25642	1898	45°
		0.50	2	29	0.042	0.020	0.065	0.46	20067	1686	45°
		0.60	2	29	0.046	0.020	0.070	0.55	16784	1544	45°
		0.80	2	29	0.052	0.020	0.080	0.71	13001	1352	45°
		1.00	2	36	0.058	0.030	0.090	0.91	12592	1461	45°
		1.50	2	36	0.068	0.030	0.105	1.32	8681	1181	45°
		2.00	2	36	0.078	0.040	0.120	1.75	6548	1022	45°
		2.50	2	36	0.088	0.040	0.135	2.15	5330	938	45°
		3.00	2	36	0.098	0.050	0.150	2.59	4424	867	45°

Ball nose end mills MicroHX

Shank ø 6mm, cylindrical neck, 5xd

X-Generation

II

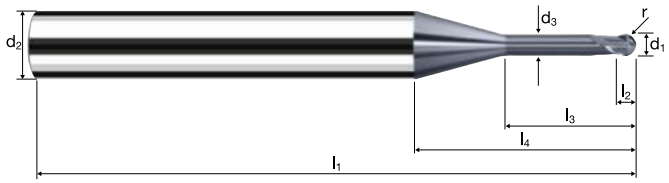
HM
XA

λ 30°
γ -10°

h4

d1

r



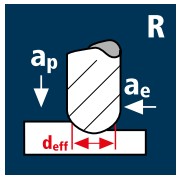
ReTool®

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	HSS

Example: **Order-N°.** Coating **Y** Article-N°. **6464** ø-Code **040**

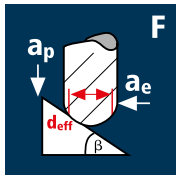
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DURO-Al Y6464
040	0.40	6.00	0.35	57	0.24	2.00	17.96	0.200	12.8°	2	●
050	0.50	6.00	0.45	57	0.30	2.50	13.01	0.250	12.3°	2	●
060	0.60	6.00	0.55	57	0.36	3.00	13.33	0.300	11.9°	2	●
080	0.80	6.00	0.75	57	0.48	4.00	13.95	0.400	11.0°	2	●
100	1.00	6.00	0.95	57	0.60	5.00	14.58	0.500	10.2°	2	●
108	1.20	6.00	1.10	57	0.72	6.00	15.09	0.600	9.4°	2	●
120	1.50	6.00	1.40	61	0.90	7.50	16.03	0.750	8.4°	2	●
140	2.00	6.00	1.90	61	1.20	10.00	17.60	1.000	6.9°	2	●
160	2.50	6.00	2.40	61	1.50	12.50	19.07	1.250	5.5°	2	●
180	3.00	6.00	2.90	66	1.80	15.00	20.64	1.500	4.4°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	346	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	520	1.7
	0.40	2	38	0.010	0.060	0.120	0.29	41710	810	5.9
	0.50	2	47	0.012	0.075	0.150	0.36	41557	1009	11.4
	0.60	2	57	0.015	0.090	0.180	0.43	42195	1229	19.9
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1627	46.9
	1.00	2	94	0.024	0.150	0.300	0.71	42142	2047	92.1
	1.50	2	152	0.039	0.270	0.375	1.15	42072	3297	333.9
	2.00	2	160	0.052	0.360	0.500	1.54	33071	3456	622.1
Hardened tool steel 48 - 52 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
	1.50	2	140	0.043	0.270	0.375	1.15	38751	3305	334.7
	2.00	2	140	0.057	0.360	0.500	1.54	28937	3291	592.4
Hardened tool steel 52 - 56 HRC	0.20	2	16	0.003	0.020	0.070	0.12	42441	255	0.4
	0.30	2	24	0.005	0.030	0.105	0.18	42441	382	1.2
	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
	2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
Hardened tool steel 56 - 60 HRC	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
	2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	195	0.078	0.040	0.120	1.75	35469	5533	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	175	0.078	0.040	0.120	1.75	31831	4966	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
	2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
	1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
	1.50	2	80	0.053	0.020	0.105	1.28	19894	2109	45°
	2.00	2	80	0.060	0.020	0.120	1.67	15248	1830	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 1xd

X-Generation

II

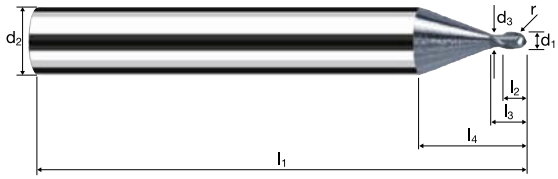
HM
XA

λ 30°
γ -10°

h4

d1

r



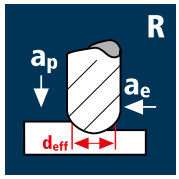
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6560** ø-Code **010**

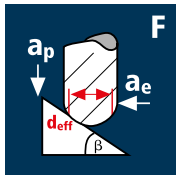
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6560
010	0.10	6.00	0.09	57	0.10	0.10	17.27	0.050	14.9°	2		●
020	0.20	6.00	0.18	57	0.20	0.20	17.10	0.100	14.8°	2		●
030	0.30	6.00	0.25	57	0.30	0.30	16.94	0.150	14.7°	2		●
040	0.40	6.00	0.35	57	0.40	0.40	16.78	0.200	14.6°	2		●
050	0.50	6.00	0.45	57	0.50	0.50	11.50	0.250	14.5°	2		●
060	0.60	6.00	0.55	57	0.60	0.60	11.43	0.300	14.5°	2		●
080	0.80	6.00	0.75	57	0.80	0.80	11.30	0.400	14.3°	2		●
100	1.00	6.00	0.95	57	1.00	1.00	11.19	0.500	14.1°	2		●
120	1.50	6.00	1.40	57	1.50	1.50	10.86	0.750	13.5°	2		●
140	2.00	6.00	1.90	57	2.00	2.00	10.52	1.000	12.9°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	346	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	520	1.7
	0.40	2	38	0.010	0.060	0.120	0.29	41710	810	5.9
	0.50	2	47	0.012	0.075	0.150	0.36	41557	1009	11.4
	0.60	2	57	0.015	0.090	0.180	0.43	42195	1229	19.9
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1627	46.9
	1.00	2	94	0.024	0.150	0.300	0.71	42142	2047	92.1
	1.50	2	152	0.039	0.270	0.375	1.15	42072	3297	333.9
	2.00	2	160	0.052	0.360	0.500	1.54	33071	3456	622.1
Hardened tool steel 48 - 52 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
	1.50	2	140	0.043	0.270	0.375	1.15	38751	3305	334.7
	2.00	2	140	0.057	0.360	0.500	1.54	28937	3291	592.4
Hardened tool steel 52 - 56 HRC	0.20	2	16	0.003	0.020	0.070	0.12	42441	255	0.4
	0.30	2	24	0.005	0.030	0.105	0.18	42441	382	1.2
	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
	2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
Hardened tool steel 56 - 60 HRC	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
	2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	195	0.078	0.040	0.120	1.75	35469	5533	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	175	0.078	0.040	0.120	1.75	31831	4966	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
	2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
	1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
	1.50	2	80	0.053	0.020	0.105	1.28	19894	2109	45°
	2.00	2	80	0.060	0.020	0.120	1.67	15248	1830	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 2xd

X-Generation X

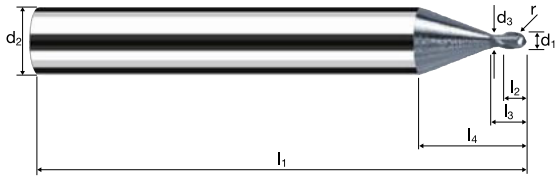
II

HM XA	λ 30° γ -10°

h4

d1

r



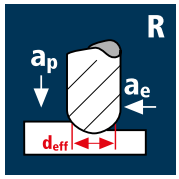
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6561** ø-Code **010**

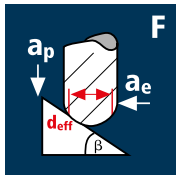
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6561
010	0.10	6.00	0.09	57	0.10	0.20	17.45	0.050	14.8°	2		●
020	0.20	6.00	0.18	57	0.20	0.40	17.34	0.100	14.6°	2		●
030	0.30	6.00	0.25	57	0.30	0.60	17.34	0.150	14.3°	2		●
040	0.40	6.00	0.35	57	0.40	0.80	17.26	0.200	14.1°	2		●
050	0.50	6.00	0.45	57	0.50	1.00	12.01	0.250	13.9°	2		●
060	0.60	6.00	0.55	57	0.60	1.20	12.03	0.300	13.7°	2		●
080	0.80	6.00	0.75	57	0.80	1.60	12.05	0.400	13.3°	2		●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.500	12.9°	2		●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.750	11.7°	2		●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	1.000	10.6°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	173	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	346	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	520	1.7
	0.40	2	38	0.010	0.060	0.120	0.29	41710	810	5.9
	0.50	2	47	0.012	0.075	0.150	0.36	41557	1009	11.4
	0.60	2	57	0.015	0.090	0.180	0.43	42195	1229	19.9
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1627	46.9
	1.00	2	94	0.024	0.150	0.300	0.71	42142	2047	92.1
Hardened tool steel 48 - 52 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	188	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
Hardened tool steel 52 - 56 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	127	0.1
	0.20	2	16	0.003	0.020	0.070	0.12	42441	255	0.4
	0.30	2	24	0.005	0.030	0.105	0.18	42441	382	1.2
	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
Hardened tool steel 56 - 60 HRC	0.10	2	7	0.001	0.007	0.030	0.05	44563	91	0.0
	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 48 - 52 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 52 - 56 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 56 - 60 HRC	0.10	2	13	0.015	0.010	0.030	0.10	41380	1241	45°
	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
	1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 2.5xd

X-Generation X

II

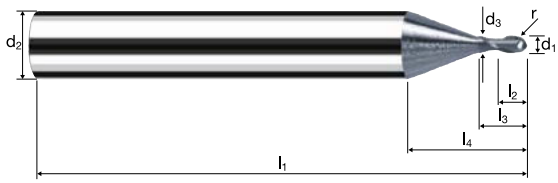
HM XA

λ 30°
γ -10°

h4

d1

r



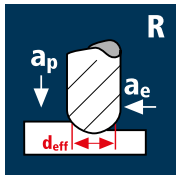
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6581** ø-Code **010**

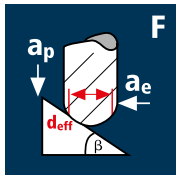
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6581
010	0.10	6.00	0.09	57	0.10	0.25	17.50	0.050	14.8°	2		●
020	0.20	6.00	0.18	57	0.20	0.50	17.44	0.100	14.5°	2		●
030	0.30	6.00	0.25	57	0.30	0.75	17.49	0.150	14.1°	2		●
040	0.40	6.00	0.35	57	0.40	1.00	17.46	0.200	13.9°	2		●
050	0.50	6.00	0.45	57	0.50	1.25	12.26	0.250	13.6°	2		●
060	0.60	6.00	0.55	57	0.60	1.50	12.33	0.300	13.4°	2		●
080	0.80	6.00	0.75	57	0.80	2.00	12.45	0.400	12.9°	2		●
100	1.00	6.00	0.95	57	1.00	2.50	12.58	0.500	12.3°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	346	0.5
	0.40	2	38	0.010	0.060	0.120	0.29	41710	810	5.9
	0.50	2	47	0.012	0.075	0.150	0.36	41557	1009	11.4
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1627	46.9
	1.00	2	94	0.024	0.150	0.300	0.71	42142	2047	92.1
	1.50	2	152	0.039	0.270	0.375	1.15	42072	3297	333.9
	2.00	2	160	0.052	0.360	0.500	1.54	33071	3456	622.1
	2.50	2	160	0.065	0.450	0.625	1.92	26526	3465	974.5
	3.00	2	160	0.078	0.540	0.750	2.31	22047	3456	1399.6
Hardened tool steel 48 - 52 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
	1.50	2	140	0.043	0.270	0.375	1.15	38751	3305	334.7
	2.00	2	140	0.057	0.360	0.500	1.54	28937	3291	592.4
	2.50	2	140	0.071	0.450	0.625	1.92	23210	3299	928.0
	3.00	2	140	0.085	0.540	0.750	2.31	19292	3291	1332.8
Hardened tool steel 52 - 56 HRC	0.20	2	16	0.003	0.020	0.070	0.12	42441	255	0.4
	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
	1.50	2	110	0.029	0.270	0.375	1.15	30447	1755	177.7
	2.00	2	110	0.038	0.360	0.500	1.54	22736	1747	314.5
	2.50	2	110	0.048	0.450	0.625	1.92	18237	1752	492.7
	3.00	2	110	0.058	0.540	0.750	2.31	15158	1747	707.6
Hardened tool steel 56 - 60 HRC	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3
	1.50	2	70	0.019	0.180	0.300	0.97	22971	896	48.4
	2.00	2	70	0.026	0.240	0.400	1.30	17140	891	85.6
	2.50	2	70	0.032	0.300	0.500	1.62	13754	894	134.1
	3.00	2	70	0.039	0.360	0.600	1.95	11427	891	192.5

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	195	0.078	0.040	0.120	1.75	35469	5533	45°
	2.50	2	195	0.088	0.040	0.135	2.15	28870	5081	45°
	3.00	2	195	0.098	0.050	0.150	2.59	23965	4697	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	175	0.078	0.040	0.120	1.75	31831	4966	45°
	2.50	2	175	0.088	0.040	0.135	2.15	25909	4560	45°
	3.00	2	175	0.098	0.050	0.150	2.59	21507	4215	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	160	0.068	0.030	0.105	1.32	38583	5247	45°
	2.00	2	160	0.078	0.040	0.120	1.75	29103	4540	45°
	2.50	2	160	0.088	0.040	0.135	2.15	23688	4169	45°
	3.00	2	160	0.098	0.050	0.150	2.59	19664	3854	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.80	2	64	0.040	0.010	0.080	0.68	29959	2397	45°
	1.00	2	80	0.045	0.020	0.090	0.88	28937	2604	45°
	1.50	2	80	0.053	0.020	0.105	1.28	19894	2109	45°
	2.00	2	80	0.060	0.020	0.120	1.67	15248	1830	45°
	2.50	2	80	0.068	0.030	0.135	2.11	12069	1641	45°
	3.00	2	80	0.075	0.030	0.150	2.50	10186	1528	45°

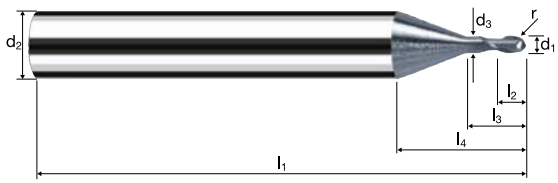
Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

X-Generation

II

HM XA	λ 30° γ -10°



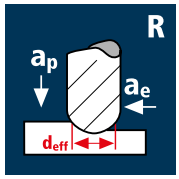
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6562** ø-Code **010**

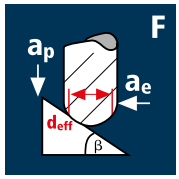
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6562
010	0.10	6.00	0.09	57	0.10	0.30	17.55	0.050	14.7°	2		●
020	0.20	6.00	0.18	57	0.20	0.60	17.54	0.100	14.4°	2		●
030	0.30	6.00	0.25	57	0.30	0.90	17.64	0.150	14.0°	2		●
040	0.40	6.00	0.35	57	0.40	1.20	17.66	0.200	13.7°	2		●
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.250	13.3°	2		●
060	0.60	6.00	0.55	57	0.60	1.80	12.63	0.300	13.0°	2		●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.400	12.4°	2		●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.500	11.8°	2		●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.600	11.2°	2		●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.750	10.3°	2		●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	1.000	9.0°	2		●
152	2.30	6.00	2.10	57	2.30	6.90	14.84	1.150	8.1°	2		●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	1.250	7.6°	2		●
172	2.80	6.00	2.60	57	2.80	8.40	15.40	1.400	6.8°	2		●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	1.500	6.4°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	173	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	346	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	520	1.7
	0.40	2	38	0.010	0.060	0.120	0.29	41710	810	5.9
	0.50	2	47	0.012	0.075	0.150	0.36	41557	1009	11.4
	0.60	2	57	0.015	0.090	0.180	0.43	42195	1229	19.9
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1627	46.9
	1.00	2	94	0.024	0.150	0.300	0.71	42142	2047	92.1
Hardened tool steel 48 - 52 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	188	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
Hardened tool steel 52 - 56 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	127	0.1
	0.20	2	16	0.003	0.020	0.070	0.12	42441	255	0.4
	0.30	2	24	0.005	0.030	0.105	0.18	42441	382	1.2
	0.40	2	38	0.007	0.060	0.120	0.29	41710	596	4.3
	0.50	2	47	0.009	0.075	0.150	0.36	41557	742	8.4
	0.60	2	57	0.011	0.090	0.180	0.43	42195	904	14.7
	0.80	2	75	0.014	0.120	0.240	0.57	41883	1196	34.5
	1.00	2	94	0.018	0.150	0.300	0.71	42142	1505	67.7
Hardened tool steel 56 - 60 HRC	0.10	2	7	0.001	0.007	0.030	0.05	44563	91	0.0
	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	40	0.006	0.050	0.125	0.30	42441	509	3.2
	0.60	2	48	0.007	0.060	0.150	0.36	42441	611	5.5
	0.80	2	63	0.010	0.080	0.200	0.48	41778	802	12.9
	1.00	2	70	0.012	0.100	0.250	0.60	37136	891	22.3

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 48 - 52 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 52 - 56 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 56 - 60 HRC	0.10	2	13	0.015	0.010	0.030	0.10	41380	1241	45°
	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	62	0.040	0.010	0.080	0.68	29022	2322	45°
	1.00	2	78	0.045	0.020	0.090	0.88	28214	2539	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 3.5xd

X-Generation

II

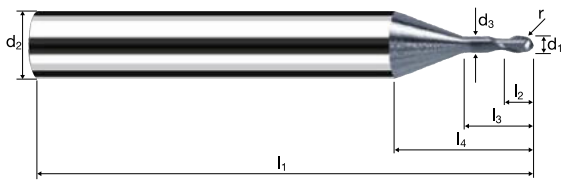
HM
XA

λ 30°
γ -10°

h4

d1

r

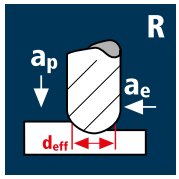


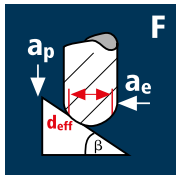
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6582** ø-Code **010**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6582
010	0.10	6.00	0.09	57	0.10	0.35	17.60	0.050	14.6°	2		●
020	0.20	6.00	0.18	57	0.20	0.70	17.64	0.100	14.2°	2		●
030	0.30	6.00	0.25	57	0.30	1.05	17.79	0.150	13.8°	2		●
040	0.40	6.00	0.35	57	0.40	1.40	17.86	0.200	13.4°	2		●
050	0.50	6.00	0.45	57	0.50	1.75	12.76	0.250	13.1°	2		●
060	0.60	6.00	0.55	57	0.60	2.10	12.93	0.300	12.7°	2		●
080	0.80	6.00	0.75	57	0.80	2.80	13.25	0.400	12.0°	2		●
100	1.00	6.00	0.95	57	1.00	3.50	13.58	0.500	11.4°	2		●

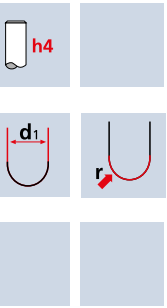
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	367	0.5
		0.30	2	24	0.006	0.030	0.105	0.18	42441	550	1.8
		0.40	2	38	0.010	0.060	0.120	0.29	41710	858	6.2
		0.50	2	47	0.013	0.075	0.150	0.36	41557	1068	12.0
		0.60	2	57	0.015	0.090	0.180	0.43	42195	1302	21.1
		0.80	2	75	0.021	0.120	0.240	0.57	41883	1723	49.6
		1.00	2	94	0.026	0.150	0.300	0.71	42142	2167	97.5
		1.50	2	121	0.041	0.270	0.375	1.15	33492	2779	281.4
		2.00	2	121	0.055	0.360	0.500	1.54	25010	2767	498.1
	Hardened tool steel 48 - 52 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
		0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
		0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
		0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
		0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
		0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
		1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
		1.50	2	105	0.043	0.270	0.375	1.15	29063	2479	251.0
		2.00	2	105	0.057	0.360	0.500	1.54	21703	2468	444.3
	Hardened tool steel 52 - 56 HRC	0.20	2	16	0.004	0.020	0.070	0.12	42441	336	0.5
		0.30	2	24	0.006	0.030	0.105	0.18	42441	504	1.6
		0.40	2	38	0.009	0.060	0.120	0.29	41710	786	5.7
		0.50	2	47	0.012	0.075	0.150	0.36	41557	979	11.0
		0.60	2	57	0.014	0.090	0.180	0.43	42195	1193	19.4
		0.80	2	75	0.019	0.120	0.240	0.57	41883	1579	45.5
		1.00	2	88	0.024	0.150	0.300	0.71	39452	1860	83.7
		1.50	2	88	0.038	0.270	0.375	1.15	24358	1853	187.6
		2.00	2	88	0.051	0.360	0.500	1.54	18189	1845	332.1
	Hardened tool steel 56 - 60 HRC	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
		0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
		0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
		0.50	2	39	0.006	0.050	0.125	0.30	41380	497	3.1
		0.60	2	39	0.007	0.060	0.150	0.36	34484	497	4.5
		0.80	2	39	0.010	0.080	0.200	0.48	25863	497	8.0
		1.00	2	39	0.012	0.100	0.250	0.60	20690	497	12.4
		1.50	2	39	0.019	0.180	0.300	0.97	12798	499	27.0
		2.00	2	39	0.026	0.240	0.400	1.30	9549	497	47.7

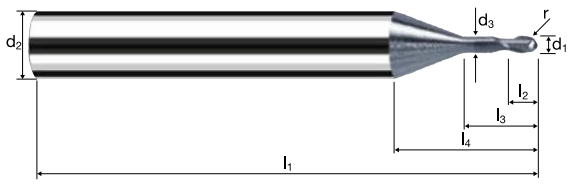
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
		2.00	2	185	0.078	0.040	0.120	1.75	33650	5249	45°
	Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	166	0.068	0.030	0.105	1.32	40030	5444	45°
		2.00	2	166	0.078	0.040	0.120	1.75	30194	4710	45°
	Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	152	0.068	0.030	0.105	1.32	36654	4985	45°
		2.00	2	152	0.078	0.040	0.120	1.75	27647	4313	45°
	Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
		0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
		0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
		0.80	2	61	0.040	0.010	0.080	0.68	28554	2284	45°
		1.00	2	76	0.045	0.020	0.090	0.88	27490	2474	45°
		1.50	2	76	0.053	0.020	0.105	1.28	18900	2003	45°
		2.00	2	76	0.060	0.020	0.120	1.67	14486	1738	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 4xd

HM XA	λ 30° γ -10°





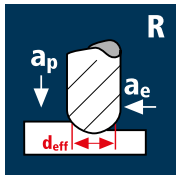
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6563** ø-Code **010**

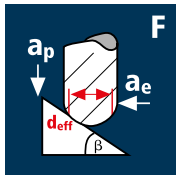
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL X6563
010	0.10	6.00	0.09	57	0.10	0.40	17.65	0.050	14.6°	2	●
020	0.20	6.00	0.18	57	0.20	0.80	17.74	0.100	14.1°	2	●
030	0.30	6.00	0.25	57	0.30	1.20	17.94	0.150	13.6°	2	●
040	0.40	6.00	0.35	57	0.40	1.60	18.06	0.200	13.2°	2	●
050	0.50	6.00	0.45	57	0.50	2.00	13.01	0.250	12.8°	2	●
060	0.60	6.00	0.55	57	0.60	2.40	13.23	0.300	12.4°	2	●
080	0.80	6.00	0.75	57	0.80	3.20	13.65	0.400	11.7°	2	●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.500	11.0°	2	●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.750	9.3°	2	●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	1.000	7.8°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	183	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	367	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	550	1.8
	0.40	2	38	0.010	0.060	0.120	0.29	41710	858	6.2
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1068	12.0
	0.60	2	57	0.015	0.090	0.180	0.43	42195	1302	21.1
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1723	49.6
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2167	97.5
Hardened tool steel 48 - 52 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	188	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	377	0.6
	0.30	2	24	0.007	0.030	0.105	0.18	42441	565	1.8
	0.40	2	38	0.011	0.060	0.120	0.29	41710	882	6.4
	0.50	2	47	0.013	0.075	0.150	0.36	41557	1098	12.4
	0.60	2	57	0.016	0.090	0.180	0.43	42195	1338	21.7
	0.80	2	75	0.021	0.120	0.240	0.57	41883	1771	51.0
	1.00	2	94	0.026	0.150	0.300	0.71	42142	2227	100.2
Hardened tool steel 52 - 56 HRC	0.10	2	8	0.002	0.010	0.035	0.06	42441	168	0.1
	0.20	2	16	0.004	0.020	0.070	0.12	42441	336	0.5
	0.30	2	24	0.006	0.030	0.105	0.18	42441	504	1.6
	0.40	2	38	0.009	0.060	0.120	0.29	41710	786	5.7
	0.50	2	47	0.012	0.075	0.150	0.36	41557	979	11.0
	0.60	2	57	0.014	0.090	0.180	0.43	42195	1193	19.4
	0.80	2	75	0.019	0.120	0.240	0.57	41883	1579	45.5
	1.00	2	84	0.024	0.150	0.300	0.71	37659	1775	79.9
Hardened tool steel 56 - 60 HRC	0.10	2	7	0.001	0.007	0.030	0.05	44563	91	0.0
	0.20	2	13	0.002	0.014	0.060	0.10	41380	169	0.2
	0.30	2	20	0.003	0.021	0.090	0.15	42441	260	0.5
	0.40	2	27	0.004	0.028	0.120	0.20	42972	351	1.2
	0.50	2	37	0.006	0.050	0.125	0.30	39258	471	3.0
	0.60	2	37	0.007	0.060	0.150	0.36	32715	471	4.3
	0.80	2	37	0.010	0.080	0.200	0.48	24536	471	7.6
	1.00	2	37	0.012	0.100	0.250	0.60	19629	471	11.8

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 48 - 52 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 52 - 56 HRC	0.10	2	13	0.020	0.010	0.030	0.10	41380	1655	45°
	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
Hardened tool steel 56 - 60 HRC	0.10	2	13	0.015	0.010	0.030	0.10	41380	1241	45°
	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	55	0.035	0.010	0.070	0.52	33667	2357	45°
	0.80	2	59	0.040	0.010	0.080	0.68	27618	2209	45°
	1.00	2	74	0.045	0.020	0.090	0.88	26767	2409	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 4.5xd

X-Generation X

II

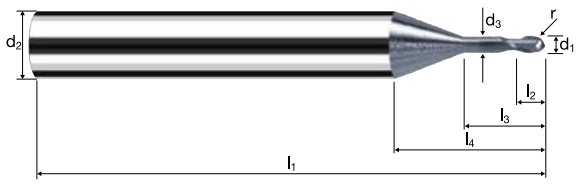
HM
XA

λ 30°
γ -10°

h4

d1

r



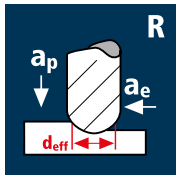
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6583** ø-Code **010**

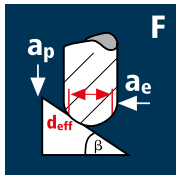
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6583
010	0.10	6.00	0.09	57	0.10	0.45	17.65	0.050	14.5°	2		●
020	0.20	6.00	0.18	57	0.20	0.90	17.84	0.100	14.0°	2		●
030	0.30	6.00	0.25	57	0.30	1.35	18.09	0.150	13.5°	2		●
040	0.40	6.00	0.35	57	0.40	1.80	18.26	0.200	13.0°	2		●
050	0.50	6.00	0.45	57	0.50	2.25	13.26	0.250	12.6°	2		●
060	0.60	6.00	0.55	57	0.60	2.70	13.53	0.300	12.1°	2		●
080	0.80	6.00	0.75	57	0.80	3.60	14.05	0.400	11.8°	2		●
100	1.00	6.00	0.95	57	1.00	4.50	14.58	0.500	10.6°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	317	0.4
	0.40	2	34	0.009	0.048	0.140	0.26	41625	779	5.3
	0.50	2	43	0.012	0.060	0.175	0.32	42773	1001	10.5
	0.80	2	69	0.019	0.096	0.280	0.52	42237	1581	42.5
	1.00	2	86	0.023	0.120	0.350	0.65	42115	1971	82.8
	1.50	2	110	0.039	0.225	0.450	1.07	32723	2524	255.6
	2.00	2	110	0.051	0.300	0.600	1.43	24485	2518	453.3
	2.50	2	110	0.064	0.375	0.750	1.79	19561	2515	707.2
	3.00	2	110	0.077	0.450	0.900	2.14	16362	2524	1022.2
Hardened tool steel 48 - 52 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	325	0.4
	0.40	2	34	0.010	0.048	0.140	0.26	41625	801	5.4
	0.50	2	43	0.012	0.060	0.175	0.32	42773	1029	10.8
	0.80	2	69	0.019	0.096	0.280	0.52	42237	1625	43.7
	1.00	2	86	0.024	0.120	0.350	0.65	42115	2026	85.1
	1.50	2	95	0.040	0.225	0.450	1.07	28261	2240	226.8
	2.00	2	95	0.053	0.300	0.600	1.43	21146	2235	402.3
	2.50	2	95	0.066	0.375	0.750	1.79	16894	2232	627.8
	3.00	2	95	0.079	0.450	0.900	2.14	14131	2240	907.3
Hardened tool steel 52 - 56 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	290	0.4
	0.40	2	34	0.009	0.048	0.140	0.26	41625	714	4.8
	0.50	2	43	0.011	0.060	0.175	0.32	42773	917	9.7
	0.80	2	69	0.017	0.096	0.280	0.52	42237	1449	39.0
	1.00	2	80	0.021	0.120	0.350	0.65	39177	1681	70.6
	1.50	2	80	0.035	0.225	0.450	1.07	23799	1683	170.4
	2.00	2	80	0.047	0.300	0.600	1.43	17808	1679	302.2
	2.50	2	80	0.059	0.375	0.750	1.79	14226	1676	471.5
	3.00	2	80	0.071	0.450	0.900	2.14	11899	1683	681.4
Hardened tool steel 56 - 60 HRC	0.20	2	12	0.002	0.010	0.060	0.09	42441	148	0.1
	0.40	2	23	0.003	0.020	0.120	0.17	43065	300	0.7
	0.50	2	35	0.005	0.040	0.125	0.27	41262	448	2.3
	0.80	2	35	0.009	0.064	0.200	0.43	25909	450	5.8
	1.00	2	35	0.011	0.080	0.250	0.54	20631	448	9.0
	1.50	2	35	0.019	0.180	0.300	0.97	11485	448	24.2
	2.00	2	35	0.026	0.240	0.400	1.30	8570	446	42.8
	2.50	2	35	0.032	0.300	0.500	1.62	6877	447	67.1
	3.00	2	35	0.039	0.360	0.600	1.95	5713	446	96.3

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	174	0.068	0.030	0.105	1.32	41959	5706	45°
	2.00	2	176	0.078	0.040	0.120	1.75	32013	4994	45°
	2.50	2	176	0.088	0.040	0.135	2.15	26057	4586	45°
	3.00	2	176	0.098	0.050	0.150	2.59	21630	4240	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	158	0.068	0.030	0.105	1.32	38101	5182	45°
	2.00	2	158	0.078	0.040	0.120	1.75	28739	4483	45°
	2.50	2	158	0.088	0.040	0.135	2.15	23392	4117	45°
	3.00	2	158	0.098	0.050	0.150	2.59	19418	3806	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
	2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
	2.50	2	144	0.088	0.040	0.135	2.15	21319	3752	45°
	3.00	2	144	0.098	0.050	0.150	2.59	17698	3469	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.80	2	58	0.040	0.010	0.080	0.68	27150	2172	45°
	1.00	2	72	0.045	0.020	0.090	0.88	26044	2344	45°
	1.50	2	72	0.053	0.020	0.105	1.28	17905	1898	45°
	2.00	2	72	0.060	0.020	0.120	1.67	13724	1647	45°
	2.50	2	72	0.068	0.030	0.135	2.11	10862	1477	45°
	3.00	2	72	0.075	0.030	0.150	2.50	9167	1375	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

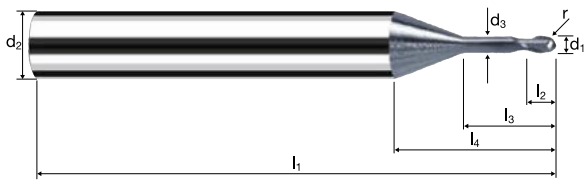
HM XA

λ **30°**
γ **-10°**

h4

d1

r



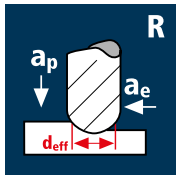
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6564** ø-Code **010**

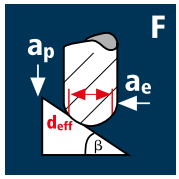
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6564
010	0.10	6.00	0.09	57	0.10	0.50	17.70	0.050	14.5°	2		●
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.100	13.9°	2		●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	0.150	13.8°	2		●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.200	12.8°	2		●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.250	12.3°	2		●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.300	11.9°	2		●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.400	11.0°	2		●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.500	10.2°	2		●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.600	9.4°	2		●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.750	8.4°	2		●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	1.000	6.9°	2		●
152	2.30	6.00	2.10	61	2.30	11.50	19.44	1.150	6.0°	2		●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	1.250	5.5°	2		●
172	2.80	6.00	2.60	61	2.80	14.00	21.00	1.400	4.9°	2		●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	1.500	4.4°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	317	0.4
	0.30	2	21	0.006	0.024	0.120	0.16	41778	490	1.4
	0.40	2	34	0.009	0.048	0.140	0.26	41625	779	5.3
	0.50	2	43	0.012	0.060	0.175	0.32	42773	1001	10.5
	0.60	2	51	0.014	0.072	0.210	0.39	41625	1169	17.7
	0.80	2	69	0.019	0.096	0.280	0.52	42237	1581	42.5
	1.00	2	86	0.023	0.120	0.350	0.65	42115	1971	82.8
	1.50	2	105	0.039	0.225	0.450	1.07	31236	2409	244.0
	2.00	2	105	0.051	0.300	0.600	1.43	23372	2404	432.7
Hardened tool steel 48 - 52 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	325	0.4
	0.30	2	21	0.006	0.024	0.120	0.16	41778	503	1.5
	0.40	2	34	0.010	0.048	0.140	0.26	41625	801	5.4
	0.50	2	43	0.012	0.060	0.175	0.32	42773	1029	10.8
	0.60	2	51	0.014	0.072	0.210	0.39	41625	1201	18.2
	0.80	2	69	0.019	0.096	0.280	0.52	42237	1625	43.7
	1.00	2	86	0.024	0.120	0.350	0.65	42115	2026	85.1
	1.50	2	90	0.040	0.225	0.450	1.07	26774	2122	214.9
	2.00	2	90	0.053	0.300	0.600	1.43	20033	2117	381.2
Hardened tool steel 52 - 56 HRC	0.20	2	14	0.004	0.016	0.080	0.11	40512	290	0.4
	0.30	2	21	0.005	0.024	0.120	0.16	41778	449	1.3
	0.40	2	34	0.009	0.048	0.140	0.26	41625	714	4.8
	0.50	2	43	0.011	0.060	0.175	0.32	42773	917	9.7
	0.60	2	51	0.013	0.072	0.210	0.39	41625	1071	16.2
	0.80	2	69	0.017	0.096	0.280	0.52	42237	1449	39.0
	1.00	2	76	0.021	0.120	0.350	0.65	37218	1597	67.1
	1.50	2	76	0.035	0.225	0.450	1.07	22609	1599	161.9
	2.00	2	76	0.047	0.300	0.600	1.43	16917	1595	287.1
Hardened tool steel 56 - 60 HRC	0.20	2	12	0.002	0.010	0.060	0.09	42441	148	0.1
	0.30	2	17	0.003	0.015	0.090	0.13	41625	218	0.3
	0.40	2	23	0.003	0.020	0.120	0.17	43065	300	0.7
	0.50	2	33	0.005	0.040	0.125	0.27	38905	422	2.1
	0.60	2	33	0.007	0.048	0.150	0.33	31831	415	3.0
	0.80	2	33	0.009	0.064	0.200	0.43	24428	424	5.5
	1.00	2	33	0.011	0.080	0.250	0.54	19452	422	8.5
	1.50	2	33	0.019	0.180	0.300	0.97	10829	422	22.8
	2.00	2	33	0.026	0.240	0.400	1.30	8080	420	40.4

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	166	0.068	0.030	0.105	1.32	40030	5444	45°
	2.00	2	166	0.078	0.040	0.120	1.75	30194	4710	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	149	0.068	0.030	0.105	1.32	35930	4887	45°
	2.00	2	149	0.078	0.040	0.120	1.75	27102	4228	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	136	0.068	0.030	0.105	1.32	32796	4460	45°
	2.00	2	136	0.078	0.040	0.120	1.75	24737	3859	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	54	0.035	0.010	0.070	0.52	33055	2314	45°
	0.80	2	54	0.040	0.010	0.080	0.68	25278	2022	45°
	1.00	2	68	0.045	0.020	0.090	0.88	24597	2214	45°
	1.50	2	68	0.053	0.020	0.105	1.28	16910	1793	45°
	2.00	2	68	0.060	0.020	0.120	1.67	12961	1555	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 6xd

X-Generation

II

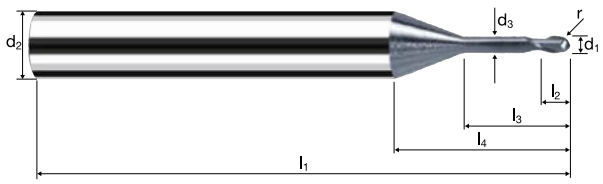
HM
XA

λ 30°
γ -10°

h4

d1

r



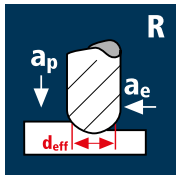
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6565** ø-Code **020**

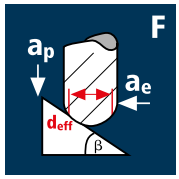
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6565
020	0.20	6.00	0.18	57	0.20	1.20	18.14	0.100	13.7°	2		●
030	0.30	6.00	0.25	57	0.30	1.80	18.54	0.150	13.0°	2		●
040	0.40	6.00	0.35	57	0.40	2.40	18.86	0.200	12.4°	2		●
050	0.50	6.00	0.45	57	0.50	3.00	14.01	0.250	11.9°	2		●
060	0.60	6.00	0.55	57	0.60	3.60	14.43	0.300	11.4°	2		●
080	0.80	6.00	0.75	57	0.80	4.80	15.25	0.400	10.4°	2		●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.500	9.5°	2		●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.750	7.6°	2		●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	1.000	6.1°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	252	0.2
	0.30	2	17	0.004	0.015	0.090	0.13	41625	370	0.5
	0.40	2	27	0.007	0.028	0.100	0.20	42972	597	1.7
	0.50	2	34	0.009	0.035	0.125	0.26	41625	722	3.2
	0.60	2	40	0.010	0.042	0.150	0.31	41072	855	5.4
	0.80	2	54	0.014	0.056	0.200	0.41	41924	1164	13.1
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1451	25.4
	1.50	2	100	0.031	0.150	0.300	0.90	35368	2165	97.4
	2.00	2	100	0.041	0.200	0.400	1.20	26526	2165	173.2
Hardened tool steel 48 - 52 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	244	0.2
	0.30	2	17	0.004	0.015	0.090	0.13	41625	359	0.5
	0.40	2	27	0.007	0.028	0.100	0.20	42972	579	1.6
	0.50	2	34	0.008	0.035	0.125	0.26	41625	701	3.1
	0.60	2	40	0.010	0.042	0.150	0.31	41072	830	5.3
	0.80	2	54	0.013	0.056	0.200	0.41	41924	1130	12.7
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1408	24.7
	1.50	2	79	0.030	0.150	0.300	0.90	27941	1660	74.7
	2.00	2	79	0.040	0.200	0.400	1.20	20955	1660	132.8
Hardened tool steel 52 - 56 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	222	0.2
	0.30	2	17	0.004	0.015	0.090	0.13	41625	327	0.5
	0.40	2	27	0.006	0.028	0.100	0.20	42972	526	1.5
	0.50	2	34	0.008	0.035	0.125	0.26	41625	637	2.8
	0.60	2	40	0.009	0.042	0.150	0.31	41072	755	4.8
	0.80	2	54	0.012	0.056	0.200	0.41	41924	1027	11.5
	1.00	2	67	0.015	0.070	0.250	0.51	41817	1280	22.4
	1.50	2	68	0.027	0.150	0.300	0.90	24050	1299	58.5
	2.00	2	68	0.036	0.200	0.400	1.20	18038	1299	103.9
Hardened tool steel 56 - 60 HRC	0.20	2	9	0.001	0.006	0.050	0.07	40926	101	0.1
	0.30	2	14	0.002	0.009	0.075	0.10	44563	164	0.1
	0.40	2	18	0.002	0.012	0.100	0.14	40926	201	0.3
	0.50	2	29	0.004	0.025	0.100	0.22	41959	329	0.8
	0.60	2	32	0.005	0.030	0.120	0.26	39177	369	1.4
	0.80	2	32	0.006	0.040	0.160	0.35	29103	365	2.4
	1.00	2	32	0.008	0.050	0.200	0.44	23150	363	3.7
	1.50	2	32	0.015	0.120	0.225	0.81	12575	368	10.0
	2.00	2	32	0.020	0.160	0.300	1.09	9345	365	17.5

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	156	0.068	0.030	0.105	1.32	37618	5116	45°
	2.00	2	156	0.078	0.040	0.120	1.75	28375	4427	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	140	0.068	0.030	0.105	1.32	33760	4591	45°
	2.00	2	140	0.078	0.040	0.120	1.75	25465	3973	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.50	2	128	0.068	0.030	0.105	1.32	30866	4198	45°
	2.00	2	128	0.078	0.040	0.120	1.75	23282	3632	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.60	2	51	0.035	0.010	0.070	0.52	31219	2185	45°
	0.80	2	51	0.040	0.010	0.080	0.68	23873	1910	45°
	1.00	2	64	0.045	0.020	0.090	0.88	23150	2084	45°
	1.50	2	64	0.053	0.020	0.105	1.28	15915	1687	45°
	2.00	2	64	0.060	0.020	0.120	1.67	12199	1464	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 7xd

X-Generation X

II

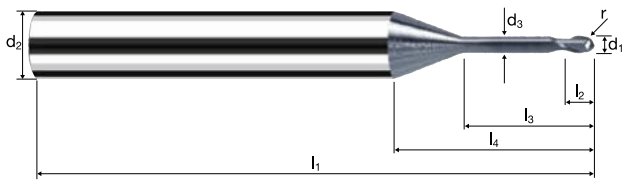
HM
XA

λ 30°
γ -10°

h4

d1

r



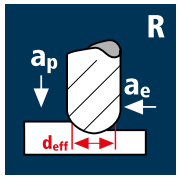
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6579** ø-Code **020**

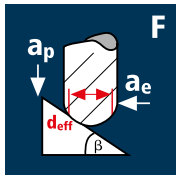
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL
											X6579
020	0.20	6.00	0.18	57	0.20	1.40	18.02	0.100	13.4°	2	●
030	0.30	6.00	0.25	57	0.30	2.10	18.34	0.150	12.7°	2	●
040	0.40	6.00	0.35	57	0.40	2.80	18.76	0.200	12.1°	2	●
050	0.50	6.00	0.45	57	0.50	3.50	14.51	0.250	11.5°	2	●
060	0.60	6.00	0.55	57	0.60	4.20	15.03	0.300	10.9°	2	●
080	0.80	6.00	0.75	57	0.80	5.60	16.05	0.400	9.9°	2	●
100	1.00	6.00	0.95	61	1.00	7.00	17.08	0.500	9.0°	2	●
120	1.50	6.00	1.40	61	1.50	10.50	19.74	0.750	7.0°	2	●
140	2.00	6.00	1.90	66	2.00	14.00	22.31	1.000	5.6°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	252	0.2
	0.40	2	27	0.007	0.028	0.100	0.20	42972	597	1.7
	0.50	2	34	0.009	0.035	0.125	0.26	41625	722	3.2
	0.80	2	54	0.014	0.056	0.200	0.41	41924	1164	13.1
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1451	25.4
	1.20	2	95	0.024	0.120	0.240	0.72	41999	2056	59.2
	1.50	2	95	0.031	0.150	0.300	0.90	33599	2056	92.6
	2.00	2	95	0.041	0.200	0.400	1.20	25200	2056	164.5
	2.50	2	95	0.051	0.250	0.500	1.50	20160	2056	257.1
Hardened tool steel 48 - 52 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	244	0.2
	0.40	2	27	0.007	0.028	0.100	0.20	42972	579	1.6
	0.50	2	34	0.008	0.035	0.125	0.26	41625	701	3.1
	0.80	2	54	0.013	0.056	0.200	0.41	41924	1130	12.7
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1408	24.7
	1.20	2	75	0.024	0.120	0.240	0.72	33157	1576	45.4
	1.50	2	75	0.030	0.150	0.300	0.90	26526	1576	70.9
	2.00	2	75	0.040	0.200	0.400	1.20	19894	1576	126.1
	2.50	2	75	0.050	0.250	0.500	1.50	15915	1576	197.0
Hardened tool steel 52 - 56 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	222	0.2
	0.40	2	27	0.006	0.028	0.100	0.20	42972	526	1.5
	0.50	2	34	0.008	0.035	0.125	0.26	41625	637	2.8
	0.80	2	54	0.012	0.056	0.200	0.41	41924	1027	11.5
	1.00	2	65	0.015	0.070	0.250	0.51	40569	1242	21.8
	1.20	2	65	0.022	0.120	0.240	0.72	28736	1241	35.8
	1.50	2	65	0.027	0.150	0.300	0.90	22989	1241	55.9
	2.00	2	65	0.036	0.200	0.400	1.20	17242	1241	99.3
	2.50	2	65	0.045	0.250	0.500	1.50	13793	1241	155.2
Hardened tool steel 56 - 60 HRC	0.20	2	9	0.001	0.006	0.050	0.07	40926	101	0.1
	0.40	2	18	0.002	0.012	0.100	0.14	40926	201	0.3
	0.50	2	29	0.004	0.025	0.100	0.22	41959	329	0.8
	0.80	2	30	0.006	0.040	0.160	0.35	27284	343	2.2
	1.00	2	30	0.008	0.050	0.200	0.44	21703	341	3.4
	1.20	2	30	0.012	0.096	0.180	0.65	14691	344	6.0
	1.50	2	30	0.015	0.120	0.225	0.81	11789	345	9.4
	2.00	2	30	0.020	0.160	0.300	1.09	8761	342	16.5
	2.50	2	30	0.024	0.200	0.375	1.36	7022	343	25.7

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	141	0.062	0.030	0.095	1.07	41946	5201	45°
	1.50	2	146	0.068	0.030	0.105	1.32	35207	4788	45°
	2.00	2	146	0.078	0.040	0.120	1.75	26556	4143	45°
	2.50	2	146	0.088	0.040	0.135	2.15	21615	3804	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	131	0.062	0.030	0.095	1.07	38971	4832	45°
	1.50	2	131	0.068	0.030	0.105	1.32	31590	4296	45°
	2.00	2	131	0.078	0.040	0.120	1.75	23828	3717	45°
	2.50	2	131	0.088	0.040	0.135	2.15	19395	3414	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	120	0.062	0.030	0.095	1.07	35698	4427	45°
	1.50	2	120	0.068	0.030	0.105	1.32	28937	3935	45°
	2.00	2	120	0.078	0.040	0.120	1.75	21827	3405	45°
	2.50	2	120	0.088	0.040	0.135	2.15	17766	3127	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
	0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
	0.80	2	48	0.040	0.010	0.080	0.68	22469	1798	45°
	1.00	2	60	0.045	0.020	0.090	0.88	21703	1953	45°
	1.20	2	60	0.048	0.020	0.095	1.04	18364	1763	45°
	1.50	2	60	0.053	0.020	0.105	1.28	14921	1582	45°
	2.00	2	60	0.060	0.020	0.120	1.67	11436	1372	45°
	2.50	2	60	0.068	0.030	0.135	2.11	9051	1231	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

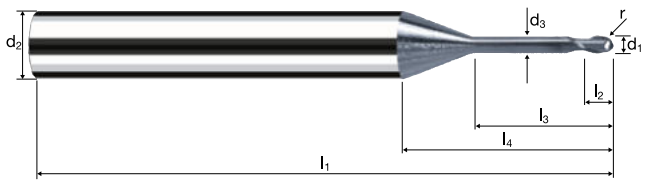
HM XA

λ 30°
γ -10°

h4

d1

r

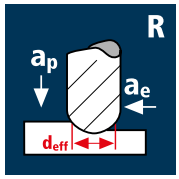


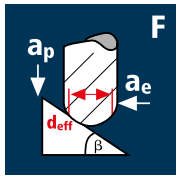
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6566** ø-Code **020**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL
											X6566
020	0.20	6.00	0.18	57	0.20	1.60	18.22	0.100	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	18.64	0.150	12.4°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.16	0.200	11.7°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.250	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.300	10.5°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.400	9.4°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.500	8.4°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.600	7.6°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.750	6.5°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	1.000	5.1°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	1.250	3.9°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	1.500	3.1°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	226	0.2
		0.30	2	17	0.004	0.015	0.090	0.13	41625	333	0.5
		0.40	2	27	0.006	0.028	0.100	0.20	42972	537	1.5
		0.50	2	34	0.008	0.035	0.125	0.26	41625	650	2.9
		0.60	2	40	0.009	0.042	0.150	0.31	41072	770	4.9
		0.80	2	54	0.012	0.056	0.200	0.41	41924	1047	11.8
		1.00	2	67	0.016	0.070	0.250	0.51	41817	1306	22.9
		1.50	2	90	0.028	0.150	0.300	0.90	31831	1753	78.9
		2.00	2	90	0.037	0.200	0.400	1.20	23873	1753	140.3
	Hardened tool steel 48 - 52 HRC	0.20	2	12	0.003	0.010	0.060	0.09	42441	220	0.2
		0.30	2	17	0.004	0.015	0.090	0.13	41625	323	0.5
		0.40	2	27	0.006	0.028	0.100	0.20	42972	521	1.5
		0.50	2	34	0.008	0.035	0.125	0.26	41625	631	2.8
		0.60	2	40	0.009	0.042	0.150	0.31	41072	747	4.7
		0.80	2	54	0.012	0.056	0.200	0.41	41924	1017	11.4
		1.00	2	67	0.015	0.070	0.250	0.51	41817	1268	22.2
		1.50	2	71	0.027	0.150	0.300	0.90	25111	1342	60.4
		2.00	2	71	0.036	0.200	0.400	1.20	18833	1342	107.4
	Hardened tool steel 52 - 56 HRC	0.20	2	12	0.002	0.010	0.060	0.09	42441	200	0.1
		0.30	2	17	0.004	0.015	0.090	0.13	41625	294	0.4
		0.40	2	27	0.006	0.028	0.100	0.20	42972	474	1.4
		0.50	2	34	0.007	0.035	0.125	0.26	41625	574	2.5
		0.60	2	40	0.008	0.042	0.150	0.31	41072	679	4.3
		0.80	2	54	0.011	0.056	0.200	0.41	41924	924	10.4
		1.00	2	62	0.014	0.070	0.250	0.51	38696	1066	18.7
		1.50	2	62	0.024	0.150	0.300	0.90	21928	1066	48.0
		2.00	2	62	0.032	0.200	0.400	1.20	16446	1066	85.3
	Hardened tool steel 56 - 60 HRC	0.20	2	9	0.001	0.006	0.050	0.07	40926	91	0.1
		0.30	2	14	0.002	0.009	0.075	0.10	44563	148	0.1
		0.40	2	18	0.002	0.012	0.100	0.14	40926	181	0.2
		0.50	2	29	0.004	0.025	0.100	0.22	41959	296	0.8
		0.60	2	29	0.004	0.030	0.120	0.26	35504	301	1.1
		0.80	2	29	0.006	0.040	0.160	0.35	26374	298	1.9
		1.00	2	29	0.007	0.050	0.200	0.44	20980	296	3.0
		1.50	2	29	0.013	0.120	0.225	0.81	11396	301	8.1
		2.00	2	29	0.018	0.160	0.300	1.09	8469	298	14.3

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	137	0.068	0.030	0.105	1.32	33037	4493	45°
		2.00	2	137	0.078	0.040	0.120	1.75	24919	3887	45°
	Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	122	0.068	0.030	0.105	1.32	29420	4001	45°
		2.00	2	122	0.078	0.040	0.120	1.75	22191	3462	45°
	Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
		0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
		0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
		0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	112	0.058	0.030	0.090	0.91	39177	4545	45°
		1.50	2	112	0.068	0.030	0.105	1.32	27008	3673	45°
		2.00	2	112	0.078	0.040	0.120	1.75	20372	3178	45°
	Hardened tool steel 56 - 60 HRC	0.20	2	25	0.020	0.010	0.040	0.19	41883	1675	45°
		0.30	2	36	0.025	0.010	0.050	0.27	42441	2122	45°
		0.40	2	38	0.029	0.010	0.057	0.36	33599	1949	45°
		0.50	2	45	0.033	0.010	0.065	0.44	32554	2149	45°
		0.60	2	45	0.035	0.010	0.070	0.52	27546	1928	45°
		0.80	2	45	0.040	0.010	0.080	0.68	21065	1685	45°
		1.00	2	56	0.045	0.020	0.090	0.88	20256	1823	45°
		1.50	2	56	0.053	0.020	0.105	1.28	13926	1476	45°
		2.00	2	56	0.060	0.020	0.120	1.67	10674	1281	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 9xd

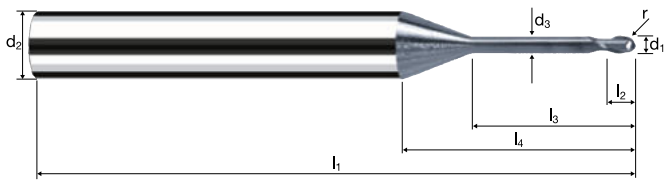
HM XA

λ **30°**
γ **-10°**

h4

d1

r



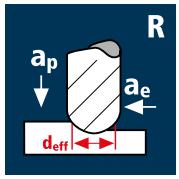
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6567** ø-Code **020**

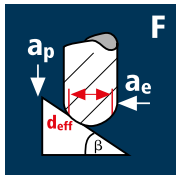
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6567
020	0.20	6.00	0.18	57	0.20	1.80	18.42	0.100	13.0°	2		●
030	0.30	6.00	0.25	57	0.30	2.70	18.94	0.150	12.1°	2		●
040	0.40	6.00	0.35	57	0.40	3.60	19.56	0.200	11.4°	2		●
050	0.50	6.00	0.45	57	0.50	4.50	15.51	0.250	10.7°	2		●
060	0.60	6.00	0.55	57	0.60	5.40	16.23	0.300	10.1°	2		●
080	0.80	6.00	0.75	61	0.80	7.20	17.65	0.400	8.9°	2		●
100	1.00	6.00	0.95	61	1.00	9.00	19.08	0.500	8.0°	2		●
120	1.50	6.00	1.40	66	1.50	13.50	22.74	0.750	6.1°	2		●
140	2.00	6.00	1.90	69	2.00	18.00	26.31	1.000	4.7°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.20	2	8	0.002	0.005	0.050	0.06	42441	146	0.1
	0.30	2	12	0.003	0.008	0.075	0.09	42441	219	0.1
	0.40	2	23	0.005	0.020	0.080	0.17	43065	414	0.7
	0.50	2	29	0.006	0.025	0.100	0.22	41959	504	1.3
	0.60	2	35	0.007	0.030	0.120	0.26	42849	617	2.2
	0.80	2	46	0.010	0.040	0.160	0.35	41835	804	5.2
	1.00	2	58	0.012	0.050	0.200	0.44	41959	1007	10.1
	1.20	2	83	0.017	0.090	0.180	0.63	41936	1460	23.7
	1.50	2	86	0.022	0.113	0.225	0.79	34651	1508	38.2
Hardened tool steel 48 - 52 HRC	0.20	2	8	0.002	0.005	0.050	0.06	42441	142	0.1
	0.30	2	12	0.003	0.008	0.075	0.09	42441	213	0.1
	0.40	2	23	0.005	0.020	0.080	0.17	43065	401	0.7
	0.50	2	29	0.006	0.025	0.100	0.22	41959	489	1.2
	0.60	2	35	0.007	0.030	0.120	0.26	42849	599	2.2
	0.80	2	46	0.009	0.040	0.160	0.35	41835	780	5.0
	1.00	2	58	0.012	0.050	0.200	0.44	41959	978	9.8
	1.20	2	68	0.017	0.090	0.180	0.63	34357	1161	18.8
	1.50	2	68	0.021	0.113	0.225	0.79	27399	1157	29.3
Hardened tool steel 52 - 56 HRC	0.20	2	8	0.002	0.005	0.050	0.06	42441	129	0.1
	0.30	2	12	0.002	0.008	0.075	0.09	42441	193	0.1
	0.40	2	23	0.004	0.020	0.080	0.17	43065	365	0.6
	0.50	2	29	0.005	0.025	0.100	0.22	41959	444	1.1
	0.60	2	35	0.006	0.030	0.120	0.26	42849	545	2.0
	0.80	2	46	0.008	0.040	0.160	0.35	41835	709	4.6
	1.00	2	58	0.011	0.050	0.200	0.44	41959	889	8.9
	1.20	2	59	0.015	0.090	0.180	0.63	29810	916	14.9
	1.50	2	59	0.019	0.113	0.225	0.79	23773	913	23.1
Hardened tool steel 56 - 60 HRC	0.20	2	7	0.001	0.004	0.050	0.06	37136	61	0.0
	0.30	2	11	0.001	0.006	0.075	0.08	43768	107	0.1
	0.40	2	15	0.002	0.008	0.100	0.11	43406	142	0.1
	0.50	2	23	0.002	0.015	0.100	0.17	43065	214	0.3
	0.60	2	27	0.003	0.018	0.120	0.20	42972	257	0.6
	0.80	2	27	0.004	0.024	0.160	0.27	31831	253	1.0
	1.00	2	27	0.005	0.030	0.200	0.34	25278	252	1.5
	1.20	2	27	0.008	0.060	0.180	0.52	16528	252	2.7
	1.50	2	27	0.010	0.075	0.225	0.65	13222	252	4.3

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	127	0.062	0.030	0.095	1.07	37781	4685	45°
	1.50	2	127	0.068	0.030	0.105	1.32	30625	4165	45°
Hardened tool steel 48 - 52 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	114	0.058	0.030	0.090	0.91	39876	4626	45°
	1.20	2	114	0.062	0.030	0.095	1.07	33913	4205	45°
	1.50	2	114	0.068	0.030	0.105	1.32	27490	3739	45°
Hardened tool steel 52 - 56 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	104	0.058	0.030	0.090	0.91	36378	4220	45°
	1.20	2	104	0.062	0.030	0.095	1.07	30939	3836	45°
	1.50	2	104	0.068	0.030	0.105	1.32	25079	3411	45°
Hardened tool steel 56 - 60 HRC	0.20	2	25	0.026	0.010	0.040	0.19	41883	2178	45°
	0.30	2	36	0.033	0.010	0.050	0.27	42441	2801	45°
	0.40	2	47	0.037	0.010	0.057	0.36	41557	3075	45°
	0.50	2	42	0.042	0.020	0.065	0.46	29063	2441	45°
	0.60	2	42	0.046	0.020	0.070	0.55	24307	2236	45°
	0.80	2	42	0.052	0.020	0.080	0.71	18830	1958	45°
	1.00	2	52	0.058	0.030	0.090	0.91	18189	2110	45°
	1.20	2	52	0.062	0.030	0.095	1.07	15469	1918	45°
	1.50	2	52	0.068	0.030	0.105	1.32	12539	1705	45°

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

X-Generation X

II

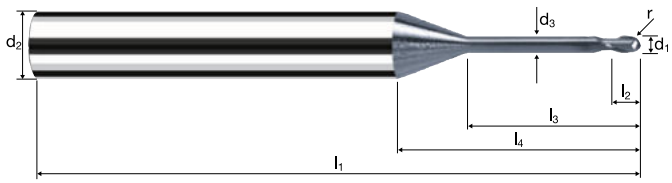
HM XA

λ 30°
γ -10°

h4

d1

r

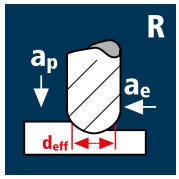


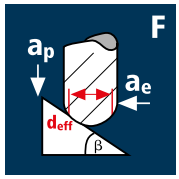
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6568** ø-Code **020**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL
											X6568
020	0.20	6.00	0.18	57	0.20	2.00	18.62	0.100	12.8°	2	●
030	0.30	6.00	0.25	57	0.30	3.00	19.24	0.150	11.9°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	19.96	0.200	11.1°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.250	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.300	9.7°	2	●
080	0.80	6.00	0.75	61	0.80	8.00	18.45	0.400	8.5°	2	●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.500	7.6°	2	●
108	1.20	6.00	1.10	66	1.20	12.00	21.80	0.600	6.7°	2	●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.750	5.7°	2	●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	1.000	4.3°	2	●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	1.250	3.3°	2	●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	1.500	2.5°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Hardened tool steel 42 - 48 HRC	0.50	2	43	0.012	0.060	0.175	0.32	42773	1001	10.5
		0.60	2	51	0.014	0.072	0.210	0.39	41625	1169	17.7
		0.80	2	69	0.019	0.096	0.280	0.52	42237	1581	42.5
		1.00	2	86	0.023	0.120	0.350	0.65	42115	1971	82.8
		1.50	2	105	0.039	0.225	0.450	1.07	31236	2409	244.0
		2.00	2	105	0.051	0.300	0.600	1.43	23372	2404	432.7
	Hardened tool steel 48 - 52 HRC	0.50	2	43	0.012	0.060	0.175	0.32	42773	1029	10.8
		0.60	2	51	0.014	0.072	0.210	0.39	41625	1201	18.2
		0.80	2	69	0.019	0.096	0.280	0.52	42237	1625	43.7
		1.00	2	86	0.024	0.120	0.350	0.65	42115	2026	85.1
		1.50	2	90	0.040	0.225	0.450	1.07	26774	2122	214.9
		2.00	2	90	0.053	0.300	0.600	1.43	20033	2117	381.2
	Hardened tool steel 52 - 56 HRC	0.50	2	43	0.011	0.060	0.175	0.32	42773	917	9.7
		0.60	2	51	0.013	0.072	0.210	0.39	41625	1071	16.2
		0.80	2	69	0.017	0.096	0.280	0.52	42237	1449	39.0
		1.00	2	76	0.021	0.120	0.350	0.65	37218	1597	67.1
		1.50	2	76	0.035	0.225	0.450	1.07	22609	1599	161.9
		2.00	2	76	0.047	0.300	0.600	1.43	16917	1595	287.1
	Hardened tool steel 56 - 60 HRC	0.50	2	33	0.005	0.040	0.125	0.27	38905	422	2.1
		0.60	2	33	0.007	0.048	0.150	0.33	31831	415	3.0
		0.80	2	33	0.009	0.064	0.200	0.43	24428	424	5.5
		1.00	2	33	0.011	0.080	0.250	0.54	19452	422	8.5
		1.50	2	33	0.019	0.180	0.300	0.97	10829	422	22.8
		2.00	2	33	0.026	0.240	0.400	1.30	8080	420	40.4

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	166	0.068	0.030	0.105	1.32	40030	5444	45°
		2.00	2	166	0.078	0.040	0.120	1.75	30194	4710	45°
	Hardened tool steel 48 - 52 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	149	0.068	0.030	0.105	1.32	35930	4887	45°
		2.00	2	149	0.078	0.040	0.120	1.75	27102	4228	45°
	Hardened tool steel 52 - 56 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
		0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
		0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
		1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
		1.50	2	136	0.068	0.030	0.105	1.32	32796	4460	45°
		2.00	2	136	0.078	0.040	0.120	1.75	24737	3859	45°
	Hardened tool steel 56 - 60 HRC	0.50	2	46	0.033	0.010	0.065	0.44	33278	2196	45°
		0.60	2	54	0.035	0.010	0.070	0.52	33055	2314	45°
		0.80	2	54	0.040	0.010	0.080	0.68	25278	2022	45°
		1.00	2	68	0.045	0.020	0.090	0.88	24597	2214	45°
		1.50	2	68	0.053	0.020	0.105	1.28	16910	1793	45°
		2.00	2	68	0.060	0.020	0.120	1.67	12961	1555	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 6xd

X-Generation X

II

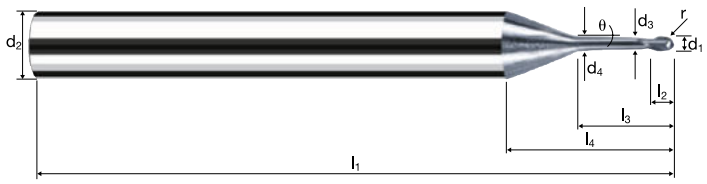
HM
XA

λ 30°
γ -10°

h4

d1

r



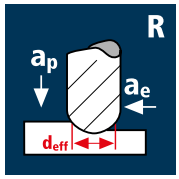
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6765** ø-Code **050**

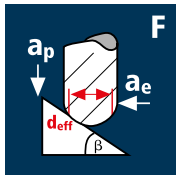
Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6765
050	0.50	6.00	0.45	0.53	57	0.40	3.00	13.87	0.9°	0.250	11.9°	2	●
060	0.60	6.00	0.55	0.65	57	0.50	3.60	14.24	0.9°	0.300	11.4°	2	●
080	0.80	6.00	0.75	0.88	57	0.65	4.80	15.01	0.9°	0.400	10.4°	2	●
100	1.00	6.00	0.95	1.11	57	0.80	6.00	15.78	0.9°	0.500	9.5°	2	●
120	1.50	6.00	1.40	1.65	61	1.20	9.00	17.78	0.9°	0.750	7.6°	2	●
140	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	1.000	6.1°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Hardened tool steel 42 - 48 HRC	0.50	2	34	0.009	0.035	0.125	0.26	41625	722	3.2
	0.60	2	40	0.010	0.042	0.150	0.31	41072	855	5.4
	0.80	2	54	0.014	0.056	0.200	0.41	41924	1164	13.1
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1451	25.4
	1.20	2	95	0.024	0.120	0.240	0.72	41999	2056	59.2
	1.50	2	95	0.031	0.150	0.300	0.90	33599	2056	92.6
	2.00	2	95	0.041	0.200	0.400	1.20	25200	2056	164.5
	2.50	2	95	0.051	0.250	0.500	1.50	20160	2056	257.1
	3.00	2	95	0.061	0.300	0.600	1.80	16800	2056	370.2
Hardened tool steel 48 - 52 HRC	0.50	2	34	0.008	0.035	0.125	0.26	41625	701	3.1
	0.60	2	40	0.010	0.042	0.150	0.31	41072	830	5.3
	0.80	2	54	0.013	0.056	0.200	0.41	41924	1130	12.7
	1.00	2	67	0.017	0.070	0.250	0.51	41817	1408	24.7
	1.20	2	75	0.024	0.120	0.240	0.72	33157	1576	45.4
	1.50	2	75	0.030	0.150	0.300	0.90	26526	1576	70.9
	2.00	2	75	0.040	0.200	0.400	1.20	19894	1576	126.1
	2.50	2	75	0.050	0.250	0.500	1.50	15915	1576	197.0
	3.00	2	75	0.059	0.300	0.600	1.80	13263	1576	283.6
Hardened tool steel 52 - 56 HRC	0.50	2	34	0.008	0.035	0.125	0.26	41625	637	2.8
	0.60	2	40	0.009	0.042	0.150	0.31	41072	755	4.8
	0.80	2	54	0.012	0.056	0.200	0.41	41924	1027	11.5
	1.00	2	65	0.015	0.070	0.250	0.51	40569	1242	21.8
	1.20	2	65	0.022	0.120	0.240	0.72	28736	1241	35.8
	1.50	2	65	0.027	0.150	0.300	0.90	22989	1241	55.9
	2.00	2	65	0.036	0.200	0.400	1.20	17242	1241	99.3
	2.50	2	65	0.045	0.250	0.500	1.50	13793	1241	155.2
	3.00	2	65	0.054	0.300	0.600	1.80	11495	1242	223.5
Hardened tool steel 56 - 60 HRC	0.50	2	29	0.004	0.025	0.100	0.22	41959	329	0.8
	0.60	2	30	0.005	0.030	0.120	0.26	36728	346	1.3
	0.80	2	30	0.006	0.040	0.160	0.35	27284	343	2.2
	1.00	2	30	0.008	0.050	0.200	0.44	21703	341	3.4
	1.20	2	30	0.012	0.096	0.180	0.65	14691	344	6.0
	1.50	2	30	0.015	0.120	0.225	0.81	11789	345	9.4
	2.00	2	30	0.020	0.160	0.300	1.09	8761	342	16.5
	2.50	2	30	0.024	0.200	0.375	1.36	7022	343	25.7
	3.00	2	30	0.029	0.240	0.450	1.63	5858	343	37.1

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	141	0.062	0.030	0.095	1.07	41946	5201	45°
	1.50	2	146	0.068	0.030	0.105	1.32	35207	4788	45°
	2.00	2	146	0.078	0.040	0.120	1.75	26556	4143	45°
	2.50	2	146	0.088	0.040	0.135	2.15	21615	3804	45°
	3.00	2	146	0.098	0.050	0.150	2.59	17943	3517	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	131	0.062	0.030	0.095	1.07	38971	4832	45°
	1.50	2	131	0.068	0.030	0.105	1.32	31590	4296	45°
	2.00	2	131	0.078	0.040	0.120	1.75	23828	3717	45°
	2.50	2	131	0.088	0.040	0.135	2.15	19395	3414	45°
	3.00	2	131	0.098	0.050	0.150	2.59	16100	3156	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	120	0.062	0.030	0.095	1.07	35698	4427	45°
	1.50	2	120	0.068	0.030	0.105	1.32	28937	3935	45°
	2.00	2	120	0.078	0.040	0.120	1.75	21827	3405	45°
	2.50	2	120	0.088	0.040	0.135	2.15	17766	3127	45°
	3.00	2	120	0.098	0.050	0.150	2.59	14748	2891	45°
Hardened tool steel 56 - 60 HRC	0.50	2	48	0.042	0.020	0.065	0.46	33215	2790	45°
	0.60	2	48	0.046	0.020	0.070	0.55	27780	2556	45°
	0.80	2	48	0.052	0.020	0.080	0.71	21520	2238	45°
	1.00	2	60	0.058	0.030	0.090	0.91	20987	2435	45°
	1.20	2	60	0.062	0.030	0.095	1.07	17849	2213	45°
	1.50	2	60	0.068	0.030	0.105	1.32	14469	1968	45°
	2.00	2	60	0.078	0.040	0.120	1.75	10913	1702	45°
	2.50	2	60	0.088	0.040	0.135	2.15	8883	1563	45°
	3.00	2	60	0.098	0.050	0.150	2.59	7374	1445	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 8xd

X-Generation X

II

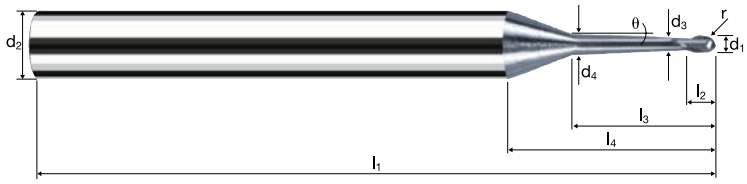
HM XA

λ 30°
γ -10°

h4

d1

r



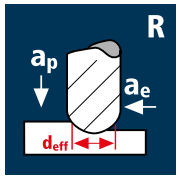
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6766** ø-Code **050**

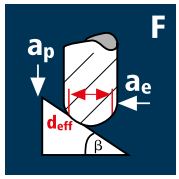
Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6766
050	0.50	6.00	0.45	0.56	57	0.40	4.00	14.81	0.9°	0.250	11.1°	2	●
060	0.60	6.00	0.55	0.69	57	0.50	4.80	15.37	0.9°	0.300	10.5°	2	●
080	0.80	6.00	0.75	0.93	57	0.65	6.40	16.52	0.9°	0.400	9.4°	2	●
100	1.00	6.00	0.95	1.18	61	0.80	8.00	17.65	0.9°	0.500	8.4°	2	●
108	1.20	6.00	1.10	1.37	61	1.00	9.60	18.90	0.9°	0.600	7.6°	2	●
120	1.50	6.00	1.40	1.74	61	1.20	12.00	20.61	0.9°	0.750	6.5°	2	●
140	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	1.000	5.1°	2	●
160	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	1.250	3.9°	2	●
180	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	1.500	3.1°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.50	2	29	0.006	0.025	0.100	0.22	41959	504	1.3
	0.60	2	35	0.007	0.030	0.120	0.26	42849	617	2.2
	0.80	2	46	0.010	0.040	0.160	0.35	41835	804	5.2
	1.00	2	58	0.012	0.050	0.200	0.44	41959	1007	10.1
	1.20	2	83	0.017	0.090	0.180	0.63	41936	1460	23.7
	1.50	2	86	0.022	0.113	0.225	0.79	34651	1508	38.2
	2.00	2	86	0.029	0.150	0.300	1.05	26071	1513	68.1
	2.50	2	86	0.036	0.188	0.375	1.32	20738	1504	105.8
	3.00	2	86	0.044	0.225	0.450	1.58	17326	1508	152.7
Hardened tool steel 48 - 52 HRC	0.50	2	29	0.006	0.025	0.100	0.22	41959	489	1.2
	0.60	2	35	0.007	0.030	0.120	0.26	42849	599	2.2
	0.80	2	46	0.009	0.040	0.160	0.35	41835	780	5.0
	1.00	2	58	0.012	0.050	0.200	0.44	41959	978	9.8
	1.20	2	68	0.017	0.090	0.180	0.63	34357	1161	18.8
	1.50	2	68	0.021	0.113	0.225	0.79	27399	1157	29.3
	2.00	2	68	0.028	0.150	0.300	1.05	20614	1161	52.3
	2.50	2	68	0.035	0.188	0.375	1.32	16398	1155	81.2
	3.00	2	68	0.042	0.225	0.450	1.58	13699	1157	117.2
Hardened tool steel 52 - 56 HRC	0.50	2	29	0.005	0.025	0.100	0.22	41959	444	1.1
	0.60	2	35	0.006	0.030	0.120	0.26	42849	545	2.0
	0.80	2	46	0.008	0.040	0.160	0.35	41835	709	4.6
	1.00	2	58	0.011	0.050	0.200	0.44	41959	889	8.9
	1.20	2	59	0.015	0.090	0.180	0.63	29810	916	14.9
	1.50	2	59	0.019	0.113	0.225	0.79	23773	913	23.1
	2.00	2	59	0.026	0.150	0.300	1.05	17886	916	41.2
	2.50	2	59	0.032	0.188	0.375	1.32	14227	911	64.1
	3.00	2	59	0.038	0.225	0.450	1.58	11886	913	92.5
Hardened tool steel 56 - 60 HRC	0.50	2	23	0.002	0.015	0.100	0.17	43065	214	0.3
	0.60	2	27	0.003	0.018	0.120	0.20	42972	257	0.6
	0.80	2	27	0.004	0.024	0.160	0.27	31831	253	1.0
	1.00	2	27	0.005	0.030	0.200	0.34	25278	252	1.5
	1.20	2	27	0.008	0.060	0.180	0.52	16528	252	2.7
	1.50	2	27	0.010	0.075	0.225	0.65	13222	252	4.3
	2.00	2	27	0.013	0.100	0.300	0.87	9879	251	7.6
	2.50	2	27	0.016	0.125	0.375	1.09	7885	251	11.8
	3.00	2	27	0.019	0.150	0.450	1.31	6561	250	16.9

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	120	0.058	0.030	0.090	0.91	41975	4869	45°
	1.20	2	127	0.062	0.030	0.095	1.07	37781	4685	45°
	1.50	2	127	0.068	0.030	0.105	1.32	30625	4165	45°
	2.00	2	127	0.078	0.040	0.120	1.75	23100	3604	45°
	2.50	2	127	0.088	0.040	0.135	2.15	18802	3309	45°
	3.00	2	127	0.098	0.050	0.150	2.59	15608	3059	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	114	0.058	0.030	0.090	0.91	39876	4626	45°
	1.20	2	114	0.062	0.030	0.095	1.07	33913	4205	45°
	1.50	2	114	0.068	0.030	0.105	1.32	27490	3739	45°
	2.00	2	114	0.078	0.040	0.120	1.75	20736	3235	45°
	2.50	2	114	0.088	0.040	0.135	2.15	16878	2971	45°
	3.00	2	114	0.098	0.050	0.150	2.59	14011	2746	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	104	0.058	0.030	0.090	0.91	36378	4220	45°
	1.20	2	104	0.062	0.030	0.095	1.07	30939	3836	45°
	1.50	2	104	0.068	0.030	0.105	1.32	25079	3411	45°
	2.00	2	104	0.078	0.040	0.120	1.75	18917	2951	45°
	2.50	2	104	0.088	0.040	0.135	2.15	15397	2710	45°
	3.00	2	104	0.098	0.050	0.150	2.59	12782	2505	45°
Hardened tool steel 56 - 60 HRC	0.50	2	42	0.042	0.020	0.065	0.46	29063	2441	45°
	0.60	2	42	0.046	0.020	0.070	0.55	24307	2236	45°
	0.80	2	42	0.052	0.020	0.080	0.71	18830	1958	45°
	1.00	2	52	0.058	0.030	0.090	0.91	18189	2110	45°
	1.20	2	52	0.062	0.030	0.095	1.07	15469	1918	45°
	1.50	2	52	0.068	0.030	0.105	1.32	12539	1705	45°
	2.00	2	52	0.078	0.040	0.120	1.75	9458	1475	45°
	2.50	2	52	0.088	0.040	0.135	2.15	7699	1355	45°
	3.00	2	52	0.098	0.050	0.150	2.59	6391	1253	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 10xd

X-Generation X

II

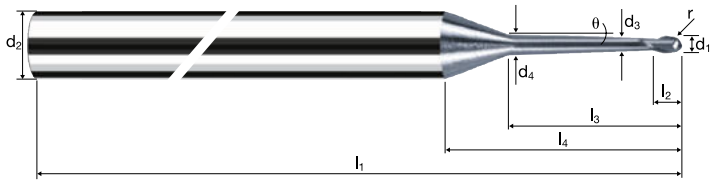
HM
XA

λ 30°
γ -10°

h4

d1

r



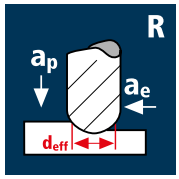
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6768** ø-Code **050**

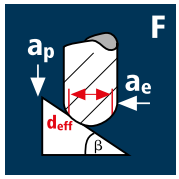
Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL X6768
050	0.50	6.00	0.45	0.59	57	0.40	5.00	15.75	0.9°	0.250	10.3°	2	●
060	0.60	6.00	0.55	0.72	57	0.50	6.00	16.51	0.9°	0.300	9.7°	2	●
080	0.80	6.00	0.75	0.98	61	0.65	8.00	18.03	0.9°	0.400	8.5°	2	●
100	1.00	6.00	0.95	1.24	61	0.80	10.00	19.54	0.9°	0.500	7.6°	2	●
108	1.20	6.00	1.10	1.45	66	1.00	12.00	21.15	0.9°	0.600	6.7°	2	●
120	1.50	6.00	1.40	1.83	66	1.20	15.00	23.44	0.9°	0.750	5.7°	2	●
140	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	1.000	4.3°	2	●
160	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	1.250	3.3°	2	●
180	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	1.500	2.5°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.50	2	21	0.004	0.013	0.075	0.16	41778	341	0.3
	0.60	2	25	0.005	0.015	0.090	0.19	41883	411	0.6
	0.80	2	33	0.007	0.020	0.120	0.25	42017	549	1.3
	1.00	2	41	0.008	0.025	0.150	0.31	42099	688	2.6
	1.20	2	69	0.014	0.060	0.120	0.52	42237	1156	8.3
	1.50	2	77	0.017	0.075	0.150	0.65	37707	1290	14.5
	2.00	2	77	0.023	0.100	0.200	0.87	28172	1285	25.7
	2.50	2	77	0.029	0.125	0.250	1.09	22486	1282	40.1
	3.00	2	77	0.034	0.150	0.300	1.31	18710	1280	57.6
Hardened tool steel 48 - 52 HRC	0.50	2	21	0.004	0.013	0.075	0.16	41778	331	0.3
	0.60	2	25	0.005	0.015	0.090	0.19	41883	399	0.6
	0.80	2	33	0.006	0.020	0.120	0.25	42017	533	1.3
	1.00	2	41	0.008	0.025	0.150	0.31	42099	668	2.5
	1.20	2	61	0.013	0.060	0.120	0.52	37340	992	7.2
	1.50	2	61	0.017	0.075	0.150	0.65	29872	992	11.2
	2.00	2	61	0.022	0.100	0.200	0.87	22318	988	19.8
	2.50	2	61	0.028	0.125	0.250	1.09	17814	986	30.8
	3.00	2	61	0.033	0.150	0.300	1.31	14822	984	44.3
Hardened tool steel 52 - 56 HRC	0.50	2	21	0.004	0.013	0.075	0.16	41778	301	0.3
	0.60	2	25	0.004	0.015	0.090	0.19	41883	362	0.5
	0.80	2	33	0.006	0.020	0.120	0.25	42017	485	1.2
	1.00	2	41	0.007	0.025	0.150	0.31	42099	607	2.3
	1.20	2	53	0.012	0.060	0.120	0.52	32443	784	5.7
	1.50	2	53	0.015	0.075	0.150	0.65	25954	784	8.8
	2.00	2	53	0.020	0.100	0.200	0.87	19391	781	15.6
	2.50	2	53	0.025	0.125	0.250	1.09	15477	779	24.4
	3.00	2	53	0.030	0.150	0.300	1.31	12878	778	35.0
Hardened tool steel 56 - 60 HRC	0.50	2	16	0.002	0.008	0.075	0.12	42441	143	0.1
	0.60	2	19	0.002	0.009	0.090	0.15	40319	163	0.2
	0.80	2	24	0.003	0.012	0.120	0.19	40208	217	0.3
	1.00	2	24	0.003	0.015	0.150	0.24	31831	214	0.5
	1.20	2	24	0.005	0.030	0.120	0.37	20647	214	0.8
	1.50	2	24	0.006	0.038	0.150	0.47	16254	211	1.2
	2.00	2	24	0.009	0.050	0.200	0.62	12322	213	2.2
	2.50	2	24	0.011	0.063	0.250	0.78	9794	212	3.3
	3.00	2	24	0.013	0.075	0.300	0.94	8127	211	4.8

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	107	0.058	0.030	0.090	0.91	37428	4342	45°
	1.20	2	107	0.062	0.030	0.095	1.07	31831	3947	45°
	1.50	2	107	0.068	0.030	0.105	1.32	25802	3509	45°
	2.00	2	107	0.078	0.040	0.120	1.75	19462	3036	45°
	2.50	2	107	0.088	0.040	0.135	2.15	15841	2788	45°
	3.00	2	107	0.098	0.050	0.150	2.59	13150	2577	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	94	0.052	0.020	0.080	0.71	42142	4383	45°
	1.00	2	96	0.058	0.030	0.090	0.91	33580	3895	45°
	1.20	2	96	0.062	0.030	0.095	1.07	28559	3541	45°
	1.50	2	96	0.068	0.030	0.105	1.32	23150	3148	45°
	2.00	2	96	0.078	0.040	0.120	1.75	17462	2724	45°
	2.50	2	96	0.088	0.040	0.135	2.15	14213	2502	45°
	3.00	2	96	0.098	0.050	0.150	2.59	11798	2312	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	70	0.052	0.020	0.080	0.71	31383	3264	45°
	1.00	2	88	0.058	0.030	0.090	0.91	30782	3571	45°
	1.20	2	88	0.062	0.030	0.095	1.07	26179	3246	45°
	1.50	2	88	0.068	0.030	0.105	1.32	21221	2886	45°
	2.00	2	88	0.078	0.040	0.120	1.75	16006	2497	45°
	2.50	2	88	0.088	0.040	0.135	2.15	13028	2293	45°
	3.00	2	88	0.098	0.050	0.150	2.59	10815	2120	45°
Hardened tool steel 56 - 60 HRC	0.50	2	35	0.042	0.020	0.065	0.46	24219	2034	45°
	0.60	2	35	0.046	0.020	0.070	0.55	20256	1864	45°
	0.80	2	35	0.052	0.020	0.080	0.71	15691	1632	45°
	1.00	2	44	0.058	0.030	0.090	0.91	15391	1785	45°
	1.20	2	44	0.062	0.030	0.095	1.07	13089	1623	45°
	1.50	2	44	0.068	0.030	0.105	1.32	10610	1443	45°
	2.00	2	44	0.078	0.040	0.120	1.75	8003	1249	45°
	2.50	2	44	0.088	0.040	0.135	2.15	6514	1147	45°
	3.00	2	44	0.098	0.050	0.150	2.59	5408	1060	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 12xd

X-Generation X

II

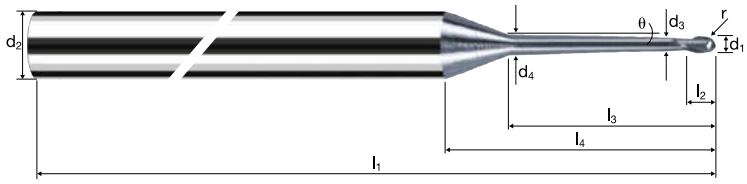
HM
XA

λ **30°**
γ **-10°**

h4

d1

r



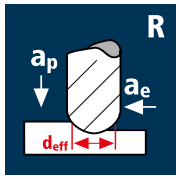
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6770** ø-Code **050**

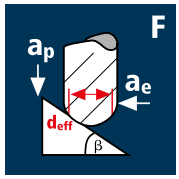
Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL	**X6770**
050	0.50	6.00	0.45	0.63	57	0.40	6.00	16.68	0.9°	0.250	9.9°	2		●
060	0.60	6.00	0.55	0.76	57	0.50	7.20	17.64	0.9°	0.300	9.0°	2		●
080	0.80	6.00	0.75	1.03	61	0.65	9.60	19.53	0.9°	0.400	8.0°	2		●
100	1.00	6.00	0.95	1.30	66	0.80	12.00	21.43	0.9°	0.500	7.0°	2		●
108	1.20	6.00	1.10	1.52	66	1.00	14.40	23.42	0.9°	0.600	6.1°	2		●
120	1.50	6.00	1.40	1.93	69	1.20	18.00	26.25	0.9°	0.750	5.1°	2		●
140	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	1.000	3.9°	2		●
160	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	1.250	2.9°	2		●
180	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	1.500	2.2°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC	0.50	2	21	0.004	0.013	0.075	0.16	41778	324	0.3
	0.60	2	25	0.005	0.015	0.090	0.19	41883	390	0.6
	0.80	2	33	0.006	0.020	0.120	0.25	42017	522	1.3
	1.00	2	41	0.008	0.025	0.150	0.31	42099	654	2.5
	1.20	2	69	0.013	0.060	0.120	0.52	42237	1098	7.9
	1.50	2	69	0.016	0.075	0.150	0.65	33790	1098	12.4
	2.00	2	69	0.022	0.100	0.200	0.87	25245	1094	21.9
	2.50	2	69	0.027	0.125	0.250	1.09	20150	1092	34.1
	3.00	2	69	0.033	0.150	0.300	1.31	16766	1090	49.1
Hardened tool steel 48 - 52 HRC	0.50	2	21	0.004	0.013	0.075	0.16	41778	315	0.3
	0.60	2	25	0.005	0.015	0.090	0.19	41883	379	0.5
	0.80	2	33	0.006	0.020	0.120	0.25	42017	506	1.2
	1.00	2	41	0.008	0.025	0.150	0.31	42099	634	2.4
	1.20	2	55	0.013	0.060	0.120	0.52	33667	850	6.1
	1.50	2	55	0.016	0.075	0.150	0.65	26934	850	9.6
	2.00	2	55	0.021	0.100	0.200	0.87	20123	846	17.0
	2.50	2	55	0.026	0.125	0.250	1.09	16062	845	26.4
	3.00	2	55	0.032	0.150	0.300	1.31	13364	843	38.0
Hardened tool steel 52 - 56 HRC	0.50	2	21	0.003	0.013	0.075	0.16	41778	286	0.3
	0.60	2	25	0.004	0.015	0.090	0.19	41883	344	0.5
	0.80	2	33	0.005	0.020	0.120	0.25	42017	460	1.1
	1.00	2	41	0.007	0.025	0.150	0.31	42099	577	2.2
	1.20	2	48	0.011	0.060	0.120	0.52	29382	674	4.9
	1.50	2	48	0.014	0.075	0.150	0.65	23506	674	7.6
	2.00	2	48	0.019	0.100	0.200	0.87	17562	672	13.5
	2.50	2	48	0.024	0.125	0.250	1.09	14017	670	21.0
	3.00	2	48	0.029	0.150	0.300	1.31	11663	669	30.1
Hardened tool steel 56 - 60 HRC	0.50	2	16	0.002	0.008	0.075	0.12	42441	136	0.1
	0.60	2	19	0.002	0.009	0.090	0.15	40319	155	0.2
	0.80	2	22	0.003	0.012	0.120	0.19	36857	189	0.3
	1.00	2	22	0.003	0.015	0.150	0.24	29178	187	0.4
	1.20	2	22	0.005	0.030	0.120	0.37	18927	187	0.7
	1.50	2	22	0.006	0.038	0.150	0.47	14900	184	1.1
	2.00	2	22	0.008	0.050	0.200	0.62	11295	186	1.9
	2.50	2	22	0.010	0.063	0.250	0.78	8978	184	2.9
	3.00	2	22	0.012	0.075	0.300	0.94	7450	184	4.2

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	72	0.046	0.020	0.070	0.55	41670	3834	45°
	0.80	2	62	0.052	0.020	0.080	0.71	27796	2891	45°
	1.00	2	78	0.058	0.030	0.090	0.91	27284	3165	45°
	1.20	2	78	0.062	0.030	0.095	1.07	23204	2877	45°
	1.50	2	78	0.068	0.030	0.105	1.32	18809	2558	45°
	2.00	2	78	0.078	0.040	0.120	1.75	14188	2213	45°
	2.50	2	78	0.088	0.040	0.135	2.15	11548	2032	45°
	3.00	2	78	0.098	0.050	0.150	2.59	9586	1879	45°
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	56	0.046	0.020	0.070	0.55	32410	2982	45°
	0.80	2	56	0.052	0.020	0.080	0.71	25106	2611	45°
	1.00	2	70	0.058	0.030	0.090	0.91	24485	2840	45°
	1.20	2	70	0.062	0.030	0.095	1.07	20824	2582	45°
	1.50	2	70	0.068	0.030	0.105	1.32	16880	2296	45°
	2.00	2	70	0.078	0.040	0.120	1.75	12732	1986	45°
	2.50	2	70	0.088	0.040	0.135	2.15	10364	1824	45°
	3.00	2	70	0.098	0.050	0.150	2.59	8603	1686	45°
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.042	0.020	0.065	0.46	42211	3546	45°
	0.60	2	51	0.046	0.020	0.070	0.55	29516	2716	45°
	0.80	2	51	0.052	0.020	0.080	0.71	22865	2378	45°
	1.00	2	64	0.058	0.030	0.090	0.91	22387	2597	45°
	1.20	2	64	0.062	0.030	0.095	1.07	19039	2361	45°
	1.50	2	64	0.068	0.030	0.105	1.32	15433	2099	45°
	2.00	2	64	0.078	0.040	0.120	1.75	11641	1816	45°
	2.50	2	64	0.088	0.040	0.135	2.15	9475	1668	45°
	3.00	2	64	0.098	0.050	0.150	2.59	7866	1542	45°
Hardened tool steel 56 - 60 HRC	0.50	2	26	0.042	0.020	0.065	0.46	17991	1511	45°
	0.60	2	26	0.046	0.020	0.070	0.55	15047	1384	45°
	0.80	2	26	0.052	0.020	0.080	0.71	11656	1212	45°
	1.00	2	32	0.058	0.030	0.090	0.91	11193	1298	45°
	1.20	2	32	0.062	0.030	0.095	1.07	9520	1181	45°
	1.50	2	32	0.068	0.030	0.105	1.32	7717	1050	45°
	2.00	2	32	0.078	0.040	0.120	1.75	5821	908	45°
	2.50	2	32	0.088	0.040	0.135	2.15	4738	834	45°
	3.00	2	32	0.098	0.050	0.150	2.59	3933	771	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 15xd

X-Generation X

II

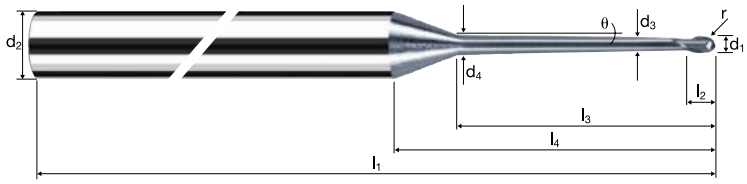
HM XA

λ **30°**
γ **-10°**

h4

d1

r



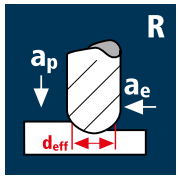
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6772** ø-Code **050**

Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL	X6772
050	0.50	6.00	0.45	0.67	61	0.40	7.50	18.10	0.9°	0.250	9.1°	2		●
060	0.60	6.00	0.55	0.82	61	0.50	9.00	19.32	0.9°	0.300	8.2°	2		●
080	0.80	6.00	0.75	1.11	66	0.65	12.00	21.78	0.9°	0.400	7.1°	2		●
100	1.00	6.00	0.95	1.40	66	0.80	15.00	24.24	0.9°	0.500	6.1°	2		●
108	1.20	6.00	1.10	1.63	69	1.00	18.00	26.81	0.9°	0.600	5.3°	2		●
120	1.50	6.00	1.40	2.07	75	1.20	22.50	30.49	0.9°	0.750	4.5°	2		●
140	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	1.000	3.3°	2		●
160	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	1.250	2.4°	2		●
180	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	1.500	1.8°	2		●

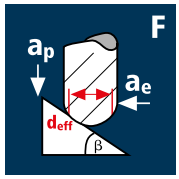
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Hardened tool steel 42 - 48 HRC									
0.50	2	18	0.003	0.010	0.050	0.14	40926	271	0.2
0.60	2	22	0.004	0.012	0.060	0.17	41193	327	0.3
0.80	2	30	0.005	0.016	0.080	0.22	43406	459	0.6
1.00	2	37	0.007	0.020	0.100	0.28	42062	556	1.1
1.50	2	56	0.011	0.038	0.150	0.47	37926	839	4.7
2.00	2	56	0.015	0.050	0.200	0.62	28751	848	8.5
2.50	2	56	0.018	0.063	0.250	0.78	22853	843	13.2
3.00	2	56	0.022	0.075	0.300	0.94	18963	839	18.9
Hardened tool steel 48 - 52 HRC									
0.50	2	18	0.003	0.010	0.050	0.14	40926	263	0.2
0.60	2	22	0.004	0.012	0.060	0.17	41193	317	0.3
0.80	2	30	0.005	0.016	0.080	0.22	43406	446	0.6
1.00	2	37	0.006	0.020	0.100	0.28	42062	540	1.1
1.50	2	44	0.011	0.038	0.150	0.47	29799	640	3.6
2.00	2	44	0.014	0.050	0.200	0.62	22590	647	6.5
2.50	2	44	0.018	0.063	0.250	0.78	17956	643	10.1
3.00	2	44	0.021	0.075	0.300	0.94	14900	640	14.4
Hardened tool steel 52 - 56 HRC									
0.50	2	18	0.003	0.010	0.050	0.14	40926	239	0.1
0.60	2	22	0.004	0.012	0.060	0.17	41193	288	0.2
0.80	2	30	0.005	0.016	0.080	0.22	43406	405	0.5
1.00	2	37	0.006	0.020	0.100	0.28	42062	491	1.0
1.50	2	38	0.010	0.038	0.150	0.47	25736	502	2.9
2.00	2	38	0.013	0.050	0.200	0.62	19509	508	5.1
2.50	2	38	0.016	0.063	0.250	0.78	15507	504	7.9
3.00	2	38	0.020	0.075	0.300	0.94	12868	502	11.3
Hardened tool steel 56 - 60 HRC									
0.50	2	18	0.002	0.010	0.050	0.14	40926	143	0.1
0.60	2	18	0.002	0.012	0.060	0.17	33703	142	0.1
0.80	2	18	0.003	0.016	0.080	0.22	26044	146	0.2
1.00	2	18	0.004	0.020	0.100	0.28	20463	143	0.3
1.50	2	18	0.006	0.038	0.150	0.47	12191	143	0.8
2.00	2	18	0.008	0.050	0.200	0.62	9241	144	1.5
2.50	2	18	0.010	0.063	0.250	0.78	7346	143	2.3
3.00	2	18	0.012	0.075	0.300	0.94	6095	143	3.2

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	23	0.042	0.020	0.065	0.46	15915	1337	45°
0.60	2	23	0.046	0.020	0.070	0.55	13311	1225	45°
0.80	2	23	0.052	0.020	0.080	0.71	10311	1072	45°
1.00	2	29	0.058	0.030	0.090	0.91	10144	1177	45°
1.50	2	29	0.068	0.030	0.105	1.32	6993	951	45°
2.00	2	29	0.078	0.040	0.120	1.75	5275	823	45°
2.50	2	29	0.088	0.040	0.135	2.15	4293	756	45°
3.00	2	29	0.098	0.050	0.150	2.59	3564	699	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	21	0.042	0.020	0.065	0.46	14532	1221	45°
0.60	2	21	0.046	0.020	0.070	0.55	12154	1118	45°
0.80	2	21	0.052	0.020	0.080	0.71	9415	979	45°
1.00	2	26	0.058	0.030	0.090	0.91	9095	1055	45°
1.50	2	26	0.068	0.030	0.105	1.32	6270	853	45°
2.00	2	26	0.078	0.040	0.120	1.75	4729	738	45°
2.50	2	26	0.088	0.040	0.135	2.15	3849	677	45°
3.00	2	26	0.098	0.050	0.150	2.59	3195	626	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	19	0.042	0.020	0.065	0.46	13148	1104	45°
0.60	2	19	0.046	0.020	0.070	0.55	10996	1012	45°
0.80	2	19	0.052	0.020	0.080	0.71	8518	886	45°
1.00	2	24	0.058	0.030	0.090	0.91	8395	974	45°
1.50	2	24	0.068	0.030	0.105	1.32	5787	787	45°
2.00	2	24	0.078	0.040	0.120	1.75	4365	681	45°
2.50	2	24	0.088	0.040	0.135	2.15	3553	625	45°
3.00	2	24	0.098	0.050	0.150	2.59	2950	578	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	10	0.042	0.020	0.065	0.46	6920	581	45°
0.60	2	10	0.046	0.020	0.070	0.55	5787	532	45°
0.80	2	10	0.052	0.020	0.080	0.71	4483	466	45°
1.00	2	12	0.058	0.030	0.090	0.91	4197	487	45°
1.50	2	12	0.068	0.030	0.105	1.32	2894	394	45°
2.00	2	12	0.078	0.040	0.120	1.75	2183	341	45°
2.50	2	12	0.088	0.040	0.135	2.15	1777	313	45°
3.00	2	12	0.098	0.050	0.150	2.59	1475	289	45°

Ball nose end mills MicroX

Shank ø 6mm, conical neck 0.9°, 20xd

X-Generation X

II

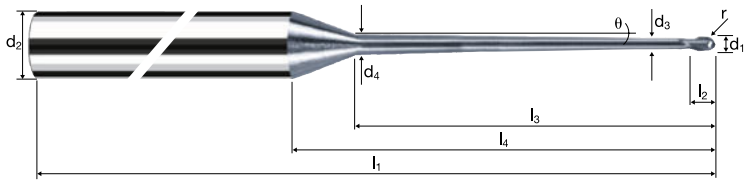
HM
XA

λ 30°
γ -10°

h4

d1

r



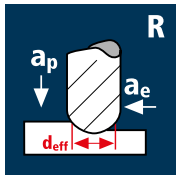
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6774** ø-Code **050**

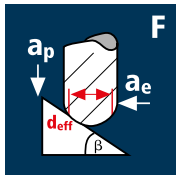
Ø Code	d_1	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r ±0.005	α	z	X-AL	X6774
050	0.50	6.00	0.45	0.75	61	0.40	10.00	20.45	0.9°	0.250	7.8°	2		●
060	0.60	6.00	0.55	0.91	66	0.50	12.00	22.16	0.9°	0.300	7.1°	2		●
080	0.80	6.00	0.75	1.23	69	0.65	16.00	25.56	0.9°	0.400	5.9°	2		●
100	1.00	6.00	0.95	1.55	69	0.80	20.00	28.96	0.9°	0.500	5.0°	2		●
120	1.50	6.00	1.40	2.30	80	1.20	30.00	37.56	0.9°	0.750	3.4°	2		●
140	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	1.000	2.5°	2		●
160	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	1.250	1.8°	2		●
180	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	1.500	1.4°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.20	2	14	0.005	0.016	0.070	0.11	40512	429	0.5
	0.30	2	21	0.008	0.024	0.105	0.16	41778	668	1.7
	0.40	2	34	0.013	0.048	0.120	0.26	41625	1057	6.1
	0.50	2	43	0.016	0.060	0.150	0.32	42773	1360	12.3
	0.60	2	51	0.019	0.072	0.180	0.39	41625	1590	20.6
	0.80	2	69	0.026	0.096	0.240	0.52	42237	2154	49.7
	1.00	2	86	0.032	0.120	0.300	0.65	42115	2679	96.5
	1.50	2	145	0.054	0.240	0.375	1.10	41959	4523	407.1
	2.00	2	160	0.072	0.320	0.500	1.47	34646	4982	797.2
Hardened tool steel 52 - 56 HRC	0.20	2	14	0.003	0.016	0.070	0.11	40512	203	0.3
	0.30	2	21	0.004	0.024	0.105	0.16	41778	309	0.8
	0.40	2	34	0.006	0.048	0.120	0.26	41625	500	2.9
	0.50	2	43	0.008	0.060	0.150	0.32	42773	642	5.8
	0.60	2	51	0.009	0.072	0.180	0.39	41625	749	9.7
	0.80	2	69	0.012	0.096	0.240	0.52	42237	1014	23.4
	1.00	2	86	0.015	0.120	0.300	0.65	42115	1255	45.2
	1.50	2	90	0.025	0.240	0.375	1.10	26044	1318	118.6
	2.00	2	90	0.034	0.320	0.500	1.47	19488	1314	210.2
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	12	0.003	0.010	0.060	0.09	42441	246	0.2
	0.30	2	17	0.004	0.015	0.090	0.13	41625	358	0.5
	0.40	2	23	0.006	0.020	0.120	0.17	43065	500	1.2
	0.50	2	36	0.009	0.040	0.125	0.27	42441	764	3.8
	0.60	2	43	0.011	0.048	0.150	0.33	41477	888	6.4
	0.80	2	57	0.014	0.064	0.200	0.43	42195	1207	15.5
	1.00	2	72	0.018	0.080	0.250	0.54	42441	1519	30.4
	1.50	2	100	0.032	0.180	0.300	0.97	32815	2113	114.1
	2.00	2	100	0.043	0.240	0.400	1.30	24485	2101	201.7
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	12	0.003	0.010	0.060	0.09	42441	255	0.2
	0.30	2	17	0.004	0.015	0.090	0.13	41625	366	0.5
	0.40	2	23	0.006	0.020	0.120	0.17	43065	508	1.2
	0.50	2	36	0.009	0.040	0.125	0.27	42441	781	3.9
	0.60	2	43	0.011	0.048	0.150	0.33	41477	921	6.7
	0.80	2	57	0.015	0.064	0.200	0.43	42195	1249	16.0
	1.00	2	72	0.018	0.080	0.250	0.54	42441	1562	31.3
	1.50	2	75	0.033	0.180	0.300	0.97	24612	1629	88.0
	2.00	2	75	0.044	0.240	0.400	1.30	18364	1623	155.9

Application F

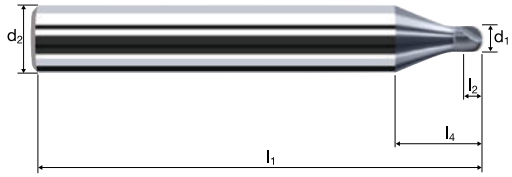


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.30	2	33	0.033	0.010	0.050	0.27	38905	2568	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	156	0.068	0.030	0.105	1.32	37618	5116	45°
	2.00	2	208	0.078	0.040	0.120	1.75	37833	5902	45°
Hardened tool steel 52 - 56 HRC	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.30	2	33	0.033	0.010	0.050	0.27	38905	2568	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
	2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.30	2	33	0.033	0.010	0.050	0.27	38905	2568	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
	2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.30	2	33	0.033	0.010	0.050	0.27	38905	2568	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	108	0.068	0.030	0.105	1.32	26044	3542	45°
	2.00	2	108	0.078	0.040	0.120	1.75	19644	3065	45°

Ball nose end mills Microcut

Shank ø 4mm, 1xd

HM XA	λ 0° γ 0°

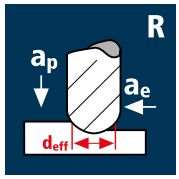


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6832** ø-Code **020**

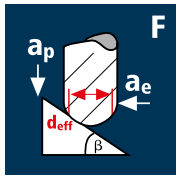
Ø Code	d_1	d_2 h4	l_1	l_2	l_4	r ±0.005	α	z	X-AL	X6832
020	0.20	4.00	50	0.12	11.41	0.100	9.7°	2		●
030	0.30	4.00	50	0.18	11.23	0.150	9.6°	2		●
040	0.40	4.00	50	0.24	11.05	0.200	9.5°	2		●
050	0.50	4.00	50	0.30	7.69	0.250	13.0°	2		●
060	0.60	4.00	50	0.36	7.60	0.300	12.8°	2		●
080	0.80	4.00	50	0.48	7.43	0.400	12.4°	2		●
100	1.00	4.00	50	0.60	7.26	0.500	11.9°	2		●
120	1.50	4.00	50	0.90	6.82	0.750	10.6°	2		●
140	2.00	4.00	50	1.20	6.39	1.000	9.1°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²	0.20	2	14	0.005	0.016	0.070	0.11	40512	429	0.5
	0.40	2	34	0.013	0.048	0.120	0.26	41625	1057	6.1
	0.50	2	43	0.016	0.060	0.150	0.32	42773	1360	12.3
	0.80	2	69	0.026	0.096	0.240	0.52	42237	2154	49.7
	1.00	2	86	0.032	0.120	0.300	0.65	42115	2679	96.5
	1.50	2	145	0.054	0.240	0.375	1.10	41959	4523	407.1
	2.00	2	160	0.072	0.320	0.500	1.47	34646	4982	797.2
	2.50	2	160	0.090	0.400	0.625	1.83	27830	4998	1249.6
	3.00	2	160	0.108	0.480	0.750	2.20	23150	4991	1796.8
Hardened tool steel 52 - 56 HRC	0.20	2	14	0.003	0.016	0.070	0.11	40512	203	0.3
	0.40	2	34	0.006	0.048	0.120	0.26	41625	500	2.9
	0.50	2	43	0.008	0.060	0.150	0.32	42773	642	5.8
	0.80	2	69	0.012	0.096	0.240	0.52	42237	1014	23.4
	1.00	2	86	0.015	0.120	0.300	0.65	42115	1255	45.2
	1.50	2	90	0.025	0.240	0.375	1.10	26044	1318	118.6
	2.00	2	90	0.034	0.320	0.500	1.47	19488	1314	210.2
	2.50	2	90	0.042	0.400	0.625	1.83	15655	1321	330.4
	3.00	2	90	0.051	0.480	0.750	2.20	13022	1318	474.4
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	12	0.003	0.010	0.060	0.09	42441	246	0.2
	0.40	2	23	0.006	0.020	0.120	0.17	43065	500	1.2
	0.50	2	36	0.009	0.040	0.125	0.27	42441	764	3.8
	0.80	2	57	0.014	0.064	0.200	0.43	42195	1207	15.5
	1.00	2	72	0.018	0.080	0.250	0.54	42441	1519	30.4
	1.50	2	100	0.032	0.180	0.300	0.97	32815	2113	114.1
	2.00	2	100	0.043	0.240	0.400	1.30	24485	2101	201.7
	2.50	2	100	0.054	0.300	0.500	1.62	19649	2106	316.0
	3.00	2	100	0.064	0.360	0.600	1.95	16324	2099	453.5
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	12	0.003	0.010	0.060	0.09	42441	255	0.2
	0.40	2	23	0.006	0.020	0.120	0.17	43065	508	1.2
	0.50	2	36	0.009	0.040	0.125	0.27	42441	781	3.9
	0.80	2	57	0.015	0.064	0.200	0.43	42195	1249	16.0
	1.00	2	72	0.018	0.080	0.250	0.54	42441	1562	31.3
	1.50	2	75	0.033	0.180	0.300	0.97	24612	1629	88.0
	2.00	2	75	0.044	0.240	0.400	1.30	18364	1623	155.9
	2.50	2	75	0.055	0.300	0.500	1.62	14737	1627	244.1
	3.00	2	75	0.066	0.360	0.600	1.95	12243	1623	350.7

Application F

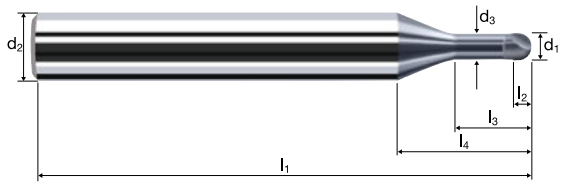


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	156	0.068	0.030	0.105	1.32	37618	5116	45°
	2.00	2	208	0.078	0.040	0.120	1.75	37833	5902	45°
	2.50	2	230	0.088	0.040	0.135	2.15	34052	5993	45°
	3.00	2	230	0.098	0.050	0.150	2.59	28267	5540	45°
Hardened tool steel 52 - 56 HRC	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
	2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
	2.50	2	144	0.088	0.040	0.135	2.15	21319	3752	45°
	3.00	2	144	0.098	0.050	0.150	2.59	17698	3469	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	144	0.068	0.030	0.105	1.32	34725	4723	45°
	2.00	2	144	0.078	0.040	0.120	1.75	26192	4086	45°
	2.50	2	144	0.088	0.040	0.135	2.15	21319	3752	45°
	3.00	2	144	0.098	0.050	0.150	2.59	17698	3469	45°
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	108	0.068	0.030	0.105	1.32	26044	3542	45°
	2.00	2	108	0.078	0.040	0.120	1.75	19644	3065	45°
	2.50	2	108	0.088	0.040	0.135	2.15	15990	2814	45°
	3.00	2	108	0.098	0.050	0.150	2.59	13273	2602	45°

Ball nose end mills Microcut

Shank ø 4mm, cylindrical neck, 3xd

HM XA	λ 0° γ 0°

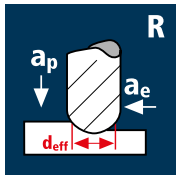


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6836** ø-Code **020**

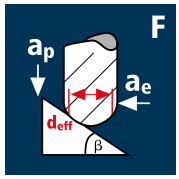
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6836
020	0.20	4.00	0.18	50	0.12	0.60	11.55	0.100	9.5°	2		●
030	0.30	4.00	0.25	50	0.18	0.90	11.47	0.150	9.4°	2		●
040	0.40	4.00	0.35	50	0.24	1.20	11.49	0.200	9.1°	2		●
050	0.50	4.00	0.45	50	0.30	1.50	8.28	0.250	12.1°	2		●
060	0.60	4.00	0.55	50	0.36	1.80	8.40	0.300	11.6°	2		●
080	0.80	4.00	0.75	50	0.48	2.40	8.62	0.400	10.7°	2		●
100	1.00	4.00	0.95	50	0.60	3.00	8.85	0.500	9.8°	2		●
108	1.20	4.00	1.10	50	0.72	3.60	8.96	0.600	9.1°	2		●
120	1.50	4.00	1.40	50	0.90	4.50	9.30	0.750	7.9°	2		●
140	2.00	4.00	1.90	50	1.20	6.00	9.87	1.000	6.0°	2		●
160	2.50	4.00	2.30	50	1.50	7.50	10.34	1.250	4.3°	2		●
180	3.00	4.00	2.80	50	1.80	9.00	10.91	1.500	2.8°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.20	2	12	0.004	0.010	0.070	0.09	42441	314	0.2
	0.40	2	32	0.010	0.040	0.120	0.24	42441	874	4.2
	0.50	2	40	0.013	0.050	0.150	0.30	42441	1095	8.2
	0.80	2	63	0.021	0.080	0.240	0.48	41778	1721	33.1
	1.00	2	79	0.026	0.100	0.300	0.60	41911	2163	64.9
	1.50	2	133	0.043	0.195	0.375	1.01	41916	3638	266.1
	2.00	2	145	0.058	0.260	0.500	1.35	34189	3952	513.8
	2.50	2	145	0.072	0.325	0.625	1.68	27473	3973	807.0
	3.00	2	145	0.087	0.390	0.750	2.02	22849	3967	1160.3
Hardened tool steel 52 - 56 HRC	0.20	2	12	0.003	0.010	0.070	0.09	42441	221	0.2
	0.40	2	32	0.007	0.040	0.120	0.24	42441	611	3.0
	0.50	2	40	0.009	0.050	0.150	0.30	42441	764	5.8
	0.80	2	63	0.014	0.080	0.240	0.48	41778	1203	23.1
	1.00	2	70	0.018	0.100	0.300	0.60	37136	1337	40.1
	1.50	2	70	0.030	0.195	0.375	1.01	22061	1337	97.8
	2.00	2	70	0.040	0.260	0.500	1.35	16505	1334	173.4
	2.50	2	70	0.050	0.325	0.625	1.68	13263	1337	271.6
	3.00	2	70	0.061	0.390	0.750	2.02	11031	1335	390.5
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	9	0.002	0.006	0.060	0.07	40926	188	0.1
	0.40	2	18	0.005	0.012	0.120	0.14	40926	368	0.6
	0.50	2	36	0.009	0.040	0.125	0.27	42441	764	3.8
	0.80	2	57	0.014	0.064	0.200	0.43	42195	1207	15.5
	1.00	2	70	0.018	0.080	0.250	0.54	41262	1477	29.6
	1.50	2	70	0.033	0.195	0.300	1.01	22061	1469	86.0
	2.00	2	70	0.044	0.260	0.400	1.35	16505	1466	152.4
	2.50	2	70	0.056	0.325	0.500	1.68	13263	1472	239.3
	3.00	2	70	0.067	0.390	0.600	2.02	11031	1469	343.8
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	9	0.002	0.006	0.060	0.07	40926	188	0.1
	0.40	2	18	0.005	0.012	0.120	0.14	40926	368	0.6
	0.50	2	36	0.009	0.040	0.125	0.27	42441	764	3.8
	0.80	2	45	0.014	0.064	0.200	0.43	33311	953	12.2
	1.00	2	45	0.018	0.080	0.250	0.54	26526	950	19.0
	1.50	2	45	0.033	0.195	0.300	1.01	14182	945	55.3
	2.00	2	45	0.044	0.260	0.400	1.35	10610	942	98.0
	2.50	2	45	0.056	0.325	0.500	1.68	8526	946	153.8
	3.00	2	45	0.067	0.390	0.600	2.02	7091	945	221.0

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	156	0.068	0.030	0.105	1.32	37618	5116	45°
	2.00	2	207	0.078	0.040	0.120	1.75	37652	5874	45°
	2.50	2	207	0.088	0.040	0.135	2.15	30647	5394	45°
	3.00	2	207	0.098	0.050	0.150	2.59	25440	4986	45°
Hardened tool steel 52 - 56 HRC	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	130	0.068	0.030	0.105	1.32	31349	4264	45°
	2.00	2	130	0.078	0.040	0.120	1.75	23646	3689	45°
	2.50	2	130	0.088	0.040	0.135	2.15	19247	3388	45°
	3.00	2	130	0.098	0.050	0.150	2.59	15977	3132	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.50	2	130	0.068	0.030	0.105	1.32	31349	4264	45°
	2.00	2	130	0.078	0.040	0.120	1.75	23646	3689	45°
	2.50	2	130	0.088	0.040	0.135	2.15	19247	3388	45°
	3.00	2	130	0.098	0.050	0.150	2.59	15977	3132	45°
Titanium alloys > 300 HB [Ti6Al4V]	0.20	2	22	0.026	0.010	0.040	0.19	36857	1917	45°
	0.40	2	42	0.037	0.010	0.057	0.36	37136	2748	45°
	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	97	0.058	0.030	0.090	0.91	33930	3936	45°
	1.50	2	97	0.068	0.030	0.105	1.32	23391	3181	45°
	2.00	2	97	0.078	0.040	0.120	1.75	17643	2752	45°
	2.50	2	97	0.088	0.040	0.135	2.15	14361	2528	45°
	3.00	2	97	0.098	0.050	0.150	2.59	11921	2337	45°

Ball nose end mills Microcut

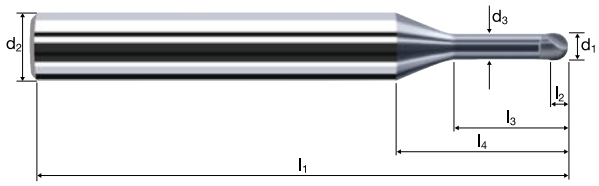
Shank ø 4mm, cylindrical neck, 5xd

HM XA	λ 0° γ 0°

h4

d1

r

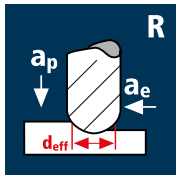


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6840** ø-Code **020**

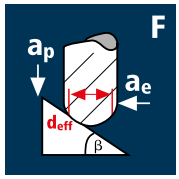
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6840
020	0.20	4.00	0.18	50	0.12	1.00	11.95	0.100	9.2°	2		●
030	0.30	4.00	0.25	50	0.18	1.50	12.07	0.150	8.9°	2		●
040	0.40	4.00	0.35	50	0.24	2.00	12.29	0.200	8.5°	2		●
050	0.50	4.00	0.45	50	0.30	2.50	9.28	0.250	10.9°	2		●
060	0.60	4.00	0.55	50	0.36	3.00	9.60	0.300	10.2°	2		●
080	0.80	4.00	0.75	50	0.48	4.00	10.22	0.400	9.1°	2		●
100	1.00	4.00	0.95	50	0.60	5.00	10.85	0.500	8.1°	2		●
108	1.20	4.00	1.10	50	0.72	6.00	11.36	0.600	7.2°	2		●
120	1.50	4.00	1.40	50	0.90	7.50	12.30	0.750	6.0°	2		●
140	2.00	4.00	1.90	50	1.20	10.00	13.87	1.000	4.3°	2		●
160	2.50	4.00	2.30	50	1.50	12.50	15.34	1.250	3.0°	2		●
180	3.00	4.00	2.80	50	1.80	15.00	16.91	1.500	1.9°	2		●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.50	2	29	0.009	0.025	0.110	0.22	41959	747	2.1
	0.60	2	35	0.011	0.030	0.132	0.26	42849	917	3.7
	0.80	2	46	0.014	0.040	0.176	0.35	41835	1197	8.4
	1.00	2	58	0.018	0.050	0.220	0.44	41959	1502	16.5
	1.20	2	86	0.027	0.096	0.204	0.65	42115	2249	44.1
	1.50	2	107	0.033	0.120	0.255	0.81	42048	2809	86.0
	2.00	2	120	0.045	0.160	0.340	1.09	35043	3119	169.7
	2.50	2	120	0.056	0.200	0.425	1.36	28086	3123	265.5
	3.00	2	120	0.067	0.240	0.510	1.63	23434	3126	382.7
Hardened tool steel 52 - 56 HRC	0.50	2	29	0.006	0.025	0.110	0.22	41959	529	1.5
	0.60	2	35	0.008	0.030	0.132	0.26	42849	651	2.6
	0.80	2	46	0.010	0.040	0.176	0.35	41835	845	6.0
	1.00	2	58	0.013	0.050	0.220	0.44	41959	1057	11.7
	1.20	2	60	0.019	0.096	0.204	0.65	29382	1111	21.8
	1.50	2	60	0.024	0.120	0.255	0.81	23579	1113	34.1
	2.00	2	60	0.032	0.160	0.340	1.09	17522	1104	60.1
	2.50	2	60	0.039	0.200	0.425	1.36	14043	1104	93.8
	3.00	2	60	0.047	0.240	0.510	1.63	11717	1106	135.4
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	29	0.007	0.025	0.110	0.22	41959	546	1.5
	0.60	2	35	0.008	0.030	0.132	0.26	42849	668	2.7
	0.80	2	46	0.011	0.040	0.176	0.35	41835	879	6.2
	1.00	2	58	0.013	0.050	0.220	0.44	41959	1099	12.1
	1.20	2	60	0.020	0.096	0.204	0.65	29382	1146	22.5
	1.50	2	60	0.024	0.120	0.255	0.81	23579	1151	35.2
	2.00	2	60	0.033	0.160	0.340	1.09	17522	1142	62.2
	2.50	2	60	0.041	0.200	0.425	1.36	14043	1143	97.2
	3.00	2	60	0.049	0.240	0.510	1.63	11717	1144	140.0
Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	29	0.007	0.025	0.110	0.22	41959	587	1.6
	0.60	2	35	0.008	0.030	0.132	0.26	42849	720	2.9
	0.80	2	40	0.011	0.040	0.176	0.35	36378	815	5.8
	1.00	2	40	0.014	0.050	0.220	0.44	28937	804	8.9
	1.20	2	40	0.021	0.096	0.204	0.65	19588	815	16.0
	1.50	2	40	0.026	0.120	0.255	0.81	15719	817	25.0
	2.00	2	40	0.035	0.160	0.340	1.09	11681	811	44.1
	2.50	2	40	0.043	0.200	0.425	1.36	9362	813	69.1
	3.00	2	40	0.052	0.240	0.510	1.63	7811	814	99.6

Application F

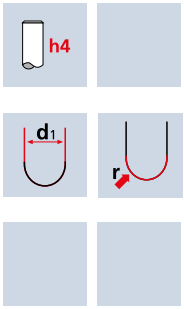


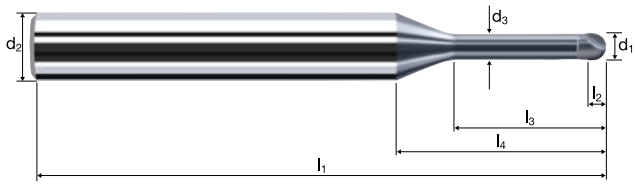
Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.20	2	127	0.062	0.030	0.095	1.07	37781	4685	45°
	1.50	2	156	0.068	0.030	0.105	1.32	37618	5116	45°
	2.00	2	173	0.078	0.040	0.120	1.75	31467	4909	45°
	2.50	2	173	0.088	0.040	0.135	2.15	25613	4508	45°
	3.00	2	173	0.098	0.050	0.150	2.59	21262	4167	45°
Hardened tool steel 52 - 56 HRC	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.20	2	108	0.062	0.030	0.095	1.07	32128	3984	45°
	1.50	2	108	0.068	0.030	0.105	1.32	26044	3542	45°
	2.00	2	108	0.078	0.040	0.120	1.75	19644	3065	45°
	2.50	2	108	0.088	0.040	0.135	2.15	15990	2814	45°
	3.00	2	108	0.098	0.050	0.150	2.59	13273	2602	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
	1.20	2	108	0.062	0.030	0.095	1.07	32128	3984	45°
	1.50	2	108	0.068	0.030	0.105	1.32	26044	3542	45°
	2.00	2	108	0.078	0.040	0.120	1.75	19644	3065	45°
	2.50	2	108	0.088	0.040	0.135	2.15	15990	2814	45°
	3.00	2	108	0.098	0.050	0.150	2.59	13273	2602	45°
Titanium alloys > 300 HB [Ti6Al4V]	0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
	0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
	0.80	2	65	0.052	0.020	0.080	0.71	29141	3031	45°
	1.00	2	81	0.058	0.030	0.090	0.91	28333	3287	45°
	1.20	2	81	0.062	0.030	0.095	1.07	24096	2988	45°
	1.50	2	81	0.068	0.030	0.105	1.32	19533	2657	45°
	2.00	2	81	0.078	0.040	0.120	1.75	14733	2298	45°
	2.50	2	81	0.088	0.040	0.135	2.15	11992	2111	45°
	3.00	2	81	0.098	0.050	0.150	2.59	9955	1951	45°

Ball nose end mills Microcut

Shank ø 4mm, cylindrical neck, 8xd

HM XA	λ 0° γ 0°



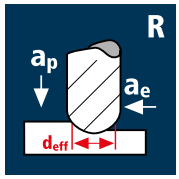


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6844** ø-Code **050**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	**X6844**
050	0.50	4.00	0.45	50	0.30	4.00	10.78	0.250	9.4°	2		●
060	0.60	4.00	0.55	50	0.36	4.80	11.40	0.300	8.7°	2		●
080	0.80	4.00	0.75	50	0.48	6.40	12.62	0.400	7.4°	2		●
100	1.00	4.00	0.95	50	0.60	8.00	13.85	0.500	6.4°	2		●
108	1.20	4.00	1.10	50	0.72	9.60	14.96	0.600	5.5°	2		●
120	1.50	4.00	1.40	50	0.90	12.00	16.80	0.750	4.5°	2		●
140	2.00	4.00	1.90	50	1.20	16.00	19.87	1.000	3.1°	2		●
160	2.50	4.00	2.30	57	1.50	20.00	22.84	1.250	2.1°	2		●
180	3.00	4.00	2.80	57	1.80	24.00	25.91	1.500	1.3°	2		●

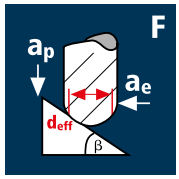
Application



Material

d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min-1]	vf [mm/min]	Q [mm3/min]
Steel 850 - 1100 N/mm²									
0.50	2	26	0.007	0.020	0.100	0.20	41380	596	1.2
0.60	2	31	0.009	0.024	0.120	0.24	41115	715	2.1
0.80	2	41	0.012	0.032	0.160	0.31	42099	977	5.0
1.00	2	52	0.015	0.040	0.200	0.39	42441	1231	9.9
1.50	2	101	0.028	0.105	0.225	0.77	41752	2355	55.7
2.00	2	108	0.038	0.140	0.300	1.02	33703	2541	106.8
2.50	2	108	0.047	0.175	0.375	1.28	26857	2530	166.0
3.00	2	108	0.057	0.210	0.450	1.53	22469	2539	240.0
Hardened tool steel 52 - 56 HRC									
0.50	2	26	0.005	0.020	0.100	0.20	41380	422	0.9
0.60	2	31	0.006	0.024	0.120	0.24	41115	502	1.5
0.80	2	41	0.008	0.032	0.160	0.31	42099	690	3.6
1.00	2	52	0.010	0.040	0.200	0.39	42441	866	7.0
1.50	2	54	0.020	0.105	0.225	0.77	22323	893	21.1
2.00	2	54	0.027	0.140	0.300	1.02	16852	897	37.7
2.50	2	54	0.033	0.175	0.375	1.28	13429	894	58.7
3.00	2	54	0.040	0.210	0.450	1.53	11234	899	85.0
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.50	2	26	0.005	0.020	0.100	0.20	41380	439	0.9
0.60	2	31	0.006	0.024	0.120	0.24	41115	518	1.5
0.80	2	41	0.009	0.032	0.160	0.31	42099	716	3.7
1.00	2	52	0.011	0.040	0.200	0.39	42441	900	7.2
1.50	2	54	0.021	0.105	0.225	0.77	22323	924	21.9
2.00	2	54	0.028	0.140	0.300	1.02	16852	930	39.1
2.50	2	54	0.034	0.175	0.375	1.28	13429	924	60.7
3.00	2	54	0.041	0.210	0.450	1.53	11234	928	87.7
Titanium alloys > 300 HB [Ti6Al4V]									
0.50	2	26	0.006	0.020	0.100	0.20	41380	464	1.0
0.60	2	31	0.007	0.024	0.120	0.24	41115	559	1.6
0.80	2	36	0.009	0.032	0.160	0.31	36965	665	3.4
1.00	2	36	0.011	0.040	0.200	0.39	29382	664	5.3
1.50	2	36	0.022	0.105	0.225	0.77	14882	655	15.5
2.00	2	36	0.029	0.140	0.300	1.02	11234	661	27.8
2.50	2	36	0.037	0.175	0.375	1.28	8952	657	43.1
3.00	2	36	0.044	0.210	0.450	1.53	7490	661	62.5

Application



Material

d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min-1]	vf [mm/min]	β [°]
Steel 850 - 1100 N/mm²									
0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
1.50	2	150	0.068	0.030	0.105	1.32	36172	4919	45°
2.00	2	150	0.078	0.040	0.120	1.75	27284	4256	45°
2.50	2	150	0.088	0.040	0.135	2.15	22208	3909	45°
3.00	2	150	0.098	0.050	0.150	2.59	18435	3613	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
1.00	2	94	0.058	0.030	0.090	0.91	32880	3814	45°
1.50	2	94	0.068	0.030	0.105	1.32	22668	3083	45°
2.00	2	94	0.078	0.040	0.120	1.75	17098	2667	45°
2.50	2	94	0.088	0.040	0.135	2.15	13917	2449	45°
3.00	2	94	0.098	0.050	0.150	2.59	11553	2264	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
0.80	2	85	0.052	0.020	0.080	0.71	38108	3963	45°
1.00	2	94	0.058	0.030	0.090	0.91	32880	3814	45°
1.50	2	94	0.068	0.030	0.105	1.32	22668	3083	45°
2.00	2	94	0.078	0.040	0.120	1.75	17098	2667	45°
2.50	2	94	0.088	0.040	0.135	2.15	13917	2449	45°
3.00	2	94	0.098	0.050	0.150	2.59	11553	2264	45°
Titanium alloys > 300 HB [Ti6Al4V]									
0.50	2	55	0.042	0.020	0.065	0.46	38059	3197	45°
0.60	2	65	0.046	0.020	0.070	0.55	37618	3461	45°
0.80	2	56	0.052	0.020	0.080	0.71	25106	2611	45°
1.00	2	70	0.058	0.030	0.090	0.91	24485	2840	45°
1.50	2	70	0.068	0.030	0.105	1.32	16880	2296	45°
2.00	2	70	0.078	0.040	0.120	1.75	12732	1986	45°
2.50	2	70	0.088	0.040	0.135	2.15	10364	1824	45°
3.00	2	70	0.098	0.050	0.150	2.59	8603	1686	45°

Ball nose end mills Microcut

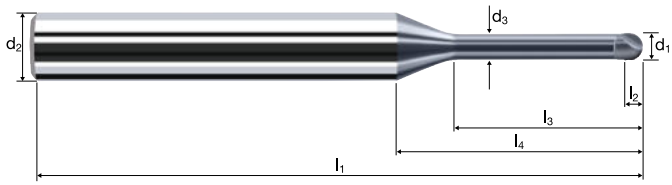
Shank ø 4mm, cylindrical neck, 10xd

HM XA	λ 0° γ 0°

h4

d1

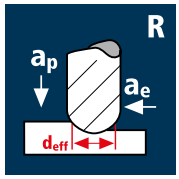
r

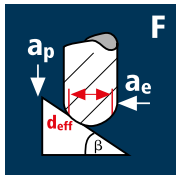


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6846** ø-Code **050**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6846
050	0.50	4.00	0.45	50	0.30	5.00	11.78	0.250	8.6°	2		●
060	0.60	4.00	0.55	50	0.36	6.00	12.60	0.300	7.9°	2		●
080	0.80	4.00	0.75	50	0.48	8.00	14.22	0.400	6.6°	2		●
100	1.00	4.00	0.95	50	0.60	10.00	15.85	0.500	5.6°	2		●
120	1.50	4.00	1.40	50	0.90	15.00	19.80	0.750	3.8°	2		●
140	2.00	4.00	1.90	57	1.20	20.00	23.87	1.000	2.6°	2		●
160	2.50	4.00	2.30	57	1.50	25.00	27.84	1.250	1.7°	2		●
180	3.00	4.00	2.80	61	1.80	30.00	31.91	1.500	1.1°	2		●

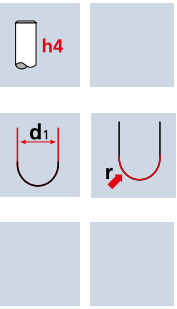
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel 850 - 1100 N/mm²	1.00	2	37	0.010	0.020	0.150	0.28	42062	824	2.5
		1.50	2	78	0.021	0.060	0.150	0.59	42082	1734	15.6
		2.00	2	97	0.028	0.080	0.200	0.78	39585	2177	34.9
		3.00	2	97	0.041	0.120	0.300	1.18	26166	2156	77.6
	Hardened tool steel 52 - 56 HRC	1.00	2	37	0.007	0.020	0.150	0.28	42062	581	1.8
		1.50	2	49	0.015	0.060	0.150	0.59	26436	772	7.0
		2.00	2	49	0.019	0.080	0.200	0.78	19996	776	12.4
		3.00	2	49	0.029	0.120	0.300	1.18	13218	772	27.8
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	37	0.007	0.020	0.150	0.28	42062	606	1.8
		1.50	2	49	0.015	0.060	0.150	0.59	26436	798	7.2
		2.00	2	49	0.020	0.080	0.200	0.78	19996	804	12.9
		3.00	2	49	0.030	0.120	0.300	1.18	13218	798	28.8
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	32	0.008	0.020	0.150	0.28	36378	560	1.7
		1.50	2	32	0.016	0.060	0.150	0.59	17264	556	5.0
		2.00	2	32	0.021	0.080	0.200	0.78	13059	559	9.0
		3.00	2	32	0.032	0.120	0.300	1.18	8632	556	20.0

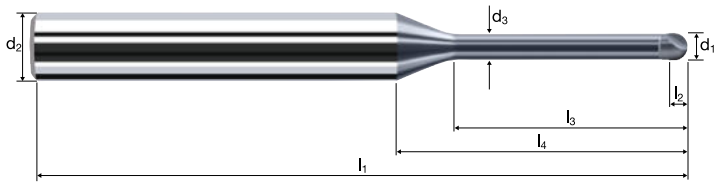
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	1.00	2	108	0.058	0.030	0.090	0.91	37777	4382	45°
		1.50	2	127	0.068	0.030	0.105	1.32	30625	4165	45°
		2.00	2	127	0.078	0.040	0.120	1.75	23100	3604	45°
		3.00	2	127	0.098	0.050	0.150	2.59	15608	3059	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	79	0.058	0.030	0.090	0.91	27633	3205	45°
		1.50	2	79	0.068	0.030	0.105	1.32	19050	2591	45°
		2.00	2	79	0.078	0.040	0.120	1.75	14369	2242	45°
		3.00	2	79	0.098	0.050	0.150	2.59	9709	1903	45°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	79	0.058	0.030	0.090	0.91	27633	3205	45°
		1.50	2	79	0.068	0.030	0.105	1.32	19050	2591	45°
		2.00	2	79	0.078	0.040	0.120	1.75	14369	2242	45°
		3.00	2	79	0.098	0.050	0.150	2.59	9709	1903	45°
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	59	0.058	0.030	0.090	0.91	20638	2394	45°
		1.50	2	59	0.068	0.030	0.105	1.32	14227	1935	45°
		2.00	2	59	0.078	0.040	0.120	1.75	10732	1674	45°
		3.00	2	59	0.098	0.050	0.150	2.59	7251	1421	45°

Ball nose end mills Microcut

Shank ø 4mm, cylindrical neck, 12xd

HM XA	λ 0° γ 0°

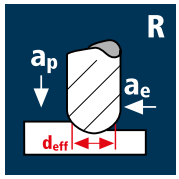


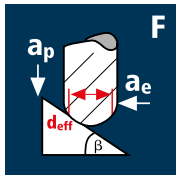


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6847** ø-Code **100**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6847
100	1.00	4.00	0.95	50	0.60	12.00	17.85	0.500	5.0°	2		●
120	1.50	4.00	1.40	57	0.90	18.00	22.80	0.750	3.3°	2		●
140	2.00	4.00	1.90	57	1.20	24.00	27.87	1.000	2.3°	2		●
180	3.00	4.00	2.80	75	1.80	36.00	37.91	1.500	1.0°	2		●

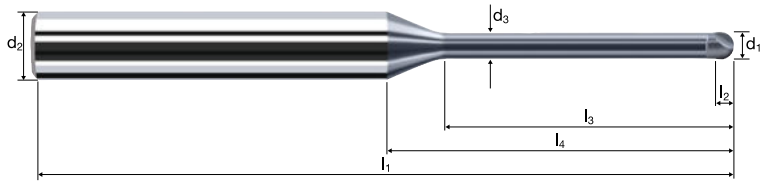
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
	Steel 850 - 1100 N/mm²	1.00	2	37	0.009	0.020	0.150	0.28	42062	782	2.4
		1.50	2	78	0.020	0.060	0.150	0.59	42082	1650	14.9
		2.00	2	87	0.026	0.080	0.200	0.78	35504	1853	29.7
		3.00	2	87	0.039	0.120	0.300	1.18	23469	1840	66.3
	Hardened tool steel 52 - 56 HRC	1.00	2	37	0.007	0.020	0.150	0.28	42062	555	1.7
		1.50	2	44	0.014	0.060	0.150	0.59	23738	655	5.9
		2.00	2	44	0.019	0.080	0.200	0.78	17956	664	10.7
		3.00	2	44	0.028	0.120	0.300	1.18	11869	658	23.7
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	37	0.007	0.020	0.150	0.28	42062	572	1.7
		1.50	2	44	0.014	0.060	0.150	0.59	23738	679	6.1
		2.00	2	44	0.019	0.080	0.200	0.78	17956	686	11.0
		3.00	2	44	0.029	0.120	0.300	1.18	11869	681	24.6
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	29	0.007	0.020	0.150	0.28	32968	481	1.5
		1.50	2	29	0.015	0.060	0.150	0.59	15646	479	4.3
		2.00	2	29	0.020	0.080	0.200	0.78	11835	483	7.8
		3.00	2	29	0.031	0.120	0.300	1.18	7823	479	17.3

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	1.00	2	92	0.058	0.030	0.090	0.91	32181	3733	45°
		1.50	2	92	0.068	0.030	0.105	1.32	22185	3017	45°
		2.00	2	92	0.078	0.040	0.120	1.75	16734	2611	45°
		3.00	2	92	0.098	0.050	0.150	2.59	11307	2216	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	58	0.058	0.030	0.090	0.91	20288	2353	45°
		1.50	2	58	0.068	0.030	0.105	1.32	13986	1902	45°
		2.00	2	58	0.078	0.040	0.120	1.75	10550	1646	45°
		3.00	2	58	0.098	0.050	0.150	2.59	7128	1397	45°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	58	0.058	0.030	0.090	0.91	20288	2353	45°
		1.50	2	58	0.068	0.030	0.105	1.32	13986	1902	45°
		2.00	2	58	0.078	0.040	0.120	1.75	10550	1646	45°
		3.00	2	58	0.098	0.050	0.150	2.59	7128	1397	45°
	Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	43	0.058	0.030	0.090	0.91	15041	1745	45°
		1.50	2	43	0.068	0.030	0.105	1.32	10369	1410	45°
		2.00	2	43	0.078	0.040	0.120	1.75	7821	1220	45°
		3.00	2	43	0.098	0.050	0.150	2.59	5285	1036	45°

Ball nose end mills Microcut

Shank ø 4mm, cylindrical neck, 15xd

HM XA	λ 0° γ 0°

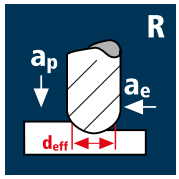


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6848** ø-Code **100**

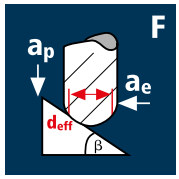
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6848
100	1.00	4.00	0.95	50	0.60	15.00	20.85	0.500	4.3°	2		●
120	1.50	4.00	1.40	57	0.90	22.50	27.30	0.750	2.8°	2		●
140	2.00	4.00	1.90	61	1.20	30.00	33.87	1.000	1.9°	2		●
180	3.00	4.00	2.80	75	1.80	45.00	46.91	1.500	0.8°	2		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm^2	1.00	2	32	0.008	0.015	0.100	0.24	42441	654	1.0
	1.50	2	55	0.013	0.030	0.150	0.42	41683	1109	5.0
	2.00	2	70	0.018	0.040	0.200	0.56	39789	1409	11.3
	3.00	2	70	0.027	0.060	0.300	0.84	26526	1411	25.4
Hardened tool steel 52 - 56 HRC	1.00	2	32	0.005	0.015	0.100	0.24	42441	458	0.7
	1.50	2	35	0.009	0.030	0.150	0.42	26526	499	2.3
	2.00	2	35	0.013	0.040	0.200	0.56	19894	497	4.0
	3.00	2	35	0.019	0.060	0.300	0.84	13263	499	9.0
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	32	0.006	0.015	0.100	0.24	42441	475	0.7
	1.50	2	35	0.010	0.030	0.150	0.42	26526	515	2.3
	2.00	2	35	0.013	0.040	0.200	0.56	19894	517	4.2
	3.00	2	35	0.019	0.060	0.300	0.84	13263	515	9.3
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	23	0.006	0.015	0.100	0.24	30505	366	0.6
	1.50	2	23	0.010	0.030	0.150	0.42	17431	363	1.7
	2.00	2	23	0.014	0.040	0.200	0.56	13073	361	2.9
	3.00	2	23	0.021	0.060	0.300	0.84	8716	361	6.5

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm^2	1.00	2	35	0.058	0.030	0.090	0.91	12243	1420	45°
	1.50	2	35	0.068	0.030	0.105	1.32	8440	1148	45°
	2.00	2	35	0.078	0.040	0.120	1.75	6366	993	45°
	3.00	2	35	0.098	0.050	0.150	2.59	4301	843	45°
Hardened tool steel 52 - 56 HRC	1.00	2	22	0.058	0.030	0.090	0.91	7695	893	45°
	1.50	2	22	0.068	0.030	0.105	1.32	5305	722	45°
	2.00	2	22	0.078	0.040	0.120	1.75	4002	624	45°
	3.00	2	22	0.098	0.050	0.150	2.59	2704	530	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	22	0.058	0.030	0.090	0.91	7695	893	45°
	1.50	2	22	0.068	0.030	0.105	1.32	5305	722	45°
	2.00	2	22	0.078	0.040	0.120	1.75	4002	624	45°
	3.00	2	22	0.098	0.050	0.150	2.59	2704	530	45°
Titanium alloys > 300 HB [Ti6Al4V]	1.00	2	16	0.058	0.030	0.090	0.91	5597	649	45°
	1.50	2	16	0.068	0.030	0.105	1.32	3858	525	45°
	2.00	2	16	0.078	0.040	0.120	1.75	2910	454	45°
	3.00	2	16	0.098	0.050	0.150	2.59	1966	385	45°

Ball nose end mills Microcut

Shank ø 4mm, cylindrical neck, 20xd

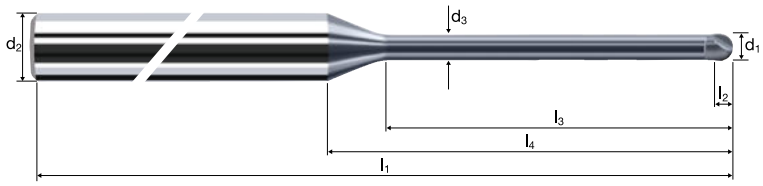
HM
XA

λ 0°
γ 0°

h4

d1

r

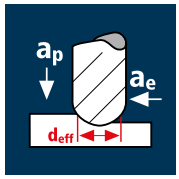


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6849** ø-Code **100**

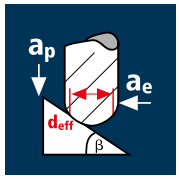
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	X-AL	X6849
100	1.00	4.00	0.95	57	0.60	20.00	25.85	0.500	3.5°	2		●
120	1.50	4.00	1.40	66	0.90	30.00	34.80	0.750	2.3°	2		●
140	2.00	4.00	1.90	75	1.20	40.00	43.87	1.000	1.5°	2		●
180	3.00	4.00	2.80	100	1.80	60.00	61.91	1.500	0.7°	2		●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.30	2	180	0.010	0.020	0.060	0.15	60000	1200	1.4
	0.50	2	180	0.018	0.040	0.100	0.27	60000	2160	8.6
	0.80	2	180	0.028	0.060	0.160	0.42	60000	3360	32.3
	1.00	2	180	0.036	0.080	0.200	0.54	60000	4320	69.1
	1.20	2	180	0.042	0.100	0.240	0.66	60000	5040	121.0
	1.50	2	180	0.054	0.120	0.300	0.81	60000	6480	233.3
	2.00	2	180	0.072	0.160	0.400	1.09	52565	7569	484.4
	2.50	2	180	0.090	0.200	0.500	1.36	42129	7583	758.3
	3.00	2	180	0.108	0.240	0.600	1.63	35151	7593	1093.3
Steel 1100 - 1300 N/mm²	0.30	2	160	0.010	0.020	0.060	0.15	60000	1200	1.4
	0.50	2	160	0.016	0.040	0.100	0.27	60000	1920	7.7
	0.80	2	160	0.026	0.060	0.160	0.42	60000	3120	30.0
	1.00	2	160	0.032	0.080	0.200	0.54	60000	3840	61.4
	1.20	2	160	0.038	0.100	0.240	0.66	60000	4560	109.4
	1.50	2	160	0.048	0.120	0.300	0.81	60000	5760	207.4
	2.00	2	160	0.064	0.160	0.400	1.09	46724	5981	382.8
	2.50	2	160	0.082	0.200	0.500	1.36	37448	6142	614.2
	3.00	2	160	0.098	0.240	0.600	1.63	31245	6124	881.9
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.30	2	80	0.010	0.020	0.060	0.15	60000	1200	1.4
	0.50	2	80	0.016	0.040	0.100	0.27	60000	1920	7.7
	0.80	2	80	0.026	0.060	0.160	0.42	60000	3120	30.0
	1.00	2	80	0.032	0.080	0.200	0.54	47157	3018	48.3
	1.20	2	80	0.038	0.100	0.240	0.66	38583	2932	70.4
	1.50	2	80	0.048	0.120	0.300	0.81	31438	3018	108.6
	2.00	2	80	0.064	0.160	0.400	1.09	23362	2990	191.4
	2.50	2	80	0.082	0.200	0.500	1.36	18724	3071	307.1
	3.00	2	80	0.098	0.240	0.600	1.63	15623	3062	440.9
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	60	0.008	0.020	0.060	0.15	60000	960	1.2
	0.50	2	60	0.012	0.040	0.100	0.27	60000	1440	5.8
	0.80	2	60	0.020	0.060	0.160	0.42	45473	1819	17.5
	1.00	2	60	0.026	0.080	0.200	0.54	35368	1839	29.4
	1.20	2	60	0.030	0.100	0.240	0.66	28937	1736	41.7
	1.50	2	60	0.038	0.120	0.300	0.81	23579	1792	64.5
	2.00	2	60	0.050	0.160	0.400	1.09	17522	1752	112.1
	2.50	2	60	0.064	0.200	0.500	1.36	14043	1798	179.8
	3.00	2	60	0.076	0.240	0.600	1.63	11717	1781	256.5

Application

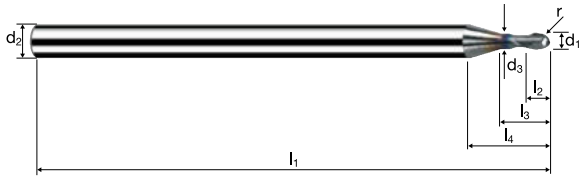


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.30	2	300	0.012	0.012	0.012	0.28	60000	1440	45°
	0.50	2	300	0.020	0.022	0.022	0.47	60000	2400	45°
	0.80	2	300	0.022	0.034	0.034	0.75	60000	2640	45°
	1.00	2	300	0.028	0.042	0.042	0.93	60000	3360	45°
	1.20	2	300	0.030	0.050	0.050	1.12	60000	3600	45°
	1.50	2	300	0.034	0.064	0.064	1.40	60000	4080	45°
	2.00	2	300	0.038	0.084	0.084	1.86	51340	3902	45°
	2.50	2	300	0.040	0.106	0.106	2.33	40984	3279	45°
	3.00	2	300	0.046	0.126	0.126	2.79	34227	3149	45°
Steel 1100 - 1300 N/mm²	0.30	2	250	0.010	0.012	0.012	0.28	60000	1200	45°
	0.50	2	250	0.018	0.022	0.022	0.47	60000	2160	45°
	0.80	2	250	0.020	0.034	0.034	0.75	60000	2400	45°
	1.00	2	250	0.026	0.042	0.042	0.93	60000	3120	45°
	1.20	2	250	0.028	0.050	0.050	1.12	60000	3360	45°
	1.50	2	250	0.030	0.064	0.064	1.40	56841	3411	45°
	2.00	2	250	0.034	0.084	0.084	1.86	42784	2909	45°
	2.50	2	250	0.036	0.106	0.106	2.33	34153	2459	45°
	3.00	2	250	0.042	0.126	0.126	2.79	28522	2396	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.30	2	120	0.010	0.012	0.012	0.28	60000	1200	45°
	0.50	2	120	0.016	0.022	0.022	0.47	60000	1920	45°
	0.80	2	120	0.018	0.034	0.034	0.75	50930	1834	45°
	1.00	2	120	0.022	0.042	0.042	0.93	41072	1807	45°
	1.20	2	120	0.024	0.050	0.050	1.12	34105	1637	45°
	1.50	2	120	0.028	0.064	0.064	1.40	27284	1528	45°
	2.00	2	120	0.030	0.084	0.084	1.86	20536	1232	45°
	2.50	2	120	0.032	0.106	0.106	2.33	16394	1049	45°
	3.00	2	120	0.036	0.126	0.126	2.79	13691	986	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.30	2	100	0.008	0.012	0.012	0.28	60000	960	45°
	0.50	2	100	0.014	0.022	0.022	0.47	60000	1680	45°
	0.80	2	100	0.016	0.034	0.034	0.75	42441	1358	45°
	1.00	2	100	0.020	0.042	0.042	0.93	34227	1369	45°
	1.20	2	100	0.022	0.050	0.050	1.12	28421	1251	45°
	1.50	2	100	0.024	0.064	0.064	1.40	22736	1091	45°
	2.00	2	100	0.026	0.084	0.084	1.86	17113	890	45°
	2.50	2	100	0.028	0.106	0.106	2.33	13661	765	45°
	3.00	2	100	0.032	0.126	0.126	2.79	11409	730	45°

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 3xd

HM MG10	λ 30° γ 5°



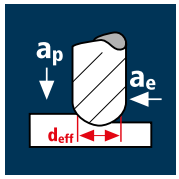
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5782** ø-Code **020**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO **M5782**
020	0.20	3.00	0.18	40	0.24	0.60	8.86	0.100	9.4°	2	●
030	0.30	3.00	0.25	40	0.36	0.90	8.96	0.150	9.0°	2	●
040	0.40	3.00	0.35	40	0.48	1.20	8.98	0.200	8.7°	2	●
050	0.50	3.00	0.45	40	0.60	1.50	6.65	0.250	11.8°	2	●
060	0.60	3.00	0.55	40	0.72	1.80	6.77	0.300	11.2°	2	●
080	0.80	3.00	0.75	40	0.96	2.40	6.99	0.400	10.1°	2	●
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.500	9.0°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.600	7.9°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.750	6.5°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	1.000	4.1°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	1.250	2.0°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	1.500	0.0°	2	●

Application



Material

Steel
850 - 1100 N/mm²

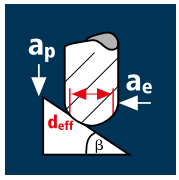
Steel
1100 - 1300 N/mm²

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
0.50	2	180	0.018	0.040	0.100	0.27	60000	2160	8.6
0.60	2	180	0.022	0.040	0.120	0.30	60000	2640	12.7
0.80	2	180	0.028	0.060	0.160	0.42	60000	3360	32.3
1.00	2	180	0.036	0.070	0.200	0.51	60000	4320	60.5
1.20	2	180	0.042	0.080	0.240	0.60	60000	5040	96.8
1.50	2	180	0.054	0.110	0.300	0.78	60000	6480	213.8
2.00	2	180	0.072	0.140	0.400	1.02	56172	8089	453.0
2.50	2	180	0.090	0.180	0.500	1.29	44415	7995	719.5
3.00	2	180	0.108	0.210	0.600	1.53	37448	8089	1019.2
0.50	2	160	0.016	0.040	0.100	0.27	60000	1920	7.7
0.60	2	160	0.020	0.040	0.120	0.30	60000	2400	11.5
0.80	2	160	0.026	0.060	0.160	0.42	60000	3120	30.0
1.00	2	160	0.032	0.070	0.200	0.51	60000	3840	53.8
1.20	2	160	0.038	0.080	0.240	0.60	60000	4560	87.6
1.50	2	160	0.048	0.110	0.300	0.78	60000	5760	190.1
2.00	2	160	0.064	0.140	0.400	1.02	49931	6391	357.9
2.50	2	160	0.082	0.180	0.500	1.29	39480	6475	582.7
3.00	2	160	0.098	0.210	0.600	1.53	33287	6524	822.1
0.50	2	80	0.016	0.040	0.100	0.27	60000	1920	7.7
0.60	2	80	0.020	0.040	0.120	0.30	60000	2400	11.5
0.80	2	80	0.026	0.060	0.160	0.42	60000	3120	30.0
1.00	2	80	0.032	0.070	0.200	0.51	49931	3196	44.7
1.20	2	80	0.038	0.080	0.240	0.60	42441	3226	61.9
1.50	2	80	0.048	0.110	0.300	0.78	32647	3134	103.4
2.00	2	80	0.064	0.140	0.400	1.02	24965	3196	178.9
2.50	2	80	0.082	0.180	0.500	1.29	19740	3237	291.4
3.00	2	80	0.098	0.210	0.600	1.53	16644	3262	411.0
0.50	2	60	0.012	0.040	0.100	0.27	60000	1440	5.8
0.60	2	60	0.016	0.040	0.120	0.30	60000	1920	9.2
0.80	2	60	0.020	0.060	0.160	0.42	45473	1819	17.5
1.00	2	60	0.026	0.070	0.200	0.51	37448	1947	27.3
1.20	2	60	0.030	0.080	0.240	0.60	31831	1910	36.7
1.50	2	60	0.038	0.110	0.300	0.78	24485	1861	61.4
2.00	2	60	0.050	0.140	0.400	1.02	18724	1872	104.9
2.50	2	60	0.064	0.180	0.500	1.29	14805	1895	170.6
3.00	2	60	0.076	0.210	0.600	1.53	12483	1897	239.1

Application



Material

Steel
850 - 1100 N/mm²

Steel
1100 - 1300 N/mm²

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

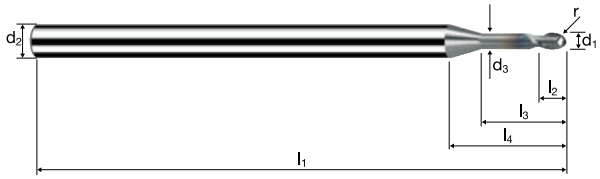
Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.50	2	300	0.014	0.020	0.020	0.46	60000	1680	45°
0.60	2	300	0.016	0.024	0.024	0.56	60000	1920	45°
0.80	2	300	0.018	0.032	0.032	0.74	60000	2160	45°
1.00	2	300	0.022	0.040	0.040	0.93	60000	2640	45°
1.20	2	300	0.024	0.048	0.048	1.11	60000	2880	45°
1.50	2	300	0.028	0.060	0.060	1.39	60000	3360	45°
2.00	2	300	0.030	0.080	0.080	1.86	51340	3080	45°
2.50	2	300	0.032	0.100	0.100	2.32	41161	2634	45°
3.00	2	300	0.036	0.120	0.120	2.78	34350	2473	45°
0.50	2	250	0.012	0.008	0.008	0.43	60000	1440	45°
0.60	2	250	0.014	0.020	0.020	0.55	60000	1680	45°
0.80	2	250	0.016	0.032	0.032	0.74	60000	1920	45°
1.00	2	250	0.020	0.040	0.040	0.93	60000	2400	45°
1.20	2	250	0.022	0.048	0.048	1.11	60000	2640	45°
1.50	2	250	0.026	0.060	0.060	1.39	57250	2977	45°
2.00	2	250	0.028	0.080	0.080	1.86	42784	2396	45°
2.50	2	250	0.028	0.100	0.100	2.32	34301	1921	45°
3.00	2	250	0.032	0.120	0.120	2.78	28625	1832	45°
0.50	2	120	0.012	0.008	0.008	0.43	60000	1440	45°
0.60	2	120	0.012	0.020	0.020	0.55	60000	1440	45°
0.80	2	120	0.014	0.032	0.032	0.74	51618	1445	45°
1.00	2	120	0.018	0.040	0.040	0.93	41072	1479	45°
1.20	2	120	0.020	0.048	0.048	1.11	34412	1377	45°
1.50	2	120	0.022	0.060	0.060	1.39	27480	1209	45°
2.00	2	120	0.024	0.080	0.080	1.86	20536	986	45°
2.50	2	120	0.026	0.100	0.100	2.32	16464	856	45°
3.00	2	120	0.028	0.120	0.120	2.78	13740	769	45°
0.50	2	100	0.010	0.008	0.008	0.43	60000	1200	45°
0.60	2	100	0.012	0.020	0.020	0.55	57875	1389	45°
0.80	2	100	0.012	0.032	0.032	0.74	43015	1032	45°
1.00	2	100	0.016	0.040	0.040	0.93	34227	1095	45°
1.20	2	100	0.016	0.048	0.048	1.11	28677	918	45°
1.50	2	100	0.020	0.060	0.060	1.39	22900	916	45°
2.00	2	100	0.022	0.080	0.080	1.86	17113	753	45°
2.50	2	100	0.022	0.100	0.100	2.32	13720	604	45°
3.00	2	100	0.026	0.120	0.120	2.78	11450	595	45°

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 30° γ 5°



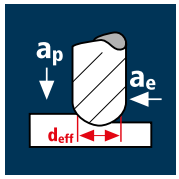
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5784** ø-Code **050**

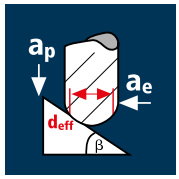
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5784
050	0.50	3.00	0.45	40	0.60	2.50	7.65	0.250	10.1°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	0.300	9.4°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	0.350	8.7°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	0.400	8.0°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.450	7.4°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.500	6.9°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.600	5.8°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.750	4.4°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.900	3.3°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	1.000	2.6°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	1.150	1.7°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	1.250	1.2°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	1.400	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	1.500	0.0°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel 850 - 1100 N/mm²	0.50	2	180	0.018	0.030	0.100	0.24	60000	2160	6.5
	0.60	2	180	0.022	0.030	0.120	0.26	60000	2640	9.5
	0.80	2	180	0.028	0.040	0.160	0.35	60000	3360	21.5
	1.00	2	180	0.036	0.050	0.200	0.44	60000	4320	43.2
	1.20	2	180	0.042	0.060	0.240	0.52	60000	5040	72.6
	1.50	2	180	0.054	0.080	0.300	0.67	60000	6480	155.5
	2.00	2	180	0.072	0.100	0.400	0.87	60000	8640	345.6
	2.50	2	180	0.090	0.130	0.500	1.11	51618	9291	603.9
	3.00	2	180	0.108	0.150	0.600	1.31	43737	9447	850.2
Steel 1100 - 1300 N/mm²	0.50	2	160	0.016	0.030	0.100	0.24	60000	1920	5.8
	0.60	2	160	0.020	0.030	0.120	0.26	60000	2400	8.6
	0.80	2	160	0.026	0.040	0.160	0.35	60000	3120	20.0
	1.00	2	160	0.032	0.050	0.200	0.44	60000	3840	38.4
	1.20	2	160	0.038	0.060	0.240	0.52	60000	4560	65.7
	1.50	2	160	0.048	0.080	0.300	0.67	60000	5760	138.2
	2.00	2	160	0.064	0.100	0.400	0.87	58540	7493	299.7
	2.50	2	160	0.082	0.130	0.500	1.11	45883	7525	489.1
	3.00	2	160	0.098	0.150	0.600	1.31	38878	7620	685.8
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	80	0.016	0.030	0.100	0.24	60000	1920	5.8
	0.60	2	80	0.020	0.030	0.120	0.26	60000	2400	8.6
	0.80	2	80	0.026	0.040	0.160	0.35	60000	3120	20.0
	1.00	2	80	0.032	0.050	0.200	0.44	57875	3704	37.0
	1.20	2	80	0.038	0.060	0.240	0.52	48971	3722	53.6
	1.50	2	80	0.048	0.080	0.300	0.67	38007	3649	87.6
	2.00	2	80	0.064	0.100	0.400	0.87	29270	3747	149.9
	2.50	2	80	0.082	0.130	0.500	1.11	22941	3762	244.5
	3.00	2	80	0.098	0.150	0.600	1.31	19439	3810	342.9
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	60	0.012	0.030	0.100	0.24	60000	1440	4.3
	0.60	2	60	0.016	0.030	0.120	0.26	60000	1920	6.9
	0.80	2	60	0.020	0.040	0.160	0.35	54567	2183	14.0
	1.00	2	60	0.026	0.050	0.200	0.44	43406	2257	22.6
	1.20	2	60	0.030	0.060	0.240	0.52	36728	2204	31.7
	1.50	2	60	0.038	0.080	0.300	0.67	28505	2166	52.0
	2.00	2	60	0.050	0.100	0.400	0.87	21952	2195	87.8
	2.50	2	60	0.064	0.130	0.500	1.11	17206	2202	143.2
	3.00	2	60	0.076	0.150	0.600	1.31	14579	2216	199.4

Application

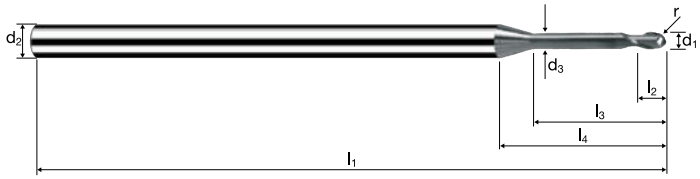


Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.50	2	300	0.014	0.020	0.020	0.46	60000	1680	45°
	0.60	2	300	0.016	0.022	0.022	0.55	60000	1920	45°
	0.80	2	300	0.018	0.030	0.030	0.74	60000	2160	45°
	1.00	2	300	0.022	0.038	0.038	0.92	60000	2640	45°
	1.20	2	300	0.024	0.046	0.046	1.11	60000	2880	45°
	1.50	2	300	0.028	0.058	0.058	1.39	60000	3360	45°
	2.00	2	300	0.030	0.076	0.076	1.85	51618	3097	45°
	2.50	2	300	0.032	0.096	0.096	2.31	41339	2646	45°
	3.00	2	300	0.036	0.114	0.114	2.77	34474	2482	45°
Steel 1100 - 1300 N/mm²	0.50	2	250	0.012	0.020	0.020	0.46	60000	1440	45°
	0.60	2	250	0.014	0.022	0.022	0.55	60000	1680	45°
	0.80	2	250	0.016	0.030	0.030	0.74	60000	1920	45°
	1.00	2	250	0.020	0.038	0.038	0.92	60000	2400	45°
	1.20	2	250	0.022	0.046	0.046	1.11	60000	2640	45°
	1.50	2	250	0.026	0.058	0.058	1.39	57250	2977	45°
	2.00	2	250	0.028	0.076	0.076	1.85	43015	2409	45°
	2.50	2	250	0.028	0.096	0.096	2.31	34449	1929	45°
	3.00	2	250	0.032	0.114	0.114	2.77	28728	1839	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.50	2	120	0.012	0.020	0.020	0.46	60000	1440	45°
	0.60	2	120	0.012	0.022	0.022	0.55	60000	1440	45°
	0.80	2	120	0.014	0.030	0.030	0.74	51618	1445	45°
	1.00	2	120	0.018	0.038	0.038	0.92	41519	1495	45°
	1.20	2	120	0.020	0.046	0.046	1.11	34412	1377	45°
	1.50	2	120	0.022	0.058	0.058	1.39	27480	1209	45°
	2.00	2	120	0.024	0.076	0.076	1.85	20647	991	45°
	2.50	2	120	0.026	0.096	0.096	2.31	16536	860	45°
	3.00	2	120	0.028	0.114	0.114	2.77	13790	772	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.50	2	100	0.010	0.020	0.020	0.46	60000	1200	45°
	0.60	2	100	0.012	0.022	0.022	0.55	57875	1389	45°
	0.80	2	100	0.012	0.030	0.030	0.74	43015	1032	45°
	1.00	2	100	0.016	0.038	0.038	0.92	34599	1107	45°
	1.20	2	100	0.016	0.046	0.046	1.11	28677	918	45°
	1.50	2	100	0.020	0.058	0.058	1.39	22900	916	45°
	2.00	2	100	0.022	0.076	0.076	1.85	17206	757	45°
	2.50	2	100	0.022	0.096	0.096	2.31	13780	606	45°
	3.00	2	100	0.026	0.114	0.114	2.77	11491	598	45°

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 30° γ 5°



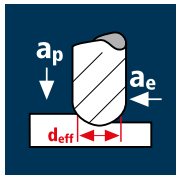
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5786** ø-Code **050**

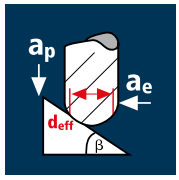
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	MICRO M5786
050	0.50	3.00	0.45	40	0.60	4.00	9.15	0.250	8.4°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	0.300	7.6°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	0.400	6.2°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.500	5.1°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.600	4.2°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.750	3.1°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	1.000	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	1.250	0.8°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	1.500	0.0°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	Q [mm^3/min]
Steel < 850 N/mm²	0.50	2	120	0.014	0.030	0.100	0.24	60000	1680	5.0
	0.60	2	120	0.020	0.040	0.140	0.30	60000	2400	13.4
	0.80	2	120	0.022	0.050	0.160	0.39	60000	2640	21.1
	1.00	2	120	0.028	0.060	0.200	0.47	60000	3360	40.3
	1.20	2	120	0.034	0.070	0.240	0.56	60000	4080	68.5
	1.50	2	120	0.042	0.090	0.300	0.71	53799	4519	122.0
	2.00	2	120	0.058	0.120	0.400	0.95	40208	4664	223.9
	2.50	2	120	0.072	0.150	0.500	1.19	32098	4622	346.7
	3.00	2	120	0.086	0.180	0.600	1.42	26899	4627	499.7
Steel 850 - 1100 N/mm²	0.50	2	80	0.012	0.030	0.100	0.24	60000	1440	4.3
	0.60	2	80	0.016	0.040	0.120	0.30	60000	1920	9.2
	0.80	2	80	0.020	0.050	0.160	0.39	60000	2400	19.2
	1.00	2	80	0.026	0.060	0.200	0.47	54180	2817	33.8
	1.20	2	80	0.030	0.070	0.240	0.56	45473	2728	45.8
	1.50	2	80	0.038	0.090	0.300	0.71	35866	2726	73.6
	2.00	2	80	0.052	0.120	0.400	0.95	26805	2788	133.8
	2.50	2	80	0.064	0.150	0.500	1.19	21399	2739	205.4
	3.00	2	80	0.078	0.180	0.600	1.42	17933	2798	302.1
Unalloyed copper	0.50	2	230	0.016	0.030	0.100	0.24	60000	1920	5.8
	0.60	2	230	0.020	0.040	0.120	0.30	60000	2400	11.5
	0.80	2	230	0.024	0.050	0.160	0.39	60000	2880	23.0
	1.00	2	230	0.030	0.060	0.200	0.47	60000	3600	43.2
	1.20	2	230	0.038	0.070	0.240	0.56	60000	4560	76.6
	1.50	2	230	0.046	0.090	0.300	0.71	60000	5520	149.0
	2.00	2	230	0.064	0.120	0.400	0.95	60000	7680	368.6
	2.50	2	230	0.080	0.150	0.500	1.19	60000	9600	720.0
	3.00	2	230	0.094	0.180	0.600	1.42	51557	9693	1046.8
Wrought aluminium Construction aluminium	0.50	2	250	0.016	0.030	0.100	0.24	60000	1920	5.8
	0.60	2	250	0.020	0.040	0.120	0.30	60000	2400	11.5
	0.80	2	250	0.024	0.050	0.160	0.39	60000	2880	23.0
	1.00	2	250	0.030	0.060	0.200	0.47	60000	3600	43.2
	1.20	2	250	0.038	0.070	0.240	0.56	60000	4560	76.6
	1.50	2	250	0.046	0.090	0.300	0.71	60000	5520	149.0
	2.00	2	250	0.064	0.120	0.400	0.95	60000	7680	368.6
	2.50	2	250	0.080	0.150	0.500	1.19	60000	9600	720.0
	3.00	2	250	0.094	0.180	0.600	1.42	56040	10536	1137.8

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	0.50	2	220	0.016	0.020	0.020	0.46	60000	1920	45°
	0.60	2	220	0.018	0.028	0.028	0.56	60000	2160	45°
	0.80	2	220	0.020	0.032	0.032	0.74	60000	2400	45°
	1.00	2	220	0.022	0.040	0.040	0.93	60000	2640	45°
	1.20	2	220	0.024	0.048	0.048	1.11	60000	2880	45°
	1.50	2	220	0.028	0.060	0.060	1.39	50380	2821	45°
	2.00	2	220	0.030	0.080	0.080	1.86	37650	2259	45°
	2.50	2	220	0.032	0.100	0.100	2.32	30185	1932	45°
	3.00	2	220	0.036	0.120	0.120	2.78	25190	1814	45°
Steel 850 - 1100 N/mm²	0.50	2	150	0.014	0.020	0.020	0.46	60000	1680	45°
	0.60	2	150	0.016	0.024	0.024	0.56	60000	1920	45°
	0.80	2	150	0.018	0.032	0.032	0.74	60000	2160	45°
	1.00	2	150	0.020	0.040	0.040	0.93	51340	2054	45°
	1.20	2	150	0.022	0.048	0.048	1.11	43015	1893	45°
	1.50	2	150	0.026	0.060	0.060	1.39	34350	1786	45°
	2.00	2	150	0.028	0.080	0.080	1.86	25670	1438	45°
	2.50	2	150	0.028	0.100	0.100	2.32	20580	1153	45°
	3.00	2	150	0.032	0.120	0.120	2.78	17175	1099	45°
Unalloyed copper	0.50	2	400	0.018	0.020	0.020	0.46	60000	2160	45°
	0.60	2	400	0.020	0.024	0.024	0.56	60000	2400	45°
	0.80	2	400	0.022	0.032	0.032	0.74	60000	2640	45°
	1.00	2	400	0.024	0.040	0.040	0.93	60000	2880	45°
	1.20	2	400	0.026	0.048	0.048	1.11	60000	3120	45°
	1.50	2	400	0.030	0.060	0.060	1.39	60000	3600	45°
	2.00	2	400	0.034	0.080	0.080	1.86	60000	4080	45°
	2.50	2	400	0.036	0.100	0.100	2.32	54881	3951	45°
	3.00	2	400	0.040	0.120	0.120	2.78	45800	3664	45°
Wrought aluminium Construction aluminium	0.50	2	400	0.018	0.020	0.020	0.46	60000	2160	45°
	0.60	2	400	0.020	0.024	0.024	0.56	60000	2400	45°
	0.80	2	400	0.022	0.032	0.032	0.74	60000	2640	45°
	1.00	2	400	0.024	0.040	0.040	0.93	60000	2880	45°
	1.20	2	400	0.026	0.048	0.048	1.11	60000	3120	45°
	1.50	2	400	0.030	0.060	0.060	1.39	60000	3600	45°
	2.00	2	400	0.034	0.080	0.080	1.86	60000	4080	45°
	2.50	2	400	0.036	0.100	0.100	2.32	54881	3951	45°
	3.00	2	400	0.040	0.120	0.120	2.78	45800	3664	45°

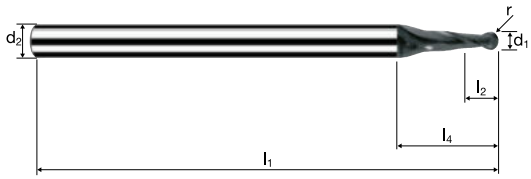
Ball nose end mills

Shank ø 3mm, 3xd

Favora® F

II

HM MG10	λ 30° γ 10°



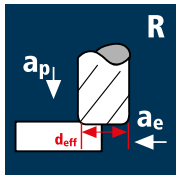
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45785** ø-Code **030**

Ø Code	d_1 ±0.01	d_2 h6	l_1	l_2	l_4	r ±0.01	α	z	MICRO M45785
030	0.30	3.00	40	1.00	9.00	0.150	9.0°	2	●
040	0.40	3.00	40	1.00	8.70	0.200	8.9°	2	●
050	0.50	3.00	40	1.50	8.90	0.250	8.4°	2	●
060	0.60	3.00	40	1.50	8.60	0.300	8.3°	2	●
070	0.70	3.00	40	2.00	8.80	0.350	7.8°	2	●
080	0.80	3.00	40	2.00	8.60	0.400	7.7°	2	●
090	0.90	3.00	40	2.50	8.80	0.450	7.2°	2	●
100	1.00	3.00	40	3.00	9.00	0.500	6.7°	2	●
108	1.20	3.00	40	4.00	9.50	0.600	5.7°	2	●
120	1.50	3.00	40	4.00	8.60	0.750	5.3°	2	●
130	1.80	3.00	40	5.00	7.30	0.900	5.2°	2	●
140	2.00	3.00	40	5.00	7.00	1.000	4.6°	2	●
160	2.50	3.00	40	7.00	8.30	1.250	2.0°	2	●
180	3.00	4.00	44	10.00	12.40	1.500	2.6°	2	●

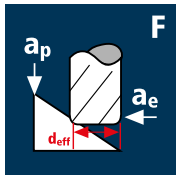
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	378	0.050
0.60	2	78	0.005	0.070	0.340	0.59	42082	447	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	131	0.009	0.070	0.680	0.99	42120	751	0.100
1.50	2	135	0.015	0.160	0.990	1.49	28840	859	0.200
2.00	2	135	0.020	0.160	1.440	1.99	21594	859	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	153	0.050
0.40	2	51	0.004	0.025	0.240	0.39	41625	312	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	454	0.050
0.60	2	78	0.006	0.070	0.340	0.59	42082	536	0.100
0.80	2	104	0.009	0.070	0.510	0.79	41904	715	0.100
1.00	2	131	0.011	0.070	0.680	0.99	42120	901	0.100
1.50	2	150	0.018	0.160	0.990	1.49	32045	1146	0.200
2.00	2	150	0.024	0.160	1.440	1.99	23993	1146	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	378	0.050
0.60	2	78	0.005	0.070	0.340	0.59	42082	447	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	131	0.009	0.070	0.680	0.99	42120	751	0.100
1.50	2	140	0.015	0.160	0.990	1.49	29908	891	0.200
2.00	2	140	0.020	0.160	1.440	1.99	22394	891	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	22	0.001	0.015	0.060	0.17	41193	78	0.050
0.40	2	49	0.002	0.015	0.180	0.37	42155	175	0.050
0.50	2	65	0.003	0.025	0.280	0.49	42225	265	0.050
0.60	2	70	0.004	0.050	0.280	0.57	39091	285	0.100
0.80	2	70	0.005	0.050	0.420	0.77	28937	285	0.100
1.00	2	70	0.006	0.050	0.560	0.97	22971	285	0.100
1.50	2	70	0.012	0.120	0.880	1.47	15158	357	0.200
2.00	2	70	0.016	0.120	1.280	1.97	11311	357	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	195	0.037	0.057	0.030	1.50	41380	3066	45°
2.00	2	195	0.037	0.057	0.030	2.00	31035	2300	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	175	0.037	0.057	0.030	1.50	37136	2752	45°
2.00	2	175	0.037	0.057	0.030	2.00	27852	2064	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	160	0.037	0.057	0.030	1.50	33953	2516	45°
2.00	2	160	0.037	0.057	0.030	2.00	25465	1887	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	53	0.015	0.030	0.010	0.39	43257	1298	45°
0.50	2	53	0.015	0.030	0.020	0.49	34429	1033	45°
0.60	2	63	0.020	0.040	0.020	0.60	33423	1337	45°
0.80	2	64	0.020	0.040	0.020	0.80	25465	1019	45°
1.00	2	64	0.020	0.040	0.020	1.00	20372	815	45°
1.50	2	80	0.029	0.057	0.030	1.50	16977	968	45°
2.00	2	80	0.029	0.057	0.030	2.00	12732	726	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 2xd

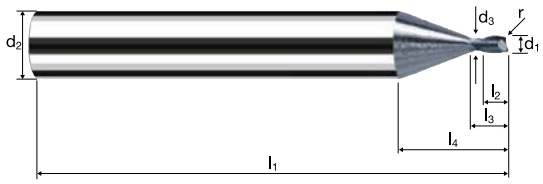
HM
XA

λ 25°
γ -10°

h4

d1

r



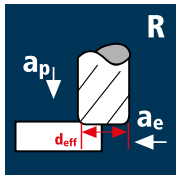
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6531** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6531
020	0.20	6.00	0.18	57	0.20	0.40	17.34	0.050	14.5°	2	●
040	0.40	6.00	0.35	57	0.40	0.80	17.26	0.050	14.0°	2	●
048	0.50	6.00	0.45	57	0.50	1.00	12.01	0.050	13.7°	2	●
042	0.40	6.00	0.35	57	0.40	0.80	17.26	0.100	14.0°	2	●
050	0.50	6.00	0.45	57	0.50	1.00	12.01	0.100	13.8°	2	●
060	0.60	6.00	0.55	57	0.60	1.20	12.03	0.100	13.5°	2	●
080	0.80	6.00	0.75	57	0.80	1.60	12.05	0.100	13.0°	2	●
098	1.00	6.00	0.95	57	1.00	2.00	12.08	0.100	12.5°	2	●
082	0.80	6.00	0.75	57	0.80	1.60	12.05	0.200	13.1°	2	●
100	1.00	6.00	0.95	57	1.00	2.00	12.08	0.200	12.6°	2	●
120	1.50	6.00	1.40	57	1.50	3.00	12.24	0.200	11.2°	2	●
140	2.00	6.00	1.90	57	2.00	4.00	12.31	0.200	9.9°	2	●
101	1.00	6.00	0.95	57	1.00	2.00	12.08	0.300	12.7°	2	●
145	2.00	6.00	1.90	57	2.00	4.00	12.31	0.500	10.2°	2	●

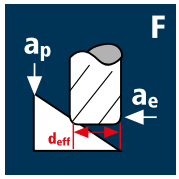
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	65	0.004	0.070	0.255	0.49	42225	372	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	131	0.009	0.070	0.680	0.99	42120	751	0.100
1.50	2	135	0.015	0.160	0.990	1.49	28840	859	0.200
2.00	2	135	0.020	0.160	1.440	1.99	21594	859	0.200
2.50	2	135	0.025	0.160	1.890	2.49	17258	859	0.200
3.00	2	135	0.030	0.160	2.340	2.99	14372	859	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	153	0.050
0.40	2	51	0.004	0.025	0.240	0.39	41625	312	0.050
0.50	2	65	0.005	0.070	0.255	0.49	42225	447	0.100
0.80	2	104	0.009	0.070	0.510	0.79	41904	715	0.100
1.00	2	131	0.011	0.070	0.680	0.99	42120	901	0.100
1.50	2	150	0.018	0.160	0.990	1.49	32045	1146	0.200
2.00	2	150	0.024	0.160	1.440	1.99	23993	1146	0.200
2.50	2	150	0.030	0.160	1.890	2.49	19175	1146	0.200
3.00	2	150	0.036	0.160	2.340	2.99	15969	1146	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	65	0.004	0.070	0.255	0.49	42225	372	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	131	0.009	0.070	0.680	0.99	42120	751	0.100
1.50	2	140	0.015	0.160	0.990	1.49	29908	891	0.200
2.00	2	140	0.020	0.160	1.440	1.99	22394	891	0.200
2.50	2	140	0.025	0.160	1.890	2.49	17897	891	0.200
3.00	2	140	0.030	0.160	2.340	2.99	14904	891	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	22	0.001	0.015	0.060	0.17	41193	78	0.050
0.40	2	49	0.002	0.015	0.180	0.37	42155	175	0.050
0.50	2	61	0.003	0.040	0.210	0.46	42211	249	0.100
0.80	2	70	0.005	0.040	0.420	0.76	29318	285	0.100
1.00	2	70	0.006	0.040	0.560	0.96	23210	285	0.100
1.50	2	70	0.012	0.100	0.880	1.45	15367	357	0.200
2.00	2	70	0.016	0.100	1.280	1.95	11427	357	0.200
2.50	2	70	0.020	0.100	1.680	2.45	9095	357	0.200
3.00	2	70	0.024	0.100	2.080	2.95	7553	357	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	195	0.037	0.057	0.030	1.50	41380	3066	45°
2.00	2	195	0.037	0.057	0.030	2.00	31035	2300	45°
2.50	2	195	0.037	0.057	0.030	2.50	24828	1840	45°
3.00	2	195	0.037	0.057	0.030	3.00	20690	1533	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	175	0.037	0.057	0.030	1.50	37136	2752	45°
2.00	2	175	0.037	0.057	0.030	2.00	27852	2064	45°
2.50	2	175	0.037	0.057	0.030	2.50	22282	1651	45°
3.00	2	175	0.037	0.057	0.030	3.00	18568	1376	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	160	0.037	0.057	0.030	1.50	33953	2516	45°
2.00	2	160	0.037	0.057	0.030	2.00	25465	1887	45°
2.50	2	160	0.037	0.057	0.030	2.50	20372	1510	45°
3.00	2	160	0.037	0.057	0.030	3.00	16977	1258	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	53	0.015	0.030	0.010	0.39	43257	1298	45°
0.50	2	53	0.020	0.040	0.020	0.50	33741	1350	45°
0.80	2	64	0.020	0.040	0.020	0.80	25465	1019	45°
1.00	2	64	0.020	0.040	0.020	1.00	20372	815	45°
1.50	2	80	0.029	0.057	0.030	1.50	16977	968	45°
2.00	2	80	0.029	0.057	0.030	2.00	12732	726	45°
2.50	2	80	0.029	0.057	0.030	2.50	10186	581	45°
3.00	2	80	0.029	0.057	0.030	3.00	8488	484	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

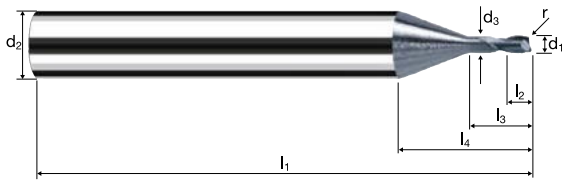
HM XA

λ 25°
γ -10°

h4

d1

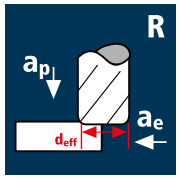
r

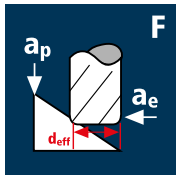


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6532** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6532
020	0.20	6.00	0.18	57	0.20	0.60	17.54	0.050	14.3°	2	●
040	0.40	6.00	0.35	57	0.40	1.20	17.66	0.050	13.5°	2	●
048	0.50	6.00	0.45	57	0.50	1.50	12.51	0.050	13.2°	2	●
042	0.40	6.00	0.35	57	0.40	1.20	17.66	0.100	13.6°	2	●
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.100	13.2°	2	●
060	0.60	6.00	0.55	57	0.60	1.80	12.63	0.100	12.9°	2	●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.100	12.2°	2	●
098	1.00	6.00	0.95	57	1.00	3.00	13.08	0.100	11.5°	2	●
082	0.80	6.00	0.75	57	0.80	2.40	12.85	0.200	12.3°	2	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.200	11.6°	2	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.200	10.9°	2	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	2	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.200	7.2°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	1.00	2	128	0.009	0.210	0.340	0.97	42004	733	0.300
		2.00	2	135	0.020	0.400	0.900	1.98	21703	859	0.500
		2.50	2	135	0.025	0.400	1.350	2.48	17327	859	0.500
		3.00	2	135	0.030	0.400	1.800	2.98	14420	859	0.500
	Hardened tool steel 48 - 52 HRC	1.00	2	128	0.010	0.210	0.340	0.97	42004	880	0.300
		2.00	2	150	0.024	0.400	0.900	1.98	24114	1146	0.500
		2.50	2	150	0.030	0.400	1.350	2.48	19253	1146	0.500
		3.00	2	150	0.036	0.400	1.800	2.98	16022	1146	0.500
	Hardened tool steel 52 - 56 HRC	1.00	2	128	0.009	0.210	0.340	0.97	42004	733	0.300
		2.00	2	140	0.020	0.400	0.900	1.98	22507	891	0.500
		2.50	2	140	0.025	0.400	1.350	2.48	17969	891	0.500
		3.00	2	140	0.030	0.400	1.800	2.98	14954	891	0.500
	Hardened tool steel 56 - 60 HRC	1.00	2	70	0.006	0.120	0.280	0.88	25320	285	0.300
		2.00	2	70	0.015	0.250	0.800	1.87	11915	357	0.500
		2.50	2	70	0.019	0.250	1.200	2.37	9402	357	0.500
		3.00	2	70	0.023	0.250	1.600	2.87	7764	357	0.500

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.00	2	105	0.046	0.070	0.020	1.00	33423	3042	45°
		2.00	2	195	0.059	0.090	0.030	1.98	31349	3668	45°
		2.50	2	195	0.059	0.090	0.030	2.48	25028	2928	45°
		3.00	2	195	0.059	0.090	0.030	2.98	20829	2437	45°
	Hardened tool steel 48 - 52 HRC	1.00	2	105	0.046	0.070	0.020	1.00	33423	3042	45°
		2.00	2	175	0.059	0.090	0.030	1.98	28133	3292	45°
		2.50	2	175	0.059	0.090	0.030	2.48	22461	2628	45°
		3.00	2	175	0.059	0.090	0.030	2.98	18693	2187	45°
	Hardened tool steel 52 - 56 HRC	1.00	2	105	0.046	0.070	0.020	1.00	33423	3042	45°
		2.00	2	160	0.059	0.090	0.030	1.98	25722	3010	45°
		2.50	2	160	0.059	0.090	0.030	2.48	20536	2403	45°
		3.00	2	160	0.059	0.090	0.030	2.98	17090	2000	45°
	Hardened tool steel 56 - 60 HRC	1.00	2	64	0.035	0.070	0.020	1.00	20372	1426	45°
		2.00	2	80	0.045	0.090	0.030	1.98	12861	1158	45°
		2.50	2	80	0.045	0.090	0.030	2.48	10268	924	45°
		3.00	2	80	0.045	0.090	0.030	2.98	8545	769	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

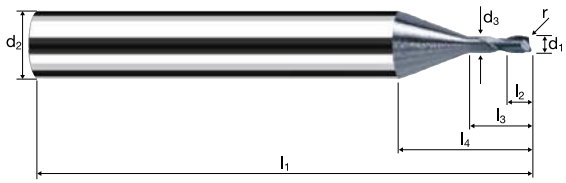
HM
XA

λ 25°
γ -10°

h4

d1

r

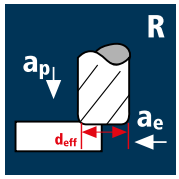


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6532** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6532
101	1.00	6.00	0.95	57	1.00	3.00	13.08	0.300	11.7°	2	●
145	2.00	6.00	1.90	57	2.00	6.00	14.31	0.500	8.7°	2	●
165	2.50	6.00	2.30	57	2.50	7.50	15.06	0.500	7.3°	2	●
185	3.00	6.00	2.80	57	3.00	9.00	15.63	0.500	6.1°	2	●

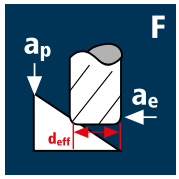
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	378	0.050
0.60	2	78	0.005	0.070	0.340	0.59	42082	447	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	128	0.009	0.070	0.680	0.99	41155	733	0.100
1.50	2	128	0.015	0.160	0.990	1.49	27345	815	0.200
2.00	2	128	0.020	0.160	1.440	1.99	20474	815	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	153	0.050
0.40	2	51	0.004	0.025	0.240	0.39	41625	312	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	454	0.050
0.60	2	78	0.006	0.070	0.340	0.59	42082	536	0.100
0.80	2	104	0.009	0.070	0.510	0.79	41904	715	0.100
1.00	2	131	0.011	0.070	0.680	0.99	42120	901	0.100
1.50	2	143	0.018	0.160	0.990	1.49	30549	1092	0.200
2.00	2	143	0.024	0.160	1.440	1.99	22874	1093	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.002	0.025	0.080	0.19	41883	127	0.050
0.40	2	51	0.003	0.025	0.240	0.39	41625	260	0.050
0.50	2	66	0.005	0.035	0.340	0.50	42017	378	0.050
0.60	2	78	0.005	0.070	0.340	0.59	42082	447	0.100
0.80	2	104	0.007	0.070	0.510	0.79	41904	596	0.100
1.00	2	131	0.009	0.070	0.680	0.99	42120	751	0.100
1.50	2	133	0.015	0.160	0.990	1.49	28413	847	0.200
2.00	2	133	0.020	0.160	1.440	1.99	21274	847	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	22	0.001	0.015	0.060	0.17	41193	78	0.050
0.40	2	49	0.002	0.015	0.180	0.37	42155	175	0.050
0.50	2	63	0.003	0.020	0.280	0.48	41778	257	0.050
0.60	2	67	0.004	0.040	0.280	0.56	38084	273	0.100
0.80	2	67	0.005	0.040	0.420	0.76	28062	273	0.100
1.00	2	67	0.006	0.040	0.560	0.96	22215	273	0.100
1.50	2	67	0.012	0.100	0.880	1.45	14708	341	0.200
2.00	2	67	0.016	0.100	1.280	1.95	10937	341	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	25	0.020	0.030	0.010	0.19	41883	1633	45°
0.40	2	52	0.020	0.030	0.010	0.39	42441	1655	45°
0.50	2	52	0.020	0.030	0.020	0.49	33780	1317	45°
0.60	2	60	0.026	0.040	0.020	0.60	31831	1655	45°
0.80	2	81	0.026	0.040	0.020	0.80	32229	1676	45°
1.00	2	102	0.026	0.040	0.020	1.00	32468	1688	45°
1.50	2	184	0.037	0.057	0.030	1.50	39046	2893	45°
2.00	2	185	0.037	0.057	0.030	2.00	29444	2182	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	25	0.020	0.030	0.010	0.19	41883	1633	45°
0.40	2	52	0.020	0.030	0.010	0.39	42441	1655	45°
0.50	2	52	0.020	0.030	0.020	0.49	33780	1317	45°
0.60	2	60	0.026	0.040	0.020	0.60	31831	1655	45°
0.80	2	81	0.026	0.040	0.020	0.80	32229	1676	45°
1.00	2	102	0.026	0.040	0.020	1.00	32468	1688	45°
1.50	2	166	0.037	0.057	0.030	1.50	35226	2610	45°
2.00	2	166	0.037	0.057	0.030	2.00	26420	1958	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	25	0.020	0.030	0.010	0.19	41883	1633	45°
0.40	2	52	0.020	0.030	0.010	0.39	42441	1655	45°
0.50	2	52	0.020	0.030	0.020	0.49	33780	1317	45°
0.60	2	60	0.026	0.040	0.020	0.60	31831	1655	45°
0.80	2	81	0.026	0.040	0.020	0.80	32229	1676	45°
1.00	2	102	0.026	0.040	0.020	1.00	32468	1688	45°
1.50	2	152	0.037	0.057	0.030	1.50	32255	2390	45°
2.00	2	152	0.037	0.057	0.030	2.00	24192	1793	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	25	0.015	0.030	0.010	0.19	41883	1257	45°
0.40	2	52	0.015	0.030	0.010	0.39	42441	1273	45°
0.50	2	52	0.015	0.030	0.020	0.49	33780	1013	45°
0.60	2	60	0.020	0.040	0.020	0.60	31831	1273	45°
0.80	2	61	0.020	0.040	0.020	0.80	24271	971	45°
1.00	2	61	0.020	0.040	0.020	1.00	19417	777	45°
1.50	2	76	0.029	0.057	0.030	1.50	16128	919	45°
2.00	2	76	0.029	0.057	0.030	2.00	12096	690	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 4xd

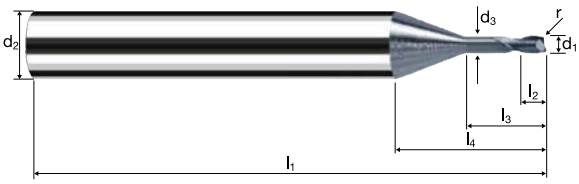
X-Generation

II

HM
XA

λ 25°
γ -10°

h4



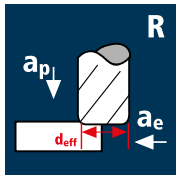
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6533** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6533
020	0.20	6.00	0.18	57	0.20	0.80	17.74	0.050	14.1°	2	●
040	0.40	6.00	0.35	57	0.40	1.60	18.06	0.050	13.1°	2	●
048	0.50	6.00	0.45	57	0.50	2.00	13.01	0.050	12.6°	2	●
042	0.40	6.00	0.35	57	0.40	1.60	18.06	0.100	13.1°	2	●
050	0.50	6.00	0.45	57	0.50	2.00	13.01	0.100	12.7°	2	●
060	0.60	6.00	0.55	57	0.60	2.40	13.23	0.100	12.3°	2	●
080	0.80	6.00	0.75	57	0.80	3.20	13.65	0.100	11.4°	2	●
098	1.00	6.00	0.95	57	1.00	4.00	14.08	0.100	10.7°	2	●
082	0.80	6.00	0.75	57	0.80	3.20	13.65	0.200	11.5°	2	●
100	1.00	6.00	0.95	57	1.00	4.00	14.08	0.200	10.7°	2	●
120	1.50	6.00	1.40	57	1.50	6.00	15.24	0.200	8.9°	2	●
140	2.00	6.00	1.90	61	2.00	8.00	16.31	0.200	7.4°	2	●
101	1.00	6.00	0.95	57	1.00	4.00	14.08	0.300	10.8°	2	●
145	2.00	6.00	1.90	61	2.00	8.00	16.31	0.500	7.5°	2	●

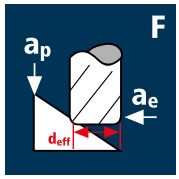
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	24	0.001	0.020	0.060	0.18	42441	110	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	229	0.050
0.50	2	62	0.004	0.050	0.210	0.47	41990	320	0.100
0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
1.00	2	115	0.008	0.100	0.420	0.95	38532	593	0.200
1.50	2	115	0.013	0.120	0.880	1.47	24902	659	0.200
2.00	2	115	0.018	0.120	1.280	1.97	18582	659	0.200
2.50	2	115	0.022	0.120	1.680	2.47	14820	659	0.200
3.00	2	115	0.027	0.120	2.080	2.97	12325	659	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	24	0.002	0.020	0.060	0.18	42441	132	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	275	0.050
0.50	2	62	0.005	0.050	0.210	0.47	41990	384	0.100
0.80	2	102	0.007	0.050	0.420	0.77	42166	631	0.100
1.00	2	125	0.009	0.100	0.420	0.95	41883	774	0.200
1.50	2	128	0.016	0.120	0.880	1.47	27717	880	0.200
2.00	2	128	0.021	0.120	1.280	1.97	20682	880	0.200
2.50	2	128	0.027	0.120	1.680	2.47	16495	880	0.200
3.00	2	128	0.032	0.120	2.080	2.97	13718	880	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	24	0.001	0.020	0.060	0.18	42441	110	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	229	0.050
0.50	2	62	0.004	0.050	0.210	0.47	41990	320	0.100
0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
1.00	2	119	0.008	0.100	0.420	0.95	39873	614	0.200
1.50	2	119	0.013	0.120	0.880	1.47	25768	682	0.200
2.00	2	119	0.018	0.120	1.280	1.97	19228	682	0.200
2.50	2	119	0.022	0.120	1.680	2.47	15336	682	0.200
3.00	2	119	0.027	0.120	2.080	2.97	12754	682	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	21	0.001	0.010	0.050	0.16	41778	67	0.050
0.40	2	48	0.002	0.010	0.150	0.36	42441	154	0.050
0.50	2	58	0.003	0.030	0.180	0.44	41959	213	0.100
0.80	2	60	0.004	0.030	0.360	0.74	25809	220	0.100
1.00	2	60	0.005	0.060	0.360	0.89	21459	220	0.200
1.50	2	60	0.010	0.080	0.770	1.42	13450	275	0.200
2.00	2	60	0.014	0.080	1.120	1.92	9947	275	0.200
2.50	2	60	0.017	0.080	1.470	2.42	7892	275	0.200
3.00	2	60	0.021	0.080	1.820	2.92	6541	275	0.200

Application



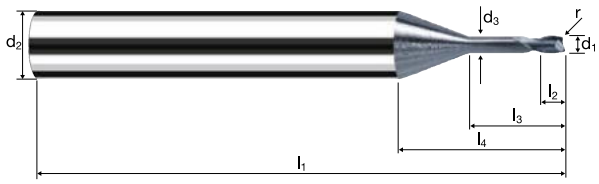
Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.037	0.057	0.020	1.00	33741	2500	45°
1.50	2	157	0.037	0.057	0.030	1.50	33316	2469	45°
2.00	2	157	0.037	0.057	0.030	2.00	24987	1852	45°
2.50	2	157	0.037	0.057	0.030	2.50	19990	1481	45°
3.00	2	157	0.037	0.057	0.030	3.00	16658	1234	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.037	0.057	0.020	1.00	33741	2500	45°
1.50	2	141	0.037	0.057	0.030	1.50	29921	2217	45°
2.00	2	141	0.037	0.057	0.030	2.00	22441	1663	45°
2.50	2	141	0.037	0.057	0.030	2.50	17953	1330	45°
3.00	2	141	0.037	0.057	0.030	3.00	14961	1109	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	103	0.037	0.057	0.020	1.00	32786	2429	45°
1.50	2	129	0.037	0.057	0.030	1.50	27375	2029	45°
2.00	2	129	0.037	0.057	0.030	2.00	20531	1521	45°
2.50	2	129	0.037	0.057	0.030	2.50	16425	1217	45°
3.00	2	129	0.037	0.057	0.030	3.00	13687	1014	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	53	0.015	0.030	0.010	0.39	43257	1298	45°
0.50	2	52	0.020	0.040	0.020	0.50	33104	1324	45°
0.80	2	52	0.020	0.040	0.020	0.80	20690	828	45°
1.00	2	52	0.029	0.057	0.020	1.00	16552	944	45°
1.50	2	65	0.029	0.057	0.030	1.50	13793	786	45°
2.00	2	65	0.029	0.057	0.030	2.00	10345	590	45°
2.50	2	65	0.029	0.057	0.030	2.50	8276	472	45°
3.00	2	65	0.029	0.057	0.030	3.00	6897	393	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

HM XA	λ 25° γ -10°



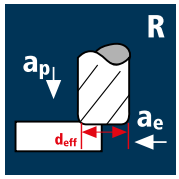
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6534** ø-Code **020**

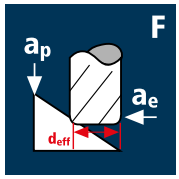
Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	r 0/+0.01	α	z	X-AL X6534
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.050	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.050	12.7°	2	●
048	0.50	6.00	0.45	57	0.50	2.50	13.51	0.050	12.2°	2	●
042	0.40	6.00	0.35	57	0.40	2.00	18.46	0.100	12.7°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.100	11.7°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	2	●
098	1.00	6.00	0.95	57	1.00	5.00	15.08	0.100	9.9°	2	●
082	0.80	6.00	0.75	57	0.80	4.00	14.45	0.200	10.9°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	2	●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.200	9.2°	2	●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.200	8.1°	2	●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.200	6.6°	2	●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.200	5.3°	2	●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.200	4.2°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	115	0.007	0.150	0.280	0.92	39789	593	0.300
	2.00	2	115	0.017	0.300	0.800	1.92	19065	659	0.500
	2.50	2	115	0.022	0.300	1.200	2.42	15126	659	0.500
	3.00	2	115	0.026	0.300	1.600	2.92	12536	659	0.500
Hardened tool steel 48 - 52 HRC	1.00	2	121	0.009	0.150	0.280	0.92	41865	749	0.300
	2.00	2	128	0.021	0.300	0.800	1.92	21221	880	0.500
	2.50	2	128	0.026	0.300	1.200	2.42	16836	880	0.500
	3.00	2	128	0.032	0.300	1.600	2.92	13953	880	0.500
Hardened tool steel 52 - 56 HRC	1.00	2	119	0.007	0.150	0.280	0.92	41173	614	0.300
	2.00	2	119	0.017	0.300	0.800	1.92	19729	682	0.500
	2.50	2	119	0.022	0.300	1.200	2.42	15652	682	0.500
	3.00	2	119	0.026	0.300	1.600	2.92	12972	682	0.500
Hardened tool steel 56 - 60 HRC	1.00	2	60	0.005	0.090	0.240	0.83	23010	220	0.300
	2.00	2	60	0.013	0.200	0.700	1.80	10610	275	0.500
	2.50	2	60	0.017	0.200	1.050	2.30	8304	275	0.500
	3.00	2	60	0.020	0.200	1.400	2.80	6821	275	0.500

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	105	0.046	0.070	0.020	1.00	33423	3042	45°
	2.00	2	157	0.059	0.090	0.030	1.98	25240	2953	45°
	2.50	2	157	0.059	0.090	0.030	2.48	20151	2358	45°
	3.00	2	157	0.059	0.090	0.030	2.98	16770	1962	45°
Hardened tool steel 48 - 52 HRC	1.00	2	105	0.046	0.070	0.020	1.00	33423	3042	45°
	2.00	2	141	0.059	0.090	0.030	1.98	22668	2652	45°
	2.50	2	141	0.059	0.090	0.030	2.48	18097	2117	45°
	3.00	2	141	0.059	0.090	0.030	2.98	15061	1762	45°
Hardened tool steel 52 - 56 HRC	1.00	2	103	0.046	0.070	0.020	1.00	32786	2984	45°
	2.00	2	129	0.059	0.090	0.030	1.98	20738	2426	45°
	2.50	2	129	0.059	0.090	0.030	2.48	16557	1937	45°
	3.00	2	129	0.059	0.090	0.030	2.98	13779	1612	45°
Hardened tool steel 56 - 60 HRC	1.00	2	52	0.035	0.070	0.020	1.00	16552	1159	45°
	2.00	2	65	0.045	0.090	0.030	1.98	10450	941	45°
	2.50	2	65	0.045	0.090	0.030	2.48	8343	751	45°
	3.00	2	65	0.045	0.090	0.030	2.98	6943	625	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

X-Generation

II

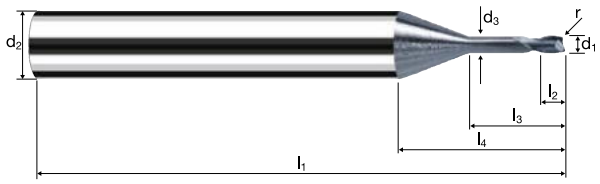
HM
XA

λ 25°
γ -10°

h4

d1

r



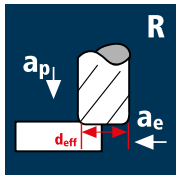
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6534** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6534
101	1.00	6.00	0.95	57	1.00	5.00	15.08	0.300	10.1°	2	●
145	2.00	6.00	1.90	61	2.00	10.00	18.31	0.500	6.7°	2	●
165	2.50	6.00	2.30	61	2.50	12.50	20.06	0.500	5.4°	2	●
185	3.00	6.00	2.80	66	3.00	15.00	21.63	0.500	4.3°	2	●

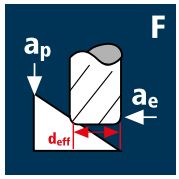
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	24	0.001	0.020	0.060	0.18	42441	110	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	229	0.050
0.50	2	65	0.004	0.025	0.280	0.49	42225	335	0.050
0.60	2	75	0.005	0.050	0.280	0.57	41883	387	0.100
0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
1.00	2	109	0.008	0.050	0.560	0.97	35769	562	0.100
1.50	2	109	0.013	0.120	0.880	1.47	23603	625	0.200
2.00	2	109	0.018	0.120	1.280	1.97	17612	625	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	24	0.002	0.020	0.060	0.18	42441	132	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	275	0.050
0.50	2	65	0.005	0.025	0.280	0.49	42225	402	0.050
0.60	2	75	0.006	0.050	0.280	0.57	41883	464	0.100
0.80	2	102	0.007	0.050	0.420	0.77	42166	631	0.100
1.00	2	121	0.009	0.050	0.560	0.97	39707	749	0.100
1.50	2	121	0.016	0.120	0.880	1.47	26201	832	0.200
2.00	2	121	0.021	0.120	1.280	1.97	19551	832	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	24	0.001	0.020	0.060	0.18	42441	110	0.050
0.40	2	50	0.003	0.020	0.180	0.38	41883	229	0.050
0.50	2	65	0.004	0.025	0.280	0.49	42225	335	0.050
0.60	2	75	0.005	0.050	0.280	0.57	41883	387	0.100
0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
1.00	2	113	0.008	0.050	0.560	0.97	37081	583	0.100
1.50	2	113	0.013	0.120	0.880	1.47	24469	647	0.200
2.00	2	113	0.018	0.120	1.280	1.97	18258	647	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	21	0.001	0.010	0.050	0.16	41778	67	0.050
0.40	2	48	0.002	0.010	0.150	0.36	42441	154	0.050
0.50	2	57	0.003	0.015	0.240	0.47	38604	209	0.050
0.60	2	57	0.003	0.030	0.240	0.54	33599	209	0.100
0.80	2	57	0.004	0.030	0.360	0.74	24518	209	0.100
1.00	2	57	0.005	0.030	0.480	0.94	19302	209	0.100
1.50	2	57	0.010	0.080	0.770	1.42	12777	261	0.200
2.00	2	57	0.014	0.080	1.120	1.92	9450	261	0.200

Application



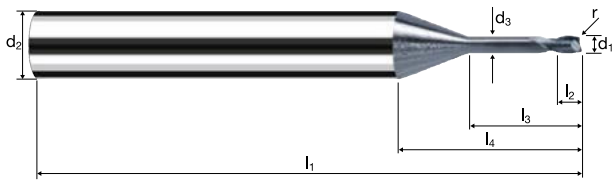
Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	150	0.037	0.057	0.030	1.50	31831	2359	45°
2.00	2	150	0.037	0.057	0.030	2.00	23873	1769	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	106	0.026	0.040	0.020	1.00	33741	1755	45°
1.50	2	134	0.037	0.057	0.030	1.50	28436	2107	45°
2.00	2	134	0.037	0.057	0.030	2.00	21327	1580	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.020	0.030	0.020	0.49	34429	1343	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	98	0.026	0.040	0.020	1.00	31194	1622	45°
1.50	2	123	0.037	0.057	0.030	1.50	26101	1934	45°
2.00	2	123	0.037	0.057	0.030	2.00	19576	1451	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	53	0.015	0.030	0.010	0.39	43257	1298	45°
0.50	2	49	0.015	0.030	0.020	0.49	31831	955	45°
0.60	2	49	0.020	0.040	0.020	0.60	25995	1040	45°
0.80	2	49	0.020	0.040	0.020	0.80	19496	780	45°
1.00	2	49	0.020	0.040	0.020	1.00	15597	624	45°
1.50	2	61	0.029	0.057	0.030	1.50	12945	738	45°
2.00	2	61	0.029	0.057	0.030	2.00	9708	553	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 6xd

HM XA	λ 25° γ -10°



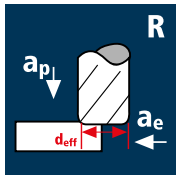
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6535** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6535
020	0.20	6.00	0.18	57	0.20	1.20	18.14	0.050	13.6°	2	●
040	0.40	6.00	0.35	57	0.40	2.40	18.86	0.050	12.3°	2	●
048	0.50	6.00	0.45	57	0.50	3.00	14.01	0.050	11.7°	2	●
042	0.40	6.00	0.35	57	0.40	2.40	18.86	0.100	12.3°	2	●
050	0.50	6.00	0.45	57	0.50	3.00	14.01	0.100	11.8°	2	●
060	0.60	6.00	0.55	57	0.60	3.60	14.43	0.100	11.2°	2	●
080	0.80	6.00	0.75	57	0.80	4.80	15.25	0.100	10.2°	2	●
098	1.00	6.00	0.95	57	1.00	6.00	16.08	0.100	9.3°	2	●
082	0.80	6.00	0.75	57	0.80	4.80	15.25	0.200	10.3°	2	●
100	1.00	6.00	0.95	57	1.00	6.00	16.08	0.200	9.4°	2	●
120	1.50	6.00	1.40	61	1.50	9.00	18.24	0.200	7.4°	2	●
140	2.00	6.00	1.90	66	2.00	12.00	20.31	0.200	5.9°	2	●
101	1.00	6.00	0.95	57	1.00	6.00	16.08	0.300	9.4°	2	●
145	2.00	6.00	1.90	66	2.00	12.00	20.31	0.500	6.0°	2	●

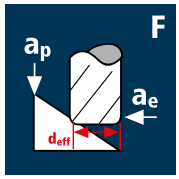
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	21	0.001	0.010	0.040	0.16	41778	87	0.050
0.40	2	48	0.002	0.010	0.120	0.36	42441	198	0.050
0.50	2	61	0.003	0.040	0.150	0.46	42211	283	0.100
0.80	2	87	0.006	0.040	0.300	0.76	36438	404	0.100
1.00	2	87	0.007	0.080	0.300	0.92	30101	404	0.200
1.50	2	87	0.012	0.100	0.660	1.45	19099	449	0.200
2.00	2	87	0.016	0.100	0.960	1.95	14202	449	0.200
2.50	2	87	0.020	0.100	1.260	2.45	11303	449	0.200
3.00	2	87	0.024	0.100	1.560	2.95	9387	449	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	21	0.001	0.010	0.040	0.16	41778	104	0.050
0.40	2	48	0.003	0.010	0.120	0.36	42441	238	0.050
0.50	2	61	0.004	0.040	0.150	0.46	42211	340	0.100
0.80	2	97	0.007	0.040	0.300	0.76	40626	540	0.100
1.00	2	97	0.008	0.080	0.300	0.92	33561	540	0.200
1.50	2	97	0.014	0.100	0.660	1.45	21294	600	0.200
2.00	2	97	0.019	0.100	0.960	1.95	15834	600	0.200
2.50	2	97	0.024	0.100	1.260	2.45	12602	600	0.200
3.00	2	97	0.029	0.100	1.560	2.95	10466	600	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	21	0.001	0.010	0.040	0.16	41778	87	0.050
0.40	2	48	0.002	0.010	0.120	0.36	42441	198	0.050
0.50	2	61	0.003	0.040	0.150	0.46	42211	283	0.100
0.80	2	90	0.006	0.040	0.300	0.76	37695	418	0.100
1.00	2	90	0.007	0.080	0.300	0.92	31139	418	0.200
1.50	2	90	0.012	0.100	0.660	1.45	19757	464	0.200
2.00	2	90	0.016	0.100	0.960	1.95	14691	464	0.200
2.50	2	90	0.020	0.100	1.260	2.45	11693	464	0.200
3.00	2	90	0.024	0.100	1.560	2.95	9711	464	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	20	0.001	0.008	0.030	0.15	42441	58	0.050
0.40	2	45	0.002	0.008	0.090	0.35	40926	130	0.050
0.50	2	45	0.002	0.020	0.120	0.42	34105	149	0.100
0.80	2	45	0.004	0.020	0.240	0.72	19894	149	0.100
1.00	2	45	0.004	0.040	0.240	0.84	17052	149	0.200
1.50	2	45	0.009	0.060	0.550	1.39	10305	186	0.200
2.00	2	45	0.012	0.060	0.800	1.89	7579	186	0.200
2.50	2	45	0.015	0.060	1.050	2.39	5993	186	0.200
3.00	2	45	0.019	0.060	1.300	2.89	4956	186	0.200

Application



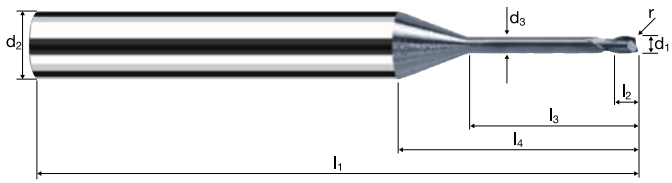
Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	96	0.037	0.057	0.020	1.00	30558	2264	45°
1.50	2	120	0.037	0.057	0.030	1.50	25465	1887	45°
2.00	2	120	0.037	0.057	0.030	2.00	19099	1415	45°
2.50	2	120	0.037	0.057	0.030	2.50	15279	1132	45°
3.00	2	120	0.037	0.057	0.030	3.00	12732	943	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
1.00	2	86	0.037	0.057	0.020	1.00	27375	2029	45°
1.50	2	107	0.037	0.057	0.030	1.50	22706	1683	45°
2.00	2	107	0.037	0.057	0.030	2.00	17030	1262	45°
2.50	2	107	0.037	0.057	0.030	2.50	13624	1010	45°
3.00	2	107	0.037	0.057	0.030	3.00	11353	841	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.020	0.030	0.010	0.39	43257	1687	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
1.00	2	79	0.037	0.057	0.020	1.00	25146	1863	45°
1.50	2	98	0.037	0.057	0.030	1.50	20796	1541	45°
2.00	2	98	0.037	0.057	0.030	2.00	15597	1156	45°
2.50	2	98	0.037	0.057	0.030	2.50	12478	925	45°
3.00	2	98	0.037	0.057	0.030	3.00	10398	771	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	49	0.015	0.030	0.010	0.39	39993	1200	45°
0.50	2	39	0.020	0.040	0.020	0.50	24828	993	45°
0.80	2	39	0.020	0.040	0.020	0.80	15518	621	45°
1.00	2	39	0.029	0.057	0.020	1.00	12414	708	45°
1.50	2	49	0.029	0.057	0.030	1.50	10398	593	45°
2.00	2	49	0.029	0.057	0.030	2.00	7799	445	45°
2.50	2	49	0.029	0.057	0.030	2.50	6239	356	45°
3.00	2	49	0.029	0.057	0.030	3.00	5199	296	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

HM XA	λ 25° γ -10°



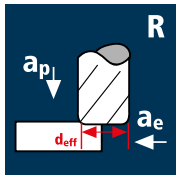
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6536** ø-Code **020**

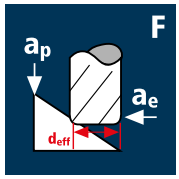
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6536
020	0.20	6.00	0.18	57	0.20	1.60	18.22	0.050	13.2°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.16	0.050	11.6°	2	●
048	0.50	6.00	0.45	57	0.50	4.00	15.01	0.050	11.0°	2	●
042	0.40	6.00	0.35	57	0.40	3.20	19.16	0.100	11.6°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.100	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.100	10.3°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.100	9.2°	2	●
098	1.00	6.00	0.95	61	1.00	8.00	18.08	0.100	8.3°	2	●
082	0.80	6.00	0.75	57	0.80	6.40	16.85	0.200	9.3°	2	●
100	1.00	6.00	0.95	61	1.00	8.00	18.08	0.200	8.3°	2	●
108	1.20	6.00	1.10	61	1.20	9.60	19.40	0.200	7.3°	2	●
120	1.50	6.00	1.40	61	1.50	12.00	21.24	0.200	6.4°	2	●
140	2.00	6.00	1.90	66	2.00	16.00	24.31	0.200	4.9°	2	●
160	2.50	6.00	2.30	69	2.50	20.00	27.56	0.200	3.8°	2	●
180	3.00	6.00	2.80	75	3.00	24.00	30.63	0.200	2.9°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	87	0.006	0.120	0.200	0.88	31469	404	0.300
	2.00	2	87	0.015	0.250	0.600	1.87	14809	449	0.500
	2.50	2	87	0.019	0.250	0.900	2.37	11685	449	0.500
	3.00	2	87	0.023	0.250	1.200	2.87	9649	449	0.500
Hardened tool steel 48 - 52 HRC	1.00	2	97	0.008	0.120	0.200	0.88	35086	540	0.300
	2.00	2	97	0.018	0.250	0.600	1.87	16511	600	0.500
	2.50	2	97	0.023	0.250	0.900	2.37	13028	600	0.500
	3.00	2	97	0.028	0.250	1.200	2.87	10758	600	0.500
Hardened tool steel 52 - 56 HRC	1.00	2	90	0.006	0.120	0.200	0.88	32554	418	0.300
	2.00	2	90	0.015	0.250	0.600	1.87	15320	464	0.500
	2.50	2	90	0.019	0.250	0.900	2.37	12088	464	0.500
	3.00	2	90	0.023	0.250	1.200	2.87	9982	464	0.500
Hardened tool steel 56 - 60 HRC	1.00	2	45	0.004	0.060	0.160	0.76	18847	149	0.300
	2.00	2	45	0.011	0.150	0.500	1.71	8377	186	0.500
	2.50	2	45	0.014	0.150	0.750	2.21	6481	186	0.500
	3.00	2	45	0.018	0.150	1.000	2.71	5286	186	0.500

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	96	0.046	0.070	0.020	1.00	30558	2781	45°
	2.00	2	120	0.059	0.090	0.030	1.98	19292	2257	45°
	2.50	2	120	0.059	0.090	0.030	2.48	15402	1802	45°
	3.00	2	120	0.059	0.090	0.030	2.98	12818	1500	45°
Hardened tool steel 48 - 52 HRC	1.00	2	86	0.046	0.070	0.020	1.00	27375	2491	45°
	2.00	2	107	0.059	0.090	0.030	1.98	17202	2013	45°
	2.50	2	107	0.059	0.090	0.030	2.48	13734	1607	45°
	3.00	2	107	0.059	0.090	0.030	2.98	11429	1337	45°
Hardened tool steel 52 - 56 HRC	1.00	2	79	0.046	0.070	0.020	1.00	25146	2288	45°
	2.00	2	98	0.059	0.090	0.030	1.98	15755	1843	45°
	2.50	2	98	0.059	0.090	0.030	2.48	12578	1472	45°
	3.00	2	98	0.059	0.090	0.030	2.98	10468	1225	45°
Hardened tool steel 56 - 60 HRC	1.00	2	39	0.035	0.070	0.020	1.00	12414	869	45°
	2.00	2	49	0.045	0.090	0.030	1.98	7877	709	45°
	2.50	2	49	0.045	0.090	0.030	2.48	6289	566	45°
	3.00	2	49	0.045	0.090	0.030	2.98	5234	471	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

X-Generation X

II

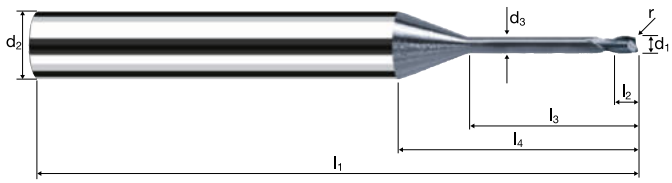
HM XA

λ 25°
γ -10°

h4

d1

r



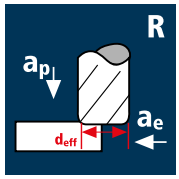
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6536** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6536
101	1.00	6.00	0.95	61	1.00	8.00	18.08	0.300	8.3°	2	●
145	2.00	6.00	1.90	66	2.00	16.00	24.31	0.500	5.0°	2	●
165	2.50	6.00	2.30	69	2.50	20.00	27.56	0.500	3.9°	2	●
185	3.00	6.00	2.80	75	3.00	24.00	30.63	0.500	3.0°	2	●

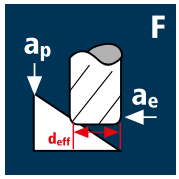
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.20	2	20	0.001	0.008	0.030	0.15	42441	78	0.050
0.40	2	41	0.002	0.015	0.060	0.31	42099	161	0.100
0.50	2	58	0.003	0.030	0.120	0.44	41959	256	0.100
0.80	2	70	0.005	0.030	0.240	0.74	30110	309	0.100
1.00	2	70	0.006	0.060	0.240	0.89	25036	309	0.200
1.50	2	70	0.011	0.080	0.550	1.42	15691	343	0.200
2.00	2	70	0.015	0.080	0.800	1.92	11605	343	0.200
2.50	2	70	0.019	0.080	1.050	2.42	9207	343	0.200
3.00	2	70	0.022	0.080	1.300	2.92	7631	343	0.200
Hardened tool steel 48 - 52 HRC									
0.20	2	20	0.001	0.008	0.030	0.15	42441	94	0.050
0.40	2	41	0.002	0.015	0.060	0.31	42099	193	0.100
0.50	2	58	0.004	0.030	0.120	0.44	41959	307	0.100
0.80	2	78	0.006	0.030	0.240	0.74	33552	413	0.100
1.00	2	78	0.007	0.060	0.240	0.89	27897	413	0.200
1.50	2	78	0.013	0.080	0.550	1.42	17485	459	0.200
2.00	2	78	0.018	0.080	0.800	1.92	12931	459	0.200
2.50	2	78	0.022	0.080	1.050	2.42	10260	459	0.200
3.00	2	78	0.027	0.080	1.300	2.92	8503	459	0.200
Hardened tool steel 52 - 56 HRC									
0.20	2	20	0.001	0.008	0.030	0.15	42441	78	0.050
0.40	2	41	0.002	0.015	0.060	0.31	42099	161	0.100
0.50	2	58	0.003	0.030	0.120	0.44	41959	256	0.100
0.80	2	72	0.005	0.030	0.240	0.74	30971	317	0.100
1.00	2	72	0.006	0.060	0.240	0.89	25751	317	0.200
1.50	2	72	0.011	0.080	0.550	1.42	16140	353	0.200
2.00	2	72	0.015	0.080	0.800	1.92	11937	353	0.200
2.50	2	72	0.019	0.080	1.050	2.42	9470	353	0.200
3.00	2	72	0.022	0.080	1.300	2.92	7849	353	0.200
Hardened tool steel 56 - 60 HRC									
0.20	2	18	0.001	0.005	0.020	0.14	40926	49	0.050
0.40	2	36	0.001	0.010	0.040	0.29	39514	99	0.100
0.50	2	36	0.002	0.015	0.090	0.41	27949	113	0.100
0.80	2	36	0.003	0.015	0.180	0.71	16140	113	0.100
1.00	2	36	0.004	0.030	0.180	0.81	14147	113	0.200
1.50	2	36	0.008	0.040	0.440	1.34	8552	141	0.200
2.00	2	36	0.011	0.040	0.640	1.84	6228	141	0.200
2.50	2	36	0.014	0.040	0.840	2.34	4897	141	0.200
3.00	2	36	0.017	0.040	1.040	2.84	4035	141	0.200

Application



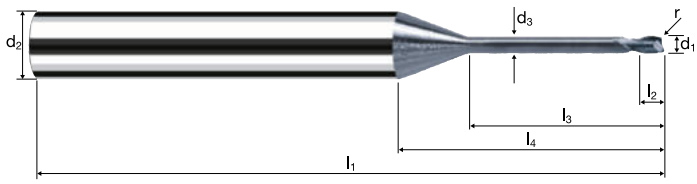
Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.026	0.040	0.010	0.40	42176	2193	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	77	0.026	0.040	0.020	0.80	30637	1593	45°
1.00	2	77	0.037	0.057	0.020	1.00	24510	1816	45°
1.50	2	96	0.037	0.057	0.030	1.50	20372	1510	45°
2.00	2	96	0.037	0.057	0.030	2.00	15279	1132	45°
2.50	2	96	0.037	0.057	0.030	2.50	12223	906	45°
3.00	2	96	0.037	0.057	0.030	3.00	10186	755	45°
Hardened tool steel 48 - 52 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.026	0.040	0.010	0.40	42176	2193	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	69	0.026	0.040	0.020	0.80	27454	1428	45°
1.00	2	69	0.037	0.057	0.020	1.00	21963	1628	45°
1.50	2	86	0.037	0.057	0.030	1.50	18250	1352	45°
2.00	2	86	0.037	0.057	0.030	2.00	13687	1014	45°
2.50	2	86	0.037	0.057	0.030	2.50	10950	811	45°
3.00	2	86	0.037	0.057	0.030	3.00	9125	676	45°
Hardened tool steel 52 - 56 HRC									
0.20	2	26	0.020	0.030	0.010	0.19	43558	1699	45°
0.40	2	53	0.026	0.040	0.010	0.40	42176	2193	45°
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.80	2	63	0.026	0.040	0.020	0.80	25067	1304	45°
1.00	2	63	0.037	0.057	0.020	1.00	20054	1486	45°
1.50	2	79	0.037	0.057	0.030	1.50	16764	1242	45°
2.00	2	79	0.037	0.057	0.030	2.00	12573	932	45°
2.50	2	79	0.037	0.057	0.030	2.50	10059	745	45°
3.00	2	79	0.037	0.057	0.030	3.00	8382	621	45°
Hardened tool steel 56 - 60 HRC									
0.20	2	26	0.015	0.030	0.010	0.19	43558	1307	45°
0.40	2	39	0.020	0.040	0.010	0.40	31035	1241	45°
0.50	2	31	0.020	0.040	0.020	0.50	19735	789	45°
0.80	2	31	0.020	0.040	0.020	0.80	12335	493	45°
1.00	2	31	0.029	0.057	0.020	1.00	9868	563	45°
1.50	2	39	0.029	0.057	0.030	1.50	8276	472	45°
2.00	2	39	0.029	0.057	0.030	2.00	6207	354	45°
2.50	2	39	0.029	0.057	0.030	2.50	4966	283	45°
3.00	2	39	0.029	0.057	0.030	3.00	4138	236	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

HM XA	λ 25° γ -10°



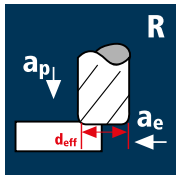
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6538** ø-Code **020**

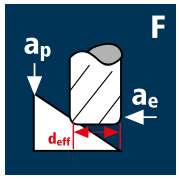
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6538
020	0.20	6.00	0.18	57	0.20	2.00	18.62	0.050	12.8°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	19.96	0.050	11.0°	2	●
048	0.50	6.00	0.45	57	0.50	5.00	16.01	0.050	10.2°	2	●
042	0.40	6.00	0.35	57	0.40	4.00	19.96	0.100	11.0°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.100	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.100	9.6°	2	●
080	0.80	6.00	0.75	61	0.80	8.00	18.45	0.100	8.4°	2	●
098	1.00	6.00	0.95	61	1.00	10.00	20.08	0.100	7.4°	2	●
082	0.80	6.00	0.75	61	0.80	8.00	18.45	0.200	8.5°	2	●
100	1.00	6.00	0.95	61	1.00	10.00	20.08	0.200	7.4°	2	●
120	1.50	6.00	1.40	66	1.50	15.00	24.24	0.200	5.5°	2	●
140	2.00	6.00	1.90	69	2.00	20.00	28.31	0.200	4.2°	2	●
160	2.50	6.00	2.30	75	2.50	25.00	32.56	0.200	3.2°	2	●
180	3.00	6.00	2.80	80	3.00	30.00	36.63	0.200	2.4°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	1.00	2	70	0.006	0.090	0.160	0.83	26845	309	0.300
	2.00	2	70	0.014	0.200	0.500	1.80	12379	343	0.500
	2.50	2	70	0.018	0.200	0.750	2.30	9688	343	0.500
	3.00	2	70	0.022	0.200	1.000	2.80	7958	343	0.500
Hardened tool steel 48 - 52 HRC	1.00	2	78	0.007	0.090	0.160	0.83	29913	413	0.300
	2.00	2	78	0.017	0.200	0.500	1.80	13793	459	0.500
	2.50	2	78	0.021	0.200	0.750	2.30	10795	459	0.500
	3.00	2	78	0.026	0.200	1.000	2.80	8867	459	0.500
Hardened tool steel 52 - 56 HRC	1.00	2	72	0.006	0.090	0.160	0.83	27612	317	0.300
	2.00	2	72	0.014	0.200	0.500	1.80	12732	353	0.500
	2.50	2	72	0.018	0.200	0.750	2.30	9964	353	0.500
	3.00	2	72	0.022	0.200	1.000	2.80	8185	353	0.500
Hardened tool steel 56 - 60 HRC	1.00	2	36	0.004	0.045	0.120	0.72	15915	113	0.300
	2.00	2	36	0.010	0.100	0.400	1.60	7162	141	0.500
	2.50	2	36	0.013	0.100	0.600	2.10	5457	141	0.500
	3.00	2	36	0.016	0.100	0.800	2.60	4407	141	0.500

Application F



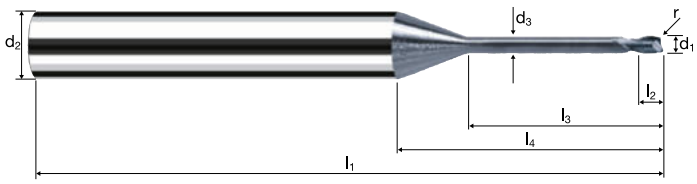
Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	1.00	2	77	0.046	0.070	0.020	1.00	24510	2230	45°
	2.00	2	96	0.059	0.090	0.030	1.98	15433	1806	45°
	2.50	2	96	0.059	0.090	0.030	2.48	12322	1442	45°
	3.00	2	96	0.059	0.090	0.030	2.98	10254	1200	45°
Hardened tool steel 48 - 52 HRC	1.00	2	69	0.046	0.070	0.020	1.00	21963	1999	45°
	2.00	2	86	0.059	0.090	0.030	1.98	13826	1618	45°
	2.50	2	86	0.059	0.090	0.030	2.48	11038	1291	45°
	3.00	2	86	0.059	0.090	0.030	2.98	9186	1075	45°
Hardened tool steel 52 - 56 HRC	1.00	2	63	0.046	0.070	0.020	1.00	20054	1825	45°
	2.00	2	79	0.059	0.090	0.030	1.98	12700	1486	45°
	2.50	2	79	0.059	0.090	0.030	2.48	10140	1186	45°
	3.00	2	79	0.059	0.090	0.030	2.98	8438	987	45°
Hardened tool steel 56 - 60 HRC	1.00	2	31	0.035	0.070	0.020	1.00	9868	691	45°
	2.00	2	39	0.045	0.090	0.030	1.98	6270	564	45°
	2.50	2	39	0.045	0.090	0.030	2.48	5006	451	45°
	3.00	2	39	0.045	0.090	0.030	2.98	4166	375	45°

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

HM
XA

λ 25°
γ -10°

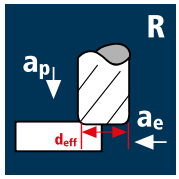


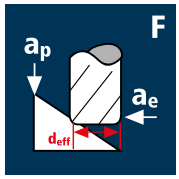
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6538** ø-Code **101**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6538
101	1.00	6.00	0.95	61	1.00	10.00	20.08	0.300	7.5°	2	●
145	2.00	6.00	1.90	69	2.00	20.00	28.31	0.500	4.3°	2	●
165	2.50	6.00	2.30	75	2.50	25.00	32.56	0.500	3.2°	2	●
185	3.00	6.00	2.80	80	3.00	30.00	36.63	0.500	2.5°	2	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.50	2	62	0.004	0.050	0.210	0.47	41990	320	0.100
		0.60	2	75	0.005	0.050	0.280	0.57	41883	387	0.100
		0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
		1.00	2	109	0.008	0.100	0.420	0.95	36522	562	0.200
		1.50	2	109	0.013	0.120	0.880	1.47	23603	625	0.200
		2.00	2	109	0.018	0.120	1.280	1.97	17612	625	0.200
	Hardened tool steel 48 - 52 HRC	0.50	2	62	0.005	0.050	0.210	0.47	41990	384	0.100
		0.60	2	75	0.006	0.050	0.280	0.57	41883	464	0.100
		0.80	2	102	0.007	0.050	0.420	0.77	42166	631	0.100
		1.00	2	121	0.009	0.100	0.420	0.95	40543	749	0.200
		1.50	2	121	0.016	0.120	0.880	1.47	26201	832	0.200
		2.00	2	121	0.021	0.120	1.280	1.97	19551	832	0.200
	Hardened tool steel 52 - 56 HRC	0.50	2	62	0.004	0.050	0.210	0.47	41990	320	0.100
		0.60	2	75	0.005	0.050	0.280	0.57	41883	387	0.100
		0.80	2	102	0.006	0.050	0.420	0.77	42166	526	0.100
		1.00	2	113	0.008	0.100	0.420	0.95	37862	583	0.200
		1.50	2	113	0.013	0.120	0.880	1.47	24469	647	0.200
		2.00	2	113	0.018	0.120	1.280	1.97	18258	647	0.200
	Hardened tool steel 56 - 60 HRC	0.50	2	57	0.003	0.030	0.180	0.44	41236	209	0.100
		0.60	2	57	0.003	0.030	0.240	0.54	33599	209	0.100
		0.80	2	57	0.004	0.030	0.360	0.74	24518	209	0.100
		1.00	2	57	0.005	0.060	0.360	0.89	20386	209	0.200
		1.50	2	57	0.010	0.080	0.770	1.42	12777	261	0.200
		2.00	2	57	0.014	0.080	1.120	1.92	9450	261	0.200

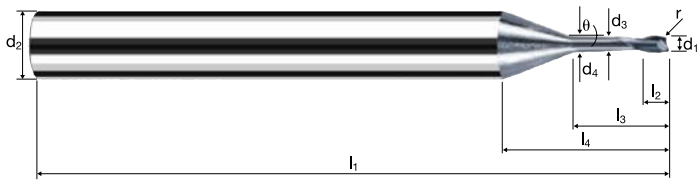
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
		0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
		0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
		1.00	2	106	0.037	0.057	0.020	1.00	33741	2500	45°
		1.50	2	150	0.037	0.057	0.030	1.50	31831	2359	45°
		2.00	2	150	0.037	0.057	0.030	2.00	23873	1769	45°
	Hardened tool steel 48 - 52 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
		0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
		0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
		1.00	2	106	0.037	0.057	0.020	1.00	33741	2500	45°
		1.50	2	134	0.037	0.057	0.030	1.50	28436	2107	45°
		2.00	2	134	0.037	0.057	0.030	2.00	21327	1580	45°
	Hardened tool steel 52 - 56 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
		0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
		0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
		1.00	2	98	0.037	0.057	0.020	1.00	31194	2312	45°
		1.50	2	123	0.037	0.057	0.030	1.50	26101	1934	45°
		2.00	2	123	0.037	0.057	0.030	2.00	19576	1451	45°
	Hardened tool steel 56 - 60 HRC	0.50	2	49	0.020	0.040	0.020	0.50	31194	1248	45°
		0.60	2	49	0.020	0.040	0.020	0.60	25995	1040	45°
		0.80	2	49	0.020	0.040	0.020	0.80	19496	780	45°
		1.00	2	49	0.029	0.057	0.020	1.00	15597	889	45°
		1.50	2	61	0.029	0.057	0.030	1.50	12945	738	45°
		2.00	2	61	0.029	0.057	0.030	2.00	9708	553	45°

Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 6xd

HM
XA

λ 25°
γ -10°



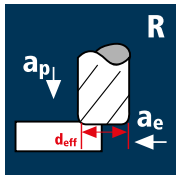
ReTool®

Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60 | Inox Stainless | Ti Titanium | Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6735** ø-Code **050**

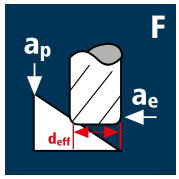
Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6735
050	0.50	6.00	0.45	0.53	57	0.40	3.00	13.87	0.9°	0.100	11.8°	2	●
060	0.60	6.00	0.55	0.65	57	0.50	3.60	14.24	0.9°	0.100	11.1°	2	●
080	0.80	6.00	0.75	0.88	57	0.65	4.80	15.01	0.9°	0.100	10.2°	2	●
100	1.00	6.00	0.95	1.11	57	0.80	6.00	15.78	0.9°	0.200	9.4°	2	●
120	1.50	6.00	1.40	1.65	61	1.20	9.00	17.78	0.9°	0.200	7.4°	2	●
140	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	0.200	5.9°	2	●
145	2.00	6.00	1.90	2.23	66	1.60	12.00	19.69	0.9°	0.500	6.0°	2	●

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	61	0.003	0.040	0.150	0.46	42211	283	0.100
	0.60	2	74	0.004	0.040	0.200	0.56	42062	343	0.100
	0.80	2	87	0.006	0.040	0.300	0.76	36438	404	0.100
	1.00	2	87	0.007	0.080	0.300	0.92	30101	404	0.200
	1.20	2	87	0.009	0.100	0.480	1.15	24081	449	0.200
	1.50	2	87	0.012	0.100	0.660	1.45	19099	449	0.200
	2.00	2	87	0.016	0.100	0.960	1.95	14202	449	0.200
	2.50	2	87	0.020	0.100	1.260	2.45	11303	449	0.200
	3.00	2	87	0.024	0.100	1.560	2.95	9387	449	0.200
Hardened tool steel 48 - 52 HRC	0.50	2	61	0.004	0.040	0.150	0.46	42211	340	0.100
	0.60	2	74	0.005	0.040	0.200	0.56	42062	412	0.100
	0.80	2	97	0.007	0.040	0.300	0.76	40626	540	0.100
	1.00	2	97	0.008	0.080	0.300	0.92	33561	540	0.200
	1.20	2	97	0.011	0.100	0.480	1.15	26849	600	0.200
	1.50	2	97	0.014	0.100	0.660	1.45	21294	600	0.200
	2.00	2	97	0.019	0.100	0.960	1.95	15834	600	0.200
	2.50	2	97	0.024	0.100	1.260	2.45	12602	600	0.200
	3.00	2	97	0.029	0.100	1.560	2.95	10466	600	0.200
Hardened tool steel 52 - 56 HRC	0.50	2	61	0.003	0.040	0.150	0.46	42211	283	0.100
	0.60	2	74	0.004	0.040	0.200	0.56	42062	343	0.100
	0.80	2	90	0.006	0.040	0.300	0.76	37695	418	0.100
	1.00	2	90	0.007	0.080	0.300	0.92	31139	418	0.200
	1.20	2	90	0.009	0.100	0.480	1.15	24911	464	0.200
	1.50	2	90	0.012	0.100	0.660	1.45	19757	464	0.200
	2.00	2	90	0.016	0.100	0.960	1.95	14691	464	0.200
	2.50	2	90	0.020	0.100	1.260	2.45	11693	464	0.200
	3.00	2	90	0.024	0.100	1.560	2.95	9711	464	0.200
Hardened tool steel 56 - 60 HRC	0.50	2	45	0.002	0.020	0.120	0.42	34105	149	0.100
	0.60	2	45	0.003	0.020	0.160	0.52	27546	149	0.100
	0.80	2	45	0.004	0.020	0.240	0.72	19894	149	0.100
	1.00	2	45	0.004	0.040	0.240	0.84	17052	149	0.200
	1.20	2	45	0.007	0.060	0.400	1.09	13141	186	0.200
	1.50	2	45	0.009	0.060	0.550	1.39	10305	186	0.200
	2.00	2	45	0.012	0.060	0.800	1.89	7579	186	0.200
	2.50	2	45	0.015	0.060	1.050	2.39	5993	186	0.200
	3.00	2	45	0.019	0.060	1.300	2.89	4956	186	0.200

Application



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
	1.00	2	96	0.037	0.057	0.020	1.00	30558	2264	45°
	1.20	2	96	0.037	0.057	0.020	1.20	25465	1887	45°
	1.50	2	120	0.037	0.057	0.030	1.50	25465	1887	45°
	2.00	2	120	0.037	0.057	0.030	2.00	19099	1415	45°
	2.50	2	120	0.037	0.057	0.030	2.50	15279	1132	45°
	3.00	2	120	0.037	0.057	0.030	3.00	12732	943	45°
Hardened tool steel 48 - 52 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	84	0.026	0.040	0.020	0.80	33423	1738	45°
	1.00	2	86	0.037	0.057	0.020	1.00	27375	2029	45°
	1.20	2	86	0.037	0.057	0.020	1.20	22812	1690	45°
	1.50	2	107	0.037	0.057	0.030	1.50	22706	1683	45°
	2.00	2	107	0.037	0.057	0.030	2.00	17030	1262	45°
	2.50	2	107	0.037	0.057	0.030	2.50	13624	1010	45°
	3.00	2	107	0.037	0.057	0.030	3.00	11353	841	45°
Hardened tool steel 52 - 56 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
	1.00	2	79	0.037	0.057	0.020	1.00	25146	1863	45°
	1.20	2	79	0.037	0.057	0.020	1.20	20955	1553	45°
	1.50	2	98	0.037	0.057	0.030	1.50	20796	1541	45°
	2.00	2	98	0.037	0.057	0.030	2.00	15597	1156	45°
	2.50	2	98	0.037	0.057	0.030	2.50	12478	925	45°
	3.00	2	98	0.037	0.057	0.030	3.00	10398	771	45°
Hardened tool steel 56 - 60 HRC	0.50	2	39	0.020	0.040	0.020	0.50	24828	993	45°
	0.60	2	39	0.020	0.040	0.020	0.60	20690	828	45°
	0.80	2	39	0.020	0.040	0.020	0.80	15518	621	45°
	1.00	2	39	0.029	0.057	0.020	1.00	12414	708	45°
	1.20	2	49	0.029	0.057	0.030	1.20	12998	741	45°
	1.50	2	49	0.029	0.057	0.030	1.50	10398	593	45°
	2.00	2	49	0.029	0.057	0.030	2.00	7799	445	45°
	2.50	2	49	0.029	0.057	0.030	2.50	6239	356	45°
	3.00	2	49	0.029	0.057	0.030	3.00	5199	296	45°

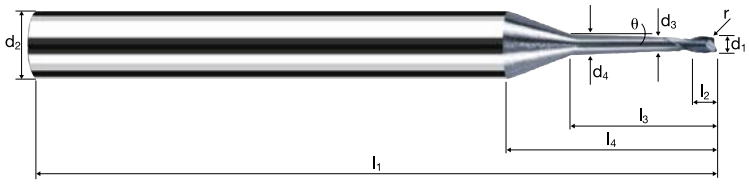
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 8xd

X-Generation X

II

HM XA	λ 25° γ -10°



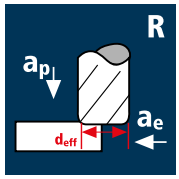
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6736** ø-Code **050**

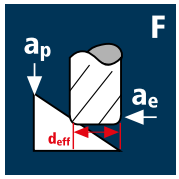
Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6736
050	0.50	6.00	0.45	0.56	57	0.40	4.00	14.81	0.9°	0.100	11.1°	2	●
060	0.60	6.00	0.55	0.69	57	0.50	4.80	15.37	0.9°	0.100	10.3°	2	●
080	0.80	6.00	0.75	0.93	57	0.65	6.40	16.52	0.9°	0.100	9.2°	2	●
100	1.00	6.00	0.95	1.18	61	0.80	8.00	17.65	0.9°	0.200	8.3°	2	●
108	1.20	6.00	1.10	1.37	61	1.00	9.60	18.90	0.9°	0.200	7.3°	2	●
120	1.50	6.00	1.40	1.74	61	1.20	12.00	20.61	0.9°	0.200	6.4°	2	●
140	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	0.200	4.9°	2	●
160	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	0.200	3.8°	2	●
180	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	0.200	2.9°	2	●
145	2.00	6.00	1.90	2.35	66	1.60	16.00	23.47	0.9°	0.500	5.0°	2	●
165	2.50	6.00	2.30	2.87	69	2.00	20.00	26.50	0.9°	0.500	3.9°	2	●
185	3.00	6.00	2.80	3.48	75	2.40	24.00	29.36	0.9°	0.500	3.0°	2	●

Application R



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC	0.50	2	58	0.003	0.030	0.120	0.44	41959	256	0.100
	0.60	2	70	0.004	0.030	0.160	0.54	41262	309	0.100
	0.80	2	70	0.005	0.030	0.240	0.74	30110	309	0.100
	1.00	2	70	0.006	0.060	0.240	0.89	25036	309	0.200
	1.20	2	70	0.009	0.080	0.400	1.12	19894	343	0.200
	1.50	2	70	0.011	0.080	0.550	1.42	15691	343	0.200
	2.00	2	70	0.015	0.080	0.800	1.92	11605	343	0.200
	2.50	2	70	0.019	0.080	1.050	2.42	9207	343	0.200
	3.00	2	70	0.022	0.080	1.300	2.92	7631	343	0.200
Hardened tool steel 48 - 52 HRC	0.50	2	58	0.004	0.030	0.120	0.44	41959	307	0.100
	0.60	2	71	0.004	0.030	0.160	0.54	41852	376	0.100
	0.80	2	78	0.006	0.030	0.240	0.74	33552	413	0.100
	1.00	2	78	0.007	0.060	0.240	0.89	27897	413	0.200
	1.20	2	78	0.010	0.080	0.400	1.12	22168	459	0.200
	1.50	2	78	0.013	0.080	0.550	1.42	17485	459	0.200
	2.00	2	78	0.018	0.080	0.800	1.92	12931	459	0.200
	2.50	2	78	0.022	0.080	1.050	2.42	10260	459	0.200
	3.00	2	78	0.027	0.080	1.300	2.92	8503	459	0.200
Hardened tool steel 52 - 56 HRC	0.50	2	58	0.003	0.030	0.120	0.44	41959	256	0.100
	0.60	2	71	0.004	0.030	0.160	0.54	41852	313	0.100
	0.80	2	72	0.005	0.030	0.240	0.74	30971	317	0.100
	1.00	2	72	0.006	0.060	0.240	0.89	25751	317	0.200
	1.20	2	72	0.009	0.080	0.400	1.12	20463	353	0.200
	1.50	2	72	0.011	0.080	0.550	1.42	16140	353	0.200
	2.00	2	72	0.015	0.080	0.800	1.92	11937	353	0.200
	2.50	2	72	0.019	0.080	1.050	2.42	9470	353	0.200
	3.00	2	72	0.022	0.080	1.300	2.92	7849	353	0.200
Hardened tool steel 56 - 60 HRC	0.50	2	36	0.002	0.015	0.090	0.41	27949	113	0.100
	0.60	2	36	0.003	0.015	0.120	0.51	22469	113	0.100
	0.80	2	36	0.003	0.015	0.180	0.71	16140	113	0.100
	1.00	2	36	0.004	0.030	0.180	0.81	14147	113	0.200
	1.20	2	36	0.006	0.040	0.320	1.04	11018	141	0.200
	1.50	2	36	0.008	0.040	0.440	1.34	8552	141	0.200
	2.00	2	36	0.011	0.040	0.640	1.84	6228	141	0.200
	2.50	2	36	0.014	0.040	0.840	2.34	4897	141	0.200
	3.00	2	36	0.017	0.040	1.040	2.84	4035	141	0.200

Application F



Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	77	0.026	0.040	0.020	0.80	30637	1593	45°
	1.00	2	77	0.037	0.057	0.020	1.00	24510	1816	45°
	1.20	2	77	0.037	0.057	0.020	1.20	20425	1514	45°
	1.50	2	96	0.037	0.057	0.030	1.50	20372	1510	45°
	2.00	2	96	0.037	0.057	0.030	2.00	15279	1132	45°
	2.50	2	96	0.037	0.057	0.030	2.50	12223	906	45°
	3.00	2	96	0.037	0.057	0.030	3.00	10186	755	45°
Hardened tool steel 48 - 52 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	69	0.026	0.040	0.020	0.80	27454	1428	45°
	1.00	2	69	0.037	0.057	0.020	1.00	21963	1628	45°
	1.20	2	69	0.037	0.057	0.020	1.20	18303	1356	45°
	1.50	2	86	0.037	0.057	0.030	1.50	18250	1352	45°
	2.00	2	86	0.037	0.057	0.030	2.00	13687	1014	45°
	2.50	2	86	0.037	0.057	0.030	2.50	10950	811	45°
	3.00	2	86	0.037	0.057	0.030	3.00	9125	676	45°
Hardened tool steel 52 - 56 HRC	0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
	0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
	0.80	2	63	0.026	0.040	0.020	0.80	25067	1304	45°
	1.00	2	63	0.037	0.057	0.020	1.00	20054	1486	45°
	1.20	2	63	0.037	0.057	0.020	1.20	16711	1238	45°
	1.50	2	79	0.037	0.057	0.030	1.50	16764	1242	45°
	2.00	2	79	0.037	0.057	0.030	2.00	12573	932	45°
	2.50	2	79	0.037	0.057	0.030	2.50	10059	745	45°
	3.00	2	79	0.037	0.057	0.030	3.00	8382	621	45°
Hardened tool steel 56 - 60 HRC	0.50	2	31	0.020	0.040	0.020	0.50	19735	789	45°
	0.60	2	31	0.020	0.040	0.020	0.60	16446	658	45°
	0.80	2	31	0.020	0.040	0.020	0.80	12335	493	45°
	1.00	2	31	0.029	0.057	0.020	1.00	9868	563	45°
	1.20	2	39	0.029	0.057	0.030	1.20	10345	590	45°
	1.50	2	39	0.029	0.057	0.030	1.50	8276	472	45°
	2.00	2	39	0.029	0.057	0.030	2.00	6207	354	45°
	2.50	2	39	0.029	0.057	0.030	2.50	4966	283	45°
	3.00	2	39	0.029	0.057	0.030	3.00	4138	236	45°

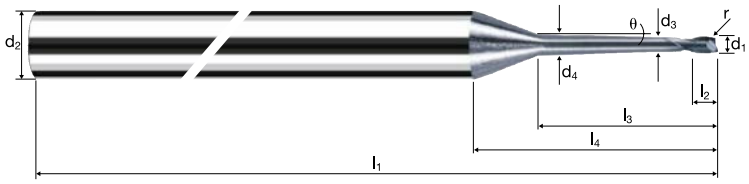
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 10xd

X-Generation X

II

HM XA	λ 25° γ -10°



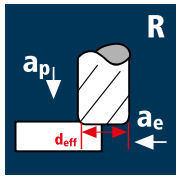
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6738** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6738
050	0.50	6.00	0.45	0.59	57	0.40	5.00	15.75	0.9°	0.100	10.4°	2	●
060	0.60	6.00	0.55	0.72	57	0.50	6.00	16.51	0.9°	0.100	9.6°	2	●
080	0.80	6.00	0.75	0.98	61	0.65	8.00	18.03	0.9°	0.100	8.6°	2	●
100	1.00	6.00	0.95	1.24	61	0.80	10.00	19.54	0.9°	0.200	7.6°	2	●
108	1.20	6.00	1.10	1.45	66	1.00	12.00	21.15	0.9°	0.200	6.8°	2	●
120	1.50	6.00	1.40	1.83	66	1.20	15.00	23.44	0.9°	0.200	5.8°	2	●
140	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	0.200	4.4°	2	●
160	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	0.200	3.4°	2	●
180	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	0.200	2.6°	2	●
145	2.00	6.00	1.90	2.48	69	1.60	20.00	27.23	0.9°	0.500	4.4°	2	●
165	2.50	6.00	2.30	3.02	75	2.00	25.00	31.22	0.9°	0.500	3.4°	2	●
185	3.00	6.00	2.80	3.67	75	2.40	30.00	35.01	0.9°	0.500	2.6°	2	●

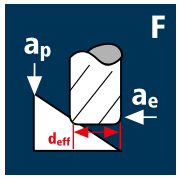
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	2	55	0.003	0.020	0.090	0.42	41683	218	0.100
0.60	2	63	0.003	0.020	0.120	0.52	38564	250	0.100
0.80	2	63	0.004	0.020	0.180	0.72	27852	250	0.100
1.00	2	63	0.005	0.040	0.180	0.84	23873	250	0.200
1.20	2	63	0.008	0.060	0.320	1.09	18398	278	0.200
1.50	2	63	0.010	0.060	0.440	1.39	14427	278	0.200
2.00	2	63	0.013	0.060	0.640	1.89	10610	278	0.200
2.50	2	63	0.017	0.060	0.840	2.39	8391	278	0.200
3.00	2	63	0.020	0.060	1.040	2.89	6939	278	0.200
Hardened tool steel 48 - 52 HRC									
0.50	2	55	0.003	0.020	0.090	0.42	41683	262	0.100
0.60	2	69	0.004	0.020	0.120	0.52	42237	329	0.100
0.80	2	70	0.005	0.020	0.180	0.72	30947	333	0.100
1.00	2	70	0.006	0.040	0.180	0.84	26526	333	0.200
1.20	2	70	0.009	0.060	0.320	1.09	20442	370	0.200
1.50	2	70	0.012	0.060	0.440	1.39	16030	370	0.200
2.00	2	70	0.016	0.060	0.640	1.89	11789	370	0.200
2.50	2	70	0.020	0.060	0.840	2.39	9323	370	0.200
3.00	2	70	0.024	0.060	1.040	2.89	7710	370	0.200
Hardened tool steel 52 - 56 HRC									
0.50	2	55	0.003	0.020	0.090	0.42	41683	218	0.100
0.60	2	65	0.003	0.020	0.120	0.52	39789	258	0.100
0.80	2	65	0.004	0.020	0.180	0.72	28736	258	0.100
1.00	2	65	0.005	0.040	0.180	0.84	24631	258	0.200
1.20	2	65	0.008	0.060	0.320	1.09	18982	287	0.200
1.50	2	65	0.010	0.060	0.440	1.39	14885	287	0.200
2.00	2	65	0.013	0.060	0.640	1.89	10947	287	0.200
2.50	2	65	0.017	0.060	0.840	2.39	8657	287	0.200
3.00	2	65	0.020	0.060	1.040	2.89	7159	287	0.200
Hardened tool steel 56 - 60 HRC									
0.50	2	33	0.002	0.010	0.060	0.39	26934	93	0.100
0.60	2	33	0.002	0.010	0.080	0.49	21437	93	0.100
0.80	2	33	0.003	0.010	0.120	0.69	15224	93	0.100
1.00	2	33	0.003	0.020	0.120	0.77	13642	93	0.200
1.20	2	33	0.006	0.030	0.240	1.01	10400	116	0.200
1.50	2	33	0.007	0.030	0.330	1.31	8018	116	0.200
2.00	2	33	0.010	0.030	0.480	1.81	5803	116	0.200
2.50	2	33	0.013	0.030	0.630	2.31	4547	116	0.200
3.00	2	33	0.016	0.030	0.780	2.81	3738	116	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.60	2	63	0.026	0.040	0.020	0.60	33423	1738	45°
0.80	2	69	0.026	0.040	0.020	0.80	27454	1428	45°
1.00	2	69	0.037	0.057	0.020	1.00	21963	1628	45°
1.20	2	69	0.037	0.057	0.020	1.20	18303	1356	45°
1.50	2	86	0.037	0.057	0.030	1.50	18250	1352	45°
2.00	2	86	0.037	0.057	0.030	2.00	13687	1014	45°
2.50	2	86	0.037	0.057	0.030	2.50	10950	811	45°
3.00	2	86	0.037	0.057	0.030	3.00	9125	676	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.60	2	62	0.026	0.040	0.020	0.60	32892	1710	45°
0.80	2	62	0.026	0.040	0.020	0.80	24669	1283	45°
1.00	2	62	0.037	0.057	0.020	1.00	19735	1462	45°
1.20	2	62	0.037	0.057	0.020	1.20	16446	1219	45°
1.50	2	77	0.037	0.057	0.030	1.50	16340	1211	45°
2.00	2	77	0.037	0.057	0.030	2.00	12255	908	45°
2.50	2	77	0.037	0.057	0.030	2.50	9804	727	45°
3.00	2	77	0.037	0.057	0.030	3.00	8170	605	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	53	0.026	0.040	0.020	0.50	33741	1755	45°
0.60	2	57	0.026	0.040	0.020	0.60	30239	1572	45°
0.80	2	57	0.026	0.040	0.020	0.80	22680	1179	45°
1.00	2	57	0.037	0.057	0.020	1.00	18144	1345	45°
1.20	2	57	0.037	0.057	0.020	1.20	15120	1120	45°
1.50	2	71	0.037	0.057	0.030	1.50	15067	1117	45°
2.00	2	71	0.037	0.057	0.030	2.00	11300	837	45°
2.50	2	71	0.037	0.057	0.030	2.50	9040	670	45°
3.00	2	71	0.037	0.057	0.030	3.00	7533	558	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	28	0.020	0.040	0.020	0.50	17825	713	45°
0.60	2	28	0.020	0.040	0.020	0.60	14854	594	45°
0.80	2	28	0.020	0.040	0.020	0.80	11141	446	45°
1.00	2	28	0.029	0.057	0.020	1.00	8913	508	45°
1.20	2	35	0.029	0.057	0.030	1.20	9284	529	45°
1.50	2	35	0.029	0.057	0.030	1.50	7427	423	45°
2.00	2	35	0.029	0.057	0.030	2.00	5570	318	45°
2.50	2	35	0.029	0.057	0.030	2.50	4456	254	45°
3.00	2	35	0.029	0.057	0.030	3.00	3714	212	45°

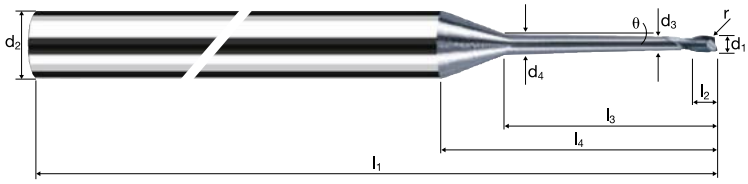
Corner radius end mills MicroX

Shank ø 6mm, conical neck 0.9°, 12xd

X-Generation X

II

HM XA	λ 25° γ -10°

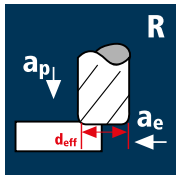


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6740** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6740
050	0.50	6.00	0.45	0.63	57	0.40	6.00	16.68	0.9°	0.100	9.9°	2	●
060	0.60	6.00	0.55	0.76	57	0.50	7.20	17.64	0.9°	0.100	8.9°	2	●
080	0.80	6.00	0.75	1.03	61	0.65	9.60	19.53	0.9°	0.100	7.9°	2	●
100	1.00	6.00	0.95	1.30	66	0.80	12.00	21.43	0.9°	0.200	7.0°	2	●
108	1.20	6.00	1.10	1.52	66	1.00	14.40	23.42	0.9°	0.200	6.2°	2	●
120	1.50	6.00	1.40	1.93	69	1.20	18.00	26.25	0.9°	0.200	5.1°	2	●
140	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	0.200	3.9°	2	●
160	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	0.200	2.9°	2	●
180	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	0.200	2.2°	2	●
145	2.00	6.00	1.90	2.60	75	1.60	24.00	31.00	0.9°	0.500	3.9°	2	●
165	2.50	6.00	2.30	3.18	80	2.00	30.00	35.92	0.9°	0.500	2.9°	2	●
185	3.00	6.00	2.80	3.86	87	2.40	36.00	40.65	0.9°	0.500	2.2°	2	●

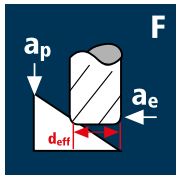
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	2	44	0.002	0.010	0.060	0.39	35912	157	0.100
0.60	2	44	0.003	0.010	0.080	0.49	28583	157	0.100
0.80	2	44	0.004	0.010	0.120	0.69	20298	157	0.100
1.00	2	44	0.004	0.020	0.120	0.77	18189	157	0.200
1.20	2	44	0.006	0.040	0.240	1.04	13467	175	0.200
1.50	2	44	0.008	0.040	0.330	1.34	10452	175	0.200
2.00	2	44	0.011	0.040	0.480	1.84	7612	175	0.200
2.50	2	44	0.015	0.040	0.630	2.34	5985	175	0.200
3.00	2	44	0.018	0.040	0.780	2.84	4932	175	0.200
Hardened tool steel 48 - 52 HRC									
0.50	2	49	0.003	0.010	0.060	0.39	39993	210	0.100
0.60	2	49	0.003	0.010	0.080	0.49	31831	210	0.100
0.80	2	49	0.005	0.010	0.120	0.69	22605	210	0.100
1.00	2	49	0.005	0.020	0.120	0.77	20256	210	0.200
1.20	2	49	0.008	0.040	0.240	1.04	14997	233	0.200
1.50	2	49	0.010	0.040	0.330	1.34	11640	233	0.200
2.00	2	49	0.014	0.040	0.480	1.84	8477	233	0.200
2.50	2	49	0.018	0.040	0.630	2.34	6665	233	0.200
3.00	2	49	0.021	0.040	0.780	2.84	5492	233	0.200
Hardened tool steel 52 - 56 HRC									
0.50	2	46	0.002	0.010	0.060	0.39	37544	164	0.100
0.60	2	46	0.003	0.010	0.080	0.49	29882	164	0.100
0.80	2	46	0.004	0.010	0.120	0.69	21221	164	0.100
1.00	2	46	0.004	0.020	0.120	0.77	19016	164	0.200
1.20	2	46	0.006	0.040	0.240	1.04	14079	183	0.200
1.50	2	46	0.008	0.040	0.330	1.34	10927	183	0.200
2.00	2	46	0.011	0.040	0.480	1.84	7958	183	0.200
2.50	2	46	0.015	0.040	0.630	2.34	6257	183	0.200
3.00	2	46	0.018	0.040	0.780	2.84	5156	183	0.200
Hardened tool steel 56 - 60 HRC									
0.50	2	23	0.001	0.005	0.030	0.36	20336	58	0.100
0.60	2	23	0.002	0.005	0.040	0.46	15915	58	0.100
0.80	2	23	0.003	0.005	0.060	0.66	11093	58	0.100
1.00	2	23	0.003	0.010	0.060	0.72	10168	58	0.200
1.20	2	23	0.005	0.020	0.160	0.97	7548	73	0.200
1.50	2	23	0.006	0.020	0.220	1.27	5765	73	0.200
2.00	2	23	0.009	0.020	0.320	1.77	4136	73	0.200
2.50	2	23	0.011	0.020	0.420	2.27	3225	73	0.200
3.00	2	23	0.014	0.020	0.520	2.77	2643	73	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	48	0.026	0.040	0.020	0.50	30558	1589	45°
0.60	2	48	0.026	0.040	0.020	0.60	25465	1324	45°
0.80	2	48	0.026	0.040	0.020	0.80	19099	993	45°
1.00	2	48	0.037	0.057	0.020	1.00	15279	1132	45°
1.20	2	48	0.037	0.057	0.020	1.20	12732	943	45°
1.50	2	60	0.037	0.057	0.030	1.50	12732	943	45°
2.00	2	60	0.037	0.057	0.030	2.00	9549	708	45°
2.50	2	60	0.037	0.057	0.030	2.50	7639	566	45°
3.00	2	60	0.037	0.057	0.030	3.00	6366	472	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	43	0.026	0.040	0.020	0.50	27375	1424	45°
0.60	2	43	0.026	0.040	0.020	0.60	22812	1186	45°
0.80	2	43	0.026	0.040	0.020	0.80	17109	890	45°
1.00	2	43	0.037	0.057	0.020	1.00	13687	1014	45°
1.20	2	43	0.037	0.057	0.020	1.20	11406	845	45°
1.50	2	54	0.037	0.057	0.030	1.50	11459	849	45°
2.00	2	54	0.037	0.057	0.030	2.00	8594	637	45°
2.50	2	54	0.037	0.057	0.030	2.50	6875	509	45°
3.00	2	54	0.037	0.057	0.030	3.00	5730	425	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	40	0.026	0.040	0.020	0.50	25465	1324	45°
0.60	2	40	0.026	0.040	0.020	0.60	21221	1104	45°
0.80	2	40	0.026	0.040	0.020	0.80	15915	828	45°
1.00	2	40	0.037	0.057	0.020	1.00	12732	943	45°
1.20	2	40	0.037	0.057	0.020	1.20	10610	786	45°
1.50	2	49	0.037	0.057	0.030	1.50	10398	771	45°
2.00	2	49	0.037	0.057	0.030	2.00	7799	578	45°
2.50	2	49	0.037	0.057	0.030	2.50	6239	462	45°
3.00	2	49	0.037	0.057	0.030	3.00	5199	385	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	20	0.020	0.040	0.020	0.50	12732	509	45°
0.60	2	20	0.020	0.040	0.020	0.60	10610	424	45°
0.80	2	20	0.020	0.040	0.020	0.80	7958	318	45°
1.00	2	20	0.029	0.057	0.020	1.00	6366	363	45°
1.20	2	25	0.029	0.057	0.030	1.20	6631	378	45°
1.50	2	25	0.029	0.057	0.030	1.50	5305	302	45°
2.00	2	25	0.029	0.057	0.030	2.00	3979	227	45°
2.50	2	25	0.029	0.057	0.030	2.50	3183	181	45°
3.00	2	25	0.029	0.057	0.030	3.00	2653	151	45°

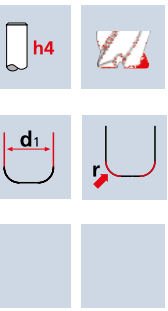
Corner radius end mills MicroX

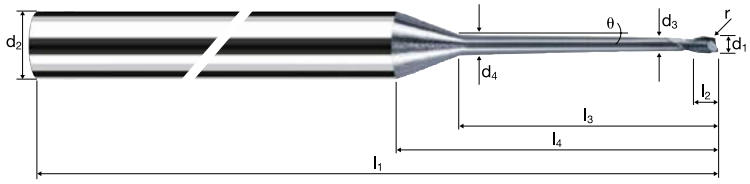
Shank ø 6mm, conical neck 0.9°, 15xd

X-Generation X

II

HM XA	λ 25° γ -10°



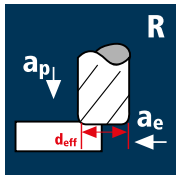


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6742** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6742
050	0.50	6.00	0.45	0.67	61	0.40	7.50	18.10	0.9°	0.100	9.1°	2	●
060	0.60	6.00	0.55	0.82	61	0.50	9.00	19.32	0.9°	0.100	8.1°	2	●
080	0.80	6.00	0.75	1.11	66	0.65	12.00	21.78	0.9°	0.100	7.1°	2	●
100	1.00	6.00	0.95	1.40	66	0.80	15.00	24.24	0.9°	0.200	6.1°	2	●
108	1.20	6.00	1.10	1.63	69	1.00	18.00	26.81	0.9°	0.200	5.3°	2	●
120	1.50	6.00	1.40	2.07	75	1.20	22.50	30.49	0.9°	0.200	4.4°	2	●
140	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	0.200	3.3°	2	●
160	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	0.200	2.4°	2	●
180	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	0.200	1.8°	2	●
145	2.00	6.00	1.90	2.79	80	1.60	30.00	36.65	0.9°	0.500	3.3°	2	●
165	2.50	6.00	2.30	3.42	87	2.00	37.50	42.97	0.9°	0.500	2.4°	2	●
185	3.00	6.00	2.80	4.14	100	2.40	45.00	49.13	0.9°	0.500	1.8°	2	●

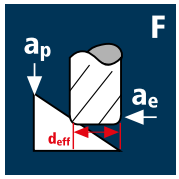
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	2	31	0.002	0.010	0.060	0.39	25302	100	0.100
0.60	2	31	0.002	0.010	0.080	0.49	20138	100	0.100
0.80	2	31	0.003	0.010	0.120	0.69	14301	100	0.100
1.00	2	31	0.004	0.020	0.120	0.77	12815	100	0.200
1.50	2	31	0.007	0.020	0.220	1.27	7770	111	0.200
2.00	2	31	0.010	0.020	0.320	1.77	5575	111	0.200
2.50	2	31	0.013	0.020	0.420	2.27	4347	111	0.200
3.00	2	31	0.016	0.020	0.520	2.77	3562	111	0.200
Hardened tool steel 48 - 52 HRC									
0.50	2	34	0.002	0.010	0.060	0.39	27750	131	0.100
0.60	2	34	0.003	0.010	0.080	0.49	22087	131	0.100
0.80	2	34	0.004	0.010	0.120	0.69	15685	131	0.100
1.00	2	34	0.005	0.020	0.120	0.77	14055	131	0.200
1.50	2	34	0.009	0.020	0.220	1.27	8522	146	0.200
2.00	2	34	0.012	0.020	0.320	1.77	6114	146	0.200
2.50	2	34	0.015	0.020	0.420	2.27	4768	146	0.200
3.00	2	34	0.019	0.020	0.520	2.77	3907	146	0.200
Hardened tool steel 52 - 56 HRC									
0.50	2	32	0.002	0.010	0.060	0.39	26118	103	0.100
0.60	2	32	0.002	0.010	0.080	0.49	20788	103	0.100
0.80	2	32	0.003	0.010	0.120	0.69	14762	103	0.100
1.00	2	32	0.004	0.020	0.120	0.77	13228	103	0.200
1.50	2	32	0.007	0.020	0.220	1.27	8020	114	0.200
2.00	2	32	0.010	0.020	0.320	1.77	5755	114	0.200
2.50	2	32	0.013	0.020	0.420	2.27	4487	114	0.200
3.00	2	32	0.016	0.020	0.520	2.77	3677	114	0.200
Hardened tool steel 56 - 60 HRC									
0.50	2	16	0.001	0.005	0.030	0.36	14147	37	0.100
0.60	2	16	0.002	0.005	0.040	0.46	11072	37	0.100
0.80	2	16	0.002	0.005	0.060	0.66	7717	37	0.100
1.00	2	16	0.003	0.010	0.060	0.72	7074	37	0.200
1.50	2	16	0.006	0.020	0.220	1.27	4010	46	0.200
2.00	2	16	0.008	0.020	0.320	1.77	2877	46	0.200
2.50	2	16	0.010	0.020	0.420	2.27	2244	46	0.200
3.00	2	16	0.012	0.020	0.520	2.77	1839	46	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	2	34	0.026	0.040	0.020	0.50	21645	1126	45°
0.60	2	34	0.026	0.040	0.020	0.60	18038	938	45°
0.80	2	34	0.026	0.040	0.020	0.80	13528	704	45°
1.00	2	34	0.037	0.057	0.020	1.00	10823	802	45°
1.50	2	42	0.037	0.057	0.030	1.50	8913	661	45°
2.00	2	42	0.037	0.057	0.030	2.00	6685	495	45°
2.50	2	42	0.037	0.057	0.030	2.50	5348	396	45°
3.00	2	42	0.037	0.057	0.030	3.00	4456	330	45°
Hardened tool steel 48 - 52 HRC									
0.50	2	30	0.026	0.040	0.020	0.50	19099	993	45°
0.60	2	30	0.026	0.040	0.020	0.60	15915	828	45°
0.80	2	30	0.026	0.040	0.020	0.80	11937	621	45°
1.00	2	30	0.037	0.057	0.020	1.00	9549	708	45°
1.50	2	38	0.037	0.057	0.030	1.50	8064	598	45°
2.00	2	38	0.037	0.057	0.030	2.00	6048	448	45°
2.50	2	38	0.037	0.057	0.030	2.50	4838	359	45°
3.00	2	38	0.037	0.057	0.030	3.00	4032	299	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	28	0.026	0.040	0.020	0.50	17825	927	45°
0.60	2	28	0.026	0.040	0.020	0.60	14854	772	45°
0.80	2	28	0.026	0.040	0.020	0.80	11141	579	45°
1.00	2	28	0.037	0.057	0.020	1.00	8913	661	45°
1.50	2	35	0.037	0.057	0.030	1.50	7427	550	45°
2.00	2	35	0.037	0.057	0.030	2.00	5570	413	45°
2.50	2	35	0.037	0.057	0.030	2.50	4456	330	45°
3.00	2	35	0.037	0.057	0.030	3.00	3714	275	45°
Hardened tool steel 56 - 60 HRC									
0.50	2	14	0.020	0.040	0.020	0.50	8913	357	45°
0.60	2	14	0.020	0.040	0.020	0.60	7427	297	45°
0.80	2	14	0.020	0.040	0.020	0.80	5570	223	45°
1.00	2	14	0.029	0.057	0.020	1.00	4456	254	45°
1.50	2	17	0.029	0.057	0.030	1.50	3608	206	45°
2.00	2	17	0.029	0.057	0.030	2.00	2706	154	45°
2.50	2	17	0.029	0.057	0.030	2.50	2165	123	45°
3.00	2	17	0.029	0.057	0.030	3.00	1804	103	45°

Corner radius end mills MicroX

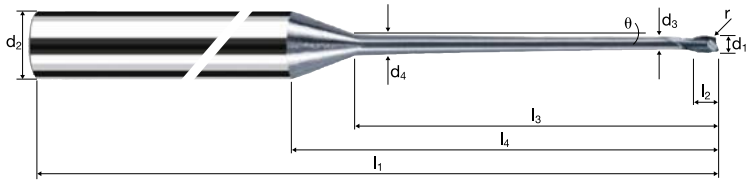
Shank ø 6mm, conical neck 0.9°, 20xd

X-Generation X

II

HM XA

λ 25°
γ -10°



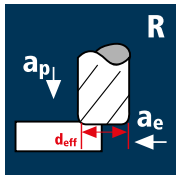
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6744** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	d_4	l_1	l_2	l_3	l_4	θ	r 0/+0.01	α	z	X-AL X6744
050	0.50	6.00	0.45	0.75	61	0.40	10.00	20.45	0.9°	0.100	7.8°	2	●
060	0.60	6.00	0.55	0.91	66	0.50	12.00	22.16	0.9°	0.100	7.0°	2	●
080	0.80	6.00	0.75	1.23	69	0.65	16.00	25.56	0.9°	0.100	5.8°	2	●
100	1.00	6.00	0.95	1.55	69	0.80	20.00	28.96	0.9°	0.200	4.9°	2	●
120	1.50	6.00	1.40	2.30	80	1.20	30.00	37.56	0.9°	0.200	3.4°	2	●
140	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	0.200	2.5°	2	●
160	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	0.200	1.8°	2	●
180	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	0.200	1.4°	2	●
145	2.00	6.00	1.90	3.11	87	1.60	40.00	46.05	0.9°	0.500	2.5°	2	●
165	2.50	6.00	2.30	3.81	100	2.00	50.00	54.74	0.9°	0.500	1.8°	2	●
185	3.00	6.00	2.80	4.61	100	2.40	60.00	63.25	0.9°	0.500	1.4°	2	●

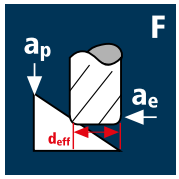
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	4	65	0.003	0.070	0.210	0.49	42225	447	0.100
0.80	4	104	0.004	0.070	0.420	0.79	41904	715	0.100
1.00	4	129	0.005	0.140	0.420	0.98	41900	887	0.200
1.20	4	135	0.007	0.160	0.600	1.19	36111	1031	0.200
1.50	4	135	0.009	0.160	0.825	1.49	28840	1031	0.200
2.00	4	135	0.012	0.160	1.200	1.99	21594	1031	0.200
2.50	4	135	0.015	0.160	1.575	2.49	17258	1031	0.200
3.00	4	135	0.018	0.160	1.950	2.99	14372	1031	0.200
Hardened tool steel 48 - 52 HRC									
0.50	4	65	0.003	0.070	0.210	0.49	42225	536	0.100
0.80	4	104	0.005	0.070	0.420	0.79	41904	858	0.100
1.00	4	129	0.006	0.140	0.420	0.98	41900	1064	0.200
1.20	4	150	0.009	0.160	0.600	1.19	40123	1375	0.200
1.50	4	150	0.011	0.160	0.825	1.49	32045	1375	0.200
2.00	4	150	0.014	0.160	1.200	1.99	23993	1375	0.200
2.50	4	150	0.018	0.160	1.575	2.49	19175	1375	0.200
3.00	4	150	0.022	0.160	1.950	2.99	15969	1375	0.200
Hardened tool steel 52 - 56 HRC									
0.50	4	65	0.003	0.070	0.210	0.49	42225	447	0.100
0.80	4	104	0.004	0.070	0.420	0.79	41904	715	0.100
1.00	4	129	0.005	0.140	0.420	0.98	41900	887	0.200
1.20	4	140	0.007	0.160	0.600	1.19	37448	1070	0.200
1.50	4	140	0.009	0.160	0.825	1.49	29908	1070	0.200
2.00	4	140	0.012	0.160	1.200	1.99	22394	1070	0.200
2.50	4	140	0.015	0.160	1.575	2.49	17897	1070	0.200
3.00	4	140	0.018	0.160	1.950	2.99	14904	1070	0.200
Hardened tool steel 56 - 60 HRC									
0.50	4	61	0.002	0.040	0.180	0.46	42211	298	0.100
0.80	4	70	0.003	0.040	0.360	0.76	29318	342	0.100
1.00	4	70	0.004	0.080	0.360	0.92	24219	342	0.200
1.20	4	70	0.006	0.100	0.560	1.15	19375	428	0.200
1.50	4	70	0.007	0.100	0.770	1.45	15367	428	0.200
2.00	4	70	0.009	0.100	1.120	1.95	11427	428	0.200
2.50	4	70	0.012	0.100	1.470	2.45	9095	428	0.200
3.00	4	70	0.014	0.100	1.820	2.95	7553	428	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	127	0.023	0.057	0.020	1.20	33688	3072	45°
1.50	4	195	0.023	0.057	0.030	1.50	41380	3774	45°
2.00	4	195	0.023	0.057	0.030	2.00	31035	2830	45°
2.50	4	195	0.023	0.057	0.030	2.50	24828	2264	45°
3.00	4	195	0.023	0.057	0.030	3.00	20690	1887	45°
Hardened tool steel 48 - 52 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	127	0.023	0.057	0.020	1.20	33688	3072	45°
1.50	4	175	0.023	0.057	0.030	1.50	37136	3387	45°
2.00	4	175	0.023	0.057	0.030	2.00	27852	2540	45°
2.50	4	175	0.023	0.057	0.030	2.50	22282	2032	45°
3.00	4	175	0.023	0.057	0.030	3.00	18568	1693	45°
Hardened tool steel 52 - 56 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	127	0.023	0.057	0.020	1.20	33688	3072	45°
1.50	4	160	0.023	0.057	0.030	1.50	33953	3097	45°
2.00	4	160	0.023	0.057	0.030	2.00	25465	2322	45°
2.50	4	160	0.023	0.057	0.030	2.50	20372	1858	45°
3.00	4	160	0.023	0.057	0.030	3.00	16977	1548	45°
Hardened tool steel 56 - 60 HRC									
0.50	4	53	0.010	0.040	0.020	0.50	33741	1350	45°
0.80	4	64	0.010	0.040	0.020	0.80	25465	1019	45°
1.00	4	64	0.014	0.057	0.020	1.00	20372	1161	45°
1.20	4	80	0.014	0.057	0.030	1.20	21221	1210	45°
1.50	4	80	0.014	0.057	0.030	1.50	16977	968	45°
2.00	4	80	0.014	0.057	0.030	2.00	12732	726	45°
2.50	4	80	0.014	0.057	0.030	2.50	10186	581	45°
3.00	4	80	0.014	0.057	0.030	3.00	8488	484	45°

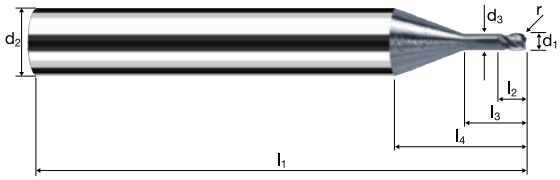
Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

X-Generation

II

HM XA	λ 30° γ -5°



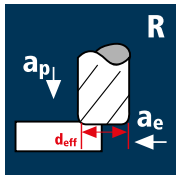
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6632** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6632
050	0.50	6.00	0.45	57	0.50	1.50	12.51	0.100	13.2°	4	●
080	0.80	6.00	0.75	57	0.80	2.40	12.85	0.100	12.2°	4	●
100	1.00	6.00	0.95	57	1.00	3.00	13.08	0.200	11.6°	4	●
108	1.20	6.00	1.10	57	1.20	3.60	13.40	0.200	10.9°	4	●
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	4	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	4	●
160	2.50	6.00	2.30	57	2.50	7.50	15.06	0.200	7.2°	4	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	4	●
145	2.00	6.00	1.90	57	2.00	6.00	14.31	0.500	8.7°	4	●
165	2.50	6.00	2.30	57	2.50	7.50	15.06	0.500	7.3°	4	●
185	3.00	6.00	2.80	57	3.00	9.00	15.63	0.500	6.1°	4	●

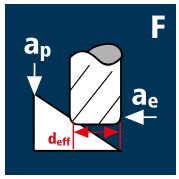
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Hardened tool steel 42 - 48 HRC									
0.50	4	62	0.003	0.050	0.150	0.47	41990	426	0.100
0.80	4	102	0.004	0.050	0.300	0.77	42166	701	0.100
1.00	4	115	0.005	0.100	0.300	0.95	38532	791	0.200
1.20	4	115	0.007	0.120	0.480	1.17	31287	879	0.200
1.50	4	115	0.009	0.120	0.660	1.47	24902	879	0.200
2.00	4	115	0.012	0.120	0.960	1.97	18582	879	0.200
2.50	4	115	0.015	0.120	1.260	2.47	14820	879	0.200
3.00	4	115	0.018	0.120	1.560	2.97	12325	879	0.200
Hardened tool steel 48 - 52 HRC									
0.50	4	62	0.003	0.050	0.150	0.47	41990	512	0.100
0.80	4	102	0.005	0.050	0.300	0.77	42166	842	0.100
1.00	4	125	0.006	0.100	0.300	0.95	41883	1031	0.200
1.20	4	128	0.008	0.120	0.480	1.17	34824	1173	0.200
1.50	4	128	0.011	0.120	0.660	1.47	27717	1173	0.200
2.00	4	128	0.014	0.120	0.960	1.97	20682	1173	0.200
2.50	4	128	0.018	0.120	1.260	2.47	16495	1173	0.200
3.00	4	128	0.021	0.120	1.560	2.97	13718	1173	0.200
Hardened tool steel 52 - 56 HRC									
0.50	4	62	0.003	0.050	0.150	0.47	41990	426	0.100
0.80	4	102	0.004	0.050	0.300	0.77	42166	701	0.100
1.00	4	119	0.005	0.100	0.300	0.95	39873	818	0.200
1.20	4	119	0.007	0.120	0.480	1.17	32375	909	0.200
1.50	4	119	0.009	0.120	0.660	1.47	25768	909	0.200
2.00	4	119	0.012	0.120	0.960	1.97	19228	909	0.200
2.50	4	119	0.015	0.120	1.260	2.47	15336	909	0.200
3.00	4	119	0.018	0.120	1.560	2.97	12754	909	0.200
Hardened tool steel 56 - 60 HRC									
0.50	4	58	0.002	0.030	0.120	0.44	41959	284	0.100
0.80	4	60	0.003	0.030	0.240	0.74	25809	293	0.100
1.00	4	60	0.003	0.060	0.240	0.89	21459	293	0.200
1.20	4	60	0.005	0.080	0.400	1.12	17052	367	0.200
1.50	4	60	0.007	0.080	0.550	1.42	13450	367	0.200
2.00	4	60	0.009	0.080	0.800	1.92	9947	367	0.200
2.50	4	60	0.012	0.080	1.050	2.42	7892	367	0.200
3.00	4	60	0.014	0.080	1.300	2.92	6541	367	0.200

Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Hardened tool steel 42 - 48 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	127	0.023	0.057	0.020	1.20	33688	3072	45°
1.50	4	166	0.023	0.057	0.030	1.50	35226	3213	45°
2.00	4	166	0.023	0.057	0.030	2.00	26420	2410	45°
2.50	4	166	0.023	0.057	0.030	2.50	21136	1928	45°
3.00	4	166	0.023	0.057	0.030	3.00	17613	1606	45°
Hardened tool steel 48 - 52 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	119	0.023	0.057	0.020	1.20	31566	2879	45°
1.50	4	149	0.023	0.057	0.030	1.50	31619	2884	45°
2.00	4	149	0.023	0.057	0.030	2.00	23714	2163	45°
2.50	4	149	0.023	0.057	0.030	2.50	18971	1730	45°
3.00	4	149	0.023	0.057	0.030	3.00	15809	1442	45°
Hardened tool steel 52 - 56 HRC									
0.50	4	53	0.016	0.040	0.020	0.50	33741	2159	45°
0.80	4	84	0.016	0.040	0.020	0.80	33423	2139	45°
1.00	4	106	0.023	0.057	0.020	1.00	33741	3077	45°
1.20	4	109	0.023	0.057	0.020	1.20	28913	2637	45°
1.50	4	136	0.023	0.057	0.030	1.50	28860	2632	45°
2.00	4	136	0.023	0.057	0.030	2.00	21645	1974	45°
2.50	4	136	0.023	0.057	0.030	2.50	17316	1579	45°
3.00	4	136	0.023	0.057	0.030	3.00	14430	1316	45°
Hardened tool steel 56 - 60 HRC									
0.50	4	53	0.010	0.040	0.020	0.50	33741	1350	45°
0.80	4	54	0.010	0.040	0.020	0.80	21486	859	45°
1.00	4	54	0.014	0.057	0.020	1.00	17189	980	45°
1.20	4	68	0.014	0.057	0.030	1.20	18038	1028	45°
1.50	4	68	0.014	0.057	0.030	1.50	14430	823	45°
2.00	4	68	0.014	0.057	0.030	2.00	10823	617	45°
2.50	4	68	0.014	0.057	0.030	2.50	8658	494	45°
3.00	4	68	0.014	0.057	0.030	3.00	7215	411	45°

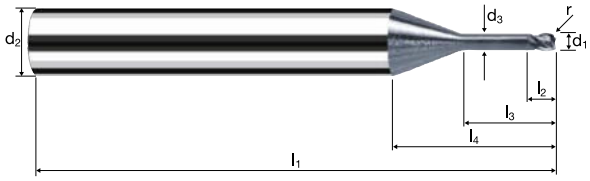
Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

X-Generation

II

HM XA	λ 30° γ -5°



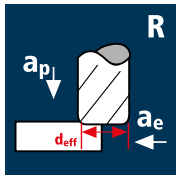
ReTool®

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6634** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL X6634
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	4	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	4	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	4	●
108	1.20	6.00	1.10	57	1.20	6.00	15.80	0.200	9.2°	4	●
120	1.50	6.00	1.40	61	1.50	7.50	16.74	0.200	8.1°	4	●
140	2.00	6.00	1.90	61	2.00	10.00	18.31	0.200	6.6°	4	●
160	2.50	6.00	2.30	61	2.50	12.50	20.06	0.200	5.3°	4	●
180	3.00	6.00	2.80	66	3.00	15.00	21.63	0.200	4.2°	4	●
145	2.00	6.00	1.90	61	2.00	10.00	18.31	0.500	6.7°	4	●
165	2.50	6.00	2.30	61	2.50	12.50	20.06	0.500	5.4°	4	●
185	3.00	6.00	2.80	66	3.00	15.00	21.63	0.500	4.3°	4	●

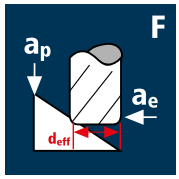
Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²	0.40	2	48	0.003	0.040	0.120	0.36	42441	246	0.100
	0.50	2	63	0.004	0.060	0.210	0.48	41778	359	0.100
	0.60	2	77	0.005	0.060	0.280	0.58	42258	440	0.100
	0.80	2	103	0.007	0.060	0.420	0.78	42033	589	0.100
	1.00	2	129	0.009	0.060	0.560	0.98	41900	737	0.100
	1.00	2	128	0.009	0.120	0.420	0.97	42004	731	0.200
	1.50	2	195	0.015	0.140	0.880	1.48	41939	1241	0.200
	2.00	2	210	0.020	0.140	1.280	1.98	33760	1337	0.200
Hardened tool steel 52 - 56 HRC	0.40	2	48	0.003	0.040	0.120	0.36	42441	221	0.100
	0.50	2	63	0.004	0.060	0.210	0.48	41778	326	0.100
	0.60	2	77	0.005	0.060	0.280	0.58	42258	397	0.100
	0.80	2	103	0.006	0.060	0.420	0.78	42033	530	0.100
	1.00	2	129	0.008	0.060	0.560	0.98	41900	662	0.100
	1.00	2	128	0.008	0.120	0.420	0.97	42004	664	0.200
	1.50	2	130	0.013	0.140	0.880	1.48	27960	744	0.200
	2.00	2	130	0.018	0.140	1.280	1.98	20899	744	0.200
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.40	2	48	0.002	0.040	0.120	0.36	42441	195	0.100
	0.50	2	63	0.004	0.060	0.210	0.48	41778	292	0.100
	0.60	2	77	0.004	0.060	0.280	0.58	42258	355	0.100
	0.80	2	103	0.006	0.060	0.420	0.78	42033	471	0.100
	1.00	2	105	0.007	0.060	0.560	0.98	34105	484	0.100
	1.00	2	105	0.007	0.120	0.420	0.97	34456	482	0.200
	1.50	2	105	0.012	0.140	0.880	1.48	22583	533	0.200
	2.00	2	105	0.016	0.140	1.280	1.98	16880	533	0.200
Titanium alloys > 300 HB [Ti6Al4V]	0.40	2	45	0.002	0.040	0.120	0.36	39789	183	0.100
	0.50	2	45	0.004	0.060	0.210	0.48	29842	209	0.100
	0.60	2	45	0.004	0.060	0.280	0.58	24696	207	0.100
	0.80	2	45	0.006	0.060	0.420	0.78	18364	206	0.100
	1.00	2	45	0.007	0.060	0.560	0.98	14616	208	0.100
	1.00	2	45	0.007	0.120	0.420	0.97	14767	207	0.200
	1.50	2	45	0.012	0.140	0.880	1.48	9678	228	0.200
	2.00	2	45	0.016	0.140	1.280	1.98	7234	229	0.200

Application



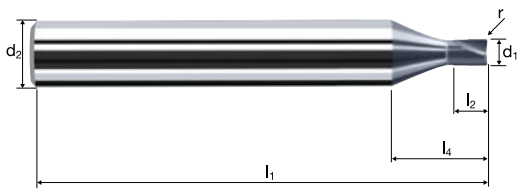
Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
	0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
	0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
	0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
	1.00	2	99	0.026	0.040	0.020	1.00	31513	1639	45°
	1.00	2	99	0.037	0.057	0.020	1.00	31513	2338	45°
	1.50	2	198	0.037	0.057	0.030	1.50	42017	3118	45°
	2.00	2	255	0.037	0.057	0.030	2.00	40585	3011	45°
Hardened tool steel 52 - 56 HRC	0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
	0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
	0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
	0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
	1.00	2	99	0.026	0.040	0.020	1.00	31513	1639	45°
	1.00	2	99	0.037	0.057	0.020	1.00	31513	2338	45°
	1.50	2	160	0.037	0.057	0.030	1.50	33953	2519	45°
	2.00	2	160	0.037	0.057	0.030	2.00	25465	1890	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
	0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
	0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
	0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
	1.00	2	99	0.026	0.040	0.020	1.00	31513	1639	45°
	1.00	2	99	0.037	0.057	0.020	1.00	31513	2338	45°
	1.50	2	160	0.037	0.057	0.030	1.50	33953	2519	45°
	2.00	2	160	0.037	0.057	0.030	2.00	25465	1890	45°
Titanium alloys > 300 HB [Ti6Al4V]	0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
	0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
	0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
	0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
	1.00	2	90	0.026	0.040	0.020	1.00	28648	1490	45°
	1.00	2	90	0.037	0.057	0.020	1.00	28648	2126	45°
	1.50	2	120	0.037	0.057	0.030	1.50	25465	1890	45°
	2.00	2	120	0.037	0.057	0.030	2.00	19099	1417	45°

Corner radius end mills Microcut

Shank ø 4mm, 1xd

HM XA	λ 0° γ 0°

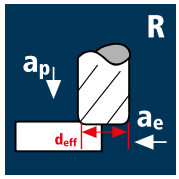


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6816** ø-Code **042**

Ø Code	d_1 0/-0.01	d_2 h4	l_1	l_2	l_4	r 0/+0.01	α	z	X-AL	X6816
042	0.40	4.00	50	0.32	11.03	0.100	9.5°	2		●
050	0.50	4.00	50	0.40	7.67	0.100	13.1°	2		●
060	0.60	4.00	50	0.48	7.58	0.100	12.8°	2		●
080	0.80	4.00	50	0.64	7.41	0.100	12.4°	2		●
098	1.00	4.00	50	1.20	7.46	0.100	11.6°	2		●
100	1.00	4.00	50	1.20	7.66	0.200	11.3°	2		●
120	1.50	4.00	50	1.80	7.42	0.200	9.8°	2		●
140	2.00	4.00	50	2.40	7.19	0.200	8.1°	2		●

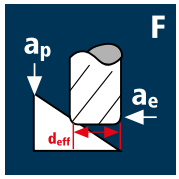
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²									
0.40	2	48	0.003	0.040	0.120	0.36	42441	246	0.100
0.50	2	63	0.004	0.060	0.210	0.48	41778	359	0.100
0.60	2	77	0.005	0.060	0.280	0.58	42258	440	0.100
0.80	2	103	0.007	0.060	0.420	0.78	42033	589	0.100
1.00	2	128	0.009	0.120	0.420	0.97	42004	731	0.200
1.50	2	195	0.015	0.140	0.880	1.48	41939	1241	0.200
2.00	2	210	0.020	0.140	1.280	1.98	33760	1337	0.200
2.50	2	210	0.025	0.140	1.680	2.48	26954	1337	0.200
3.00	2	210	0.030	0.140	2.080	2.98	22431	1337	0.200
Hardened tool steel 52 - 56 HRC									
0.40	2	48	0.003	0.040	0.120	0.36	42441	221	0.100
0.50	2	63	0.004	0.060	0.210	0.48	41778	326	0.100
0.60	2	77	0.005	0.060	0.280	0.58	42258	397	0.100
0.80	2	103	0.006	0.060	0.420	0.78	42033	530	0.100
1.00	2	128	0.008	0.120	0.420	0.97	42004	664	0.200
1.50	2	130	0.013	0.140	0.880	1.48	27960	744	0.200
2.00	2	130	0.018	0.140	1.280	1.98	20899	744	0.200
2.50	2	130	0.022	0.140	1.680	2.48	16686	744	0.200
3.00	2	130	0.027	0.140	2.080	2.98	13886	744	0.200
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.40	2	48	0.002	0.040	0.120	0.36	42441	195	0.100
0.50	2	63	0.004	0.060	0.210	0.48	41778	292	0.100
0.60	2	77	0.004	0.060	0.280	0.58	42258	355	0.100
0.80	2	103	0.006	0.060	0.420	0.78	42033	471	0.100
1.00	2	105	0.007	0.120	0.420	0.97	34456	482	0.200
1.50	2	105	0.012	0.140	0.880	1.48	22583	533	0.200
2.00	2	105	0.016	0.140	1.280	1.98	16880	533	0.200
2.50	2	105	0.020	0.140	1.680	2.48	13477	534	0.200
3.00	2	105	0.024	0.140	2.080	2.98	11216	534	0.200
Titanium alloys > 300 HB [Ti6Al4V]									
0.40	2	45	0.002	0.040	0.120	0.36	39789	183	0.100
0.50	2	45	0.004	0.060	0.210	0.48	29842	209	0.100
0.60	2	45	0.004	0.060	0.280	0.58	24696	207	0.100
0.80	2	45	0.006	0.060	0.420	0.78	18364	206	0.100
1.00	2	45	0.007	0.120	0.420	0.97	14767	207	0.200
1.50	2	45	0.012	0.140	0.880	1.48	9678	228	0.200
2.00	2	45	0.016	0.140	1.280	1.98	7234	229	0.200
2.50	2	45	0.020	0.140	1.680	2.48	5776	229	0.200
3.00	2	45	0.024	0.140	2.080	2.98	4807	229	0.200

Application



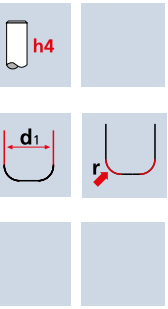
Material

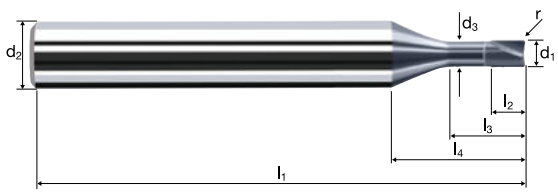
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²									
0.40	2	43	0.026	0.040	0.010	0.40	34218	1779	45°
0.50	2	46	0.026	0.040	0.020	0.50	29285	1523	45°
0.60	2	56	0.026	0.040	0.020	0.60	29709	1545	45°
0.80	2	76	0.026	0.040	0.020	0.80	30239	1572	45°
1.00	2	88	0.037	0.057	0.020	1.00	28011	2078	45°
1.50	2	184	0.037	0.057	0.030	1.50	39046	2897	45°
2.00	2	235	0.037	0.057	0.030	2.00	37401	2775	45°
2.50	2	235	0.037	0.057	0.030	2.50	29921	2220	45°
3.00	2	235	0.037	0.057	0.030	3.00	24934	1850	45°
Hardened tool steel 52 - 56 HRC									
0.40	2	43	0.026	0.040	0.010	0.40	34218	1779	45°
0.50	2	46	0.026	0.040	0.020	0.50	29285	1523	45°
0.60	2	56	0.026	0.040	0.020	0.60	29709	1545	45°
0.80	2	76	0.026	0.040	0.020	0.80	30239	1572	45°
1.00	2	88	0.037	0.057	0.020	1.00	28011	2078	45°
1.50	2	140	0.037	0.057	0.030	1.50	29709	2204	45°
2.00	2	140	0.037	0.057	0.030	2.00	22282	1653	45°
2.50	2	140	0.037	0.057	0.030	2.50	17825	1323	45°
3.00	2	140	0.037	0.057	0.030	3.00	14854	1102	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.40	2	43	0.026	0.040	0.010	0.40	34218	1779	45°
0.50	2	46	0.026	0.040	0.020	0.50	29285	1523	45°
0.60	2	56	0.026	0.040	0.020	0.60	29709	1545	45°
0.80	2	76	0.026	0.040	0.020	0.80	30239	1572	45°
1.00	2	88	0.037	0.057	0.020	1.00	28011	2078	45°
1.50	2	140	0.037	0.057	0.030	1.50	29709	2204	45°
2.00	2	140	0.037	0.057	0.030	2.00	22282	1653	45°
2.50	2	140	0.037	0.057	0.030	2.50	17825	1323	45°
3.00	2	140	0.037	0.057	0.030	3.00	14854	1102	45°
Titanium alloys > 300 HB [Ti6Al4V]									
0.40	2	43	0.026	0.040	0.010	0.40	34218	1779	45°
0.50	2	46	0.026	0.040	0.020	0.50	29285	1523	45°
0.60	2	56	0.026	0.040	0.020	0.60	29709	1545	45°
0.80	2	75	0.026	0.040	0.020	0.80	29842	1552	45°
1.00	2	75	0.037	0.057	0.020	1.00	23873	1771	45°
1.50	2	100	0.037	0.057	0.030	1.50	21221	1575	45°
2.00	2	100	0.037	0.057	0.030	2.00	15915	1181	45°
2.50	2	100	0.037	0.057	0.030	2.50	12732	945	45°
3.00	2	100	0.037	0.057	0.030	3.00	10610	787	45°

Corner radius end mills Microcut

Shank ø 4mm, cylindrical neck, 3xd

HM XA	λ 0° γ 0°



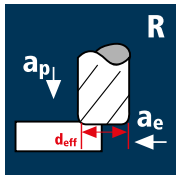


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6818** ø-Code **042**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL	X6818
042	0.40	4.00	0.35	50	0.32	1.20	11.49	0.100	9.1°	2		●
050	0.50	4.00	0.45	50	0.40	1.50	8.28	0.100	12.1°	2		●
060	0.60	4.00	0.55	50	0.48	1.80	8.40	0.100	11.6°	2		●
080	0.80	4.00	0.75	50	0.64	2.40	8.62	0.100	10.7°	2		●
098	1.00	4.00	0.95	50	1.20	3.00	8.85	0.100	9.8°	2		●
100	1.00	4.00	0.95	50	1.20	3.00	8.85	0.200	9.8°	2		●
108	1.20	4.00	1.10	50	1.44	3.60	8.96	0.200	9.1°	2		●
120	1.50	4.00	1.40	50	1.80	4.50	9.30	0.200	7.9°	2		●
140	2.00	4.00	1.90	50	2.40	6.00	9.87	0.200	6.0°	2		●
160	2.50	4.00	2.30	50	3.00	7.50	10.34	0.200	4.3°	2		●
180	3.00	4.00	2.80	50	3.60	9.00	10.91	0.200	2.8°	2		●

Application



Material

Steel 850 - 1100 N/mm²

X X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.40	2	45	0.002	0.030	0.100	0.34	42129	202	0.100
0.50	2	62	0.004	0.050	0.180	0.47	41990	319	0.100
0.60	2	75	0.005	0.050	0.240	0.57	41883	385	0.100
0.80	2	102	0.006	0.050	0.360	0.77	42166	523	0.100
1.00	2	125	0.008	0.100	0.360	0.95	41883	645	0.200
1.50	2	168	0.013	0.120	0.770	1.47	36378	960	0.200
2.00	2	168	0.018	0.120	1.120	1.97	27145	961	0.200
2.50	2	168	0.022	0.120	1.470	2.47	21650	961	0.200
3.00	2	168	0.027	0.120	1.820	2.97	18005	962	0.200

Hardened tool steel 52 - 56 HRC

X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.40	2	45	0.002	0.030	0.100	0.34	42129	185	0.100
0.50	2	62	0.003	0.050	0.180	0.47	41990	286	0.100
0.60	2	75	0.004	0.050	0.240	0.57	41883	352	0.100
0.80	2	102	0.006	0.050	0.360	0.77	42166	472	0.100
1.00	2	104	0.007	0.100	0.360	0.95	34847	481	0.200
1.50	2	104	0.012	0.120	0.770	1.47	22520	536	0.200
2.00	2	104	0.016	0.120	1.120	1.97	16804	538	0.200
2.50	2	104	0.020	0.120	1.470	2.47	13403	536	0.200
3.00	2	104	0.024	0.120	1.820	2.97	11146	537	0.200

Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]

X

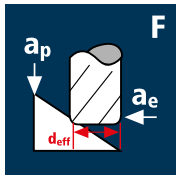
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.40	2	45	0.002	0.030	0.100	0.34	42129	169	0.100
0.50	2	62	0.003	0.050	0.180	0.47	41990	252	0.100
0.60	2	75	0.004	0.050	0.240	0.57	41883	310	0.100
0.80	2	84	0.005	0.050	0.360	0.77	34725	347	0.100
1.00	2	84	0.006	0.100	0.360	0.95	28145	349	0.200
1.50	2	84	0.011	0.120	0.770	1.47	18189	386	0.200
2.00	2	84	0.014	0.120	1.120	1.97	13573	386	0.200
2.50	2	84	0.018	0.120	1.470	2.47	10825	385	0.200
3.00	2	84	0.021	0.120	1.820	2.97	9003	385	0.200

Titanium alloys > 300 HB [Ti6Al4V]

X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
0.40	2	36	0.002	0.030	0.100	0.34	33703	135	0.100
0.50	2	36	0.003	0.050	0.180	0.47	24381	146	0.100
0.60	2	36	0.004	0.050	0.240	0.57	20104	149	0.100
0.80	2	36	0.005	0.050	0.360	0.77	14882	149	0.100
1.00	2	36	0.006	0.100	0.360	0.95	12062	150	0.200
1.50	2	36	0.011	0.120	0.770	1.47	7795	165	0.200
2.00	2	36	0.014	0.120	1.120	1.97	5817	165	0.200
2.50	2	36	0.018	0.120	1.470	2.47	4639	165	0.200
3.00	2	36	0.021	0.120	1.820	2.97	3858	165	0.200

Application



Material

Steel 850 - 1100 N/mm²

X X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
1.00	2	99	0.037	0.057	0.020	1.00	31513	2338	45°
1.50	2	188	0.037	0.057	0.030	1.50	39895	2960	45°
2.00	2	188	0.037	0.057	0.030	2.00	29921	2220	45°
2.50	2	188	0.037	0.057	0.030	2.50	23937	1776	45°
3.00	2	188	0.037	0.057	0.030	3.00	19947	1480	45°

Hardened tool steel 52 - 56 HRC

X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
1.00	2	84	0.037	0.057	0.020	1.00	26738	1984	45°
1.50	2	112	0.037	0.057	0.030	1.50	23767	1764	45°
2.00	2	112	0.037	0.057	0.030	2.00	17825	1323	45°
2.50	2	112	0.037	0.057	0.030	2.50	14260	1058	45°
3.00	2	112	0.037	0.057	0.030	3.00	11884	882	45°

Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]

X

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
1.00	2	84	0.037	0.057	0.020	1.00	26738	1984	45°
1.50	2	112	0.037	0.057	0.030	1.50	23767	1764	45°
2.00	2	112	0.037	0.057	0.030	2.00	17825	1323	45°
2.50	2	112	0.037	0.057	0.030	2.50	14260	1058	45°
3.00	2	112	0.037	0.057	0.030	3.00	11884	882	45°

Titanium alloys > 300 HB [Ti6Al4V]

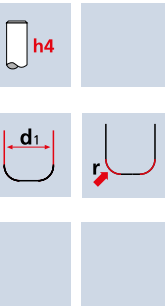
X

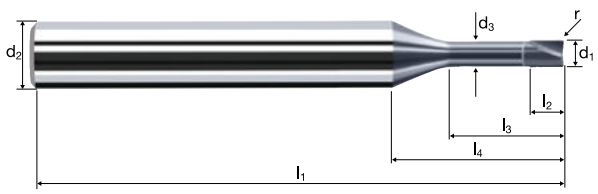
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
0.40	2	48	0.026	0.040	0.010	0.40	38197	1986	45°
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	60	0.026	0.040	0.020	0.80	23873	1241	45°
1.00	2	60	0.037	0.057	0.020	1.00	19099	1417	45°
1.50	2	80	0.037	0.057	0.030	1.50	16977	1260	45°
2.00	2	80	0.037	0.057	0.030	2.00	12732	945	45°
2.50	2	80	0.037	0.057	0.030	2.50	10186	756	45°
3.00	2	80	0.037	0.057	0.030	3.00	8488	630	45°

Corner radius end mills Microcut

Shank ø 4mm, cylindrical neck, 5xd

HM XA	λ 0° γ 0°



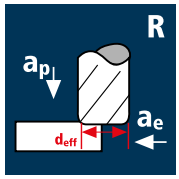


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6820** ø-Code **042**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL	X6820
042	0.40	4.00	0.35	50	0.32	2.00	12.29	0.100	8.5°	2		●
050	0.50	4.00	0.45	50	0.40	2.50	9.28	0.100	10.9°	2		●
060	0.60	4.00	0.55	50	0.48	3.00	9.60	0.100	10.2°	2		●
080	0.80	4.00	0.75	50	0.64	4.00	10.22	0.100	9.1°	2		●
098	1.00	4.00	0.95	50	1.20	5.00	10.85	0.100	8.1°	2		●
100	1.00	4.00	0.95	50	1.20	5.00	10.85	0.200	8.1°	2		●
108	1.20	4.00	1.10	50	1.44	6.00	11.36	0.200	7.2°	2		●
120	1.50	4.00	1.40	50	1.80	7.50	12.30	0.200	6.0°	2		●
140	2.00	4.00	1.90	50	2.40	10.00	13.87	0.200	4.3°	2		●
160	2.50	4.00	2.30	50	3.00	12.50	15.34	0.200	3.0°	2		●
180	3.00	4.00	2.80	50	3.60	15.00	16.91	0.200	1.9°	2		●

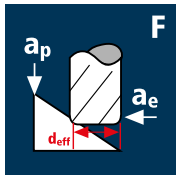
Application



Material

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²									
0.50	2	61	0.003	0.040	0.150	0.46	42211	287	0.100
0.60	2	74	0.004	0.040	0.200	0.56	42062	345	0.100
0.80	2	100	0.006	0.040	0.300	0.76	41883	461	0.100
1.00	2	121	0.007	0.080	0.300	0.92	41865	561	0.200
1.20	2	126	0.009	0.100	0.480	1.15	34876	649	0.200
1.50	2	126	0.012	0.100	0.660	1.45	27660	647	0.200
2.00	2	126	0.016	0.100	0.960	1.95	20568	650	0.200
2.50	2	126	0.020	0.100	1.260	2.45	16370	648	0.200
3.00	2	126	0.024	0.100	1.560	2.95	13596	650	0.200
Hardened tool steel 52 - 56 HRC									
0.50	2	61	0.003	0.040	0.150	0.46	42211	253	0.100
0.60	2	74	0.004	0.040	0.200	0.56	42062	311	0.100
0.80	2	78	0.005	0.040	0.300	0.76	32669	327	0.100
1.00	2	78	0.006	0.080	0.300	0.92	26987	324	0.200
1.20	2	78	0.008	0.100	0.480	1.15	21590	363	0.200
1.50	2	78	0.011	0.100	0.660	1.45	17123	363	0.200
2.00	2	78	0.014	0.100	0.960	1.95	12732	362	0.200
2.50	2	78	0.018	0.100	1.260	2.45	10134	363	0.200
3.00	2	78	0.022	0.100	1.560	2.95	8416	362	0.200
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.50	2	61	0.003	0.040	0.150	0.46	42211	228	0.100
0.60	2	63	0.003	0.040	0.200	0.56	35810	236	0.100
0.80	2	63	0.004	0.040	0.300	0.76	26386	232	0.100
1.00	2	63	0.005	0.080	0.300	0.92	21797	235	0.200
1.20	2	63	0.008	0.100	0.480	1.15	17438	262	0.200
1.50	2	63	0.009	0.100	0.660	1.45	13830	260	0.200
2.00	2	63	0.013	0.100	0.960	1.95	10284	259	0.200
2.50	2	63	0.016	0.100	1.260	2.45	8185	260	0.200
3.00	2	63	0.019	0.100	1.560	2.95	6798	260	0.200
Titanium alloys > 300 HB [Ti6Al4V]									
0.50	2	27	0.003	0.040	0.150	0.46	18683	101	0.100
0.60	2	27	0.003	0.040	0.200	0.56	15347	101	0.100
0.80	2	27	0.004	0.040	0.300	0.76	11308	100	0.100
1.00	2	27	0.005	0.080	0.300	0.92	9342	101	0.200
1.20	2	27	0.008	0.100	0.480	1.15	7473	112	0.200
1.50	2	27	0.009	0.100	0.660	1.45	5927	111	0.200
2.00	2	27	0.013	0.100	0.960	1.95	4407	111	0.200
2.50	2	27	0.016	0.100	1.260	2.45	3508	112	0.200
3.00	2	27	0.019	0.100	1.560	2.95	2913	111	0.200

Application



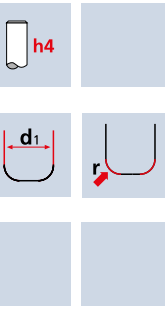
Material

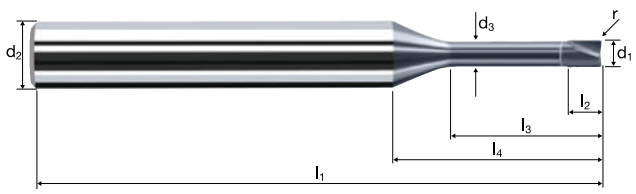
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²									
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	79	0.026	0.040	0.020	0.80	31433	1635	45°
1.00	2	99	0.037	0.057	0.020	1.00	31513	2338	45°
1.20	2	141	0.037	0.057	0.030	1.20	37401	2775	45°
1.50	2	141	0.037	0.057	0.030	1.50	29921	2220	45°
2.00	2	141	0.037	0.057	0.030	2.00	22441	1665	45°
2.50	2	141	0.037	0.057	0.030	2.50	17953	1332	45°
3.00	2	141	0.037	0.057	0.030	3.00	14961	1110	45°
Hardened tool steel 52 - 56 HRC									
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	63	0.026	0.040	0.020	0.80	25067	1304	45°
1.00	2	63	0.037	0.057	0.020	1.00	20054	1488	45°
1.20	2	84	0.037	0.057	0.030	1.20	22282	1653	45°
1.50	2	84	0.037	0.057	0.030	1.50	17825	1323	45°
2.00	2	84	0.037	0.057	0.030	2.00	13369	992	45°
2.50	2	84	0.037	0.057	0.030	2.50	10695	794	45°
3.00	2	84	0.037	0.057	0.030	3.00	8913	661	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]									
0.50	2	49	0.026	0.040	0.020	0.50	31194	1622	45°
0.60	2	59	0.026	0.040	0.020	0.60	31300	1628	45°
0.80	2	63	0.026	0.040	0.020	0.80	25067	1304	45°
1.00	2	63	0.037	0.057	0.020	1.00	20054	1488	45°
1.20	2	84	0.037	0.057	0.030	1.20	22282	1653	45°
1.50	2	84	0.037	0.057	0.030	1.50	17825	1323	45°
2.00	2	84	0.037	0.057	0.030	2.00	13369	992	45°
2.50	2	84	0.037	0.057	0.030	2.50	10695	794	45°
3.00	2	84	0.037	0.057	0.030	3.00	8913	661	45°
Titanium alloys > 300 HB [Ti6Al4V]									
0.50	2	45	0.026	0.040	0.020	0.50	28648	1490	45°
0.60	2	45	0.026	0.040	0.020	0.60	23873	1241	45°
0.80	2	45	0.026	0.040	0.020	0.80	17905	931	45°
1.00	2	45	0.037	0.057	0.020	1.00	14324	1063	45°
1.20	2	60	0.037	0.057	0.030	1.20	15915	1181	45°
1.50	2	60	0.037	0.057	0.030	1.50	12732	945	45°
2.00	2	60	0.037	0.057	0.030	2.00	9549	709	45°
2.50	2	60	0.037	0.057	0.030	2.50	7639	567	45°
3.00	2	60	0.037	0.057	0.030	3.00	6366	472	45°

Corner radius end mills Microcut

Shank ø 4mm, cylindrical neck, 8xd

HM XA	λ 0° γ 0°



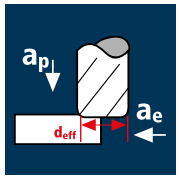


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60		Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **X** Article-N°. **6823** ø-Code **050**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r 0/+0.01	α	z	X-AL	X6823
050	0.50	4.00	0.45	50	0.40	4.00	10.78	0.100	9.4°	2		●
060	0.60	4.00	0.55	50	0.48	4.80	11.40	0.100	8.7°	2		●
080	0.80	4.00	0.75	50	0.64	6.40	12.62	0.100	7.4°	2		●
098	1.00	4.00	0.95	50	1.20	8.00	13.85	0.100	6.4°	2		●
100	1.00	4.00	0.95	50	1.20	8.00	13.85	0.200	6.4°	2		●
108	1.20	4.00	1.10	50	1.44	9.60	14.96	0.200	5.5°	2		●
120	1.50	4.00	1.40	50	1.80	12.00	16.80	0.200	4.5°	2		●
140	2.00	4.00	1.90	50	2.40	16.00	19.87	0.200	3.1°	2		●
160	2.50	4.00	2.30	57	3.00	20.00	22.84	0.200	2.1°	2		●
180	3.00	4.00	2.80	57	3.60	24.00	25.91	0.200	1.3°	2		●

Application



Material

Steel
850 - 1100 N/mm²

M
M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
1.00	2	180	0.036	0.080	0.200	0.92	60000	4320	0.200
1.20	2	180	0.042	0.100	0.240	1.15	49822	4185	0.200
1.50	2	180	0.054	0.120	0.300	1.47	38977	4210	0.200
2.00	2	180	0.072	0.160	0.400	1.99	28792	4146	0.200
2.50	2	180	0.090	0.200	0.500	2.50	22918	4125	0.200
3.00	2	180	0.108	0.240	0.600	2.99	19162	4139	0.200

Steel
1100 - 1300 N/mm²

M
M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
1.00	2	160	0.032	0.080	0.200	0.92	55358	3543	0.200
1.20	2	160	0.038	0.100	0.240	1.15	44287	3366	0.200
1.50	2	160	0.048	0.120	0.300	1.47	34646	3326	0.200
2.00	2	160	0.064	0.160	0.400	1.99	25593	3276	0.200
2.50	2	160	0.082	0.200	0.500	2.50	20372	3341	0.200
3.00	2	160	0.098	0.240	0.600	2.99	17033	3339	0.200

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

M

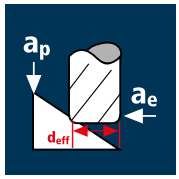
d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
1.00	2	80	0.032	0.080	0.200	0.92	27679	1772	0.200
1.20	2	80	0.038	0.100	0.240	1.15	22143	1683	0.200
1.50	2	80	0.048	0.120	0.300	1.47	17323	1663	0.200
2.00	2	80	0.064	0.160	0.400	1.99	12796	1638	0.200
2.50	2	80	0.082	0.200	0.500	2.50	10186	1671	0.200
3.00	2	80	0.098	0.240	0.600	2.99	8517	1669	0.200

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
1.00	2	60	0.026	0.080	0.200	0.92	20759	1080	0.200
1.20	2	60	0.030	0.100	0.240	1.15	16607	996	0.200
1.50	2	60	0.038	0.120	0.300	1.47	12992	987	0.200
2.00	2	60	0.050	0.160	0.400	1.99	9597	960	0.200
2.50	2	60	0.064	0.200	0.500	2.50	7639	978	0.200
3.00	2	60	0.076	0.240	0.600	2.99	6387	971	0.200

Application



Material

Steel
850 - 1100 N/mm²

M
M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
1.00	2	300	0.028	0.042	0.042	1.00	60000	3360	45°
1.20	2	300	0.030	0.050	0.050	1.20	60000	3600	45°
1.50	2	300	0.034	0.064	0.064	1.50	60000	4080	45°
2.00	2	300	0.038	0.084	0.084	1.99	47986	3647	45°
2.50	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
3.00	2	300	0.046	0.126	0.126	2.97	32153	2958	45°

Steel
1100 - 1300 N/mm²

M
M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
1.00	2	250	0.026	0.042	0.042	1.00	60000	3120	45°
1.20	2	250	0.028	0.050	0.050	1.20	60000	3360	45°
1.50	2	250	0.030	0.064	0.064	1.50	53052	3183	45°
2.00	2	250	0.034	0.084	0.084	1.99	39989	2719	45°
2.50	2	250	0.036	0.106	0.106	2.48	32088	2310	45°
3.00	2	250	0.042	0.126	0.126	2.97	26794	2251	45°

Inox normal
[Cr-Ni/1.4301]
[Cr-Ni-Mo/1.4571]

M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
1.00	2	120	0.022	0.042	0.042	1.00	38197	1681	45°
1.20	2	120	0.024	0.050	0.050	1.20	31831	1528	45°
1.50	2	120	0.028	0.064	0.064	1.50	25465	1426	45°
2.00	2	120	0.030	0.084	0.084	1.99	19195	1152	45°
2.50	2	120	0.032	0.106	0.106	2.48	15402	986	45°
3.00	2	120	0.036	0.126	0.126	2.97	12861	926	45°

Titanium alloys
up to 300 HB
[Ti5Al2.5Sn]

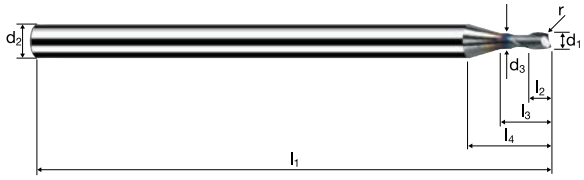
M

d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
1.00	2	100	0.020	0.042	0.042	1.00	31831	1273	45°
1.20	2	100	0.022	0.050	0.050	1.20	26526	1167	45°
1.50	2	100	0.024	0.064	0.064	1.50	21221	1019	45°
2.00	2	100	0.026	0.084	0.084	1.99	15995	832	45°
2.50	2	100	0.028	0.106	0.106	2.48	12835	719	45°
3.00	2	100	0.032	0.126	0.126	2.97	10718	686	45°

Corner radius end mills Microcut

Shank ø 3mm, cylindrical neck, 3xd

HM MG10	λ 25° γ 6°



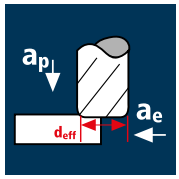
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5752** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5752
100	1.00	3.00	0.95	50	1.20	3.00	7.22	0.200	8.5°	2	●
108	1.20	3.00	1.10	50	1.44	3.60	7.54	0.200	7.4°	2	●
120	1.50	3.00	1.40	50	1.80	4.50	7.88	0.200	5.9°	2	●
140	2.00	3.00	1.90	50	2.40	6.00	8.45	0.200	3.7°	2	●
160	2.50	3.00	2.30	50	3.00	7.50	9.20	0.200	1.7°	2	●
180	3.00	3.00	2.80	50	3.60	8.56	9.00	0.200	0.0°	2	●

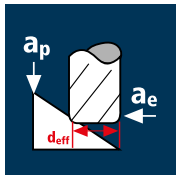
Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²	1.00	2	180	0.036	0.070	0.200	0.90	60000	4320	0.200
	1.20	2	180	0.042	0.080	0.240	1.12	51157	4297	0.200
	1.50	2	180	0.054	0.110	0.300	1.46	39244	4238	0.200
	2.00	2	180	0.072	0.140	0.400	1.98	28937	4167	0.200
	2.50	2	180	0.090	0.180	0.500	2.50	22918	4125	0.200
	3.00	2	180	0.108	0.210	0.600	3.00	19099	4125	0.200
Steel 1100 - 1300 N/mm²	1.00	2	160	0.032	0.070	0.200	0.90	56588	3622	0.200
	1.20	2	160	0.038	0.080	0.240	1.12	45473	3456	0.200
	1.50	2	160	0.048	0.110	0.300	1.46	34883	3349	0.200
	2.00	2	160	0.064	0.140	0.400	1.98	25722	3292	0.200
	2.50	2	160	0.082	0.180	0.500	2.50	20372	3341	0.200
	3.00	2	160	0.098	0.210	0.600	3.00	16977	3328	0.200
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	80	0.032	0.070	0.200	0.90	28294	1811	0.200
	1.20	2	80	0.038	0.080	0.240	1.12	22736	1728	0.200
	1.50	2	80	0.048	0.110	0.300	1.46	17442	1674	0.200
	2.00	2	80	0.064	0.140	0.400	1.98	12861	1646	0.200
	2.50	2	80	0.082	0.180	0.500	2.50	10186	1671	0.200
	3.00	2	80	0.098	0.210	0.600	3.00	8488	1664	0.200
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.026	0.070	0.200	0.90	21221	1104	0.200
	1.20	2	60	0.030	0.080	0.240	1.12	17052	1023	0.200
	1.50	2	60	0.038	0.110	0.300	1.46	13081	994	0.200
	2.00	2	60	0.050	0.140	0.400	1.98	9646	965	0.200
	2.50	2	60	0.064	0.180	0.500	2.50	7639	978	0.200
	3.00	2	60	0.076	0.210	0.600	3.00	6366	968	0.200

Application



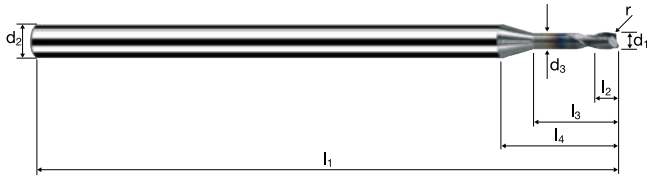
Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min^{-1}]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	300	0.022	0.040	0.040	1.00	60000	2640	45°
	1.20	2	300	0.024	0.048	0.048	1.20	60000	2880	45°
	1.50	2	300	0.028	0.060	0.060	1.50	60000	3360	45°
	2.00	2	300	0.030	0.080	0.080	2.00	47746	2865	45°
	2.50	2	300	0.032	0.100	0.100	2.49	38351	2455	45°
	3.00	2	300	0.036	0.120	0.120	2.97	32153	2315	45°
Steel 1100 - 1300 N/mm²	1.00	2	250	0.020	0.040	0.040	1.00	60000	2400	45°
	1.20	2	250	0.022	0.048	0.048	1.20	60000	2640	45°
	1.50	2	250	0.026	0.060	0.060	1.50	53052	2759	45°
	2.00	2	250	0.028	0.080	0.080	2.00	39789	2228	45°
	2.50	2	250	0.028	0.100	0.100	2.49	31959	1790	45°
	3.00	2	250	0.032	0.120	0.120	2.97	26794	1715	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	120	0.018	0.040	0.040	1.00	38197	1375	45°
	1.20	2	120	0.020	0.048	0.048	1.20	31831	1273	45°
	1.50	2	120	0.022	0.060	0.060	1.50	25465	1121	45°
	2.00	2	120	0.024	0.080	0.080	2.00	19099	917	45°
	2.50	2	120	0.026	0.100	0.100	2.49	15340	798	45°
	3.00	2	120	0.028	0.120	0.120	2.97	12861	720	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	100	0.016	0.040	0.040	1.00	31831	1019	45°
	1.20	2	100	0.016	0.048	0.048	1.20	26526	849	45°
	1.50	2	100	0.020	0.060	0.060	1.50	21221	849	45°
	2.00	2	100	0.022	0.080	0.080	2.00	15915	700	45°
	2.50	2	100	0.022	0.100	0.100	2.49	12784	563	45°
	3.00	2	100	0.026	0.120	0.120	2.97	10718	557	45°

Corner radius end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 25° γ 6°



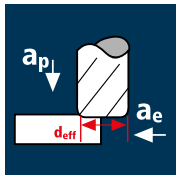
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5754** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5754
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.200	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.200	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.200	4.2°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.200	2.5°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.200	1.1°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.200	0.0°	2	●

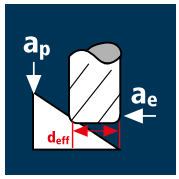
Application



Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel 850 - 1100 N/mm²	1.00	2	180	0.036	0.050	0.200	0.86	60000	4320	0.200
	1.20	2	180	0.042	0.060	0.240	1.09	52565	4416	0.200
	1.50	2	180	0.054	0.080	0.300	1.42	40349	4358	0.200
	2.00	2	180	0.072	0.100	0.400	1.95	29382	4231	0.200
	2.50	2	180	0.090	0.130	0.500	2.47	23197	4176	0.200
	3.00	2	180	0.108	0.150	0.600	2.99	19162	4139	0.200
Steel 1100 - 1300 N/mm²	1.00	2	160	0.032	0.050	0.200	0.86	59220	3790	0.200
	1.20	2	160	0.038	0.060	0.240	1.09	46724	3551	0.200
	1.50	2	160	0.048	0.080	0.300	1.42	35866	3443	0.200
	2.00	2	160	0.064	0.100	0.400	1.95	26118	3343	0.200
	2.50	2	160	0.082	0.130	0.500	2.47	20619	3382	0.200
	3.00	2	160	0.098	0.150	0.600	2.99	17033	3339	0.200
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	80	0.032	0.050	0.200	0.86	29610	1895	0.200
	1.20	2	80	0.038	0.060	0.240	1.09	23362	1776	0.200
	1.50	2	80	0.048	0.080	0.300	1.42	17933	1722	0.200
	2.00	2	80	0.064	0.100	0.400	1.95	13059	1672	0.200
	2.50	2	80	0.082	0.130	0.500	2.47	10310	1691	0.200
	3.00	2	80	0.098	0.150	0.600	2.99	8517	1669	0.200
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	60	0.026	0.050	0.200	0.86	22208	1155	0.200
	1.20	2	60	0.030	0.060	0.240	1.09	17522	1051	0.200
	1.50	2	60	0.038	0.080	0.300	1.42	13450	1022	0.200
	2.00	2	60	0.050	0.100	0.400	1.95	9794	979	0.200
	2.50	2	60	0.064	0.130	0.500	2.47	7732	990	0.200
	3.00	2	60	0.076	0.150	0.600	2.99	6387	971	0.200

Application



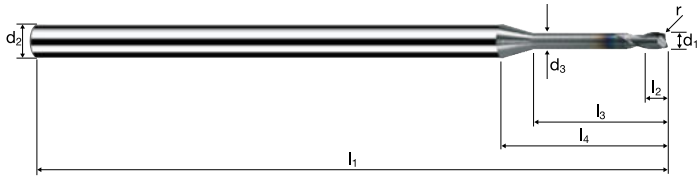
Material

Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.00	2	300	0.022	0.038	0.038	0.99	60000	2640	45°
	1.20	2	300	0.024	0.046	0.046	1.20	60000	2880	45°
	1.50	2	300	0.028	0.058	0.058	1.50	60000	3360	45°
	2.00	2	300	0.030	0.076	0.076	2.00	47746	2865	45°
	2.50	2	300	0.032	0.096	0.096	2.49	38351	2455	45°
	3.00	2	300	0.036	0.114	0.114	2.98	32045	2307	45°
Steel 1100 - 1300 N/mm²	1.00	2	250	0.020	0.038	0.038	0.99	60000	2400	45°
	1.20	2	250	0.022	0.046	0.046	1.20	60000	2640	45°
	1.50	2	250	0.026	0.058	0.058	1.50	53052	2759	45°
	2.00	2	250	0.028	0.076	0.076	2.00	39789	2228	45°
	2.50	2	250	0.028	0.096	0.096	2.49	31959	1790	45°
	3.00	2	250	0.032	0.114	0.114	2.98	26704	1709	45°
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1.00	2	120	0.018	0.038	0.038	0.99	38583	1389	45°
	1.20	2	120	0.020	0.046	0.046	1.20	31831	1273	45°
	1.50	2	120	0.022	0.058	0.058	1.50	25465	1121	45°
	2.00	2	120	0.024	0.076	0.076	2.00	19099	917	45°
	2.50	2	120	0.026	0.096	0.096	2.49	15340	798	45°
	3.00	2	120	0.028	0.114	0.114	2.98	12818	718	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.00	2	100	0.016	0.038	0.038	0.99	32153	1029	45°
	1.20	2	100	0.016	0.046	0.046	1.20	26526	849	45°
	1.50	2	100	0.020	0.058	0.058	1.50	21221	849	45°
	2.00	2	100	0.022	0.076	0.076	2.00	15915	700	45°
	2.50	2	100	0.022	0.096	0.096	2.49	12784	563	45°
	3.00	2	100	0.026	0.114	0.114	2.98	10682	556	45°

Corner radius end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10 | λ 25° γ 6°



ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5756** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	MICRO M5756
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.200	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.200	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.200	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.200	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.200	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.200	0.0°	2	●

passion
for precision
fraisa

End milling tools for aluminium and copper
Smooth-edged, cylindrical

Normal version

N° 15530 / 15630 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 575

N° 15535 / 15635 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 6 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 577

N° 8560 / 8660 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 3.0xd_1$

Base-X | Roughing HPC, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 579

N° 15520 / 15620 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 2 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 581

N° 15525 / 15625 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 6 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 583

N° 8561 / 8661 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 3.0xd_1$

Base-X | Roughing HPC, Finishing | d_1 1 – 10 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 585

N° 5272 / 5500 ToolSchool

Favora® | Roughing, Finishing | d_1 2 – 20 | 45° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 587

Medium length version

N° 15557 / 15657 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 589

N° 15560 / 15660 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 591

N° 8578 / 8678 **new!** **E-Cut Alu**

$l_2 = 3.7xd_1$

Base-X | Roughing HPC, Roughing HDC, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 593

N° 8570 / 8670 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 4.5xd_1$

Base-X | Roughing HPC, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 595

N° 15550 / 15650 ToolSchool **AX**

X-Generation | Roughing, Finishing | d_1 3 – 20 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 597

N° 8571 / 8671 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 4.5xd_1$

Base-X | Roughing HPC, Finishing | d_1 1 – 10 | 90° | Al Aluminium Alloy | Cu Copper | Plastic Thermoplast | 599

End milling tools for aluminium and copper
Smooth-edged, cylindrical

Long version

N° 15559 / 15659 ToolSchool

AX

X-Generation **X**

Roughing
Finishing
d_1 6 – 20
90°

Al Aluminium Alloy | **Cu** Copper | **Plastic** Thermoplast

601

N° 15561 / 15661 ToolSchool

AX

X-Generation **X**

Roughing
Finishing
d_1 6 – 20
90°

Al Aluminium Alloy | **Cu** Copper | **Plastic** Thermoplast

603

N° 8580 / 8680 **new!**

E-Cut Alu

Base-X **B**

Roughing HPC
Finishing
d_1 3 – 20
90°

Al Aluminium Alloy | **Cu** Copper | **Plastic** Thermoplast

605

$l_2 = 2.2 \times d_1$ $l_3 = 5.6 \times d_1$

End milling tools for aluminium and copper
Smooth-edged, with corner radius

Normal version

N° 8567 / 8667 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 3.0xd_1$

Base-X B

Roughing HPC
Finishing

r 0.2, 0.5, 1.0, 2.0, 3.0

Al Aluminium Alloy | Cu Copper | Plastic Thermoplast

607

Medium length version

N° 8576 / 8676 **new!** **E-Cut Alu**

$l_2 = 3.7xd_1$

Base-X B

Roughing HPC
Roughing HDC
Finishing

r 0.2, 0.5, 1.0, 2.0, 3.0

Al Aluminium Alloy | Cu Copper | Plastic Thermoplast

611

N° 8577 / 8677 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 4.5xd_1$

Base-X B

Roughing HPC
Finishing

r 0.2, 0.5, 1.0, 2.0, 3.0

Al Aluminium Alloy | Cu Copper | Plastic Thermoplast

615

Long version

N° 8587 / 8687 **new!** **E-Cut Alu**

$l_2 = 2.2xd_1$ $l_3 = 5.6xd_1$

Base-X B

Roughing HPC
Finishing

r 0.2, 0.5, 1.0

Al Aluminium Alloy | Cu Copper | Plastic Thermoplast

619

End milling tools for aluminium and copper
Smooth-edged, with corner radius

3xd and 5xd

N° 15583	AX	X-Generation	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	Al Aluminium Alloy			623
N° 15573	AX	X-Generation	Roughing Finishing	r 0.5, 1.0, 1.5, 2.0, 2.5, 4.0	Al Aluminium Alloy			627
N° 15585	AX	X-Generation	Roughing Finishing	r 1.0, 2.5, 4.0	Al Aluminium Alloy			631
N° 15575	AX	X-Generation	Roughing Finishing	r 1.0, 2.5, 4.0	Al Aluminium Alloy			633

End milling tools for aluminium and copper
Ball nose

Tolerance r ±0.005

N° 7550	**Sphericut**	Base-X B	3xd HDC R/F	d_1 2 – 20	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	341
N° 7554	**Sphericut**	Base-X B	6xd HDC R/F	d_1 3 – 16	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	357

III

End milling tools for aluminium and copper
Profiled, cylindrical

Normal version

N° 15500 / 15600

AX-FPS | X-Generation | Roughing, Finishing | d_1 6 – 25 | r | Al Aluminium Alloy | 635

N° 5297 / 5397

AX | X-Generation | Roughing, Finishing | d_1 6 – 20 | 45° | Al Aluminium Alloy | Cu Copper | 637

N° 0391

HSS | Roughing, Finishing | d_1 6 – 25 | 45° | Al Aluminium Alloy | Cu Copper | 639

Medium length version

N° 15506 / 15606

AX-FPS | X-Generation | Roughing, Finishing | d_1 6 – 20 | r | Al Aluminium Alloy | 641

N° 15297 / 15397

AX | X-Generation | Roughing, Finishing | d_1 6 – 20 | 45° | Al Aluminium Alloy | Cu Copper | 643

N° 0393

HSS | Roughing, Finishing | d_1 10 – 25 | 45° | Al Aluminium Alloy | Cu Copper | 645

Medium length version with neck

N° 15505 / 15605

AX-FPS | X-Generation | Roughing, Finishing | d_1 6 – 25 | r | Al Aluminium Alloy | 647

N° 15298 / 15398

AX | X-Generation | Roughing, Finishing | d_1 6 – 25 | 45° | Al Aluminium Alloy | Cu Copper | 649

5.2xd version

N° 15507 / 15607

AX-FPS | X-Generation | Roughing, Finishing | d_1 6 – 20 | r | Al Aluminium Alloy | 651

End milling tools for aluminium and copper
Profiled, with corner radius

Normal version

N° 15502

AX-FPS

X-Generation

Roughing

Finishing

r 1.0, 2.0, 2.5, 3.0

Al
Aluminium Alloy

653

End milling tools for aluminium and copper
Finishing, cylindrical

Normal version

N° 15589

MulticutXA

X-Generation

Roughing
Finishing

d_1 6 – 20

r

Al Aluminium Alloy

655

Medium length version

N° 15590

MulticutXA

X-Generation

Roughing
Finishing

d_1 6 – 20

r

Al Aluminium Alloy

657

5.2xd version

N° 15510

AX

X-Generation

Roughing
Finishing

d_1 6 – 20

r

Al Aluminium Alloy

Cu Copper

659

End milling tools for aluminium and copper
Finishing, with corner radius

5.2xd version

N° 15512

AX

X-Generation

Roughing

Finishing

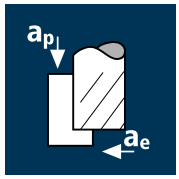
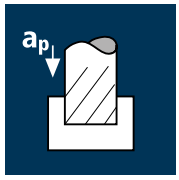
r 1.0, 2.5

Al Aluminium Alloy

Cu Copper

661

III

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	550	0.050	4.500	1.400	58355	8753	55.1
		4.00	3	550	0.065	6.000	1.800	43770	8535	92.2
		5.00	3	550	0.085	7.500	2.300	35015	8929	154.0
		6.00	3	550	0.110	9.000	2.700	29180	9629	234.0
		8.00	3	550	0.135	12.000	3.600	21885	8863	382.9
		10.00	3	550	0.165	15.000	4.500	17505	8665	584.9
		12.00	3	550	0.200	18.000	5.400	14590	8754	850.9
		16.00	3	550	0.215	24.000	7.200	10940	7056	1219.3
		20.00	3	550	0.250	30.000	9.000	8755	6566	1772.9
	Unalloyed copper	3.00	3	400	0.040	4.500	1.350	42440	5093	30.9
		4.00	3	400	0.050	6.000	1.800	31830	4775	51.6
		5.00	3	400	0.070	7.500	2.250	25465	5348	90.2
		6.00	3	400	0.090	9.000	2.700	21220	5729	139.2
		8.00	3	400	0.110	12.000	3.600	15915	5252	226.9
		10.00	3	400	0.130	15.000	4.500	12730	4965	335.1
		12.00	3	400	0.160	18.000	5.400	10610	5093	495.0
		16.00	3	400	0.170	24.000	7.200	7960	4060	701.5
		20.00	3	400	0.200	30.000	9.000	6365	3819	1031.1
	Thermoplastics	3.00	3	1000	0.050	4.500	1.350	60000	9000	54.7
		4.00	3	1000	0.065	6.000	1.800	60000	11700	126.4
		5.00	3	1000	0.085	7.500	2.250	60000	15300	258.2
		6.00	3	1000	0.110	9.000	2.700	53050	17507	425.4
		8.00	3	1000	0.135	12.000	3.600	39790	16115	696.2
		10.00	3	1000	0.165	15.000	4.500	31830	15756	1063.5
		12.00	3	1000	0.200	18.000	5.400	26525	15915	1546.9
		16.00	3	1000	0.215	24.000	7.200	19895	12832	2217.4
		20.00	3	1000	0.250	30.000	9.000	15915	11936	3222.8
	Cast aluminium	3.00	3	396	0.050	4.500	1.350	42015	6302	38.3
		4.00	3	440	0.065	6.000	1.800	35015	6828	73.7
		5.00	3	440	0.085	7.500	2.250	28010	7143	120.5
		6.00	3	440	0.110	9.000	2.700	23345	7704	187.2
		8.00	3	440	0.135	12.000	3.600	17505	7090	306.3
		10.00	3	440	0.165	15.000	4.500	14005	6933	467.9
		12.00	3	440	0.200	18.000	5.400	11670	7002	680.6
		16.00	3	440	0.215	24.000	7.200	8755	5647	975.8
		20.00	3	440	0.250	30.000	9.000	7005	5254	1418.5
	Wrought aluminium Construction aluminium	3.00	3	450	0.035	1.800	3.000	47745	5013	27.1
		4.00	3	450	0.045	2.400	4.000	35810	4834	46.4
		5.00	3	450	0.060	3.000	5.000	28650	5157	77.4
		6.00	3	450	0.075	3.600	6.000	23875	5372	116.0
		8.00	3	450	0.095	4.800	8.000	17905	5103	196.0
		10.00	3	450	0.115	6.000	10.000	14325	4942	296.5
		12.00	3	450	0.140	7.200	12.000	11935	5013	433.1
		16.00	3	450	0.150	9.600	16.000	8950	4028	618.6
		20.00	3	450	0.175	12.000	20.000	7160	3759	902.2
	Unalloyed copper	3.00	3	350	0.030	1.800	3.000	37135	3342	18.0
		4.00	3	350	0.035	2.400	4.000	27850	2924	28.1
		5.00	3	350	0.050	3.000	5.000	22280	3342	50.1
		6.00	3	350	0.060	3.600	6.000	18570	3343	72.2
		8.00	3	350	0.075	4.800	8.000	13925	3133	120.3
		10.00	3	350	0.090	6.000	10.000	11140	3008	180.5
		12.00	3	350	0.110	7.200	12.000	9285	3064	264.7
		16.00	3	350	0.120	9.600	16.000	6965	2507	385.1
		20.00	3	350	0.140	12.000	20.000	5570	2339	561.5
	Thermoplastics	3.00	3	800	0.035	1.800	3.000	60000	6300	34.0
		4.00	3	800	0.045	2.400	4.000	60000	8100	77.8
		5.00	3	800	0.060	3.000	5.000	50930	9167	137.5
		6.00	3	800	0.075	3.600	6.000	42440	9549	206.3
		8.00	3	800	0.095	4.800	8.000	31830	9072	348.3
		10.00	3	800	0.115	6.000	10.000	25465	8785	527.1
		12.00	3	800	0.140	7.200	12.000	21220	8912	770.0
		16.00	3	800	0.150	9.600	16.000	15915	7162	1100.1
		20.00	3	800	0.175	12.000	20.000	12730	6683	1604.0
	Cast aluminium	3.00	3	360	0.035	1.800	3.000	38195	4011	21.7
		4.00	3	360	0.045	2.400	4.000	28650	3868	37.1
		5.00	3	360	0.060	3.000	5.000	22920	4126	61.9
		6.00	3	360	0.075	3.600	6.000	19100	4298	92.8
		8.00	3	360	0.095	4.800	8.000	14325	4083	156.8
		10.00	3	360	0.115	6.000	10.000	11460	3954	237.2
		12.00	3	360	0.140	7.200	12.000	9550	4011	346.6
		16.00	3	360	0.150	9.600	16.000	7160	3222	494.9
		20.00	3	360	0.175	12.000	20.000	5730	3008	722.0

Cylindrical end mills AX

Smooth-edged, normal version, short neck

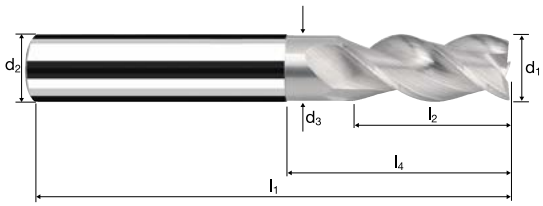
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

ToolSchool 8560 / 8660 8570 / 8670 8580 / 8680

III

Rm < 850

Al Aluminium > 99%

Al Aluminium Alloy

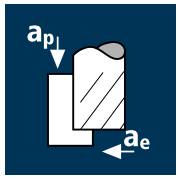
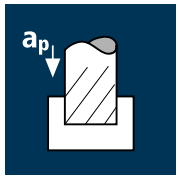
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15530** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15630	CELERO C15630
										15530	C15530
180	3.00	6.00	2.80	57	8.00	14.00	20.63	4.5°	3	●	●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	3.0°	3	●	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	1.5°	3	●	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.0°	3	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.0°	3	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.0°	3	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.0°	3	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.0°	3	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.0°	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	6.00	3	650	0.060	9.000	2.400	34485	6207	134.1
		8.00	3	650	0.075	12.000	3.200	25865	5820	223.5
		10.00	3	650	0.090	15.000	4.000	20690	5586	335.2
		12.00	3	650	0.110	18.000	4.800	17240	5689	491.5
		16.00	3	650	0.120	24.000	6.400	12930	4655	715.0
		20.00	3	650	0.140	30.000	8.000	10345	4345	1042.8
	Unalloyed copper	6.00	3	500	0.050	9.000	2.400	26525	3979	85.9
		8.00	3	500	0.060	12.000	3.200	19895	3581	137.5
		10.00	3	500	0.070	15.000	4.000	15915	3342	200.5
		12.00	3	500	0.090	18.000	4.800	13265	3582	309.5
		16.00	3	500	0.095	24.000	6.400	9945	2834	435.3
		20.00	3	500	0.110	30.000	8.000	7960	2627	630.4
	Thermoplastics	6.00	3	1200	0.060	9.000	2.400	60000	10800	233.3
		8.00	3	1200	0.075	12.000	3.200	47745	10743	412.5
		10.00	3	1200	0.090	15.000	4.000	38195	10313	618.8
		12.00	3	1200	0.110	18.000	4.800	31830	10504	907.5
		16.00	3	1200	0.120	24.000	6.400	23875	8595	1320.2
		20.00	3	1200	0.140	30.000	8.000	19100	8022	1925.3
	Cast aluminium	6.00	3	520	0.060	9.000	2.400	27585	4965	107.3
		8.00	3	520	0.075	12.000	3.200	20690	4655	178.8
		10.00	3	520	0.090	15.000	4.000	16550	4469	268.1
		12.00	3	520	0.110	18.000	4.800	13795	4552	393.3
		16.00	3	520	0.120	24.000	6.400	10345	3724	572.0
		20.00	3	520	0.140	30.000	8.000	8275	3476	834.1
	Wrought aluminium Construction aluminium	6.00	3	550	0.040	3.000	6.000	29180	3502	63.0
		8.00	3	550	0.050	4.000	8.000	21885	3283	105.0
		10.00	3	550	0.065	5.000	10.000	17505	3414	170.7
		12.00	3	550	0.075	6.000	12.000	14590	3283	236.4
		16.00	3	550	0.085	8.000	16.000	10940	2790	357.1
		20.00	3	550	0.095	10.000	20.000	8755	2495	499.0
	Unalloyed copper	6.00	3	450	0.035	3.000	6.000	23875	2507	45.1
		8.00	3	450	0.040	4.000	8.000	17905	2149	68.8
		10.00	3	450	0.050	5.000	10.000	14325	2149	107.4
		12.00	3	450	0.060	6.000	12.000	11935	2148	154.7
		16.00	3	450	0.065	8.000	16.000	8950	1745	223.4
		20.00	3	450	0.075	10.000	20.000	7160	1611	322.2
	Thermoplastics	6.00	3	1000	0.040	3.000	6.000	53050	6366	114.6
		8.00	3	1000	0.050	4.000	8.000	39790	5969	191.0
		10.00	3	1000	0.065	5.000	10.000	31830	6207	310.3
		12.00	3	1000	0.075	6.000	12.000	26525	5968	429.7
		16.00	3	1000	0.085	8.000	16.000	19895	5073	649.4
		20.00	3	1000	0.095	10.000	20.000	15915	4536	907.2
	Cast aluminium	6.00	3	440	0.040	3.000	6.000	23345	2801	50.4
		8.00	3	440	0.050	4.000	8.000	17505	2626	84.0
		10.00	3	440	0.065	5.000	10.000	14005	2731	136.6
		12.00	3	440	0.075	6.000	12.000	11670	2626	189.1
		16.00	3	440	0.085	8.000	16.000	8755	2233	285.8
		20.00	3	440	0.095	10.000	20.000	7005	1996	399.3

Cylindrical end mills AX

Smooth-edged, normal version, short neck
Integral cooling channel

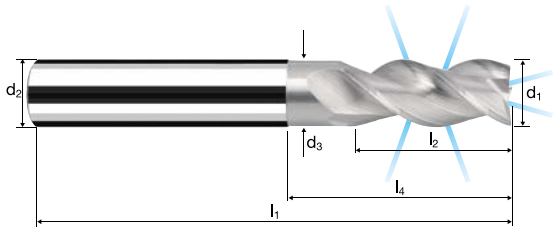
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

ToolSchool 8560 / 8660 8570 / 8670

III

Rm < 850

Al Aluminium > 99%

Al Aluminium Alloy

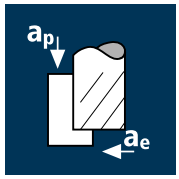
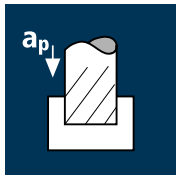
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15535** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	15635	CELERO C15635
									15535	C15535
300	6.00	6.00	5.50	57	13.00	19.34	20.00	3	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	3	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	3	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	3	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	3	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.056	4.500	1.350	42015	6996	42.5
		4.00	3	500	0.074	6.000	1.800	39790	8833	95.4
		5.00	3	500	0.093	7.500	2.250	31830	8833	149.1
		6.00	3	500	0.111	9.000	2.700	26525	8833	214.6
		8.00	3	500	0.148	12.000	3.600	19895	8833	381.6
		10.00	3	500	0.185	15.000	4.500	15915	8833	596.2
		12.00	3	500	0.222	18.000	5.400	13265	8835	858.7
		16.00	3	500	0.237	24.000	7.200	9945	7065	1220.8
		20.00	3	500	0.278	30.000	9.000	7960	6627	1789.2
	Unalloyed copper	3.00	3	375	0.041	4.500	1.350	39790	4942	30.0
		4.00	3	375	0.055	6.000	1.800	29840	4942	53.4
		5.00	3	375	0.069	7.500	2.250	23875	4942	83.4
		6.00	3	375	0.083	9.000	2.700	19895	4942	120.1
		8.00	3	375	0.110	12.000	3.600	14920	4942	213.5
		10.00	3	375	0.138	15.000	4.500	11935	4941	333.5
		12.00	3	375	0.166	18.000	5.400	9945	4941	480.2
		16.00	3	375	0.177	24.000	7.200	7460	3953	683.1
		20.00	3	375	0.207	30.000	9.000	5970	3707	1001.0
	Thermoplastics	3.00	3	396	0.067	4.500	1.350	42015	8395	51.0
		4.00	3	500	0.089	6.000	1.800	39790	10600	114.5
		5.00	3	500	0.111	7.500	2.250	31830	10599	178.9
		6.00	3	500	0.133	9.000	2.700	26525	10599	257.6
		8.00	3	500	0.178	12.000	3.600	19895	10600	457.9
		10.00	3	500	0.222	15.000	4.500	15915	10599	715.5
		12.00	3	500	0.266	18.000	5.400	13265	10601	1030.5
		16.00	3	500	0.284	24.000	7.200	9945	8478	1465.0
		20.00	3	500	0.333	30.000	9.000	7960	7952	2147.0
	Cast aluminium	3.00	3	396	0.044	4.500	1.350	42015	5596	34.0
		4.00	3	400	0.059	6.000	1.800	31830	5653	61.1
		5.00	3	400	0.074	7.500	2.250	25465	5653	95.4
		6.00	3	400	0.089	9.000	2.700	21220	5653	137.4
		8.00	3	400	0.118	12.000	3.600	15915	5653	244.2
		10.00	3	400	0.148	15.000	4.500	12730	5652	381.5
		12.00	3	400	0.178	18.000	5.400	10610	5653	549.5
		16.00	3	400	0.189	24.000	7.200	7960	4524	781.7
		20.00	3	400	0.222	30.000	9.000	6365	4239	1144.6
	Wrought aluminium Construction aluminium	3.00	3	395	0.032	4.500	3.000	41910	4012	54.2
		4.00	3	400	0.043	6.000	4.000	31830	4063	97.5
		5.00	3	400	0.053	7.500	5.000	25465	4063	152.4
		6.00	3	400	0.064	9.000	6.000	21220	4063	219.4
		8.00	3	400	0.085	12.000	8.000	15915	4063	390.1
		10.00	3	400	0.106	15.000	10.000	12730	4063	609.4
		12.00	3	400	0.128	18.000	12.000	10610	4063	877.6
		16.00	3	400	0.136	24.000	16.000	7960	3252	1248.6
		20.00	3	400	0.160	30.000	20.000	6365	3047	1828.1
	Unalloyed copper	3.00	3	300	0.024	4.500	3.000	31830	2273	30.7
		4.00	3	300	0.032	6.000	4.000	23875	2273	54.6
		5.00	3	300	0.040	7.500	5.000	19100	2273	85.3
		6.00	3	300	0.048	9.000	6.000	15915	2273	122.7
		8.00	3	300	0.063	12.000	8.000	11935	2273	218.2
		10.00	3	300	0.079	15.000	10.000	9550	2273	341.0
		12.00	3	300	0.095	18.000	12.000	7960	2274	491.2
		16.00	3	300	0.102	24.000	16.000	5970	1819	698.5
		20.00	3	300	0.119	30.000	20.000	4775	1705	1023.0
	Thermoplastics	3.00	3	400	0.038	4.500	3.000	42440	4876	65.8
		4.00	3	400	0.051	6.000	4.000	31830	4876	117.0
		5.00	3	400	0.064	7.500	5.000	25465	4876	182.8
		6.00	3	400	0.077	9.000	6.000	21220	4876	263.3
		8.00	3	400	0.102	12.000	8.000	15915	4876	468.1
		10.00	3	400	0.128	15.000	10.000	12730	4875	731.3
		12.00	3	400	0.153	18.000	12.000	10610	4876	1053.2
		16.00	3	400	0.163	24.000	16.000	7960	3902	1498.3
		20.00	3	400	0.191	30.000	20.000	6365	3656	2193.7
	Cast aluminium	3.00	3	320	0.026	4.500	3.000	33955	2601	35.1
		4.00	3	320	0.034	6.000	4.000	25465	2601	62.4
		5.00	3	320	0.043	7.500	5.000	20370	2600	97.5
		6.00	3	320	0.051	9.000	6.000	16975	2600	140.4
		8.00	3	320	0.068	12.000	8.000	12730	2600	249.6
		10.00	3	320	0.085	15.000	10.000	10185	2600	390.0
		12.00	3	320	0.102	18.000	12.000	8490	2601	561.8
		16.00	3	320	0.109	24.000	16.000	6365	2080	798.7
		20.00	3	320	0.128	30.000	20.000	5095	1951	1170.7

Cylindrical end mills E-Cut Alu

Smooth-edged, normal version, short neck

Base-X **B**

$l_2 = 2.2 \times d_1$

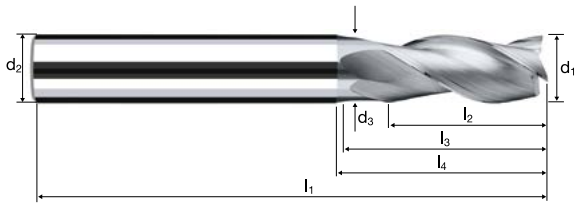
$l_3 = 3.0 \times d_1$

new!

HM MG10 | λ 34° γ 24°

90° | G 2.5

Vario



Roughing

Finishing

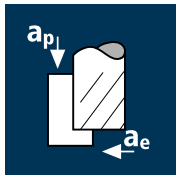
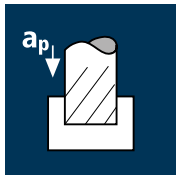
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8560** Article-N°. **180** ø-Code

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	α	z	**8660**	**8560**
180	3.00	6.00	2.80	54	6.60	9.00	12.33	7.2°	3	●	
220	4.00	6.00	3.70	54	9.00	12.00	14.54	4.2°	3	●	
260	5.00	6.00	4.60	57	11.00	15.00	16.72	2.0°	3	●	
300	6.00	6.00	5.50	57	13.50	18.00	19.85	0.0°	3	●	
391	8.00	8.00	7.40	63	18.00	24.00	26.37	0.0°	3	●	
450	10.00	10.00	9.20	74	22.00	30.00	33.01	0.0°	3	●	
501	12.00	12.00	11.00	85	27.00	36.00	39.71	0.0°	3	●	
610	16.00	16.00	15.00	102	36.00	48.00	52.27	0.0°	3	●	
682	20.00	20.00	19.00	115	44.00	60.00	64.77	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	2	550	0.055	4.500	1.800	58355	6419	52.0
		4.00	2	550	0.075	6.000	2.400	43770	6566	94.5
		5.00	2	550	0.090	7.500	3.000	35015	6303	141.8
		6.00	2	550	0.120	9.000	3.600	29180	7003	226.9
		8.00	2	550	0.160	12.000	4.800	21885	7003	403.4
		10.00	2	550	0.200	15.000	6.000	17505	7002	630.2
		12.00	2	550	0.220	18.000	7.200	14590	6420	832.0
		16.00	2	550	0.245	24.000	9.600	10940	5361	1235.1
		20.00	2	550	0.285	30.000	12.000	8755	4990	1796.5
	Unalloyed copper	3.00	2	400	0.030	4.500	1.800	42440	2546	20.6
		4.00	2	400	0.060	6.000	2.400	31830	3820	55.0
		5.00	2	400	0.070	7.500	3.000	25465	3565	80.2
		6.00	2	400	0.095	9.000	3.600	21220	4032	130.6
		8.00	2	400	0.130	12.000	4.800	15915	4138	238.3
		10.00	2	400	0.160	15.000	6.000	12730	4074	366.6
		12.00	2	400	0.175	18.000	7.200	10610	3714	481.3
		16.00	2	400	0.195	24.000	9.600	7960	3104	715.3
		20.00	2	400	0.230	30.000	12.000	6365	2928	1054.0
	Thermoplastics	3.00	2	1000	0.035	4.500	1.800	60000	4200	34.0
		4.00	2	1000	0.075	6.000	2.400	60000	9000	129.6
		5.00	2	1000	0.090	7.500	3.000	60000	10800	243.0
		6.00	2	1000	0.120	9.000	3.600	53050	12732	412.5
		8.00	2	1000	0.160	12.000	4.800	39790	12733	733.4
		10.00	2	1000	0.200	15.000	6.000	31830	12732	1145.9
		12.00	2	1000	0.220	18.000	7.200	26525	11671	1512.6
		16.00	2	1000	0.245	24.000	9.600	19895	9749	2246.1
		20.00	2	1000	0.285	30.000	12.000	15915	9072	3265.8
	Cast aluminium	3.00	2	396	0.055	4.500	1.800	42015	4622	37.4
		4.00	2	440	0.075	6.000	2.400	35015	5252	75.6
		5.00	2	440	0.090	7.500	3.000	28010	5042	113.4
		6.00	2	440	0.120	9.000	3.600	23345	5603	181.5
		8.00	2	440	0.160	12.000	4.800	17505	5602	322.7
		10.00	2	440	0.200	15.000	6.000	14005	5602	504.2
		12.00	2	440	0.220	18.000	7.200	11670	5135	665.5
		16.00	2	440	0.245	24.000	9.600	8755	4290	988.4
		20.00	2	440	0.285	30.000	12.000	7005	3993	1437.4
	Wrought aluminium Construction aluminium	3.00	2	450	0.025	3.000	3.000	47745	2387	21.5
		4.00	2	450	0.055	4.000	4.000	35810	3939	63.0
		5.00	2	450	0.065	5.000	5.000	28650	3725	93.1
		6.00	2	450	0.085	6.000	6.000	23875	4059	146.1
		8.00	2	450	0.110	8.000	8.000	17905	3939	252.1
		10.00	2	450	0.140	10.000	10.000	14325	4011	401.1
		12.00	2	450	0.155	12.000	12.000	11935	3700	532.8
		16.00	2	450	0.170	16.000	16.000	8950	3043	779.0
		20.00	2	450	0.200	20.000	20.000	7160	2864	1145.6
	Unalloyed copper	3.00	2	350	0.020	3.000	3.000	37135	1485	13.4
		4.00	2	350	0.045	4.000	4.000	27850	2507	40.1
		5.00	2	350	0.050	5.000	5.000	22280	2228	55.7
		6.00	2	350	0.070	6.000	6.000	18570	2600	93.6
		8.00	2	350	0.090	8.000	8.000	13925	2507	160.4
		10.00	2	350	0.110	10.000	10.000	11140	2451	245.1
		12.00	2	350	0.125	12.000	12.000	9285	2321	334.3
		16.00	2	350	0.135	16.000	16.000	6965	1881	481.4
		20.00	2	350	0.160	20.000	20.000	5570	1782	713.0
	Thermoplastics	3.00	2	800	0.025	3.000	3.000	60000	3000	27.0
		4.00	2	800	0.055	4.000	4.000	60000	6600	105.6
		5.00	2	800	0.065	5.000	5.000	50930	6621	165.5
		6.00	2	800	0.085	6.000	6.000	42440	7215	259.7
		8.00	2	800	0.110	8.000	8.000	31830	7003	448.2
		10.00	2	800	0.140	10.000	10.000	25465	7130	713.0
		12.00	2	800	0.155	12.000	12.000	21220	6578	947.3
		16.00	2	800	0.170	16.000	16.000	15915	5411	1385.2
		20.00	2	800	0.200	20.000	20.000	12730	5092	2036.8
	Cast aluminium	3.00	2	360	0.025	3.000	3.000	38195	1910	17.2
		4.00	2	360	0.055	4.000	4.000	28650	3152	50.4
		5.00	2	360	0.065	5.000	5.000	22920	2980	74.5
		6.00	2	360	0.085	6.000	6.000	19100	3247	116.9
		8.00	2	360	0.110	8.000	8.000	14325	3152	201.7
		10.00	2	360	0.140	10.000	10.000	11460	3209	320.9
		12.00	2	360	0.155	12.000	12.000	9550	2961	426.3
		16.00	2	360	0.170	16.000	16.000	7160	2434	623.2
		20.00	2	360	0.200	20.000	20.000	5730	2292	916.8

Cylindrical end mills AX

Smooth-edged, normal version, short neck

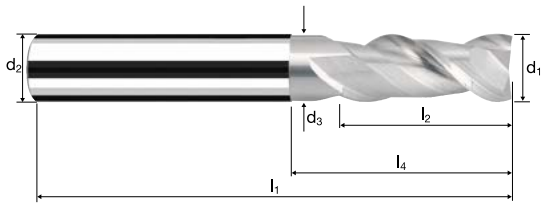
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

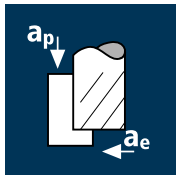
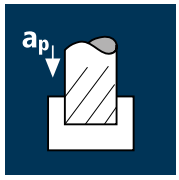
Finishing

ToolSchool 8561 / 8661 · 8571 / 8671 · 8580 / 8680

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15520** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15620	CELERO C15620
										15520	C15520
140	2.00	6.00	1.90	57	7.00	10.00	18.31	7.0°	2	●	●
180	3.00	6.00	2.80	57	8.00	14.00	20.63	4.5°	2	●	●
220	4.00	6.00	3.70	57	11.00	16.00	20.95	3.0°	2	●	●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	1.5°	2	●	●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.0°	2	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.0°	2	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.0°	2	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.0°	2	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.0°	2	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.0°	2	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	6.00	2	650	0.065	9.000	3.300	34485	4483	133.1
		8.00	2	650	0.090	12.000	4.400	25865	4656	245.8
		10.00	2	650	0.110	15.000	5.500	20690	4552	375.5
		12.00	2	650	0.120	18.000	6.600	17240	4138	491.5
		16.00	2	650	0.135	24.000	8.800	12930	3491	737.3
		20.00	2	650	0.155	30.000	11.000	10345	3207	1058.3
	Unalloyed copper	6.00	2	500	0.050	9.000	3.300	26525	2653	78.8
		8.00	2	500	0.070	12.000	4.400	19895	2785	147.1
		10.00	2	500	0.090	15.000	5.500	15915	2865	236.3
		12.00	2	500	0.095	18.000	6.600	13265	2520	299.4
		16.00	2	500	0.105	24.000	8.800	9945	2089	441.1
		20.00	2	500	0.125	30.000	11.000	7960	1990	656.7
	Thermoplastics	6.00	2	1200	0.065	9.000	3.300	60000	7800	231.7
		8.00	2	1200	0.090	12.000	4.400	47745	8594	453.8
		10.00	2	1200	0.110	15.000	5.500	38195	8403	693.2
		12.00	2	1200	0.120	18.000	6.600	31830	7639	907.5
		16.00	2	1200	0.135	24.000	8.800	23875	6446	1361.5
		20.00	2	1200	0.155	30.000	11.000	19100	5921	1953.9
	Cast aluminium	6.00	2	520	0.065	9.000	3.300	27585	3586	106.5
		8.00	2	520	0.090	12.000	4.400	20690	3724	196.6
		10.00	2	520	0.110	15.000	5.500	16550	3641	300.4
		12.00	2	520	0.120	18.000	6.600	13795	3311	393.3
		16.00	2	520	0.135	24.000	8.800	10345	2793	589.9
		20.00	2	520	0.155	30.000	11.000	8275	2565	846.5
	Wrought aluminium Construction aluminium	6.00	2	550	0.045	5.400	6.000	29180	2626	85.1
		8.00	2	550	0.060	7.200	8.000	21885	2626	151.3
		10.00	2	550	0.075	9.000	10.000	17505	2626	236.3
		12.00	2	550	0.085	10.800	12.000	14590	2480	321.4
		16.00	2	550	0.095	14.400	16.000	10940	2079	478.9
		20.00	2	550	0.110	18.000	20.000	8755	1926	693.4
	Unalloyed copper	6.00	2	450	0.040	5.400	6.000	23875	1910	61.9
		8.00	2	450	0.050	7.200	8.000	17905	1791	103.1
		10.00	2	450	0.060	9.000	10.000	14325	1719	154.7
		12.00	2	450	0.070	10.800	12.000	11935	1671	216.5
		16.00	2	450	0.075	14.400	16.000	8950	1343	309.3
		20.00	2	450	0.090	18.000	20.000	7160	1289	464.0
	Thermoplastics	6.00	2	1000	0.045	5.400	6.000	53050	4775	154.7
		8.00	2	1000	0.060	7.200	8.000	39790	4775	275.0
		10.00	2	1000	0.075	9.000	10.000	31830	4775	429.7
		12.00	2	1000	0.085	10.800	12.000	26525	4509	584.4
		16.00	2	1000	0.095	14.400	16.000	19895	3780	870.9
		20.00	2	1000	0.110	18.000	20.000	15915	3501	1260.5
	Cast aluminium	6.00	2	440	0.045	5.400	6.000	23345	2101	68.1
		8.00	2	440	0.060	7.200	8.000	17505	2101	121.0
		10.00	2	440	0.075	9.000	10.000	14005	2101	189.1
		12.00	2	440	0.085	10.800	12.000	11670	1984	257.1
		16.00	2	440	0.095	14.400	16.000	8755	1664	383.3
		20.00	2	440	0.110	18.000	20.000	7005	1541	554.8

Cylindrical end mills AX

Smooth-edged, normal version, short neck
Integral cooling channel

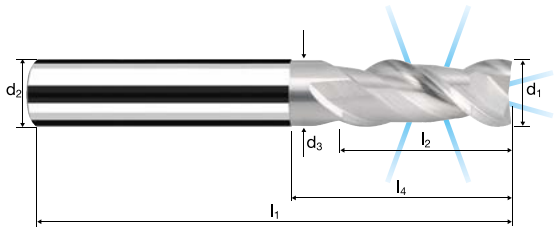
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

ToolSchool 8561 / 8661 8571 / 8671

III

Rm < 850

Al Aluminium > 99%

Al Aluminium Alloy

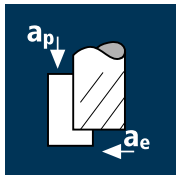
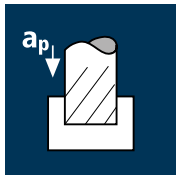
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15525** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	15625	CELERO C15625
									15525	C15525
300	6.00	6.00	5.50	57	13.00	19.34	20.00	2	●	●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	2	●	●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	2	●	●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	2	●	●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	2	●	●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	2	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	1.00	2	132	0.020	1.500	0.650	42000	1680	1.6
		2.00	2	264	0.040	3.000	1.300	42000	3360	13.1
		3.00	2	396	0.060	4.500	1.950	42000	5040	44.2
		4.00	2	500	0.080	6.000	2.600	39790	6366	99.3
		5.00	2	500	0.100	7.500	3.250	31830	6366	155.2
		6.00	2	500	0.120	9.000	3.900	26525	6366	223.4
		8.00	2	500	0.160	12.000	5.200	19895	6366	397.3
		10.00	2	500	0.200	15.000	6.500	15915	6366	620.7
	Unalloyed copper	1.00	2	132	0.014	1.500	0.650	42000	1176	1.1
		2.00	2	264	0.028	3.000	1.300	42000	2352	9.2
		3.00	2	350	0.042	4.500	1.950	37135	3119	27.4
		4.00	2	350	0.056	6.000	2.600	27850	3119	48.7
		5.00	2	350	0.070	7.500	3.250	22280	3119	76.0
		6.00	2	350	0.084	9.000	3.900	18570	3120	109.5
		8.00	2	350	0.112	12.000	5.200	13925	3119	194.6
		10.00	2	350	0.140	15.000	6.500	11140	3119	304.1
	Thermoplastics	1.00	2	132	0.024	1.500	0.650	42000	2016	2.0
		2.00	2	264	0.048	3.000	1.300	42000	4032	15.7
		3.00	2	396	0.072	4.500	1.950	42000	6048	53.1
		4.00	2	500	0.096	6.000	2.600	39790	7640	119.2
		5.00	2	500	0.120	7.500	3.250	31830	7639	186.2
		6.00	2	500	0.144	9.000	3.900	26525	7639	268.1
		8.00	2	500	0.192	12.000	5.200	19895	7640	476.7
		10.00	2	500	0.240	15.000	6.500	15915	7639	744.8
	Cast aluminium	1.00	2	132	0.020	1.500	0.650	42000	1680	1.6
		2.00	2	264	0.040	3.000	1.300	42000	3360	13.1
		3.00	2	396	0.060	4.500	1.950	42000	5040	44.2
		4.00	2	400	0.080	6.000	2.600	31830	5093	79.4
		5.00	2	400	0.100	7.500	3.250	25465	5093	124.1
		6.00	2	400	0.120	9.000	3.900	21220	5093	178.8
		8.00	2	400	0.160	12.000	5.200	15915	5093	317.8
		10.00	2	400	0.200	15.000	6.500	12730	5092	496.5
	Wrought aluminium Construction aluminium	1.00	2	132	0.016	1.500	1.000	42000	1344	2.0
		2.00	2	264	0.032	3.000	2.000	42000	2688	16.1
		3.00	2	396	0.048	4.500	3.000	42000	4032	54.4
		4.00	2	425	0.064	6.000	4.000	33820	4329	103.9
		5.00	2	425	0.080	7.500	5.000	27055	4329	162.3
		6.00	2	425	0.096	9.000	6.000	22545	4329	233.7
		8.00	2	425	0.128	12.000	8.000	16910	4329	415.6
		10.00	2	425	0.160	15.000	10.000	13530	4330	649.4
	Unalloyed copper	1.00	2	132	0.011	1.500	1.000	42000	941	1.4
		2.00	2	264	0.022	3.000	2.000	42000	1882	11.3
		3.00	2	300	0.034	4.500	3.000	31830	2139	28.9
		4.00	2	300	0.045	6.000	4.000	23875	2139	51.3
		5.00	2	300	0.056	7.500	5.000	19100	2139	80.2
		6.00	2	300	0.067	9.000	6.000	15915	2139	115.5
		8.00	2	300	0.090	12.000	8.000	11935	2139	205.3
		10.00	2	300	0.112	15.000	10.000	9550	2139	320.9
	Thermoplastics	1.00	2	132	0.019	1.500	1.000	42000	1613	2.4
		2.00	2	264	0.038	3.000	2.000	42000	3226	19.4
		3.00	2	396	0.058	4.500	3.000	42000	4838	65.3
		4.00	2	425	0.077	6.000	4.000	33820	5195	124.7
		5.00	2	425	0.096	7.500	5.000	27055	5195	194.8
		6.00	2	425	0.115	9.000	6.000	22545	5194	280.5
		8.00	2	425	0.154	12.000	8.000	16910	5195	498.7
		10.00	2	425	0.192	15.000	10.000	13530	5196	779.3
	Cast aluminium	1.00	2	132	0.016	1.500	1.000	42000	1344	2.0
		2.00	2	264	0.032	3.000	2.000	42000	2688	16.1
		3.00	2	396	0.048	4.500	3.000	42000	4032	54.4
		4.00	2	340	0.064	6.000	4.000	27055	3463	83.1
		5.00	2	340	0.080	7.500	5.000	21645	3463	129.9
		6.00	2	340	0.096	9.000	6.000	18040	3464	187.0
		8.00	2	340	0.128	12.000	8.000	13530	3464	332.5
		10.00	2	340	0.160	15.000	10.000	10825	3464	519.6

Cylindrical end mills E-Cut Alu

Smooth-edged, normal version, short neck

Base-X **B**

$l_2 = 2.2 \times d_1$

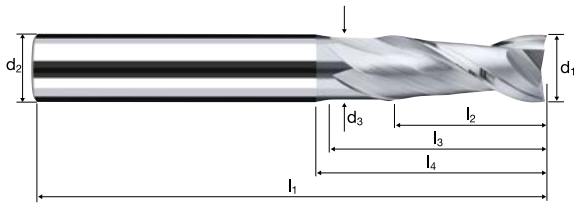
$l_3 = 3.0 \times d_1$

HM MG10 | λ 34° γ 24°

90° | G 2.5

Vario

new!



Roughing

Finishing

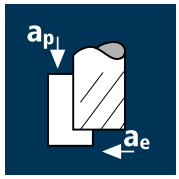
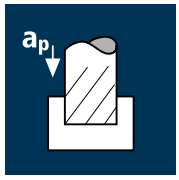
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8561** Article-N°. ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	α	z	8661	8561
100	1.00	6.00	0.95	50	2.20	3.00	8.41	16.8°	2	●	
140	2.00	6.00	1.90	51	4.40	6.00	10.18	11.4°	2	●	
180	3.00	6.00	2.80	54	6.60	9.00	12.33	7.2°	2	●	
220	4.00	6.00	3.70	54	9.00	12.00	14.54	4.2°	2	●	
260	5.00	6.00	4.60	57	11.00	15.00	16.72	2.0°	2	●	
300	6.00	6.00	5.50	57	13.50	18.00	19.85	0.0°	2	●	
391	8.00	8.00	7.40	63	18.00	24.00	26.37	0.0°	2	●	
450	10.00	10.00	9.20	74	22.00	30.00	33.01	0.0°	2	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	2	550	0.040	4.500	1.400	58355	4668	29.4
		4.00	2	550	0.055	6.000	1.800	43770	4815	52.0
		5.00	2	550	0.070	7.500	2.300	35015	4902	84.6
		6.00	2	550	0.090	9.000	2.700	29180	5252	127.6
		8.00	2	550	0.120	12.000	3.600	21885	5252	226.9
		10.00	2	550	0.150	15.000	4.500	17505	5252	354.5
		12.00	2	550	0.165	18.000	5.400	14590	4815	468.0
		16.00	2	550	0.185	24.000	7.200	10940	4048	699.5
		20.00	2	550	0.215	30.000	9.000	8755	3765	1016.5
	Unalloyed copper	3.00	2	400	0.030	4.500	1.350	42440	2546	15.5
		4.00	2	400	0.045	6.000	1.800	31830	2865	30.9
		5.00	2	400	0.055	7.500	2.250	25465	2801	47.3
		6.00	2	400	0.070	9.000	2.700	21220	2971	72.2
		8.00	2	400	0.095	12.000	3.600	15915	3024	130.6
		10.00	2	400	0.120	15.000	4.500	12730	3055	206.2
		12.00	2	400	0.130	18.000	5.400	10610	2759	268.1
		16.00	2	400	0.150	24.000	7.200	7960	2388	412.6
		20.00	2	400	0.170	30.000	9.000	6365	2164	584.3
	Thermoplastics	3.00	2	396	0.040	4.500	1.350	42015	3361	20.4
		4.00	2	528	0.055	6.000	1.800	42015	4622	49.9
		5.00	2	660	0.070	7.500	2.250	42015	5882	99.3
		6.00	2	792	0.090	9.000	2.700	42015	7563	183.8
		8.00	2	1000	0.120	12.000	3.600	39790	9550	412.5
		10.00	2	1000	0.150	15.000	4.500	31830	9549	644.6
		12.00	2	1000	0.165	18.000	5.400	26525	8753	850.8
		16.00	2	1000	0.185	24.000	7.200	19895	7361	1272.0
		20.00	2	1000	0.215	30.000	9.000	15915	6844	1847.7
	Cast aluminium	3.00	2	396	0.040	4.500	1.350	42015	3361	20.4
		4.00	2	440	0.055	6.000	1.800	35015	3852	41.6
		5.00	2	440	0.070	7.500	2.250	28010	3921	66.2
		6.00	2	440	0.090	9.000	2.700	23345	4202	102.1
		8.00	2	440	0.120	12.000	3.600	17505	4201	181.5
		10.00	2	440	0.150	15.000	4.500	14005	4202	283.6
		12.00	2	440	0.165	18.000	5.400	11670	3851	374.3
		16.00	2	440	0.185	24.000	7.200	8755	3239	559.8
		20.00	2	440	0.215	30.000	9.000	7005	3012	813.3
	Wrought aluminium Construction aluminium	3.00	2	450	0.030	1.500	3.000	47745	2865	12.9
		4.00	2	450	0.040	2.000	4.000	35810	2865	22.9
		5.00	2	450	0.050	2.500	5.000	28650	2865	35.8
		6.00	2	450	0.065	3.000	6.000	23875	3104	55.9
		8.00	2	450	0.085	4.000	8.000	17905	3044	97.4
		10.00	2	450	0.105	5.000	10.000	14325	3008	150.4
		12.00	2	450	0.115	6.000	12.000	11935	2745	197.6
		16.00	2	450	0.130	8.000	16.000	8950	2327	297.9
		20.00	2	450	0.150	10.000	20.000	7160	2148	429.6
	Unalloyed copper	3.00	2	350	0.025	1.500	3.000	37135	1857	8.4
		4.00	2	350	0.030	2.000	4.000	27850	1671	13.4
		5.00	2	350	0.040	2.500	5.000	22280	1782	22.3
		6.00	2	350	0.050	3.000	6.000	18570	1857	33.4
		8.00	2	350	0.070	4.000	8.000	13925	1950	62.4
		10.00	2	350	0.085	5.000	10.000	11140	1894	94.7
		12.00	2	350	0.090	6.000	12.000	9285	1671	120.3
		16.00	2	350	0.105	8.000	16.000	6965	1463	187.2
		20.00	2	350	0.120	10.000	20.000	5570	1337	267.4
	Thermoplastics	3.00	2	396	0.030	1.500	3.000	42015	2521	11.3
		4.00	2	528	0.040	2.000	4.000	42015	3361	26.9
		5.00	2	660	0.050	2.500	5.000	42015	4202	52.5
		6.00	2	792	0.065	3.000	6.000	42015	5462	98.3
		8.00	2	800	0.085	4.000	8.000	31830	5411	173.2
		10.00	2	800	0.105	5.000	10.000	25465	5348	267.4
		12.00	2	800	0.115	6.000	12.000	21220	4881	351.4
		16.00	2	800	0.130	8.000	16.000	15915	4138	529.7
		20.00	2	800	0.150	10.000	20.000	12730	3819	763.8
	Cast aluminium	3.00	2	360	0.030	1.500	3.000	38195	2292	10.3
		4.00	2	360	0.040	2.000	4.000	28650	2292	18.3
		5.00	2	360	0.050	2.500	5.000	22920	2292	28.7
		6.00	2	360	0.065	3.000	6.000	19100	2483	44.7
		8.00	2	360	0.085	4.000	8.000	14325	2435	77.9
		10.00	2	360	0.105	5.000	10.000	11460	2407	120.3
		12.00	2	360	0.115	6.000	12.000	9550	2197	158.1
		16.00	2	360	0.130	8.000	16.000	7160	1862	238.3
		20.00	2	360	0.150	10.000	20.000	5730	1719	343.8

Cylindrical end mills

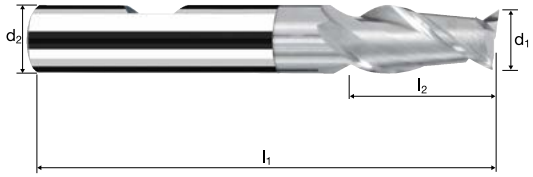
Smooth-edged, normal version

Favora® F

HM
MG10

λ **40°**
γ **18°**

45°



Roughing

Finishing

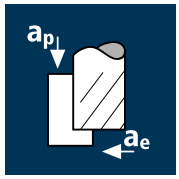
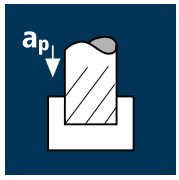
ToolSchool 8560 / 8660 8561 / 8661 8561 / 8661

III

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **5500** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	45°	α	z	CELERO C5500	CELERO C5272
140	2.00	6.00	54	6.00	15.32	0.05	8.0°	2		●
180	3.00	6.00	57	7.00	14.96	0.05	6.0°	2		●
220	4.00	6.00	57	8.00	14.59	0.05	4.5°	2		●
260	5.00	6.00	57	10.00	14.72	0.10	2.5°	2		●
300	6.00	6.00	57	10.00	-	0.10	0.0°	2		●
391	8.00	8.00	63	16.00	-	0.10	0.0°	2		●
450	10.00	10.00	72	19.00	-	0.15	0.0°	2		●
501	12.00	12.00	83	22.00	-	0.15	0.0°	2		●
610	16.00	16.00	92	26.00	-	0.15	0.0°	2		●
682	20.00	20.00	104	32.00	-	0.15	0.0°	2		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	3	550	0.045	4.500	0.900	58355	7878	31.9
		4.00	3	550	0.060	6.000	1.200	43770	7879	56.7
		5.00	3	550	0.075	7.500	1.500	35015	7878	88.6
		6.00	3	550	0.100	9.000	1.800	29180	8754	141.8
		8.00	3	550	0.120	12.000	2.400	21885	7879	226.9
		10.00	3	550	0.150	15.000	3.000	17505	7877	354.5
		12.00	3	550	0.180	18.000	3.600	14590	7879	510.5
		16.00	3	550	0.190	24.000	4.800	10940	6236	718.4
		20.00	3	550	0.225	30.000	6.000	8755	5910	1063.7
	Unalloyed copper	3.00	3	400	0.035	4.500	0.900	42440	4456	18.0
		4.00	3	400	0.050	6.000	1.200	31830	4775	34.4
		5.00	3	400	0.060	7.500	1.500	25465	4584	51.6
		6.00	3	400	0.080	9.000	1.800	21220	5093	82.5
		8.00	3	400	0.095	12.000	2.400	15915	4536	130.6
		10.00	3	400	0.120	15.000	3.000	12730	4583	206.2
		12.00	3	400	0.145	18.000	3.600	10610	4615	299.1
		16.00	3	400	0.150	24.000	4.800	7960	3582	412.6
		20.00	3	400	0.180	30.000	6.000	6365	3437	618.7
	Thermoplastics	3.00	3	1000	0.045	4.500	0.900	60000	8100	32.8
		4.00	3	1000	0.060	6.000	1.200	60000	10800	77.8
		5.00	3	1000	0.075	7.500	1.500	60000	13500	151.9
		6.00	3	1000	0.100	9.000	1.800	53050	15915	257.8
		8.00	3	1000	0.120	12.000	2.400	39790	14324	412.5
		10.00	3	1000	0.150	15.000	3.000	31830	14324	644.6
		12.00	3	1000	0.180	18.000	3.600	26525	14324	928.2
		16.00	3	1000	0.190	24.000	4.800	19895	11340	1306.4
		20.00	3	1000	0.225	30.000	6.000	15915	10743	1933.7
	Cast aluminium	3.00	3	396	0.045	4.500	0.900	42015	5672	23.0
		4.00	3	440	0.060	6.000	1.200	35015	6303	45.4
		5.00	3	440	0.075	7.500	1.500	28010	6302	70.9
		6.00	3	440	0.100	9.000	1.800	23345	7004	113.5
		8.00	3	440	0.120	12.000	2.400	17505	6302	181.5
		10.00	3	440	0.150	15.000	3.000	14005	6302	283.6
		12.00	3	440	0.180	18.000	3.600	11670	6302	408.4
		16.00	3	440	0.190	24.000	4.800	8755	4990	574.9
		20.00	3	440	0.225	30.000	6.000	7005	4728	851.1
	Wrought aluminium Construction aluminium	3.00	3	450	0.030	1.350	3.000	47745	4297	17.4
		4.00	3	450	0.040	1.800	4.000	35810	4297	30.9
		5.00	3	450	0.055	2.250	5.000	28650	4727	53.2
		6.00	3	450	0.070	2.700	6.000	23875	5014	81.2
		8.00	3	450	0.085	3.600	8.000	17905	4566	131.5
		10.00	3	450	0.105	4.500	10.000	14325	4512	203.1
		12.00	3	450	0.125	5.400	12.000	11935	4476	290.0
		16.00	3	450	0.135	7.200	16.000	8950	3625	417.6
		20.00	3	450	0.160	9.000	20.000	7160	3437	618.6
	Unalloyed copper	3.00	3	350	0.025	1.350	3.000	37135	2785	11.3
		4.00	3	350	0.030	1.800	4.000	27850	2507	18.0
		5.00	3	350	0.045	2.250	5.000	22280	3008	33.8
		6.00	3	350	0.055	2.700	6.000	18570	3064	49.6
		8.00	3	350	0.070	3.600	8.000	13925	2924	84.2
		10.00	3	350	0.085	4.500	10.000	11140	2841	127.8
		12.00	3	350	0.100	5.400	12.000	9285	2786	180.5
		16.00	3	350	0.110	7.200	16.000	6965	2299	264.8
		20.00	3	350	0.130	9.000	20.000	5570	2172	391.0
	Thermoplastics	3.00	3	800	0.030	1.350	3.000	60000	5400	21.9
		4.00	3	800	0.040	1.800	4.000	60000	7200	51.8
		5.00	3	800	0.055	2.250	5.000	50930	8404	94.5
		6.00	3	800	0.070	2.700	6.000	42440	8912	144.4
		8.00	3	800	0.085	3.600	8.000	31830	8117	233.8
		10.00	3	800	0.105	4.500	10.000	25465	8022	361.0
		12.00	3	800	0.125	5.400	12.000	21220	7958	515.6
		16.00	3	800	0.135	7.200	16.000	15915	6446	742.5
		20.00	3	800	0.160	9.000	20.000	12730	6110	1099.9
	Cast aluminium	3.00	3	360	0.030	1.350	3.000	38195	3438	13.9
		4.00	3	360	0.040	1.800	4.000	28650	3438	24.8
		5.00	3	360	0.055	2.250	5.000	22920	3782	42.5
		6.00	3	360	0.070	2.700	6.000	19100	4011	65.0
		8.00	3	360	0.085	3.600	8.000	14325	3653	105.2
		10.00	3	360	0.105	4.500	10.000	11460	3610	162.4
		12.00	3	360	0.125	5.400	12.000	9550	3581	232.1
		16.00	3	360	0.135	7.200	16.000	7160	2900	334.1
		20.00	3	360	0.160	9.000	20.000	5730	2750	495.1

Cylindrical end mills AX

Smooth-edged, medium length version, neck

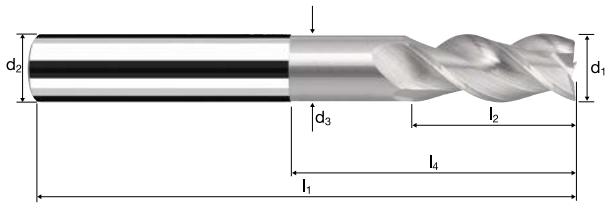
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

ToolSchool 8570 / 8670 8580 / 8680

III

Rm < 850

Al Aluminium > 99%

Al Aluminium Alloy

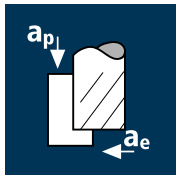
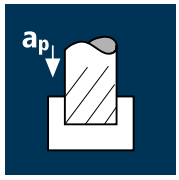
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15557** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15657	CELERO C15657
										15557	C15557
180	3.00	6.00	2.80	63	8.00	20.00	26.63	3.5°	3	●	●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	2.5°	3	●	●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	1.5°	3	●	●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.0°	3	●	●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.0°	3	●	●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.0°	3	●	●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.0°	3	●	●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.0°	3	●	●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.0°	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	3	550	0.035	7.500	0.600	58355	6127	27.6
		4.00	3	550	0.045	10.000	0.800	43770	5909	47.3
		5.00	3	550	0.060	12.500	1.000	35015	6303	78.8
		6.00	3	550	0.075	15.000	1.200	29180	6566	118.2
		8.00	3	550	0.095	20.000	1.600	21885	6237	199.6
		10.00	3	550	0.115	25.000	2.000	17505	6039	302.0
		12.00	3	550	0.140	30.000	2.400	14590	6128	441.2
		16.00	3	550	0.150	40.000	3.200	10940	4923	630.1
		20.00	3	550	0.175	50.000	4.000	8755	4596	919.3
	Unalloyed copper	3.00	3	400	0.030	7.500	0.600	42440	3820	17.2
		4.00	3	400	0.035	10.000	0.800	31830	3342	26.7
		5.00	3	400	0.050	12.500	1.000	25465	3820	47.7
		6.00	3	400	0.060	15.000	1.200	21220	3820	68.8
		8.00	3	400	0.075	20.000	1.600	15915	3581	114.6
		10.00	3	400	0.090	25.000	2.000	12730	3437	171.9
		12.00	3	400	0.110	30.000	2.400	10610	3501	252.1
		16.00	3	400	0.120	40.000	3.200	7960	2866	366.8
		20.00	3	400	0.140	50.000	4.000	6365	2673	534.7
	Thermoplastics	3.00	3	1000	0.035	7.500	0.600	60000	6300	28.4
		4.00	3	1000	0.045	10.000	0.800	60000	8100	64.8
		5.00	3	1000	0.060	12.500	1.000	60000	10800	135.0
		6.00	3	1000	0.075	15.000	1.200	53050	11936	214.9
		8.00	3	1000	0.095	20.000	1.600	39790	11340	362.9
		10.00	3	1000	0.115	25.000	2.000	31830	10981	549.1
		12.00	3	1000	0.140	30.000	2.400	26525	11141	802.1
		16.00	3	1000	0.150	40.000	3.200	19895	8953	1146.0
		20.00	3	1000	0.175	50.000	4.000	15915	8355	1671.1
	Cast aluminium	3.00	3	396	0.035	7.500	0.600	42015	4412	19.9
		4.00	3	440	0.045	10.000	0.800	35015	4727	37.8
		5.00	3	440	0.060	12.500	1.000	28010	5042	63.0
		6.00	3	440	0.075	15.000	1.200	23345	5253	94.5
		8.00	3	440	0.095	20.000	1.600	17505	4989	159.6
		10.00	3	440	0.115	25.000	2.000	14005	4832	241.6
		12.00	3	440	0.140	30.000	2.400	11670	4901	352.9
		16.00	3	440	0.150	40.000	3.200	8755	3940	504.3
		20.00	3	440	0.175	50.000	4.000	7005	3678	735.5
	Wrought aluminium Construction aluminium	3.00	3	450	0.025	1.200	3.000	47745	3581	12.9
		4.00	3	450	0.030	1.600	4.000	35810	3223	20.6
		5.00	3	450	0.040	2.000	5.000	28650	3438	34.4
		6.00	3	450	0.055	2.400	6.000	23875	3939	56.7
		8.00	3	450	0.065	3.200	8.000	17905	3492	89.4
		10.00	3	450	0.080	4.000	10.000	14325	3438	137.5
		12.00	3	450	0.100	4.800	12.000	11935	3581	206.2
		16.00	3	450	0.105	6.400	16.000	8950	2819	288.7
		20.00	3	450	0.125	8.000	20.000	7160	2685	429.6
	Unalloyed copper	3.00	3	350	0.020	1.200	3.000	37135	2228	8.0
		4.00	3	350	0.025	1.600	4.000	27850	2089	13.4
		5.00	3	350	0.030	2.000	5.000	22280	2005	20.1
		6.00	3	350	0.045	2.400	6.000	18570	2507	36.1
		8.00	3	350	0.050	3.200	8.000	13925	2089	53.5
		10.00	3	350	0.065	4.000	10.000	11140	2172	86.9
		12.00	3	350	0.080	4.800	12.000	9285	2228	128.4
		16.00	3	350	0.085	6.400	16.000	6965	1776	181.9
		20.00	3	350	0.100	8.000	20.000	5570	1671	267.4
	Thermoplastics	3.00	3	800	0.025	1.200	3.000	60000	4500	16.2
		4.00	3	800	0.030	1.600	4.000	60000	5400	34.6
		5.00	3	800	0.040	2.000	5.000	50930	6112	61.1
		6.00	3	800	0.055	2.400	6.000	42440	7003	100.8
		8.00	3	800	0.065	3.200	8.000	31830	6207	158.9
		10.00	3	800	0.080	4.000	10.000	25465	6112	244.5
		12.00	3	800	0.100	4.800	12.000	21220	6366	366.7
		16.00	3	800	0.105	6.400	16.000	15915	5013	513.4
		20.00	3	800	0.125	8.000	20.000	12730	4774	763.8
	Cast aluminium	3.00	3	360	0.025	1.200	3.000	38195	2865	10.3
		4.00	3	360	0.030	1.600	4.000	28650	2579	16.5
		5.00	3	360	0.040	2.000	5.000	22920	2750	27.5
		6.00	3	360	0.055	2.400	6.000	19100	3152	45.4
		8.00	3	360	0.065	3.200	8.000	14325	2793	71.5
		10.00	3	360	0.080	4.000	10.000	11460	2750	110.0
		12.00	3	360	0.100	4.800	12.000	9550	2865	165.0
		16.00	3	360	0.105	6.400	16.000	7160	2255	231.0
		20.00	3	360	0.125	8.000	20.000	5730	2149	343.8

Cylindrical end mills AX

Smooth-edged, medium length version, short neck

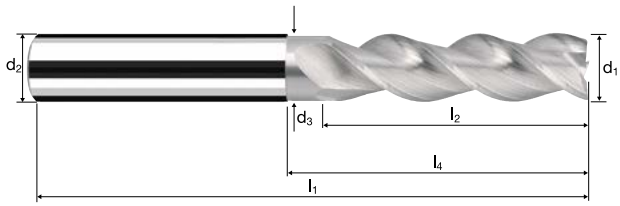
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

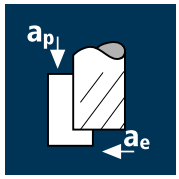
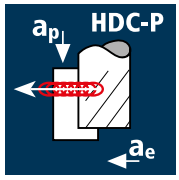
ToolSchool 8578 / 8678 8580 / 8680

III

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15560** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15660	CELERO C15660
										15560	C15560
180	3.00	6.00	2.80	63	14.00	20.00	26.63	3.5°	3	●	●
220	4.00	6.00	3.70	63	17.00	22.00	26.95	2.5°	3	●	●
260	5.00	6.00	4.60	63	19.00	24.00	27.27	1.5°	3	●	●
300	6.00	6.00	5.50	63	19.00	25.34	26.00	0.0°	3	●	●
391	8.00	8.00	7.40	72	28.00	34.29	35.00	0.0°	3	●	●
450	10.00	10.00	9.20	84	34.00	42.20	43.00	0.0°	3	●	●
501	12.00	12.00	11.00	97	40.00	50.13	51.00	0.0°	3	●	●
610	16.00	16.00	15.00	108	48.00	58.13	59.00	0.0°	3	●	●
682	20.00	20.00	19.00	122	56.00	70.13	71.00	0.0°	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.042	4.500	1.350	42000	5292	32.1
		4.00	3	475	0.056	6.000	1.800	37800	6350	68.6
		5.00	3	475	0.070	7.500	2.250	30240	6350	107.2
		6.00	3	475	0.084	9.000	2.700	25200	6350	154.3
		8.00	3	475	0.112	12.000	3.600	18900	6350	274.3
		10.00	3	475	0.140	15.000	4.500	15120	6350	428.7
		12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	3.00	3	355	0.032	4.500	1.350	37665	3559	21.6
		4.00	3	355	0.042	6.000	1.800	28250	3560	38.4
		5.00	3	355	0.053	7.500	2.250	22600	3560	60.1
		6.00	3	355	0.063	9.000	2.700	18835	3560	86.5
		8.00	3	355	0.084	12.000	3.600	14125	3560	153.8
		10.00	3	355	0.105	15.000	4.500	11300	3560	240.3
		12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	3.00	3	396	0.050	4.500	1.350	42000	6350	38.6
		4.00	3	475	0.067	6.000	1.800	37800	7621	82.3
		5.00	3	475	0.084	7.500	2.250	30240	7621	128.6
		6.00	3	475	0.101	9.000	2.700	25200	7621	185.2
		8.00	3	475	0.134	12.000	3.600	18900	7621	329.2
		10.00	3	475	0.168	15.000	4.500	15120	7621	514.4
		12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	3.00	3	380	0.042	4.500	1.350	40320	5080	30.9
		4.00	3	380	0.056	6.000	1.800	30240	5080	54.9
		5.00	3	380	0.070	7.500	2.250	24190	5080	85.7
		6.00	3	380	0.084	9.000	2.700	20160	5080	123.5
		8.00	3	380	0.112	12.000	3.600	15120	5080	219.5
		10.00	3	380	0.140	15.000	4.500	12095	5080	342.9
		12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	3.00	3	375	0.052	11.100	0.750	39790	6207	51.7
		4.00	3	375	0.070	15.000	1.000	29840	6266	94.0
		5.00	3	375	0.087	18.500	1.250	23875	6231	144.1
		6.00	3	375	0.104	22.500	1.500	19895	6207	209.5
		8.00	3	375	0.139	30.000	2.000	14920	6222	373.3
		10.00	3	375	0.174	37.000	2.500	11935	6230	576.3
		12.00	3	375	0.209	45.000	3.000	9945	6236	841.8
		16.00	3	375	0.222	60.000	4.000	7460	4968	1192.4
		20.00	3	375	0.261	74.000	5.000	5970	4675	1729.6
	Unalloyed copper	3.00	3	284	0.039	11.100	0.750	30135	3526	29.4
		4.00	3	284	0.052	15.000	1.000	22600	3526	52.9
		5.00	3	284	0.065	18.500	1.250	18080	3526	81.5
		6.00	3	284	0.078	22.500	1.500	15065	3525	119.0
		8.00	3	284	0.104	30.000	2.000	11300	3526	211.5
		10.00	3	284	0.130	37.000	2.500	9040	3526	326.1
		12.00	3	375	0.249	45.000	3.000	9945	7429	1002.9
		16.00	3	284	0.166	60.000	4.000	5650	2814	675.3
		20.00	3	284	0.195	74.000	5.000	4520	2644	978.4
	Thermoplastics	3.00	3	375	0.062	11.100	0.750	39790	7401	61.6
		4.00	3	375	0.083	15.000	1.000	29840	7430	111.5
		5.00	3	375	0.104	18.500	1.250	23875	7449	172.3
		6.00	3	375	0.125	22.500	1.500	19895	7461	251.8
		8.00	3	375	0.166	30.000	2.000	14920	7430	445.8
		10.00	3	375	0.208	37.000	2.500	11935	7447	688.9
		12.00	3	375	0.249	45.000	3.000	9945	7429	1002.9
		16.00	3	375	0.266	60.000	4.000	7460	5953	1428.7
		20.00	3	375	0.311	74.000	5.000	5970	5570	2060.9
	Cast aluminium	3.00	3	301	0.052	11.100	0.750	31935	4982	41.5
		4.00	3	301	0.070	15.000	1.000	23955	5031	75.5
		5.00	3	301	0.087	18.500	1.250	19160	5001	115.6
		6.00	3	301	0.104	22.500	1.500	15970	4983	168.2
		8.00	3	301	0.139	30.000	2.000	11975	4994	299.6
		10.00	3	301	0.174	37.000	2.500	9580	5001	462.6
		12.00	3	301	0.209	45.000	3.000	7985	5007	675.9
		16.00	3	301	0.222	60.000	4.000	5990	3989	957.4
		20.00	3	301	0.261	74.000	5.000	4790	3751	1387.7

Cylindrical end mills E-Cut Alu

Smooth-edged, medium length version

Base-X **B**

$l_2 = 3.7 \times d_1$

HM
MG10

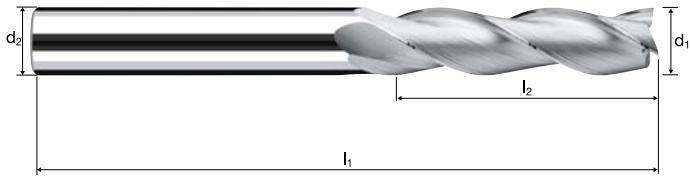
λ **34°**
γ **24°**

90°

G 2.5

Vario

new!



Roughing HPC

Roughing HDC

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

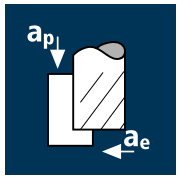
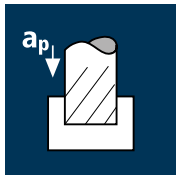
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **8578** Article-N°. ø-Code **180**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	α	z	8678	8578
180	3.00	6.00	57	11.10	17.05	5.3°	3	●	
220	4.00	6.00	60	15.00	21.04	3.0°	3	●	
260	5.00	6.00	63	18.50	24.37	1.4°	3	●	
300	6.00	6.00	65	22.50	-	0.0°	3	●	
391	8.00	8.00	76	30.00	-	0.0°	3	●	
450	10.00	10.00	90	37.00	-	0.0°	3	●	
501	12.00	12.00	105	45.00	-	0.0°	3	●	
610	16.00	16.00	125	60.00	-	0.0°	3	●	
682	20.00	20.00	145	74.00	-	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.042	4.500	1.350	42000	5292	32.1
		4.00	3	475	0.056	6.000	1.800	37800	6350	68.6
		5.00	3	475	0.070	7.500	2.250	30240	6350	107.2
		6.00	3	475	0.084	9.000	2.700	25200	6350	154.3
		8.00	3	475	0.112	12.000	3.600	18900	6350	274.3
		10.00	3	475	0.140	15.000	4.500	15120	6350	428.7
		12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	3.00	3	355	0.032	4.500	1.350	37665	3559	21.6
		4.00	3	355	0.042	6.000	1.800	28250	3560	38.4
		5.00	3	355	0.053	7.500	2.250	22600	3560	60.1
		6.00	3	355	0.063	9.000	2.700	18835	3560	86.5
		8.00	3	355	0.084	12.000	3.600	14125	3560	153.8
		10.00	3	355	0.105	15.000	4.500	11300	3560	240.3
		12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	3.00	3	396	0.050	4.500	1.350	42000	6350	38.6
		4.00	3	475	0.067	6.000	1.800	37800	7621	82.3
		5.00	3	475	0.084	7.500	2.250	30240	7621	128.6
		6.00	3	475	0.101	9.000	2.700	25200	7621	185.2
		8.00	3	475	0.134	12.000	3.600	18900	7621	329.2
		10.00	3	475	0.168	15.000	4.500	15120	7621	514.4
		12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	3.00	3	380	0.042	4.500	1.350	40320	5080	30.9
		4.00	3	380	0.056	6.000	1.800	30240	5080	54.9
		5.00	3	380	0.070	7.500	2.250	24190	5080	85.7
		6.00	3	380	0.084	9.000	2.700	20160	5080	123.5
		8.00	3	380	0.112	12.000	3.600	15120	5080	219.5
		10.00	3	380	0.140	15.000	4.500	12095	5080	342.9
		12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	3.00	3	375	0.024	4.500	3.000	39790	2883	38.9
		4.00	3	375	0.032	6.000	4.000	29840	2883	69.2
		5.00	3	375	0.040	7.500	5.000	23875	2883	108.1
		6.00	3	375	0.048	9.000	6.000	19895	2883	155.7
		8.00	3	375	0.064	12.000	8.000	14920	2883	276.7
		10.00	3	375	0.081	15.000	10.000	11935	2882	432.3
		12.00	3	375	0.097	18.000	12.000	9945	2882	622.5
		16.00	3	375	0.103	24.000	16.000	7460	2306	885.5
		20.00	3	375	0.121	30.000	20.000	5970	2163	1297.6
	Unalloyed copper	3.00	3	280	0.018	4.500	3.000	29710	1614	21.8
		4.00	3	280	0.024	6.000	4.000	22280	1614	38.7
		5.00	3	280	0.030	7.500	5.000	17825	1614	60.5
		6.00	3	280	0.036	9.000	6.000	14855	1614	87.2
		8.00	3	280	0.048	12.000	8.000	11140	1614	155.0
		10.00	3	280	0.060	15.000	10.000	8915	1615	242.2
		12.00	3	280	0.072	18.000	12.000	7425	1614	348.6
		16.00	3	280	0.077	24.000	16.000	5570	1291	495.9
		20.00	3	280	0.091	30.000	20.000	4455	1210	726.2
	Thermoplastics	3.00	3	375	0.029	4.500	3.000	39790	3459	46.7
		4.00	3	375	0.039	6.000	4.000	29840	3459	83.0
		5.00	3	375	0.048	7.500	5.000	23875	3460	129.7
		6.00	3	375	0.058	9.000	6.000	19895	3459	186.8
		8.00	3	375	0.077	12.000	8.000	14920	3459	332.1
		10.00	3	375	0.097	15.000	10.000	11935	3459	518.8
		12.00	3	375	0.116	18.000	12.000	9945	3459	747.0
		16.00	3	375	0.124	24.000	16.000	7460	2767	1062.6
		20.00	3	375	0.145	30.000	20.000	5970	2595	1557.1
	Cast aluminium	3.00	3	300	0.024	4.500	3.000	31830	2306	31.1
		4.00	3	300	0.032	6.000	4.000	23875	2306	55.4
		5.00	3	300	0.040	7.500	5.000	19100	2306	86.5
		6.00	3	300	0.048	9.000	6.000	15915	2306	124.5
		8.00	3	300	0.064	12.000	8.000	11935	2306	221.4
		10.00	3	300	0.081	15.000	10.000	9550	2306	345.9
		12.00	3	300	0.097	18.000	12.000	7960	2307	498.3
		16.00	3	300	0.103	24.000	16.000	5970	1845	708.6
		20.00	3	300	0.121	30.000	20.000	4775	1730	1037.8

Cylindrical end mills E-Cut Alu

Smooth-edged, medium length version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

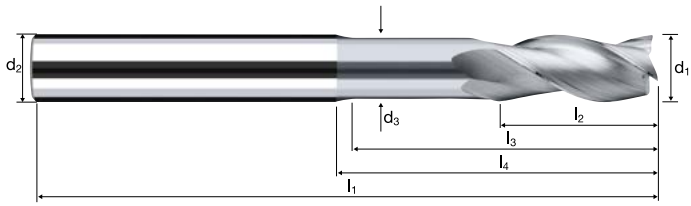
$l_3 = 4.5 \times d_1$

HM MG10 | λ 34° γ 24°

90° | G 2.5

Vario

new!



Roughing

Finishing

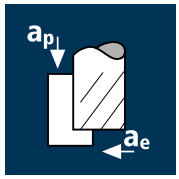
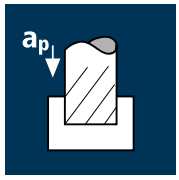
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating: **8570** ø-Code: **180**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	α	z	**8670**	**8570**
180	3.00	6.00	2.80	57	6.60	13.50	16.83	5.3°	3	●	
220	4.00	6.00	3.70	60	9.00	18.00	20.54	3.0°	3	●	
260	5.00	6.00	4.60	63	11.00	22.50	24.22	1.4°	3	●	
300	6.00	6.00	5.50	65	13.50	27.00	28.85	0.0°	3	●	
391	8.00	8.00	7.40	76	18.00	36.00	38.37	0.0°	3	●	
450	10.00	10.00	9.20	90	22.00	45.00	48.01	0.0°	3	●	
501	12.00	12.00	11.00	105	27.00	54.00	57.71	0.0°	3	●	
610	16.00	16.00	15.00	125	36.00	72.00	76.27	0.0°	3	●	
682	20.00	20.00	19.00	145	44.00	90.00	94.77	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	2	550	0.050	4.500	1.200	58355	5836	31.5
		4.00	2	550	0.065	6.000	1.600	43770	5690	54.6
		5.00	2	550	0.080	7.500	2.000	35015	5602	84.0
		6.00	2	550	0.110	9.000	2.400	29180	6420	138.7
		8.00	2	550	0.145	12.000	3.200	21885	6347	243.7
		10.00	2	550	0.180	15.000	4.000	17505	6302	378.1
		12.00	2	550	0.195	18.000	4.800	14590	5690	491.6
		16.00	2	550	0.220	24.000	6.400	10940	4814	739.4
		20.00	2	550	0.255	30.000	8.000	8755	4465	1071.6
	Unalloyed copper	3.00	2	400	0.040	4.500	1.200	42440	3395	18.3
		4.00	2	400	0.050	6.000	1.600	31830	3183	30.6
		5.00	2	400	0.065	7.500	2.000	25465	3311	49.7
		6.00	2	400	0.090	9.000	2.400	21220	3820	82.5
		8.00	2	400	0.115	12.000	3.200	15915	3661	140.6
		10.00	2	400	0.145	15.000	4.000	12730	3692	221.5
		12.00	2	400	0.155	18.000	4.800	10610	3289	284.2
		16.00	2	400	0.175	24.000	6.400	7960	2786	427.9
		20.00	2	400	0.205	30.000	8.000	6365	2610	626.3
	Thermoplastics	3.00	2	1000	0.050	4.500	1.200	60000	6000	32.4
		4.00	2	1000	0.065	6.000	1.600	60000	7800	74.9
		5.00	2	1000	0.080	7.500	2.000	60000	9600	144.0
		6.00	2	1000	0.110	9.000	2.400	53050	11671	252.1
		8.00	2	1000	0.145	12.000	3.200	39790	11539	443.1
		10.00	2	1000	0.180	15.000	4.000	31830	11459	687.5
		12.00	2	1000	0.195	18.000	4.800	26525	10345	893.8
		16.00	2	1000	0.220	24.000	6.400	19895	8754	1344.6
		20.00	2	1000	0.255	30.000	8.000	15915	8117	1948.0
	Cast aluminium	3.00	2	396	0.050	4.500	1.200	42015	4202	22.7
		4.00	2	440	0.065	6.000	1.600	35015	4552	43.7
		5.00	2	440	0.080	7.500	2.000	28010	4482	67.2
		6.00	2	440	0.110	9.000	2.400	23345	5136	110.9
		8.00	2	440	0.145	12.000	3.200	17505	5077	194.9
		10.00	2	440	0.180	15.000	4.000	14005	5042	302.5
		12.00	2	440	0.195	18.000	4.800	11670	4551	393.2
		16.00	2	440	0.220	24.000	6.400	8755	3852	591.7
		20.00	2	440	0.255	30.000	8.000	7005	3573	857.4
	Wrought aluminium Construction aluminium	3.00	2	450	0.035	2.100	3.000	47745	3342	21.1
		4.00	2	450	0.045	2.800	4.000	35810	3223	36.1
		5.00	2	450	0.055	3.500	5.000	28650	3152	55.2
		6.00	2	450	0.075	4.200	6.000	23875	3581	90.2
		8.00	2	450	0.100	5.600	8.000	17905	3581	160.4
		10.00	2	450	0.125	7.000	10.000	14325	3581	250.7
		12.00	2	450	0.135	8.400	12.000	11935	3223	324.8
		16.00	2	450	0.155	11.200	16.000	8950	2775	497.2
		20.00	2	450	0.180	14.000	20.000	7160	2578	721.7
	Unalloyed copper	3.00	2	350	0.030	2.100	3.000	37135	2228	14.0
		4.00	2	350	0.035	2.800	4.000	27850	1950	21.8
		5.00	2	350	0.045	3.500	5.000	22280	2005	35.1
		6.00	2	350	0.060	4.200	6.000	18570	2228	56.2
		8.00	2	350	0.080	5.600	8.000	13925	2228	99.8
		10.00	2	350	0.100	7.000	10.000	11140	2228	156.0
		12.00	2	350	0.110	8.400	12.000	9285	2043	205.9
		16.00	2	350	0.125	11.200	16.000	6965	1741	312.0
		20.00	2	350	0.145	14.000	20.000	5570	1615	452.3
	Thermoplastics	3.00	2	800	0.035	2.100	3.000	60000	4200	26.5
		4.00	2	800	0.045	2.800	4.000	60000	5400	60.5
		5.00	2	800	0.055	3.500	5.000	50930	5602	98.0
		6.00	2	800	0.075	4.200	6.000	42440	6366	160.4
		8.00	2	800	0.100	5.600	8.000	31830	6366	285.2
		10.00	2	800	0.125	7.000	10.000	25465	6366	445.6
		12.00	2	800	0.135	8.400	12.000	21220	5729	577.5
		16.00	2	800	0.155	11.200	16.000	15915	4934	884.1
		20.00	2	800	0.180	14.000	20.000	12730	4583	1283.2
	Cast aluminium	3.00	2	360	0.035	2.100	3.000	38195	2674	16.8
		4.00	2	360	0.045	2.800	4.000	28650	2579	28.9
		5.00	2	360	0.055	3.500	5.000	22920	2521	44.1
		6.00	2	360	0.075	4.200	6.000	19100	2865	72.2
		8.00	2	360	0.100	5.600	8.000	14325	2865	128.4
		10.00	2	360	0.125	7.000	10.000	11460	2865	200.6
		12.00	2	360	0.135	8.400	12.000	9550	2579	259.9
		16.00	2	360	0.155	11.200	16.000	7160	2220	397.8
		20.00	2	360	0.180	14.000	20.000	5730	2063	577.6

Cylindrical end mills AX

Smooth-edged, medium length version, neck

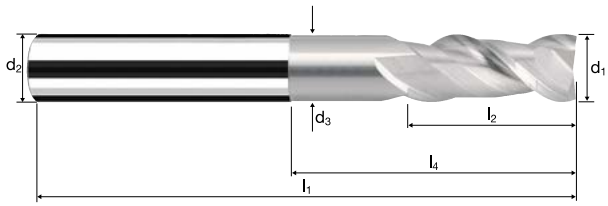
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

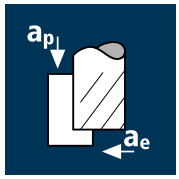
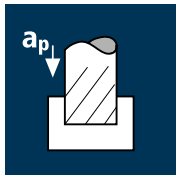
ToolSchool 8571 / 8671 8580 / 8680

III

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15550** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	α	z	15650	CELERO C15650
										15550	C15550
180	3.00	6.00	2.80	63	8.00	20.00	26.63	3.5°	2	●	●
220	4.00	6.00	3.70	63	11.00	22.00	26.95	2.5°	2	●	●
260	5.00	6.00	4.60	63	13.00	24.00	27.27	1.5°	2	●	●
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.0°	2	●	●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.0°	2	●	●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.0°	2	●	●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.0°	2	●	●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.0°	2	●	●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.0°	2	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	1.00	2	132	0.015	1.500	0.650	42000	1260	1.2
		2.00	2	264	0.030	3.000	1.300	42000	2520	9.8
		3.00	2	396	0.045	4.500	1.950	42000	3780	33.2
		4.00	2	475	0.060	6.000	2.600	37800	4536	70.8
		5.00	2	475	0.075	7.500	3.250	30240	4536	110.6
		6.00	2	475	0.090	9.000	3.900	25200	4536	159.2
		8.00	2	475	0.120	12.000	5.200	18900	4536	283.0
		10.00	2	475	0.150	15.000	6.500	15120	4536	442.3
	Unalloyed copper	1.00	2	132	0.011	1.500	0.650	42000	924	0.9
		2.00	2	264	0.022	3.000	1.300	42000	1848	7.2
		3.00	2	355	0.033	4.500	1.950	37665	2486	21.8
		4.00	2	355	0.044	6.000	2.600	28250	2486	38.8
		5.00	2	355	0.055	7.500	3.250	22600	2486	60.6
		6.00	2	355	0.066	9.000	3.900	18835	2486	87.3
		8.00	2	355	0.088	12.000	5.200	14125	2486	155.1
		10.00	2	355	0.110	15.000	6.500	11300	2486	242.4
	Thermoplastics	1.00	2	132	0.018	1.500	0.650	42000	1512	1.5
		2.00	2	264	0.036	3.000	1.300	42000	3024	11.8
		3.00	2	396	0.054	4.500	1.950	42000	4536	39.8
		4.00	2	475	0.072	6.000	2.600	37800	5443	84.9
		5.00	2	475	0.090	7.500	3.250	30240	5443	132.7
		6.00	2	475	0.108	9.000	3.900	25200	5443	191.1
		8.00	2	475	0.144	12.000	5.200	18900	5443	339.7
		10.00	2	475	0.180	15.000	6.500	15120	5443	530.7
	Cast aluminium	1.00	2	132	0.015	1.500	0.650	42000	1260	1.2
		2.00	2	264	0.030	3.000	1.300	42000	2520	9.8
		3.00	2	380	0.045	4.500	1.950	40320	3629	31.8
		4.00	2	380	0.060	6.000	2.600	30240	3629	56.6
		5.00	2	380	0.075	7.500	3.250	24190	3629	88.4
		6.00	2	380	0.090	9.000	3.900	20160	3629	127.4
		8.00	2	380	0.120	12.000	5.200	15120	3629	226.4
		10.00	2	380	0.150	15.000	6.500	12095	3629	353.8
	Wrought aluminium Construction aluminium	1.00	2	132	0.013	1.500	1.000	42000	1058	1.6
		2.00	2	264	0.025	3.000	2.000	42000	2117	12.7
		3.00	2	375	0.038	4.500	3.000	39790	3008	40.6
		4.00	2	375	0.050	6.000	4.000	29840	3008	72.2
		5.00	2	375	0.063	7.500	5.000	23875	3008	112.8
		6.00	2	375	0.076	9.000	6.000	19895	3008	162.4
		8.00	2	375	0.101	12.000	8.000	14920	3008	288.8
		10.00	2	375	0.126	15.000	10.000	11935	3008	451.1
	Unalloyed copper	1.00	2	132	0.009	1.500	1.000	42000	776	1.2
		2.00	2	264	0.018	3.000	2.000	42000	1552	9.3
		3.00	2	280	0.028	4.500	3.000	29710	1647	22.2
		4.00	2	280	0.037	6.000	4.000	22280	1647	39.5
		5.00	2	280	0.046	7.500	5.000	17825	1647	61.8
		6.00	2	280	0.055	9.000	6.000	14855	1647	88.9
		8.00	2	280	0.074	12.000	8.000	11140	1647	158.1
		10.00	2	280	0.092	15.000	10.000	8915	1648	247.1
	Thermoplastics	1.00	2	132	0.015	1.500	1.000	42000	1270	1.9
		2.00	2	264	0.030	3.000	2.000	42000	2540	15.2
		3.00	2	375	0.045	4.500	3.000	39790	3610	48.7
		4.00	2	375	0.060	6.000	4.000	29840	3609	86.6
		5.00	2	375	0.076	7.500	5.000	23875	3610	135.4
		6.00	2	375	0.091	9.000	6.000	19895	3610	194.9
		8.00	2	375	0.121	12.000	8.000	14920	3609	346.5
		10.00	2	375	0.151	15.000	10.000	11935	3609	541.4
	Cast aluminium	1.00	2	132	0.013	1.500	1.000	42000	1058	1.6
		2.00	2	264	0.025	3.000	2.000	42000	2117	12.7
		3.00	2	300	0.038	4.500	3.000	31830	2406	32.5
		4.00	2	300	0.050	6.000	4.000	23875	2407	57.8
		5.00	2	300	0.063	7.500	5.000	19100	2407	90.2
		6.00	2	300	0.076	9.000	6.000	15915	2406	129.9
		8.00	2	300	0.101	12.000	8.000	11935	2406	231.0
		10.00	2	300	0.126	15.000	10.000	9550	2407	361.0

Cylindrical end mills E-Cut Alu

Smooth-edged, medium length version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

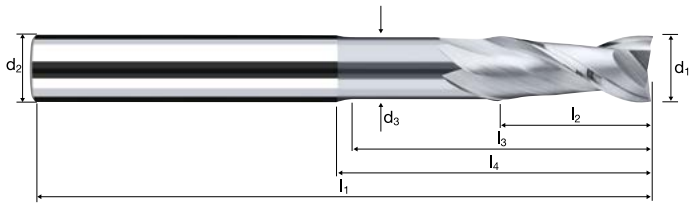
$l_3 = 4.5 \times d_1$

HM MG10 | λ 34° γ 24°

90° | G 2.5

Vario

new!



Roughing

Finishing

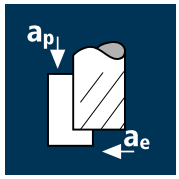
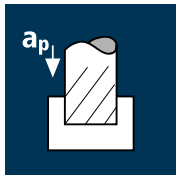
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8571** Article-N°. ø-Code **100**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	α	z	8671	8571
100	1.00	6.00	0.95	51	2.20	4.50	9.91	14.4°	2	●	
140	2.00	6.00	1.90	54	4.40	9.00	13.18	8.9°	2	●	
180	3.00	6.00	2.80	57	6.60	13.50	16.83	5.3°	2	●	
220	4.00	6.00	3.70	60	9.00	18.00	20.54	3.0°	2	●	
260	5.00	6.00	4.60	63	11.00	22.50	24.22	1.4°	2	●	
300	6.00	6.00	5.50	65	13.50	27.00	28.85	0.0°	2	●	
391	8.00	8.00	7.40	76	18.00	36.00	38.37	0.0°	2	●	
450	10.00	10.00	9.20	90	22.00	45.00	48.01	0.0°	2	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	6.00	3	550	0.085	9.000	1.500	29180	7441	100.5
		8.00	3	550	0.105	12.000	2.000	21885	6894	165.5
		10.00	3	550	0.135	15.000	2.500	17505	7090	265.9
		12.00	3	550	0.160	18.000	3.000	14590	7003	378.2
		16.00	3	550	0.170	24.000	4.000	10940	5579	535.6
		20.00	3	550	0.200	30.000	5.000	8755	5253	788.0
	Unalloyed copper	6.00	3	400	0.070	9.000	1.500	21220	4456	60.2
		8.00	3	400	0.085	12.000	2.000	15915	4058	97.4
		10.00	3	400	0.110	15.000	2.500	12730	4201	157.5
		12.00	3	400	0.130	18.000	3.000	10610	4138	223.4
		16.00	3	400	0.135	24.000	4.000	7960	3224	309.5
		20.00	3	400	0.160	30.000	5.000	6365	3055	458.3
	Thermoplastics	6.00	3	1000	0.085	9.000	1.500	53050	13528	182.6
		8.00	3	1000	0.105	12.000	2.000	39790	12534	300.8
		10.00	3	1000	0.135	15.000	2.500	31830	12891	483.4
		12.00	3	1000	0.160	18.000	3.000	26525	12732	687.5
		16.00	3	1000	0.170	24.000	4.000	19895	10147	974.1
		20.00	3	1000	0.200	30.000	5.000	15915	9549	1432.4
	Cast aluminium	6.00	3	440	0.085	9.000	1.500	23345	5953	80.4
		8.00	3	440	0.105	12.000	2.000	17505	5514	132.3
		10.00	3	440	0.135	15.000	2.500	14005	5672	212.7
		12.00	3	440	0.160	18.000	3.000	11670	5602	302.5
		16.00	3	440	0.170	24.000	4.000	8755	4465	428.6
		20.00	3	440	0.200	30.000	5.000	7005	4203	630.5
	Wrought aluminium Construction aluminium	6.00	3	450	0.060	2.100	6.000	23875	4298	54.1
		8.00	3	450	0.075	2.800	8.000	17905	4029	90.2
		10.00	3	450	0.095	3.500	10.000	14325	4083	142.9
		12.00	3	450	0.110	4.200	12.000	11935	3939	198.5
		16.00	3	450	0.120	5.600	16.000	8950	3222	288.7
		20.00	3	450	0.140	7.000	20.000	7160	3007	421.0
	Unalloyed copper	6.00	3	350	0.050	2.100	6.000	18570	2786	35.1
		8.00	3	350	0.060	2.800	8.000	13925	2507	56.1
		10.00	3	350	0.075	3.500	10.000	11140	2507	87.7
		12.00	3	350	0.090	4.200	12.000	9285	2507	126.4
		16.00	3	350	0.095	5.600	16.000	6965	1985	177.9
		20.00	3	350	0.110	7.000	20.000	5570	1838	257.3
	Thermoplastics	6.00	3	800	0.060	2.100	6.000	42440	7639	96.3
		8.00	3	800	0.075	2.800	8.000	31830	7162	160.4
		10.00	3	800	0.095	3.500	10.000	25465	7258	254.0
		12.00	3	800	0.110	4.200	12.000	21220	7003	352.9
		16.00	3	800	0.120	5.600	16.000	15915	5729	513.4
		20.00	3	800	0.140	7.000	20.000	12730	5347	748.5
	Cast aluminium	6.00	3	360	0.060	2.100	6.000	19100	3438	43.3
		8.00	3	360	0.075	2.800	8.000	14325	3223	72.2
		10.00	3	360	0.095	3.500	10.000	11460	3266	114.3
		12.00	3	360	0.110	4.200	12.000	9550	3152	158.8
		16.00	3	360	0.120	5.600	16.000	7160	2578	231.0
		20.00	3	360	0.140	7.000	20.000	5730	2407	336.9

Cylindrical end mills AX

Smooth-edged, long version, neck

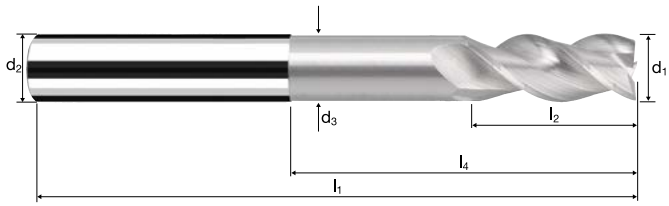
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

ToolSchool 8580 / 8680

III

Rm < 850

Al Aluminium > 99%

Al Aluminium Alloy

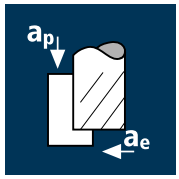
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15559** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	z	15659	CELERO C15659
									15559	C15559
300	6.00	6.00	5.50	70	13.00	32.34	33.00	3	●	●
391	8.00	8.00	7.40	80	19.00	42.29	43.00	3	●	●
450	10.00	10.00	9.20	100	22.00	58.20	59.00	3	●	●
501	12.00	12.00	11.00	110	26.00	63.13	64.00	3	●	●
610	16.00	16.00	15.00	123	32.00	73.13	74.00	3	●	●
682	20.00	20.00	19.00	141	38.00	89.13	90.00	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium C	6.00	3	350	0.065	18.000	0.900	18570	3621	58.7
		8.00	3	350	0.080	24.000	1.200	13925	3342	96.2
		10.00	3	350	0.100	30.000	1.500	11140	3342	150.4
		12.00	3	350	0.120	36.000	1.800	9285	3343	216.6
		16.00	3	350	0.130	48.000	2.400	6965	2716	312.9
		20.00	3	350	0.150	60.000	3.000	5570	2507	451.2
	Unalloyed copper C	6.00	3	220	0.050	18.000	0.900	11670	1751	28.4
		8.00	3	220	0.065	24.000	1.200	8755	1707	49.2
		10.00	3	220	0.080	30.000	1.500	7005	1681	75.7
		12.00	3	220	0.095	36.000	1.800	5835	1663	107.8
		16.00	3	220	0.105	48.000	2.400	4375	1378	158.8
		20.00	3	220	0.120	60.000	3.000	3500	1260	226.8
	Thermoplastics	6.00	3	600	0.065	18.000	0.900	31830	6207	100.6
		8.00	3	600	0.080	24.000	1.200	23875	5730	165.0
		10.00	3	600	0.100	30.000	1.500	19100	5730	257.9
		12.00	3	600	0.120	36.000	1.800	15915	5729	371.3
		16.00	3	600	0.130	48.000	2.400	11935	4655	536.2
		20.00	3	600	0.150	60.000	3.000	9550	4298	773.6
	Cast aluminium C	6.00	3	280	0.065	18.000	0.900	14855	2897	46.9
		8.00	3	280	0.080	24.000	1.200	11140	2674	77.0
		10.00	3	280	0.100	30.000	1.500	8915	2675	120.4
		12.00	3	280	0.120	36.000	1.800	7425	2673	173.2
		16.00	3	280	0.130	48.000	2.400	5570	2172	250.2
		20.00	3	280	0.150	60.000	3.000	4455	2005	360.9

Cylindrical end mills AX

Smooth-edged, long version

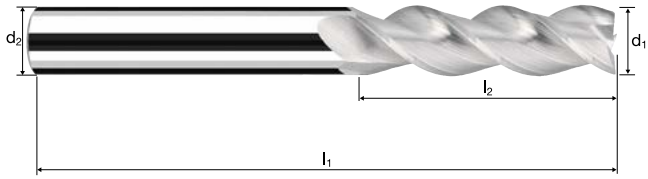
X-Generation

HM
MG10

λ **40°**
γ **20°**

90°

Vario



Roughing

Finishing

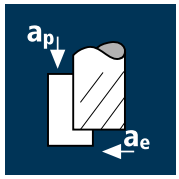
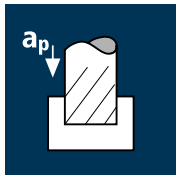
ToolSchool 8580 / 8680

III

Rm < 850			**Al** Aluminium > 99%	**Al** Aluminium Alloy	**Al** Aluminium Cast		**Cu** Copper	**Plastic** Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15561** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	z	**15661**	**CELERO C15661**
						15561	**C15561**
300	6.00	6.00	70	26.00	3	●	●
391	8.00	8.00	80	36.00	3	●	●
450	10.00	10.00	100	45.00	3	●	●
501	12.00	12.00	110	53.00	3	●	●
610	16.00	16.00	123	63.00	3	●	●
682	20.00	20.00	141	75.00	3	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	3.00	3	380	0.038	4.500	1.200	40320	4572	24.7
		4.00	3	380	0.050	6.000	1.600	30240	4572	43.9
		5.00	3	380	0.063	7.500	2.000	24190	4572	68.6
		6.00	3	380	0.076	9.000	2.400	20160	4572	98.8
		8.00	3	380	0.101	12.000	3.200	15120	4572	175.6
		10.00	3	380	0.126	15.000	4.000	12095	4572	274.3
		12.00	3	380	0.151	18.000	4.800	10080	4572	395.0
		16.00	3	380	0.161	24.000	6.400	7560	3658	561.8
		20.00	3	380	0.189	30.000	8.000	6050	3430	823.3
	Unalloyed copper	3.00	3	285	0.029	4.500	1.200	30240	2586	14.0
		4.00	3	285	0.038	6.000	1.600	22680	2586	24.8
		5.00	3	285	0.048	7.500	2.000	18145	2586	38.8
		6.00	3	285	0.057	9.000	2.400	15120	2586	55.8
		8.00	3	285	0.076	12.000	3.200	11340	2586	99.3
		10.00	3	285	0.095	15.000	4.000	9070	2585	155.1
		12.00	3	285	0.114	18.000	4.800	7560	2586	223.4
		16.00	3	285	0.122	24.000	6.400	5670	2068	317.7
		20.00	3	285	0.143	30.000	8.000	4535	1939	465.3
	Thermoplastics	3.00	3	380	0.045	4.500	1.200	40320	5480	29.6
		4.00	3	380	0.060	6.000	1.600	30240	5480	52.6
		5.00	3	380	0.076	7.500	2.000	24190	5479	82.2
		6.00	3	380	0.091	9.000	2.400	20160	5480	118.4
		8.00	3	380	0.121	12.000	3.200	15120	5480	210.4
		10.00	3	380	0.151	15.000	4.000	12095	5479	328.7
		12.00	3	380	0.181	18.000	4.800	10080	5480	473.4
		16.00	3	380	0.193	24.000	6.400	7560	4384	673.3
		20.00	3	380	0.227	30.000	8.000	6050	4111	986.6
	Cast aluminium	3.00	3	305	0.038	4.500	1.200	32360	3670	19.8
		4.00	3	305	0.050	6.000	1.600	24270	3670	35.2
		5.00	3	305	0.063	7.500	2.000	19415	3669	55.0
		6.00	3	305	0.076	9.000	2.400	16180	3670	79.3
		8.00	3	305	0.101	12.000	3.200	12135	3670	140.9
		10.00	3	305	0.126	15.000	4.000	9710	3670	220.2
		12.00	3	305	0.151	18.000	4.800	8090	3670	317.1
		16.00	3	305	0.161	24.000	6.400	6070	2937	451.1
		20.00	3	305	0.189	30.000	8.000	4855	2753	660.7
	Wrought aluminium Construction aluminium	3.00	3	300	0.022	3.000	3.000	31830	2076	18.7
		4.00	3	300	0.029	4.000	4.000	23875	2076	33.2
		5.00	3	300	0.036	5.000	5.000	19100	2076	51.9
		6.00	3	300	0.043	6.000	6.000	15915	2076	74.7
		8.00	3	300	0.058	8.000	8.000	11935	2075	132.8
		10.00	3	300	0.072	10.000	10.000	9550	2076	207.6
		12.00	3	300	0.087	12.000	12.000	7960	2076	299.0
		16.00	3	300	0.093	16.000	16.000	5970	1661	425.2
		20.00	3	300	0.109	20.000	20.000	4775	1557	622.7
	Unalloyed copper	3.00	3	225	0.016	3.000	3.000	23875	1174	10.6
		4.00	3	225	0.022	4.000	4.000	17905	1174	18.8
		5.00	3	225	0.027	5.000	5.000	14325	1174	29.3
		6.00	3	225	0.033	6.000	6.000	11935	1174	42.2
		8.00	3	225	0.044	8.000	8.000	8950	1173	75.1
		10.00	3	225	0.055	10.000	10.000	7160	1173	117.3
		12.00	3	225	0.066	12.000	12.000	5970	1174	169.1
		16.00	3	225	0.070	16.000	16.000	4475	939	240.3
		20.00	3	225	0.082	20.000	20.000	3580	880	352.0
	Thermoplastics	3.00	3	300	0.026	3.000	3.000	31830	2487	22.4
		4.00	3	300	0.035	4.000	4.000	23875	2488	39.8
		5.00	3	300	0.043	5.000	5.000	19100	2488	62.2
		6.00	3	300	0.052	6.000	6.000	15915	2487	89.5
		8.00	3	300	0.069	8.000	8.000	11935	2487	159.2
		10.00	3	300	0.087	10.000	10.000	9550	2488	248.8
		12.00	3	300	0.104	12.000	12.000	7960	2488	358.3
		16.00	3	300	0.111	16.000	16.000	5970	1990	509.5
		20.00	3	300	0.130	20.000	20.000	4775	1866	746.3
	Cast aluminium	3.00	3	240	0.022	3.000	3.000	25465	1660	14.9
		4.00	3	240	0.029	4.000	4.000	19100	1661	26.6
		5.00	3	240	0.036	5.000	5.000	15280	1661	41.5
		6.00	3	240	0.043	6.000	6.000	12730	1660	59.8
		8.00	3	240	0.058	8.000	8.000	9550	1661	106.3
		10.00	3	240	0.072	10.000	10.000	7640	1661	166.1
		12.00	3	240	0.087	12.000	12.000	6365	1660	239.1
		16.00	3	240	0.093	16.000	16.000	4775	1328	340.1
		20.00	3	240	0.109	20.000	20.000	3820	1245	498.2

Cylindrical end mills E-Cut Alu

Smooth-edged, long version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 5.6 \times d_1$

HM MG10

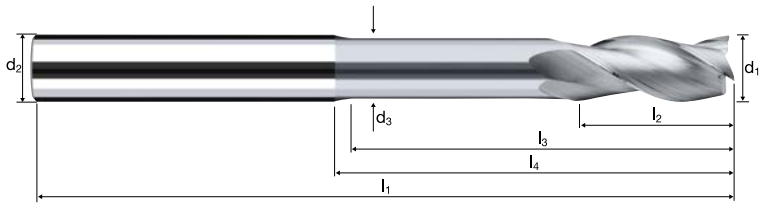
λ **34°**
γ **24°**

90°

G 2.5

Vario

new!



Finishing

Roughing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

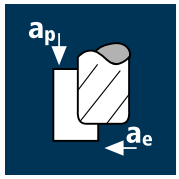
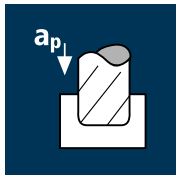
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **8** Article-N°. **580** ø-Code **180**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	α	z	**8680**	**8580**
180	3.00	6.00	2.80	60	6.60	16.80	20.13	4.5°	3	●	
220	4.00	6.00	3.70	65	9.00	22.50	25.04	2.5°	3	●	
260	5.00	6.00	4.60	68	11.00	28.00	29.72	1.2°	3	●	
300	6.00	6.00	5.50	73	13.50	34.00	35.85	0.0°	3	●	
391	8.00	8.00	7.40	84	18.00	45.00	47.37	0.0°	3	●	
450	10.00	10.00	9.20	100	22.00	56.00	59.01	0.0°	3	●	
501	12.00	12.00	11.00	117	27.00	67.50	71.21	0.0°	3	●	
610	16.00	16.00	15.00	144	36.00	90.00	94.27	0.0°	3	●	
682	20.00	20.00	19.00	169	44.00	112.00	116.77	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.056	4.500	1.350	42000	6993	42.5
		4.00	3	500	0.074	6.000	1.800	39790	8833	95.4
		5.00	3	500	0.093	7.500	2.250	31830	8833	149.1
		6.00	3	500	0.111	9.000	2.700	26525	8833	214.6
		8.00	3	500	0.148	12.000	3.600	19895	8833	381.6
		10.00	3	500	0.185	15.000	4.500	15915	8833	596.2
		12.00	3	500	0.222	18.000	5.400	13265	8835	858.7
		16.00	3	500	0.237	24.000	7.200	9945	7065	1220.8
		20.00	3	500	0.278	30.000	9.000	7960	6627	1789.2
	Unalloyed copper	3.00	3	375	0.041	4.500	1.350	39790	4942	30.0
		4.00	3	375	0.055	6.000	1.800	29840	4942	53.4
		5.00	3	375	0.069	7.500	2.250	23875	4942	83.4
		6.00	3	375	0.083	9.000	2.700	19895	4942	120.1
		8.00	3	375	0.110	12.000	3.600	14920	4942	213.5
		10.00	3	375	0.138	15.000	4.500	11935	4941	333.5
		12.00	3	375	0.166	18.000	5.400	9945	4941	480.2
		16.00	3	375	0.177	24.000	7.200	7460	3953	683.1
		20.00	3	375	0.207	30.000	9.000	5970	3707	1001.0
	Thermoplastics	3.00	3	396	0.067	4.500	1.350	42000	8392	51.0
		4.00	3	500	0.089	6.000	1.800	39790	10600	114.5
		5.00	3	500	0.111	7.500	2.250	31830	10599	178.9
		6.00	3	500	0.133	9.000	2.700	26525	10599	257.6
		8.00	3	500	0.178	12.000	3.600	19895	10600	457.9
		10.00	3	500	0.222	15.000	4.500	15915	10599	715.5
		12.00	3	500	0.266	18.000	5.400	13265	10601	1030.5
		16.00	3	500	0.284	24.000	7.200	9945	8478	1465.0
		20.00	3	500	0.333	30.000	9.000	7960	7952	2147.0
	Cast aluminium	3.00	3	396	0.044	4.500	1.350	42000	5594	34.0
		4.00	3	400	0.059	6.000	1.800	31830	5653	61.1
		5.00	3	400	0.074	7.500	2.250	25465	5653	95.4
		6.00	3	400	0.089	9.000	2.700	21220	5653	137.4
		8.00	3	400	0.118	12.000	3.600	15915	5653	244.2
		10.00	3	400	0.148	15.000	4.500	12730	5652	381.5
		12.00	3	400	0.178	18.000	5.400	10610	5653	549.5
		16.00	3	400	0.189	24.000	7.200	7960	4524	781.7
		20.00	3	400	0.222	30.000	9.000	6365	4239	1144.6
	Wrought aluminium Construction aluminium	3.00	3	395	0.032	4.500	3.000	41910	4012	54.2
		4.00	3	400	0.043	6.000	4.000	31830	4063	97.5
		5.00	3	400	0.053	7.500	5.000	25465	4063	152.4
		6.00	3	400	0.064	9.000	6.000	21220	4063	219.4
		8.00	3	400	0.085	12.000	8.000	15915	4063	390.1
		10.00	3	400	0.106	15.000	10.000	12730	4063	609.4
		12.00	3	400	0.128	18.000	12.000	10610	4063	877.6
		16.00	3	400	0.136	24.000	16.000	7960	3252	1248.6
		20.00	3	400	0.160	30.000	20.000	6365	3047	1828.1
	Unalloyed copper	3.00	3	300	0.024	4.500	3.000	31830	2273	30.7
		4.00	3	300	0.032	6.000	4.000	23875	2273	54.6
		5.00	3	300	0.040	7.500	5.000	19100	2273	85.3
		6.00	3	300	0.048	9.000	6.000	15915	2273	122.7
		8.00	3	300	0.063	12.000	8.000	11935	2273	218.2
		10.00	3	300	0.079	15.000	10.000	9550	2273	341.0
		12.00	3	300	0.095	18.000	12.000	7960	2274	491.2
		16.00	3	300	0.102	24.000	16.000	5970	1819	698.5
		20.00	3	300	0.119	30.000	20.000	4775	1705	1023.0
	Thermoplastics	3.00	3	400	0.038	4.500	3.000	42440	4876	65.8
		4.00	3	400	0.051	6.000	4.000	31830	4876	117.0
		5.00	3	400	0.064	7.500	5.000	25465	4876	182.8
		6.00	3	400	0.077	9.000	6.000	21220	4876	263.3
		8.00	3	400	0.102	12.000	8.000	15915	4876	468.1
		10.00	3	400	0.128	15.000	10.000	12730	4875	731.3
		12.00	3	400	0.153	18.000	12.000	10610	4876	1053.2
		16.00	3	400	0.163	24.000	16.000	7960	3902	1498.3
		20.00	3	400	0.191	30.000	20.000	6365	3656	2193.7
	Cast aluminium	3.00	3	320	0.026	4.500	3.000	33955	2601	35.1
		4.00	3	320	0.034	6.000	4.000	25465	2601	62.4
		5.00	3	320	0.043	7.500	5.000	20370	2600	97.5
		6.00	3	320	0.051	9.000	6.000	16975	2600	140.4
		8.00	3	320	0.068	12.000	8.000	12730	2600	249.6
		10.00	3	320	0.085	15.000	10.000	10185	2600	390.0
		12.00	3	320	0.102	18.000	12.000	8490	2601	561.8
		16.00	3	320	0.109	24.000	16.000	6365	2080	798.7
		20.00	3	320	0.128	30.000	20.000	5095	1951	1170.7

Corner radius end mills E-Cut Alu

Smooth-edged, normal version, short neck

Base-X **B**

$l_2 = 2.2 \times d_1$

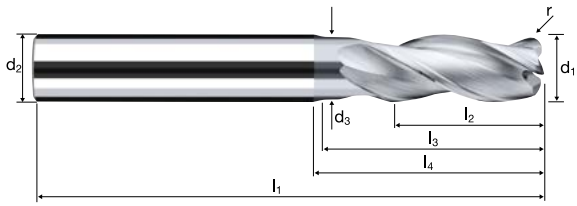
$l_3 = 3.0 \times d_1$

new!

HM MG10 | λ 34° γ 24°

G 2.5

Vario



Roughing

Finishing

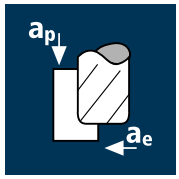
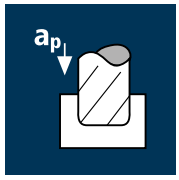
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8567** ø-Code **178**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	8667	8567
178	3.00	6.00	2.80	54	6.60	9.00	12.33	0.200	7.2°	3	●	
218	4.00	6.00	3.70	54	9.00	12.00	14.54	0.200	4.2°	3	●	
258	5.00	6.00	4.60	57	11.00	15.00	16.72	0.200	2.0°	3	●	
180	3.00	6.00	2.80	54	6.60	9.00	12.33	0.500	7.2°	3	●	
220	4.00	6.00	3.70	54	9.00	12.00	14.54	0.500	4.2°	3	●	
260	5.00	6.00	4.60	57	11.00	15.00	16.72	0.500	2.0°	3	●	
300	6.00	6.00	5.50	57	13.50	18.00	19.85	0.500	0.0°	3	●	
388	8.00	8.00	7.40	63	18.00	24.00	26.37	0.500	0.0°	3	●	
448	10.00	10.00	9.20	74	22.00	30.00	33.01	0.500	0.0°	3	●	
302	6.00	6.00	5.50	57	13.50	18.00	19.85	1.000	0.0°	3	●	
391	8.00	8.00	7.40	63	18.00	24.00	26.37	1.000	0.0°	3	●	
450	10.00	10.00	9.20	74	22.00	30.00	33.01	1.000	0.0°	3	●	
501	12.00	12.00	11.00	85	27.00	36.00	39.71	1.000	0.0°	3	●	
608	16.00	16.00	15.00	102	36.00	48.00	52.27	1.000	0.0°	3	●	
455	10.00	10.00	9.20	74	22.00	30.00	33.01	2.000	0.0°	3	●	
505	12.00	12.00	11.00	85	27.00	36.00	39.71	2.000	0.0°	3	●	
611	16.00	16.00	15.00	102	36.00	48.00	52.27	2.000	0.0°	3	●	
683	20.00	20.00	19.00	115	44.00	60.00	64.77	2.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	12.00	3	500	0.222	18.000	5.400	13265	8835	858.7
		16.00	3	500	0.237	24.000	7.200	9945	7065	1220.8
		20.00	3	500	0.278	30.000	9.000	7960	6627	1789.2
	Unalloyed copper	12.00	3	375	0.166	18.000	5.400	9945	4941	480.2
		16.00	3	375	0.177	24.000	7.200	7460	3953	683.1
		20.00	3	375	0.207	30.000	9.000	5970	3707	1001.0
	Thermoplastics	12.00	3	500	0.266	18.000	5.400	13265	10601	1030.5
		16.00	3	500	0.284	24.000	7.200	9945	8478	1465.0
		20.00	3	500	0.333	30.000	9.000	7960	7952	2147.0
	Cast aluminium	12.00	3	400	0.178	18.000	5.400	10610	5653	549.5
		16.00	3	400	0.189	24.000	7.200	7960	4524	781.7
		20.00	3	400	0.222	30.000	9.000	6365	4239	1144.6
	Wrought aluminium Construction aluminium	12.00	3	400	0.128	18.000	12.000	10610	4063	877.6
		16.00	3	400	0.136	24.000	16.000	7960	3252	1248.6
		20.00	3	400	0.160	30.000	20.000	6365	3047	1828.1
	Unalloyed copper	12.00	3	300	0.095	18.000	12.000	7960	2274	491.2
		16.00	3	300	0.102	24.000	16.000	5970	1819	698.5
		20.00	3	300	0.119	30.000	20.000	4775	1705	1023.0
	Thermoplastics	12.00	3	400	0.153	18.000	12.000	10610	4876	1053.2
		16.00	3	400	0.163	24.000	16.000	7960	3902	1498.3
		20.00	3	400	0.191	30.000	20.000	6365	3656	2193.7
	Cast aluminium	12.00	3	320	0.102	18.000	12.000	8490	2601	561.8
		16.00	3	320	0.109	24.000	16.000	6365	2080	798.7
		20.00	3	320	0.128	30.000	20.000	5095	1951	1170.7

Corner radius end mills E-Cut Alu

Smooth-edged, normal version, short neck

Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 3.0 \times d_1$

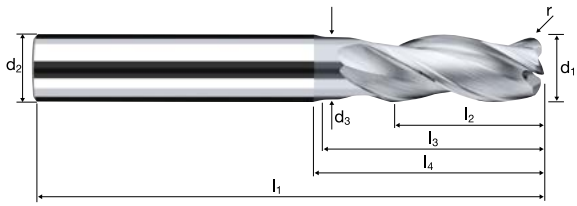
HM
MG10

λ 34°
γ 24°

G 2.5

Vario

new!



Roughing

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

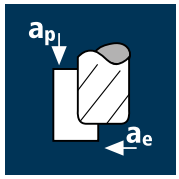
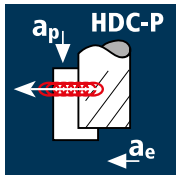
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating: **8567** ø-Code: **507**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	8667	8567
507	12.00	12.00	11.00	85	27.00	36.00	39.71	3.000	0.0°	3	●	
613	16.00	16.00	15.00	102	36.00	48.00	52.27	3.000	0.0°	3	●	
685	20.00	20.00	19.00	115	44.00	60.00	64.77	3.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.042	4.500	1.350	42000	5292	32.1
		4.00	3	475	0.056	6.000	1.800	37800	6350	68.6
		5.00	3	475	0.070	7.500	2.250	30240	6350	107.2
		6.00	3	475	0.084	9.000	2.700	25200	6350	154.3
		8.00	3	475	0.112	12.000	3.600	18900	6350	274.3
		10.00	3	475	0.140	15.000	4.500	15120	6350	428.7
		12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	3.00	3	355	0.032	4.500	1.350	37665	3559	21.6
		4.00	3	355	0.042	6.000	1.800	28250	3560	38.4
		5.00	3	355	0.053	7.500	2.250	22600	3560	60.1
		6.00	3	355	0.063	9.000	2.700	18835	3560	86.5
		8.00	3	355	0.084	12.000	3.600	14125	3560	153.8
		10.00	3	355	0.105	15.000	4.500	11300	3560	240.3
		12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	3.00	3	396	0.050	4.500	1.350	42000	6350	38.6
		4.00	3	475	0.067	6.000	1.800	37800	7621	82.3
		5.00	3	475	0.084	7.500	2.250	30240	7621	128.6
		6.00	3	475	0.101	9.000	2.700	25200	7621	185.2
		8.00	3	475	0.134	12.000	3.600	18900	7621	329.2
		10.00	3	475	0.168	15.000	4.500	15120	7621	514.4
		12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	3.00	3	380	0.042	4.500	1.350	40320	5080	30.9
		4.00	3	380	0.056	6.000	1.800	30240	5080	54.9
		5.00	3	380	0.070	7.500	2.250	24190	5080	85.7
		6.00	3	380	0.084	9.000	2.700	20160	5080	123.5
		8.00	3	380	0.112	12.000	3.600	15120	5080	219.5
		10.00	3	380	0.140	15.000	4.500	12095	5080	342.9
		12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	3.00	3	375	0.052	11.100	0.750	39790	6207	51.7
		4.00	3	375	0.070	15.000	1.000	29840	6266	94.0
		5.00	3	375	0.087	18.500	1.250	23875	6231	144.1
		6.00	3	375	0.104	22.500	1.500	19895	6207	209.5
		8.00	3	375	0.139	30.000	2.000	14920	6222	373.3
		10.00	3	375	0.174	37.000	2.500	11935	6230	576.3
		12.00	3	375	0.209	44.500	3.000	9945	6236	832.4
		16.00	3	375	0.222	60.000	4.000	7460	4968	1192.4
		20.00	3	375	0.261	74.000	5.000	5970	4675	1729.6
	Unalloyed copper	3.00	3	284	0.039	11.100	0.750	30135	3526	29.4
		4.00	3	284	0.052	15.000	1.000	22600	3526	52.9
		5.00	3	284	0.065	18.500	1.250	18080	3526	81.5
		6.00	3	284	0.078	22.500	1.500	15065	3525	119.0
		8.00	3	284	0.104	30.000	2.000	11300	3526	211.5
		10.00	3	284	0.130	37.000	2.500	9040	3526	326.1
		12.00	3	284	0.156	44.500	3.000	7535	3526	470.8
		16.00	3	284	0.166	60.000	4.000	5650	2814	675.3
		20.00	3	284	0.195	74.000	5.000	4520	2644	978.4
	Thermoplastics	3.00	3	375	0.062	11.100	0.750	39790	7401	61.6
		4.00	3	375	0.083	15.000	1.000	29840	7430	111.5
		5.00	3	375	0.104	18.500	1.250	23875	7449	172.3
		6.00	3	375	0.125	22.500	1.500	19895	7461	251.8
		8.00	3	375	0.166	30.000	2.000	14920	7430	445.8
		10.00	3	375	0.208	37.000	2.500	11935	7447	688.9
		12.00	3	375	0.249	44.500	3.000	9945	7429	991.8
		16.00	3	375	0.266	60.000	4.000	7460	5953	1428.7
		20.00	3	375	0.311	74.000	5.000	5970	5570	2060.9
	Cast aluminium	3.00	3	301	0.052	11.100	0.750	31935	4982	41.5
		4.00	3	301	0.070	15.000	1.000	23955	5031	75.5
		5.00	3	301	0.087	18.500	1.250	19160	5001	115.6
		6.00	3	301	0.104	22.500	1.500	15970	4983	168.2
		8.00	3	301	0.139	30.000	2.000	11975	4994	299.6
		10.00	3	301	0.174	37.000	2.500	9580	5001	462.6
		12.00	3	301	0.209	44.500	3.000	7985	5007	668.4
		16.00	3	301	0.222	60.000	4.000	5990	3989	957.4
		20.00	3	301	0.261	74.000	5.000	4790	3751	1387.7

Corner radius end mills E-Cut Alu

Smooth-edged, medium length version

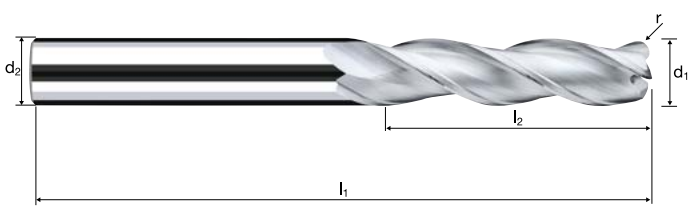
Base-X **B**

$l_2 = 3.7 \times d_1$

HM MG10 | λ 34° γ 24°

G 2.5

Vario



new!

Roughing HPC | Roughing HDC | Finishing

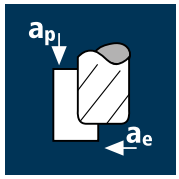
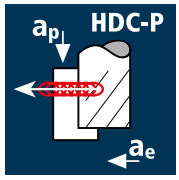
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8576** Article-N°. **178** ø-Code

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r 0/+0.03	α	z	8676	8576
178	3.00	6.00	57	11.10	17.05	0.200	5.3°	3	●	
218	4.00	6.00	60	15.00	21.04	0.200	3.0°	3	●	
258	5.00	6.00	63	18.50	24.37	0.200	1.4°	3	●	
180	3.00	6.00	57	11.10	17.05	0.500	5.3°	3	●	
220	4.00	6.00	60	15.00	21.04	0.500	3.0°	3	●	
260	5.00	6.00	63	18.50	24.37	0.500	1.4°	3	●	
300	6.00	6.00	65	22.50	-	0.500	0.0°	3	●	
388	8.00	8.00	76	30.00	-	0.500	0.0°	3	●	
448	10.00	10.00	90	37.00	-	0.500	0.0°	3	●	
302	6.00	6.00	65	22.50	-	1.000	0.0°	3	●	
391	8.00	8.00	76	30.00	-	1.000	0.0°	3	●	
450	10.00	10.00	90	37.00	-	1.000	0.0°	3	●	
501	12.00	12.00	105	45.00	-	1.000	0.0°	3	●	
608	16.00	16.00	125	60.00	-	1.000	0.0°	3	●	
455	10.00	10.00	90	37.00	-	2.000	0.0°	3	●	
505	12.00	12.00	105	45.00	-	2.000	0.0°	3	●	
611	16.00	16.00	125	60.00	-	2.000	0.0°	3	●	
683	20.00	20.00	145	74.00	-	2.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	12.00	3	375	0.209	44.500	3.000	9945	6236	832.4
		16.00	3	375	0.222	60.000	4.000	7460	4968	1192.4
		20.00	3	375	0.261	74.000	5.000	5970	4675	1729.6
	Unalloyed copper	12.00	3	284	0.156	44.500	3.000	7535	3526	470.8
		16.00	3	284	0.166	60.000	4.000	5650	2814	675.3
		20.00	3	284	0.195	74.000	5.000	4520	2644	978.4
	Thermoplastics	12.00	3	375	0.249	44.500	3.000	9945	7429	991.8
		16.00	3	375	0.266	60.000	4.000	7460	5953	1428.7
		20.00	3	375	0.311	74.000	5.000	5970	5570	2060.9
	Cast aluminium	12.00	3	301	0.209	44.500	3.000	7985	5007	668.4
		16.00	3	301	0.222	60.000	4.000	5990	3989	957.4
		20.00	3	301	0.261	74.000	5.000	4790	3751	1387.7

Corner radius end mills E-Cut Alu

Smooth-edged, medium length version

Base-X **B**

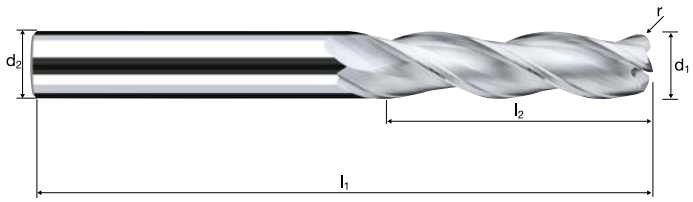
$l_2 = 3.7 \times d_1$

HM
MG10

λ 34°
γ 24°

G 2.5

Vario



new!

Roughing HPC

Roughing HDC

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

Al Aluminium Cast

Cu Copper

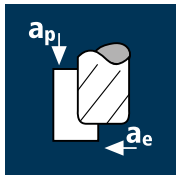
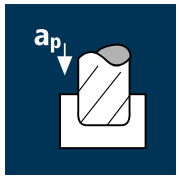
Plastic Thermoplast

Example:
Order-N°.

Coating | Article-N°. | ø-Code

8576 **507**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	l_4	r 0/+0.03	α	z	8676	8576
507	12.00	12.00	105	45.00	-	3.000	0.0°	3	●	
613	16.00	16.00	125	60.00	-	3.000	0.0°	3	●	
685	20.00	20.00	145	74.00	-	3.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	396	0.042	4.500	1.350	42000	5292	32.1
		4.00	3	475	0.056	6.000	1.800	37800	6350	68.6
		5.00	3	475	0.070	7.500	2.250	30240	6350	107.2
		6.00	3	475	0.084	9.000	2.700	25200	6350	154.3
		8.00	3	475	0.112	12.000	3.600	18900	6350	274.3
		10.00	3	475	0.140	15.000	4.500	15120	6350	428.7
		12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	3.00	3	355	0.032	4.500	1.350	37665	3559	21.6
		4.00	3	355	0.042	6.000	1.800	28250	3560	38.4
		5.00	3	355	0.053	7.500	2.250	22600	3560	60.1
		6.00	3	355	0.063	9.000	2.700	18835	3560	86.5
		8.00	3	355	0.084	12.000	3.600	14125	3560	153.8
		10.00	3	355	0.105	15.000	4.500	11300	3560	240.3
		12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	3.00	3	396	0.050	4.500	1.350	42000	6350	38.6
		4.00	3	475	0.067	6.000	1.800	37800	7621	82.3
		5.00	3	475	0.084	7.500	2.250	30240	7621	128.6
		6.00	3	475	0.101	9.000	2.700	25200	7621	185.2
		8.00	3	475	0.134	12.000	3.600	18900	7621	329.2
		10.00	3	475	0.168	15.000	4.500	15120	7621	514.4
		12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	3.00	3	380	0.042	4.500	1.350	40320	5080	30.9
		4.00	3	380	0.056	6.000	1.800	30240	5080	54.9
		5.00	3	380	0.070	7.500	2.250	24190	5080	85.7
		6.00	3	380	0.084	9.000	2.700	20160	5080	123.5
		8.00	3	380	0.112	12.000	3.600	15120	5080	219.5
		10.00	3	380	0.140	15.000	4.500	12095	5080	342.9
		12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	3.00	3	380	0.024	4.500	3.000	40320	2921	39.4
		4.00	3	380	0.032	6.000	4.000	30240	2921	70.1
		5.00	3	380	0.040	7.500	5.000	24190	2921	109.5
		6.00	3	380	0.048	9.000	6.000	20160	2921	157.7
		8.00	3	380	0.064	12.000	8.000	15120	2921	280.4
		10.00	3	380	0.081	15.000	10.000	12095	2921	438.1
		12.00	3	380	0.097	18.000	12.000	10080	2921	631.0
		16.00	3	380	0.103	24.000	16.000	7560	2337	897.4
		20.00	3	380	0.121	30.000	20.000	6050	2192	1315.0
	Unalloyed copper	3.00	3	284	0.018	4.500	3.000	30135	1638	22.1
		4.00	3	284	0.024	6.000	4.000	22600	1637	39.3
		5.00	3	284	0.030	7.500	5.000	18080	1637	61.4
		6.00	3	284	0.036	9.000	6.000	15065	1637	88.4
		8.00	3	284	0.048	12.000	8.000	11300	1637	157.2
		10.00	3	284	0.060	15.000	10.000	9040	1637	245.6
		12.00	3	284	0.072	18.000	12.000	7535	1638	353.7
		16.00	3	284	0.077	24.000	16.000	5650	1310	503.0
		20.00	3	284	0.091	30.000	20.000	4520	1228	736.8
	Thermoplastics	3.00	3	380	0.029	4.500	3.000	40320	3505	47.3
		4.00	3	380	0.039	6.000	4.000	30240	3505	84.1
		5.00	3	380	0.048	7.500	5.000	24190	3505	131.4
		6.00	3	380	0.058	9.000	6.000	20160	3505	189.3
		8.00	3	380	0.077	12.000	8.000	15120	3505	336.5
		10.00	3	380	0.097	15.000	10.000	12095	3505	525.8
		12.00	3	380	0.116	18.000	12.000	10080	3505	757.2
		16.00	3	380	0.124	24.000	16.000	7560	2804	1076.9
		20.00	3	380	0.145	30.000	20.000	6050	2630	1577.9
	Cast aluminium	3.00	3	304	0.024	4.500	3.000	32255	2337	31.5
		4.00	3	304	0.032	6.000	4.000	24190	2337	56.1
		5.00	3	304	0.040	7.500	5.000	19355	2337	87.6
		6.00	3	304	0.048	9.000	6.000	16130	2337	126.2
		8.00	3	304	0.064	12.000	8.000	12095	2337	224.3
		10.00	3	304	0.081	15.000	10.000	9675	2337	350.5
		12.00	3	304	0.097	18.000	12.000	8065	2337	504.8
		16.00	3	304	0.103	24.000	16.000	6050	1870	718.2
		20.00	3	304	0.121	30.000	20.000	4840	1753	1052.0

Corner radius end mills E-Cut Alu

Smooth-edged, medium length version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

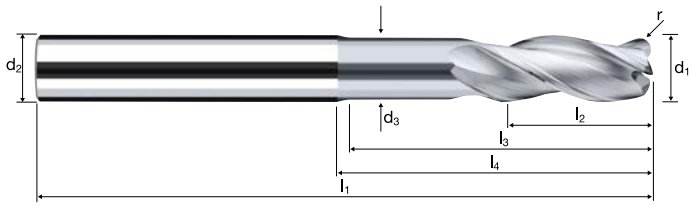
$l_3 = 4.5 \times d_1$

HM MG10 | λ 34° γ 24°

G 2.5

Vario

new!



Roughing

Finishing

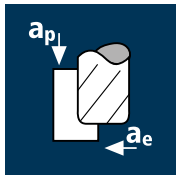
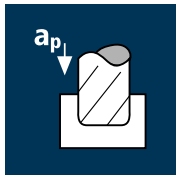
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **8577** Article-N°. **178** ø-Code

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	8677	8577
178	3.00	6.00	2.80	57	6.60	13.50	16.83	0.200	5.3°	3	●	
218	4.00	6.00	3.70	60	9.00	18.00	20.54	0.200	3.0°	3	●	
258	5.00	6.00	4.60	63	11.00	22.50	24.22	0.200	1.4°	3	●	
180	3.00	6.00	2.80	57	6.60	13.50	16.83	0.500	5.3°	3	●	
220	4.00	6.00	3.70	60	9.00	18.00	20.54	0.500	3.0°	3	●	
260	5.00	6.00	4.60	63	11.00	22.50	24.22	0.500	1.4°	3	●	
300	6.00	6.00	5.50	65	13.50	27.00	28.85	0.500	0.0°	3	●	
388	8.00	8.00	7.40	76	18.00	36.00	38.37	0.500	0.0°	3	●	
448	10.00	10.00	9.20	90	22.00	45.00	48.01	0.500	0.0°	3	●	
302	6.00	6.00	5.50	65	13.50	27.00	28.85	1.000	0.0°	3	●	
391	8.00	8.00	7.40	76	18.00	36.00	38.37	1.000	0.0°	3	●	
450	10.00	10.00	9.20	90	22.00	45.00	48.01	1.000	0.0°	3	●	
501	12.00	12.00	11.00	105	27.00	54.00	57.71	1.000	0.0°	3	●	
608	16.00	16.00	15.00	125	36.00	72.00	76.27	1.000	0.0°	3	●	
455	10.00	10.00	9.20	90	22.00	45.00	48.01	2.000	0.0°	3	●	
505	12.00	12.00	11.00	105	27.00	54.00	57.71	2.000	0.0°	3	●	
611	16.00	16.00	15.00	125	36.00	72.00	76.27	2.000	0.0°	3	●	
683	20.00	20.00	19.00	145	44.00	90.00	94.77	2.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	12.00	3	475	0.168	18.000	5.400	12600	6350	617.3
		16.00	3	475	0.179	24.000	7.200	9450	5080	877.9
		20.00	3	475	0.210	30.000	9.000	7560	4763	1286.0
	Unalloyed copper	12.00	3	355	0.126	18.000	5.400	9415	3559	345.9
		16.00	3	355	0.134	24.000	7.200	7065	2849	492.2
		20.00	3	355	0.158	30.000	9.000	5650	2670	720.8
	Thermoplastics	12.00	3	475	0.202	18.000	5.400	12600	7621	740.7
		16.00	3	475	0.215	24.000	7.200	9450	6096	1053.5
		20.00	3	475	0.252	30.000	9.000	7560	5715	1543.2
	Cast aluminium	12.00	3	380	0.168	18.000	5.400	10080	5080	493.8
		16.00	3	380	0.179	24.000	7.200	7560	4064	702.3
		20.00	3	380	0.210	30.000	9.000	6050	3812	1029.1
	Wrought aluminium Construction aluminium	12.00	3	380	0.097	18.000	12.000	10080	2921	631.0
		16.00	3	380	0.103	24.000	16.000	7560	2337	897.4
		20.00	3	380	0.121	30.000	20.000	6050	2192	1315.0
	Unalloyed copper	12.00	3	284	0.072	18.000	12.000	7535	1638	353.7
		16.00	3	284	0.077	24.000	16.000	5650	1310	503.0
		20.00	3	284	0.091	30.000	20.000	4520	1228	736.8
	Thermoplastics	12.00	3	380	0.116	18.000	12.000	10080	3505	757.2
		16.00	3	380	0.124	24.000	16.000	7560	2804	1076.9
		20.00	3	380	0.145	30.000	20.000	6050	2630	1577.9
	Cast aluminium	12.00	3	304	0.097	18.000	12.000	8065	2337	504.8
		16.00	3	304	0.103	24.000	16.000	6050	1870	718.2
		20.00	3	304	0.121	30.000	20.000	4840	1753	1052.0

Corner radius end mills E-Cut Alu

Smooth-edged, medium length version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 4.5 \times d_1$

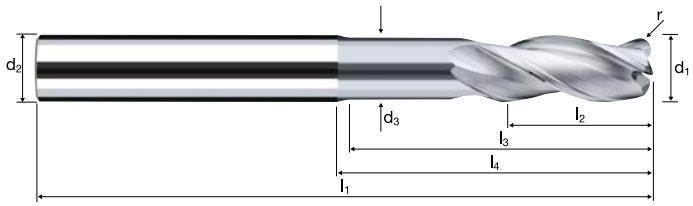
HM
MG10

λ 34°
γ 24°

G 2.5

Vario

new!



Roughing

Finishing

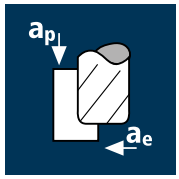
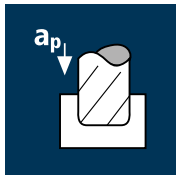
ReTool®

III

Al Aluminium > 99%
Al Aluminium Alloy
Al Aluminium Cast
Cu Copper
Plastic Thermoplast

Example: **Order-N°.** Coating **8577** Article-N°. ø-Code **507**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	8677	8577
507	12.00	12.00	11.00	105	27.00	54.00	57.71	3.000	0.0°	3	●	
613	16.00	16.00	15.00	125	36.00	72.00	76.27	3.000	0.0°	3	●	
685	20.00	20.00	19.00	145	44.00	90.00	94.77	3.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	3.00	3	380	0.038	4.500	1.200	40320	4572	24.7
		4.00	3	380	0.050	6.000	1.600	30240	4572	43.9
		5.00	3	380	0.063	7.500	2.000	24190	4572	68.6
		6.00	3	380	0.076	9.000	2.400	20160	4572	98.8
		8.00	3	380	0.101	12.000	3.200	15120	4572	175.6
		10.00	3	380	0.126	15.000	4.000	12095	4572	274.3
		12.00	3	380	0.151	18.000	4.800	10080	4572	395.0
		16.00	3	380	0.161	24.000	6.400	7560	3658	561.8
		20.00	3	380	0.189	30.000	8.000	6050	3430	823.3
	Unalloyed copper	3.00	3	285	0.029	4.500	1.200	30240	2586	14.0
		4.00	3	285	0.038	6.000	1.600	22680	2586	24.8
		5.00	3	285	0.048	7.500	2.000	18145	2586	38.8
		6.00	3	285	0.057	9.000	2.400	15120	2586	55.8
		8.00	3	285	0.076	12.000	3.200	11340	2586	99.3
		10.00	3	285	0.095	15.000	4.000	9070	2585	155.1
		12.00	3	285	0.114	18.000	4.800	7560	2586	223.4
		16.00	3	285	0.122	24.000	6.400	5670	2068	317.7
		20.00	3	285	0.143	30.000	8.000	4535	1939	465.3
	Thermoplastics	3.00	3	380	0.045	4.500	1.200	40320	5480	29.6
		4.00	3	380	0.060	6.000	1.600	30240	5480	52.6
		5.00	3	380	0.076	7.500	2.000	24190	5479	82.2
		6.00	3	380	0.091	9.000	2.400	20160	5480	118.4
		8.00	3	380	0.121	12.000	3.200	15120	5480	210.4
		10.00	3	380	0.151	15.000	4.000	12095	5479	328.7
		12.00	3	380	0.181	18.000	4.800	10080	5480	473.4
		16.00	3	380	0.193	24.000	6.400	7560	4384	673.3
		20.00	3	380	0.227	30.000	8.000	6050	4111	986.6
	Cast aluminium	3.00	3	305	0.041	4.500	1.200	32360	3961	21.4
		4.00	3	305	0.054	6.000	1.600	24270	3961	38.0
		5.00	3	305	0.068	7.500	2.000	19415	3961	59.4
		6.00	3	305	0.082	9.000	2.400	16180	3961	85.6
		8.00	3	305	0.109	12.000	3.200	12135	3961	152.1
		10.00	3	305	0.136	15.000	4.000	9710	3962	237.7
		12.00	3	305	0.163	18.000	4.800	8090	3961	342.2
		16.00	3	305	0.174	24.000	6.400	6070	3170	486.9
		20.00	3	305	0.204	30.000	8.000	4855	2971	713.1
	Wrought aluminium Construction aluminium	3.00	3	304	0.022	3.000	3.000	32255	2103	18.9
		4.00	3	304	0.029	4.000	4.000	24190	2103	33.6
		5.00	3	304	0.036	5.000	5.000	19355	2103	52.6
		6.00	3	304	0.043	6.000	6.000	16130	2104	75.7
		8.00	3	304	0.058	8.000	8.000	12095	2103	134.6
		10.00	3	304	0.072	10.000	10.000	9675	2103	210.3
		12.00	3	304	0.087	12.000	12.000	8065	2104	302.9
		16.00	3	304	0.093	16.000	16.000	6050	1683	430.9
		20.00	3	304	0.109	20.000	20.000	4840	1578	631.2
	Unalloyed copper	3.00	3	228	0.016	3.000	3.000	24190	1189	10.7
		4.00	3	228	0.022	4.000	4.000	18145	1189	19.0
		5.00	3	228	0.027	5.000	5.000	14515	1189	29.7
		6.00	3	228	0.033	6.000	6.000	12095	1189	42.8
		8.00	3	228	0.044	8.000	8.000	9070	1189	76.1
		10.00	3	228	0.055	10.000	10.000	7255	1189	118.9
		12.00	3	228	0.066	12.000	12.000	6050	1190	171.3
		16.00	3	228	0.070	16.000	16.000	4535	951	243.5
		20.00	3	228	0.082	20.000	20.000	3630	892	356.9
	Thermoplastics	3.00	3	304	0.026	3.000	3.000	32255	2521	22.7
		4.00	3	304	0.035	4.000	4.000	24190	2520	40.3
		5.00	3	304	0.043	5.000	5.000	19355	2521	63.0
		6.00	3	304	0.052	6.000	6.000	16130	2521	90.8
		8.00	3	304	0.069	8.000	8.000	12095	2520	161.3
		10.00	3	304	0.087	10.000	10.000	9675	2520	252.0
		12.00	3	304	0.104	12.000	12.000	8065	2521	363.0
		16.00	3	304	0.111	16.000	16.000	6050	2017	516.4
		20.00	3	304	0.130	20.000	20.000	4840	1891	756.4
	Cast aluminium	3.00	3	244	0.023	3.000	3.000	25890	1822	16.4
		4.00	3	244	0.031	4.000	4.000	19415	1822	29.2
		5.00	3	244	0.039	5.000	5.000	15535	1822	45.6
		6.00	3	244	0.047	6.000	6.000	12945	1822	65.6
		8.00	3	244	0.063	8.000	8.000	9710	1822	116.6
		10.00	3	244	0.078	10.000	10.000	7765	1822	182.2
		12.00	3	244	0.094	12.000	12.000	6470	1821	262.3
		16.00	3	244	0.100	16.000	16.000	4855	1458	373.2
		20.00	3	244	0.117	20.000	20.000	3885	1367	546.8

Corner radius end mills E-Cut Alu

Smooth-edged, long version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 5.6 \times d_1$

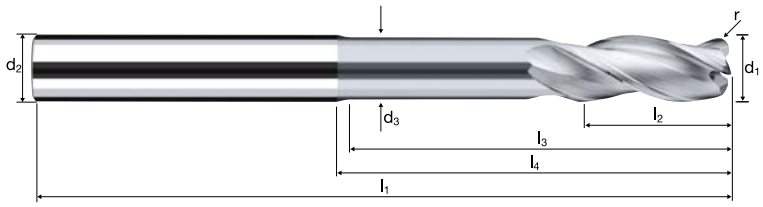
HM
MG10

λ **34°**
γ **24°**

G 2.5

Vario

new!



Roughing

Finishing

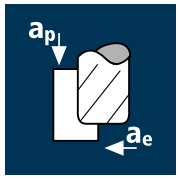
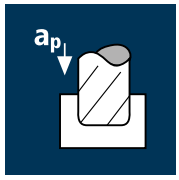
ReTool®

III

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast			

Example: **Order-N°.** Coating **8587** Article-N°. **178** ø-Code

												8687	
												8587	
Ø Code	**d_1** e8	**d_2** h5	**d_3**	**l_1**	**l_2**	**l_3**	**l_4**	**r** 0/+0.03	**α**	**z**			
178	3.00	6.00	2.80	60	6.60	16.80	20.13	0.200	4.5°	3		●	
218	4.00	6.00	3.70	65	9.00	22.50	25.04	0.200	2.5°	3		●	
258	5.00	6.00	4.60	68	11.00	28.00	29.72	0.200	1.2°	3		●	
180	3.00	6.00	2.80	60	6.60	16.80	20.13	0.500	4.5°	3		●	
220	4.00	6.00	3.70	65	9.00	22.50	25.04	0.500	2.5°	3		●	
260	5.00	6.00	4.60	68	11.00	28.00	29.72	0.500	1.2°	3		●	
300	6.00	6.00	5.50	73	13.50	34.00	35.85	0.500	0.0°	3		●	
388	8.00	8.00	7.40	84	18.00	45.00	47.37	0.500	0.0°	3		●	
448	10.00	10.00	9.20	100	22.00	56.00	59.01	0.500	0.0°	3		●	
302	6.00	6.00	5.50	73	13.50	34.00	35.85	1.000	0.0°	3		●	
391	8.00	8.00	7.40	84	18.00	45.00	47.37	1.000	0.0°	3		●	
450	10.00	10.00	9.20	100	22.00	56.00	59.01	1.000	0.0°	3		●	
501	12.00	12.00	11.00	117	27.00	67.50	71.21	1.000	0.0°	3		●	
608	16.00	16.00	15.00	144	36.00	90.00	94.27	1.000	0.0°	3		●	
455	10.00	10.00	9.20	100	22.00	56.00	59.01	2.000	0.0°	3		●	
505	12.00	12.00	11.00	117	27.00	67.50	71.21	2.000	0.0°	3		●	
611	16.00	16.00	15.00	144	36.00	90.00	94.27	2.000	0.0°	3		●	
683	20.00	20.00	19.00	169	44.00	112.00	116.77	2.000	0.0°	3		●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	12.00	3	380	0.151	18.000	4.800	10080	4572	395.0
		16.00	3	380	0.161	24.000	6.400	7560	3658	561.8
		20.00	3	380	0.189	30.000	8.000	6050	3430	823.3
	Unalloyed copper	12.00	3	285	0.114	18.000	4.800	7560	2586	223.4
		16.00	3	285	0.122	24.000	6.400	5670	2068	317.7
		20.00	3	285	0.143	30.000	8.000	4535	1939	465.3
	Thermoplastics	12.00	3	380	0.181	18.000	4.800	10080	5480	473.4
		16.00	3	380	0.193	24.000	6.400	7560	4384	673.3
		20.00	3	380	0.227	30.000	8.000	6050	4111	986.6
	Cast aluminium	12.00	3	305	0.163	18.000	4.800	8090	3961	342.2
		16.00	3	305	0.174	24.000	6.400	6070	3170	486.9
		20.00	3	305	0.204	30.000	8.000	4855	2971	713.1
	Wrought aluminium Construction aluminium	12.00	3	304	0.087	12.000	12.000	8065	2104	302.9
		16.00	3	304	0.093	16.000	16.000	6050	1683	430.9
		20.00	3	304	0.109	20.000	20.000	4840	1578	631.2
	Unalloyed copper	12.00	3	228	0.066	12.000	12.000	6050	1190	171.3
		16.00	3	228	0.070	16.000	16.000	4535	951	243.5
		20.00	3	228	0.082	20.000	20.000	3630	892	356.9
	Thermoplastics	12.00	3	304	0.104	12.000	12.000	8065	2521	363.0
		16.00	3	304	0.111	16.000	16.000	6050	2017	516.4
		20.00	3	304	0.130	20.000	20.000	4840	1891	756.4
	Cast aluminium	12.00	3	244	0.094	12.000	12.000	6470	1821	262.3
		16.00	3	244	0.100	16.000	16.000	4855	1458	373.2
		20.00	3	244	0.117	20.000	20.000	3885	1367	546.8

Corner radius end mills E-Cut Alu

Smooth-edged, long version, neck

Base-X **B**

$l_2 = 2.2 \times d_1$

$l_3 = 5.6 \times d_1$

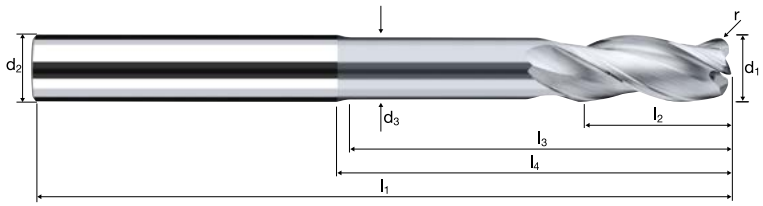
HM
MG10

λ **34°**
γ **24°**

G 2.5

Vario

new!



Roughing

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

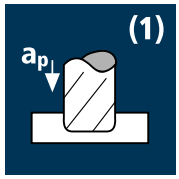
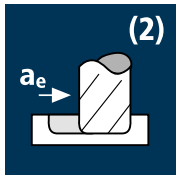
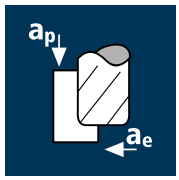
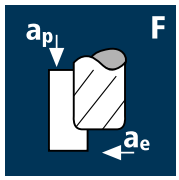
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example:
Order-N°. Coating **8587** Article-N°. ø-Code **507**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	8687	8587
507	12.00	12.00	11.00	117	27.00	67.50	71.21	3.000	0.0°	3	●	
613	16.00	16.00	15.00	144	36.00	90.00	94.27	3.000	0.0°	3	●	
685	20.00	20.00	19.00	169	44.00	112.00	116.77	3.000	0.0°	3	●	

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	3.00	3	0.030	2.000	3.000	900	1350	1800	2700
		4.00	3	0.040	3.000	4.000	1200	1800	2400	3600
		6.00	3	0.060	4.000	6.000	1800	2700	3600	5400
		8.00	3	0.085	5.000	8.000	2550	3825	5100	7650
		10.00	3	0.105	5.500	10.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	12.000	3750	5625	7500	11250
		16.00	3	0.135	6.500	16.000	4050	6075	8100	12150
		20.00	3	0.140	7.000	20.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	25.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	3.00	3	0.030	2.000	2.400	900	1350	1800	2700
		4.00	3	0.040	3.000	3.200	1200	1800	2400	3600
		6.00	3	0.060	4.000	4.800	1800	2700	3600	5400
		8.00	3	0.085	5.000	6.400	2550	3825	5100	7650
		10.00	3	0.105	5.500	8.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	9.600	3750	5625	7500	11250
		16.00	3	0.135	6.500	12.800	4050	6075	8100	12150
		20.00	3	0.140	7.000	16.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	20.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	3.00	3	0.030	3.000	1.800	900	1350	1800	2700
		4.00	3	0.040	4.500	2.400	1200	1800	2400	3600
		6.00	3	0.060	6.000	3.600	1800	2700	3600	5400
		8.00	3	0.085	7.500	4.800	2550	3825	5100	7650
		10.00	3	0.105	8.300	6.000	3150	4725	6300	9450
		12.00	3	0.125	9.000	7.200	3750	5625	7500	11250
		16.00	3	0.135	9.800	9.600	4050	6075	8100	12150
		20.00	3	0.140	10.500	12.000	4200	6300	8400	12600
		25.00	3	0.150	10.500	15.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	3.00	3	0.010	3.000	0.100	300	450	600	900
		4.00	3	0.010	4.500	0.100	300	450	600	900
		6.00	3	0.020	6.000	0.200	600	900	1200	1800
		8.00	3	0.025	7.500	0.250	750	1125	1500	2250
		10.00	3	0.030	8.300	0.300	900	1350	1800	2700
		12.00	3	0.040	9.000	0.350	1200	1800	2400	3600
		16.00	3	0.040	9.800	0.500	1200	1800	2400	3600
		20.00	3	0.040	10.500	0.600	1200	1800	2400	3600
		25.00	3	0.045	10.500	0.750	1350	2025	2700	4050
	Wrought aluminium Construction aluminium C	3.00	3	0.065	0.400	0.400	1950	2925	3900	5850
		4.00	3	0.090	0.450	0.450	2700	4050	5400	8100
		6.00	3	0.130	0.400	0.400	3900	5850	7800	11700
		8.00	3	0.185	0.450	0.450	5550	8325	11100	16650
		10.00	3	0.230	0.500	0.500	6900	10350	13800	20700
		12.00	3	0.275	0.600	0.600	8250	12375	16500	24750
		16.00	3	0.295	0.750	0.750	8850	13275	17700	26550
		20.00	3	0.310	1.000	1.000	9300	13950	18600	27900
		25.00	3	0.330	1.200	1.200	9900	14850	19800	29700

Corner radius end mills AX

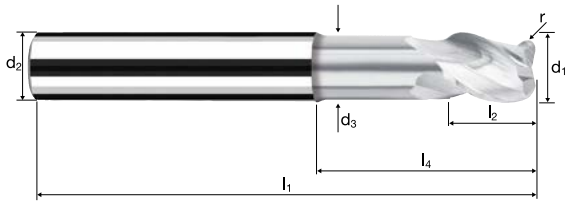
Smooth-edged, version 3xd, neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



Roughing

Finishing

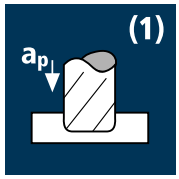
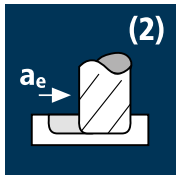
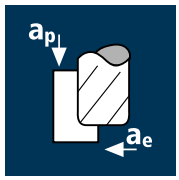
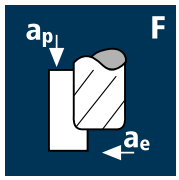
ReTool®

III

Al Aluminium > 99% | **Al Aluminium Alloy** | Al Aluminium Cast | Cu Copper | Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15583** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15583	CELERO C15583
180	3.00	6.00	2.80	54	4.00	9.00	15.37	0.500	5.9°	3	●	●
220	4.00	6.00	3.70	54	5.00	12.00	16.82	0.500	3.7°	3	●	●
260	5.00	6.00	4.60	54	6.00	15.00	18.27	0.500	1.7°	3	●	●
300	6.00	6.00	5.50	54	7.00	16.15	18.00	0.500	0.0°	3	●	●
302	6.00	6.00	5.50	54	7.00	16.15	18.00	1.000	0.0°	3	●	●
391	8.00	8.00	7.40	63	9.00	21.63	24.00	1.000	0.0°	3	●	●
450	10.00	10.00	9.20	72	11.00	26.99	30.00	1.000	0.0°	3	●	●
501	12.00	12.00	11.00	83	13.00	32.29	36.00	1.000	0.0°	3	●	●
608	16.00	16.00	15.00	97	18.00	43.73	48.00	1.000	0.0°	3	●	●
680	20.00	20.00	19.00	111	22.00	55.23	60.00	1.000	0.0°	3	●	●
770	25.00	25.00	24.00	132	27.00	69.68	75.00	1.000	0.0°	3	●	●
453	10.00	10.00	9.20	72	11.00	26.99	30.00	1.500	0.0°	3	●	–
503	12.00	12.00	11.00	83	13.00	32.29	36.00	1.500	0.0°	3	●	–
611	16.00	16.00	15.00	97	18.00	43.73	48.00	2.000	0.0°	3	●	–
683	20.00	20.00	19.00	111	22.00	55.23	60.00	2.000	0.0°	3	●	–

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	6.00	3	0.060	4.000	6.000	1800	2700	3600	5400
		8.00	3	0.085	5.000	8.000	2550	3825	5100	7650
		10.00	3	0.105	5.500	10.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	12.000	3750	5625	7500	11250
		16.00	3	0.135	6.500	16.000	4050	6075	8100	12150
		20.00	3	0.140	7.000	20.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	25.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	6.00	3	0.060	4.000	4.800	1800	2700	3600	5400
		8.00	3	0.085	5.000	6.400	2550	3825	5100	7650
		10.00	3	0.105	5.500	8.000	3150	4725	6300	9450
		12.00	3	0.125	6.000	9.600	3750	5625	7500	11250
		16.00	3	0.135	6.500	12.800	4050	6075	8100	12150
		20.00	3	0.140	7.000	16.000	4200	6300	8400	12600
		25.00	3	0.150	7.000	20.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	6.00	3	0.060	6.000	3.600	1800	2700	3600	5400
		8.00	3	0.085	7.500	4.800	2550	3825	5100	7650
		10.00	3	0.105	8.300	6.000	3150	4725	6300	9450
		12.00	3	0.125	9.000	7.200	3750	5625	7500	11250
		16.00	3	0.135	9.800	9.600	4050	6075	8100	12150
		20.00	3	0.140	10.500	12.000	4200	6300	8400	12600
		25.00	3	0.150	10.500	15.000	4500	6750	9000	13500
	Wrought aluminium Construction aluminium C	6.00	3	0.020	6.000	0.200	600	900	1200	1800
		8.00	3	0.025	7.500	0.250	750	1125	1500	2250
		10.00	3	0.030	8.300	0.300	900	1350	1800	2700
		12.00	3	0.040	9.000	0.350	1200	1800	2400	3600
		16.00	3	0.040	9.800	0.500	1200	1800	2400	3600
		20.00	3	0.040	10.500	0.600	1200	1800	2400	3600
		25.00	3	0.045	10.500	0.750	1350	2025	2700	4050
	Wrought aluminium Construction aluminium C	6.00	3	0.130	0.400	0.400	3900	5850	7800	11700
		8.00	3	0.185	0.450	0.450	5550	8325	11100	16650
		10.00	3	0.230	0.500	0.500	6900	10350	13800	20700
		12.00	3	0.275	0.600	0.600	8250	12375	16500	24750
		16.00	3	0.295	0.750	0.750	8850	13275	17700	26550
		20.00	3	0.310	1.000	1.000	9300	13950	18600	27900
		25.00	3	0.330	1.200	1.200	9900	14850	19800	29700

Corner radius end mills AX

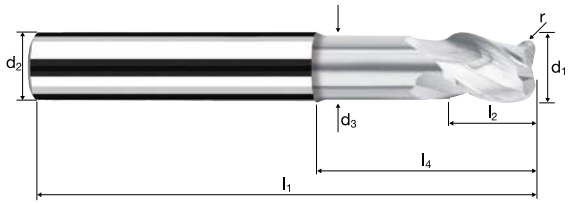
Smooth-edged, version 3xd, neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



Roughing

Finishing

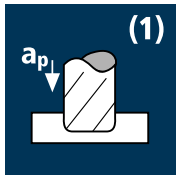
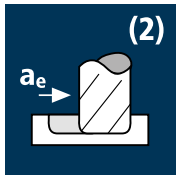
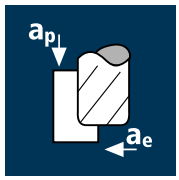
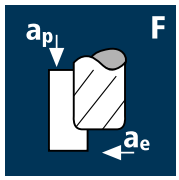
ReTool®

III

Al Aluminium > 99% | **Al Aluminium Alloy** | Al Aluminium Cast | Cu Copper | Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15583** ø-Code **307**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15583	CELERO C15583
307	6.00	6.00	5.50	54	7.00	16.15	18.00	2.500	0.0°	3	●	●
397	8.00	8.00	7.40	63	9.00	21.63	24.00	2.500	0.0°	3	●	●
457	10.00	10.00	9.20	72	11.00	26.99	30.00	2.500	0.0°	3	●	●
506	12.00	12.00	11.00	83	13.00	32.29	36.00	2.500	0.0°	3	●	●
612	16.00	16.00	15.00	97	18.00	43.73	48.00	2.500	0.0°	3	●	●
684	20.00	20.00	19.00	111	22.00	55.23	60.00	2.500	0.0°	3	●	●
774	25.00	25.00	24.00	132	27.00	69.68	75.00	2.500	0.0°	3	●	●
459	10.00	10.00	9.20	72	11.00	26.99	30.00	4.000	0.0°	3	●	●
508	12.00	12.00	11.00	83	13.00	32.29	36.00	4.000	0.0°	3	●	●
614	16.00	16.00	15.00	97	18.00	43.73	48.00	4.000	0.0°	3	●	●
686	20.00	20.00	19.00	111	22.00	55.23	60.00	4.000	0.0°	3	●	●
776	25.00	25.00	24.00	132	27.00	69.68	75.00	4.000	0.0°	3	●	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	3.00	2	0.050	2.000	3.000	1000	1500	2000	3000
		4.00	2	0.065	3.000	4.000	1300	1950	2600	3900
		6.00	2	0.100	4.000	6.000	2000	3000	4000	6000
		8.00	2	0.130	5.000	8.000	2600	3900	5200	7800
		10.00	2	0.165	5.500	10.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	12.000	3900	5850	7800	11700
		16.00	2	0.210	6.500	16.000	4200	6300	8400	12600
		20.00	2	0.220	7.000	20.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	25.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	3.00	2	0.050	2.000	2.400	1000	1500	2000	3000
		4.00	2	0.065	3.000	3.200	1300	1950	2600	3900
		6.00	2	0.100	4.000	4.800	2000	3000	4000	6000
		8.00	2	0.130	5.000	6.400	2600	3900	5200	7800
		10.00	2	0.165	5.500	8.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	9.600	3900	5850	7800	11700
		16.00	2	0.210	6.500	12.800	4200	6300	8400	12600
		20.00	2	0.220	7.000	16.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	20.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	3.00	2	0.050	3.000	1.800	1000	1500	2000	3000
		4.00	2	0.065	4.500	2.400	1300	1950	2600	3900
		6.00	2	0.100	6.000	3.600	2000	3000	4000	6000
		8.00	2	0.130	7.500	4.800	2600	3900	5200	7800
		10.00	2	0.165	8.300	6.000	3300	4950	6600	9900
		12.00	2	0.195	9.000	7.200	3900	5850	7800	11700
		16.00	2	0.210	9.800	9.600	4200	6300	8400	12600
		20.00	2	0.220	10.500	12.000	4400	6600	8800	13200
		25.00	2	0.230	10.500	15.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	3.00	2	0.015	3.000	0.100	300	450	600	900
		4.00	2	0.020	4.500	0.100	400	600	800	1200
		6.00	2	0.030	6.000	0.200	600	900	1200	1800
		8.00	2	0.040	7.500	0.250	800	1200	1600	2400
		10.00	2	0.050	8.300	0.300	1000	1500	2000	3000
		12.00	2	0.060	9.000	0.350	1200	1800	2400	3600
		16.00	2	0.065	9.800	0.500	1300	1950	2600	3900
		20.00	2	0.065	10.500	0.600	1300	1950	2600	3900
		25.00	2	0.070	10.500	0.750	1400	2100	2800	4200
	Wrought aluminium Construction aluminium C	3.00	2	0.110	0.300	0.300	2200	3300	4400	6600
		4.00	2	0.145	0.350	0.350	2900	4350	5800	8700
		6.00	2	0.220	0.400	0.400	4400	6600	8800	13200
		8.00	2	0.285	0.450	0.450	5700	8550	11400	17100
		10.00	2	0.365	0.500	0.500	7300	10950	14600	21900
		12.00	2	0.430	0.600	0.600	8600	12900	17200	25800
		16.00	2	0.460	0.750	0.750	9200	13800	18400	27600
		20.00	2	0.485	1.000	1.000	9700	14550	19400	29100
		25.00	2	0.505	1.200	1.200	10100	15150	20200	30300

Corner radius end mills AX

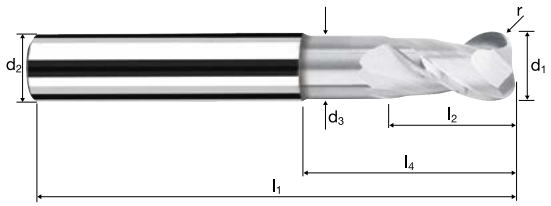
Smooth-edged, version 3xd, neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



Roughing

Finishing

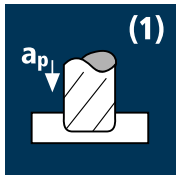
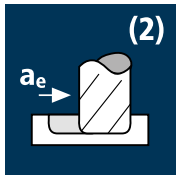
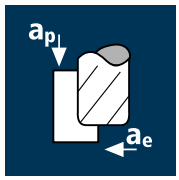
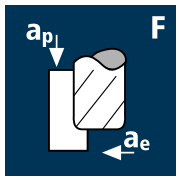
ReTool®

III

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15573** ø-Code **180**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15573	CELERO C15573
180	3.00	6.00	2.80	54	4.00	9.00	15.37	0.500	5.9°	2	●	●
220	4.00	6.00	3.70	54	5.00	12.00	16.82	0.500	3.7°	2	●	●
260	5.00	6.00	4.60	54	6.00	15.00	18.27	0.500	1.7°	2	●	●
300	6.00	6.00	5.50	54	7.00	16.15	18.00	0.500	0.0°	2	●	●
302	6.00	6.00	5.50	54	7.00	16.15	18.00	1.000	0.0°	2	●	●
391	8.00	8.00	7.40	63	9.00	21.63	24.00	1.000	0.0°	2	●	●
450	10.00	10.00	9.20	72	11.00	26.99	30.00	1.000	0.0°	2	●	●
501	12.00	12.00	11.00	83	13.00	32.29	36.00	1.000	0.0°	2	●	●
608	16.00	16.00	15.00	97	18.00	43.73	48.00	1.000	0.0°	2	●	●
680	20.00	20.00	19.00	111	22.00	55.23	60.00	1.000	0.0°	2	●	●
770	25.00	25.00	24.00	132	27.00	69.68	75.00	1.000	0.0°	2	●	●
453	10.00	10.00	9.20	72	11.00	26.99	30.00	1.500	0.0°	2	●	–
503	12.00	12.00	11.00	83	13.00	32.29	36.00	1.500	0.0°	2	●	–
611	16.00	16.00	15.00	97	18.00	43.73	48.00	2.000	0.0°	2	●	–
683	20.00	20.00	19.00	111	22.00	55.23	60.00	2.000	0.0°	2	●	–

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	6.00	2	0.100	4.000	6.000	2000	3000	4000	6000
		8.00	2	0.130	5.000	8.000	2600	3900	5200	7800
		10.00	2	0.165	5.500	10.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	12.000	3900	5850	7800	11700
		16.00	2	0.210	6.500	16.000	4200	6300	8400	12600
		20.00	2	0.220	7.000	20.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	25.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	6.00	2	0.100	4.000	4.800	2000	3000	4000	6000
		8.00	2	0.130	5.000	6.400	2600	3900	5200	7800
		10.00	2	0.165	5.500	8.000	3300	4950	6600	9900
		12.00	2	0.195	6.000	9.600	3900	5850	7800	11700
		16.00	2	0.210	6.500	12.800	4200	6300	8400	12600
		20.00	2	0.220	7.000	16.000	4400	6600	8800	13200
		25.00	2	0.230	7.000	20.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	6.00	2	0.100	6.000	3.600	2000	3000	4000	6000
		8.00	2	0.130	7.500	4.800	2600	3900	5200	7800
		10.00	2	0.165	8.300	6.000	3300	4950	6600	9900
		12.00	2	0.195	9.000	7.200	3900	5850	7800	11700
		16.00	2	0.210	9.800	9.600	4200	6300	8400	12600
		20.00	2	0.220	10.500	12.000	4400	6600	8800	13200
		25.00	2	0.230	10.500	15.000	4600	6900	9200	13800
	Wrought aluminium Construction aluminium C	6.00	2	0.030	6.000	0.200	600	900	1200	1800
		8.00	2	0.040	7.500	0.250	800	1200	1600	2400
		10.00	2	0.050	8.300	0.300	1000	1500	2000	3000
		12.00	2	0.060	9.000	0.350	1200	1800	2400	3600
		16.00	2	0.065	9.800	0.500	1300	1950	2600	3900
		20.00	2	0.065	10.500	0.600	1300	1950	2600	3900
		25.00	2	0.070	10.500	0.750	1400	2100	2800	4200
	Wrought aluminium Construction aluminium C	6.00	2	0.220	0.400	0.400	4400	6600	8800	13200
		8.00	2	0.285	0.450	0.450	5700	8550	11400	17100
		10.00	2	0.365	0.500	0.500	7300	10950	14600	21900
		12.00	2	0.430	0.600	0.600	8600	12900	17200	25800
		16.00	2	0.460	0.750	0.750	9200	13800	18400	27600
		20.00	2	0.485	1.000	1.000	9700	14550	19400	29100
		25.00	2	0.505	1.200	1.200	10100	15150	20200	30300

Corner radius end mills AX

Smooth-edged, version 3xd, neck

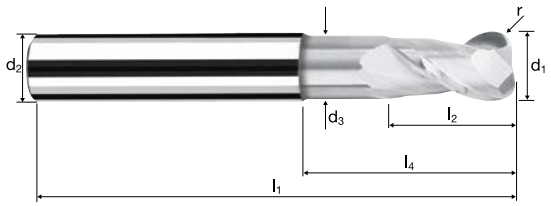
X-Generation

HM
MG10

λ **40°**
γ **20°**

G 2.5

Vario



Roughing

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

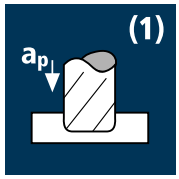
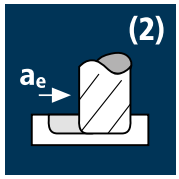
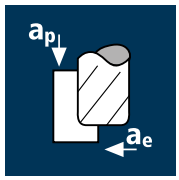
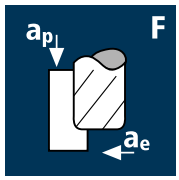
Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15573** ø-Code **307**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	15573	CELERO C15573
307	6.00	6.00	5.50	54	7.00	16.15	18.00	2.500	0.0°	2	●	●
397	8.00	8.00	7.40	63	9.00	21.63	24.00	2.500	0.0°	2	●	●
457	10.00	10.00	9.20	72	11.00	26.99	30.00	2.500	0.0°	2	●	●
506	12.00	12.00	11.00	83	13.00	32.29	36.00	2.500	0.0°	2	●	●
612	16.00	16.00	15.00	97	18.00	43.73	48.00	2.500	0.0°	2	●	●
684	20.00	20.00	19.00	111	22.00	55.23	60.00	2.500	0.0°	2	●	●
774	25.00	25.00	24.00	132	27.00	69.68	75.00	2.500	0.0°	2	●	●
459	10.00	10.00	9.20	72	11.00	26.99	30.00	4.000	0.0°	2	●	●
508	12.00	12.00	11.00	83	13.00	32.29	36.00	4.000	0.0°	2	●	●
614	16.00	16.00	15.00	97	18.00	43.73	48.00	4.000	0.0°	2	●	●
686	20.00	20.00	19.00	111	22.00	55.23	60.00	4.000	0.0°	2	●	●
776	25.00	25.00	24.00	132	27.00	69.68	75.00	4.000	0.0°	2	●	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	6.00	3	0.040	4.000	6.000	1200	1800	2400	3600
		8.00	3	0.055	4.500	8.000	1650	2475	3300	4950
		10.00	3	0.070	5.000	10.000	2100	3150	4200	6300
		12.00	3	0.075	5.000	12.000	2250	3375	4500	6750
		16.00	3	0.095	5.000	16.000	2850	4275	5700	8550
		20.00	3	0.115	5.000	20.000	3450	5175	6900	10350
		25.00	3	0.130	5.000	25.000	3900	5850	7800	11700
	Wrought aluminium Construction aluminium C	6.00	3	0.040	4.000	3.600	1200	1800	2400	3600
		8.00	3	0.055	4.500	4.800	1650	2475	3300	4950
		10.00	3	0.070	5.000	6.000	2100	3150	4200	6300
		12.00	3	0.075	5.000	7.200	2250	3375	4500	6750
		16.00	3	0.095	5.000	9.600	2850	4275	5700	8550
		20.00	3	0.115	5.000	12.000	3450	5175	6900	10350
		25.00	3	0.130	5.000	15.000	3900	5850	7800	11700
	Wrought aluminium Construction aluminium C	6.00	3	0.040	6.000	3.600	1200	1800	2400	3600
		8.00	3	0.055	6.800	4.800	1650	2475	3300	4950
		10.00	3	0.070	7.500	6.000	2100	3150	4200	6300
		12.00	3	0.075	7.500	7.200	2250	3375	4500	6750
		16.00	3	0.095	7.500	9.600	2850	4275	5700	8550
		20.00	3	0.115	7.500	12.000	3450	5175	6900	10350
		25.00	3	0.130	7.500	15.000	3900	5850	7800	11700
	Wrought aluminium Construction aluminium C	6.00	3	0.010	6.000	0.200	300	450	600	900
		8.00	3	0.015	6.800	0.250	450	675	900	1350
		10.00	3	0.020	7.500	0.300	600	900	1200	1800
		12.00	3	0.025	7.500	0.350	750	1125	1500	2250
		16.00	3	0.030	7.500	0.500	900	1350	1800	2700
		20.00	3	0.035	7.500	0.600	1050	1575	2100	3150
		25.00	3	0.040	7.500	0.750	1200	1800	2400	3600
	Wrought aluminium Construction aluminium C	6.00	3	0.090	0.450	0.450	2700	4050	5400	8100
		8.00	3	0.120	0.500	0.500	3600	5400	7200	10800
		10.00	3	0.155	0.450	0.450	4650	6975	9300	13950
		12.00	3	0.165	0.500	0.500	4950	7425	9900	14850
		16.00	3	0.210	0.600	0.600	6300	9450	12600	18900
		20.00	3	0.255	0.750	0.750	7650	11475	15300	22950
		25.00	3	0.285	0.800	0.800	8550	12825	17100	25650

Corner radius end mills AX

Smooth-edged, version 5xd, neck

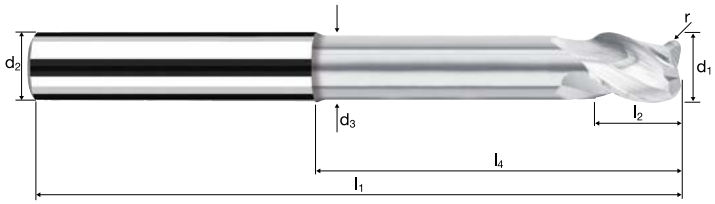
X-Generation

HM MG10

λ **40°**
γ **20°**

G 2.5

Vario



Roughing

Finishing

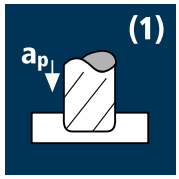
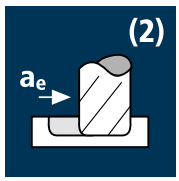
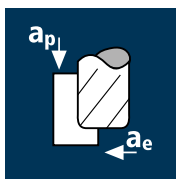
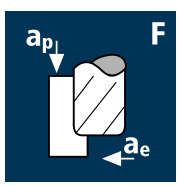
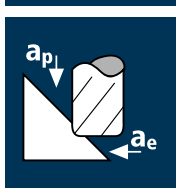
ReTool®

III

Al Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15585** ø-Code **450**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15585	CELERO C15585
450	10.00	10.00	9.20	91	11.00	46.99	50.00	1.000	3	●	●
501	12.00	12.00	11.00	106	13.00	56.29	60.00	1.000	3	●	●
608	16.00	16.00	15.00	129	18.00	75.73	80.00	1.000	3	●	●
680	20.00	20.00	19.00	151	22.00	95.23	100.00	1.000	3	●	●
770	25.00	25.00	24.00	182	27.00	119.68	125.00	1.000	3	●	●
307	6.00	6.00	5.50	66	7.00	28.15	30.00	2.500	3	●	●
397	8.00	8.00	7.40	76	9.00	37.63	40.00	2.500	3	●	●
457	10.00	10.00	9.20	91	11.00	46.99	50.00	2.500	3	●	●
506	12.00	12.00	11.00	106	13.00	56.29	60.00	2.500	3	●	●
612	16.00	16.00	15.00	129	18.00	75.73	80.00	2.500	3	●	●
684	20.00	20.00	19.00	151	22.00	95.23	100.00	2.500	3	●	●
774	25.00	25.00	24.00	182	27.00	119.68	125.00	2.500	3	●	●
459	10.00	10.00	9.20	91	11.00	46.99	50.00	4.000	3	●	●
508	12.00	12.00	11.00	106	13.00	56.29	60.00	4.000	3	●	●
614	16.00	16.00	15.00	129	18.00	75.73	80.00	4.000	3	●	●
686	20.00	20.00	19.00	151	22.00	95.23	100.00	4.000	3	●	●
776	25.00	25.00	24.00	182	27.00	119.68	125.00	4.000	3	●	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	6.00	2	0.065	4.000	6.000	1300	1950	2600	3900
		8.00	2	0.085	4.500	8.000	1700	2550	3400	5100
		10.00	2	0.110	5.000	10.000	2200	3300	4400	6600
		12.00	2	0.120	5.000	12.000	2400	3600	4800	7200
		16.00	2	0.150	5.000	16.000	3000	4500	6000	9000
		20.00	2	0.180	5.000	20.000	3600	5400	7200	10800
		25.00	2	0.200	5.000	25.000	4000	6000	8000	12000
	Wrought aluminium Construction aluminium C	6.00	2	0.065	4.000	3.600	1300	1950	2600	3900
		8.00	2	0.085	4.500	4.800	1700	2550	3400	5100
		10.00	2	0.110	5.000	6.000	2200	3300	4400	6600
		12.00	2	0.120	5.000	7.200	2400	3600	4800	7200
		16.00	2	0.150	5.000	9.600	3000	4500	6000	9000
		20.00	2	0.180	5.000	12.000	3600	5400	7200	10800
		25.00	2	0.200	5.000	15.000	4000	6000	8000	12000
	Wrought aluminium Construction aluminium C	6.00	2	0.065	6.000	3.600	1300	1950	2600	3900
		8.00	2	0.085	6.800	4.800	1700	2550	3400	5100
		10.00	2	0.110	7.500	6.000	2200	3300	4400	6600
		12.00	2	0.120	7.500	7.200	2400	3600	4800	7200
		16.00	2	0.150	7.500	9.600	3000	4500	6000	9000
		20.00	2	0.180	7.500	12.000	3600	5400	7200	10800
		25.00	2	0.200	7.500	15.000	4000	6000	8000	12000
	Wrought aluminium Construction aluminium C	6.00	2	0.020	6.000	0.200	400	600	800	1200
		8.00	2	0.025	6.800	0.250	500	750	1000	1500
		10.00	2	0.035	7.500	0.300	700	1050	1400	2100
		12.00	2	0.035	7.500	0.350	700	1050	1400	2100
		16.00	2	0.045	7.500	0.500	900	1350	1800	2700
		20.00	2	0.055	7.500	0.600	1100	1650	2200	3300
		25.00	2	0.060	7.500	0.750	1200	1800	2400	3600
	Wrought aluminium Construction aluminium C	6.00	2	0.145	0.350	0.350	2900	4350	5800	8700
		8.00	2	0.185	0.400	0.400	3700	5550	7400	11100
		10.00	2	0.240	0.450	0.450	4800	7200	9600	14400
		12.00	2	0.265	0.500	0.500	5300	7950	10600	15900
		16.00	2	0.330	0.600	0.600	6600	9900	13200	19800
		20.00	2	0.395	0.750	0.750	7900	11850	15800	23700
		25.00	2	0.440	0.800	0.800	8800	13200	17600	26400

Corner radius end mills AX

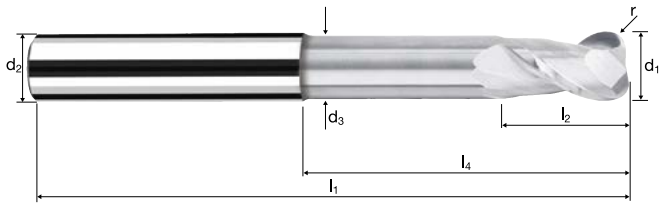
Smooth-edged, version 5xd, neck

X-Generation

HM MG10	λ 40° γ 20°

G 2.5

Vario



Roughing

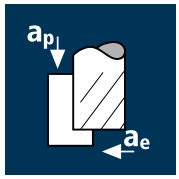
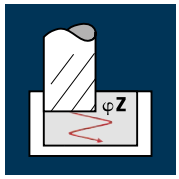
Finishing

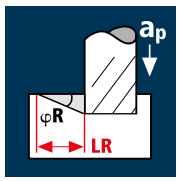
ReTool®

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15575** ø-Code **302**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15575	CELERO C15575
302	6.00	6.00	5.50	66	7.00	28.15	30.00	1.000	2	●	–
391	8.00	8.00	7.40	76	9.00	37.63	40.00	1.000	2	●	–
450	10.00	10.00	9.20	91	11.00	46.99	50.00	1.000	2	●	●
501	12.00	12.00	11.00	106	13.00	56.29	60.00	1.000	2	●	●
608	16.00	16.00	15.00	129	18.00	75.73	80.00	1.000	2	●	●
680	20.00	20.00	19.00	151	22.00	95.23	100.00	1.000	2	●	●
770	25.00	25.00	24.00	182	27.00	119.68	125.00	1.000	2	●	●
307	6.00	6.00	5.50	66	7.00	28.15	30.00	2.500	2	●	●
397	8.00	8.00	7.40	76	9.00	37.63	40.00	2.500	2	●	●
457	10.00	10.00	9.20	91	11.00	46.99	50.00	2.500	2	●	●
506	12.00	12.00	11.00	106	13.00	56.29	60.00	2.500	2	●	●
612	16.00	16.00	15.00	129	18.00	75.73	80.00	2.500	2	●	●
684	20.00	20.00	19.00	151	22.00	95.23	100.00	2.500	2	●	●
774	25.00	25.00	24.00	182	27.00	119.68	125.00	2.500	2	●	●
459	10.00	10.00	9.20	91	11.00	46.99	50.00	4.000	2	●	●
508	12.00	12.00	11.00	106	13.00	56.29	60.00	4.000	2	●	●
614	16.00	16.00	15.00	129	18.00	75.73	80.00	4.000	2	●	●
686	20.00	20.00	19.00	151	22.00	95.23	100.00	4.000	2	●	●
776	25.00	25.00	24.00	182	27.00	119.68	125.00	4.000	2	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Wrought aluminium Construction aluminium	6.00	3	500	0.080	9.000	4.800	26525	6366	275.0	20.0°
		8.00	3	500	0.100	12.000	6.400	19895	5969	458.4	20.0°
		10.00	3	500	0.120	15.000	8.000	15915	5729	687.5	20.0°
		12.00	3	500	0.140	18.000	9.600	13265	5571	962.7	20.0°
		16.00	3	500	0.160	24.000	12.800	9945	4774	1466.4	20.0°
		20.00	3	500	0.180	30.000	16.000	7960	4298	2063.2	20.0°
		25.00	3	500	0.200	37.500	20.000	6365	3819	2864.3	20.0°
	Al-Gusslegierung	6.00	3	450	0.080	9.000	4.800	23875	5730	247.5	20.0°
		8.00	3	450	0.100	12.000	6.400	17905	5372	412.5	20.0°
		10.00	3	450	0.120	15.000	8.000	14325	5157	618.8	20.0°
		12.00	3	450	0.140	18.000	9.600	11935	5013	866.2	20.0°
		16.00	3	450	0.160	24.000	12.800	8950	4296	1319.7	20.0°
		20.00	3	450	0.180	30.000	16.000	7160	3866	1855.9	20.0°
		25.00	3	450	0.200	37.500	20.000	5730	3438	2578.5	20.0°
	Unalloyed copper	6.00	3	400	0.072	9.000	4.800	21220	4584	198.0	12.0°
		8.00	3	400	0.090	12.000	6.400	15915	4297	330.0	12.0°
		10.00	3	400	0.108	15.000	8.000	12730	4125	494.9	12.0°
		12.00	3	400	0.126	18.000	9.600	10610	4011	693.0	12.0°
		16.00	3	400	0.144	24.000	12.800	7960	3439	1056.4	12.0°
		20.00	3	400	0.162	30.000	16.000	6365	3093	1484.8	12.0°
		25.00	3	400	0.180	37.500	20.000	5095	2751	2063.5	12.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Wrought aluminium Construction aluminium	6.00	3	450	0.072	9.000	6.000	23875	5157	278.5	25.0°	19.3
		8.00	3	450	0.090	12.000	8.000	17905	4834	464.1	25.0°	25.7
		10.00	3	450	0.108	15.000	10.000	14325	4641	696.2	25.0°	32.2
		12.00	3	450	0.126	18.000	12.000	11935	4511	974.5	25.0°	38.6
		16.00	3	450	0.144	24.000	16.000	8950	3866	1484.7	25.0°	51.5
		20.00	3	450	0.162	30.000	20.000	7160	3480	2087.9	25.0°	64.3
		25.00	3	450	0.180	37.500	25.000	5730	3094	2900.8	25.0°	80.4
	Al-Gusslegierung	6.00	3	405	0.072	9.000	6.000	21485	4641	250.6	25.0°	19.3
		8.00	3	405	0.090	12.000	8.000	16115	4351	417.7	25.0°	25.7
		10.00	3	405	0.108	15.000	10.000	12890	4176	626.5	25.0°	32.2
		12.00	3	405	0.126	18.000	12.000	10745	4062	877.3	25.0°	38.6
		16.00	3	405	0.144	24.000	16.000	8055	3480	1336.2	25.0°	51.5
		20.00	3	405	0.162	30.000	20.000	6445	3132	1879.4	25.0°	64.3
		25.00	3	405	0.180	37.500	25.000	5155	2784	2609.7	25.0°	80.4
	Unalloyed copper	6.00	3	320	0.058	9.000	6.000	16975	2954	159.5	15.0°	33.6
		8.00	3	320	0.072	12.000	8.000	12730	2750	264.0	15.0°	44.8
		10.00	3	320	0.086	15.000	10.000	10185	2628	394.2	15.0°	56.0
		12.00	3	320	0.101	18.000	12.000	8490	2573	555.7	15.0°	67.2
		16.00	3	320	0.115	24.000	16.000	6365	2196	843.2	15.0°	89.6
		20.00	3	320	0.130	30.000	20.000	5095	1987	1192.3	15.0°	112.0
		25.00	3	320	0.140	37.500	25.000	4075	1712	1604.5	15.0°	140.0

Use **ToolExpert AX-FPS** to determine the best possible cutting data for your machining environment!

Cylindrical end mills AX-FPS

Profiled, normal version, short neck
High-performance penetration edge, central cooling channel

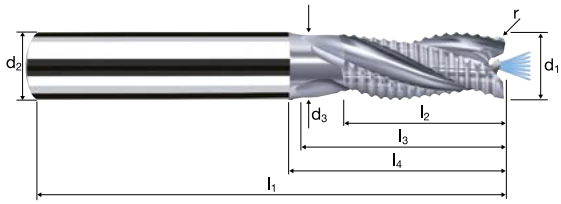
X-Generation

HM
MG10

λ **30°**
γ **20°**

r

G 2.5



Roughing

Finishing

ReTool®

III

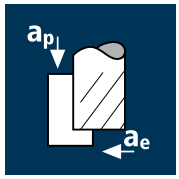
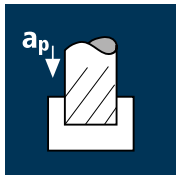
			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast			

Example: **Order-N°.** Coating **15500** Article-N°. ø-Code **300**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z	15600	15500
300	6.00	6.00	5.50	57	13.00	18.15	20.00	0.100	3	●	
391	8.00	8.00	7.40	63	18.00	23.63	26.00	0.150	3	●	
450	10.00	10.00	9.20	72	22.00	27.99	31.00	0.200	3	●	
501	12.00	12.00	11.00	83	26.00	33.29	37.00	0.200	3	●	
610	16.00	16.00	15.00	95	32.00	41.73	46.00	0.200	3	●	
682	20.00	20.00	19.00	104	40.00	48.23	53.00	0.200	3	●	
770**	25.00	25.00	24.00	121	44.00	58.68	64.00	0.250	3	●	
772*	25.00	25.00	24.00	121	50.00	64.68	70.00	0.250	3	●	

* Cylindrical shank HA, shank length = 50 mm

** Shank with side clamping according to DIN 6535 HB

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	6.00	3	600	0.065	9.000	3.600	31830	6207	201.1
		8.00	3	600	0.090	12.000	4.800	23875	6446	371.3
		10.00	3	600	0.110	15.000	6.000	19100	6303	567.3
		12.00	3	600	0.135	18.000	7.200	15915	6446	835.3
		16.00	3	600	0.180	24.000	9.600	11935	6445	1484.9
		20.00	3	600	0.220	30.000	12.000	9550	6303	2269.1
	Unalloyed copper	6.00	3	400	0.065	9.000	3.600	21220	4138	134.1
		8.00	3	400	0.090	12.000	4.800	15915	4297	247.5
		10.00	3	400	0.110	15.000	6.000	12730	4201	378.1
		12.00	3	400	0.135	18.000	7.200	10610	4297	556.9
		16.00	3	400	0.180	24.000	9.600	7960	4298	990.4
		20.00	3	400	0.220	30.000	12.000	6365	4201	1512.3
	Thermoplastics	6.00	3	650	0.065	9.000	3.600	34485	6725	217.9
		8.00	3	650	0.090	12.000	4.800	25865	6984	402.3
		10.00	3	650	0.110	15.000	6.000	20690	6828	614.5
		12.00	3	650	0.135	18.000	7.200	17240	6982	904.9
		16.00	3	650	0.180	24.000	9.600	12930	6982	1608.7
		20.00	3	650	0.220	30.000	12.000	10345	6828	2458.0
	Wrought aluminium Construction aluminium	6.00	3	500	0.060	9.000	6.000	26525	4775	257.8
		8.00	3	500	0.080	12.000	8.000	19895	4775	458.4
		10.00	3	500	0.100	15.000	10.000	15915	4775	716.2
		12.00	3	500	0.120	18.000	12.000	13265	4775	1031.5
		16.00	3	500	0.160	24.000	16.000	9945	4774	1833.1
		20.00	3	500	0.200	30.000	20.000	7960	4776	2865.6
	Unalloyed copper	6.00	3	270	0.060	9.000	6.000	14325	2579	139.2
		8.00	3	270	0.080	12.000	8.000	10745	2579	247.6
		10.00	3	270	0.100	15.000	10.000	8595	2579	386.8
		12.00	3	270	0.120	18.000	12.000	7160	2578	556.8
		16.00	3	270	0.160	24.000	16.000	5370	2578	989.8
		20.00	3	270	0.200	30.000	20.000	4295	2577	1546.2
	Thermoplastics	6.00	3	650	0.060	9.000	6.000	34485	6207	335.2
		8.00	3	650	0.080	12.000	8.000	25865	6208	595.9
		10.00	3	650	0.100	15.000	10.000	20690	6207	931.1
		12.00	3	650	0.120	18.000	12.000	17240	6206	1340.6
		16.00	3	650	0.160	24.000	16.000	12930	6206	2383.3
		20.00	3	650	0.200	30.000	20.000	10345	6207	3724.2

Cylindrical end mills AX

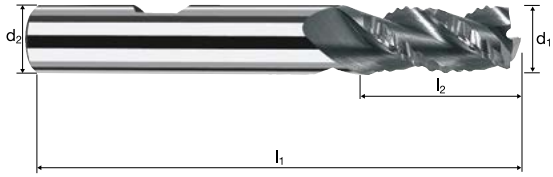
Profiled, normal version

X-Generation

III

HM MG10	λ 40° γ 18°

45°



Roughing

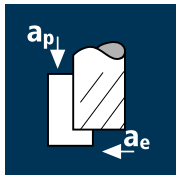
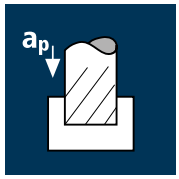
Finishing

ReTool®

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5397** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	CELERO C5397	CELERO C5297
300	6.00	6.00	57	13.00	0.30	3		●
391	8.00	8.00	63	19.00	0.30	3		●
450	10.00	10.00	72	22.00	0.30	3		●
501	12.00	12.00	83	26.00	0.30	3		●
610	16.00	16.00	92	32.00	0.40	3		●
682	20.00	20.00	104	38.00	0.40	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	6.00	3	207	0.055	9.000	2.400	10980	1812	39.1
		8.00	3	207	0.070	12.000	3.200	8235	1729	66.4
		10.00	3	207	0.090	15.000	4.000	6590	1779	106.8
		12.00	3	207	0.125	18.000	4.800	5490	2059	177.9
		16.00	3	207	0.170	24.000	6.400	4120	2101	322.7
		20.00	3	207	0.210	30.000	8.000	3295	2076	498.2
		25.00	3	207	0.265	37.500	10.000	2635	2095	785.6
	Unalloyed copper	6.00	3	88	0.055	9.000	2.400	4670	771	16.6
		8.00	3	88	0.070	12.000	3.200	3500	735	28.2
		10.00	3	88	0.090	15.000	4.000	2800	756	45.4
		12.00	3	88	0.125	18.000	4.800	2335	876	75.7
		16.00	3	88	0.170	24.000	6.400	1750	893	137.1
		20.00	3	88	0.210	30.000	8.000	1400	882	211.7
		25.00	3	88	0.265	37.500	10.000	1120	890	333.9
	Thermoplastics	6.00	3	224	0.055	9.000	2.400	11885	1961	42.4
		8.00	3	224	0.070	12.000	3.200	8915	1872	71.9
		10.00	3	224	0.090	15.000	4.000	7130	1925	115.5
		12.00	3	224	0.125	18.000	4.800	5940	2228	192.5
		16.00	3	224	0.170	24.000	6.400	4455	2272	349.0
		20.00	3	224	0.210	30.000	8.000	3565	2246	539.0
		25.00	3	224	0.265	37.500	10.000	2850	2266	849.7
	Wrought aluminium Construction aluminium	6.00	3	189	0.045	6.000	6.000	10025	1353	48.7
		8.00	3	189	0.055	8.000	8.000	7520	1241	79.4
		10.00	3	189	0.070	10.000	10.000	6015	1263	126.3
		12.00	3	189	0.100	12.000	12.000	5015	1505	216.6
		16.00	3	189	0.135	16.000	16.000	3760	1523	389.8
		20.00	3	189	0.170	20.000	20.000	3010	1535	614.0
		25.00	3	189	0.210	25.000	25.000	2405	1515	947.0
	Unalloyed copper	6.00	3	82	0.045	6.000	6.000	4350	587	21.1
		8.00	3	82	0.055	8.000	8.000	3265	539	34.5
		10.00	3	82	0.070	10.000	10.000	2610	548	54.8
		12.00	3	82	0.100	12.000	12.000	2175	653	94.0
		16.00	3	82	0.135	16.000	16.000	1630	660	169.0
		20.00	3	82	0.170	20.000	20.000	1305	666	266.2
		25.00	3	82	0.210	25.000	25.000	1045	658	411.5
	Thermoplastics	6.00	3	224	0.045	6.000	6.000	11885	1605	57.8
		8.00	3	224	0.055	8.000	8.000	8915	1471	94.1
		10.00	3	224	0.070	10.000	10.000	7130	1497	149.7
		12.00	3	224	0.100	12.000	12.000	5940	1782	256.6
		16.00	3	224	0.135	16.000	16.000	4455	1804	461.9
		20.00	3	224	0.170	20.000	20.000	3565	1818	727.3
		25.00	3	224	0.210	25.000	25.000	2850	1796	1122.2

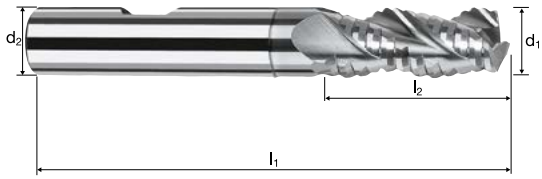
Cylindrical end mills

Profiled, normal version

HSS

HSS-E Co8 | λ **40°** γ **18°**

45°



Roughing

Finishing

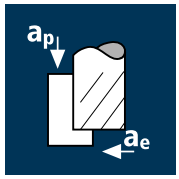
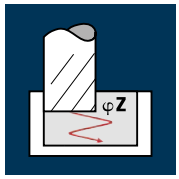
ReTool®

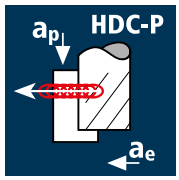
III

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Cu** Copper | **Plastic** Thermoplast

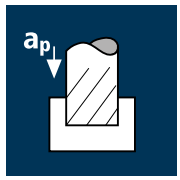
Example: **Order-N°.** Coating **C** Article-N°. **0391** ø-Code **300**

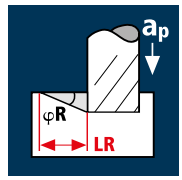
Ø Code	d_1 k8	d_2 h6	l_1	l_2	l_4	45°	α	z	CELERO
									C0391
300	6.00	6.00	57	13.00	-	0.30	0.0°	3	●
402	8.00	10.00	69	19.00	28.50	0.30	2.5°	3	●
450	10.00	10.00	72	22.00	-	0.30	0.0°	3	●
501	12.00	12.00	83	26.00	-	0.30	0.0°	3	●
610	16.00	16.00	92	32.00	-	0.40	0.0°	3	●
682	20.00	20.00	104	38.00	-	0.40	0.0°	3	●
772	25.00	25.00	121	45.00	-	0.60	0.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Wrought aluminium Construction aluminium	6.00	3	450	0.064	9.000	3.600	23875	4584	148.5	15.0°
		8.00	3	450	0.080	12.000	4.800	17905	4297	247.5	15.0°
		10.00	3	450	0.096	15.000	6.000	14325	4126	371.3	15.0°
		12.00	3	450	0.112	18.000	7.200	11935	4010	519.7	15.0°
		16.00	3	450	0.128	24.000	9.600	8950	3437	791.8	15.0°
		20.00	3	450	0.144	30.000	12.000	7160	3093	1113.5	15.0°
	Cast aluminium	6.00	3	405	0.064	9.000	3.600	21485	4125	133.7	15.0°
		8.00	3	405	0.080	12.000	4.800	16115	3868	222.8	15.0°
		10.00	3	405	0.096	15.000	6.000	12890	3712	334.1	15.0°
		12.00	3	405	0.112	18.000	7.200	10745	3610	467.9	15.0°
		16.00	3	405	0.128	24.000	9.600	8055	3093	712.7	15.0°
		20.00	3	405	0.144	30.000	12.000	6445	2784	1002.3	15.0°
	Unalloyed copper	6.00	3	360	0.058	9.000	3.600	19100	3323	107.7	9.0°
		8.00	3	360	0.072	12.000	4.800	14325	3094	178.2	9.0°
		10.00	3	360	0.086	15.000	6.000	11460	2957	266.1	9.0°
		12.00	3	360	0.101	18.000	7.200	9550	2894	375.0	9.0°
		16.00	3	360	0.115	24.000	9.600	7160	2470	569.1	9.0°
		20.00	3	360	0.130	30.000	12.000	5730	2235	804.5	9.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	6.00	3	300	0.104	19.000	1.800	15915	4966	169.8
		8.00	3	350	0.134	28.000	2.400	13925	5598	376.2
		10.00	3	400	0.181	34.000	3.000	12730	6912	705.1
		12.00	3	400	0.259	40.000	3.600	10610	8244	1187.1
		16.00	3	500	0.300	48.000	4.800	9945	8951	2062.2
		20.00	3	500	0.340	56.000	6.000	7960	8119	2728.1
	Cast aluminium	6.00	3	270	0.104	19.000	1.800	14325	4469	152.9
		8.00	3	315	0.134	28.000	2.400	12535	5039	338.6
		10.00	3	360	0.181	34.000	3.000	11460	6223	634.7
		12.00	3	360	0.259	40.000	3.600	9550	7420	1068.5
		16.00	3	450	0.300	48.000	4.800	8950	8055	1855.9
		20.00	3	450	0.340	56.000	6.000	7160	7303	2453.9
	Unalloyed copper	6.00	3	240	0.083	19.000	1.800	12730	3170	108.4
		8.00	3	280	0.107	28.000	2.400	11140	3576	240.3
		10.00	3	320	0.145	34.000	3.000	10185	4431	451.9
		12.00	3	320	0.207	40.000	3.600	8490	5272	759.2
		16.00	3	400	0.239	48.000	4.800	7960	5707	1315.0
		20.00	3	400	0.273	56.000	6.000	6365	5213	1751.5

Use **ToolExpert AX-FPS** to determine the best possible cutting data for your machining environment!





Cylindrical end mills AX-FPS

Profiled, medium length version
High-performance penetration edge, central cooling channel

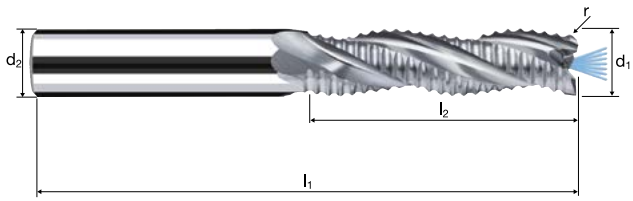
X-Generation

HM
MG10

λ **30°**
γ **20°**

r

G 2.5



Roughing

Finishing

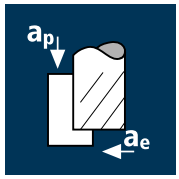
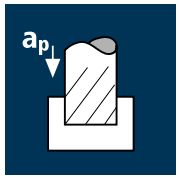
ReTool®

III

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast			

Example: **Order-N°.** Coating **15506** Article-N°. ø-Code **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	15606	15506
300	6.00	6.00	63	19.00	0.100	3	●	
391	8.00	8.00	72	28.00	0.150	3	●	
450	10.00	10.00	84	34.00	0.200	3	●	
501	12.00	12.00	97	40.00	0.200	3	●	
610	16.00	16.00	108	48.00	0.200	3	●	
682	20.00	20.00	122	56.00	0.200	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	6.00	3	600	0.065	12.000	1.800	31830	6207	134.1
		8.00	3	600	0.090	16.000	2.400	23875	6446	247.5
		10.00	3	600	0.110	20.000	3.000	19100	6303	378.2
		12.00	3	600	0.135	24.000	3.600	15915	6446	556.9
		16.00	3	600	0.180	32.000	4.800	11935	6445	989.9
		20.00	3	600	0.220	40.000	6.000	9550	6303	1512.7
	Unalloyed copper	6.00	3	400	0.065	12.000	1.800	21220	4138	89.4
		8.00	3	400	0.090	16.000	2.400	15915	4297	165.0
		10.00	3	400	0.110	20.000	3.000	12730	4201	252.1
		12.00	3	400	0.135	24.000	3.600	10610	4297	371.3
		16.00	3	400	0.180	32.000	4.800	7960	4298	660.2
		20.00	3	400	0.220	40.000	6.000	6365	4201	1008.2
	Thermoplastics	6.00	3	650	0.065	12.000	1.800	34485	6725	145.3
		8.00	3	650	0.090	16.000	2.400	25865	6984	268.2
		10.00	3	650	0.110	20.000	3.000	20690	6828	409.7
		12.00	3	650	0.135	24.000	3.600	17240	6982	603.3
		16.00	3	650	0.180	32.000	4.800	12930	6982	1072.5
		20.00	3	650	0.220	40.000	6.000	10345	6828	1638.6
	Wrought aluminium Construction aluminium	6.00	3	500	0.060	4.200	6.000	26525	4775	120.3
		8.00	3	500	0.080	5.600	8.000	19895	4775	213.9
		10.00	3	500	0.100	7.000	10.000	15915	4775	334.2
		12.00	3	500	0.120	8.400	12.000	13265	4775	481.4
		16.00	3	500	0.160	11.200	16.000	9945	4774	855.4
		20.00	3	500	0.200	14.000	20.000	7960	4776	1337.3
	Unalloyed copper	6.00	3	270	0.060	4.200	6.000	14325	2579	65.0
		8.00	3	270	0.080	5.600	8.000	10745	2579	115.5
		10.00	3	270	0.100	7.000	10.000	8595	2579	180.5
		12.00	3	270	0.120	8.400	12.000	7160	2578	259.8
		16.00	3	270	0.160	11.200	16.000	5370	2578	461.9
		20.00	3	270	0.200	14.000	20.000	4295	2577	721.6
	Thermoplastics	6.00	3	650	0.060	4.200	6.000	34485	6207	156.4
		8.00	3	650	0.080	5.600	8.000	25865	6208	278.1
		10.00	3	650	0.100	7.000	10.000	20690	6207	434.5
		12.00	3	650	0.120	8.400	12.000	17240	6206	625.6
		16.00	3	650	0.160	11.200	16.000	12930	6206	1112.2
		20.00	3	650	0.200	14.000	20.000	10345	6207	1738.0

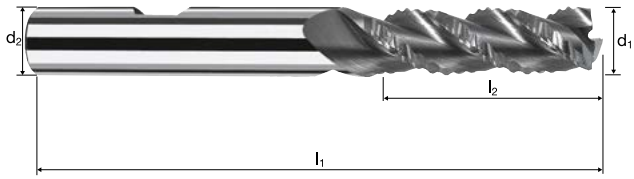
Cylindrical end mills AX

Profiled, medium length version

X-Generation

HM MG10	λ 40° γ 18°

45°



Roughing

Finishing

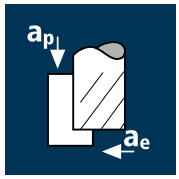
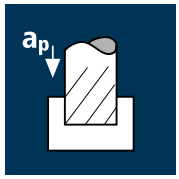
ReTool®

III

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15397** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	45°	z	CELERO C15397	CELERO C15297
300	6.00	6.00	63	19.00	0.30	3		●
391	8.00	8.00	72	28.00	0.30	3		●
450	10.00	10.00	84	34.00	0.30	3		●
501	12.00	12.00	97	40.00	0.30	3		●
610	16.00	16.00	108	48.00	0.40	3		●
682	20.00	20.00	122	56.00	0.40	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	10.00	3	104	0.060	30.000	2.000	3310	596	35.7
		12.00	3	104	0.090	36.000	2.400	2760	745	64.4
		16.00	3	104	0.120	48.000	3.200	2070	745	114.5
		20.00	3	104	0.145	60.000	4.000	1655	720	172.8
		25.00	3	104	0.185	75.000	5.000	1325	735	275.8
	Unalloyed copper	10.00	3	44	0.060	30.000	2.000	1400	252	15.1
		12.00	3	44	0.090	36.000	2.400	1165	315	27.2
		16.00	3	44	0.120	48.000	3.200	875	315	48.4
		20.00	3	44	0.145	60.000	4.000	700	305	73.1
		25.00	3	44	0.185	75.000	5.000	560	311	116.6
	Thermoplastics	10.00	3	224	0.060	30.000	2.000	7130	1283	77.0
		12.00	3	224	0.090	36.000	2.400	5940	1604	138.6
		16.00	3	224	0.120	48.000	3.200	4455	1604	246.3
		20.00	3	224	0.145	60.000	4.000	3565	1551	372.2
		25.00	3	224	0.185	75.000	5.000	2850	1582	593.2
	Wrought aluminium Construction aluminium	10.00	3	94	0.050	5.000	10.000	2990	449	22.4
		12.00	3	94	0.070	6.000	12.000	2495	524	37.7
		16.00	3	94	0.095	8.000	16.000	1870	533	68.2
		20.00	3	94	0.120	10.000	20.000	1495	538	107.6
		25.00	3	94	0.145	12.500	25.000	1195	520	162.4
	Unalloyed copper	10.00	3	41	0.050	5.000	10.000	1305	196	9.8
		12.00	3	41	0.070	6.000	12.000	1090	229	16.5
		16.00	3	41	0.095	8.000	16.000	815	232	29.7
		20.00	3	41	0.120	10.000	20.000	655	236	47.2
		25.00	3	41	0.145	12.500	25.000	520	226	70.7
	Thermoplastics	10.00	3	224	0.050	5.000	10.000	7130	1070	53.5
		12.00	3	224	0.070	6.000	12.000	5940	1247	89.8
		16.00	3	224	0.095	8.000	16.000	4455	1270	162.5
		20.00	3	224	0.120	10.000	20.000	3565	1283	256.7
		25.00	3	224	0.145	12.500	25.000	2850	1240	387.4

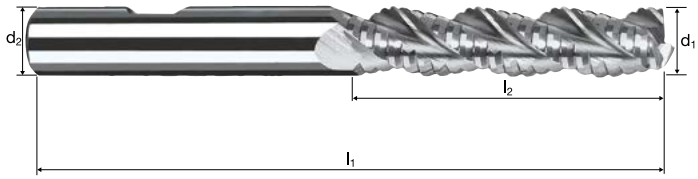
Cylindrical end mills

Profiled, medium length version

HSS

HSS-E Co8 | λ **40°** γ **18°**

45°



Roughing

Finishing

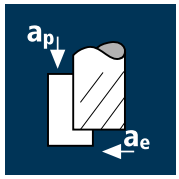
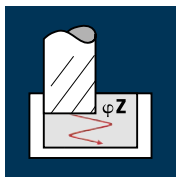
ReTool®

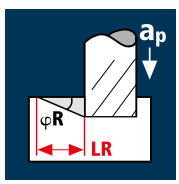
III

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **0393** ø-Code **450**

Ø Code	d_1 k8	d_2 h6	l_1	l_2	45°	z	CELERO
							C0393
450	10.00	10.00	95	45.00	0.30	3	●
501	12.00	12.00	110	53.00	0.30	3	●
610	16.00	16.00	123	63.00	0.40	3	●
682	20.00	20.00	141	75.00	0.40	3	●
772	25.00	25.00	166	90.00	0.60	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Wrought aluminium Construction aluminium	6.00	3	450	0.064	9.000	3.600	23875	4584	148.5	15.0°
		8.00	3	450	0.080	12.000	4.800	17905	4297	247.5	15.0°
		10.00	3	450	0.096	15.000	6.000	14325	4126	371.3	15.0°
		12.00	3	450	0.112	18.000	7.200	11935	4010	519.7	15.0°
		16.00	3	450	0.128	24.000	9.600	8950	3437	791.8	15.0°
		20.00	3	450	0.144	30.000	12.000	7160	3093	1113.5	15.0°
		25.00	3	450	0.160	37.500	15.000	5730	2750	1547.1	15.0°
	Al-Gusslegierung	6.00	3	405	0.064	9.000	3.600	21485	4125	133.7	15.0°
		8.00	3	405	0.080	12.000	4.800	16115	3868	222.8	15.0°
		10.00	3	405	0.096	15.000	6.000	12890	3712	334.1	15.0°
		12.00	3	405	0.112	18.000	7.200	10745	3610	467.9	15.0°
		16.00	3	405	0.128	24.000	9.600	8055	3093	712.7	15.0°
		20.00	3	405	0.144	30.000	12.000	6445	2784	1002.3	15.0°
		25.00	3	405	0.160	37.500	15.000	5155	2474	1391.9	15.0°
	Unalloyed copper	6.00	3	360	0.058	9.000	3.600	19100	3323	107.7	9.0°
		8.00	3	360	0.072	12.000	4.800	14325	3094	178.2	9.0°
		10.00	3	360	0.086	15.000	6.000	11460	2957	266.1	9.0°
		12.00	3	360	0.101	18.000	7.200	9550	2894	375.0	9.0°
		16.00	3	360	0.115	24.000	9.600	7160	2470	569.1	9.0°
		20.00	3	360	0.130	30.000	12.000	5730	2235	804.5	9.0°
		25.00	3	360	0.140	37.500	15.000	4585	1926	1083.2	9.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Wrought aluminium Construction aluminium	6.00	3	315	0.051	9.000	6.000	16710	2557	138.1	15.0°	33.6
		8.00	3	315	0.064	12.000	8.000	12535	2407	231.0	15.0°	44.8
		10.00	3	315	0.077	15.000	10.000	10025	2316	347.4	15.0°	56.0
		12.00	3	315	0.090	18.000	12.000	8355	2256	487.3	15.0°	67.2
		16.00	3	315	0.102	24.000	16.000	6265	1917	736.2	15.0°	89.6
		20.00	3	315	0.115	30.000	20.000	5015	1730	1038.1	15.0°	112.0
		25.00	3	315	0.130	37.500	25.000	4010	1564	1466.2	15.0°	140.0
	Al-Gusslegierung	6.00	3	285	0.051	9.000	6.000	15120	2322	125.4	15.0°	33.6
		8.00	3	285	0.064	12.000	8.000	11340	2177	209.0	15.0°	44.8
		10.00	3	285	0.077	15.000	10.000	9070	2090	313.5	15.0°	56.0
		12.00	3	285	0.090	18.000	12.000	7560	2032	438.9	15.0°	67.2
		16.00	3	285	0.102	24.000	16.000	5670	1742	668.9	15.0°	89.6
		20.00	3	285	0.115	30.000	20.000	4535	1567	940.4	15.0°	112.0
		25.00	3	285	0.128	37.500	25.000	3630	1394	1306.8	15.0°	140.0
	Unalloyed copper	6.00	3	216	0.040	9.000	6.000	11460	1375	74.3	9.0°	56.8
		8.00	3	216	0.050	12.000	8.000	8595	1289	123.8	9.0°	75.8
		10.00	3	216	0.060	15.000	10.000	6875	1238	185.6	9.0°	94.7
		12.00	3	216	0.071	18.000	12.000	5730	1221	263.6	9.0°	113.6
		16.00	3	216	0.081	24.000	16.000	4295	1044	400.8	9.0°	151.5
		20.00	3	216	0.091	30.000	20.000	3440	939	563.5	9.0°	189.4
		25.00	3	216	0.100	37.500	25.000	2750	825	773.4	9.0°	236.8

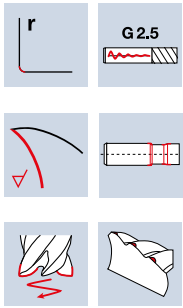
Use **ToolExpert AX-FPS** to determine the best possible cutting data for your machining environment!

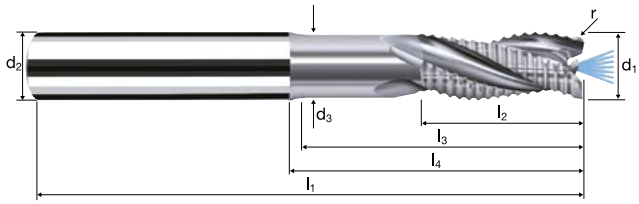
Cylindrical end mills AX-FPS

Profiled, medium length version, neck
High-performance penetration edge, central cooling channel

X-Generation

HM MG10	λ 30° γ 20°





Roughing

Finishing

ReTool®

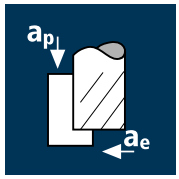
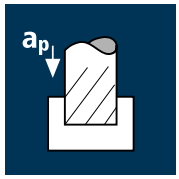
Al Aluminium > 99% | Al Aluminium Alloy | Al Aluminium Cast | Cu Copper | Plastic Thermoplast

Example: **Order-N°.** Coating **15505** Article-N°. ø-Code **300**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	z	15605	15505
300	6.00	6.00	5.50	63	13.00	24.15	26.00	0.100	3	●	
391	8.00	8.00	7.40	72	18.00	32.63	35.00	0.150	3	●	
450	10.00	10.00	9.20	84	22.00	39.99	43.00	0.200	3	●	
501	12.00	12.00	11.00	97	26.00	47.29	51.00	0.200	3	●	
610	16.00	16.00	15.00	108	32.00	54.73	59.00	0.200	3	●	
682	20.00	20.00	19.00	122	40.00	66.23	71.00	0.200	3	●	
770**	25.00	25.00	24.00	144	50.00	81.68	87.00	0.250	3	●	
772*	25.00	25.00	24.00	144	50.00	86.68	92.00	0.250	3	●	

* Cylindrical shank HA, shank length = 50 mm

** Shank with side clamping according to DIN 6535 HB

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Wrought aluminium Construction aluminium	6.00	3	600	0.065	9.000	2.400	31830	6207	134.1
		8.00	3	600	0.090	12.000	3.200	23875	6446	247.5
		10.00	3	600	0.110	15.000	4.000	19100	6303	378.2
		12.00	3	600	0.135	18.000	4.800	15915	6446	556.9
		16.00	3	600	0.180	24.000	6.400	11935	6445	989.9
		20.00	3	600	0.220	30.000	8.000	9550	6303	1512.7
		25.00	3	600	0.280	37.500	10.000	7640	6418	2406.6
	Unalloyed copper	6.00	3	400	0.065	9.000	2.400	21220	4138	89.4
		8.00	3	400	0.090	12.000	3.200	15915	4297	165.0
		10.00	3	400	0.110	15.000	4.000	12730	4201	252.1
		12.00	3	400	0.135	18.000	4.800	10610	4297	371.3
		16.00	3	400	0.180	24.000	6.400	7960	4298	660.2
		20.00	3	400	0.220	30.000	8.000	6365	4201	1008.2
		25.00	3	400	0.280	37.500	10.000	5095	4280	1604.9
	Thermoplastics	6.00	3	650	0.065	9.000	2.400	34485	6725	145.3
		8.00	3	650	0.090	12.000	3.200	25865	6984	268.2
		10.00	3	650	0.110	15.000	4.000	20690	6828	409.7
		12.00	3	650	0.135	18.000	4.800	17240	6982	603.3
		16.00	3	650	0.180	24.000	6.400	12930	6982	1072.5
		20.00	3	650	0.220	30.000	8.000	10345	6828	1638.6
		25.00	3	650	0.280	37.500	10.000	8275	6951	2606.6
	Wrought aluminium Construction aluminium	6.00	3	500	0.060	4.800	6.000	26525	4775	137.5
		8.00	3	500	0.080	6.400	8.000	19895	4775	244.5
		10.00	3	500	0.100	8.000	10.000	15915	4775	382.0
		12.00	3	500	0.120	9.600	12.000	13265	4775	550.1
		16.00	3	500	0.160	12.800	16.000	9945	4774	977.6
		20.00	3	500	0.200	16.000	20.000	7960	4776	1528.3
		25.00	3	500	0.250	20.000	25.000	6365	4774	2386.9
	Unalloyed copper	6.00	3	270	0.060	4.800	6.000	14325	2579	74.3
		8.00	3	270	0.080	6.400	8.000	10745	2579	132.0
		10.00	3	270	0.100	8.000	10.000	8595	2579	206.3
		12.00	3	270	0.120	9.600	12.000	7160	2578	296.9
		16.00	3	270	0.160	12.800	16.000	5370	2578	527.9
		20.00	3	270	0.200	16.000	20.000	4295	2577	824.6
		25.00	3	270	0.250	20.000	25.000	3440	2580	1290.0
	Thermoplastics	6.00	3	650	0.060	4.800	6.000	34485	6207	178.8
		8.00	3	650	0.080	6.400	8.000	25865	6208	317.8
		10.00	3	650	0.100	8.000	10.000	20690	6207	496.6
		12.00	3	650	0.120	9.600	12.000	17240	6206	715.0
		16.00	3	650	0.160	12.800	16.000	12930	6206	1271.1
		20.00	3	650	0.200	16.000	20.000	10345	6207	1986.2
		25.00	3	650	0.250	20.000	25.000	8275	6206	3103.2

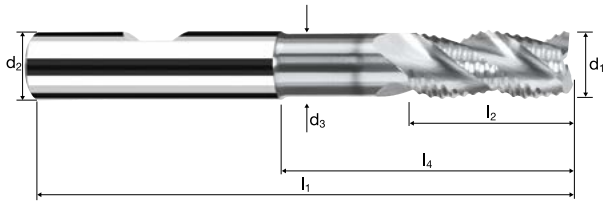
Cylindrical end mills AX

Profiled, medium length version, neck

X-Generation

HM MG10	λ 40° γ 18°

45°



Roughing

Finishing

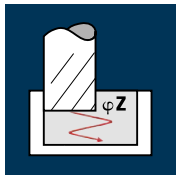
ReTool®

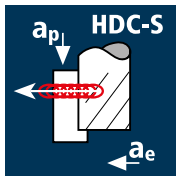
III

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15398** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	z	CELERO C15398	CELERO C15298
300	6.00	6.00	5.50	63	13.00	25.34	26.00	0.30	3		●
391	8.00	8.00	7.40	72	19.00	34.29	35.00	0.30	3		●
450	10.00	10.00	9.20	84	22.00	42.20	43.00	0.30	3		●
501	12.00	12.00	11.00	97	26.00	50.13	51.00	0.30	3		●
610	16.00	16.00	15.00	108	32.00	58.13	59.00	0.40	3		●
682	20.00	20.00	19.00	122	38.00	70.13	71.00	0.40	3		●
772	25.00	25.00	24.00	144	45.00	86.13	87.00	0.60	3		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	φZ [°]
	Wrought aluminium Construction aluminium	6.00	3	300	0.065	32.000	5.400	15915	3103	5.0°
		8.00	3	300	0.080	42.000	7.200	11935	2864	5.0°
		10.00	3	350	0.095	53.000	9.000	11140	3175	5.0°
		12.00	3	350	0.110	63.000	10.800	9285	3064	5.0°
		16.00	3	400	0.130	84.000	14.400	7960	3104	5.0°
		20.00	3	400	0.145	105.000	18.000	6365	2769	5.0°
	Cast aluminium	6.00	3	270	0.065	32.000	5.400	14325	2793	5.0°
		8.00	3	270	0.080	42.000	7.200	10745	2579	5.0°
		10.00	3	315	0.095	53.000	9.000	10025	2857	5.0°
		12.00	3	315	0.110	63.000	10.800	8355	2757	5.0°
		16.00	3	360	0.130	84.000	14.400	7160	2792	5.0°
		20.00	3	360	0.145	105.000	18.000	5730	2493	5.0°
	Unalloyed copper	6.00	3	240	0.059	32.000	5.400	12730	2253	3.5°
		8.00	3	240	0.072	42.000	7.200	9550	2063	3.5°
		10.00	3	280	0.086	53.000	9.000	8915	2300	3.5°
		12.00	3	280	0.099	63.000	10.800	7425	2205	3.5°
		16.00	3	320	0.117	84.000	14.400	6365	2234	3.5°
		20.00	3	320	0.131	105.000	18.000	5095	2002	3.5°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium Construction aluminium	6.00	3	284	0.096	32.000	0.600	15065	4339	83.3
		8.00	3	331	0.138	42.000	0.800	13170	5452	183.2
		10.00	3	379	0.158	53.000	1.000	12065	5719	303.1
		12.00	3	379	0.190	63.000	1.200	10055	5731	433.3
		16.00	3	473	0.194	84.000	1.600	9410	5477	736.1
		20.00	3	473	0.217	105.000	2.000	7530	4902	1029.4
	Cast aluminium	6.00	3	256	0.096	32.000	0.600	13580	3911	75.1
		8.00	3	298	0.138	42.000	0.800	11855	4908	164.9
		10.00	3	341	0.158	53.000	1.000	10855	5145	272.7
		12.00	3	341	0.190	63.000	1.200	9045	5156	389.8
		16.00	3	426	0.194	84.000	1.600	8475	4933	662.9
		20.00	3	426	0.217	105.000	2.000	6780	4414	926.9
	Unalloyed copper	6.00	3	227	0.077	32.000	0.600	12045	2782	53.4
		8.00	3	264	0.112	42.000	0.800	10505	3530	118.6
		10.00	3	303	0.125	53.000	1.000	9645	3617	191.7
		12.00	3	303	0.152	63.000	1.200	8035	3664	277.0
		16.00	3	378	0.154	84.000	1.600	7520	3474	466.9
		20.00	3	378	0.173	105.000	2.000	6015	3122	655.6

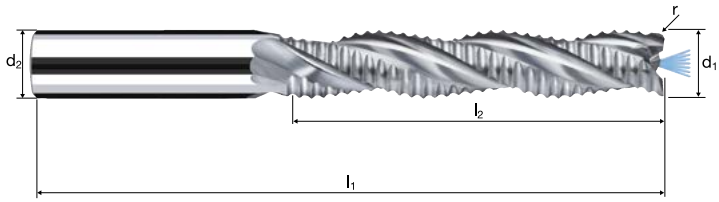
Use **ToolExpert AX-FPS** to determine the best possible cutting data for your machining environment!

Cylindrical end mills AX-FPS

Profiled, extra-long version 5.2xd
High-performance penetration edge, central cooling channel

X-Generation

HM MG10	λ 30° γ 20°



Roughing

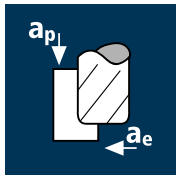
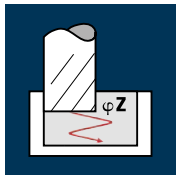
Finishing

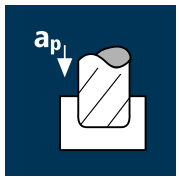
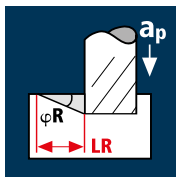
ReTool®

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast		

Example: **Order-N°.** Coating: — Article-N°.: **15507** ø-Code: **300**

Ø Code	d_1 e8	d_2 h5	l_1	l_2	r	z	15607	15507
300	6.00	6.00	73	32.00	0.100	3	●	
391	8.00	8.00	84	42.00	0.150	3	●	
450	10.00	10.00	100	53.00	0.200	3	●	
501	12.00	12.00	117	63.00	0.200	3	●	
610	16.00	16.00	144	84.00	0.200	3	●	
682	20.00	20.00	169	105.00	0.200	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φZ [°]
	Wrought aluminium Construction aluminium	12.00	3	500	0.140	18.000	9.600	13265	5571	962.7	12.0°
		16.00	3	500	0.160	24.000	12.800	9945	4774	1466.4	13.0°
		20.00	3	500	0.180	30.000	16.000	7960	4298	2063.2	15.0°
	Al-Gusslegierung	12.00	3	450	0.140	18.000	9.600	11935	5013	866.2	12.0°
		16.00	3	450	0.160	24.000	12.800	8950	4296	1319.7	13.0°
		20.00	3	450	0.180	30.000	16.000	7160	3866	1855.9	15.0°
	Unalloyed copper	12.00	3	400	0.126	18.000	9.600	10610	4011	693.0	7.0°
		16.00	3	400	0.144	24.000	12.800	7960	3439	1056.4	8.0°
		20.00	3	400	0.162	30.000	16.000	6365	3093	1484.8	9.0°

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Wrought aluminium Construction aluminium	12.00	3	450	0.126	18.000	12.000	11935	4511	974.5	15.0°	67.2
		16.00	3	450	0.144	24.000	16.000	8950	3866	1484.7	16.0°	83.7
		20.00	3	450	0.162	30.000	20.000	7160	3480	2087.9	19.0°	87.1
	Al-Gusslegierung	12.00	3	405	0.126	18.000	12.000	10745	4062	877.3	15.0°	67.2
		16.00	3	405	0.144	24.000	16.000	8055	3480	1336.2	16.0°	83.7
		20.00	3	405	0.162	30.000	20.000	6445	3132	1879.4	19.0°	87.1
	Unalloyed copper	12.00	3	320	0.101	18.000	12.000	8490	2573	555.7	9.0°	113.6
		16.00	3	320	0.115	24.000	16.000	6365	2196	843.2	9.5°	143.4
		20.00	3	320	0.130	30.000	20.000	5095	1987	1192.3	11.5°	147.5

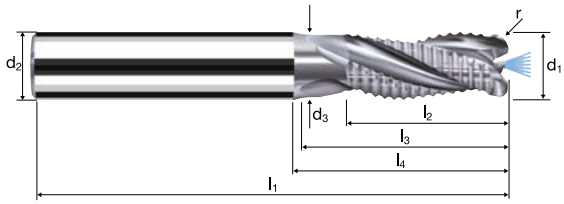
Use **ToolExpert AX-FPS** to determine the best possible cutting data for your machining environment!

Corner radius end mills AX-FPS

Profiled, normal version, neck
High-performance penetration edge, central cooling channel

X-Generation

HM MG10	λ 30° γ 20°



Roughing

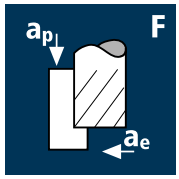
Finishing

ReTool®

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **15502** Article-N°. **501** ø-Code

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	z	15502	
501	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	3	●	
608	16.00	16.00	15.00	95	32.00	41.73	46.00	1.000	3	●	
611	16.00	16.00	15.00	95	32.00	41.73	46.00	2.000	3	●	
506	12.00	12.00	11.00	83	26.00	33.29	37.00	2.500	3	●	
612	16.00	16.00	15.00	95	32.00	41.73	46.00	2.500	3	●	
684	20.00	20.00	19.00	104	40.00	48.23	53.00	2.500	3	●	
613	16.00	16.00	15.00	95	32.00	41.73	46.00	3.000	3	●	

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium C	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Unalloyed copper C	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Thermoplastics	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400
	Cast aluminium C	6.00	6	0.020	12.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	16.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	20.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	24.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	32.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	40.000	0.300	1800	2700	3600	5400

Cylindrical end mills MulticutXA

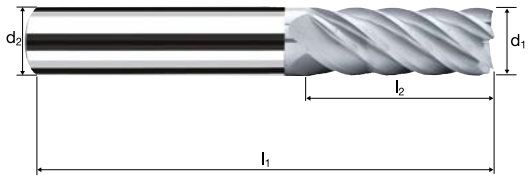
Finishing, normal version

X-Generation

HM MG10	λ 40° γ 20°

r | G 2.5

Vario



Roughing

Finishing

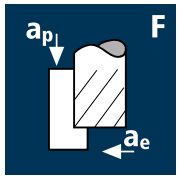
ReTool®

III

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15589** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15589	CELERO C15589
300	6.00	6.00	57	13.00	0.150	6	●	●
391	8.00	8.00	63	19.00	0.150	6	●	●
450	10.00	10.00	72	22.00	0.200	6	●	●
501	12.00	12.00	83	26.00	0.200	6	●	●
610	16.00	16.00	92	32.00	0.200	6	●	●
682	20.00	20.00	104	40.00	0.200	6	●	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Wrought aluminium Construction aluminium	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Unalloyed copper	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Thermoplastics	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400
	Cast aluminium	6.00	6	0.020	18.000	0.100	1200	1800	2400	3600
		8.00	6	0.020	24.000	0.100	1200	1800	2400	3600
		10.00	6	0.025	30.000	0.150	1500	2250	3000	4500
		12.00	6	0.025	36.000	0.200	1500	2250	3000	4500
		16.00	6	0.030	48.000	0.250	1800	2700	3600	5400
		20.00	6	0.030	60.000	0.300	1800	2700	3600	5400

Cylindrical end mills MulticutXA

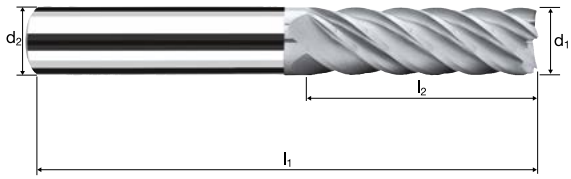
Finishing, medium length version

X-Generation

HM MG10	λ 40° γ 20°

r | G 2.5

Vario



Roughing

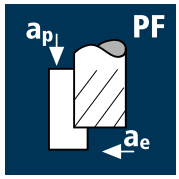
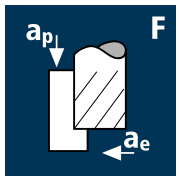
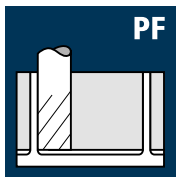
Finishing

ReTool®

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **15590** ø-Code **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15590	CELERO C15590
300	6.00	6.00	63	18.00	0.150	6	●	●
391	8.00	8.00	72	24.00	0.150	6	●	●
450	10.00	10.00	84	30.00	0.200	6	●	●
501	12.00	12.00	97	36.00	0.200	6	●	●
610	16.00	16.00	108	48.00	0.200	6	●	●
682	20.00	20.00	122	60.00	0.200	6	●	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Wrought aluminium Construction aluminium	6.00	3	300	0.025	32.000	0.080	15915	1194
		8.00	3	300	0.030	42.000	0.100	11935	1074
		10.00	3	350	0.030	53.000	0.120	11140	1003
		12.00	3	350	0.030	63.000	0.120	9285	836
		16.00	3	400	0.035	84.000	0.150	7960	836
		20.00	3	400	0.035	105.000	0.150	6365	668
	Cast aluminium	6.00	3	270	0.025	32.000	0.080	14325	1074
		8.00	3	270	0.030	42.000	0.100	10745	967
		10.00	3	315	0.030	53.000	0.120	10025	902
		12.00	3	315	0.030	63.000	0.120	8355	752
		16.00	3	360	0.035	84.000	0.150	7160	752
		20.00	3	360	0.035	105.000	0.150	5730	602
	Wrought aluminium Construction aluminium	6.00	3	200	0.020	32.000	0.030	10610	637
		8.00	3	200	0.025	42.000	0.050	7960	597
		10.00	3	250	0.025	53.000	0.050	7960	597
		12.00	3	250	0.025	63.000	0.050	6630	497
		16.00	3	300	0.030	84.000	0.050	5970	537
		20.00	3	300	0.030	105.000	0.050	4775	430
	Cast aluminium	6.00	3	180	0.020	32.000	0.030	9550	573
		8.00	3	180	0.025	42.000	0.050	7160	537
		10.00	3	225	0.025	53.000	0.050	7160	537
		12.00	3	225	0.025	63.000	0.050	5970	448
		16.00	3	270	0.030	84.000	0.050	5370	483
		20.00	3	270	0.030	105.000	0.050	4295	387
	Wrought aluminium Construction aluminium	6.00	3	200	0.025	32.000	0.060	10610	796
		8.00	3	200	0.030	42.000	0.060	7960	716
		10.00	3	250	0.030	53.000	0.080	7960	716
		12.00	3	250	0.030	63.000	0.080	6630	597
		16.00	3	300	0.035	84.000	0.100	5970	627
		20.00	3	300	0.035	105.000	0.100	4775	501
	Unalloyed copper	6.00	3	120	0.025	32.000	0.060	6365	477
		8.00	3	120	0.030	42.000	0.060	4775	430
		10.00	3	150	0.030	53.000	0.080	4775	430
		12.00	3	150	0.030	63.000	0.080	3980	358
		16.00	3	180	0.035	84.000	0.100	3580	376
		20.00	3	180	0.035	105.000	0.100	2865	301
	Wrought aluminium Construction aluminium	6.00	3	150	0.020	32.000	0.030	7960	478
		8.00	3	150	0.025	42.000	0.030	5970	448
		10.00	3	200	0.025	53.000	0.040	6365	477
		12.00	3	200	0.025	63.000	0.040	5305	398
		16.00	3	250	0.030	84.000	0.050	4975	448
		20.00	3	250	0.030	105.000	0.050	3980	358
	Unalloyed copper	6.00	3	90	0.020	32.000	0.030	4775	287
		8.00	3	90	0.025	42.000	0.030	3580	269
		10.00	3	120	0.025	53.000	0.040	3820	287
		12.00	3	120	0.025	63.000	0.040	3185	239
		16.00	3	150	0.030	84.000	0.050	2985	269
		20.00	3	150	0.030	105.000	0.050	2385	215

Cylindrical end mills AX

Finishing, extra-long version 5.2xd

X-Generation

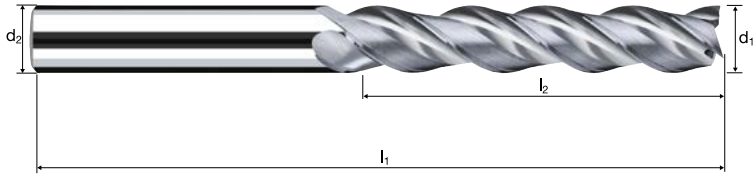
HM
MG10

λ **40°**
γ **20°**

r

G 2.5

Vario



Roughing

Finishing

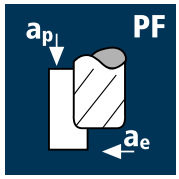
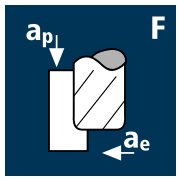
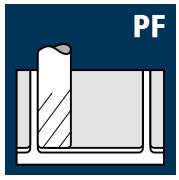
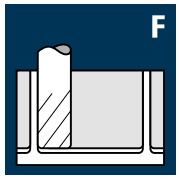
ReTool®

III

			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast		

Example: **Order-N°.** Coating Article-N°. ø-Code **15510** **300**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15510	
300	6.00	6.00	73	32.00	0.150	3	●	
391	8.00	8.00	84	42.00	0.150	3	●	
450	10.00	10.00	100	53.00	0.200	3	●	
501	12.00	12.00	117	63.00	0.200	3	●	
610	16.00	16.00	144	84.00	0.200	3	●	
682	20.00	20.00	169	105.00	0.200	3	●	

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Wrought aluminium Construction aluminium	6.00	3	300	0.025	32.000	0.080	15915	1194
		8.00	3	300	0.030	42.000	0.100	11935	1074
		10.00	3	350	0.030	53.000	0.120	11140	1003
		12.00	3	350	0.030	63.000	0.120	9285	836
		16.00	3	400	0.035	84.000	0.150	7960	836
		20.00	3	400	0.035	105.000	0.150	6365	668
	Cast aluminium	6.00	3	270	0.025	32.000	0.080	14325	1074
		8.00	3	270	0.030	42.000	0.100	10745	967
		10.00	3	315	0.030	53.000	0.120	10025	902
		12.00	3	315	0.030	63.000	0.120	8355	752
		16.00	3	360	0.035	84.000	0.150	7160	752
		20.00	3	360	0.035	105.000	0.150	5730	602
	Wrought aluminium Construction aluminium	6.00	3	200	0.020	32.000	0.030	10610	637
		8.00	3	200	0.025	42.000	0.050	7960	597
		10.00	3	250	0.025	53.000	0.050	7960	597
		12.00	3	250	0.025	63.000	0.050	6630	497
		16.00	3	300	0.030	84.000	0.050	5970	537
		20.00	3	300	0.030	105.000	0.050	4775	430
	Cast aluminium	6.00	3	180	0.020	32.000	0.030	9550	573
		8.00	3	180	0.025	42.000	0.050	7160	537
		10.00	3	225	0.025	53.000	0.050	7160	537
		12.00	3	225	0.025	63.000	0.050	5970	448
		16.00	3	270	0.030	84.000	0.050	5370	483
		20.00	3	270	0.030	105.000	0.050	4295	387
	Wrought aluminium Construction aluminium	6.00	3	200	0.025	32.000	0.060	10610	796
		8.00	3	200	0.030	42.000	0.060	7960	716
		10.00	3	250	0.030	53.000	0.080	7960	716
		12.00	3	250	0.030	63.000	0.080	6630	597
		16.00	3	300	0.035	84.000	0.100	5970	627
		20.00	3	300	0.035	105.000	0.100	4775	501
	Unalloyed copper	6.00	3	120	0.025	32.000	0.060	6365	477
		8.00	3	120	0.030	42.000	0.060	4775	430
		10.00	3	150	0.030	53.000	0.080	4775	430
		12.00	3	150	0.030	63.000	0.080	3980	358
		16.00	3	180	0.035	84.000	0.100	3580	376
		20.00	3	180	0.035	105.000	0.100	2865	301
	Wrought aluminium Construction aluminium	6.00	3	150	0.020	32.000	0.030	7960	478
		8.00	3	150	0.025	42.000	0.030	5970	448
		10.00	3	200	0.025	53.000	0.040	6365	477
		12.00	3	200	0.025	63.000	0.040	5305	398
		16.00	3	250	0.030	84.000	0.050	4975	448
		20.00	3	250	0.030	105.000	0.050	3980	358
	Unalloyed copper	6.00	3	90	0.020	32.000	0.030	4775	287
		8.00	3	90	0.025	42.000	0.030	3580	269
		10.00	3	120	0.025	53.000	0.040	3820	287
		12.00	3	120	0.025	63.000	0.040	3185	239
		16.00	3	150	0.030	84.000	0.050	2985	269
		20.00	3	150	0.030	105.000	0.050	2385	215

Corner radius end mills AX

Finishing, extra-long version 5.2xd

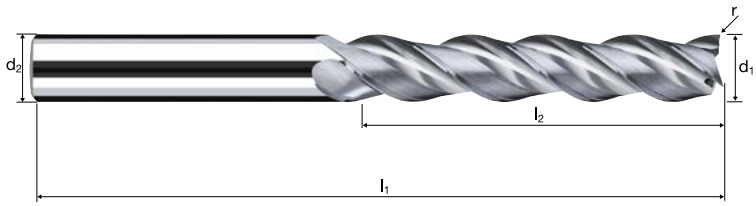
X-Generation

HM MG10	λ 40° γ 20°

r

G 2.5

Vario



Roughing

Finishing

ReTool®

III

Al Aluminium > 99%

Al Aluminium Alloy

Al Aluminium Cast

Cu Copper

Plastic Thermoplast

Example: **Order-N°.** Coating **15512** Article-N°. **302** ø-Code

Ø Code	d_1 e8	d_2 h6	l_1	l_2	r	z	15512	
302	6.00	6.00	73	32.00	1.000	3	●	I
391	8.00	8.00	84	42.00	1.000	3	●	I
450	10.00	10.00	100	53.00	1.000	3	●	I
501	12.00	12.00	117	63.00	1.000	3	●	I
608	16.00	16.00	144	84.00	1.000	3	●	I
457	10.00	10.00	100	53.00	2.500	3	●	I
506	12.00	12.00	117	63.00	2.500	3	●	I
612	16.00	16.00	144	84.00	2.500	3	●	I
684	20.00	20.00	169	105.00	2.500	3	●	I

I Availability and delivery dates on request

passion
for precision
fraisa

End milling tools for graphite
Micro with ball nose

Shank ø 6mm, tolerance r ±0.005

N° 6062	MicroX	X-Generation X	3xd R F	d_1 1.5 – 6.0	C Graphite				669
N° 6064	MicroX	X-Generation X	5xd R F	d_1 0.1 – 6.0	C Graphite				671
N° 6066	MicroX	X-Generation X	8xd R F	d_1 0.1 – 6.0	C Graphite				673
N° 6068	MicroX	X-Generation X	10xd R F	d_1 0.2 – 6.0	C Graphite				675
N° 6070	MicroX	X-Generation X	12xd R F	d_1 0.2 – 4.0	C Graphite				677
N° 6072	MicroX	X-Generation X	15xd R F	d_1 0.3 – 4.0	C Graphite				679
N° 6074	MicroX	X-Generation X	20xd R F	d_1 0.3– 4.0	C Graphite				681

Shank ø 3mm, tolerance r ±0.01

N° 5784	Microcut	Base-X B	5xd R F	d_1 0.5 – 3.0	C Graphite				683
N° 5786	Microcut	Base-X B	8xd R F	d_1 0.5 – 3.0	C Graphite				685
N° 5787	Microcut	Base-X B	10xd R F	d_1 0.5 – 3.0	C Graphite				687
N° 5791	Microcut	Base-X B	12xd R F	d_1 1.0 – 3.0	C Graphite				689
N° 5793	Microcut	Base-X B	15xd R F	d_1 1.0 – 3.0	C Graphite				691
N° 15795	Microcut	Base-X B	20xd R F	d_1 1.0 – 3.0	C Graphite				693

IV

End milling tools for graphite
Micro with corner radius

Shank ø 6mm, tolerance r ±0.005

N° 6032	MicroX	X-Generation X	3xd	R F	r 0.2, 0.5	C Graphite			695
N° 6034	MicroX	X-Generation X	5xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			697
N° 6036	MicroX	X-Generation X	8xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			701
N° 6038	MicroX	X-Generation X	10xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			705
N° 6040	MicroX	X-Generation X	12xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			709
N° 6042	MicroX	X-Generation X	15xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			711
N° 6044	MicroX	X-Generation X	20xd	R F	r 0.05, 0.1, 0.2, 0.5	C Graphite			713

Shank ø 3mm, tolerance r ±0.03

N° 5754	Microcut	Base-X B	5xd	R F	r 0.2	C Graphite			715
N° 5756	Microcut	Base-X B	8xd	R F	r 0.2	C Graphite			717

End milling tools for graphite
Micro, cylindrical

Shank ø 3mm

N° 5714	**Microcut**	Base-X B	5xd R F	d_1 0.5 – 3.0 45°	C Graphite				719
N° 5716	**Microcut**	Base-X B	8xd R F	d_1 0.5 – 3.0 45°	C Graphite				721
N° 5717	**Microcut**	Base-X B	10xd R F	d_1 0.5 – 3.0 45°	C Graphite				723

End milling tools for graphite
Ball nose

Tolerance r ±0.005

N° 7484

SpheroX

X-Generation

6xd

d_1 6 - 12

R F

C Graphite

725

End milling tools for graphite
Corner radius

Tolerance r ±0.005

N° 7284

ToroX

X-Generation **X** | 6xd | R | F | r 0.5, 1.0 | C Graphite | 727

Tolerance r 0/+0.03

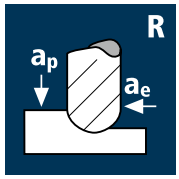
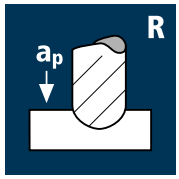
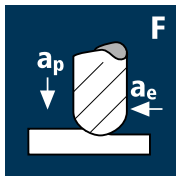
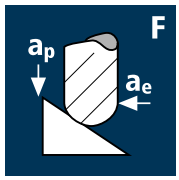
N° 5640

Base-X **B** | R | F | r 0.15, 0.2, 0.3, 0.5 | C Graphite | 729

N° 5645

Base-X **B** | R | F | r 0.15, 0.2, 0.3, 0.5 | C Graphite | 731

IV

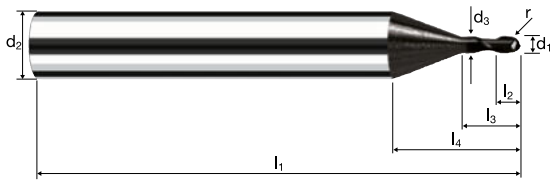
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.50	2	0.018	0.750	0.900	540	900	1080	1620
		2.00	2	0.024	1.000	1.200	720	1200	1440	2160
		3.00	2	0.035	1.500	1.800	1050	1750	2100	3150
		4.00	2	0.047	2.000	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.500	3.000	1770	2950	3540	5310
		6.00	2	0.071	3.000	3.600	2130	3550	4260	6390
	Graphite B B	1.50	2	0.014	0.750	1.500	420	700	840	1260
		2.00	2	0.018	1.000	2.000	540	900	1080	1620
		3.00	2	0.027	1.500	3.000	810	1350	1620	2430
		4.00	2	0.036	2.000	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	3.000	6.000	1650	2750	3300	4950
	Graphite B B	1.50	2	0.020	0.230	0.300	600	1000	1200	1800
		2.00	2	0.027	0.300	0.400	810	1350	1620	2430
		3.00	2	0.040	0.450	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.600	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.750	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.900	1.200	2400	4000	4800	7200
	Graphite B B	1.50	2	0.020	0.300	0.300	600	1000	1200	1800
		2.00	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.040	0.600	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.800	0.800	1590	2650	3180	4770
		5.00	2	0.067	1.000	1.000	2010	3350	4020	6030
		6.00	2	0.080	1.200	1.200	2400	4000	4800	7200

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

X-Generation

HM XA	λ 30° γ 15°



h4

d1

r

C Graphite

CF/GF Fiber Reinforced Plastics

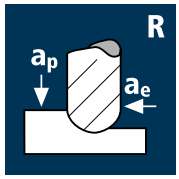
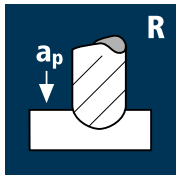
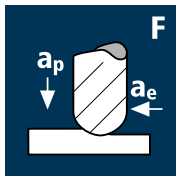
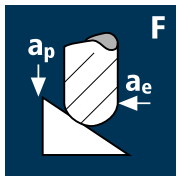
IV

DIAPLUS

Example: **Order-N°.** Coating **B** Article-N°. **6062** ø-Code **120**

B6062

Ø Code	d_1	d_2 h4	d_3	l_1	l_3	l_2	l_4	r ±0.005	α	z	
120	1.50	6.00	1.40	57	4.50	1.50	13.74	0.750	10.3°	2	●
140	2.00	6.00	1.90	57	6.00	2.00	14.31	1.000	9.0°	2	●
180	3.00	6.00	2.80	57	9.00	3.00	15.63	1.500	6.4°	2	●
220	4.00	6.00	3.70	57	12.00	4.00	16.95	2.000	4.1°	2	●
260	5.00	6.00	4.60	57	15.00	5.00	18.27	2.500	2.0°	2	●
300	6.00	6.00	5.50	57	17.34	6.00	18.00	3.000	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.50	2	0.006	0.250	0.300	180	300	360	540
		0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
		3.00	2	0.035	1.350	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.800	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.250	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.700	3.600	2130	3550	4260	6390
	Graphite B B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.50	2	0.005	0.250	0.500	150	250	300	450
		0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
		3.00	2	0.027	1.350	3.000	810	1350	1620	2430
		4.00	2	0.036	1.800	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.250	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.700	6.000	1650	2750	3300	4950
	Graphite B B	0.20	2	0.003	0.030	0.040	90	150	180	270
		0.50	2	0.007	0.070	0.100	210	350	420	630
		0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
		3.00	2	0.040	0.420	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.700	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.840	1.200	2400	4000	4800	7200
	Graphite B B	0.20	2	0.003	0.040	0.040	90	150	180	270
		0.50	2	0.007	0.090	0.090	210	350	420	630
		0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430
		3.00	2	0.040	0.540	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.720	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.900	0.900	2010	3350	4020	6030
		6.00	2	0.080	1.080	1.080	2400	4000	4800	7200

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

X-Generation X

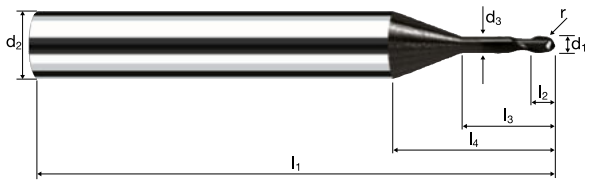
HM
XA

λ 30°
γ 15°

h4

d1

r



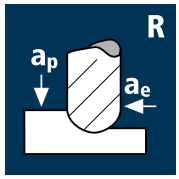
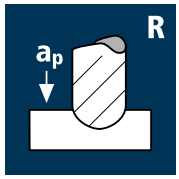
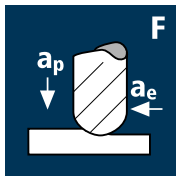
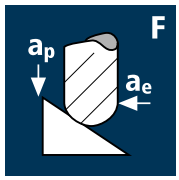
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6064** ø-Code **010**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6064
010	0.10	6.00	0.09	57	0.10	0.50	17.70	0.050	14.5°	2	●
015	0.15	6.00	0.13	57	0.15	0.75	17.83	0.075	14.2°	2	●
020	0.20	6.00	0.18	57	0.20	1.00	17.94	0.100	13.9°	2	●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	0.150	13.8°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.200	12.8°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.250	12.3°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.300	11.9°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.400	11.0°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.500	10.2°	2	●
120	1.50	6.00	1.40	57	1.50	7.50	16.74	0.750	8.4°	2	●
140	2.00	6.00	1.90	57	2.00	10.00	18.31	1.000	6.9°	2	●
180	3.00	6.00	2.80	57	3.00	15.00	21.63	1.500	4.4°	2	●
182	3.00	6.00	2.80	61	3.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	61	4.00	20.00	24.95	2.000	2.6°	2	●
222	4.00	6.00	3.70	66	4.00	25.00	29.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	66	5.00	25.00	28.27	2.500	1.2°	2	●
300	6.00	6.00	5.50	69	6.00	29.34	30.00	3.000	0.0°	2	●

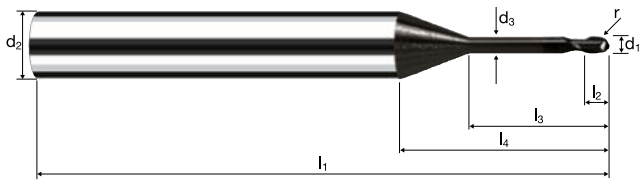
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.50	2	0.006	0.200	0.300	180	300	360	540
		0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
		3.00	2	0.035	1.200	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.600	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.000	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	3.600	2130	3550	4260	6390
	Graphite B B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.50	2	0.005	0.200	0.500	150	250	300	450
		0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
		3.00	2	0.027	1.200	3.000	810	1350	1620	2430
		4.00	2	0.036	1.600	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.000	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.400	6.000	1650	2750	3300	4950
	Graphite B B	0.20	2	0.003	0.020	0.040	90	150	180	270
		0.50	2	0.007	0.060	0.090	210	350	420	630
		0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
		3.00	2	0.040	0.360	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.480	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.600	0.900	2010	3350	4020	6030
		6.00	2	0.080	0.720	1.080	2400	4000	4800	7200
	Graphite B B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.50	2	0.007	0.080	0.080	210	350	420	630
		0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430
		3.00	2	0.040	0.480	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.640	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.800	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.960	0.960	2400	4000	4800	7200

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

X-Generation X

HM XA	λ 30° γ 15°



h4

d1

r

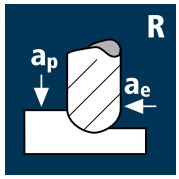
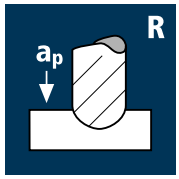
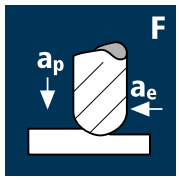
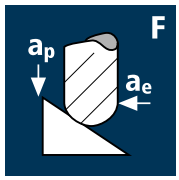
C Graphite

CF/GF Fiber Reinforced Plastics

IV

Example: **Order-N°.** Coating **B** Article-N°. **6066** ø-Code **010**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6066
010	0.10	6.00	0.09	57	0.10	0.80	18.00	0.050	14.1°	2	●
015	0.15	6.00	0.13	57	0.15	1.20	18.28	0.075	13.7°	2	●
020	0.20	6.00	0.18	57	0.20	1.60	18.54	0.100	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	19.14	0.150	12.4°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.66	0.200	11.7°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.250	11.1°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.300	10.5°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.400	9.4°	2	●
100	1.00	6.00	0.95	57	1.00	8.00	18.08	0.500	8.4°	2	●
120	1.50	6.00	1.40	57	1.50	12.00	21.24	0.750	6.5°	2	●
140	2.00	6.00	1.90	61	2.00	16.00	24.31	1.000	5.1°	2	●
180	3.00	6.00	2.80	66	3.00	24.00	30.63	1.500	3.1°	2	●
220	4.00	6.00	3.70	75	4.00	32.00	36.95	2.000	1.7°	2	●
260	5.00	6.00	4.60	80	5.00	40.00	43.27	2.500	0.8°	2	●
300	6.00	6.00	5.50	87	6.00	47.34	48.00	3.000	0.0°	2	●

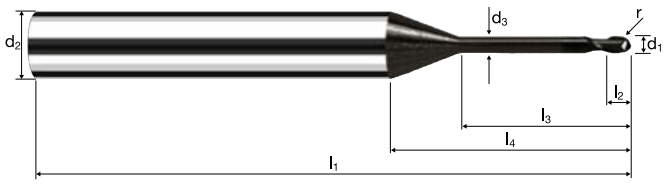
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.080	0.080	60	100	120	180
		0.50	2	0.006	0.200	0.200	180	300	360	540
		0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
		3.00	2	0.035	1.200	1.200	1050	1750	2100	3150
		4.00	2	0.047	1.600	1.600	1410	2350	2820	4230
		5.00	2	0.059	2.000	2.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	2.400	2130	3550	4260	6390
	Graphite B B	0.20	2	0.001	0.060	0.200	30	50	60	90
		0.50	2	0.004	0.150	0.500	120	200	240	360
		0.80	2	0.006	0.250	0.800	180	300	360	540
		1.00	2	0.007	0.300	1.000	210	350	420	630
		2.00	2	0.015	0.600	2.000	450	750	900	1350
		3.00	2	0.022	0.900	3.000	660	1100	1320	1980
		4.00	2	0.029	1.200	4.000	870	1450	1740	2610
		5.00	2	0.036	1.500	5.000	1080	1800	2160	3240
		6.00	2	0.044	1.800	6.000	1320	2200	2640	3960
	Graphite B B	0.20	2	0.003	0.020	0.030	90	150	180	270
		0.50	2	0.007	0.050	0.080	210	350	420	630
		0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
		3.00	2	0.040	0.300	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.400	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.500	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.600	0.960	2400	4000	4800	7200
	Graphite B B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.50	2	0.007	0.070	0.070	210	350	420	630
		0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430
		3.00	2	0.040	0.420	0.420	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.560	1590	2650	3180	4770
		5.00	2	0.067	0.700	0.700	2010	3350	4020	6030
		6.00	2	0.080	0.840	0.840	2400	4000	4800	7200

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

X-Generation X

HM XA	λ 30° γ 15°



h4

d1

r

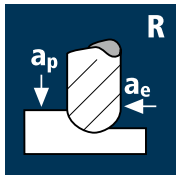
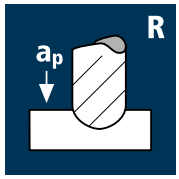
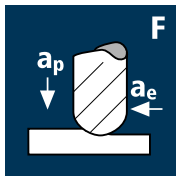
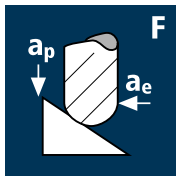
C Graphite

CF/GF Fiber Reinforced Plastics

IV

Example: **Order-N°.** Coating **B** Article-N°. **6068** ø-Code **020**

Ø Code	d1	d2 h4	d3	l1	l2	l3	l4	r ±0.005	α	z	DIAPLUS B6068
020	0.20	6.00	0.18	57	0.20	2.00	18.94	0.100	12.8°	2	●
030	0.30	6.00	0.25	57	0.30	3.00	19.74	0.150	11.9°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	20.46	0.200	11.1°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.250	10.3°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.300	9.7°	2	●
080	0.80	6.00	0.75	57	0.80	8.00	18.45	0.400	8.5°	2	●
100	1.00	6.00	0.95	57	1.00	10.00	20.08	0.500	7.5°	2	●
120	1.50	6.00	1.40	61	1.50	15.00	24.24	0.750	5.7°	2	●
140	2.00	6.00	1.90	66	2.00	20.00	28.31	1.000	4.3°	2	●
180	3.00	6.00	2.80	75	3.00	30.00	36.63	1.500	2.5°	2	●
220	4.00	6.00	3.70	80	4.00	40.00	44.95	2.000	1.4°	2	●
260	5.00	6.00	4.60	100	5.00	50.00	53.27	2.500	0.6°	2	●
300	6.00	6.00	5.50	100	6.00	59.34	60.00	3.000	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.060	0.080	60	100	120	180
		0.50	2	0.005	0.150	0.200	150	250	300	450
		0.60	2	0.006	0.200	0.250	180	300	360	540
		0.80	2	0.008	0.250	0.300	240	400	480	720
		1.00	2	0.009	0.300	0.400	270	450	540	810
		1.50	2	0.014	0.450	0.600	420	700	840	1260
		2.00	2	0.019	0.600	0.800	570	950	1140	1710
		3.00	2	0.028	0.900	1.200	840	1400	1680	2520
		4.00	2	0.038	1.200	1.600	1140	1900	2280	3420
	Graphite B B	0.20	2	0.001	0.040	0.200	30	50	60	90
		0.50	2	0.004	0.100	0.500	120	200	240	360
		0.60	2	0.004	0.100	0.600	120	200	240	360
		0.80	2	0.006	0.150	0.800	180	300	360	540
		1.00	2	0.007	0.200	1.000	210	350	420	630
		1.50	2	0.011	0.300	1.500	330	550	660	990
		2.00	2	0.015	0.400	2.000	450	750	900	1350
		3.00	2	0.022	0.060	3.000	660	1100	1320	1980
		4.00	2	0.029	0.800	4.000	870	1450	1740	2610
	Graphite B B	0.20	2	0.002	0.020	0.030	60	100	120	180
		0.50	2	0.005	0.050	0.070	150	250	300	450
		0.60	2	0.006	0.060	0.080	180	300	360	540
		0.80	2	0.009	0.080	0.110	270	450	540	810
		1.00	2	0.011	0.100	0.140	330	550	660	990
		1.50	2	0.016	0.150	0.210	480	800	960	1440
		2.00	2	0.021	0.200	0.280	630	1050	1260	1890
		3.00	2	0.032	0.300	0.420	960	1600	1920	2880
		4.00	2	0.043	0.400	0.560	1290	2150	2580	3870
	Graphite B B	0.20	2	0.002	0.020	0.020	60	100	120	180
		0.50	2	0.005	0.050	0.050	150	250	300	450
		0.60	2	0.006	0.060	0.060	180	300	360	540
		0.80	2	0.009	0.080	0.080	270	450	540	810
		1.00	2	0.011	0.100	0.100	330	550	660	990
		1.50	2	0.016	0.150	0.150	480	800	960	1440
		2.00	2	0.021	0.200	0.200	630	1050	1260	1890
		3.00	2	0.032	0.300	0.300	960	1600	1920	2880
		4.00	2	0.043	0.400	0.400	1290	2150	2580	3870

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 12xd

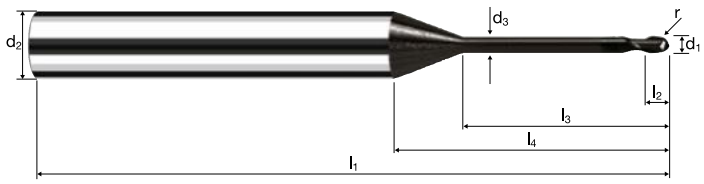
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



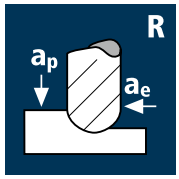
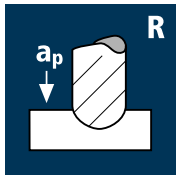
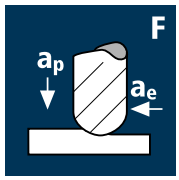
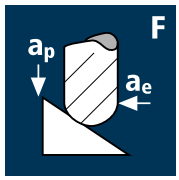
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6070** ø-Code **020**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6070
020	0.20	6.00	0.18	57	0.20	2.40	19.34	0.100	12.5°	2	●
030	0.30	6.00	0.25	57	0.30	3.60	20.34	0.150	11.4°	2	●
040	0.40	6.00	0.35	57	0.40	4.80	21.26	0.200	10.5°	2	●
050	0.50	6.00	0.45	57	0.50	6.00	17.01	0.250	9.9°	2	●
060	0.60	6.00	0.55	57	0.60	7.20	18.03	0.300	9.2°	2	●
080	0.80	6.00	0.75	57	0.80	9.60	20.05	0.400	8.0°	2	●
100	1.00	6.00	0.95	61	1.00	12.00	22.08	0.500	7.0°	2	●
120	1.50	6.00	1.40	66	1.50	18.00	27.24	0.750	5.1°	2	●
140	2.00	6.00	1.90	69	2.00	24.00	32.31	1.000	3.9°	2	●
180	3.00	6.00	2.80	80	3.00	36.00	42.63	1.500	2.2°	2	●
220	4.00	6.00	3.70	100	4.00	48.00	52.95	2.000	1.2°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.30	2	0.002	0.060	0.090	60	100	120	180
		0.50	2	0.004	0.100	0.150	120	200	240	360
		0.60	2	0.005	0.100	0.200	150	250	300	450
		0.80	2	0.007	0.150	0.250	210	350	420	630
		1.00	2	0.008	0.200	0.300	240	400	480	720
		1.50	2	0.012	0.300	0.450	360	600	720	1080
		2.00	2	0.016	0.400	0.600	480	800	960	1440
		3.00	2	0.025	0.600	0.900	750	1250	1500	2250
		4.00	2	0.033	0.800	1.200	990	1650	1980	2970
	Graphite B B	0.30	2	0.002	0.030	0.300	60	100	120	180
		0.50	2	0.003	0.050	0.500	90	150	180	270
		0.60	2	0.004	0.060	0.600	120	200	240	360
		0.80	2	0.005	0.080	0.800	150	250	300	450
		1.00	2	0.006	0.100	1.000	180	300	360	540
		1.50	2	0.010	0.150	1.500	300	500	600	900
		2.00	2	0.013	0.200	2.000	390	650	780	1170
		3.00	2	0.019	0.300	3.000	570	950	1140	1710
		4.00	2	0.025	0.400	4.000	750	1250	1500	2250
	Graphite B B	0.30	2	0.003	0.020	0.030	90	150	180	270
		0.50	2	0.005	0.040	0.050	150	250	300	450
		0.60	2	0.006	0.050	0.060	180	300	360	540
		0.80	2	0.007	0.060	0.080	210	350	420	630
		1.00	2	0.009	0.080	0.100	270	450	540	810
		1.50	2	0.014	0.120	0.150	420	700	840	1260
		2.00	2	0.019	0.160	0.200	570	950	1140	1710
		3.00	2	0.028	0.240	0.300	840	1400	1680	2520
		4.00	2	0.037	0.320	0.400	1110	1850	2220	3330
	Graphite B B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.040	0.040	150	250	300	450
		0.60	2	0.006	0.050	0.050	180	300	360	540
		0.80	2	0.007	0.060	0.060	210	350	420	630
		1.00	2	0.009	0.080	0.080	270	450	540	810
		1.50	2	0.014	0.120	0.120	420	700	840	1260
		2.00	2	0.019	0.160	0.160	570	950	1140	1710
		3.00	2	0.028	0.240	0.240	840	1400	1680	2520
		4.00	2	0.037	0.320	0.320	1110	1850	2220	3330

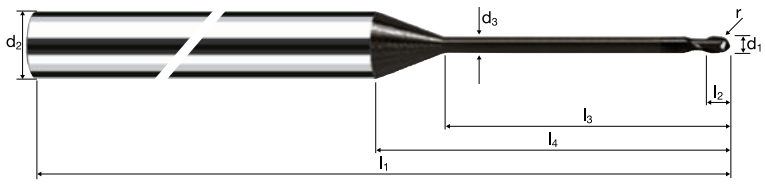
Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 15xd

X-Generation

HM XA	λ 30° γ 15°

h4



d1

r

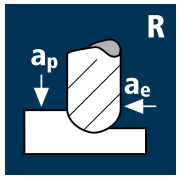
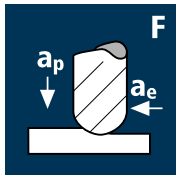
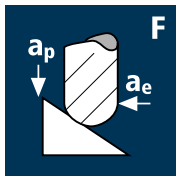
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6072** ø-Code **030**

Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6072
030	0.30	6.00	0.25	61	0.30	4.50	21.24	0.150	10.7°	2	●
040	0.40	6.00	0.35	61	0.40	6.00	22.46	0.200	9.8°	2	●
050	0.50	6.00	0.45	57	0.50	7.50	18.51	0.250	8.9°	2	●
060	0.60	6.00	0.55	57	0.60	9.00	19.83	0.300	8.4°	2	●
080	0.80	6.00	0.75	61	0.80	12.00	22.45	0.400	7.0°	2	●
100	1.00	6.00	0.95	66	1.00	15.00	25.08	0.500	6.0°	2	●
120	1.50	6.00	1.40	69	1.50	22.50	31.74	0.750	4.3°	2	●
140	2.00	6.00	1.90	75	2.00	30.00	38.31	1.000	3.2°	2	●
180	3.00	6.00	2.80	100	3.00	45.00	51.63	1.500	1.8°	2	●
220	4.00	6.00	3.70	105	4.00	60.00	64.95	2.000	1.0°	2	●

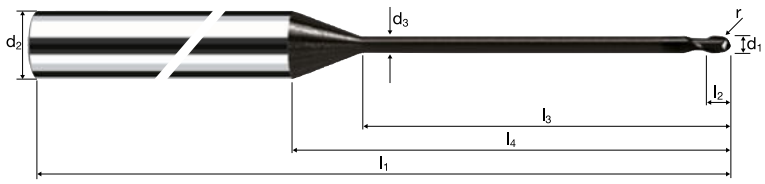
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.30	2	0.002	0.050	0.060	60	100	120	180
		0.50	2	0.004	0.080	0.100	120	200	240	360
		0.60	2	0.005	0.100	0.100	150	250	300	450
		0.80	2	0.007	0.100	0.150	210	350	420	630
		1.00	2	0.008	0.150	0.200	240	400	480	720
		1.50	2	0.012	0.250	0.300	360	600	720	1080
		2.00	2	0.016	0.300	0.400	480	800	960	1440
		3.00	2	0.025	0.450	0.600	750	1250	1500	2250
		4.00	2	0.033	0.600	0.800	990	1650	1980	2970
	Graphite B B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.030	0.040	150	250	300	450
		0.60	2	0.006	0.040	0.050	180	300	360	540
		0.80	2	0.007	0.050	0.060	210	350	420	630
		1.00	2	0.009	0.060	0.080	270	450	540	810
		1.50	2	0.014	0.090	0.120	420	700	840	1260
		2.00	2	0.019	0.120	0.160	570	950	1140	1710
		3.00	2	0.028	0.180	0.240	840	1400	1680	2520
		4.00	2	0.037	0.240	0.320	1110	1850	2220	3330
	Graphite B B	0.30	2	0.003	0.020	0.020	90	150	180	270
		0.50	2	0.005	0.030	0.030	150	250	300	450
		0.60	2	0.006	0.040	0.040	180	300	360	540
		0.80	2	0.007	0.050	0.050	210	350	420	630
		1.00	2	0.009	0.060	0.060	270	450	540	810
		1.50	2	0.014	0.090	0.090	420	700	840	1260
		2.00	2	0.019	0.120	0.120	570	950	1140	1710
		3.00	2	0.028	0.180	0.180	840	1400	1680	2520
		4.00	2	0.037	0.240	0.240	1110	1850	2220	3330

Ball nose end mills MicroX

Shank ø 6mm, cylindrical neck, 20xd

X-Generation

HM XA	λ 30° γ 15°



h4

d1

r

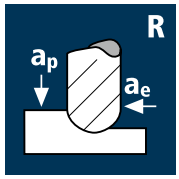
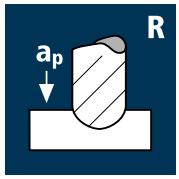
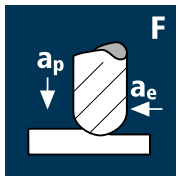
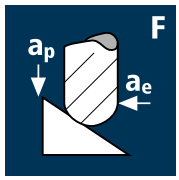
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6074** ø-Code **030**

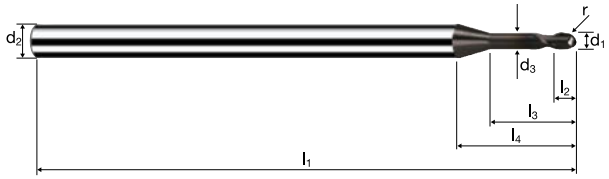
Ø Code	d_1	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6074
030	0.30	6.00	0.25	61	0.30	6.00	17.39	0.150	9.8°	2	●
040	0.40	6.00	0.35	61	0.40	8.00	19.20	0.200	8.7°	2	●
050	0.50	6.00	0.45	61	0.50	10.00	21.01	0.250	7.8°	2	●
060	0.60	6.00	0.55	61	0.60	12.00	22.83	0.300	7.1°	2	●
080	0.80	6.00	0.75	66	0.80	16.00	26.45	0.400	5.9°	2	●
100	1.00	6.00	0.95	69	1.00	20.00	30.08	0.500	5.0°	2	●
120	1.50	6.00	1.40	80	1.50	30.00	39.24	0.750	3.4°	2	●
140	2.00	6.00	1.90	87	2.00	40.00	48.31	1.000	2.5°	2	●
180	3.00	6.00	2.80	105	3.00	60.00	66.63	1.500	1.4°	2	●
220	4.00	6.00	3.70	122	4.00	80.00	84.95	2.000	0.7°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.250	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.350	0.500	240	400	480	720
		1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B B	0.50	2	0.004	0.250	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.350	0.800	180	300	360	540
		1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B B	0.50	2	0.005	0.070	0.100	150	250	300	450
		0.60	2	0.006	0.080	0.120	180	300	360	540
		0.80	2	0.009	0.110	0.160	270	450	540	810
		1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.090	0.090	150	250	300	450
		0.60	2	0.006	0.110	0.110	180	300	360	540
		0.80	2	0.009	0.140	0.140	270	450	540	810
		1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

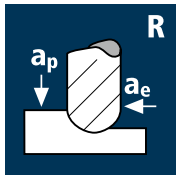
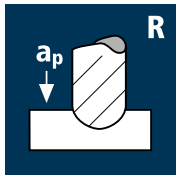
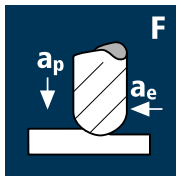
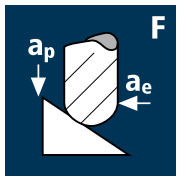
HM MG10	λ 30° γ 5°



C Graphite	CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5784** ø-Code **050**

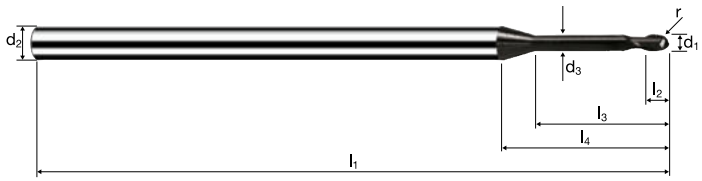
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5784
050	0.50	3.00	0.45	40	0.60	2.50	7.65	0.250	10.1°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	0.300	9.4°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	0.350	8.7°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	0.400	8.1°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	0.450	7.4°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.500	6.9°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.600	5.8°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.750	4.5°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.900	3.3°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	1.000	2.7°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	1.150	1.8°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	1.250	1.2°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	1.400	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	1.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.200	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.300	0.500	240	400	480	720
		1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B B	0.50	2	0.004	0.200	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.300	0.800	180	300	360	540
		1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B B	0.50	2	0.005	0.060	0.090	150	250	300	450
		0.60	2	0.006	0.070	0.110	180	300	360	540
		0.80	2	0.009	0.100	0.140	270	450	540	810
		1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.080	0.080	150	250	300	450
		0.60	2	0.006	0.100	0.100	180	300	360	540
		0.80	2	0.009	0.130	0.130	270	450	540	810
		1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 30° γ 5°

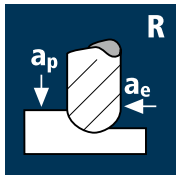
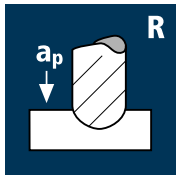
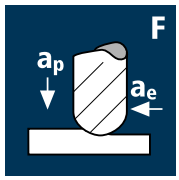
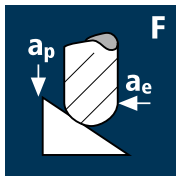


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5786** ø-Code **050**

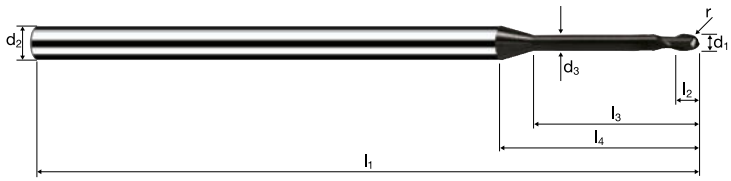
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5786
050	0.50	3.00	0.45	40	0.60	4.00	9.15	0.250	8.4°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	0.300	7.6°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	0.400	6.2°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.500	5.1°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.600	4.2°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.750	3.1°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	1.000	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	1.250	0.8°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	1.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.200	0.200	150	250	300	450
		0.60	2	0.006	0.250	0.250	180	300	360	540
		0.80	2	0.008	0.300	0.300	240	400	480	720
		1.00	2	0.009	0.400	0.400	270	450	540	810
		1.20	2	0.011	0.500	0.500	330	550	660	990
		1.50	2	0.014	0.600	0.600	420	700	840	1260
		2.00	2	0.019	0.800	0.800	570	950	1140	1710
		2.50	2	0.024	1.000	1.000	720	1200	1440	2160
		3.00	2	0.028	1.200	1.200	840	1400	1680	2520
	Graphite B B	0.50	2	0.003	0.150	0.500	90	150	180	270
		0.60	2	0.003	0.200	0.600	90	150	180	270
		0.80	2	0.004	0.250	0.800	120	200	240	360
		1.00	2	0.005	0.300	1.000	150	250	300	450
		1.20	2	0.007	0.350	1.200	210	350	420	630
		1.50	2	0.008	0.450	1.500	240	400	480	720
		2.00	2	0.011	0.600	2.000	330	550	660	990
		2.50	2	0.014	0.750	2.500	420	700	840	1260
		3.00	2	0.016	0.900	3.000	480	800	960	1440
	Graphite B B	0.50	2	0.005	0.050	0.080	150	250	300	450
		0.60	2	0.006	0.060	0.100	180	300	360	540
		0.80	2	0.009	0.080	0.130	270	450	540	810
		1.00	2	0.011	0.100	0.160	330	550	660	990
		1.20	2	0.013	0.120	0.190	390	650	780	1170
		1.50	2	0.016	0.150	0.240	480	800	960	1440
		2.00	2	0.021	0.200	0.320	630	1050	1260	1890
		2.50	2	0.027	0.250	0.400	810	1350	1620	2430
		3.00	2	0.032	0.300	0.480	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.070	0.070	150	250	300	450
		0.60	2	0.006	0.080	0.080	180	300	360	540
		0.80	2	0.009	0.110	0.110	270	450	540	810
		1.00	2	0.011	0.140	0.140	330	550	660	990
		1.20	2	0.013	0.170	0.170	390	650	780	1170
		1.50	2	0.016	0.210	0.210	480	800	960	1440
		2.00	2	0.021	0.280	0.280	630	1050	1260	1890
		2.50	2	0.027	0.350	0.350	810	1350	1620	2430
		3.00	2	0.032	0.420	0.420	960	1600	1920	2880

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 10xd

HM MG10	λ 30° γ 5°

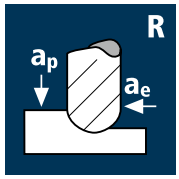
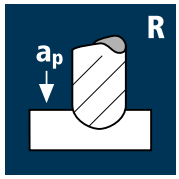
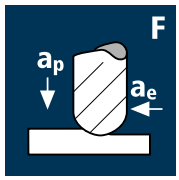
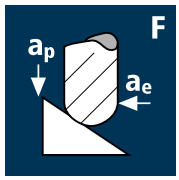


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5787** ø-Code **050**

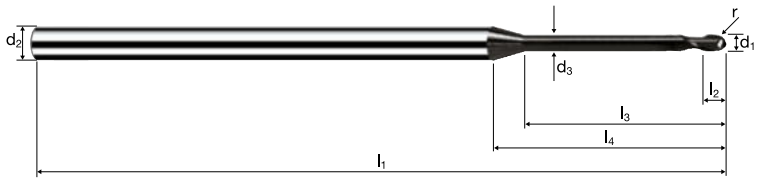
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5787
050	0.50	3.00	0.45	40	0.60	5.00	10.15	0.250	7.5°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	0.300	6.7°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	0.400	5.4°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.500	4.3°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.600	3.5°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.750	2.6°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	1.000	1.4°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	1.250	0.6°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	1.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.00	2	0.007	0.300	0.400	210	350	420	630
		1.20	2	0.008	0.350	0.500	240	400	480	720
		1.50	2	0.011	0.450	0.600	330	550	660	990
		2.00	2	0.014	0.600	0.800	420	700	840	1260
		2.50	2	0.018	0.750	1.000	540	900	1080	1620
		3.00	2	0.021	0.900	1.200	630	1050	1260	1890
	Graphite B B	1.00	2	0.005	0.200	1.000	150	250	300	450
		1.20	2	0.007	0.250	1.200	210	350	420	630
		1.50	2	0.008	0.300	1.500	240	400	480	720
		2.00	2	0.011	0.400	2.000	330	550	660	990
		2.50	2	0.014	0.500	2.500	420	700	840	1260
		3.00	2	0.016	0.600	3.000	480	800	960	1440
	Graphite B B	1.00	2	0.008	0.100	0.140	240	400	480	720
		1.20	2	0.010	0.120	0.170	300	500	600	900
		1.50	2	0.012	0.150	0.210	360	600	720	1080
		2.00	2	0.016	0.200	0.280	480	800	960	1440
		2.50	2	0.020	0.250	0.350	600	1000	1200	1800
		3.00	2	0.024	0.300	0.420	720	1200	1440	2160
	Graphite B B	1.00	2	0.008	0.100	0.100	240	400	480	720
		1.20	2	0.010	0.120	0.120	300	500	600	900
		1.50	2	0.012	0.150	0.150	360	600	720	1080
		2.00	2	0.016	0.200	0.200	480	800	960	1440
		2.50	2	0.020	0.250	0.250	600	1000	1200	1800
		3.00	2	0.024	0.300	0.300	720	1200	1440	2160

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 12xd

HM MG10	λ 30° γ 5°

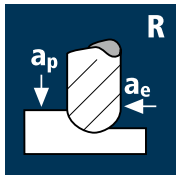
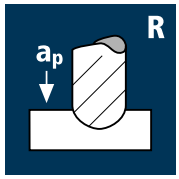
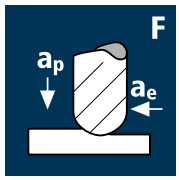
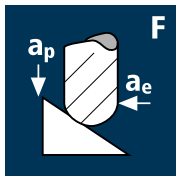


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5791** ø-Code **100**

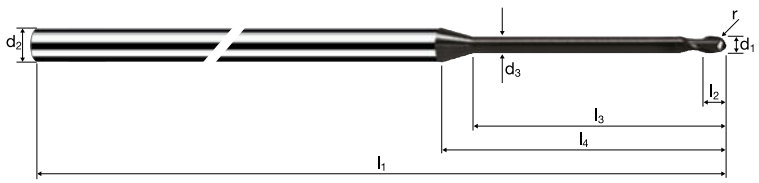
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5791
100	1.00	3.00	0.95	50	1.20	12.00	16.22	0.500	3.8°	2	●
108	1.20	3.00	1.10	60	1.44	14.40	18.34	0.600	3.0°	2	●
120	1.50	3.00	1.40	60	1.80	18.00	21.38	0.750	2.2°	2	●
140	2.00	3.00	1.90	60	2.40	24.00	26.45	1.000	1.2°	2	●
160	2.50	3.00	2.30	70	3.00	30.00	31.70	1.250	0.5°	2	●
180	3.00	3.00	2.80	70	3.60	35.56	36.00	1.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.00	2	0.007	0.200	0.300	210	350	420	630
		1.20	2	0.008	0.250	0.350	240	400	480	720
		1.50	2	0.011	0.300	0.450	330	550	660	990
		2.00	2	0.014	0.400	0.600	420	700	840	1260
		2.50	2	0.018	0.500	0.750	540	900	1080	1620
		3.00	2	0.021	0.600	0.900	630	1050	1260	1890
	Graphite B B	1.00	2	0.005	0.100	1.000	150	250	300	450
		1.20	2	0.007	0.100	1.200	210	350	420	630
		1.50	2	0.008	0.150	1.500	240	400	480	720
		2.00	2	0.011	0.200	2.000	330	550	660	990
		2.50	2	0.014	0.250	2.500	420	700	840	1260
		3.00	2	0.016	0.300	3.000	480	800	960	1440
	Graphite B B	1.00	2	0.008	0.080	0.100	240	400	480	720
		1.20	2	0.010	0.100	0.120	300	500	600	900
		1.50	2	0.012	0.120	0.150	360	600	720	1080
		2.00	2	0.016	0.160	0.200	480	800	960	1440
		2.50	2	0.020	0.200	0.250	600	1000	1200	1800
		3.00	2	0.024	0.240	0.300	720	1200	1440	2160
	Graphite B B	1.00	2	0.008	0.080	0.080	240	400	480	720
		1.20	2	0.010	0.100	0.100	300	500	600	900
		1.50	2	0.012	0.120	0.120	360	600	720	1080
		2.00	2	0.016	0.160	0.160	480	800	960	1440
		2.50	2	0.020	0.200	0.200	600	1000	1200	1800
		3.00	2	0.024	0.240	0.240	720	1200	1440	2160

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 15xd

HM MG10	λ 30° γ 5°

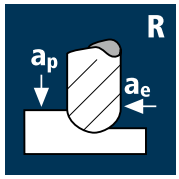
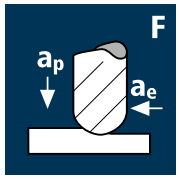
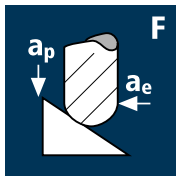


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5793** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B5793
100	1.00	3.00	0.95	60	1.20	15.00	19.22	0.500	3.2°	2	●
108	1.20	3.00	1.10	60	1.44	18.00	21.94	0.600	2.5°	2	●
120	1.50	3.00	1.40	70	1.80	22.50	25.88	0.750	1.8°	2	●
140	2.00	3.00	1.90	70	2.40	30.00	32.45	1.000	1.0°	2	●
160	2.50	3.00	2.30	70	3.00	37.50	39.20	1.250	0.4°	2	●
180	3.00	3.00	2.80	80	3.60	44.56	45.00	1.500	0.0°	2	●

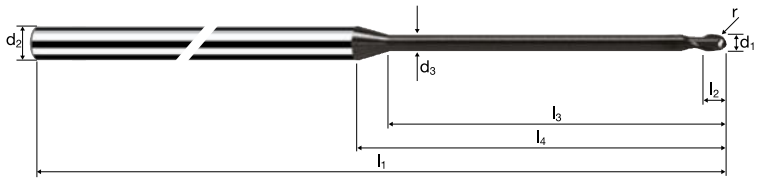
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.00	2	0.007	0.150	0.200	210	350	420	630
		1.20	2	0.008	0.200	0.250	240	400	480	720
		1.50	2	0.011	0.250	0.300	330	550	660	990
		2.00	2	0.014	0.300	0.400	420	700	840	1260
		2.50	2	0.018	0.400	0.500	540	900	1080	1620
		3.00	2	0.021	0.450	0.600	630	1050	1260	1890
	Graphite B B	1.00	2	0.008	0.060	0.080	240	400	480	720
		1.20	2	0.010	0.070	0.100	300	500	600	900
		1.50	2	0.012	0.090	0.120	360	600	720	1080
		2.00	2	0.016	0.120	0.160	480	800	960	1440
		2.50	2	0.020	0.150	0.200	600	1000	1200	1800
		3.00	2	0.024	0.180	0.240	720	1200	1440	2160
	Graphite B B	1.00	2	0.008	0.060	0.060	240	400	480	720
		1.20	2	0.010	0.070	0.070	300	500	600	900
		1.50	2	0.012	0.090	0.090	360	600	720	1080
		2.00	2	0.016	0.120	0.120	480	800	960	1440
		2.50	2	0.020	0.150	0.150	600	1000	1200	1800
		3.00	2	0.024	0.180	0.180	720	1200	1440	2160

Ball nose end mills Microcut

Shank ø 3mm, cylindrical neck, 20xd

Base-X **B**

HM MG10 | λ **30°** γ **5°**



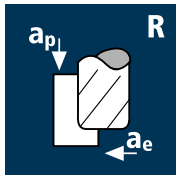
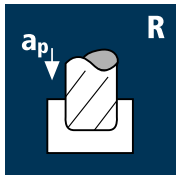
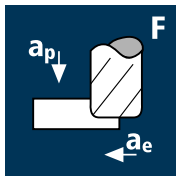
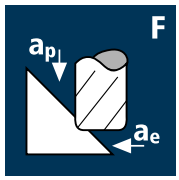
C Graphite

CF/GF Fiber Reinforced Plastics

IV

Example: **Order-N°.** Coating **B** Article-N°. **15795** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r ±0.01	α	z	DIAMANT B15795
100	1.00	3.00	0.95	60	1.20	20.00	24.22	0.500	2.5°	2	●
108	1.20	3.00	1.10	60	1.44	24.00	27.94	0.600	2.0°	2	●
120	1.50	3.00	1.40	70	1.80	30.00	33.38	0.750	1.4°	2	●
140	2.00	3.00	1.90	80	2.40	40.00	42.45	1.000	0.8°	2	●
160	2.50	3.00	2.30	80	3.00	50.00	51.70	1.250	0.3°	2	●
180	3.00	3.00	2.80	90	3.60	59.56	60.00	1.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.50	2	0.018	0.750	0.900	540	900	1080	1620
		2.00	2	0.024	1.000	1.200	720	1200	1440	2160
		3.00	2	0.035	1.500	1.800	1050	1750	2100	3150
		4.00	2	0.047	2.000	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.500	3.000	1770	2950	3540	5310
		6.00	2	0.071	3.000	3.600	2130	3550	4260	6390
	Graphite B B	1.50	2	0.014	0.750	1.500	420	700	840	1260
		2.00	2	0.018	1.000	2.000	540	900	1080	1620
		3.00	2	0.027	1.500	3.000	810	1350	1620	2430
		4.00	2	0.036	2.000	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	3.000	6.000	1650	2750	3300	4950
	Graphite B B	1.50	2	0.020	0.230	0.300	600	1000	1200	1800
		2.00	2	0.027	0.300	0.400	810	1350	1620	2430
		3.00	2	0.040	0.450	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.600	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.750	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.900	1.200	2400	4000	4800	7200
	Graphite B B	1.50	2	0.020	0.300	0.300	600	1000	1200	1800
		2.00	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.040	0.600	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.800	0.800	1590	2650	3180	4770
		5.00	2	0.067	1.000	1.000	2010	3350	4020	6030
		6.00	2	0.080	1.200	1.200	2400	4000	4800	7200

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 3xd

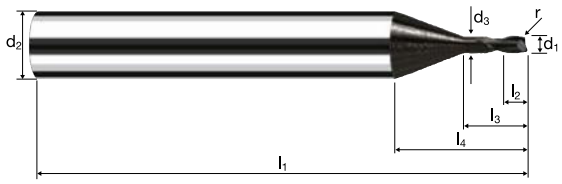
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



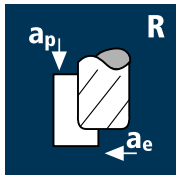
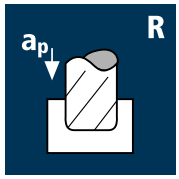
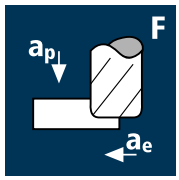
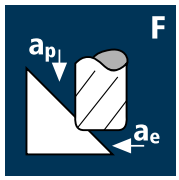
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6032** ø-Code **120**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6032
120	1.50	6.00	1.40	57	1.50	4.50	13.74	0.200	10.0°	2	●
140	2.00	6.00	1.90	57	2.00	6.00	14.31	0.200	8.6°	2	●
180	3.00	6.00	2.80	57	3.00	9.00	15.63	0.200	6.0°	2	●
215	4.00	6.00	3.70	57	4.00	12.00	16.95	0.200	3.7°	2	●
255	5.00	6.00	4.60	57	5.00	15.00	18.27	0.200	1.8°	2	●
295	6.00	6.00	5.50	57	6.00	17.34	18.00	0.200	0.0°	2	●
220	4.00	6.00	3.70	57	4.00	12.00	16.95	0.500	3.7°	2	●
260	5.00	6.00	4.60	57	5.00	15.00	18.27	0.500	2.0°	2	●
300	6.00	6.00	5.50	57	6.00	17.34	18.00	0.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.150	0.200	120	200	240	360
		0.40	2	0.005	0.200	0.250	150	250	300	450
		0.50	2	0.006	0.250	0.300	180	300	360	540
		0.60	2	0.007	0.250	0.350	210	350	420	630
		0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
	Graphite B B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.30	2	0.003	0.150	0.300	90	150	180	270
		0.40	2	0.004	0.200	0.400	120	200	240	360
		0.50	2	0.005	0.250	0.500	150	250	300	450
		0.60	2	0.005	0.250	0.600	150	250	300	450
		0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
	Graphite B B	0.20	2	0.003	0.030	0.040	90	150	180	270
		0.30	2	0.004	0.040	0.060	120	200	240	360
		0.40	2	0.005	0.060	0.080	150	250	300	450
		0.50	2	0.007	0.070	0.100	210	350	420	630
		0.60	2	0.008	0.080	0.120	240	400	480	720
		0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
	Graphite B B	0.20	2	0.003	0.040	0.040	90	150	180	270
		0.30	2	0.004	0.050	0.050	120	200	240	360
		0.40	2	0.005	0.070	0.070	150	250	300	450
		0.50	2	0.007	0.090	0.090	210	350	420	630
		0.60	2	0.008	0.110	0.110	240	400	480	720
		0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

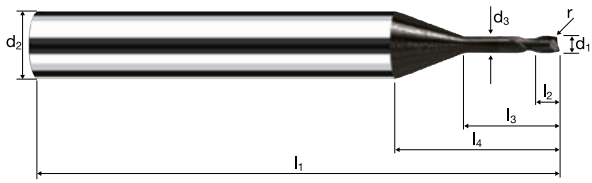
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



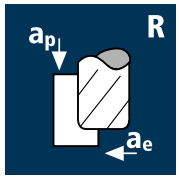
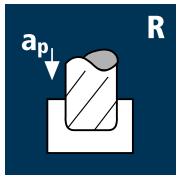
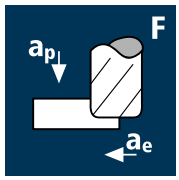
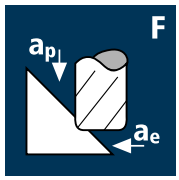
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6034** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6034
020	0.20	6.00	0.18	57	0.20	1.00	17.94	-	13.8°	2	●
030	0.30	6.00	0.25	57	0.30	1.50	18.24	-	13.2°	2	●
018	0.20	6.00	0.18	57	0.20	1.00	17.94	0.050	13.8°	2	●
028	0.30	6.00	0.25	57	0.30	1.50	18.24	0.050	13.2°	2	●
040	0.40	6.00	0.35	57	0.40	2.00	18.46	0.050	12.7°	2	●
048	0.50	6.00	0.45	57	0.50	2.50	13.51	0.050	12.2°	2	●
058	0.60	6.00	0.55	57	0.60	3.00	13.83	0.050	11.7°	2	●
078	0.80	6.00	0.75	57	0.80	4.00	14.45	0.050	10.8°	2	●
096	1.00	6.00	0.95	57	1.00	5.00	15.08	0.050	9.9°	2	●
050	0.50	6.00	0.45	57	0.50	2.50	13.51	0.100	12.2°	2	●
060	0.60	6.00	0.55	57	0.60	3.00	13.83	0.100	11.7°	2	●
080	0.80	6.00	0.75	57	0.80	4.00	14.45	0.100	10.8°	2	●
098	1.00	6.00	0.95	57	1.00	5.00	15.08	0.100	9.9°	2	●
138	2.00	6.00	1.90	57	2.00	10.00	18.31	0.100	6.5°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.80	2	0.009	0.350	0.500	270	450	540	810
		1.00	2	0.012	0.450	0.600	360	600	720	1080
		1.50	2	0.018	0.700	0.900	540	900	1080	1620
		2.00	2	0.024	0.900	1.200	720	1200	1440	2160
		3.00	2	0.035	1.350	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.800	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.250	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.700	3.600	2130	3550	4260	6390
	Graphite B B	0.80	2	0.007	0.350	0.800	210	350	420	630
		1.00	2	0.009	0.450	1.000	270	450	540	810
		1.50	2	0.014	0.700	1.500	420	700	840	1260
		2.00	2	0.018	0.900	2.000	540	900	1080	1620
		3.00	2	0.027	1.350	3.000	810	1350	1620	2430
		4.00	2	0.036	1.800	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.250	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.700	6.000	1650	2750	3300	4950
	Graphite B B	0.80	2	0.011	0.110	0.160	330	550	660	990
		1.00	2	0.013	0.140	0.200	390	650	780	1170
		1.50	2	0.020	0.210	0.300	600	1000	1200	1800
		2.00	2	0.027	0.280	0.400	810	1350	1620	2430
		3.00	2	0.040	0.420	0.600	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.800	1590	2650	3180	4770
		5.00	2	0.067	0.700	1.000	2010	3350	4020	6030
		6.00	2	0.080	0.840	1.200	2400	4000	4800	7200
	Graphite B B	0.80	2	0.011	0.140	0.140	330	550	660	990
		1.00	2	0.013	0.180	0.180	390	650	780	1170
		1.50	2	0.020	0.270	0.270	600	1000	1200	1800
		2.00	2	0.027	0.360	0.360	810	1350	1620	2430
		3.00	2	0.040	0.540	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.720	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.900	0.900	2010	3350	4020	6030
		6.00	2	0.080	1.080	1.080	2400	4000	4800	7200

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 5xd

X-Generation

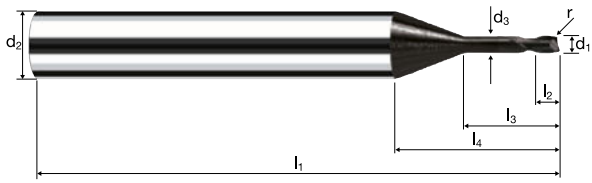
HM
XA

λ 30°
γ 15°

h4

d1

r



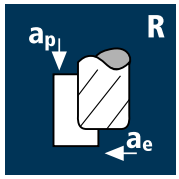
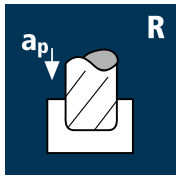
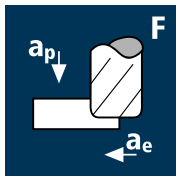
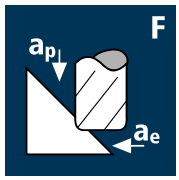
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6034** ø-Code **082**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6034
082	0.80	6.00	0.75	57	0.80	4.00	14.45	0.200	10.9°	2	●
100	1.00	6.00	0.95	57	1.00	5.00	15.08	0.200	9.9°	2	●
120	1.50	6.00	1.40	57	1.50	7.50	16.74	0.200	8.1°	2	●
140	2.00	6.00	1.90	57	2.00	10.00	18.31	0.200	6.6°	2	●
180	3.00	6.00	2.80	57	3.00	15.00	21.63	0.200	4.2°	2	●
182	3.00	6.00	2.80	61	3.00	18.00	24.63	0.200	3.7°	2	●
215	4.00	6.00	3.70	61	4.00	20.00	24.95	0.200	2.5°	2	●
217	4.00	6.00	3.70	66	4.00	25.00	29.95	0.200	2.0°	2	●
255	5.00	6.00	4.60	66	5.00	25.00	28.27	0.200	1.1°	2	●
295	6.00	6.00	5.50	69	6.00	29.34	30.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	61	3.00	15.00	21.63	0.500	4.2°	2	●
220	4.00	6.00	3.70	61	4.00	20.00	24.95	0.500	2.6°	2	●
222	4.00	6.00	3.70	66	4.00	25.00	29.95	0.500	2.1°	2	●
260	5.00	6.00	4.60	66	5.00	25.00	28.27	0.500	1.1°	2	●
300	6.00	6.00	5.50	69	6.00	29.34	30.00	0.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.100	0.200	120	200	240	360
		0.40	2	0.005	0.150	0.250	150	250	300	450
		0.50	2	0.006	0.200	0.300	180	300	360	540
		0.60	2	0.007	0.250	0.350	210	350	420	630
		0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
	Graphite B B	0.20	2	0.002	0.100	0.200	60	100	120	180
		0.30	2	0.003	0.100	0.300	90	150	180	270
		0.40	2	0.004	0.150	0.400	120	200	240	360
		0.50	2	0.005	0.200	0.500	150	250	300	450
		0.60	2	0.005	0.250	0.600	150	250	300	450
		0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
	Graphite B B	0.20	2	0.003	0.020	0.040	90	150	180	270
		0.30	2	0.004	0.040	0.050	120	200	240	360
		0.40	2	0.005	0.050	0.070	150	250	300	450
		0.50	2	0.007	0.060	0.090	210	350	420	630
		0.60	2	0.008	0.070	0.110	240	400	480	720
		0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
	Graphite B B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.30	2	0.004	0.050	0.050	120	200	240	360
		0.40	2	0.005	0.060	0.060	150	250	300	450
		0.50	2	0.007	0.080	0.080	210	350	420	630
		0.60	2	0.008	0.100	0.100	240	400	480	720
		0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

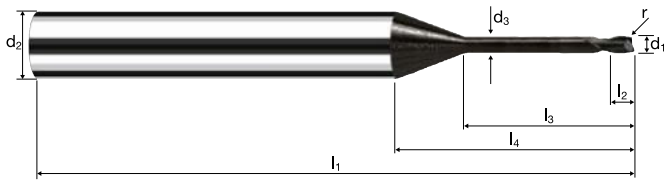
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



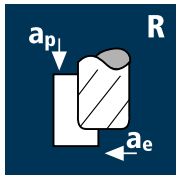
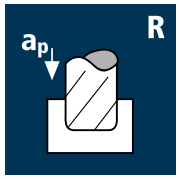
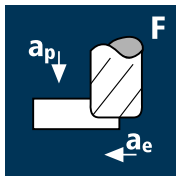
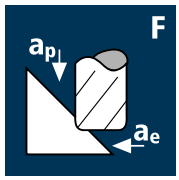
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6036** ø-Code **020**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6036
020	0.20	6.00	0.18	57	0.20	1.60	18.54	-	13.2°	2	●
030	0.30	6.00	0.25	57	0.30	2.40	19.14	-	12.5°	2	●
018	0.20	6.00	0.18	57	0.20	1.60	18.54	0.050	13.2°	2	●
028	0.30	6.00	0.25	57	0.30	2.40	19.14	0.050	12.3°	2	●
040	0.40	6.00	0.35	57	0.40	3.20	19.66	0.050	11.6°	2	●
048	0.50	6.00	0.45	57	0.50	4.00	15.01	0.050	11.0°	2	●
058	0.60	6.00	0.55	57	0.60	4.80	15.63	0.050	10.3°	2	●
078	0.80	6.00	0.75	57	0.80	6.40	16.85	0.050	9.2°	2	●
096	1.00	6.00	0.95	57	1.00	8.00	18.08	0.050	8.2°	2	●
050	0.50	6.00	0.45	57	0.50	4.00	15.01	0.100	11.0°	2	●
060	0.60	6.00	0.55	57	0.60	4.80	15.63	0.100	10.3°	2	●
080	0.80	6.00	0.75	57	0.80	6.40	16.85	0.100	9.2°	2	●
098	1.00	6.00	0.95	57	1.00	8.00	18.08	0.100	8.2°	2	●
138	2.00	6.00	1.90	61	2.00	16.00	24.31	0.100	4.9°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.80	2	0.009	0.300	0.500	270	450	540	810
		1.00	2	0.012	0.400	0.600	360	600	720	1080
		1.50	2	0.018	0.600	0.900	540	900	1080	1620
		2.00	2	0.024	0.800	1.200	720	1200	1440	2160
		3.00	2	0.035	1.200	1.800	1050	1750	2100	3150
		4.00	2	0.047	1.600	2.400	1410	2350	2820	4230
		5.00	2	0.059	2.000	3.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	3.600	2130	3550	4260	6390
	Graphite B B	0.80	2	0.007	0.300	0.800	210	350	420	630
		1.00	2	0.009	0.400	1.000	270	450	540	810
		1.50	2	0.014	0.600	1.500	420	700	840	1260
		2.00	2	0.018	0.800	2.000	540	900	1080	1620
		3.00	2	0.027	1.200	3.000	810	1350	1620	2430
		4.00	2	0.036	1.600	4.000	1080	1800	2160	3240
		5.00	2	0.045	2.000	5.000	1350	2250	2700	4050
		6.00	2	0.055	2.400	6.000	1650	2750	3300	4950
	Graphite B B	0.80	2	0.011	0.100	0.140	330	550	660	990
		1.00	2	0.013	0.120	0.180	390	650	780	1170
		1.50	2	0.020	0.180	0.270	600	1000	1200	1800
		2.00	2	0.027	0.240	0.360	810	1350	1620	2430
		3.00	2	0.040	0.360	0.540	1200	2000	2400	3600
		4.00	2	0.053	0.480	0.720	1590	2650	3180	4770
		5.00	2	0.067	0.600	0.900	2010	3350	4020	6030
		6.00	2	0.080	0.720	1.080	2400	4000	4800	7200
	Graphite B B	0.80	2	0.011	0.130	0.130	330	550	660	990
		1.00	2	0.013	0.160	0.160	390	650	780	1170
		1.50	2	0.020	0.240	0.240	600	1000	1200	1800
		2.00	2	0.027	0.320	0.320	810	1350	1620	2430
		3.00	2	0.040	0.480	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.640	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.800	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.960	0.960	2400	4000	4800	7200

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 8xd

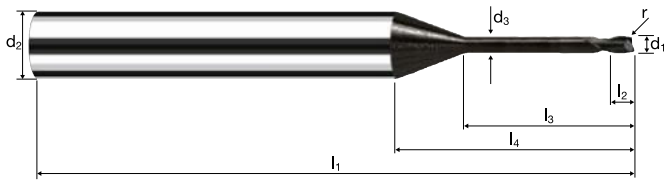
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



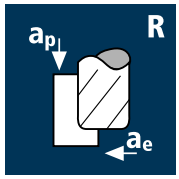
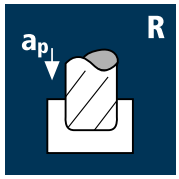
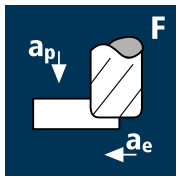
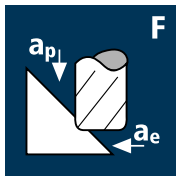
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6036** ø-Code **082**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6036
082	0.80	6.00	0.75	57	0.80	6.40	16.85	0.200	9.3°	2	●
100	1.00	6.00	0.95	57	1.00	8.00	18.08	0.200	8.3°	2	●
120	1.50	6.00	1.40	57	1.50	12.00	21.24	0.200	6.4°	2	●
140	2.00	6.00	1.90	61	2.00	16.00	24.31	0.200	4.9°	2	●
180	3.00	6.00	2.80	66	3.00	24.00	30.63	0.200	2.9°	2	●
215	4.00	6.00	3.70	75	4.00	32.00	36.95	0.200	1.7°	2	●
255	5.00	6.00	4.60	80	5.00	40.00	43.27	0.200	0.7°	2	●
295	6.00	6.00	5.50	87	6.00	47.34	48.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	69	3.00	24.00	30.63	0.500	3.0°	2	●
220	4.00	6.00	3.70	75	4.00	32.00	36.95	0.500	1.7°	2	●
260	5.00	6.00	4.60	80	5.00	40.00	43.27	0.500	0.7°	2	●
300	6.00	6.00	5.50	87	6.00	47.34	48.00	0.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.20	2	0.002	0.100	0.100	60	100	120	180
		0.30	2	0.004	0.100	0.100	120	200	240	360
		0.40	2	0.005	0.150	0.150	150	250	300	450
		0.50	2	0.006	0.200	0.200	180	300	360	540
		0.60	2	0.007	0.250	0.250	210	350	420	630
		0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
	Graphite B B	0.20	2	0.002	0.050	0.200	60	100	120	180
		0.30	2	0.003	0.100	0.300	90	150	180	270
		0.40	2	0.004	0.100	0.400	120	200	240	360
		0.50	2	0.005	0.150	0.500	150	250	300	450
		0.60	2	0.005	0.200	0.600	150	250	300	450
		0.80	2	0.007	0.250	0.800	210	350	420	630
		1.00	2	0.009	0.300	1.000	270	450	540	810
		2.00	2	0.018	0.600	2.000	540	900	1080	1620
	Graphite B B	0.20	2	0.003	0.020	0.030	90	150	180	270
		0.30	2	0.004	0.030	0.050	120	200	240	360
		0.40	2	0.005	0.040	0.060	150	250	300	450
		0.50	2	0.007	0.050	0.080	210	350	420	630
		0.60	2	0.008	0.060	0.100	240	400	480	720
		0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
	Graphite B B	0.20	2	0.003	0.030	0.030	90	150	180	270
		0.30	2	0.004	0.040	0.040	120	200	240	360
		0.40	2	0.005	0.060	0.060	150	250	300	450
		0.50	2	0.007	0.070	0.070	210	350	420	630
		0.60	2	0.008	0.080	0.080	240	400	480	720
		0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

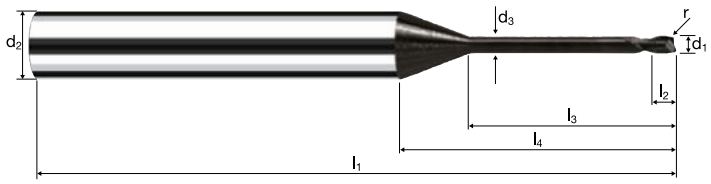
HM
XA

λ 30°
γ 15°

h4

d1

r



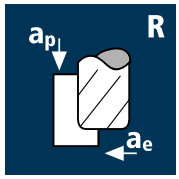
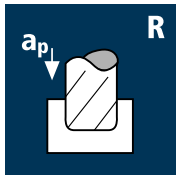
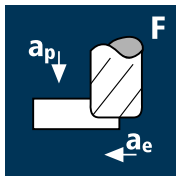
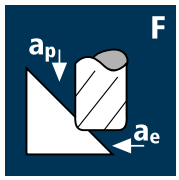
C
Graphite

CF/GF
Fiber Reinforced Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6038** ø-Code **018**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6038
018	0.20	6.00	0.18	57	0.20	2.00	18.94	0.050	12.8°	2	●
028	0.30	6.00	0.25	57	0.30	3.00	19.74	0.050	11.8°	2	●
040	0.40	6.00	0.35	57	0.40	4.00	20.46	0.050	11.0°	2	●
048	0.50	6.00	0.45	57	0.50	5.00	16.01	0.050	10.3°	2	●
058	0.60	6.00	0.55	57	0.60	6.00	16.83	0.050	9.6°	2	●
078	0.80	6.00	0.75	57	0.80	8.00	18.45	0.050	8.4°	2	●
096	1.00	6.00	0.95	57	1.00	10.00	20.08	0.050	7.4°	2	●
050	0.50	6.00	0.45	57	0.50	5.00	16.01	0.100	10.4°	2	●
060	0.60	6.00	0.55	57	0.60	6.00	16.83	0.100	9.6°	2	●
080	0.80	6.00	0.75	57	0.80	8.00	18.45	0.100	8.4°	2	●
098	1.00	6.00	0.95	57	1.00	10.00	20.08	0.100	7.4°	2	●
138	2.00	6.00	1.90	66	2.00	20.00	28.31	0.100	4.2°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.80	2	0.009	0.300	0.300	270	450	540	810
		1.00	2	0.012	0.400	0.400	360	600	720	1080
		1.50	2	0.018	0.600	0.600	540	900	1080	1620
		2.00	2	0.024	0.800	0.800	720	1200	1440	2160
		3.00	2	0.035	1.200	1.200	1050	1750	2100	3150
		4.00	2	0.047	1.600	1.600	1410	2350	2820	4230
		5.00	2	0.059	2.000	2.000	1770	2950	3540	5310
		6.00	2	0.071	2.400	2.400	2130	3550	4260	6390
	Graphite B B	0.80	2	0.007	0.250	0.800	210	350	420	630
		1.00	2	0.009	0.300	1.000	270	450	540	810
		1.50	2	0.014	0.450	1.500	420	700	840	1260
		2.00	2	0.018	0.600	2.000	540	900	1080	1620
		3.00	2	0.027	0.900	3.000	810	1350	1620	2430
		4.00	2	0.036	1.200	4.000	1080	1800	2160	3240
		5.00	2	0.045	1.500	5.000	1350	2250	2700	4050
		6.00	2	0.055	1.800	6.000	1650	2750	3300	4950
	Graphite B B	0.80	2	0.011	0.080	0.130	330	550	660	990
		1.00	2	0.013	0.100	0.160	390	650	780	1170
		1.50	2	0.020	0.150	0.240	600	1000	1200	1800
		2.00	2	0.027	0.200	0.320	810	1350	1620	2430
		3.00	2	0.040	0.300	0.480	1200	2000	2400	3600
		4.00	2	0.053	0.400	0.640	1590	2650	3180	4770
		5.00	2	0.067	0.500	0.800	2010	3350	4020	6030
		6.00	2	0.080	0.600	0.960	2400	4000	4800	7200
	Graphite B B	0.80	2	0.011	0.110	0.110	330	550	660	990
		1.00	2	0.013	0.140	0.140	390	650	780	1170
		1.50	2	0.020	0.210	0.210	600	1000	1200	1800
		2.00	2	0.027	0.280	0.280	810	1350	1620	2430
		3.00	2	0.040	0.420	0.420	1200	2000	2400	3600
		4.00	2	0.053	0.560	0.560	1590	2650	3180	4770
		5.00	2	0.067	0.700	0.700	2010	3350	4020	6030
		6.00	2	0.080	0.840	0.840	2400	4000	4800	7200

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 10xd

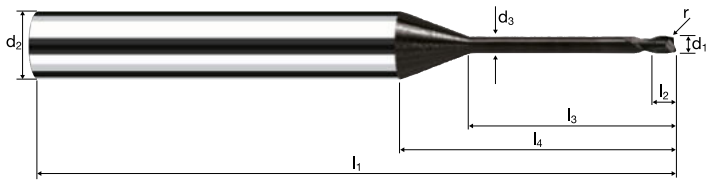
X-Generation

HM XA	λ 30° γ 15°

h4

d1

r



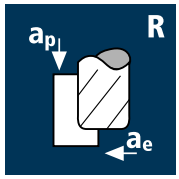
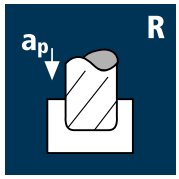
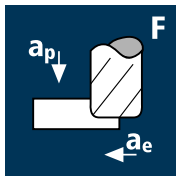
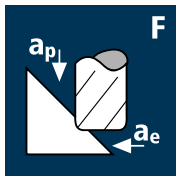
C
Graphite

CF/GF
Fiber Reinforced
Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6038** ø-Code **082**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6038
082	0.80	6.00	0.75	57	0.80	8.00	18.45	0.200	8.4°	2	●
100	1.00	6.00	0.95	57	1.00	10.00	20.08	0.200	7.4°	2	●
120	1.50	6.00	1.40	61	1.50	15.00	24.24	0.200	5.5°	2	●
140	2.00	6.00	1.90	66	2.00	20.00	28.31	0.200	4.2°	2	●
180	3.00	6.00	2.80	75	3.00	30.00	36.63	0.200	2.5°	2	●
215	4.00	6.00	3.70	80	4.00	40.00	44.95	0.200	1.4°	2	●
255	5.00	6.00	4.60	100	5.00	50.00	53.27	0.200	0.6°	2	●
295	6.00	6.00	5.50	100	6.00	59.34	60.00	0.200	0.0°	2	●
185	3.00	6.00	2.80	75	3.00	30.00	36.63	0.500	2.5°	2	●
220	4.00	6.00	3.70	80	4.00	40.00	44.95	0.500	1.4°	2	●
260	5.00	6.00	4.60	100	5.00	50.00	53.27	0.500	0.6°	2	●
300	6.00	6.00	5.50	100	6.00	59.34	60.00	0.500	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.30	2	0.003	0.100	0.100	90	150	180	270
		0.40	2	0.004	0.100	0.150	120	200	240	360
		0.50	2	0.005	0.150	0.200	150	250	300	450
		0.60	2	0.006	0.200	0.250	180	300	360	540
		0.80	2	0.008	0.250	0.300	240	400	480	720
		1.00	2	0.009	0.300	0.400	270	450	540	810
		1.50	2	0.014	0.450	0.600	420	700	840	1260
		2.00	2	0.019	0.600	0.800	570	950	1140	1710
		3.00	2	0.028	0.900	1.200	840	1400	1680	2520
	Graphite B B	0.30	2	0.002	0.050	0.300	60	100	120	180
		0.40	2	0.003	0.100	0.400	90	150	180	270
		0.50	2	0.004	0.100	0.500	120	200	240	360
		0.60	2	0.004	0.100	0.600	120	200	240	360
		0.80	2	0.006	0.150	0.800	180	300	360	540
		1.00	2	0.007	0.200	1.000	210	350	420	630
		1.50	2	0.011	0.300	1.500	330	550	660	990
		2.00	2	0.015	0.400	2.000	450	750	900	1350
		3.00	2	0.022	0.600	3.000	660	1100	1320	1980
	Graphite B B	0.30	2	0.003	0.030	0.040	90	150	180	270
		0.40	2	0.004	0.040	0.060	120	200	240	360
		0.50	2	0.005	0.050	0.070	150	250	300	450
		0.60	2	0.006	0.060	0.080	180	300	360	540
		0.80	2	0.009	0.080	0.110	270	450	540	810
		1.00	2	0.011	0.100	0.140	330	550	660	990
		1.50	2	0.016	0.150	0.210	480	800	960	1440
		2.00	2	0.021	0.200	0.280	630	1050	1260	1890
		3.00	2	0.032	0.300	0.420	960	1600	1920	2880
	Graphite B B	0.30	2	0.003	0.030	0.030	90	150	180	270
		0.40	2	0.004	0.040	0.040	120	200	240	360
		0.50	2	0.005	0.050	0.050	150	250	300	450
		0.60	2	0.006	0.060	0.060	180	300	360	540
		0.80	2	0.009	0.080	0.080	270	450	540	810
		1.00	2	0.011	0.100	0.100	330	550	660	990
		1.50	2	0.016	0.150	0.150	480	800	960	1440
		2.00	2	0.021	0.200	0.200	630	1050	1260	1890
		3.00	2	0.032	0.300	0.300	960	1600	1920	2880

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 12xd

X-Generation

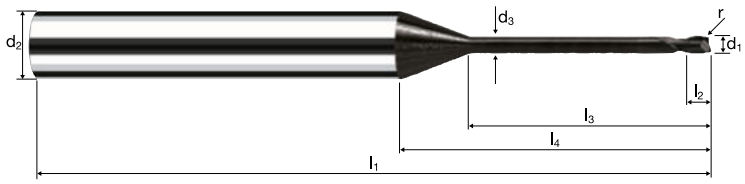
HM
XA

λ **30°**
γ **15°**

h4

d1

r



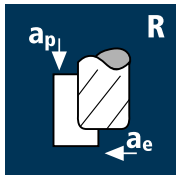
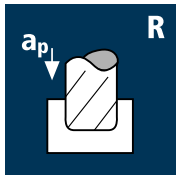
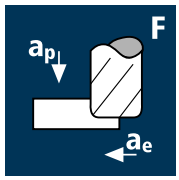
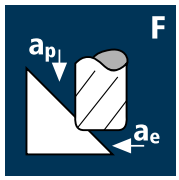
C
Graphite

CF/GF
Fiber Reinforced Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6040** ø-Code **028**

Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6040
028	0.30	6.00	0.25	57	0.30	3.60	20.34	0.050	11.3°	2	●
040	0.40	6.00	0.35	57	0.40	4.80	21.26	0.050	7.8°	2	●
048	0.50	6.00	0.45	57	0.50	6.00	17.01	0.050	9.6°	2	●
058	0.60	6.00	0.55	57	0.60	7.20	18.03	0.050	8.9°	2	●
078	0.80	6.00	0.75	57	0.80	9.60	20.05	0.050	7.7°	2	●
096	1.00	6.00	0.95	61	1.00	12.00	22.08	0.050	6.7°	2	●
050	0.50	6.00	0.45	57	0.50	6.00	17.01	0.100	9.7°	2	●
060	0.60	6.00	0.55	57	0.60	7.20	18.03	0.100	8.9°	2	●
080	0.80	6.00	0.75	57	0.80	9.60	20.05	0.100	7.7°	2	●
098	1.00	6.00	0.95	61	1.00	12.00	22.08	0.100	6.7°	2	●
138	2.00	6.00	1.90	69	2.00	24.00	32.31	0.100	3.7°	2	●
082	0.80	6.00	0.75	57	0.80	9.60	20.05	0.200	7.8°	2	●
100	1.00	6.00	0.95	61	1.00	12.00	22.08	0.200	6.7°	2	●
120	1.50	6.00	1.40	66	1.50	18.00	27.24	0.200	4.9°	2	●
140	2.00	6.00	1.90	69	2.00	24.00	32.31	0.200	3.7°	2	●
180	3.00	6.00	2.80	80	3.00	36.00	42.63	0.200	2.1°	2	●
185	3.00	6.00	2.80	80	3.00	36.00	42.63	0.500	2.1°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.40	2	0.003	0.080	0.100	90	150	180	270
		0.50	2	0.004	0.100	0.150	120	200	240	360
		0.60	2	0.005	0.100	0.200	150	250	300	450
		0.80	2	0.007	0.150	0.250	210	350	420	630
		1.00	2	0.008	0.200	0.300	240	400	480	720
		1.50	2	0.012	0.300	0.450	360	600	720	1080
		2.00	2	0.016	0.400	0.600	480	800	960	1440
		3.00	2	0.025	0.600	0.900	750	1250	1500	2250
	Graphite B B	0.40	2	0.003	0.040	0.400	90	150	180	270
		0.50	2	0.003	0.050	0.500	90	150	180	270
		0.60	2	0.004	0.060	0.600	120	200	240	360
		0.80	2	0.005	0.080	0.800	150	250	300	450
		1.00	2	0.006	0.100	1.000	180	300	360	540
		1.50	2	0.010	0.150	1.500	300	500	600	900
		2.00	2	0.013	0.200	2.000	390	650	780	1170
		3.00	2	0.019	0.300	3.000	570	950	1140	1710
	Graphite B B	0.40	2	0.004	0.030	0.040	120	200	240	360
		0.50	2	0.005	0.040	0.050	150	250	300	450
		0.60	2	0.006	0.050	0.060	180	300	360	540
		0.80	2	0.007	0.060	0.080	210	350	420	630
		1.00	2	0.009	0.080	0.100	270	450	540	810
		1.50	2	0.014	0.120	0.150	420	700	840	1260
		2.00	2	0.019	0.160	0.200	570	950	1140	1710
		3.00	2	0.028	0.240	0.300	840	1400	1680	2520
	Graphite B B	0.40	2	0.004	0.030	0.030	120	200	240	360
		0.50	2	0.005	0.040	0.040	150	250	300	450
		0.60	2	0.006	0.050	0.050	180	300	360	540
		0.80	2	0.007	0.060	0.060	210	350	420	630
		1.00	2	0.009	0.080	0.080	270	450	540	810
		1.50	2	0.014	0.120	0.120	420	700	840	1260
		2.00	2	0.019	0.160	0.160	570	950	1140	1710
		3.00	2	0.028	0.240	0.240	840	1400	1680	2520

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 15xd

X-Generation

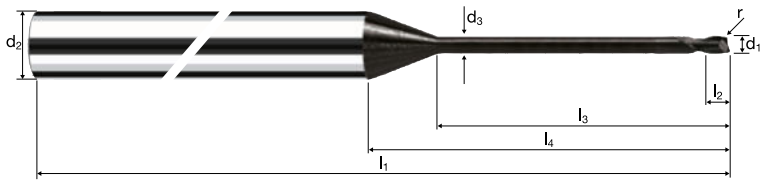
HM
XA

λ **30°**
γ **15°**

h4

d1

r



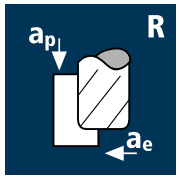
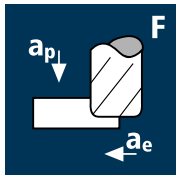
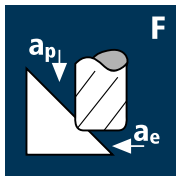
C
Graphite

CF/GF
Fiber Reinforced Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6042** ø-Code **040**

Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	r ±0.005	α	z	DIAPLUS B6042
040	0.40	6.00	0.35	61	0.40	6.00	22.46	0.050	9.7°	2	●
048	0.50	6.00	0.45	57	0.50	7.50	18.51	0.050	8.8°	2	●
058	0.60	6.00	0.55	57	0.60	9.00	19.83	0.050	8.1°	2	●
078	0.80	6.00	0.75	61	0.80	12.00	22.45	0.050	6.9°	2	●
096	1.00	6.00	0.95	66	1.00	15.00	25.08	0.050	5.9°	2	●
050	0.50	6.00	0.45	57	0.50	7.50	18.51	0.100	8.8°	2	●
060	0.60	6.00	0.55	57	0.60	9.00	19.83	0.100	8.1°	2	●
080	0.80	6.00	0.75	61	0.80	12.00	22.45	0.100	6.9°	2	●
098	1.00	6.00	0.95	66	1.00	15.00	25.08	0.100	5.9°	2	●
138	2.00	6.00	1.90	75	2.00	30.00	38.31	0.100	3.1°	2	●
082	0.80	6.00	0.75	61	0.80	12.00	22.45	0.200	6.9°	2	●
100	1.00	6.00	0.95	66	1.00	15.00	25.08	0.200	5.9°	2	●
120	1.50	6.00	1.40	69	1.50	22.50	31.74	0.200	4.2°	2	●
140	2.00	6.00	1.90	75	2.00	30.00	38.31	0.200	3.1°	2	●
180	3.00	6.00	2.80	100	3.00	45.00	51.63	0.200	1.7°	2	●
185	3.00	6.00	2.80	100	3.00	45.00	51.63	0.500	1.7°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.40	2	0.003	0.060	0.100	90	150	180	270
		0.50	2	0.004	0.080	0.100	120	200	240	360
		0.60	2	0.005	0.100	0.100	150	250	300	450
		0.80	2	0.007	0.100	0.150	210	350	420	630
		1.00	2	0.008	0.150	0.200	240	400	480	720
		1.50	2	0.012	0.250	0.300	360	600	720	1080
		2.00	2	0.016	0.300	0.400	480	800	960	1440
		3.00	2	0.025	0.450	0.600	750	1250	1500	2250
	Graphite B B	0.40	2	0.004	0.020	0.030	120	200	240	360
		0.50	2	0.005	0.030	0.040	150	250	300	450
		0.60	2	0.006	0.040	0.050	180	300	360	540
		0.80	2	0.007	0.050	0.060	210	350	420	630
		1.00	2	0.009	0.060	0.080	270	450	540	810
		1.50	2	0.014	0.090	0.120	420	700	840	1260
		2.00	2	0.019	0.120	0.160	570	950	1140	1710
		3.00	2	0.028	0.180	0.240	840	1400	1680	2520
	Graphite B B	0.40	2	0.004	0.020	0.020	120	200	240	360
		0.50	2	0.005	0.030	0.030	150	250	300	450
		0.60	2	0.006	0.040	0.040	180	300	360	540
		0.80	2	0.007	0.050	0.050	210	350	420	630
		1.00	2	0.009	0.060	0.060	270	450	540	810
		1.50	2	0.014	0.090	0.090	420	700	840	1260
		2.00	2	0.019	0.120	0.120	570	950	1140	1710
		3.00	2	0.028	0.180	0.180	840	1400	1680	2520

Corner radius end mills MicroX

Shank ø 6mm, cylindrical neck, 20xd

X-Generation

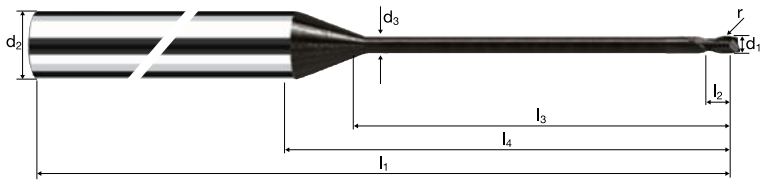
HM
XA

λ **30°**
γ **15°**

h4

d_1

r



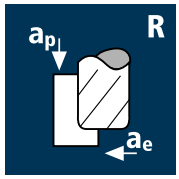
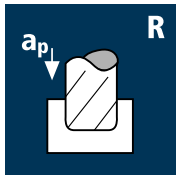
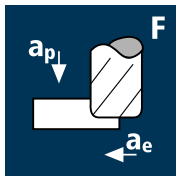
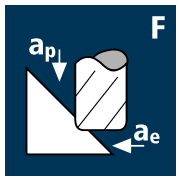
C
Graphite

CF/GF
Fiber Reinforced Plastics

IV

Example:
Order-N°. Coating **B** Article-N°. **6044** ø-Code **040**

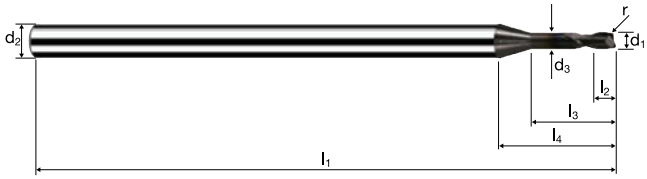
Ø Code	d_1 0/-0.01	d_2 h4	d_3	l_1	l_2	l_3	l_4	r ±0.005	α	z	DIAPLUS B6044
040	0.40	6.00	0.35	61	0.40	8.00	19.20	0.050	8.7°	2	●
048	0.50	6.00	0.45	61	0.50	10.00	21.01	0.050	7.8°	2	●
058	0.60	6.00	0.55	61	0.60	12.00	22.83	0.050	7.0°	2	●
078	0.80	6.00	0.75	66	0.80	16.00	26.45	0.050	5.8°	2	●
096	1.00	6.00	0.95	69	1.00	20.00	30.08	0.050	4.9°	2	●
050	0.50	6.00	0.45	61	0.50	10.00	21.01	0.100	7.8°	2	●
060	0.60	6.00	0.55	61	0.60	12.00	22.83	0.100	7.0°	2	●
080	0.80	6.00	0.75	66	0.80	16.00	26.45	0.100	5.8°	2	●
098	1.00	6.00	0.95	69	1.00	20.00	30.08	0.100	4.9°	2	●
138	2.00	6.00	1.90	87	2.00	40.00	48.31	0.100	2.5°	2	●
082	0.80	6.00	0.75	66	0.80	16.00	26.45	0.200	5.8°	2	●
100	1.00	6.00	0.95	69	1.00	20.00	30.08	0.200	4.9°	2	●
120	1.50	6.00	1.40	80	1.50	30.00	39.24	0.200	3.4°	2	●
140	2.00	6.00	1.90	87	2.00	40.00	48.31	0.200	2.5°	2	●
180	3.00	6.00	2.80	105	3.00	60.00	66.63	0.200	1.4°	2	●
185	3.00	6.00	2.80	105	3.00	60.00	66.63	0.500	1.4°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B B	1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B B	1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B B	1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

Corner radius end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM MG10	λ 25° γ 6°

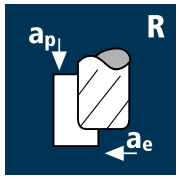
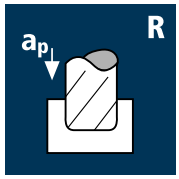
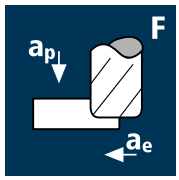
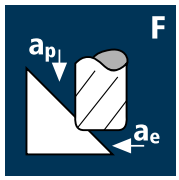


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5754** ø-Code **100**

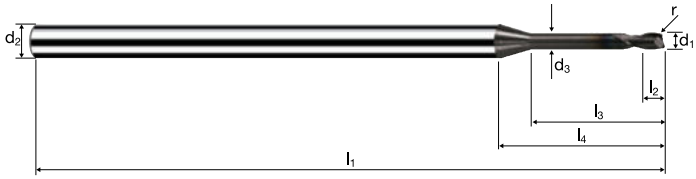
Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DIAMANT B5754
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.200	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.200	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.200	4.2°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.200	2.5°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.200	1.1°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.200	0.0°	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B B	1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B B	1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B B	1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Corner radius end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10	λ 25° γ 6°

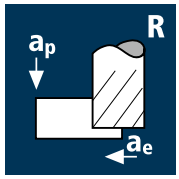
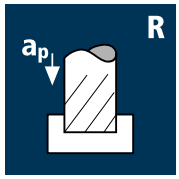
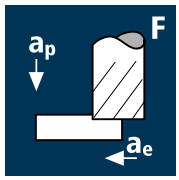
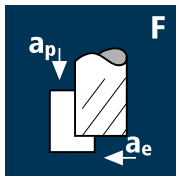


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5756** ø-Code **100**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	r 0/+0.03	α	z	DIAMANT B5756
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.200	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.200	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.200	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.200	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.200	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.200	0.0°	2	●

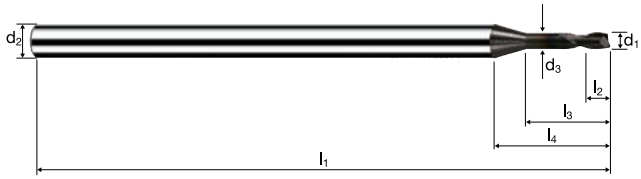
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.250	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.350	0.500	240	400	480	720
		1.00	2	0.009	0.450	0.600	270	450	540	810
		1.20	2	0.011	0.550	0.700	330	550	660	990
		1.50	2	0.014	0.700	0.900	420	700	840	1260
		2.00	2	0.019	0.900	1.200	570	950	1140	1710
		2.50	2	0.024	1.150	1.500	720	1200	1440	2160
		3.00	2	0.028	1.350	1.800	840	1400	1680	2520
	Graphite B B	0.50	2	0.004	0.250	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.350	0.800	180	300	360	540
		1.00	2	0.007	0.450	1.000	210	350	420	630
		1.20	2	0.009	0.550	1.200	270	450	540	810
		1.50	2	0.011	0.700	1.500	330	550	660	990
		2.00	2	0.015	0.900	2.000	450	750	900	1350
		2.50	2	0.018	1.150	2.500	540	900	1080	1620
		3.00	2	0.022	1.350	3.000	660	1100	1320	1980
	Graphite B B	0.50	2	0.005	0.070	0.100	150	250	300	450
		0.60	2	0.006	0.080	0.120	180	300	360	540
		0.80	2	0.009	0.110	0.160	270	450	540	810
		1.00	2	0.011	0.140	0.200	330	550	660	990
		1.20	2	0.013	0.170	0.240	390	650	780	1170
		1.50	2	0.016	0.210	0.300	480	800	960	1440
		2.00	2	0.021	0.280	0.400	630	1050	1260	1890
		2.50	2	0.027	0.350	0.500	810	1350	1620	2430
		3.00	2	0.032	0.420	0.600	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.090	0.090	150	250	300	450
		0.60	2	0.006	0.110	0.110	180	300	360	540
		0.80	2	0.009	0.140	0.140	270	450	540	810
		1.00	2	0.011	0.180	0.180	330	550	660	990
		1.20	2	0.013	0.220	0.220	390	650	780	1170
		1.50	2	0.016	0.270	0.270	480	800	960	1440
		2.00	2	0.021	0.360	0.360	630	1050	1260	1890
		2.50	2	0.027	0.450	0.450	810	1350	1620	2430
		3.00	2	0.032	0.540	0.540	960	1600	1920	2880

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 5xd

HM MG10 | λ **25°** γ **6°**

45°

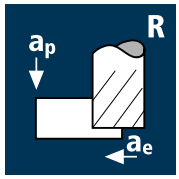
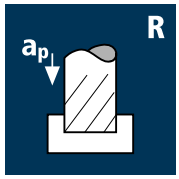
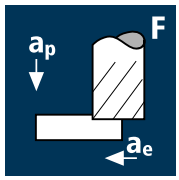
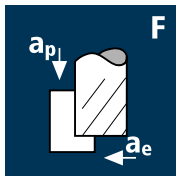


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5714** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5714
050	0.50	3.00	0.45	40	0.60	2.50	7.65	-	9.9°	2	●
060	0.60	3.00	0.55	40	0.72	3.00	7.97	-	9.2°	2	●
070	0.70	3.00	0.65	40	0.84	3.50	8.28	-	8.4°	2	●
080	0.80	3.00	0.75	40	0.96	4.00	8.59	-	7.8°	2	●
090	0.90	3.00	0.85	40	1.08	4.50	8.91	-	7.2°	2	●
100	1.00	3.00	0.95	50	1.20	5.00	9.22	0.04	6.6°	2	●
108	1.20	3.00	1.10	50	1.44	6.00	9.94	0.04	5.5°	2	●
120	1.50	3.00	1.40	50	1.80	7.50	10.88	0.04	4.2°	2	●
132	1.80	3.00	1.70	50	2.16	9.00	11.82	0.04	3.1°	2	●
140	2.00	3.00	1.90	50	2.40	10.00	12.45	0.05	2.4°	2	●
152	2.30	3.00	2.10	50	2.76	11.50	13.57	0.05	1.6°	2	●
160	2.50	3.00	2.30	50	3.00	12.50	14.20	0.05	1.1°	2	●
172	2.80	3.00	2.60	50	3.36	14.00	15.14	0.05	0.5°	2	●
180	3.00	3.00	2.80	50	3.60	14.56	15.00	0.05	0.0°	2	●

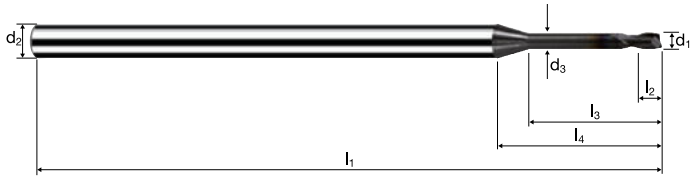
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.200	0.300	150	250	300	450
		0.60	2	0.006	0.250	0.350	180	300	360	540
		0.80	2	0.008	0.300	0.500	240	400	480	720
		1.00	2	0.009	0.400	0.600	270	450	540	810
		1.20	2	0.011	0.500	0.700	330	550	660	990
		1.50	2	0.014	0.600	0.900	420	700	840	1260
		2.00	2	0.019	0.800	1.200	570	950	1140	1710
		2.50	2	0.024	1.000	1.500	720	1200	1440	2160
		3.00	2	0.028	1.200	1.800	840	1400	1680	2520
	Graphite B B	0.50	2	0.004	0.200	0.500	120	200	240	360
		0.60	2	0.004	0.250	0.600	120	200	240	360
		0.80	2	0.006	0.300	0.800	180	300	360	540
		1.00	2	0.007	0.400	1.000	210	350	420	630
		1.20	2	0.009	0.500	1.200	270	450	540	810
		1.50	2	0.011	0.600	1.500	330	550	660	990
		2.00	2	0.015	0.800	2.000	450	750	900	1350
		2.50	2	0.018	1.000	2.500	540	900	1080	1620
		3.00	2	0.022	1.200	3.000	660	1100	1320	1980
	Graphite B B	0.50	2	0.005	0.060	0.090	150	250	300	450
		0.60	2	0.006	0.070	0.110	180	300	360	540
		0.80	2	0.009	0.100	0.140	270	450	540	810
		1.00	2	0.011	0.120	0.180	330	550	660	990
		1.20	2	0.013	0.140	0.220	390	650	780	1170
		1.50	2	0.016	0.180	0.270	480	800	960	1440
		2.00	2	0.021	0.240	0.360	630	1050	1260	1890
		2.50	2	0.027	0.300	0.450	810	1350	1620	2430
		3.00	2	0.032	0.360	0.540	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.080	0.080	150	250	300	450
		0.60	2	0.006	0.100	0.100	180	300	360	540
		0.80	2	0.009	0.130	0.130	270	450	540	810
		1.00	2	0.011	0.160	0.160	330	550	660	990
		1.20	2	0.013	0.190	0.190	390	650	780	1170
		1.50	2	0.016	0.240	0.240	480	800	960	1440
		2.00	2	0.021	0.320	0.320	630	1050	1260	1890
		2.50	2	0.027	0.400	0.400	810	1350	1620	2430
		3.00	2	0.032	0.480	0.480	960	1600	1920	2880

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 8xd

HM MG10 | λ **25°** γ **6°**

45°

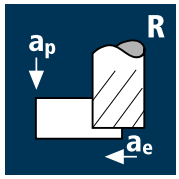
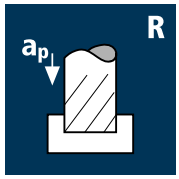
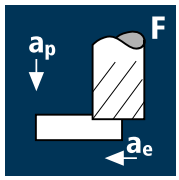
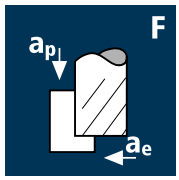


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5716** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5716
050	0.50	3.00	0.45	40	0.60	4.00	9.15	-	8.3°	2	●
060	0.60	3.00	0.55	40	0.72	4.80	9.77	-	7.4°	2	●
080	0.80	3.00	0.75	40	0.96	6.40	10.99	-	6.0°	2	●
100	1.00	3.00	0.95	50	1.20	8.00	12.22	0.04	4.9°	2	●
108	1.20	3.00	1.10	50	1.44	9.60	13.54	0.04	4.0°	2	●
120	1.50	3.00	1.40	60	1.80	12.00	15.38	0.04	3.0°	2	●
140	2.00	3.00	1.90	60	2.40	16.00	18.45	0.05	1.7°	2	●
160	2.50	3.00	2.30	60	3.00	20.00	21.70	0.05	0.7°	2	●
180	3.00	3.00	2.80	60	3.60	23.56	24.00	0.05	0.0°	2	●

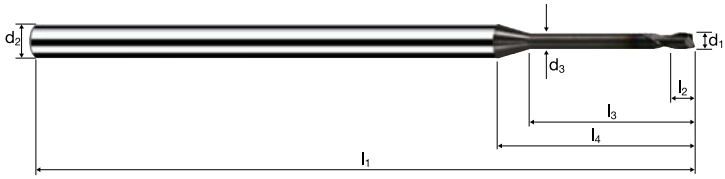
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000min⁻¹ v_f [mm/min]	n=25000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]	n=45000min⁻¹ v_f [mm/min]
	Graphite B B	0.50	2	0.005	0.200	0.200	150	250	300	450
		0.60	2	0.006	0.250	0.250	180	300	360	540
		0.80	2	0.008	0.300	0.300	240	400	480	720
		1.00	2	0.009	0.400	0.400	270	450	540	810
		1.20	2	0.011	0.500	0.500	330	550	660	990
		1.50	2	0.014	0.600	0.600	420	700	840	1260
		2.00	2	0.019	0.800	0.800	570	950	1140	1710
		2.50	2	0.024	1.000	1.000	720	1200	1440	2160
		3.00	2	0.028	1.200	1.200	840	1400	1680	2520
	Graphite B B	0.50	2	0.003	0.150	0.500	90	150	180	270
		0.60	2	0.003	0.200	0.600	90	150	180	270
		0.80	2	0.004	0.250	0.800	120	200	240	360
		1.00	2	0.005	0.300	1.000	150	250	300	450
		1.20	2	0.007	0.350	1.200	210	350	420	630
		1.50	2	0.008	0.450	1.500	240	400	480	720
		2.00	2	0.011	0.600	2.000	330	550	660	990
		2.50	2	0.014	0.750	2.500	420	700	840	1260
		3.00	2	0.016	0.900	3.000	480	800	960	1440
	Graphite B B	0.50	2	0.005	0.050	0.080	150	250	300	450
		0.60	2	0.006	0.060	0.090	180	300	360	540
		0.80	2	0.009	0.080	0.120	270	450	540	810
		1.00	2	0.011	0.100	0.150	330	550	660	990
		1.20	2	0.013	0.120	0.180	390	650	780	1170
		1.50	2	0.016	0.150	0.230	480	800	960	1440
		2.00	2	0.021	0.200	0.300	630	1050	1260	1890
		2.50	2	0.027	0.250	0.380	810	1350	1620	2430
		3.00	2	0.032	0.300	0.450	960	1600	1920	2880
	Graphite B B	0.50	2	0.005	0.070	0.070	150	250	300	450
		0.60	2	0.006	0.080	0.080	180	300	360	540
		0.80	2	0.009	0.110	0.110	270	450	540	810
		1.00	2	0.011	0.140	0.140	330	550	660	990
		1.20	2	0.013	0.170	0.170	390	650	780	1170
		1.50	2	0.016	0.210	0.210	480	800	960	1440
		2.00	2	0.021	0.280	0.280	630	1050	1260	1890
		2.50	2	0.027	0.350	0.350	810	1350	1620	2430
		3.00	2	0.032	0.420	0.420	960	1600	1920	2880

Cylindrical end mills Microcut

Shank ø 3mm, cylindrical neck, 10xd

HM MG10 | λ **25°** γ **6°**

45°

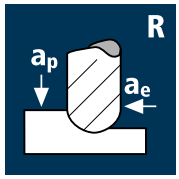
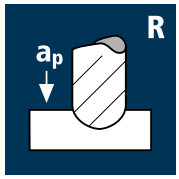
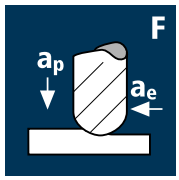
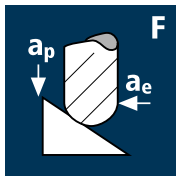


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5717** ø-Code **050**

Ø Code	d_1 ±0.01	d_2 h6	d_3	l_1	l_2	l_3	l_4	45°	α	z	DIAMANT B5717
050	0.50	3.00	0.45	40	0.60	5.00	10.15	-	7.4°	2	●
060	0.60	3.00	0.55	40	0.72	6.00	10.97	-	6.6°	2	●
080	0.80	3.00	0.75	40	0.96	8.00	12.59	-	5.2°	2	●
100	1.00	3.00	0.95	50	1.20	10.00	14.22	0.04	4.2°	2	●
108	1.20	3.00	1.10	50	1.44	12.00	15.94	0.04	3.4°	2	●
120	1.50	3.00	1.40	60	1.80	15.00	18.38	0.04	2.5°	2	●
140	2.00	3.00	1.90	60	2.40	20.00	22.45	0.05	1.4°	2	●
160	2.50	3.00	2.30	60	3.00	25.00	26.70	0.05	0.6°	2	●
180	3.00	3.00	2.80	60	3.60	29.56	30.00	0.05	0.0°	2	●

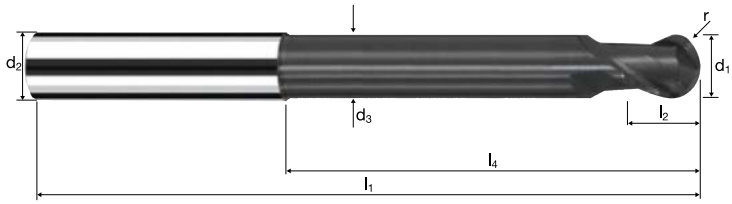
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Graphite B B	6.00	2	0.071	2.700	3.600	1420	2130	2840	4260
		8.00	2	0.094	3.600	4.800	1880	2820	3760	5640
		10.00	2	0.118	4.500	6.000	2360	3540	4720	7080
		12.00	2	0.141	5.400	7.200	2820	4230	5640	8460
	Graphite B B	6.00	2	0.055	2.700	6.000	1100	1650	2200	3300
		8.00	2	0.073	3.600	8.000	1460	2190	2920	4380
		10.00	2	0.091	4.500	10.000	1820	2730	3640	5460
		12.00	2	0.109	5.400	12.000	2180	3270	4360	6540
	Graphite B B	6.00	2	0.080	0.850	1.200	1600	2400	3200	4800
		8.00	2	0.107	1.100	1.600	2140	3210	4280	6420
		10.00	2	0.133	1.400	2.000	2660	3990	5320	7980
		12.00	2	0.160	1.700	2.400	3200	4800	6400	9600
	Graphite B B	6.00	2	0.080	1.100	0.350	1600	2400	3200	4800
		8.00	2	0.107	1.450	0.350	2140	3210	4280	6420
		10.00	2	0.133	1.800	0.350	2660	3990	5320	7980
		12.00	2	0.160	2.150	0.350	3200	4800	6400	9600

Ball nose end mills SpheroX

Tolerance r ±0.005, 6xd

X-Generation

HM XA	λ 30° γ 15°



h4

d1

r

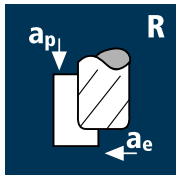
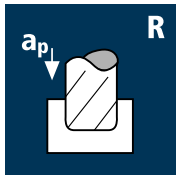
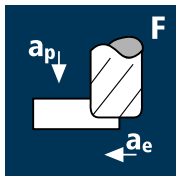
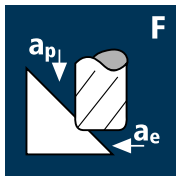
C Graphite

CF/GF Fiber Reinforced Plastics

IV

Example: **Order-N°.** Coating **B** Article-N°. **7484** ø-Code **300**

Ø Code	d1	d2 h4	d3	l1	l2	l3	l4	r ±0.005	z	DIAPLUS B7484
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	2	●

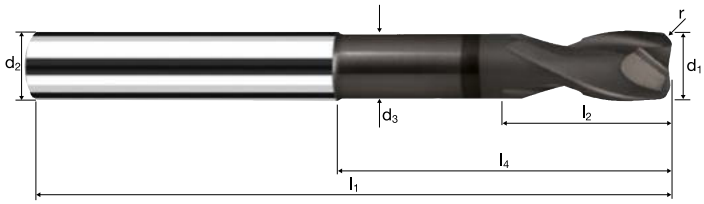
Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Graphite B B	6.00	2	0.056	4.800	2.400	1120	1680	2240	3360
		8.00	2	0.075	6.400	3.200	1500	2250	3000	4500
		10.00	2	0.094	8.000	4.000	1880	2820	3760	5640
		12.00	2	0.113	9.600	4.800	2260	3390	4520	6780
	Graphite B B	6.00	2	0.044	3.000	6.000	880	1320	1760	2640
		8.00	2	0.058	4.000	8.000	1160	1740	2320	3480
		10.00	2	0.073	5.000	10.000	1460	2190	2920	4380
		12.00	2	0.087	6.000	12.000	1740	2610	3480	5220
	Graphite B B	6.00	2	0.080	0.480	2.700	1600	2400	3200	4800
		8.00	2	0.107	0.640	3.600	2140	3210	4280	6420
		10.00	2	0.133	0.800	4.500	2660	3990	5320	7980
		12.00	2	0.160	0.960	5.400	3200	4800	6400	9600
	Graphite B B	6.00	2	0.080	0.900	0.900	1600	2400	3200	4800
		8.00	2	0.107	1.200	1.200	2140	3210	4280	6420
		10.00	2	0.133	1.500	1.500	2660	3990	5320	7980
		12.00	2	0.160	1.800	1.800	3200	4800	6400	9600

Corner radius end mills ToroX

Tolerance r ±0.005, 6xd

X-Generation X

HM XA	λ 30° γ 15°



h4

d1

r

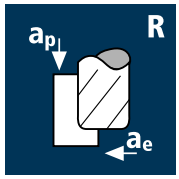
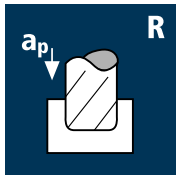
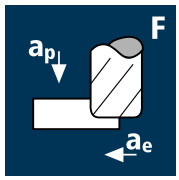
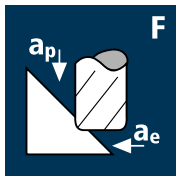
C Graphite

CF/GF Fiber Reinforced Plastics

IV

Example: **Order-N°.** Coating **B** Article-N°. **7284** ø-Code **300**

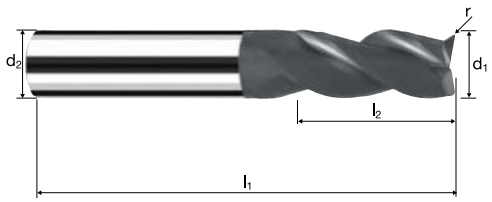
Ø Code	d1 0/-0.01	d2 h4	d3	l1	l2	l3	l4	r ±0.005	z	DIAPLUS B7284
300	6.00	6.00	5.50	80	7.00	42.34	43.00	0.500	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	0.500	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	0.500	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	0.500	2	●
297	6.00	6.00	5.50	80	7.00	42.34	43.00	1.000	2	●
388	8.00	8.00	7.40	90	9.00	52.29	53.00	1.000	2	●
445	10.00	10.00	9.20	105	11.00	63.20	64.00	1.000	2	●
496	12.00	12.00	11.00	120	13.00	73.13	74.00	1.000	2	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Graphite 	2.00	3	0.024	4.000	0.500	720	1080	1440	2160
		3.00	3	0.035	6.000	0.750	1050	1575	2100	3150
		4.00	3	0.047	8.000	1.000	1410	2115	2820	4230
		5.00	3	0.059	10.000	1.250	1770	2655	3540	5310
		6.00	3	0.071	12.000	1.500	2130	3195	4260	6390
		8.00	3	0.094	16.000	2.000	2820	4230	5640	8460
		10.00	3	0.118	20.000	2.500	3540	5310	7080	10620
		12.00	3	0.141	24.000	3.000	4230	6345	8460	12690
	Graphite 	2.00	3	0.018	0.600	2.000	540	810	1080	1620
		3.00	3	0.027	0.900	3.000	810	1215	1620	2430
		4.00	3	0.036	1.200	4.000	1080	1620	2160	3240
		5.00	3	0.045	1.500	5.000	1350	2025	2700	4050
		6.00	3	0.055	1.800	6.000	1650	2475	3300	4950
		8.00	3	0.073	2.400	8.000	2190	3285	4380	6570
		10.00	3	0.091	3.000	10.000	2730	4095	5460	8190
		12.00	3	0.109	3.600	12.000	3270	4905	6540	9810
	Graphite 	2.00	3	0.027	0.200	0.800	810	1215	1620	2430
		3.00	3	0.040	0.300	1.200	1200	1800	2400	3600
		4.00	3	0.053	0.400	1.600	1590	2385	3180	4770
		5.00	3	0.067	0.500	2.000	2010	3015	4020	6030
		6.00	3	0.080	0.600	2.400	2400	3600	4800	7200
		8.00	3	0.107	0.800	3.200	3210	4815	6420	9630
		10.00	3	0.133	1.000	4.000	3990	5985	7980	11970
		12.00	3	0.160	1.200	4.800	4800	7200	9600	14400
	Graphite 	2.00	3	0.027	4.000	0.300	810	1215	1620	2430
		3.00	3	0.040	6.000	0.450	1200	1800	2400	3600
		4.00	3	0.053	8.000	0.600	1590	2385	3180	4770
		5.00	3	0.067	10.000	0.750	2010	3015	4020	6030
		6.00	3	0.080	12.000	0.900	2400	3600	4800	7200
		8.00	3	0.107	16.000	1.200	3210	4815	6420	9630
		10.00	3	0.133	20.000	1.500	3990	5985	7980	11970
		12.00	3	0.160	24.000	1.800	4800	7200	9600	14400

Corner radius end mills

Tolerance r 0/+0.03

HM XA | λ **40°** γ **15°**

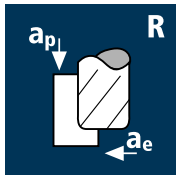
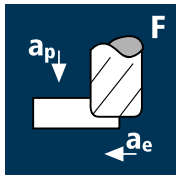
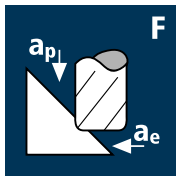


C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5640** ø-Code **140**

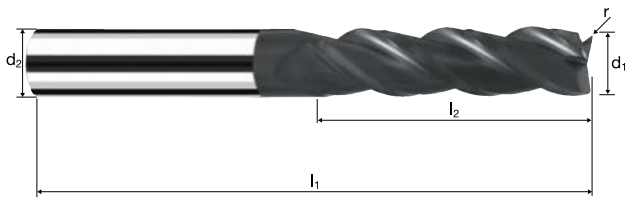
Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	DIAMANT B5640
140	2.00	3.00	40	6.00	9.06	0.150	3.4°	3	●
180	3.00	3.00	40	12.00	-	0.150	0.0°	3	●
220	4.00	4.00	50	14.00	-	0.200	0.0°	3	●
260	5.00	5.00	50	16.00	-	0.300	0.0°	3	●
300	6.00	6.00	63	19.00	-	0.300	0.0°	3	●
391	8.00	8.00	63	19.00	-	0.500	0.0°	3	●
450	10.00	10.00	72	22.00	-	0.500	0.0°	3	●
501	12.00	12.00	75	25.00	-	0.500	0.0°	3	●

Application	Material	d_1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000min⁻¹ v_f [mm/min]	n=15000min⁻¹ v_f [mm/min]	n=20000min⁻¹ v_f [mm/min]	n=30000min⁻¹ v_f [mm/min]
	Graphite B B	2.00	3	0.019	6.000	0.400	570	855	1140	1710
		3.00	3	0.028	9.000	0.600	840	1260	1680	2520
		4.00	3	0.038	12.000	0.800	1140	1710	2280	3420
		5.00	3	0.047	15.000	1.000	1410	2115	2820	4230
		6.00	3	0.056	18.000	1.200	1680	2520	3360	5040
		8.00	3	0.075	24.000	1.600	2250	3375	4500	6750
		10.00	3	0.094	30.000	2.000	2820	4230	5640	8460
		12.00	3	0.113	36.000	2.400	3390	5085	6780	10170
	Graphite B B	2.00	3	0.021	0.200	0.700	630	945	1260	1890
		3.00	3	0.032	0.300	1.050	960	1440	1920	2880
		4.00	3	0.043	0.400	1.400	1290	1935	2580	3870
		5.00	3	0.053	0.500	1.750	1590	2385	3180	4770
		6.00	3	0.064	0.600	2.100	1920	2880	3840	5760
		8.00	3	0.085	0.800	2.800	2550	3825	5100	7650
		10.00	3	0.107	1.000	3.500	3210	4815	6420	9630
		12.00	3	0.128	1.200	4.200	3840	5760	7680	11520
	Graphite B B	2.00	3	0.021	6.000	0.300	630	945	1260	1890
		3.00	3	0.032	9.000	0.450	960	1440	1920	2880
		4.00	3	0.043	12.000	0.600	1290	1935	2580	3870
		5.00	3	0.053	15.000	0.750	1590	2385	3180	4770
		6.00	3	0.064	18.000	0.900	1920	2880	3840	5760
		8.00	3	0.085	24.000	1.200	2550	3825	5100	7650
		10.00	3	0.107	30.000	1.500	3210	4815	6420	9630
		12.00	3	0.128	36.000	1.800	3840	5760	7680	11520

Corner radius end mills

Tolerance r 0/+0.03

HM XA | λ **40°** γ **15°**



C Graphite

CF/GF Fiber Reinforced Plastics

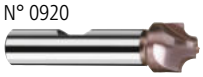
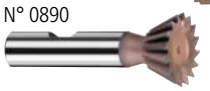
Example: **Order-N°.** Coating **B** Article-N°. **5645** ø-Code **140**

Ø Code	d_1 e8	d_2 h6	l_1	l_2	l_4	r 0/+0.03	α	z	DIAMANT B5645
140	2.00	3.00	60	9.00	12.06	0.150	2.5°	3	●
180	3.00	3.00	60	30.00	-	0.150	0.0°	3	●
220	4.00	4.00	60	30.00	-	0.200	0.0°	3	●
260	5.00	5.00	70	35.00	-	0.300	0.0°	3	●
300	6.00	6.00	100	40.00	-	0.300	0.0°	3	●
391	8.00	8.00	100	40.00	-	0.500	0.0°	3	●
450	10.00	10.00	100	40.00	-	0.500	0.0°	3	●
501	12.00	12.00	97	42.00	-	0.500	0.0°	3	●

passion
for precision
fraisa

End milling tools with special forms

Forming end mills

N° 7920	Base-X B		Rm <850-1300			737
N° 0920 	HSS		Rm <850-1100			739
N° 0915	HSS		Rm <850-1100			741
N° 0910	HSS		Rm <850-1100			743
N° 0905	HSS		Rm <850-1100			745
N° 0890 	HSS		Rm <850-1100			749

V

End milling tools with special forms

Deburring end mills

N° 7930

Base-X B | Rm <850-1100 | 751

N° 7940

Base-X B | Rm <850-1100 | 753

N° 7942

Base-X B | Rm <850-1100 | 755

Universal end mills

N° 7960

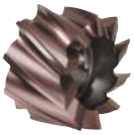
Base-X B | Rm <850-1100 | 757

Shell end mills

N° 3490

HSS | Rm <850-1100 | 759

N° 3209



HSS | Rm <850-1300 | 761

End milling tools for CFC

Cylindrical carbide

N° 20020

Base-X	Wear resistance	d_1 4 – 12	CFK GFK I	CFK GFK II		
B	▬▬▬□□	45°	CFK GFK I	CFK GFK II		763

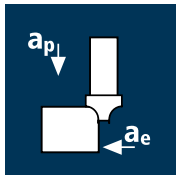
N° 20025

Base-X	Wear resistance	d_1 4 – 12	CFK GFK I	CFK GFK II		
B	▬▬▬□□	45°	CFK GFK I	CFK GFK II		765

N° 20030

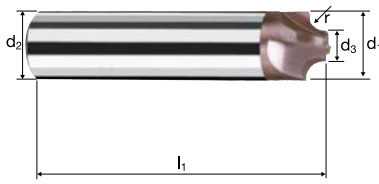
Base-X	Wear resistance	d_1 4 – 12	CFK GFK I	CFK GFK II		
B	▬▬▬□□	45°	CFK GFK I	CFK GFK II		767

V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	4	120	0.025	0.500	0.500	6365	637
		8.00	4	120	0.030	1.000	1.000	4775	573
		10.00	4	120	0.040	2.000	2.000	3820	611
		12.00	4	120	0.050	3.000	3.000	3185	637
	Steel 850 - 1100 N/mm²	6.00	4	100	0.020	0.500	0.500	5305	424
		8.00	4	100	0.025	1.000	1.000	3980	398
		10.00	4	100	0.035	2.000	2.000	3185	446
		12.00	4	100	0.040	3.000	3.000	2655	425
	Steel 1100 - 1300 N/mm²	6.00	4	60	0.015	0.500	0.500	3185	191
		8.00	4	60	0.025	1.000	1.000	2385	239
		10.00	4	60	0.030	2.000	2.000	1910	229
		12.00	4	60	0.035	3.000	3.000	1590	223
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	50	0.015	0.500	0.500	2655	159
		8.00	4	50	0.025	1.000	1.000	1990	199
		10.00	4	50	0.030	2.000	2.000	1590	191
		12.00	4	50	0.035	3.000	3.000	1325	186
	Cast iron (lamellar / spheroidal)	6.00	4	140	0.025	0.500	0.500	7425	743
		8.00	4	140	0.030	1.000	1.000	5570	668
		10.00	4	140	0.040	2.000	2.000	4455	713
		12.00	4	140	0.050	3.000	3.000	3715	743
	Unalloyed copper	6.00	4	160	0.020	0.500	0.500	8490	679
		8.00	4	160	0.025	1.000	1.000	6365	637
		10.00	4	160	0.035	2.000	2.000	5095	713
		12.00	4	160	0.040	3.000	3.000	4245	679
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	60	0.015	0.500	0.500	3185	191
		8.00	4	60	0.025	1.000	1.000	2385	239
		10.00	4	60	0.030	2.000	2.000	1910	229
		12.00	4	60	0.035	3.000	3.000	1590	223
	Wrought aluminium Construction aluminium	6.00	4	180	0.025	0.500	0.500	9550	955
		8.00	4	180	0.030	1.000	1.000	7160	859
		10.00	4	180	0.040	2.000	2.000	5730	917
		12.00	4	180	0.050	3.000	3.000	4775	955

Quarter radius end mills

HM MG10	λ 0° γ 0°

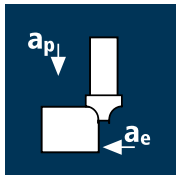


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7920** ø-Code **300**

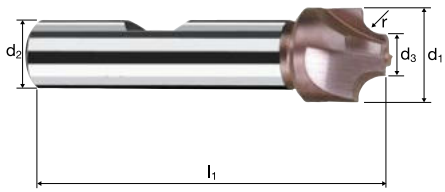
Ø Code	d_1	d_2 h6	d_3 ±0.1	l_1	r JS10	z		UNICUT-4X U7920
300	6.00	6.00	4.50	57	0.500	4		●
303	6.00	6.00	4.00	57	0.750	4		●
391	8.00	8.00	5.50	63	1.000	4		●
394	8.00	8.00	5.00	63	1.250	4		●
397	8.00	8.00	4.50	63	1.500	4		●
450	10.00	10.00	5.00	72	2.000	4		●
453	10.00	10.00	4.50	72	2.500	4		●
501	12.00	12.00	5.00	83	3.000	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	10.00	4	50	0.010	2.000	2.000	1590	64
		12.00	4	50	0.010	2.500	2.500	1325	53
		16.00	4	50	0.025	4.000	4.000	995	100
		20.00	4	50	0.030	5.000	5.000	795	95
		22.00	4	50	0.035	6.000	6.000	725	102
		24.00	5	50	0.040	7.000	7.000	665	133
		28.00	5	50	0.045	8.000	8.000	570	128
		32.00	5	50	0.050	10.000	10.000	495	124
		38.00	6	50	0.060	12.000	12.000	420	151
	Steel 850 - 1100 N/mm²	10.00	4	45	0.010	2.000	2.000	1430	57
		12.00	4	45	0.010	2.500	2.500	1195	48
		16.00	4	45	0.025	4.000	4.000	895	90
		20.00	4	45	0.030	5.000	5.000	715	86
		22.00	4	45	0.035	6.000	6.000	650	91
		24.00	5	45	0.040	7.000	7.000	595	119
		28.00	5	45	0.045	8.000	8.000	510	115
		32.00	5	45	0.050	10.000	10.000	450	113
		38.00	6	45	0.060	12.000	12.000	375	135
	Steel 1100 - 1300 N/mm²	10.00	4	34	0.010	2.000	2.000	1080	43
		12.00	4	34	0.010	2.500	2.500	900	36
		16.00	4	34	0.025	4.000	4.000	675	68
		20.00	4	34	0.030	5.000	5.000	540	65
		22.00	4	34	0.035	6.000	6.000	490	69
		24.00	5	34	0.040	7.000	7.000	450	90
		28.00	5	34	0.045	8.000	8.000	385	87
		32.00	5	34	0.050	10.000	10.000	340	85
		38.00	6	34	0.060	12.000	12.000	285	103
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	10.00	4	25	0.010	2.000	2.000	795	32
		12.00	4	25	0.010	2.500	2.500	665	27
		16.00	4	25	0.025	4.000	4.000	495	50
		20.00	4	25	0.030	5.000	5.000	400	48
		22.00	4	25	0.035	6.000	6.000	360	50
		24.00	5	25	0.040	7.000	7.000	330	66
		28.00	5	25	0.045	8.000	8.000	285	64
		32.00	5	25	0.050	10.000	10.000	250	63
		38.00	6	25	0.060	12.000	12.000	210	76
	Cast iron (lamellar / spheroidal)	10.00	4	42	0.010	2.000	2.000	1335	53
		12.00	4	42	0.010	2.500	2.500	1115	45
		16.00	4	42	0.025	4.000	4.000	835	84
		20.00	4	42	0.030	5.000	5.000	670	80
		22.00	4	42	0.035	6.000	6.000	610	85
		24.00	5	42	0.040	7.000	7.000	555	111
		28.00	5	42	0.045	8.000	8.000	475	107
		32.00	5	42	0.050	10.000	10.000	420	105
		38.00	6	42	0.060	12.000	12.000	350	126
	Unalloyed copper	10.00	4	42	0.010	2.000	2.000	1335	53
		12.00	4	42	0.010	2.500	2.500	1115	45
		16.00	4	42	0.025	4.000	4.000	835	84
		20.00	4	42	0.030	5.000	5.000	670	80
		22.00	4	42	0.035	6.000	6.000	610	85
		24.00	5	42	0.040	7.000	7.000	555	111
		28.00	5	42	0.045	8.000	8.000	475	107
		32.00	5	42	0.050	10.000	10.000	420	105
		38.00	6	42	0.060	12.000	12.000	350	126
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	10.00	4	15	0.010	2.000	2.000	475	19
		12.00	4	15	0.010	2.500	2.500	400	16
		16.00	4	15	0.025	4.000	4.000	300	30
		20.00	4	15	0.030	5.000	5.000	240	29
		22.00	4	15	0.035	6.000	6.000	215	30
		24.00	5	15	0.040	7.000	7.000	200	40
		28.00	5	15	0.045	8.000	8.000	170	38
		32.00	5	15	0.050	10.000	10.000	150	38
		38.00	6	15	0.060	12.000	12.000	125	45
	Wrought aluminium Construction aluminium	10.00	4	50	0.010	2.000	2.000	1590	64
		12.00	4	50	0.010	2.500	2.500	1325	53
		16.00	4	50	0.025	4.000	4.000	995	100
		20.00	4	50	0.030	5.000	5.000	795	95
		22.00	4	50	0.035	6.000	6.000	725	102
		24.00	5	50	0.040	7.000	7.000	665	133
		28.00	5	50	0.045	8.000	8.000	570	128
		32.00	5	50	0.050	10.000	10.000	495	124
		38.00	6	50	0.060	12.000	12.000	420	151

Quarter radius end mills

HSS

HSS-E Co8	λ 8° γ 0°



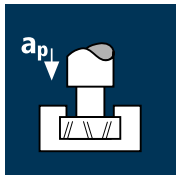
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0920** ø-Code **080**

Ø Code	d_1	d_2 h6	d_3 0/+0.1	l_1	r H11	z	UNICUT-4X U0920
080	8.00	10.00	5.30	56	1.000	4	●
090	9.00	10.00	5.30	56	1.500	4	●
100	10.00	10.00	5.10	56	2.000	4	●
120	12.00	12.00	6.10	63	2.500	4	●
140	14.00	12.00	7.10	63	3.000	4	●
160	16.00	12.00	7.10	63	4.000	4	●
200	20.00	16.00	8.70	70	5.000	4	●
220	22.00	16.00	8.70	70	6.000	4	●
240	24.00	16.00	8.70	70	7.000	5	●
280	28.00	16.00	10.20	70	8.000	5	●
320	32.00	16.00	10.20	75	10.000	5	●
380	38.00	20.00	11.70	80	12.000	6	●
460	46.00	25.00	14.00	94	15.000	6	●
580	58.00	25.00	15.00	100	20.000	6	●

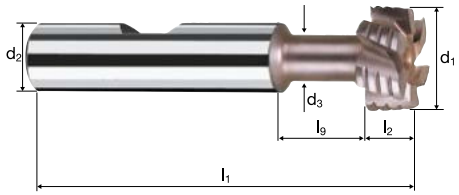
V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	16.00	6	50	0.020	8.000	16.000	995	119
		18.00	6	50	0.020	8.000	18.000	885	106
		21.00	6	50	0.030	9.000	21.000	760	137
		25.00	6	50	0.040	11.000	25.000	635	152
		28.00	6	50	0.040	12.000	28.000	570	137
		32.00	6	50	0.050	14.000	32.000	495	149
		40.00	8	50	0.060	18.000	40.000	400	192
	Steel 850 - 1100 N/mm²	16.00	6	45	0.020	8.000	16.000	895	107
		18.00	6	45	0.020	8.000	18.000	795	95
		21.00	6	45	0.030	9.000	21.000	680	122
		25.00	6	45	0.040	11.000	25.000	575	138
		28.00	6	45	0.040	12.000	28.000	510	122
		32.00	6	45	0.050	14.000	32.000	450	135
		40.00	8	45	0.060	18.000	40.000	360	173
	Steel 1100 - 1300 N/mm²	16.00	6	34	0.020	8.000	16.000	675	81
		18.00	6	34	0.020	8.000	18.000	600	72
		21.00	6	34	0.030	9.000	21.000	515	93
		25.00	6	34	0.040	11.000	25.000	435	104
		28.00	6	34	0.040	12.000	28.000	385	92
		32.00	6	34	0.050	14.000	32.000	340	102
		40.00	8	34	0.060	18.000	40.000	270	130
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	16.00	6	25	0.020	8.000	16.000	495	59
		18.00	6	25	0.020	8.000	18.000	440	53
		21.00	6	25	0.030	9.000	21.000	380	68
		25.00	6	25	0.040	11.000	25.000	320	77
		28.00	6	25	0.040	12.000	28.000	285	68
		32.00	6	25	0.050	14.000	32.000	250	75
		40.00	8	25	0.060	18.000	40.000	200	96
	Cast iron (lamellar / spheroidal)	16.00	6	42	0.020	8.000	16.000	835	100
		18.00	6	42	0.020	8.000	18.000	745	89
		21.00	6	42	0.030	9.000	21.000	635	114
		25.00	6	42	0.040	11.000	25.000	535	128
		28.00	6	42	0.040	12.000	28.000	475	114
		32.00	6	42	0.050	14.000	32.000	420	126
		40.00	8	42	0.060	18.000	40.000	335	161
	Unalloyed copper	16.00	6	42	0.020	8.000	16.000	835	100
		18.00	6	42	0.020	8.000	18.000	745	89
		21.00	6	42	0.030	9.000	21.000	635	114
		25.00	6	42	0.040	11.000	25.000	535	128
		28.00	6	42	0.040	12.000	28.000	475	114
		32.00	6	42	0.050	14.000	32.000	420	126
		40.00	8	42	0.060	18.000	40.000	335	161
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	16.00	6	15	0.020	8.000	16.000	300	36
		18.00	6	15	0.020	8.000	18.000	265	32
		21.00	6	15	0.030	9.000	21.000	225	41
		25.00	6	15	0.040	11.000	25.000	190	46
		28.00	6	15	0.040	12.000	28.000	170	41
		32.00	6	15	0.050	14.000	32.000	150	45
		40.00	8	15	0.060	18.000	40.000	120	58
	Wrought aluminium Construction aluminium	16.00	6	50	0.020	8.000	16.000	995	119
		18.00	6	50	0.020	8.000	18.000	885	106
		21.00	6	50	0.030	9.000	21.000	760	137
		25.00	6	50	0.040	11.000	25.000	635	152
		28.00	6	50	0.040	12.000	28.000	570	137
		32.00	6	50	0.050	14.000	32.000	495	149
		40.00	8	50	0.060	18.000	40.000	400	192

T-groove end mills

HSS

HSS-E Co8	λ 7° γ 10°



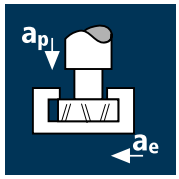
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0915** ø-Code **140**

Ø Code	d_1 d11	d_2 h6	d_3 h12	l_1	l_2 d11	l_9	z	UNICUT-4X U0915
140	16.00	10.00	7.00	62	8.00	13.50	6	●
160	18.00	12.00	8.00	70	8.00	16.50	6	●
180	21.00	12.00	10.00	74	9.00	19.50	6	●
200	25.00	16.00	12.00	82	11.00	22.50	6	●
220	28.00	16.00	12.00	83	12.00	22.50	6	●
240	32.00	16.00	15.00	90	14.00	27.50	6	●
260	40.00	25.00	19.00	108	18.00	33.50	8	●

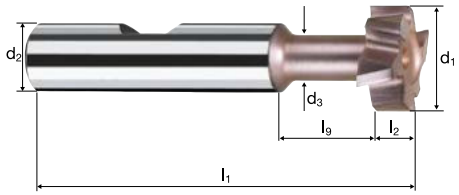
V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	11.00	4	50	0.010	4.000	1.100	1445	58
		12.50	4	50	0.010	6.000	1.250	1275	51
		16.00	4	50	0.025	8.000	1.600	995	100
		18.00	6	50	0.025	8.000	1.800	885	133
		21.00	6	50	0.040	9.000	2.100	760	182
		25.00	6	50	0.045	11.000	2.500	635	172
		32.00	6	50	0.060	14.000	3.200	495	178
		40.00	8	50	0.070	18.000	4.000	400	224
		50.00	8	50	0.090	22.000	5.000	320	230
	Steel 850 - 1100 N/mm²	11.00	4	45	0.010	4.000	1.100	1300	52
		12.50	4	45	0.010	6.000	1.250	1145	46
		16.00	4	45	0.025	8.000	1.600	895	90
		18.00	6	45	0.025	8.000	1.800	795	119
		21.00	6	45	0.040	9.000	2.100	680	163
		25.00	6	45	0.045	11.000	2.500	575	155
		32.00	6	45	0.060	14.000	3.200	450	162
		40.00	8	45	0.070	18.000	4.000	360	202
		50.00	8	45	0.090	22.000	5.000	285	205
	Steel 1100 - 1300 N/mm²	11.00	4	34	0.010	4.000	1.100	985	39
		12.50	4	34	0.010	6.000	1.250	865	35
		16.00	4	34	0.025	8.000	1.600	675	68
		18.00	6	34	0.025	8.000	1.800	600	90
		21.00	6	34	0.040	9.000	2.100	515	124
		25.00	6	34	0.045	11.000	2.500	435	118
		32.00	6	34	0.060	14.000	3.200	340	122
		40.00	8	34	0.070	18.000	4.000	270	151
		50.00	8	34	0.090	22.000	5.000	215	155
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	11.00	4	25	0.010	4.000	1.100	725	29
		12.50	4	25	0.010	6.000	1.250	635	25
		16.00	4	25	0.025	8.000	1.600	495	50
		18.00	6	25	0.025	8.000	1.800	440	66
		21.00	6	25	0.040	9.000	2.100	380	91
		25.00	6	25	0.045	11.000	2.500	320	86
		32.00	6	25	0.060	14.000	3.200	250	90
		40.00	8	25	0.070	18.000	4.000	200	112
		50.00	8	25	0.090	22.000	5.000	160	115
	Cast iron (lamellar / spheroidal)	11.00	4	42	0.010	4.000	1.100	1215	49
		12.50	4	42	0.010	6.000	1.250	1070	43
		16.00	4	42	0.025	8.000	1.600	835	84
		18.00	6	42	0.025	8.000	1.800	745	112
		21.00	6	42	0.040	9.000	2.100	635	152
		25.00	6	42	0.045	11.000	2.500	535	145
		32.00	6	42	0.060	14.000	3.200	420	151
		40.00	8	42	0.070	18.000	4.000	335	188
		50.00	8	42	0.090	22.000	5.000	265	191
	Unalloyed copper	11.00	4	42	0.010	4.000	1.100	1215	49
		12.50	4	42	0.010	6.000	1.250	1070	43
		16.00	4	42	0.025	8.000	1.600	835	84
		18.00	6	42	0.025	8.000	1.800	745	112
		21.00	6	42	0.040	9.000	2.100	635	152
		25.00	6	42	0.045	11.000	2.500	535	145
		32.00	6	42	0.060	14.000	3.200	420	151
		40.00	8	42	0.070	18.000	4.000	335	188
		50.00	8	42	0.090	22.000	5.000	265	191
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	11.00	4	15	0.010	4.000	1.100	435	17
		12.50	4	15	0.010	6.000	1.250	380	15
		16.00	4	15	0.025	8.000	1.600	300	30
		18.00	6	15	0.025	8.000	1.800	265	40
		21.00	6	15	0.040	9.000	2.100	225	54
		25.00	6	15	0.045	11.000	2.500	190	51
		32.00	6	15	0.060	14.000	3.200	150	54
		40.00	8	15	0.070	18.000	4.000	120	67
		50.00	8	15	0.090	22.000	5.000	95	68
	Wrought aluminium Construction aluminium	11.00	4	50	0.010	4.000	1.100	1445	58
		12.50	4	50	0.010	6.000	1.250	1275	51
		16.00	4	50	0.025	8.000	1.600	995	100
		18.00	6	50	0.025	8.000	1.800	885	133
		21.00	6	50	0.040	9.000	2.100	760	182
		25.00	6	50	0.045	11.000	2.500	635	172
		32.00	6	50	0.060	14.000	3.200	495	178
		40.00	8	50	0.070	18.000	4.000	400	224
		50.00	8	50	0.090	22.000	5.000	320	230

T-groove end mills

HSS

HSS-E Co8	λ 12° γ 12°



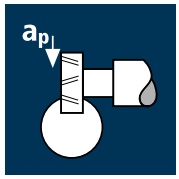
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0910** ø-Code **100**

Ø Code	d_1 d11	d_2 h6	d_3	l_1	l_2 k11	l_9	z	UNICUT-4X U0910
100	11.00	10.00	4.00	54	4.00	9.00	4	●
120	12.50	10.00	5.00	57	6.00	10.50	4	●
140	16.00	10.00	7.00	62	8.00	13.50	4	●
160	18.00	12.00	8.00	70	8.00	16.50	6	●
180	21.00	12.00	10.00	74	9.00	19.50	6	●
200	25.00	16.00	12.00	82	11.00	22.50	6	●
220	32.00	16.00	15.00	90	14.00	27.50	6	●
240	40.00	25.00	19.00	108	18.00	33.50	8	●
260	50.00	32.00	25.00	124	22.00	41.50	8	●
500*	12.00	8.00	5.00	54	2.50	15.00	8	●
520*	16.00	8.00	6.00	56	3.00	16.50	8	●
540*	20.00	10.00	8.00	62	4.00	17.50	8	●
560*	25.00	10.00	9.00	65	5.00	19.50	10	●
580*	32.00	12.00	10.00	73	6.00	21.50	12	●
600*	40.00	12.00	11.00	77	8.00	23.50	12	●
620*	50.00	16.00	14.00	84	10.00	25.50	14	●

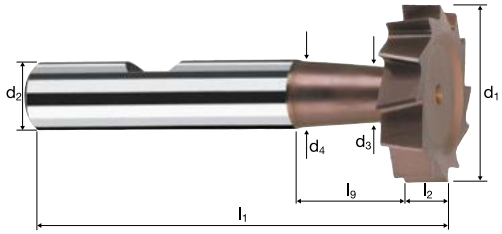
* Conical neck

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	7.50	8	55	0.005	2.000	1.500	2335	93
		10.50	8	55	0.010	2.900	2.000	1665	133
		13.50	8	55	0.010	3.800	2.500	1295	104
		16.50	8	55	0.025	5.000	3.000	1060	212
		19.50	10	55	0.035	5.500	3.000	900	315
		22.50	10	55	0.040	6.600	4.000	780	312
	Steel 850 - 1100 N/mm²	7.50	8	45	0.005	2.000	1.500	1910	76
		10.50	8	45	0.010	2.900	2.000	1365	109
		13.50	8	45	0.010	3.800	2.500	1060	85
		16.50	8	45	0.025	5.000	3.000	870	174
		19.50	10	45	0.035	5.500	3.000	735	257
		22.50	10	45	0.040	6.600	4.000	635	254
	Steel 1100 - 1300 N/mm²	7.50	8	34	0.005	2.000	1.500	1445	58
		10.50	8	34	0.010	2.900	2.000	1030	82
		13.50	8	34	0.010	3.800	2.500	800	64
		16.50	8	34	0.025	5.000	3.000	655	131
		19.50	10	34	0.035	5.500	3.000	555	194
		22.50	10	34	0.040	6.600	4.000	480	192
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	7.50	8	25	0.005	2.000	1.500	1060	42
		10.50	8	25	0.010	2.900	2.000	760	61
		13.50	8	25	0.010	3.800	2.500	590	47
		16.50	8	25	0.025	5.000	3.000	480	96
		19.50	10	25	0.035	5.500	3.000	410	144
		22.50	10	25	0.040	6.600	4.000	355	142
	Cast iron (lamellar / spheroidal)	7.50	8	21	0.005	2.000	1.500	890	36
		10.50	8	21	0.010	2.900	2.000	635	51
		13.50	8	21	0.010	3.800	2.500	495	40
		16.50	8	21	0.025	5.000	3.000	405	81
		19.50	10	21	0.035	5.500	3.000	345	121
		22.50	10	21	0.040	6.600	4.000	295	118
	Unalloyed copper	7.50	8	21	0.005	2.000	1.500	890	36
		10.50	8	21	0.010	2.900	2.000	635	51
		13.50	8	21	0.010	3.800	2.500	495	40
		16.50	8	21	0.025	5.000	3.000	405	81
		19.50	10	21	0.035	5.500	3.000	345	121
		22.50	10	21	0.040	6.600	4.000	295	118
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	7.50	8	15	0.005	2.000	1.500	635	25
		10.50	8	15	0.010	2.900	2.000	455	36
		13.50	8	15	0.010	3.800	2.500	355	28
		16.50	8	15	0.025	5.000	3.000	290	58
		19.50	10	15	0.035	5.500	3.000	245	86
		22.50	10	15	0.040	6.600	4.000	210	84
	Wrought aluminium Construction aluminium	7.50	8	26	0.005	2.000	1.500	1105	44
		10.50	8	26	0.010	2.900	2.000	790	63
		13.50	8	26	0.010	3.800	2.500	615	49
		16.50	8	26	0.025	5.000	3.000	500	100
		19.50	10	26	0.035	5.500	3.000	425	149
		22.50	10	26	0.040	6.600	4.000	370	148

Slotting end mills

HSS

HSS PM/F	λ 10° γ 8°



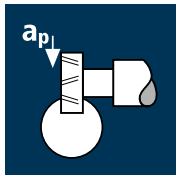
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0905** ø-Code **100**

Ø Code	d_1 h11	d_2 h6	d_3	d_4	l_1	l_2 e8	l_9	z		UNICUT-4X U0905
100	4.50	6.00	1.80	5.50	50	1.00	12.00	8		●
150	7.50	6.00	2.80	5.50	50	1.50	11.00	8		●
160	7.50	6.00	3.20	5.50	50	2.00	10.00	8		●
200	10.50	6.00	4.00	5.50	50	2.00	11.00	8		●
210	10.50	6.00	4.00	5.50	50	2.50	10.00	8		●
220	10.50	6.00	4.20	5.50	50	3.00	9.00	8		●
310	13.50	10.00	4.60	9.50	56	2.50	13.00	8		●
320	13.50	10.00	4.60	9.50	56	3.00	12.00	8		●
330	13.50	10.00	4.60	9.50	56	4.00	11.00	8		●
360	16.50	10.00	4.60	9.50	56	3.00	12.00	8		●
370	16.50	10.00	4.60	9.50	56	4.00	11.00	8		●
380	16.50	10.00	5.00	9.50	56	5.00	10.00	8		●
410	19.50	10.00	5.60	9.50	63	3.00	18.00	10		●
420	19.50	10.00	5.60	9.50	63	4.00	17.00	10		●
430	19.50	10.00	6.00	9.50	63	5.00	16.00	10		●
440	19.50	10.00	6.50	9.50	63	6.00	15.00	10		●
500	22.50	10.00	6.00	9.50	63	4.00	17.00	10		●
510	22.50	10.00	6.00	9.50	63	5.00	16.00	10		●
520	22.50	10.00	6.50	9.50	63	6.00	15.00	10		●
540	22.50	10.00	6.50	9.50	63	8.00	14.00	10		●

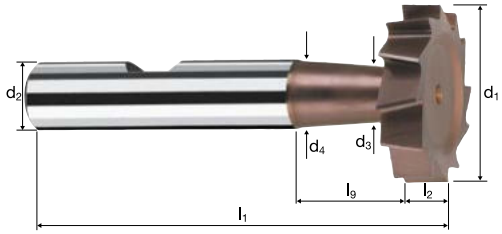
V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	25.50	12	55	0.045	7.000	5.000	685	370
		28.50	12	55	0.050	8.200	10.000	615	369
		32.50	12	55	0.060	9.800	6.000	540	389
		45.50	14	55	0.080	12.000	10.000	385	431
	Steel 850 - 1100 N/mm²	25.50	12	45	0.045	7.000	5.000	560	302
		28.50	12	45	0.050	8.200	10.000	505	303
		32.50	12	45	0.060	9.800	6.000	440	317
		45.50	14	45	0.080	12.000	10.000	315	353
	Steel 1100 - 1300 N/mm²	25.50	12	34	0.045	7.000	5.000	425	230
		28.50	12	34	0.050	8.200	10.000	380	228
		32.50	12	34	0.060	9.800	6.000	335	241
		45.50	14	34	0.080	12.000	10.000	240	269
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	25.50	12	25	0.045	7.000	5.000	310	167
		28.50	12	25	0.050	8.200	10.000	280	168
		32.50	12	25	0.060	9.800	6.000	245	176
		45.50	14	25	0.080	12.000	10.000	175	196
	Cast iron (lamellar / spheroidal)	25.50	12	21	0.045	7.000	5.000	260	140
		28.50	12	21	0.050	8.200	10.000	235	141
		32.50	12	21	0.060	9.800	6.000	205	148
		45.50	14	21	0.080	12.000	10.000	145	162
	Unalloyed copper	25.50	12	21	0.045	7.000	5.000	260	140
		28.50	12	21	0.050	8.200	10.000	235	141
		32.50	12	21	0.060	9.800	6.000	205	148
		45.50	14	21	0.080	12.000	10.000	145	162
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	25.50	12	15	0.045	7.000	5.000	185	100
		28.50	12	15	0.050	8.200	10.000	170	102
		32.50	12	15	0.060	9.800	6.000	145	104
		45.50	14	15	0.080	12.000	10.000	105	118
	Wrought aluminium Construction aluminium	25.50	12	26	0.045	7.000	5.000	325	176
		28.50	12	26	0.050	8.200	10.000	290	174
		32.50	12	26	0.060	9.800	6.000	255	184
		45.50	14	26	0.080	12.000	10.000	180	202

Slotting end mills

HSS

HSS PM/F	λ 10° γ 8°



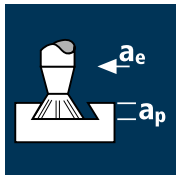
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0905** ø-Code **600**

Ø Code	d_1 h11	d_2 h6	d_3	d_4	l_1	l_2 e8	l_9	z		UNICUT-4X U0905
600	25.50	10.00	7.50	9.50	63	5.00	16.00	12		●
610	25.50	10.00	7.50	9.50	63	6.00	15.00	12		●
650	28.50	10.00	8.50	9.50	63	6.00	14.00	12		●
660	28.50	10.00	8.50	9.50	63	8.00	13.00	12		●
700	28.50	12.00	9.30	11.50	71	10.00	14.00	12		●
750	32.50	12.00	8.50	11.50	71	6.00	18.00	12		●
760	32.50	12.00	8.50	11.50	71	7.00	17.00	12		●
770	32.50	12.00	8.50	11.50	71	8.00	16.00	12		●
800	32.50	12.00	9.30	11.50	71	10.00	15.00	12		●
900	45.50	12.00	11.00	11.50	71	10.00	14.00	14		●

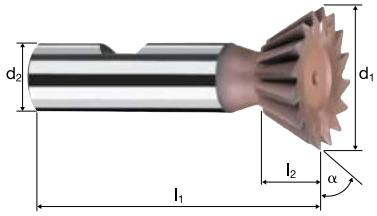
V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	8.00	7	55	0.005	2.500	1.500	2190	77
		12.00	8	55	0.010	3.000	2.000	1460	117
		16.00	10	55	0.015	4.000	2.200	1095	164
		20.00	12	55	0.018	6.000	2.400	875	189
		25.00	14	55	0.020	8.000	2.600	700	196
		32.00	16	55	0.025	10.000	3.000	545	218
	Steel 850 - 1100 N/mm²	8.00	7	45	0.005	2.500	1.500	1790	63
		12.00	8	45	0.010	3.000	2.000	1195	96
		16.00	10	45	0.015	4.000	2.200	895	134
		20.00	12	45	0.018	6.000	2.400	715	154
		25.00	14	45	0.020	8.000	2.600	575	161
		32.00	16	45	0.025	10.000	3.000	450	180
	Steel 1100 - 1300 N/mm²	8.00	7	34	0.005	2.500	1.500	1355	47
		12.00	8	34	0.010	3.000	2.000	900	72
		16.00	10	34	0.015	4.000	2.200	675	101
		20.00	12	34	0.018	6.000	2.400	540	117
		25.00	14	34	0.020	8.000	2.600	435	122
		32.00	16	34	0.025	10.000	3.000	340	136
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	8.00	7	21	0.005	2.500	1.500	835	29
		12.00	8	21	0.010	3.000	2.000	555	44
		16.00	10	21	0.015	4.000	2.200	420	63
		20.00	12	21	0.018	6.000	2.400	335	72
		25.00	14	21	0.020	8.000	2.600	265	74
		32.00	16	21	0.025	10.000	3.000	210	84
	Cast iron (lamellar / spheroidal)	8.00	7	42	0.005	2.500	1.500	1670	59
		12.00	8	42	0.010	3.000	2.000	1115	89
		16.00	10	42	0.015	4.000	2.200	835	125
		20.00	12	42	0.018	6.000	2.400	670	145
		25.00	14	42	0.020	8.000	2.600	535	150
		32.00	16	42	0.025	10.000	3.000	420	168
	Unalloyed copper	8.00	7	65	0.005	2.500	1.500	2585	91
		12.00	8	65	0.010	3.000	2.000	1725	138
		16.00	10	65	0.015	4.000	2.200	1295	194
		20.00	12	65	0.018	6.000	2.400	1035	224
		25.00	14	65	0.020	8.000	2.600	830	232
		32.00	16	65	0.025	10.000	3.000	645	258
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	8.00	7	23	0.005	2.500	1.500	915	32
		12.00	8	23	0.010	3.000	2.000	610	49
		16.00	10	23	0.015	4.000	2.200	460	69
		20.00	12	23	0.018	6.000	2.400	365	79
		25.00	14	23	0.020	8.000	2.600	295	83
		32.00	16	23	0.025	10.000	3.000	230	92
	Wrought aluminium Construction aluminium	8.00	7	80	0.005	2.500	1.500	3185	112
		12.00	8	80	0.010	3.000	2.000	2120	170
		16.00	10	80	0.015	4.000	2.200	1590	239
		20.00	12	80	0.018	6.000	2.400	1275	275
		25.00	14	80	0.020	8.000	2.600	1020	286
		32.00	16	80	0.025	10.000	3.000	795	318

Angular end mills

HSS

HSS-E Co8	λ 0° γ 0°



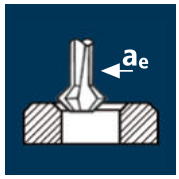
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **0890** ø-Code **100**

Ø Code	d_1 js12	d_2 h6	l_1	l_2	α	z	UNICUT-4X U0890
100	12.00	10.00	54	3.00	45.0°	8	●
120	16.00	12.00	60	4.00	45.0°	10	●
140	20.00	12.00	63	5.00	45.0°	12	●
160	25.00	12.00	67	6.30	45.0°	14	●
180	32.00	16.00	71	8.00	45.0°	16	●
300	8.00	6.00	49	3.00	60.0°	7	●
320	12.00	10.00	54	4.00	60.0°	8	●
340	16.00	12.00	60	6.30	60.0°	10	●
360	20.00	12.00	63	8.00	60.0°	12	●
380	25.00	12.00	67	10.00	60.0°	14	●
400	32.00	16.00	71	12.50	60.0°	16	●

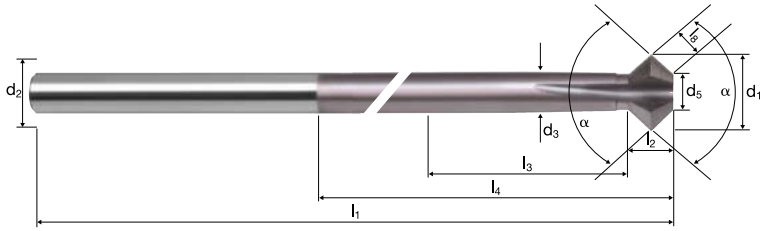
V

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	4	150	0.008	0.150	15915	509
		4.00	4	150	0.012	0.200	11935	573
		5.00	4	150	0.014	0.250	9550	535
		6.00	4	150	0.018	0.250	7960	573
		8.00	4	150	0.022	0.300	5970	525
		10.00	4	150	0.028	0.400	4775	535
		12.00	4	150	0.034	0.500	3980	541
	Steel 850 - 1100 N/mm²	3.00	4	120	0.008	0.150	12730	407
		4.00	4	120	0.012	0.200	9550	458
		5.00	4	120	0.014	0.250	7640	428
		6.00	4	120	0.018	0.250	6365	458
		8.00	4	120	0.022	0.300	4775	420
		10.00	4	120	0.028	0.400	3820	428
		12.00	4	120	0.034	0.500	3185	433
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	50	0.008	0.150	5305	170
		4.00	4	50	0.012	0.200	3980	191
		5.00	4	50	0.014	0.250	3185	178
		6.00	4	50	0.018	0.250	2655	191
		8.00	4	50	0.022	0.300	1990	175
		10.00	4	50	0.028	0.400	1590	178
		12.00	4	50	0.034	0.500	1325	180
	Cast iron (lamellar / spheroidal)	3.00	4	180	0.008	0.150	19100	611
		4.00	4	180	0.012	0.200	14325	688
		5.00	4	180	0.014	0.250	11460	642
		6.00	4	180	0.018	0.250	9550	688
		8.00	4	180	0.022	0.300	7160	630
		10.00	4	180	0.028	0.400	5730	642
		12.00	4	180	0.034	0.500	4775	649
	Steel < 850 N/mm²	3.00	4	150	0.008	0.150	15915	509
		4.00	4	150	0.012	0.200	11935	573
		5.00	4	150	0.014	0.250	9550	535
		6.00	4	150	0.018	0.250	7960	573
		8.00	4	150	0.022	0.300	5970	525
		10.00	4	150	0.028	0.400	4775	535
		12.00	4	150	0.034	0.500	3980	541
	Steel 850 - 1100 N/mm²	3.00	4	120	0.008	0.150	12730	407
		4.00	4	120	0.012	0.200	9550	458
		5.00	4	120	0.014	0.250	7640	428
		6.00	4	120	0.018	0.250	6365	458
		8.00	4	120	0.022	0.300	4775	420
		10.00	4	120	0.028	0.400	3820	428
		12.00	4	120	0.034	0.500	3185	433
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	4	50	0.008	0.150	5305	170
		4.00	4	50	0.012	0.200	3980	191
		5.00	4	50	0.014	0.250	3185	178
		6.00	4	50	0.018	0.250	2655	191
		8.00	4	50	0.022	0.300	1990	175
		10.00	4	50	0.028	0.400	1590	178
		12.00	4	50	0.034	0.500	1325	180
	Cast iron (lamellar / spheroidal)	3.00	4	180	0.008	0.150	19100	611
		4.00	4	180	0.012	0.200	14325	688
		5.00	4	180	0.014	0.250	11460	642
		6.00	4	180	0.018	0.250	9550	688
		8.00	4	180	0.022	0.300	7160	630
		10.00	4	180	0.028	0.400	5730	642
		12.00	4	180	0.034	0.500	4775	649

Forward and reverse deburring end mills

45° - Chamfer

HM	λ 0° γ 8°



ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7930** ø-Code **180**

UNICUT-4X

U7930

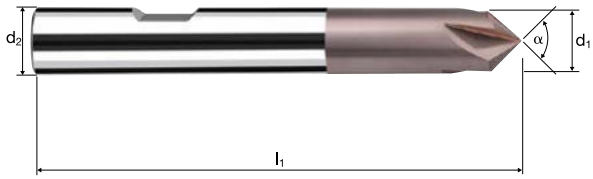
Ø Code	d_1 0/-0.05	d_2 h6	d_3	d_5	l_1	l_2	l_3	l_4	l_8	α	z	
180	3.00	6.00	2.20	1.2	100	1.30	10.00	60.00	1.27	90.0°	4	●
220	4.00	6.00	2.90	1.6	100	1.75	12.00	60.00	1.70	90.0°	4	●
260	5.00	6.00	3.40	2.0	100	2.30	15.00	60.00	2.12	90.0°	4	●
300	6.00	6.00	3.80	2.4	100	2.90	18.00	60.00	2.55	90.0°	4	●
391	8.00	6.00	4.90	4.9	100	3.10	35.00	60.00	2.19	90.0°	4	●
450	10.00	6.00	5.90	5.9	100	4.10	35.00	60.00	2.90	90.0°	4	●
501	12.00	6.00	5.90	5.9	100	6.10	35.00	60.00	4.31	90.0°	4	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	6.00	4	150	0.020	0.200	0.200	7960	637
		8.00	4	150	0.025	0.250	0.250	5970	597
		10.00	4	150	0.030	0.300	0.300	4775	573
		12.00	4	150	0.035	0.400	0.400	3980	557
	Steel 850 - 1100 N/mm²	6.00	4	120	0.020	0.200	0.200	6365	509
		8.00	4	120	0.025	0.250	0.250	4775	478
		10.00	4	120	0.030	0.300	0.300	3820	458
		12.00	4	120	0.035	0.400	0.400	3185	446
	Steel 1100 - 1300 N/mm²	6.00	4	55	0.020	0.200	0.200	2920	234
		8.00	4	55	0.025	0.250	0.250	2190	219
		10.00	4	55	0.030	0.300	0.300	1750	210
		12.00	4	55	0.035	0.400	0.400	1460	204
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	6.00	4	60	0.020	0.200	0.200	3185	255
		8.00	4	60	0.025	0.250	0.250	2385	239
		10.00	4	60	0.030	0.300	0.300	1910	229
		12.00	4	60	0.035	0.400	0.400	1590	223
	Cast iron (lamellar / spheroidal)	6.00	4	160	0.020	0.200	0.200	8490	679
		8.00	4	160	0.025	0.250	0.250	6365	637
		10.00	4	160	0.030	0.300	0.300	5095	611
		12.00	4	160	0.035	0.400	0.400	4245	594
	Unalloyed copper	6.00	4	200	0.020	0.200	0.200	10610	849
		8.00	4	200	0.025	0.250	0.250	7960	796
		10.00	4	200	0.030	0.300	0.300	6365	764
		12.00	4	200	0.035	0.400	0.400	5305	743
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	6.00	4	70	0.020	0.200	0.200	3715	297
		8.00	4	70	0.025	0.250	0.250	2785	279
		10.00	4	70	0.030	0.300	0.300	2230	268
		12.00	4	70	0.035	0.400	0.400	1855	260
	Wrought aluminium Construction aluminium	6.00	4	300	0.020	0.200	0.200	15915	1273
		8.00	4	300	0.025	0.250	0.250	11935	1194
		10.00	4	300	0.030	0.300	0.300	9550	1146
		12.00	4	300	0.035	0.400	0.400	7960	1114

Deburring end mills

45° - Chamfer

HM	λ 0° γ 0°



ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7940** ø-Code **300**

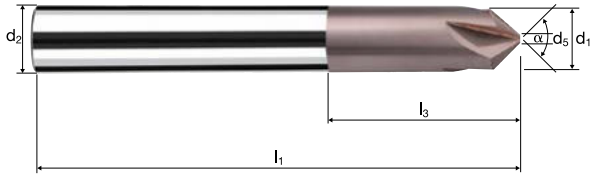
Ø Code	d_1 h6	d_2 h6	l_1	α	z		UNICUT-4X U7940
300	6.00	6.00	57	90.0°	4		●
391	8.00	8.00	63	90.0°	4		●
450	10.00	10.00	72	90.0°	4		●
501	12.00	12.00	83	90.0°	4		●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	2.00	3	150	0.005	0.050	0.050	23875	358
		3.00	3	150	0.010	0.100	0.100	15915	478
		4.00	3	150	0.015	0.150	0.150	11935	537
		6.00	3	150	0.020	0.200	0.200	7960	478
	Steel 850 - 1100 N/mm²	2.00	3	120	0.005	0.050	0.050	19100	287
		3.00	3	120	0.010	0.100	0.100	12730	382
		4.00	3	120	0.015	0.150	0.150	9550	430
		6.00	3	120	0.020	0.200	0.200	6365	382
	Steel 1100 - 1300 N/mm²	2.00	3	70	0.005	0.050	0.050	11140	167
		3.00	3	70	0.010	0.100	0.100	7425	223
		4.00	3	70	0.015	0.150	0.150	5570	251
		6.00	3	70	0.020	0.200	0.200	3715	223
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	2.00	3	60	0.005	0.050	0.050	9550	143
		3.00	3	60	0.010	0.100	0.100	6365	191
		4.00	3	60	0.015	0.150	0.150	4775	215
		6.00	3	60	0.020	0.200	0.200	3185	191
	Cast iron (lamellar / spheroidal)	2.00	3	160	0.005	0.050	0.050	25465	382
		3.00	3	160	0.010	0.100	0.100	16975	509
		4.00	3	160	0.015	0.150	0.150	12730	573
		6.00	3	160	0.020	0.200	0.200	8490	509
	Unalloyed copper	2.00	3	180	0.005	0.050	0.050	28650	430
		3.00	3	180	0.010	0.100	0.100	19100	573
		4.00	3	180	0.015	0.150	0.150	14325	645
		6.00	3	180	0.020	0.200	0.200	9550	573
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.00	3	70	0.005	0.050	0.050	11140	167
		3.00	3	70	0.010	0.100	0.100	7425	223
		4.00	3	70	0.015	0.150	0.150	5570	251
		6.00	3	70	0.020	0.200	0.200	3715	223
	Wrought aluminium Construction aluminium	2.00	3	200	0.005	0.050	0.050	31830	478
		3.00	3	200	0.010	0.100	0.100	21220	637
		4.00	3	200	0.015	0.150	0.150	15915	716
		6.00	3	200	0.020	0.200	0.200	10610	637

Deburring end mills

45° - Chamfer

HM	λ 0° γ 0°

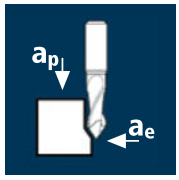


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7942** ø-Code **140**

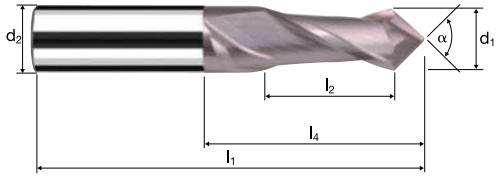
Ø Code	d_1 h6	d_2 h6	d_5 ±0.05	l_1	l_3	α	z	UNICUT-4X U7942
140	2.00	3.00	0.2	40	7.20	90.0°	3	●
180	3.00	3.00	0.3	40	-	90.0°	3	●
220	4.00	4.00	0.4	50	-	90.0°	3	●
300	6.00	6.00	0.6	57	-	90.0°	3	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	Steel < 850 N/mm²	3.00	2	120	0.008	0.100	0.100	12730	204
		4.00	2	120	0.012	0.150	0.150	9550	229
		5.00	2	120	0.014	0.200	0.200	7640	214
		6.00	2	120	0.018	0.200	0.200	6365	229
		8.00	2	120	0.022	0.250	0.250	4775	210
		10.00	2	120	0.028	0.350	0.350	3820	214
		12.00	2	120	0.034	0.450	0.450	3185	217
	Steel 850 - 1100 N/mm²	3.00	2	100	0.008	0.100	0.100	10610	170
		4.00	2	100	0.012	0.150	0.150	7960	191
		5.00	2	100	0.014	0.200	0.200	6365	178
		6.00	2	100	0.018	0.200	0.200	5305	191
		8.00	2	100	0.022	0.250	0.250	3980	175
		10.00	2	100	0.028	0.350	0.350	3185	178
		12.00	2	100	0.034	0.450	0.450	2655	181
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	2	50	0.008	0.100	0.100	5305	85
		4.00	2	50	0.012	0.150	0.150	3980	96
		5.00	2	50	0.014	0.200	0.200	3185	89
		6.00	2	50	0.018	0.200	0.200	2655	96
		8.00	2	50	0.022	0.250	0.250	1990	88
		10.00	2	50	0.028	0.350	0.350	1590	89
		12.00	2	50	0.034	0.450	0.450	1325	90
	Cast iron (lamellar / spheroidal)	3.00	2	140	0.008	0.100	0.100	14855	238
		4.00	2	140	0.012	0.150	0.150	11140	267
		5.00	2	140	0.014	0.200	0.200	8915	250
		6.00	2	140	0.018	0.200	0.200	7425	267
		8.00	2	140	0.022	0.250	0.250	5570	245
		10.00	2	140	0.028	0.350	0.350	4455	250
		12.00	2	140	0.034	0.450	0.450	3715	253
	Steel < 850 N/mm²	3.00	2	100	0.008	3.000	0.150	10610	170
		4.00	2	100	0.012	4.000	0.150	7960	191
		5.00	2	100	0.014	5.000	0.200	6365	178
		6.00	2	100	0.018	6.000	0.200	5305	191
		8.00	2	100	0.022	8.000	0.250	3980	175
		10.00	2	100	0.028	10.000	0.250	3185	178
		12.00	2	100	0.034	12.000	0.300	2655	181
	Steel 850 - 1100 N/mm²	3.00	2	80	0.008	3.000	0.150	8490	136
		4.00	2	80	0.012	4.000	0.150	6365	153
		5.00	2	80	0.014	5.000	0.200	5095	143
		6.00	2	80	0.018	6.000	0.200	4245	153
		8.00	2	80	0.022	8.000	0.250	3185	140
		10.00	2	80	0.028	10.000	0.250	2545	143
		12.00	2	80	0.034	12.000	0.300	2120	144
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	3.00	2	45	0.008	3.000	0.150	4775	76
		4.00	2	45	0.012	4.000	0.150	3580	86
		5.00	2	45	0.014	5.000	0.200	2865	80
		6.00	2	45	0.018	6.000	0.200	2385	86
		8.00	2	45	0.022	8.000	0.250	1790	79
		10.00	2	45	0.028	10.000	0.250	1430	80
		12.00	2	45	0.034	12.000	0.300	1195	81
	Cast iron (lamellar / spheroidal)	3.00	2	120	0.008	3.000	0.150	12730	204
		4.00	2	120	0.012	4.000	0.150	9550	229
		5.00	2	120	0.014	5.000	0.200	7640	214
		6.00	2	120	0.018	6.000	0.200	6365	229
		8.00	2	120	0.022	8.000	0.250	4775	210
		10.00	2	120	0.028	10.000	0.250	3820	214
		12.00	2	120	0.034	12.000	0.300	3185	217

Universal end mills

Milling, chamfering, centering, drilling

HM	λ 30° γ 12°

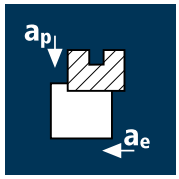
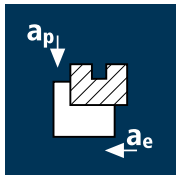


ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **7960** ø-Code **050**

Ø Code	d_1 h9	d_2 h6	l_1	l_2	l_4	α	z	UNICUT-4X U7960
050	0.50	3.00	39	1.00	5.65	90.0°	2	●
100	1.00	3.00	39	2.00	7.15	90.0°	2	●
120	1.50	3.00	39	3.00	8.92	90.0°	2	●
140	2.00	3.00	39	4.00	9.15	90.0°	2	●
160	2.50	3.00	39	5.00	8.98	90.0°	2	●
180	3.00	4.00	50	6.00	11.20	90.0°	2	●
220	4.00	5.00	50	8.00	13.70	90.0°	2	●
260	5.00	6.00	50	10.00	16.70	90.0°	2	●
300	6.00	8.00	60	12.00	21.07	90.0°	2	●
391	8.00	10.00	70	16.00	26.07	90.0°	2	●
450	10.00	12.00	70	18.00	31.07	90.0°	2	●
501	12.00	12.00	70	20.00	35.00	90.0°	2	●
610	16.00	16.00	80	26.00	49.00	90.0°	2	●
682	20.00	20.00	100	32.00	57.00	90.0°	2	●

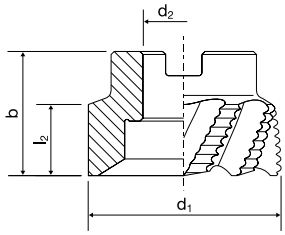
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]
	Steel < 850 N/mm²	32.00	6	65	0.060	6.400	24.000	645	232	35.7
		40.00	8	65	0.080	8.000	30.000	515	330	79.1
		50.00	8	65	0.100	10.000	37.500	415	332	124.5
		63.00	10	65	0.120	12.600	47.250	330	396	235.8
		80.00	10	65	0.120	16.000	60.000	260	312	299.5
	Steel 850 - 1100 N/mm²	32.00	6	48	0.060	6.400	24.000	475	171	26.3
		40.00	8	48	0.080	8.000	30.000	380	243	58.4
		50.00	8	48	0.100	10.000	37.500	305	244	91.5
		63.00	10	48	0.120	12.600	47.250	245	294	175.0
		80.00	10	48	0.120	16.000	60.000	190	228	218.9
	Steel 1100 - 1300 N/mm²	32.00	6	35	0.060	6.400	24.000	350	126	19.4
		40.00	8	35	0.080	8.000	30.000	280	179	43.0
		50.00	8	35	0.100	10.000	37.500	225	180	67.5
		63.00	10	35	0.120	12.600	47.250	175	210	125.0
		80.00	10	35	0.120	16.000	60.000	140	168	161.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	32.00	6	26	0.060	6.400	24.000	260	94	14.4
		40.00	8	26	0.080	8.000	30.000	205	131	31.5
		50.00	8	26	0.100	10.000	37.500	165	132	49.5
		63.00	10	26	0.120	12.600	47.250	130	156	92.9
		80.00	10	26	0.120	16.000	60.000	105	126	121.0
	Steel < 850 N/mm²	32.00	6	68	0.070	6.400	9.600	675	284	17.4
		40.00	8	68	0.090	8.000	12.000	540	389	37.3
		50.00	8	68	0.110	10.000	15.000	435	383	57.4
		63.00	10	68	0.125	12.600	18.900	345	431	102.7
		80.00	10	68	0.145	16.000	24.000	270	392	150.3
	Steel 850 - 1100 N/mm²	32.00	6	55	0.070	6.400	9.600	545	229	14.1
		40.00	8	55	0.090	8.000	12.000	440	317	30.4
		50.00	8	55	0.110	10.000	15.000	350	308	46.2
		63.00	10	55	0.125	12.600	18.900	280	350	83.3
		80.00	10	55	0.145	16.000	24.000	220	319	122.5
	Steel 1100 - 1300 N/mm²	32.00	6	40	0.070	6.400	9.600	400	168	10.3
		40.00	8	40	0.090	8.000	12.000	320	230	22.1
		50.00	8	40	0.110	10.000	15.000	255	224	33.7
		63.00	10	40	0.125	12.600	18.900	200	250	59.5
		80.00	10	40	0.145	16.000	24.000	160	232	89.1
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	32.00	6	29	0.070	6.400	9.600	290	122	7.5
		40.00	8	29	0.090	8.000	12.000	230	166	15.9
		50.00	8	29	0.110	10.000	15.000	185	163	24.4
		63.00	10	29	0.125	12.600	18.900	145	181	43.2
		80.00	10	29	0.145	16.000	24.000	115	167	64.1

Shell end mills

Profiled

HSS

HSS PM/F	λ 25° γ 10°
45°	



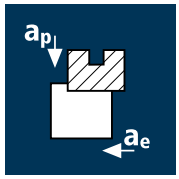
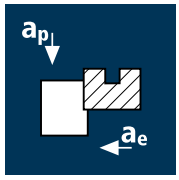
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Aluminium Copper

Example: **Order-N°.** Coating **U** Article-N°. **3490** ø-Code **100**

Ø Code	d_1 k9	d_2 H7	l_2	b k13	45°	z		UNICUT-4X U3490
100	32.00	13.00	15.00	28.00	0.70	6		●
110	40.00	16.00	18.00	32.00	0.90	8		●
130	50.00	22.00	20.00	36.00	0.90	8		●
160	63.00	27.00	22.00	40.00	1.20	10		●
180	80.00	27.00	25.00	45.00	1.20	10		●

V

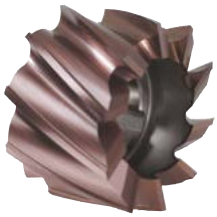
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm²	40.00	8	45	0.065	2.000	30.000	360	187	11.2
		50.00	8	45	0.080	2.500	37.500	285	182	17.1
		63.00	10	45	0.080	3.150	47.250	225	180	26.8
		80.00	12	45	0.100	4.000	60.000	180	216	51.8
	Steel 1100 - 1300 N/mm²	40.00	8	30	0.065	2.000	30.000	240	125	7.5
		50.00	8	30	0.080	2.500	37.500	190	122	11.4
		63.00	10	30	0.080	3.150	47.250	150	120	17.9
		80.00	12	30	0.100	4.000	60.000	120	144	34.6
	Cold work tool steel (12% Cr), high alloyed [1.2379]	40.00	8	20	0.065	2.000	30.000	160	83	5.0
		50.00	8	20	0.080	2.500	37.500	125	80	7.5
		63.00	10	20	0.080	3.150	47.250	100	80	11.9
		80.00	12	20	0.100	4.000	60.000	80	96	23.0
	Cast iron (lamellar / spheroidal)	40.00	8	42	0.065	2.000	30.000	335	174	10.5
		50.00	8	42	0.080	2.500	37.500	265	170	15.9
		63.00	10	42	0.080	3.150	47.250	210	168	25.0
		80.00	12	42	0.100	4.000	60.000	165	198	47.5
	Steel 850 - 1100 N/mm²	40.00	8	50	0.065	20.000	1.000	400	208	4.2
		50.00	8	50	0.080	25.000	1.250	320	205	6.4
		63.00	10	50	0.080	31.500	1.575	255	204	10.1
		80.00	12	50	0.100	40.000	2.000	200	240	19.2
	Steel 1100 - 1300 N/mm²	40.00	8	35	0.065	20.000	1.000	280	146	2.9
		50.00	8	35	0.080	25.000	1.250	225	144	4.5
		63.00	10	35	0.080	31.500	1.575	175	140	6.9
		80.00	12	35	0.100	40.000	2.000	140	168	13.4
	Cold work tool steel (12% Cr), high alloyed [1.2379]	40.00	8	25	0.065	20.000	1.000	200	104	2.1
		50.00	8	25	0.080	25.000	1.250	160	102	3.2
		63.00	10	25	0.080	31.500	1.575	125	100	5.0
		80.00	12	25	0.100	40.000	2.000	100	120	9.6
	Cast iron (lamellar / spheroidal)	40.00	8	45	0.065	20.000	1.000	360	187	3.7
		50.00	8	45	0.080	25.000	1.250	285	182	5.7
		63.00	10	45	0.080	31.500	1.575	225	180	8.9
		80.00	12	45	0.100	40.000	2.000	180	216	17.3

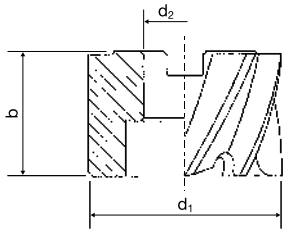
Shell end mills

Smooth-edged

HSS

HSS PM/F	λ 30° γ 15°
90°	





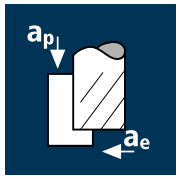
ReTool®

Rm < 850	Rm 850-1100	Rm 1100-1300							GG(G)

Example: **Order-N°.** Coating **U** Article-N°. **3209** ø-Code **110**

Ø Code	d_1 k8	d_2 H7	b k13	z		UNICUT-4X U3209
110	40.00	16.00	32.00	8		●
130	50.00	22.00	36.00	8		●
160	63.00	27.00	40.00	10		●
180	80.00	27.00	45.00	12		●

V

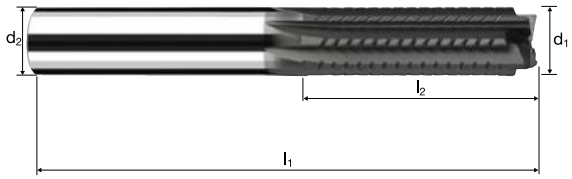
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3183
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2866
		10.00	8	200	0.050	18.000	4.000	6365	2546
		12.00	8	200	0.060	21.600	4.800	5305	2546
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2864
		5.00	8	150	0.035	9.000	2.000	9550	2674
		6.00	8	150	0.040	10.800	2.400	7960	2547
		8.00	8	150	0.050	14.400	3.200	5970	2388
		10.00	8	150	0.055	18.000	4.000	4775	2101
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1672
		10.00	8	150	0.040	8.000	10.000	4775	1528
		12.00	8	150	0.050	9.600	12.000	3980	1592
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1592
		5.00	8	100	0.030	4.000	5.000	6365	1528
		6.00	8	100	0.030	4.800	6.000	5305	1273
		8.00	8	100	0.040	6.400	8.000	3980	1274
		10.00	8	100	0.045	8.000	10.000	3185	1147
		12.00	8	100	0.050	9.600	12.000	2655	1062

Cylindrical end mills

Normal version, straight cutting edge

HM MG6 | λ **0°** γ **18°**

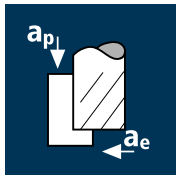
45°



Wear resistance

CFK GFK I | CFK GFK II

Example: **Order-N°.**	Coating **B**	Article-N°. **20020**	ø-Code **220**							DIAMANT
										B20020
Ø Code	**d_1** h10	**d_2** h6		**l_1**	**l_2**	**l_4**	**45°**	α	**z**	
220	4.00	6.00		60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00		60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00		60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00		65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00		75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00		63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00		75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00		72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00		83	32.00	38.00	0.20	0.0°	8	●

Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3183
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2866
		10.00	8	200	0.050	18.000	4.000	6365	2546
		12.00	8	200	0.060	21.600	4.800	5305	2546
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2864
		5.00	8	150	0.035	9.000	2.000	9550	2674
		6.00	8	150	0.040	10.800	2.400	7960	2547
		8.00	8	150	0.050	14.400	3.200	5970	2388
		10.00	8	150	0.055	18.000	4.000	4775	2101
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1672
		10.00	8	150	0.040	8.000	10.000	4775	1528
		12.00	8	150	0.050	9.600	12.000	3980	1592
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1592
		5.00	8	100	0.030	4.000	5.000	6365	1528
		6.00	8	100	0.030	4.800	6.000	5305	1273
		8.00	8	100	0.040	6.400	8.000	3980	1274
		10.00	8	100	0.045	8.000	10.000	3185	1147
		12.00	8	100	0.050	9.600	12.000	2655	1062

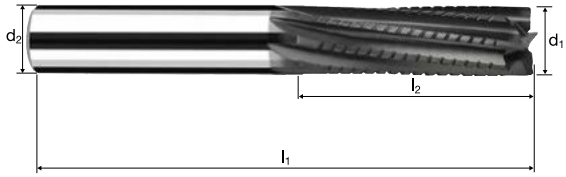
Cylindrical end mills

Normal version, pulling cutting edge

HM
MG6

λ **8°**
γ **18°**

45°

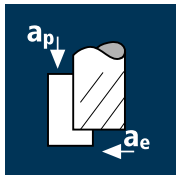


Wear resistance

CFK GFK I | CFK GFK II

Example: **Order-N°.** Coating **B** Article-N°. **20025** ø-Code **220**

Ø Code	d_1 h10	d_2 h6	l_1	l_2	l_4	45°	α	z	DIAMANT B20025
220	4.00	6.00	60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00	60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00	60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00	65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00	75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00	63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00	75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00	72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00	83	32.00	38.00	0.20	0.0°	8	●

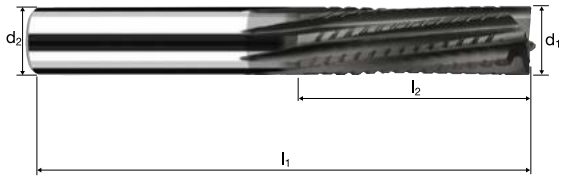
Application	Material	d_1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
	CFC	4.00	8	200	0.025	7.200	1.600	15915	3183
		5.00	8	200	0.030	9.000	2.000	12730	3055
		6.00	8	200	0.040	10.800	2.400	10610	3395
		8.00	8	200	0.045	14.400	3.200	7960	2866
		10.00	8	200	0.050	18.000	4.000	6365	2546
		12.00	8	200	0.060	21.600	4.800	5305	2546
	GRP	4.00	8	150	0.030	7.200	1.600	11935	2864
		5.00	8	150	0.035	9.000	2.000	9550	2674
		6.00	8	150	0.040	10.800	2.400	7960	2547
		8.00	8	150	0.050	14.400	3.200	5970	2388
		10.00	8	150	0.055	18.000	4.000	4775	2101
		12.00	8	150	0.065	21.600	4.800	3980	2070
	CFC	4.00	8	150	0.020	3.200	4.000	11935	1910
		5.00	8	150	0.025	4.000	5.000	9550	1910
		6.00	8	150	0.030	4.800	6.000	7960	1910
		8.00	8	150	0.035	6.400	8.000	5970	1672
		10.00	8	150	0.040	8.000	10.000	4775	1528
		12.00	8	150	0.050	9.600	12.000	3980	1592
	GRP	4.00	8	100	0.025	3.200	4.000	7960	1592
		5.00	8	100	0.030	4.000	5.000	6365	1528
		6.00	8	100	0.030	4.800	6.000	5305	1273
		8.00	8	100	0.040	6.400	8.000	3980	1274
		10.00	8	100	0.045	8.000	10.000	3185	1147
		12.00	8	100	0.050	9.600	12.000	2655	1062

Cylindrical end mills

Normal version, pushing cutting edge

HM MG6 | λ **-8°** γ **18°**

45°



Wear resistance

CFK GFK I | CFK GFK II

Example: **Order-N°.** Coating **B** Article-N°. **20030** ø-Code **220**

Ø Code	d_1 h10	d_2 h6	l_1	l_2	l_4	45°	α	z	DIAMANT B20030
220	4.00	6.00	60	16.00	24.00	0.10	2.9°	8	●
260	5.00	6.00	60	18.00	24.00	0.10	1.4°	8	●
300	6.00	6.00	60	20.00	24.00	0.10	0.0°	8	●
302	6.00	6.00	65	25.00	29.00	0.10	0.0°	8	●
304	6.00	6.00	75	28.00	39.00	0.10	0.0°	8	●
391	8.00	8.00	63	22.00	27.00	0.20	0.0°	8	●
393	8.00	8.00	75	32.00	39.00	0.20	0.0°	8	●
450	10.00	10.00	72	32.00	32.00	0.20	0.0°	8	●
501	12.00	12.00	83	32.00	38.00	0.20	0.0°	8	●

passion
for precision
fraisa

Round indexable insert milling tools

771 – 785

Indexable insert milling tools HFC

787 – 801

Indexable insert face milling tools

803 – 807

Corner/slot indexable insert milling tools

809 – 819

Accessories

820 – 821

passion
for precision
fraisa

Round insert end mill for indexable inserts 10mm

N° W03140

N° W03185

NX	λ 5° γ 15°	d_1 20 – 32	**Rm** 850-1500			775
SX	λ 5° γ 20°	d_1 20 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 5° γ -4°	d_1 20 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 5° γ 14°	d_1 20 – 32	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 5° γ 21°	d_1 20 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 12mm

N° W03150

N° W03195

NX	λ 0° γ 14°	d_1 25 – 32	**Rm** 850-1500			777
SX	λ 0° γ 19°	d_1 25 – 32	**Inox** Stainless	**Rm** <850		
HX	λ 0° γ -4°	d_1 25 – 32	**Rm** 1300-1500	**HRC** 48-60		
ZX	λ 0° γ 13°	d_1 25 – 32	**Ni** Alloys	**Inox** Stainless	**Rm** <850	
AX	λ 0° γ 20°	d_1 25 – 32	**Al** Aluminium Alloy	**Al** Aluminium Cast	**Cu** Copper	

Round insert end mill for indexable inserts 10mm

N° W03410

NX	λ 5° γ 15°	d_1 40 – 52	Rm 850-1500			779
SX	λ 5° γ 20°	d_1 40 – 52	Inox Stainless	Rm <850		
HX	λ 5° γ -4°	d_1 40 – 52	Rm 1300-1500	HRC 48-60		
ZX	λ 5° γ 14°	d_1 40 – 52	Ni Alloys	Inox Stainless	Rm <850	
AX	λ 5° γ 21°	d_1 40 – 52	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Round insert end mill for indexable inserts 12mm

N° W03412

NX	λ 5° γ 15°	d_1 40 – 100	Rm 850-1500			781
SX	λ 5° γ 20°	d_1 40 – 100	Inox Stainless	Rm <850		
HX	λ 5° γ -4°	d_1 40 – 100	Rm 1300-1500	HRC 48-60		
ZX	λ 5° γ 14°	d_1 40 – 100	Ni Alloys	Inox Stainless	Rm <850	
AX	λ 5° γ 21°	d_1 40 – 100	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Round insert end mill for indexable inserts 10mm

N° W03210

NX	λ 5° γ 15°	d_1 25 – 35	Rm 850-1500			783
SX	λ 5° γ 20°	d_1 25 – 35	Inox Stainless	Rm <850		
HX	λ 5° γ -4°	d_1 25 – 35	Rm 1300-1500	HRC 48-60		
ZX	λ 5° γ 14°	d_1 25 – 35	Ni Alloys	Inox Stainless	Rm <850	
AX	λ 5° γ 21°	d_1 25 – 35	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Round insert end mill for indexable inserts 12mm

N° W03212

NX	λ 5° γ 15°	d_1 35 – 42	Rm 850-1500			785
SX	λ 5° γ 20°	d_1 35 – 42	Inox Stainless	Rm <850		
HX	λ 5° γ -4°	d_1 35 – 42	Rm 1300-1500	HRC 48-60		
ZX	λ 5° γ 14°	d_1 35 – 42	Ni Alloys	Inox Stainless	Rm <850	
AX	λ 5° γ 21°	d_1 35 – 42	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	W53310010	W53210010	W53410010	W53510010

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	D_1	D	r	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

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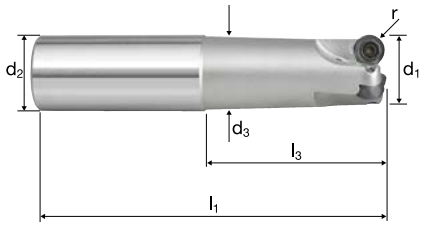
Round insert end mill

Inserts 10mm, integral air/cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	**L-Typ**	
W03140202	20.00	20.00	19.00	110	57.00	1.40	2	M	●
W03185202	20.00	20.00	19.00	185	57.00	1.40	2	XL	●
W03140253	25.00	25.00	24.00	124	65.00	1.40	3	M	●
W03185253	25.00	25.00	24.00	210	65.00	1.40	3	XL	●
W03140324	32.00	32.00	31.00	144	81.00	1.40	4	M	●
W03185324	32.00	32.00	31.00	250	81.00	1.40	4	XL	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M3 x 7.3	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	W53310012	W53210012	W53410012	W53510012

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	D_1	D	r	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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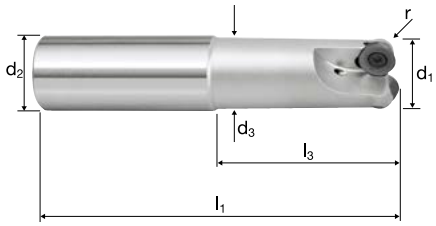
HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	**L-Typ**	
W03150252	25.00	25.00	24.00	124	65.00	1.70	2	M	●
W03195252	25.00	25.00	24.00	210	65.00	1.70	2	XL	●
W03150323	32.00	32.00	31.00	144	81.00	1.70	3	M	●
W03195323	32.00	32.00	31.00	250	81.00	1.70	3	XL	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M4 x 8.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	W53310010	W53210010	W53410010	W53510010

Inserts — Delivery range: Packaging unit 10 pieces

Order-N°.	ISO-Norm	D_1	D	r	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

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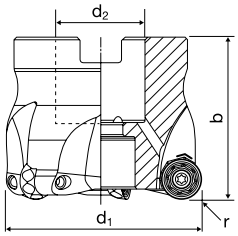
Round insert end mill

Inserts 10mm, integral air/cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W03410404*	40.00	16.00	40.0	1.40	4	●
W03410424*	42.00	16.00	40.0	1.40	4	●
W03410505	50.00	22.00	40.0	1.40	5	●
W03410525	52.00	22.00	40.0	1.40	5	●
	*Delivery range with Powerscrew					

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M3 x 7.3	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	**W53310012**	**W53210012**	**W53410012**	**W53510012**

Inserts Delivery range: Packaging unit 10 pieces

Order-N°.	ISO-Norm	D_1	D	r	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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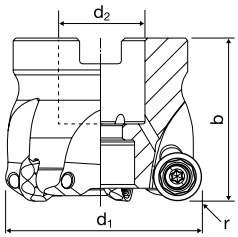
Round insert end mill

Inserts 12mm, integral air/cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W03412404*	40.00	16.00	40.0	1.70	4	●
W03412424*	42.00	16.00	40.0	1.70	4	●
W03412505	50.00	22.00	40.0	1.70	5	●
W03412525	52.00	22.00	40.0	1.70	5	●
W03412636	63.00	22.00	40.0	1.70	6	●
W03412666	66.00	22.00	40.0	1.70	6	●
W03412808	80.00	27.00	50.0	1.70	8	●
W03412100	100.00	32.00	50.0	1.70	10	●
	*Delivery range with Powerscrew					

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M4 x 8.5	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110010	W53310010	W53210010	W53410010	W53510010

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	D_1	D	r	
W53110010	RPMX 10T3MOSN	10.0	4.0	5.000	●
W53310010	RPMX 10T3MOEN	10.0	4.0	5.000	●
W53210010	RDHW 10T3MOSN	10.0	4.0	5.000	●
W53410010	RPHX 10T3MOEN	10.0	4.0	5.000	●
W53510010	RDHX 10T3MOFN	10.0	4.0	5.000	●

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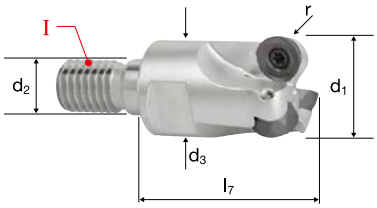
Round insert end mill

Inserts 10mm, integral air/cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W03210253	25.00	12.50	21.00	35	1.40	3	17	M12	●
W03210354	35.00	17.00	29.00	35	1.40	4	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110010	Torque screwdriver 2.0 Nm with blade Torx TX 10	●
W93111010	Interchangeable blade for torque screwdriver Torx TX 10	●
W93100010	Screwdriver Torx TX 10	●
W93500010	Clamping screws for inserts Torx TX 10 / M3 x 7.3	●

Inserts

12mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W53110012	W53310012	W53210012	W53410012	W53510012

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	D_1	D	r	
W53110012	RPMX 1204MOSN	12.0	4.8	6.000	●
W53310012	RPMX 1204MOEN	12.0	4.8	6.000	●
W53210012	RDHW 1204MOSN	12.0	4.8	6.000	●
W53410012	RPHX 1204MOEN	12.0	4.8	6.000	●
W53510012	RDHX 1204MOFN	12.0	4.8	6.000	●

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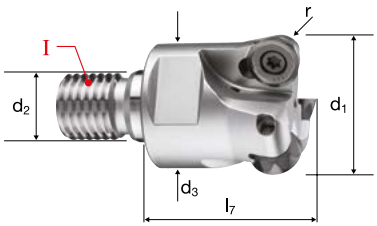
Round insert end mill

Inserts 12mm, integral air/cooling channel

HM



Round insert end mill	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W03212353	35.00	17.00	29.00	35	1.70	3	24	M16	●
W03212424	42.00	17.00	31.00	40	1.70	4	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W93110012	Torque screwdriver 4.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W93500012	Clamping screws for inserts Torx TX 15 / M4 x 8.5	●

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High feed end mills for inserts 10mm

N° W02140

N° W02180

NX	λ 2° γ 14°	d_1 25	Rm 850-1500			791
SX	λ 2° γ 15°	d_1 25	Inox Stainless	Rm <850		
HX	λ 2° γ 2°	d_1 25	Rm 1300-1500	HRC 48- >60		
ZX	λ 2° γ 15°	d_1 25	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 13mm

N° W02150

N° W02190

NX	λ 0° γ 12°	d_1 35	Rm 850-1500			793
SX	λ 0° γ 13°	d_1 35	Inox Stainless	Rm <850		
HX	λ 0° γ 0°	d_1 35	Rm 1300-1500	HRC 48- >60		
ZX	λ 0° γ 13°	d_1 35	Ni Alloys	Inox Stainless	Rm <850	

VI

High feed end mills for inserts 10mm

N° W02400

NX	λ 4° γ 16°	d_1 40 – 63	Rm 850-1500			795
SX	λ 4° γ 17°	d_1 40 – 63	Inox Stainless	Rm <850		
HX	λ 4° γ 4°	d_1 40 – 63	Rm 1300-1500	HRC 48- >60		
ZX	λ 4° γ 17°	d_1 40 – 63	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 13mm

N° W02410

NX	λ 4° γ 16°	d_1 50 – 80	Rm 850-1500			797
SX	λ 4° γ 17°	d_1 50 – 80	Inox Stainless	Rm <850		
HX	λ 4° γ 4°	d_1 50 – 80	Rm 1300-1500	HRC 48- >60		
ZX	λ 4° γ 17°	d_1 50 – 80	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 10mm

N° W02200

NX	λ 2° γ 14°	d_1 25	Rm 850-1500			799
SX	λ 2° γ 15°	d_1 25	Inox Stainless	Rm <850		
HX	λ 2° γ 2°	d_1 25	Rm 1300-1500	HRC 48- >60		
ZX	λ 2° γ 15°	d_1 25	Ni Alloys	Inox Stainless	Rm <850	

High feed end mills for inserts 13mm

N° W02210

NX	λ 0° γ 12°	d_1 35	Rm 850-1500			801
SX	λ 0° γ 13°	d_1 35	Inox Stainless	Rm <850		
HX	λ 0° γ 0°	d_1 35	Rm 1300-1500	HRC 48- >60		
ZX	λ 0° γ 13°	d_1 35	Ni Alloys	Inox Stainless	Rm <850	

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	W52310010	W52210010	W52410010

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	ISO-Norm	H	B	D	r	$R_{theo.}$	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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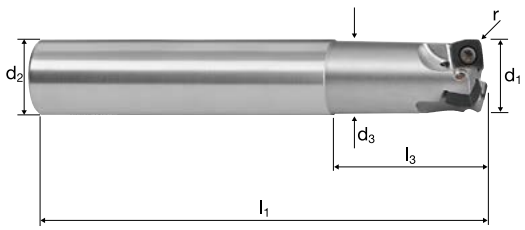
High feed end mills

Inserts 10mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	**L-Typ**	
W02140253*	25.00	25.00	24.00	125	65.00	1.00	3	M	●
W02180253	25.00	25.00	24.00	225	50.00	1.00	3	XL	●
	*with clamping flat only								

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M3.5 x 7.2	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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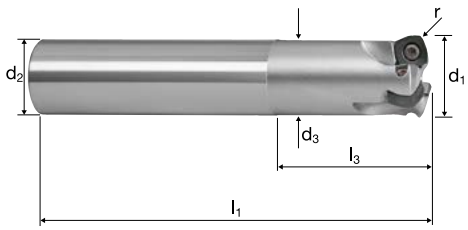
High feed end mills

Inserts 13mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	**L-Typ**	
W02150353*	35.00	32.00	31.40	144	63.00	2.00	3	M	●
W02190353	35.00	32.00	31.40	250	63.00	2.00	3	XL	●
	*with clamping flat only								

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M4.5 x 10.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	**W52310010**	**W52210010**	**W52410010**

Inserts

Delivery range: Packaging unit 10 pieces

Order-N°.	ISO-Norm	H	B	D	r	$R_{theo.}$	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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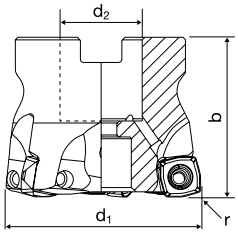
High feed end mills

Inserts 10mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W02400404*	40.00	16.00	40.0	1.00	4	●
W02400505	50.00	22.00	40.0	1.00	5	●
W02400636	63.00	22.00	40.0	1.00	6	●
	*Delivery range with Powerscrew					

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W92500010	Clamping screws for inserts Torx TX 15 / M3.5 x 8.6	●
W99510010*	Powerscrew M8.0 x 30.0 (Torque 15.0 Nm)	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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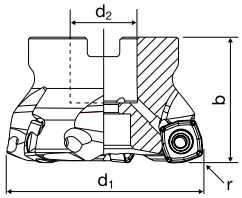
High feed end mills

Inserts 13mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W02410504	50.00	22.00	40.0	2.00	4	●
W02410635	63.00	22.00	40.0	2.00	5	●
W02410807	80.00	27.00	50.0	2.00	7	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M4.5 x 10.5	●

Inserts

10mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110010	**W52310010**	**W52210010**	**W52410010**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110010	XDLT 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52310010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●
W52210010	XDLW 10T308SR	10.2	10.0	4.0	0.800	2.00	●
W52410010	XDLT 10T308ER	10.2	10.0	4.0	0.800	2.00	●

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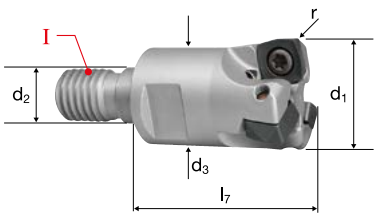
High feed end mills

Inserts 10mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2	d_3	l_7	$ap_{max.}$	z		I	
W02200253	25.00	12.50	21.00	35	1.00	3	17	M12	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M3.5 x 7.2	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials
W52110013	**W52310013**	**W52210013**	**W52410013**

Inserts	Delivery range: Packaging unit 10 pieces						
Order-N°.	**ISO-Norm**	**H**	**B**	**D**	**r**	**$R_{theo.}$**	
W52110013	XOLT 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52310013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●
W52210013	XOLW 130410SR	13.6	13.1	4.8	1.000	3.00	●
W52410013	XOLT 130410ER	13.6	13.1	4.8	1.000	3.00	●

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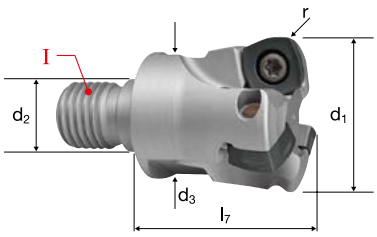
High feed end mills

Inserts 13mm, integral air/cooling channel

HM



High feed end mills	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2**	**d_3**	**l_7**	**$ap_{max.}$**	**z**		**I**	
W02210353	35.00	17.00	29.00	35	2.00	3	24	M16	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M4.5 x 10.5	●

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Face milling cutter for inserts 9mm

N° W01400

NX	λ 12° γ -6°	d_1 40 – 125	Rm 850-1300			805
SX	λ 12° γ -6°	d_1 40 – 125	Inox Stainless	Rm <850		
ZX	λ 12° γ -6°	d_1 40 – 125	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 12° γ 15°	d_1 40 – 125	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Face milling cutter for inserts 13mm

N° W01410

NX	λ 13° γ -6°	d_1 40 – 125	Rm 850-1300			807
SX	λ 13° γ -6°	d_1 40 – 125	Inox Stainless	Rm <850		
ZX	λ 13° γ -6°	d_1 40 – 125	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 13° γ 13°	d_1 40 – 125	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Inserts

9mm

NX Steel	SX Stainless Steel	ZX Difficult-to-cut materials	AX Aluminium
W51110009	W51310009	W51410009	W51510009

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	H	B	D	
W51110009	SDLT09T3AESN	9.5	9.5	4.0	●
W51310009	SDLT09T3AESN	9.5	9.5	4.0	●
W51410009	SDLT09T3AESN	9.5	9.5	4.0	●
W51510009	SDLT09T3AEFN	9.5	9.5	4.0	●

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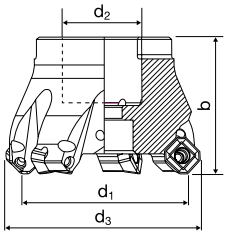
Face milling cutter 45°

Inserts 9mm, integral air/cooling channel

HM



Face milling cutter 45°	Delivery range: Cutter body incl. clamping screws for inserts						
Order-N°.	**d_1**	**d_2**	**d_3**	**b**	**$ap_{max.}$**	**z**	
W01400406	40.00	16.00	48.40	40.0	4.00	6	●
W01400507	50.00	22.00	58.40	40.0	4.00	7	●
W01400638	63.00	22.00	71.40	40.0	4.00	8	●
W01400809	80.00	27.00	88.40	50.0	4.00	9	●
W01400100	100.00	32.00	108.40	50.0	4.00	11	●
W01400125	125.00	40.00	133.40	63.0	4.00	12	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W91500009	Clamping screws for inserts Torx TX 08 / M3.0 x 7.3	●

Inserts

13mm

NX Steel	SX Stainless Steel	ZX Difficult-to-cut materials	AX Aluminium
W51110013	W51310013	W51410013	W51510013

Inserts	Delivery range: Packaging unit 10 pieces				
Order-N°.	ISO-Norm	H	B	D	
W51110013	SDLT1304AESN	13.0	13.0	4.8	●
W51310013	SDLT1304AESN	13.0	13.0	4.8	●
W51410013	SDLT1304AESN	13.0	13.0	4.8	●
W51510013	SDLT1304AEFN	12.7	12.7	4.8	●

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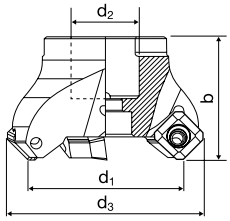
Face milling cutter 45°

Inserts 13mm, integral air/cooling channel

HM



Face milling cutter 45°	Delivery range: Cutter body incl. clamping screws for inserts						
Order-N°.	**d_1**	**d_2**	**d_3**	**b**	**$ap_{max.}$**	**z**	
W01410403	40.00	16.00	54.00	40.0	6.00	3	●
W01410504	50.00	22.00	63.90	40.0	6.00	4	●
W01410635	63.00	22.00	76.90	40.0	6.00	5	●
W01410806	80.00	27.00	93.90	50.0	6.00	6	●
W01410100	100.00	32.00	113.90	50.0	6.00	7	●
W01410125	125.00	40.00	138.90	63.0	6.00	8	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W91110013	Torque screwdriver 5.0 Nm with blade Torx TX 20	●
W91111013	Interchangeable blade for torque screwdriver TX 20	●
W91100013	Screwdriver Torx TX 20	●
W91500013	Clamping screws for inserts Torx TX 20 / M4.5 x 10.5	●

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Corner/slot end mills 90° for inserts 8mm

N° W00100

N° W00140

N° W00180

NX	λ 8° γ 0°	d_1 16 – 32	Rm 850-1300			813
SX	λ 8° γ 0°	d_1 16 – 32	Inox Stainless	Rm <850		
HX	λ 8° γ -8°	d_1 16 – 32	Rm 1300-1500	HRC 48-60		
ZX	λ 8° γ 0°	d_1 16 – 32	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 8° γ 20°	d_1 16 – 32	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Corner/slot end mills 90° for inserts 13mm

N° W00110

N° W00150

N° W00190

NX	λ 8° γ 6°	d_1 25 – 32	Rm 850-1300			815
SX	λ 8° γ 6°	d_1 25 – 32	Inox Stainless	Rm <850		
HX	λ 8° γ -10°	d_1 25 – 32	Rm 1300-1500	HRC 48-60		
ZX	λ 8° γ 6°	d_1 25 – 32	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 8° γ 20°	d_1 25 – 32	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

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Corner end mills 90° for inserts 8mm

N° W00400

NX	λ 8° γ 0°	d_1 40 – 80	Rm 850-1300			817
SX	λ 8° γ 0°	d_1 40 – 80	Inox Stainless	Rm <850		
HX	λ 8° γ -8°	d_1 40 – 80	Rm 1300-1500	HRC 48-60		
ZX	λ 8° γ 0°	d_1 40 – 80	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 8° γ 20°	d_1 40 – 80	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Corner end mills 90° for inserts 13mm

N° W00410

NX	λ 8° γ 6°	d_1 40 – 80	Rm 850-1300			819
SX	λ 8° γ 6°	d_1 40 – 80	Inox Stainless	Rm <850		
HX	λ 8° γ -10°	d_1 40 – 80	Rm 1300-1500	HRC 48-60		
ZX	λ 8° γ 6°	d_1 40 – 80	Ni-/Mn- Alloys	Inox Stainless	Rm <850	
AX	λ 8° γ 20°	d_1 40 – 80	Al Aluminium Alloy	Al Aluminium Cast	Cu Copper	

Inserts

8mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111008	W50311008	W50210008	W50410008	W50510008

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50311008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50210008	APKT 0803PD SR	8.5	6.4	3.5	0.600	●
W50410008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50510008	APHT 0803PDFR	8.3	6.4	3.4	0.600	●

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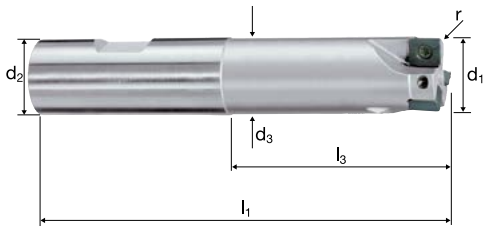
Corner/Slot end mills 90°

Inserts 8mm, integral air/cooling channel

HM



Corner/Slot end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	**d_1**	**d_2** h6	**d_3**	**l_1**	**l_3**	**$ap_{max.}$**	**z**	**L-Typ**	
W00100162	16.00	16.00	15.40	75	25.00	7.50	2	K	●
W00100203	20.00	20.00	19.40	77	25.00	7.50	3	K	●
W00100254	25.00	25.00	24.00	90	32.00	7.50	4	K	●
W00100325	32.00	32.00	31.00	102	40.00	7.50	5	K	●
W00140162	16.00	16.00	15.00	102	51.00	7.50	2	M	●
W00140203	20.00	20.00	19.40	110	57.00	7.50	3	M	●
W00140254	25.00	25.00	24.00	124	65.00	7.50	4	M	●
W00140325	32.00	32.00	31.00	144	81.00	7.50	5	M	●
W00180162	16.00	16.00	15.00	129	78.00	7.50	2	L	●
W00180203	20.00	20.00	19.40	140	87.00	7.50	3	L	●
W00180254	25.00	25.00	24.00	158	99.00	7.50	4	L	●
W00180325	32.00	32.00	31.00	186	123.00	7.50	5	L	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W90500008	Clamping screws for inserts Torx TX 08 / M2.5 x 5.0	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111013	W50311013	W50210013	W50410013	W50510013

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50311013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50210013	APKT 1304PD SR	14.7	8.1	4.7	0.800	●
W50410013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50510013	APHT 1304PDFR	14.7	8.0	4.5	0.800	●

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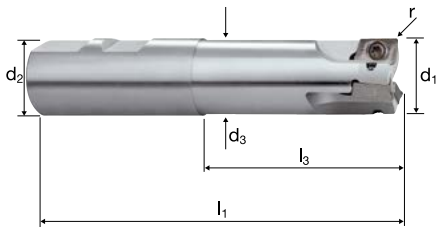
Corner/Slot end mills 90°

Inserts 13mm, integral air/cooling channel

HM



Corner/Slot end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts								
Order-N°.	d_1	d_2 h6	d_3	l_1	l_3	$ap_{max.}$	z	L-Typ	
W00110253	25.00	25.00	24.00	90	32.00	12.50	3	K	●
W00110324	32.00	32.00	31.00	102	40.00	12.50	4	K	●
W00150253	25.00	25.00	24.00	124	65.00	12.50	3	M	●
W00150324	32.00	32.00	31.00	144	81.00	12.50	4	M	●
W00190253	25.00	25.00	24.00	158	99.00	12.50	3	L	●
W00190324	32.00	32.00	31.00	186	123.00	12.50	4	L	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M3.5 x 7.2	●

Inserts

8mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111008	W50311008	W50210008	W50410008	W50510008

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50311008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50210008	APKT 0803PD SR	8.5	6.4	3.5	0.600	●
W50410008	APKT 0803PD SR	8.4	6.4	3.4	0.600	●
W50510008	APHT 0803PDFR	8.3	6.4	3.4	0.600	●

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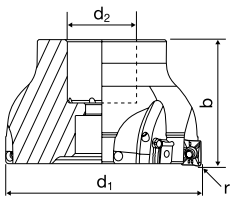
Corner end mills 90°

Inserts 8mm, integral air/cooling channel

HM



Corner end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W00400405	40.00	16.00	40.0	7.50	5	●
W00400506	50.00	22.00	40.0	7.50	6	●
W00400637	63.00	22.00	40.0	7.50	7	●
W00400801	80.00	27.00	50.0	7.50	10	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110008	Torque screwdriver 1.2 Nm with blade Torx TX 08	●
W90111008	Interchangeable blade for torque screwdriver TX 08	●
W90100008	Screwdriver Torx TX 08	●
W90500008	Clamping screws for inserts Torx TX 08 / M2.5 x 5.0	●

Inserts

13mm

NX Steel	SX Stainless Steel	HX Hardened Steel	ZX Difficult-to-cut materials	AX Aluminium
W50111013	W50311013	W50210013	W50410013	W50510013

Inserts	Delivery range: Packaging unit 10 pieces					
Order-N°.	ISO-Norm	H	B	D	r	
W50111013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50311013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50210013	APKT 1304PD SR	14.7	8.1	4.7	0.800	●
W50410013	APKT 1304PD SR	14.8	8.1	4.7	0.800	●
W50510013	APHT 1304PDFR	14.7	8.0	4.5	0.800	●

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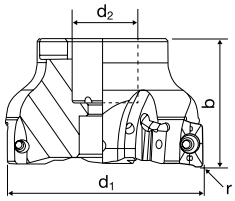
Corner end mills 90°

Inserts 13mm, integral air/cooling channel

HM



Corner end mills 90°	Delivery range: Cutter body incl. clamping screws for inserts					
Order-N°.	**d_1**	**d_2**	**b**	**$ap_{max.}$**	**z**	
W00410404	40.00	16.00	40.0	12.50	4	●
W00410505	50.00	22.00	40.0	12.50	5	●
W00410636	63.00	22.00	40.0	12.50	6	●
W00410808	80.00	27.00	50.0	12.50	8	●

Accessories	Delivery range clamping screws for inserts: Packaging unit 10 pieces	
Order-N°.		
W90110013	Torque screwdriver 3.2 Nm with blade Torx TX 15	●
W90111013	Interchangeable blade for torque screwdriver TX 15	●
W90100013	Screwdriver Torx TX 15	●
W90500013	Clamping screws for inserts Torx TX 15 / M3.5 x 7.2	●

Torque screwdriver Torx with blade

Torque is pre-set according to table

Order-N°.	Torx-Dimension	Torque	
W90110008	TX 08	1.2 Nm	●
W93110010	TX 10	2.0 Nm	●
W90110013	TX 15	3.2 Nm	●
W93110012	TX 15	4.2 Nm	●
W91110013	TX 20	5.0 Nm	●

Interchangeable blade for torque screwdriver

Order-N°.	Torx-Dimension		
W90111008	TX 08		●
W93111010	TX 10		●
W90111013	TX 15		●
W91111013	TX 20		●

Screwdriver Torx

Order-N°.	Torx-Dimension		
W90100008	TX 08		●
W93100010	TX 10		●
W90100013	TX 15		●
W91100013	TX 20		●

Marking and assembly of indexable inserts

Type	Corner end mills	Face milling cutter	High feed end mills	Round insert milling*
NX Steel ●	Order-N°. **W50111008** **W50111013**	Order-N°. **W51110009** **W51110013**	Order-N°. **W52110010** **W52110013**	Order-N°. **W53110010** **W53110012**
SX Stainless Steel ●●	Order-N°. **W50311008** **W50311013**	Order-N°. **W51310009** **W51310013**	Order-N°. **W52310010** **W52310013**	Order-N°. **W53310010** **W53310012**
HX Hardened Steel ●●●	Order-N°. **W50210008** **W50210013**		Order-N°. **W52210010** **W52210013**	Order-N°. **W53210010** **W53210012**
ZX Difficult to-cut materials ●●●●	Order-N°. **W50410008** **W50410013**	Order-N°. **W51410009** **W51410013**	Order-N°. **W52410010** **W52410013**	Order-N°. **W53410010** **W53410012**
AX Aluminium ●●●● ●	Order-N°. **W50510008** **W50510013**	Order-N°. **W51510009** **W51510013**		Order-N°. **W53510010** **W53510012**

- Clean the insert seats prior to assembly
- Ensure that all insert markings have the same orientation
- Use the turning moment screw driver to tighten the screws
- Ensure an exact positioning when tightening the indexable inserts

* The indexable round inserts may be used on eight positioning surfaces. It is not necessary to remove the screw completely to turn the insert to the next surface. Ensure a precise positioning when tightening the indexable round insert to the surface in order to prevent damage to the insert seat.

passion
for precision
fraisa

FRAISA offers you highly innovative products; products that are always state-of-the-art and right at the cutting edge of technological development.

For this reason, we would like to use our **"ToolSchool Recommendation"** concept to draw your attention to the latest technologies now incorporated in our product catalog and, of course, to the advantages they bring.

Our **"ToolSchool Recommendation"** clearly demonstrates how you can and should switch from the products you have been using until now to the new cutting-edge products from FRAISA. The ToolSchool logo has been used in this catalog to highlight selected products that offer a particularly good opportunity to upgrade from an existing tool to the latest technology.

By switching from "old" to "new", you benefit from increased productivity, cost reductions and genuine competitive advantages in the marketplace.

With our ToolSchool concept, you can be sure you always have the very latest technology to hand. This will strengthen your position in comparison to all your competitors.

FRAISA's ToolSchool stands for longstanding, field-proven experience and expertise. ToolSchool stands for application know-how and customer value. You can count on that.

Latest FRAISA technology for:

- **Greater efficiency**
- **Lower costs**
- **Improved competitiveness**

Enclosed with this catalog is a flyer that illustrates the ToolSchool recommendations by means of a tool compendium.

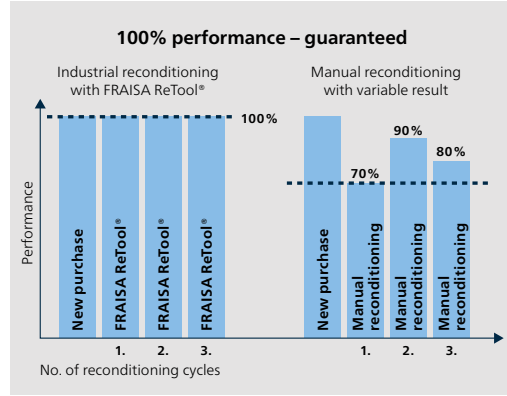
FRAISA ReTool® – Industrial tool reconditioning

FRAISA ReTool® offers an all-round service that restores your used tools to their original performance level and optimises your processes. FRAISA and third-party tools are reconditioned using the very latest technology – and in a resource-friendly way. The outcome: mint-condition tools as productive as they were the first day they were used. And to make things even better, your level of investment is lower than if you were to buy new tools, you increase your productivity and you save costs.

FRAISA ReTool® – a performance guarantee founded on integrated development of the tools and the reconditioning process

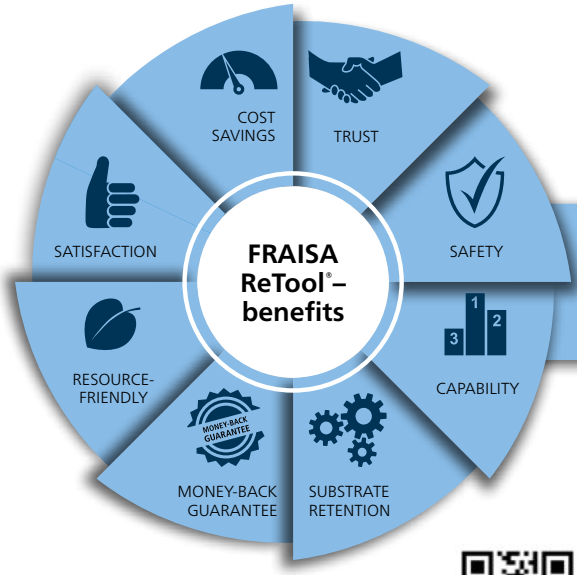
We guarantee that following their reconditioning with F**RAISA ReTool®**, your used tools will be restored to the original performance level they had when new. Our ability to provide this performance guarantee is a priority of our team of experts right from very early on in product development.

That's why the development of the reconditioning process is an integral part of the development phase, alongside the actual product tests and calculating the cutting data. Strict rules apply: the **FRAISA ReTool®** process is approved only if we are able to fulfil our performance guarantee 100%.



FRAISA ReToolBlue – recycle rather than throw away

With our **FRAISA ReToolBlue** service, we recycle the valuable carbide from tools that can no longer be reconditioned.



FRAISA ReTool® makes economic sense for you, too: After reconditioning them, we return your tools to you in mint condition. We restore them to their original performance level at a price that's more cost-effective for you than purchasing new ones or reconditioning them by hand.

Over 30 years' experience in tool reconditioning:

Our competence centre in Germany is Europe's largest service centre for carbide milling tools.

Video on our service product: FRAISA ReTool®

fraisa.com

Legend to the product page

Performance rating

Products that have a **high level of specialisation** for applications that go beyond (e**X**tra!) general applications and performance demands.

Products that have a **wide application area** within the scope of general applications and **high to very high performance demands.**

Products that have an **exceedingly wide application area, average performance demands** and a **favourable price-performance ratio.**

Products made from heavy-duty, high-speed steel for **basic applications** and/or performance demands limited by the machinery.

FRAISA marks all exceptional innovations with the signature **KS**.
This is in memory of the legendary Head of Production and Development, Mr Konrad Schmid, who defined the FRAISA brand from 1969 until 2000.

Performance

Roughing

Roughing HPC

Roughing HDC

Finishing

This index describes the performance of the tool in comparison to other products in the respective chapter. The more boxes that are filled, the better it is suited for each operation.

Wear resistance

This index describes the wear resistance of the tools in the CFC section. The more fields are completed, the greater is the wear resistance of the tool, which is crucial for processing abrasive composite materials.

Legend to the product page

Tool technologies

Milling tool with a variable helix angle
- Minimization of oscillation and vibrations
- Increase in material removal rates and tool life

Ball nose end mill with a variable helix angle
- Minimization of oscillation and vibrations
- Increase in material removal rates and tool life

Milling tool with a variable helix angle
- Axial and radial vibration damping, as well as smooth and gentle cutting
- Better component surfaces and lower noise levels
- Less stress on the spindle and energy consumption, despite high metal removal volume

High-performance penetration edge
- Easy-cutting high-performance penetration edge for high penetration angles
- Higher performance, tool life and process reliability for penetration
- High functionality with cutting data from ToolExpert HelixRamp

Milling tool with scaled slot
- Extension of swarf space
- Optimized chip removal
- Highest possible axial and radial infeeds

Milling tool with chip breaker
- Shorter chip lengths at high axial infeed rates, improving chip removal from both the component and the machine
- Improved optimization and process reliability
- High multi-functionality of the smooth-cutting tool is maintained

Milling tool with a special groove geometry
- Optimized swarf/groove geometry for improved swarf removal
- Optimized relationship between core diameter and swarf space for a high level of tool stability

Milling tool with a partially polished blade
- Reinforcement of the exposed cutting corner
- Absorption of high cutting forces

Milling tool with a special protective chamfer
- Reinforcement of the main cutting edge against chipping
- High tooth feed rates are possible in the case of smooth-edged tools
- High axial and radial infeeds are possible in the case of profiled tools

Milling tool with special edge conditioning
- Conditioning of the main cutting edge for increased stability
- Increase the mechanical and thermal load on the cutting edge
- General increase in the tool life

Legend to the product page

Tool technologies

Front chamfer
- Tool is supported in radial and axial directions
- Reduced vibrations
- Better surface quality from both side and end faces

Supporting chamfer
- Support for the tool in the radial and axial directions
- Reduced vibrations and higher performance
- Improved surface quality as a result of increased running smoothness

Milling tool with special free space design
- Significant reinforcement of the cutting edge
- Higher performance, less vibrations and improved component quality
- Longer tool life and more process safety - therefore higher degree of automation

High-gloss technology
- High gloss-ground tool faces and/or flanks and flutes
- Reduced adhesion tendency
- Improved surface finishes on the component
- Increased tool life and performance

Parabolic support face
- Support for the tool in the radial and axial directions
- Reduced vibration and higher performance

Finely balanced tools
- Finely balanced tools at least G2.5 at n=20,000 rpm or permissible residual imbalance <1gmm
- Reduction or elimination of the balancing process in the case of finely balanced clamping devices
- Improved surface quality as a result of increased running smoothness and fewer vibrations
- Increase in the service life of the machine spindle

Smooth transitions
- The shaft-neck-cutting edge transitions are fitted with smooth gradients and radii
- Improved tool rigidity and therefore less radial deflection
- Minimal step formation with several infeed depths
- Higher mechanical load and therefore improved performance

Optimized neck transitions <6 mm
- The transitions from the shank to the neck are short and their optimized shape
- Improved tool rigidity for diameters <6 mm
- Less deflection, greater precision
- Higher mechanical resilience can be translated into increased performance

Milling tool with increased core diameter
- Improved tool rigidity and less tool deflection
- Higher performance in the area of the infeeds ap, ae and of the feed rate fz
- Better component accuracy through less tool deflection

Legend to the product page

Tool technologies

Milling tool with shank of h4 tolerance
- High concentric and eccentric precision
- Optimal for modern precision chucks

Milling tool with shank of h5 tolerance
- High concentric and eccentric precision
- Optimal for modern precision chucks

Ball nose end mill with special edge conditioning for rough machining
- Conditioning of the main cutting edge for increased stability
- Significant increase in material removal rates compared to conventional ball nose mills
- General increase in the tool life

Ball nose end mill with special edge conditioning for finish machining
- Conditioning and smoothening of the main cutter profile
- Long term contour precision and surface quality
- General increase in the tool life

Corner radius end mill with special edge conditioning for roughing
- Conditioning of the main cutting edge for increased stability
- Significant increase of the material removal rate compared to standard corner radius end mills
- General increase in the tool life

Corner radius end mill with special edge conditioning for finishing
- Conditioning and smoothening of the main cutting edge
- Long-lasting contour accuracy and surface quality
- General increase in the tool life

Ball nose end mill with high-precision diameter
- High-precision tolerance zone across 180° of the ball for high dimensional accuracy
- Cutting edge diameter is twice the effective radius of the ball

Ball nose end mill with a highly precise radius tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Corner radius end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Corner radius end mill with a highly precise radius tolerance
- Specially designed tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Legend to the product page

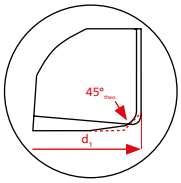
Tool technologies

Cylindrical end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Dimensional accuracy
- Dimensional accuracy of up to +/–0.005 mm guarantees high component precision

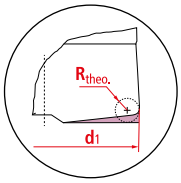
Face finishing cutting edge
- Tool with special cutting edge for face finishing
- Top quality plane surfaces can be machined

Tools with the face finishing cutting edge have a theoretical 45° chamfer ($45°_{theo.}$). This value is indicated for each diameter in the data table of the catalog page and is indicated as the tool chamfer for CNC/CAM programming. During machining, however, a minimal amount of rest material is produced due to the difference of $45°_{theo.}$ to the effective tool contour. (Observe the application related tips.)



High feed cutting (HFC) tool
- Tool with a special cutting geometry for high feed cutting
- High feeds are possible due to a defined swarf cross section distribution
- Large swarf space for quick and trouble-free removal of the swarf
- High removal volume with good contour convergency as well

The HFC tool has a theoretical programming radius ($R_{theo.}$). This value is stated for each diameter in the data table on the catalog page and, for the CNC/CAM programming, it is stated as a tool radius. However as a result of the $R_{theo.}$ difference to the effective tool contour, residual material arises in the machining.



Indexable insert
- Periphally ground, partially face polished on all sides
- Improved performance

New Safe-Center cutting edge geometry
- Counteracts chipping during the penetration process
- Good cutting-edge stability means good wear resistance and performance capability

Legend to the product page

Cutting tool substrate material

HM XT	Fine grain carbide. Hardness 1900 HV. Co content 9%. Characterised by a particularly high level of toughness.
HM XA	Fine grain carbide. Hardness 1950 HV. Co content 8%. Characterised by a particularly high level of abrasion resistance.
HM MG10	Fine grain carbide. Hardness 1600 HV. Co content 10%.
HM MG6	Fine grain carbide. Hardness 1800 HV. Co content 6%.
HM Plus	Ultrafine-grain carbide. Hardness 1800 HV. Co content 12%.
HM	Universal fine-grain carbide.
CBN	Cubic crystallized boron nitride (CBN). Hardness 4700 HV. Characterised by a particularly high level of abrasion resistance.
HSS PM/F	High-performance substrate material, powder metallurgically produced HSS alloys.
HSS-E Co8	High-performance high speed steel.

Legend to the product page

Form of the corner of the cutting edges

The corner between the front side blade and the circumference blade has a protective chamfer of 45°. The size of the protective chamfer is stated for each diameter in the data table on the catalog page.

The tool is furnished with a corner radius. For every diameter the size of the radius is listed in the corresponding data table of the catalog.

The corner between front cutting edge and circumferential cutting edge is executed sharp-edged.

High Feed Cutting (HFC) tool. Tool with a special cutting geometry for high feed milling.

High Feed Cutting (HFC) tool with corner radius. Tool with special cutting edge geometry for high feed machining.

Legend to the product page

Application suitability

A blue background means that the tool is particularly suitable for this material.

A light blue background means that the tool has good to adequate suitability for this material.

Chapter: Steel, stainless steel and titanium / 3D machining of steel / special shapes

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	

Chapter: Aluminium and copper

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermo-plast	

Additional material which can be machined is stated in the additional field

Chapter: CFC

Al Aluminium Cast	Cu Copper	CuZn Brass		C Graphite	CFK GFK I	CFK GFK II	CFK III	CFK/Al	

CFK GFK I — Group I: Fibre-reinforced technical plastics and plastic composites with fibre content up to 30%

CFK GFK II — Group II: Abrasive fibre-reinforced plastic composites with fibre content up to 60%

CFK III — Group III: Very abrasive carbon fibre-reinforced high-performance plastic composites with a fibre content of over 60%

Depending on the combination of the following influencing factors, the fibre-reinforced composite materials can be assigned to the 3 metal-cutting groups (whereby the above description serves as a simplified aid):

- Matrix (binding agent)
- Fibre type (material)
- Fibre shape (short, long, endless, fabric)
- Fibre content
- Fibre structure (orientation)
- Manufacturing process

Legend to the product page

Shape of the shank / shank versions

Full carbide tools with a cylindrical shank: shank version in accordance with DIN 6535 HA

Full carbide tools with a cylindrical shank and a side clamping surface. Shank version in accordance with DIN 6535 HB

Short shank tools: In the diameter graduation and diameter tolerance, the shank corresponds to the DIN 6535 HB standard. The section behind the clamping surface is shortened.

HSS tools with a cylindrical shank and a side clamping surface: Shank version in accordance with DIN 1835 B

Indexable insert milling tools

Shank version in accordance with DIN 1835 B

Bore receptacle with crosswise slot adherent to DIN 138

Helix angle and rake angle

Helix and rake angles are particularly important characteristics of milling tools. Due to this fact, helix angle λ and rake angle γ are specified for each tool. The exact values can vary with the tool diameter.

Crash angle α

Tools with a smaller cutting diameter than the shank diameter need specific attention during machining. A crash can surely be avoided when the limiting side surfaces are sloped with at least a minimum angle, the crash angle α, against the vertical.
The angle of collision is stated for each diameter in the data table on the catalog page.

Legend to the product page

Abbreviations

d_1	Diameter of the cutting edge [mm]
d_2	Shank diameter or bore diameter [mm]
d_3	Neck diameter or external diameter (face milling cutter) [mm]
d_4	Diameter of the neck before the transition from the neck to the shank [mm]
d_5	End face diameter [mm]
l_1	Total length of the tool [mm]
l_2	Length of cutting edge [mm]
l_3	Distance from the front of the tool to the end of the neck [mm]
l_4	Distance from the edge of the tool to the beginning of the shank [mm]
l_5	Distance from the front of the shank to the end of the neck [mm]
l_6	Shank length [mm]
l_7	Head length [mm]
l_8	Flank length [mm]
l_9	Distance from the end of the cutting edge of the tool to the beginning of the shank [mm]
Θ	Tightening angle «Theta» between d_3 and d_4 [° - DEG]
45°	Size of the protective chamfer between the face end blade and the circumference blade [mm]
r	Corner radius [mm]
α	Collision angle «Alpha» [° - DEG]
β	Minimum setting angle «Beta» [° - DEG]
z	Number of cutting edges
$45°_{theo.}$	Size of theoretical protective chamfer between end cutting edge and peripheral cutting edge [mm]
$R_{theo.}$	Theoretical programming radius ($R_{theo.}$) for HFC tools [mm] See information at Tool Technology HFC
α/2	Conical angle [° - DEG]

Legend to the product page

r_1	Cutting edge radius [mm]
r_2	Curved surface radius [mm]
r_3	Run-out radius [mm]
ap_{max}	Maximum axial infeed [mm]
ap_{lim}	Axial infeed [mm] limited by the application or tool geometry [mm]
b	Tool height of shell end mills [mm]
φ_{max}	Maximum infeed angle
H	Height of the insert
B	Width of the insert
D	Thickness of the insert
D_1	Diameter of the indexable insert
L_A	Overall length from the spindle nose
L-Typ	Version: K = short; N = normal; M = medium; L = long; XL = extra long
I	Interface: Interface parameters

2.5D machining strategies

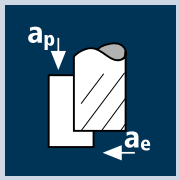
HPC High-Performance-Cutting
Characteristics of HPC:
- High machining volume with high cutting forces
- Large tool engagement angle of 66°–80°(ae) and small cutting depths (ap < 1.5 xd)
- Short tool path (tool always engaged)

HDC High-Dynamic-Cutting
Characteristics of HDC:
- Maximum machining volume with lower cutting forces
- Constant cutting forces / cutting conditions / tool engagement angle
- Small tool engagement angle of 25°–60°(ae) and large cutting depths (ap > 1.5 xd)

Applications for 2.5D machining

Cylindrical and Corner radius

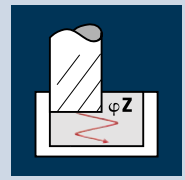
Roughing HPC



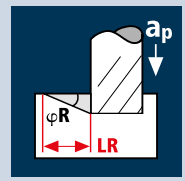
Roughing HPC, laterally (partial cut)

Roughing HPC, slots (full cut)

Penetration

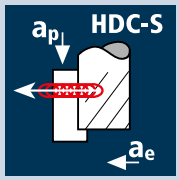


Penetration, helical interpolation

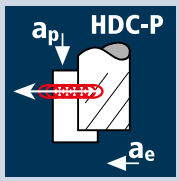


Penetration, ramping

Roughing HDC

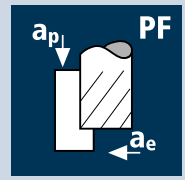


Roughing HDC-S (partial cut)

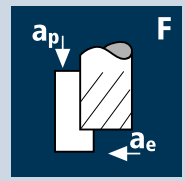


Roughing HDC-P (partial cut)

Finishing



Pre-finishing (partial cut) (Pre-Finishing PF)



Finishing (partial cut) (Finishing F)

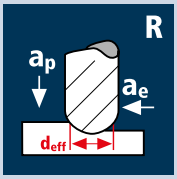
3D machining strategies

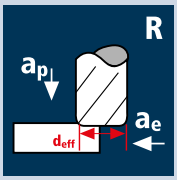
HSC High-Speed-Cutting
Characteristics of HSC:
- Machining with toric or spherical tools
- High surface quality & dimensional accuracy attainable
- Machining is performed with small depths of cut (ap & ae)
- High cutting speeds (vc)

HFC High-Feed-Cutting
Characteristics of HFC:
- Small depths of cut (ap)
- Very high feed per tooth (fz)
- High machining volume with low cutting forces
- Special cutting geometry of the tools

Application notes can be found in the chapter 3D

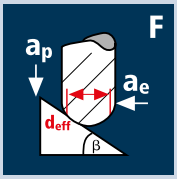
The application symbols are on the left next to the cutting data.
The letter, top right, provides information concerning strategy in relation to the stated cutting data.

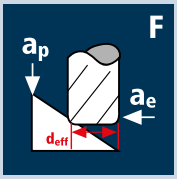




R stands for «Roughing» - a process which requires sufficient power and stability with regard to the machine and clamping.

Z-level roughing: The cutting data given in the catalog is for layer-by-layer removal. In this case the axial machine axis is set to constant depth and does not change. Pull and push cutting are therefore not recommended!





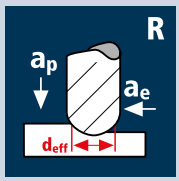
PF stands for «Pre-Finishing»
F stands for «Finishing»
SF stands for «Super-Finishing»

The cutting data given in the catalog applies for removal from level surfaces and parallel with the shape of the workpiece. Pull and push cutting are permissible. Push cutting is however less than ideal and will result in a reduction in tool life.

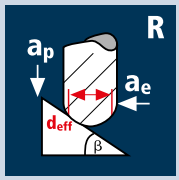
Applications for 3D machining

HSC machining

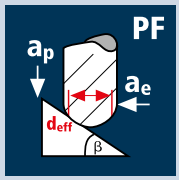
Ball nose



Z-level roughing
(Roughing R)

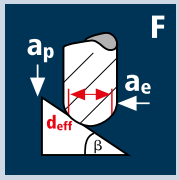


Roughing parallel
to contour
(Roughing R)



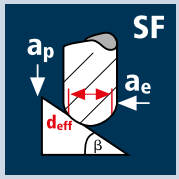
Pre-finishing
(Pre-Finishing PF)

Steep slopes



Finishing
(Finishing F)

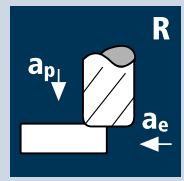
Steep slopes



Super-Finishing
(Super-Finishing SF)

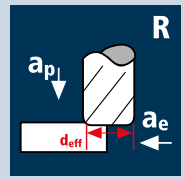
Steep slopes

Corner radius



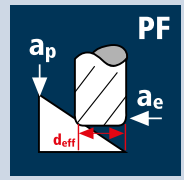
Z-level roughing
(Roughing R)

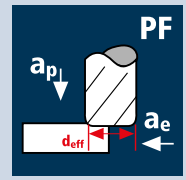
For use above the
corner radius area



Z-level roughing
(Roughing R)

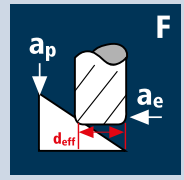
For use in the
corner radius area

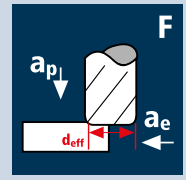




Pre-finishing
(Pre-Finishing PF)

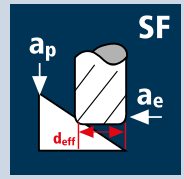
Steep slopes /
Flat surfaces

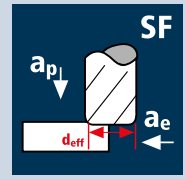




Finishing
(Finishing F)

Steep slopes /
Flat surfaces

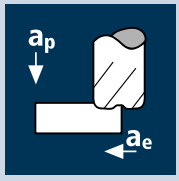




Super-Finishing
(Super-Finishing SF)

Steep slopes /
Flat surfaces

HFC machining



Rough milling (area clearance) with high-feed mills
(High-Feed-Cutting)

Machining strategies for ArCutX milling tools (circular arc milling cutters)

Finishing Planes and free-form surfaces can be pre-finished and finished highly efficiently using the ArCutX tool concept.

HSC Radius areas can be machined using a 5-axis HSC strategy.

HDC Rest material in corners can be removed using a 5-axis HDC strategy.

Applications for ArCutX milling tools (circular arc milling cutters)

Spherical / Spherical & Toric

Pre-finishing
(Pre-Finishing PF)

Steep slopes /
Flat surfaces

Finishing
(Finishing F)

Steep slopes /
Flat surfaces

Super-Finishing
(Super-Finishing SF)

Steep slopes /
Flat surfaces

Pre-finishing HSC
(Pre-Finishing PF)

Radius areas

Finishing HSC
(Finishing F)

Radius areas

Super-Finishing HSC
(Super-Finishing SF)

Radius areas

Toric / Toric integral

HDC (Rest material)
Roughing
(Roughing HDC)

Corners

Pre-finishing
(Pre-Finishing PF)

Steep slopes

Finishing
(Finishing F)

Steep slopes

Super-Finishing
(Super-Finishing SF)

Steep slopes

Roughing HSC
(Roughing R)

Corners

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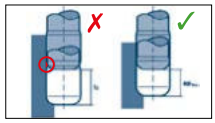
AX tools:



Clean transitions can be achieved with the AX tools during finishing by means of several infeed depths. However, in this application the correct infeed depth is important. On the basis of the tool geometry with front radius, the limited axial infeed (ap_{lim}) is specified in the following table:

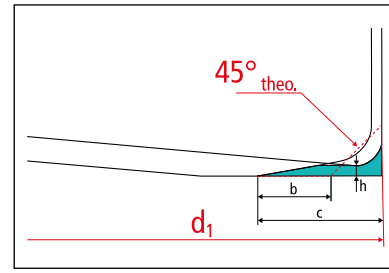
Axial infeed depth ap_{lim} for plane transition in wall for AX

d_1	l_2	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
3	4	0.5	2.5										
4	5	0.5	3.5										
5	6	0.5	4.5										
6	7	0.5	5.5	1.0	5.0					2.5	3.5		
8	9			1.0	7.0					2.5	5.5		
10	11			1.0	9.0	1.5	8.5			2.5	7.5	4.0	6.0
12	13			1.0	11.0	1.5	10.5			2.5	9.5	4.0	8.0
16	18			1.0	16.0	1.5	15.5	2.0	15.0	2.5	14.5	4.0	13.0
20	22			1.0	20.0	1.5	19.5	2.0	19.0	2.5	18.5	4.0	17.0
25	27			1.0	25.0	1.5	24.5			2.5	23.5	4.0	22.0

Tools with face finishing cutting edge:

Radial cutting depth ae_{max} for plane surfaces with tools with a face finishing cutting edge

d_1	h	b	c	ae_{max}
[mm]	[mm]	[mm]	[mm]	[mm]
3	0.02	0.1	0.20	2.6
4	0.02	0.1	0.20	3.6
5	0.02	0.1	0.20	4.6
6	0.03	0.2	0.20	5.3
8	0.03	0.2	0.35	7.3
10	0.04	0.3	0.35	9
12	0.04	0.3	0.50	11
16	0.04	0.3	0.50	15



CFC/GRP processing:

Recommended processing:
Counter-rotation

- Heat is led away from the component
- Improved surface quality
- Less disintegration (mechanical damage)
- Dust is led away

Cylindrical end mill DIAMOND coated: Roughing and finishing of CFC in one operation.

Straight cutting edge for neutral use with medium clamping quality and wall thickness.

Pulling cutting edge for normal use with good clamping and dust/chip removal.

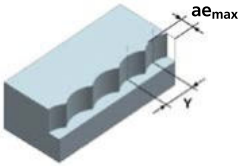
Pushing cutting edge for use in thin materials, as the material is pressed on to the substrate.

Indexable insert milling tools:

Radial infeed depth a_e for flat surfaces with HFC indexable insert milling tools

d_1	Insert size	a_e
[mm]	[mm]	[mm]
25	10	13.6
35	13	18.8
40	10	28.6
50	10	38.6
63	10	51.6
50	13	33.8
63	13	46.8
80	13	63.8

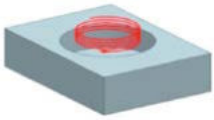
Plunge milling with HFC indexable insert milling tools



Insert size	ae_{max}	f_z	Y_{max}
[mm]	[mm]	[mm]	[mm]
10	8	0.15	< 0.7 x d_1
13	10.5	0.20	< 0.7 x d_1

Bore milling/helical plunging with milling tools for HFC and round indexable inserts

Minimum and maximum bore diameters



	Indexable inserts HFC 10mm		Indexable inserts HFC 13mm	
d_1	D_{max}	D_{min}	D_{max}	D_{min}
[mm]	[mm]	[mm]	[mm]	[mm]
25	48	35	–	–
35	–	–	68	50
40	78	65	–	–
50	98	85	98	80
63	124	111	124	106
80	–	–	158	140

	Round indexable inserts 10mm		Round indexable inserts 12mm	
d_1	D_{max}	D_{min}	D_{max}	D_{min}
[mm]	[mm]	[mm]	[mm]	[mm]
20	40	24	–	–
25	50	32	–	–
32	64	46	–	–
35	70	52	70	48
40	80	62	80	58
42	84	66	84	62
50	100	82	100	78
52	104	86	104	82
63	–	–	126	104
66	–	–	132	110
80	–	–	160	138
100	–	–	200	178

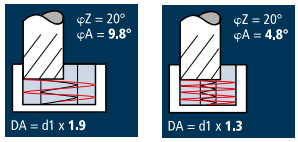
Infeed angle for monoblock milling tools

Chapter: Steel, stainless steel, titanium and nickel												
Material group	Rm 850-1500			HRC 48-60			Inox Stainless			Ti Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate v_f [%]	100%			100%			80%			80%		
z = 2	2.50°	1.80°	1.00°	1.50°	1.00°	0.60°	2.50°	1.80°	1.00°	2.50°	1.80°	1.00°
z = 3	2.00°	1.20°	0.80°	1.00°	0.65°	0.40°	2.00°	1.20°	0.80°	2.00°	1.20°	0.80°
z = 4	1.00°	0.65°	0.40°	0.50°	0.35°	0.20°	1.00°	0.65°	0.40°	1.00°	0.65°	0.40°
z > 4	0.40°	0.30°	0.20°	0.20°	0.15°	0.10°	0.40°	0.30°	0.20°	0.40°	0.30°	0.20°

Chapter: 3D machining												
Material group	Rm 850-1500			HRC 48-60			Inox Stainless			Ti Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate v_f [%]	100%			100%			80%			80%		
z = 2	0.50°	0.35°	0.25°	0.25°	0.20°	0.10°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°
z = 4	0.30°	0.25°	0.15°	0.20°	0.15°	0.10°	0.30°	0.25°	0.15°	0.30°	0.25°	0.15°
z > 4	0.20°	0.15°	0.10°	0.15°	0.10°	0.10°	0.20°	0.15°	0.10°	0.20°	0.15°	0.10°
HFC	0.50°	0.35°	0.25°	0.40°	0.30°	0.20°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°

Chapter: Aluminium and copper												
Material group	Al Aluminium Alloy						Cu Copper					
Version	N	M	2xd	3xd	4xd	5xd	N	M	2xd	3xd	4xd	5xd
Feed rate v_f [%]	100%						100%					
z = 2	5.00°	4.00°	6.00°	5.00°	4.00°	2.50°	4.00°	3.00°	5.00°	4.00°	3.00°	2.00°
z = 3	4.50°	3.50°	5.00°	4.50°	3.50°	2.00°	3.50°	2.50°	4.00°	3.50°	2.50°	1.50°

The penetration angle (Helix) for milling tools with high-performance penetration edge



Program the penetration angle φZ or φA correctly!

Conversion table φZ to φA with corresponding bore diameter											
Penetration angle φZ [°]	20°	18°	17.5°	16°	15°	13°	12°	10°	9°	8°	7°
Bore diameter DA	**Penetration angle φA [°]**										
DA = d_1 x 1.3 [mm]	4.8°	4.3°	4.2°	3.8°	3.5°	3.0°	2.8°	2.3°	2.1°	1.9°	1.6°
DA = d_1 x 1.5 [mm]	6.9°	6.2°	6.0°	5.5°	5.1°	4.4°	4.1°	3.4°	3.0°	2.7°	2.3°
DA = d_1 x 1.7 [mm]	8.5°	7.6°	7.4°	6.7°	6.3°	5.4°	5.0°	4.2°	3.7°	3.3°	2.9°
DA = d_1 x 1.9 [mm]	**9.8°**	**8.7°**	**8.5°**	**7.7°**	**7.2°**	**6.2°**	**5.7°**	**4.8°**	**4.3°**	**3.8°**	**3.3°**

FRAISA recommendation

Infeed angle for indexable insert milling tools

Material group		Rm 850-1500			HRC 48-60			Inox Stainless		Ti Titanium	Al Aluminium Alloy		
Version		K	M	L/XL	K	M	L/XL	K	M	L/XL	K	M	L/XL
Feed rate v_f [%]		100 %			100 %			80 %			100 %		
	d_1												
Corner-/Slot end mills 8mm	16	1.00°	0.80°	0.60°	0.70°	0.55°	0.40°	1.00°	0.80°	0.60°	1.30°	1.10°	0.80°
Corner-/Slot end mills 8mm	20	0.75°	0.60°	0.45°	0.55°	0.40°	0.30°	0.75°	0.60°	0.45°	1.00°	0.80°	0.60°
Corner-/Slot end mills 8mm	25	0.75°	0.60°	0.45°	0.55°	0.40°	0.30°	0.75°	0.60°	0.45°	1.00°	0.80°	0.60°
Corner-/Slot end mills 8mm	32	0.50°	0.40°	0.30°	0.35°	0.30°	0.20°	0.50°	0.40°	0.30°	0.65°	0.50°	0.40°
Corner-/Slot end mills 13mm	25	2.00°	1.60°	1.20°	1.40°	1.10°	0.85°	2.00°	1.60°	1.20°	2.50°	2.00°	1.50°
Corner-/Slot end mills 13mm	32	1.60°	1.30°	0.95°	1.10°	0.90°	0.65°	1.60°	1.30°	0.95°	2.00°	1.60°	1.20°
Corner end mills 8mm	40 ; 50	0.20°			0.20°			0.20°			0.25°		
Corner end mills 8mm	63 ; 80	0.10°			0.10°			0.10°			0.15°		
Corner end mills 13mm	40 ; 50	0.40°			0.40°			0.40°			0.45°		
Corner end mills 13mm	63 ; 80	0.20°			0.20°			0.20°			0.25°		
Face milling cutter	40 ; 50	0.15°			X			0.15°			0.20°		
Face milling cutter	63 ; 80	0.10°			X			0.10°			0.15°		
Face milling cutter	100 ; 125	X			X			X			X		
High feed end mills	25 ; 35	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	X		
High feed end mills	40 ; 50	0.40°			0.30°			0.40°			X		
High feed end mills	63 ; 80	0.20°			0.15°			0.20°			X		
Round insert end mills	20 ; 25	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	0.80°	0.50°	0.25°
Round insert end mills	32 ; 35	0.60°	0.40°	0.20°	0.50°	0.30°	0.15°	0.60°	0.40°	0.20°	0.80°	0.50°	0.25°
Round insert end mills	40 ; 42	0.50°			0.40°			0.50°			0.60°		
Round insert end mills	50 ; 52	0.40°			0.30°			0.40°			0.50°		
Round insert end mills	63 ; 66	0.25°			0.20°			0.25°			0.35°		
Round insert end mills	80 ; 100	0.10°			0.10°			0.10°			0.20°		

Information for cutting data

FRAISA ToolExpert® – the new online cutting data tool for optimum tool use

ToolExpert is available online, so there's no longer any need to download it. What's more, it is platform-independent. All you need is an up-to-date browser. It has also been redesigned to make it even more user-friendly.

The user-friendly online tool provides you with perfectly coordinated, tool- and material- specific cutting data for your production – and the perfect basis for high-precision usage of your FRAISA tools: fast, simple and free of charge.

The three applications ToolExpert MFC, ToolExpert HelixRamp and ToolExpert HDC are now integrated into ToolExpert. This means ToolExpert can be implemented even more flexibly and in a wider range of applications.

FRAISA ToolExpert® ArCutX – Tested online application data for efficient milling with ArCutX

ArCutX milling cutters were developed for finishing processes aimed at producing excellent surface quality. A variety of applications are possible for each of the five ArCutX tool types.

The specially developed ToolExpert ArCutX is now a reliable aid for finding the perfect tool from the ArCutX family to suit the desired material and application. The clearly structured menu lets you select/read off material, application, ArCutX tool type and the option «coated» or «uncoated».

Similarly, using ToolExpert ArCutX you can also find the corresponding cutting data for the selected tool. The phenomenal range of options offered by the ArCutX can therefore be exploited to the full, thanks to the specially developed cutting data calculator.

FRAISA ToolExpert® AX-FPS – An innovative solution for defining cutting data

The new ToolExpert AX-FPS gives FRAISA customers an innovative solution for defining cutting data that is specially tailored to their machine environment. High-performance roughing of aluminum alloys is not limited by the tool, but by the machine spindle and the machine environment.

ToolExpert AX-FPS lets you clearly and simply describe your machine environment, making it easy to discover the most effective and reliable cutting data for your application. This new option, the only one of its kind on the market, offers our customers real added value and ensures a reduction in machining times and production costs.

The functions incorporated into ToolExpert AX-FPS have been developed by recording over a thousand measuring points and guarantee highly productive and reliable system utilisation. At the same time, capacity utilisation of the milling cutter, the machine spindle and machine environment come as close as possible to maximum utilisation.

Services

FRAISA's service portfolio at a glance

FRAISA ToolCare® 2.1: management, procurement and information system for tools

FRAISA ConcepTool: custom-made special tools

FRAISA ReTool®: industrial tool reconditioning with performance guarantee

FRAISA ToolSchool: initial and further training

CAD data

We offer you the possibility to download 2D drawings (DXF), 3D models (STEP) and XML data (according DIN4000-102) for our products. Simply enter the article number of the tool and select the desired file.

Download measurement report*

As a customer, you can enter the measurement report number of your FRAISA tool and download the measurement report as a PDF file.

* Measurement reports available for the following article:
- High precision mills +/- 0,003 SpheroX (X7500)

https://www.fraisa.com/en/online-tools

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You can also use our ordering service via our E-Shop and benefit from our changing offers.

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Calculation formulas for cutting data

Formulas

d_1	Diameter of the cutting edge [mm]
z	Number of cutting edges
a_p	Axial infeed depth [mm]
a_e	Radial infeed depth [mm]
v_c	Cutting speed [m/min]
f_z	Feed per tooth and revolution [mm]
n	Spindle speed [min^{-1}]
v_f	Feed rate [mm/min]
f	Feed per rotation [mm]
Q	Material removal rate [cm^3/min]
d_{eff}	Effective engagement diameter [mm]
β	Setting angle «Beta» [° - DEG]

Spindle speed

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad \left[\frac{1}{min}\right]$$

Cutting speed

$$v_c = \frac{d_1 \cdot n \cdot \pi}{1000} \quad \left[\frac{m}{min}\right]$$

Feed rate

$$v_f = f_z \cdot z \cdot n \quad \left[\frac{mm}{min}\right]$$

Feed per tooth

$$f_z = \frac{v_f}{z \cdot n} \quad [mm]$$

Feed per rotation

$$f = f_z \cdot z \quad [mm]$$

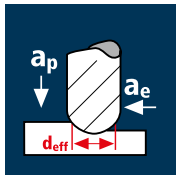
Material removal rate

$$Q = \frac{ap \cdot ae \cdot v_f}{1000} \quad \left[\frac{cm^3}{min}\right]$$

i

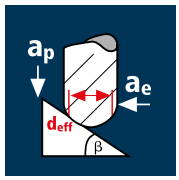
Calculation formulas for cutting data

Effective diameter for ball nose end mills at a set angle β = 0°



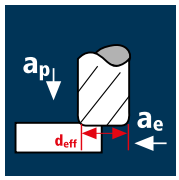
$$d_{eff} = 2 \cdot \sqrt{d_1 \cdot ap - ap^2} \quad [mm]$$

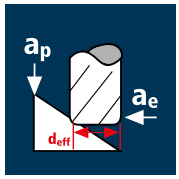
Effective diameter for ball nose end mills at a set angle 0 < β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]



$$d_{eff} = d_1 \cdot \sin\left[\beta + \cos^{-1}\left(\frac{d_1 - 2 \cdot ap}{d_1}\right)\right] \quad [mm]$$

Effective diameter for corner radius end mills at a set angle 0 ≤ β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]





$$d_{eff} = d_1 - 2 \cdot r + 2 \cdot r \cdot \sin\left[\beta + \cos^{-1}\left(1 - \frac{ap}{r}\right)\right] \quad [mm]$$

Calculation formulas for cutting data

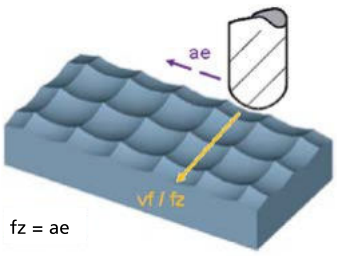
Theoretical surface roughness and surface qualities

Surface roughness in the direction of feed v_f

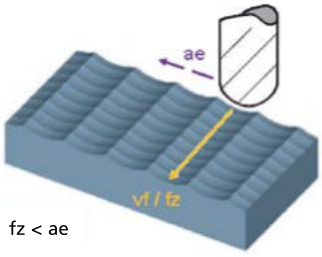
$$R_{th,vf} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - f_z^2}{4}} \right) \cdot 1000 \quad [\mu m]$$

Surface roughness in the infeed direction ae

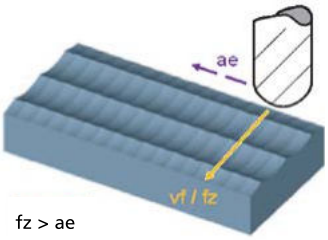
$$R_{th,ae} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - ae^2}{4}} \right) \cdot 1000 \quad [\mu m]$$



fz = ae

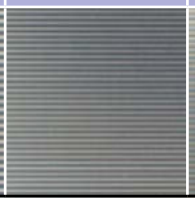
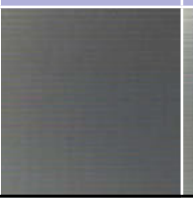
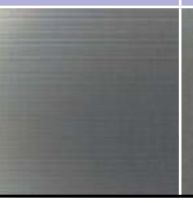


fz < ae



fz > ae

Surface qualities

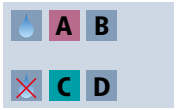
Maximum roughness values Ra in µm; 1 µm = 0.001 mm					
3.2	1.6	0.8	0.4	0.2	0.1
Roughness classes					
N8	N7	N6	N5	N4	N3
					

Hardness conversion table (R_m → HV10 → HB → HRC)

R_m [N/mm²]	HV 10	HB	HRC		R_m [N/mm²]	HV 10	HB	HRC
240	75	71			920	287	273	28
255	80	76			940	293	278	29
270	85	81			970	302	287	30
285	90	86			995	310	295	31
305	95	90			1020	317	301	32
320	100	95			1050	327	311	33
335	105	100			1080	336	319	34
350	110	105			1110	345	328	35
370	115	109			1140	355	337	36
385	120	114			1170	364	346	37
400	125	119			1200	373	354	38
415	130	124			1230	382	363	39
430	135	128			1260	392	372	40
450	140	133			1300	403	383	41
465	145	138			1330	413	393	42
480	150	143			1360	423	402	43
495	155	147			1400	434	413	44
510	160	152			1440	446	424	45
530	165	157			1480	458	435	46
545	170	162			1530	473	449	47
560	175	166			1570	484	460	48
575	180	171			1620	497	472	49
595	185	176			1680	514	488	50
610	190	181			1730	527	501	51
625	195	185			1790	544	517	52
640	200	190			1845	560	532	53
660	205	195			1910	578	549	54
675	210	199			1980	596	567	55
690	215	204			2050	615	584	56
705	220	209			2140	639	607	57
720	225	214				655	622	58
740	230	219				675		59
755	235	223				698		60
770	240	228				720		61
785	245	233				745		62
800	250	238	22			773		63
820	255	242	23			800		64
835	260	247	24			829		65
860	268	255	25			864		66
870	272	258	26			900		67
900	280	266	27			940		68

Coating suitability for milling tools

Coating suitability related to dry or wet machining conditions



A: Excellent suitability of the coating A during wet machining.
B: The suitability of the coating B during wet machining is sufficient to good.

C: Excellent suitability of the coating C during dry machining.
D: The suitability of the coating D during dry machining is sufficient to good.

Coating suitability for milling tools in the corresponding material class

1 = Ideally suited 2 = Adequate to well-suited	U UNICUT-4X		P POLYCHROM		D DURO-S		V DURO-V		H DURO-Si		X X-AL		M MICRO		C CELERO	
Material classes	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C
Steel < 550 N/mm²	1	2	1	2			2		2		1	2	1	2		
Steel 550 - 850 N/mm²	1	2	1	1			2		2	1	1	1	1	2		
Steel 850 - 1100 N/mm²	1		1	1			2	1			1	1	1			
Steel 1100 - 1300 N/mm²	2	2	2	1			2	1			2	1	1			
Steel 1300 - 1500 N/mm²	2	2	2	1		2		1		1	2	1	2	1		
Hardened tool steel 48-52 HRC		2		1		2		1		1		1		1		
Hardened tool steel 52-56 HRC				1		1		1		1		1		1		
Hardened tool steel 56-60 HRC				1		1		1		1		1		1		
Hardened tool steel 60-64 HRC				2		1		1		1		1				
Cold work tool steel (12% Cr) hoch legiert [1.2379]	2	2	2	1		1	2	1	2	1	2	1	2	2		
Cold work tool steel, low alloyed [1.2067]	2	2	2	1		1	2	1	2	1	2	1	2	2		
Inox martensitic C < 0.3% [Cr/1.4021]	1		1				2		1		1		1			
Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	1		1				2		1		1		1			
Inox medium [Cr-Ni-Mo+/1.4539] Duplex steel [17-4 PH]	1		1				2		1		1		1			
Inox difficult [Cr-Ni-Mo++/1.4529] Heat resistant steel [1.4841]	1		1				2		1		1		1			
Nickel base alloys prec.-hard. [Inconel 718]	2		1				2		1		2		1			
Cast iron (lamellar / spheroidal)	2	2	2	1		1	2	1			2	1	2	1		
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2		1		2		1		1		1		2			
Titanium alloy > 300 HB [Ti6Al4V]	2		1		1		1		1		1		2			
Unalloyed aluminium															1	
Wrought aluminium Si < 6%	2		2								2		2		1	
Unalloyed copper	2		2								2		2		1	
Wrought copper alloys Bronze	2	2	2	1		2	2	1			2	1	2	1		
Brass short chips [Ms58]	2	2	2	1		2	2	1			2	1	2	1		
Thermoplastics	2		2										2		2	
High speed steel hardened, hardened 64-70 HRC						1		1		1		2				

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infochina@fraisa.com

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Article list – Drilling tools

Example: Article: B62015

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Coating: NANO-U²
Page: 17

Article-N°.			Coating												
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
Chemical composition			TiAlCrN	TiAlCN	AlTiN	AlTiSiN	TiAlSiN	AlTiN/ TiSiXN	TiAlN/ AlCrN	TiAlN/ AlCrN	TiAlN	TiB2	C	C	C
Hardness [HV]			3000	3200	3600	3300	3200	3800	3300	3300	3000	4000	10000	10000	10000
Max. temp. [°C]			1000	650	880	1100	1100	1100	1100	1100	800	700	600	600	600
0110	81			●											
0200	131			●											
0391	639											●			
0393	645											●			
0400	305			●											
0410	309			●											
0540	203		●												
0609	209			●											
0610	205			●											
0619	201			●											
0621	227			●											
0650	217			●											
0659	215			●											
0665	225			●											
0695	211			●											
0700	149			●											
0780	85			●											
0890	749			●											
0905	745			●											
0910	743			●											
0915	741			●											
0920	739			●											
3209	761			●											
3490	759			●											
5036	147		●												
5213	143		●												
5225	91		●												
5229	145		●												
5236	299		●												
5237	303		●												
5249	141		●		●										
5250	393		●												
5252	399		●												
5255	65		●												
5272	587											●			
5286	361		●												
5297	637											●			
5313	143		●												

Article-N°.			Coating													
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
5325	91		●												
5329	145		●												
5335	301		●												
5336	299		●												
5337	303		●												
5349	141		●		●										
5355	65		●												
5397	637											●			
5500	587											●			
5580	427														●
5640	729												●		
5645	731												●		
5712	279										●				
5714	283										●				
5714	719												●		
5716	287										●				
5716	721												●		
5717	723												●		
5752	559										●				
5754	561										●				
5754	715												●		
5756	563										●				
5756	717												●		
5782	505										●				
5784	507										●				
5784	683												●		
5786	509										●				
5786	685												●		
5787	687												●		
5791	689												●		
5793	691												●		
6032	695													●	
6034	697													●	
6036	701													●	
6038	705													●	
6040	709													●	
6042	711													●	
6044	713													●	
6062	669													●	
6064	671													●	
6066	673													●	
6068	675													●	
6070	677													●	
6072	679													●	
6074	681													●	
6460	435								●						
6461	437								●						
6462	441								●						
6463	445								●						
6464	449								●						
6481	439								●						
6482	443								●						
6483	447								●						
6500	247									●					
6501	249									●					
6502	251									●					
6503	253									●					
6504	255									●					
6505	257									●					
6506	259									●					
6508	261									●					
6531	513									●					
6532	515									●					
6533	519									●					

Article-N°.			Coating													
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
6534	521									●					
6535	525									●					
6536	527									●					
6538	531									●					
6560	451									●					
6561	453									●					
6562	457									●					
6563	461									●					
6564	465									●					
6565	467									●					
6566	471									●					
6567	473									●					
6568	475									●					
6579	469									●					
6581	455									●					
6582	459									●					
6583	463									●					
6632	547									●					
6634	549									●					
6735	535									●					
6736	537									●					
6738	539									●					
6740	541									●					
6742	543									●					
6744	545									●					
6765	477									●					
6766	479									●					
6768	481									●					
6770	483									●					
6772	485									●					
6774	487									●					
6800	263									●					
6802	265									●					
6804	267									●					
6807	269									●					
6809	271									●					
6810	273									●					
6811	275									●					
6812	277									●					
6816	551									●					
6818	553									●					
6820	555									●					
6823	557									●					
6832	489									●					
6836	491									●					
6840	493									●					
6844	495									●					
6846	497									●					
6847	499									●					
6848	501									●					
6849	503									●					
7100	379									●					
7104	389									●					
7200	375									●					
7204	385									●					
7210	373						●								
7212	383						●								
7284	727													●	
7340	395		●												
7344	401		●												
7400	335									●					
7402	347									●					
7404	353									●					
7460	337									●					

Article-N°.			Coating													
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
7470	331					●									
7472	343					●									
7474	349					●									
7478	359					●									
7484	725													●	
7490	333						●								
7492	345						●								
7494	351						●								
7500	329									●					
7540	339		●												
7544	355		●												
7550	341	●													
7554	357	●													
7600	409									●					
7604	421									●					
7608	425									●					
7610	405						●								
7612	413						●								
7614	417						●								
7620	411									●					
7624	423									●					
7630	407									●					
7632	415									●					
7634	419									●					
7920	737			●											
7930	751			●											
7940	753			●											
7942	755			●											
7960	757			●											
8100	55		●												
8101	49		●												
8102	51		●												
8105	53		●												
8107	167		●												
8111	101		●												
8112	103		●												
8115	105		●												
8117	191		●												
8121	133		●												
8122	139		●												
8200	55		●												
8201	49		●												
8202	51		●												
8205	53		●												
8207	167		●												
8211	101		●												
8212	103		●												
8215	105		●												
8217	191		●												
8221	133		●												
8222	139		●												
8300	61		●												
8301	231		●												
8302	195		●												
8303	67		●												
8304	57		●												
8305	63		●												
8307	171		●												
8310	111		●												
8311	235		●												
8313	115		●												
8315	113		●												
8320	135		●												
8321	241		●												

Article-N°.			Coating												
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
8322	243		●												
8323	137		●												
8400	61		●												
8401	231		●												
8402	195		●												
8403	67		●												
8404	57		●												
8405	63		●												
8407	171		●												
8410	111		●												
8413	115		●												
8415	113		●												
8420	135		●												
8423	137		●												
8500	37		●												
8502	245						●								
8504	35						●								
8506	45						●								
8507	153						●								
8508	47							●							
8514	93						●								
8516	97						●								
8517	187						●								
8518	99							●							
8521	239		●				●								
8530	365		●												
8535	367		●												
8540	369		●												
8550	371		●												
8560	579	●													
8561	585	●													
8567	607	●													
8570	595	●													
8571	599	●													
8576	611	●													
8577	615	●													
8578	593	●													
8580	605	●													
8587	619	●													
8600	37		●												
8604	35						●								
8606	45						●								
8607	153						●								
8608	47							●							
8614	93						●								
8616	97						●								
8617	187						●								
8618	99							●							
8660	579	●													
8661	585	●													
8667	607	●													
8670	595	●													
8671	599	●													
8676	611	●													
8677	615	●													
8678	593	●													
8680	605	●													
8687	619	●													
8700	41		●												
8705	43		●												
8720	161		●												
8800	41		●												
8805	43		●												
8820	161		●												

Article-N°.			Coating													
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
15207	59		●												
15208	109		●												
15210	107		●												
15222	39		●												
15223	95		●												
15225	125		●												
15226	177		●												
15232	297	●	●												
15236	197		●												
15238	213		●												
15239	219		●												
15242	89		●												
15248	223		●												
15250	229		●				●								
15251	233		●				●								
15254	237		●				●								
15259	123		●												
15260	221		●												
15268	157		●												
15297	643											●			
15298	649											●			
15299	127		●												
15307	59		●												
15308	109		●												
15310	107		●												
15322	39		●												
15323	95		●												
15325	125		●												
15326	177		●												
15336	197		●												
15338	213		●												
15339	219		●												
15342	89		●												
15348	223		●												
15359	123		●												
15360	221		●												
15368	157		●												
15397	643											●			
15398	649											●			
15399	127		●												
15500	635	●													
15502	653	●													
15505	647	●													
15506	641	●													
15507	651	●													
15510	659	●													
15512	661	●													
15520	581	●										●			
15525	583	●										●			
15530	575	●										●			
15535	577	●										●			
15550	597	●										●			
15557	589	●										●			
15559	601	●										●			
15560	591	●										●			
15561	603	●										●			
15573	627	●										●			
15575	633	●										●			
15583	623	●										●			
15585	631	●										●			
15589	655	●										●			
15590	657	●										●			
15600	635	●													
15605	647	●													

Article-N°.			Coating													
INDEX		without	P POLYCHROM	U UNICUT-4 X	D DURO-S	V DURO-V	H DURO-SI	S DURO-XI	Y DURO-AI	X X-AL	M MICRO	C CELERO	B DIAMOND	B DIAPLUS	B DIA-C
15606	641	●													
15607	651	●													
15620	581	●										●			
15625	583	●										●			
15630	575	●										●			
15635	577	●										●			
15650	597	●										●			
15657	589	●										●			
15659	601	●										●			
15660	591	●										●			
15661	603	●										●			
15752	281										●				
15754	285										●				
15795	693												●		
20020	763												●		
20025	765												●		
20030	767												●		
31410	433	●													
31420	431	●													
31700	429	●													
45217	73		●												
45219	181		●												
45223	129		●												
45225	71		●												
45226	119		●												
45233	77		●												
45234	121		●												
45255	75		●												
45298	363			●											
45317	73		●												
45319	181		●												
45323	129		●												
45325	71		●												
45326	119		●												
45333	77		●												
45334	121		●												
45355	75		●												
45371	199		●												
45710	289										●				
45713	293										●				
45785	511										●				
46200	69		●												
46210	117		●												
46300	69		●												
46310	117		●												

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passion
for precision

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