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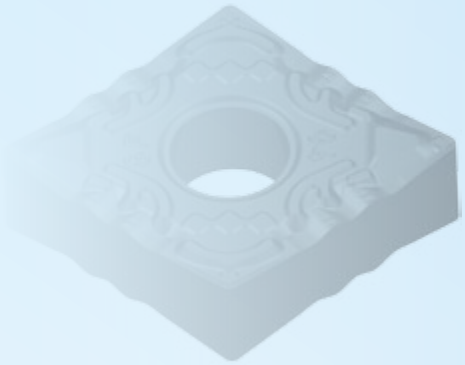
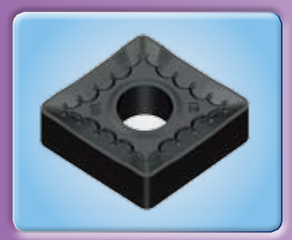
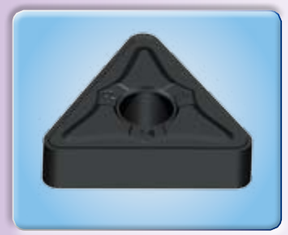
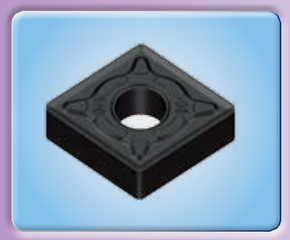
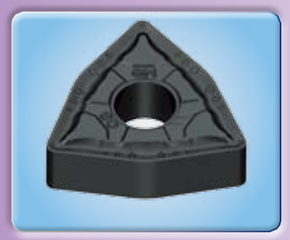


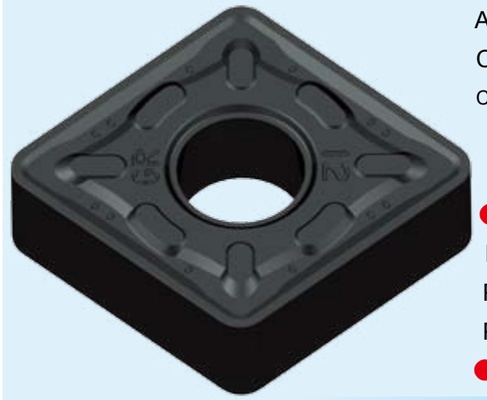








Turning



Turning Turning inserts overview

Cemented carbide and cermet inserts

Negative angle

Semi-finishing

	CNMG-GR	CNMM-GR	CNMG-BR	CNMG-KR	DNMG-GR	DNMM-GR	DNMG-BR
Length of cutting edge	09,12	12,16,19,25	12,16,19	12,16,19	15	15	15
Page	A20	A20	A20	A21	A24	A24	A24

	DNMG-KR	SNMG-GR	SNMM-GR	SNMG-BR	SNMG-KR	TNMG-GR	TNMM-GR	TNMG-BR
Length of cutting edge	15	12,15,19	12,15,19,25	12,15,19	12,15,19	16,22,27	16,22,27	16,22
Page	A24	A28	A28	A29	A29	A32	A32	A32

	TNMG-KR	WNMG-GR	WNMG-BR	WNMG-KR
Length of cutting edge	16,22	06,08	06,08	06,08
Page	A33	A37	A37	A37

Semi-finishing

	CNMG-GM	CNMG-GS	CNMG-BM	DNMG-GM	DNMG-GS	DNMG-BM	SNMG-GM
Length of cutting edge	09,12	09,12	09,12	11,15	11,15	11,15	09,12,,15,19
Page	A22	A22	A23	A25	A26	A26	A30

	SNMG-GS	SNMG-BM	TNMG-GM	TNMG-GS	TNMG-BM	VNMG-GM	VNMG-BM	WNMG-GM
Length of cutting edge	12,15	12,15	11,16,22	16,22	11,16,22	16	16	06,08
Page	A30	A31	A34	A34	A34	A36	A36	A38

	WNMG-BM
Length of cutting edge	06,08
Page	A38

Semi-finishing

	CNMG-GF	CNMG-BF	DNMG-GF	DNMG-BF	SNMG-GF	SNMG-BF	TNMG-GF
Length of cutting edge	09,12	09,12	11,15	11,15	12	09,12,15	16,22
Page	A23	A23	A27	A27	A31	A31	A35

Negative angle

	TNMG-BF	VNMG-GF	VNMG-BF	WNMG-GF	WNMG-BF
Length of cutting edge	1,16,22	16	16	06,08	06,08
Page	A35	A36	A36	A39	A39

Semi-finishing

	CNMG	DNMG	SNMG	TNMG	VNMG	WNMG
Length of cutting edge	12,16,19	15,19	09,12,15,19,25	11,16,22,27,33	16	06,08
Page	A21	A24	A29	A33	A36	A38

Semi-finishing

	CNMA	DNMA	SNMA	TNMA	WNMA	RNMA
Length of cutting edge	12,16,19	11,15	09,12,15,19	16,22,27	06,08	12
Page	A22	A25	A30	A33	A37	A40

Semi-finishing

	KNUX
Length of cutting edge	16
Page	A40

Positive angle

Semi-finishing

	CCMT-HR	DCMT-HR	SCMT-HR	TCMT-HR
Length of cutting edge	09,12	07,11	09,12	09,11,16
Page	A41	A44	A46	A48

Semi-finishing

	CCMT-HM	DCMT-HM	SCMT-HM	TCMT-HM
Length of cutting edge	06,09,12	07,11	09,12	09,11,16
Page	A41	A44	A46	A48

	VCMT-HM	VBMT-HM	CPMT-HM	DPMT-HM	SPMT-HM	TPMT-HM
Length of cutting edge	11	11,16	06,09	07,11	09,12	09,11
Page	A51	A52	A53	A54	A55	A56

Turning Turning inserts overview

Negative angle

Finishing

	CCGT-HF	DCGT-HF	SCGT-HF	TCGT-HF
Length of cutting edge	06,09,12	07,09	09	06,09,11,16
Page	A42	A44	A46	A49

	VCGT-HF	CPGT-HF	DPGT-HF	SPGT-HF	TPGT-HF	VBGT-HF
Length of cutting edge	11	06,09	07,09	09	09,11	11
Page	A51	A53	A54	A55	A56	A52

Positive angle

Aluminium machining

	CCGX-AC	DCGX-AC	SCGX-AC	TCGX-AC
Length of cutting edge	06,09,12	07,11	09,12	09,11,16
Page	A43	A45	A47	A50

	VCGX-AC
Length of cutting edge	11,16,22
Page	A51

Semi-finishing

	CCGW	DCGW	SCGW	TCGW	VCGW	CPGW	DPGW
Length of cutting edge	06,09,12	07,11	09,12	11,16	11	06	11
Page	A43	A45	A47	A50	A51	A53	A54

	SPGW	TPGW	VBGW
Length of cutting edge	09,12	09,11,16,22	16
Page	A55	A56	A52

Parting and grooving inserts

QDMA□□□N	QCMB□□□N-GM	QFMB□0000N-GM	QDMB-MT	QCMB-MT
3.12~9.85	2,3,4,5,6	5	2.5,3,4,5,6	2.5,3,4,5,6
A63	A63	A64	A64	A65

Threading inserts

The illustration shows Right toolholder

	Partial profile 60°		Partial profile 55°		ISO Metric	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	0.5~6.0	0.5~6.0	0.5~6.0	0.5~6.0	0.35~6.0	0.35~6.0
Page	A73	A73	A74	A74	A75	A77

The illustration shows Right toolholder

	American UN		Whitworth		British Standard Pipe thread	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	72~4	72~4	72~4	72~4	28~11	28~11
Page	A79	A81	A83	A85	A87	A87

The illustration shows Right toolholder

	American 60° NPTtape pipe thread		National Pipe Threads-Dryseal		Round DIN 405	
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	27~8	27~8	27~8	27~8	10~4	10~4
Page	A88	A88	A89	A89	A90	A90

The illustration shows Right toolholder

	Trapez DIN 103		American ACME	
	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	1.5~6.0	1.5~6.0	16~4	16~4
Page	A91	A91	A92	A92

Turning Recommended grade overview for turning inserts

ISO		Common turning				Threading	Parting and grooving	
Code		Coated			Cemented carbide	Coated	Coated	
		CVD	PVD			PVD	CVD	PVD
P Steel	01	JT4015	JT1015		JP302	JT1025	JT4025	JT1025
	10	JT4025	JT1025		JP402	JT1225	JT4125	
	20	JT4035	JT1035					
	30	JT4115						
	40	JT4125						
M Stainless steel	01	JT4135	JT1005	JT1205		JT1025	JT1025	
	10	JT4215	JT1015	JT1215		JT1225	JT1225	
	20	JT4225	JT1025	JT1225				
	30	JT4235	JT1035	JT1235				
	40	JT4245						
K Cast iron	01	JT3105			JK001	JT1025		JT1025
	10	JT3115			JK101			
	20	JT3125			JK202			
	30	JT3205						
	40	JT3215						
	50	JT3225						
N Non-ferrous metal	01		JT1025		JK001	JT1025		
	10				JK101			
	20							
	30							
S Heat resis tant alloy titanium alloy	01		JT1015	JT1025		JT1025		JT1025
	10				JK102			
	20							
	30							
H High hardness material	01		JT1025					
	10							
	20							
	30							

Turning

Common turning inserts

Turning Common turning inserts

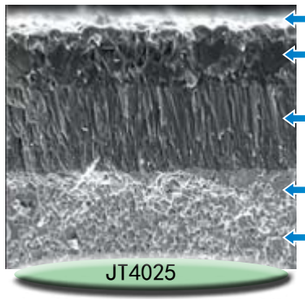
Negative inserts with holes

			Main cutting edge		ap/fn
Roughin	GR Double-side	First choise of light load roughing of ISO P&K application area. M-class tolerance double chipbreaker allow it to have high metal removal rate and good edge economy at the same time.	0.4 0.1		ap=3～12(mm) fn=0.3～0.8(mm/r)
	GR One-side	Recommended single-side at M class chipbreaker for ISO P type roughing, can gain high removal rate and cutting force from high cutting feed and depth, having lower chance of chipping at the same time.	0.4 0.1		ap=3～15(mm) fn=0.3～0.8(mm/r)
	KR	Recommended for heavy load roughing in ISO K application area, at M class double side chipbreaker with strong edge line and strong resistance to plastic deformation and lower chance of chipping.	0.45		ap=5～15(mm) fn=0.3～1.0(mm/r)
	Straight slot	Recommended for roughing and semi-finishing processing in ISO P&M&K application area, M class double side chipbreaker. Strong edge line and good edge security allow it have good versability.	0.2		ap=1.5～5(mm) fn=0.15～0.5(mm/r)
	plant	For rough machining of K type materials. Double side M-class chipbreaker with strong edge line, which makes it suitable for unstable processing, like discontinuous cutting and etc.			ap=3～6(mm) fn=0.2～0.6(mm/r)
Semi-finishing	GM	Recommended for semi-finishing in ISO P application area double-side chipbreaker, at M class, having stronger edge line than -GS type chipbreaker, is suitable for semi-finishing in unstable processing condition and for cast iron processing with low cutting force.	0.2		ap=1.5～5(mm) fn=0.15～0.5(mm/r)
	GS	Recommended for semi-finishing in ISO P application area. Machining with light cutting force and generate wide chip. -GS has good performance in processing ductile alloy steel.	0.08		ap=1.5～5(mm) fn=0.15～0.5(mm/r)
	BS	Recommended for light cutting in ISO M application area, double side M class tolerance chipbreaker with sharpe edge.			ap=1～4(mm) fn=0.15～0.5(mm/r)
	BM	Semi-finishing recommended chipbreaker in ISO M application area. -BM can break chips effectively and reduce the problem of stick, and is more productive than -BF.	0.08		ap=1.5～5(mm) fn=0.15～0.3(mm/r)
Finishing	GF	Recommended for finishing processing of P type material, double side at M class chipbreaker have strong edge line and good edge security which makes it have good versability.	0.1		ap=0.3～2(mm) fn=0.05～0.3(mm/r)
	BF	Recommended for finishing processing of M type metarials. The sharp edge line well solved those problems in stainless steel processing, like chipbreaking, hardening of the surface of stainless steel in the procedure of processing. All those make getting high machined surfaces possible.	0.05		ap=0.05～1(mm) fn=0.05～0.3(mm/r)

Negative inserts with holes

			Main cutting edge		ap/fn
Roughing	HR	General roughing chipbreaker at M class. Especially suitable for steel, stainless steel and cast iron in internal and external rough turning.	0.22		ap=3～12(mm) fn=0.3～0.8(mm/r)
Semi-Finishing	HM	General semi-finishing chipbreaker at M class. Especially suitable for steel and cast iron in internal and external semi-finishing turning.	0.12		ap=3～15(mm) fn=0.3～0.8(mm/r)
Finishing	HF	General finishing chipbreaker at M class tolerance. Especially suitable for steel and cast iron in internal and external finishing turning.			ap=5～15(mm) fn=0.3～1.0(mm/r)
For Aluminum	AC	Chipbreaker for aluminium at G class tolerance with large rake angle and large inclination angle make the tool sharper and make chip breaking and cutting easier.			ap=1.5～5(mm) fn=0.15～0.5(mm/r)
	New design in 2018				
	UF	Recommended for super finishing in ISO P&M application area geometry can achieve stable processing and surface with little glitch in small feed and low turning speed with sharp edge.			ap=1.5～5(mm) fn=0.15～0.5(mm/r)

CVD Coated cemented carbide



Surface gold TiN has the excellency of reducing the friction and wear recognition effect.

Special structure of Al_2O_3 settled layer has the best thermal barrier performance, high speed dry cutting, ensure resistance to plastic deformation of blade matrix at high speed dry cutting.

TiCN layer with anti-wear material abrasion performance lead to the best wear resistant of the face of clearance angle.

Using gradient sintering technology, and increase the impact resistance and wear resistance of insert, so as to improve the ability to resist damage of the insert.

Carbide with special crystal structure improves the red hardness of the blade matrix, and strengthened the high temperature resistant performance of insert.

JT4015

High wear-resistant substrates combinate with MT-TiCN,thick Al_2O_3,TiN coatings,excellent grades of steel,cast steel & stainless steel materials' finish processing at high speed cutting conditions.

JT4025

Special strength & toughness of the blade's substrates,perfect combinations with MT-TiCN,thick Al_2O_3 coating,common grades for steel,suitable for steel,cast steel & stainless steel in semi-finishing,finishing.

JT4035

High-strength resistance & antiplastic deformation substrates,combinating with MT-TiCN,thick Al_2O_3 coating,good toughness & anti-plastic deformation,suitable for steel,cast steel & stainless steel in light-roughing & roughing.

JT4330

High hardness substrates,medium and high speed, suitable for light & heavy milling of low alloy steel & unalloyed steel,also suitable for milling at low condition.

JT4340

Wear-resistant & good toughness substrates, common coating cemented carbide grades, used for medium and low speed milling of steel, cast iron, hardened steel.

JT4215

The combination of high wear-resistant substrate with MT-TiCN, fine grained Al_2O_3 and TiN coatings, is a ideal grade of finishing processing of steel, stainless steel and cast iron in the case of high speed cutting.

JT4225

With optimized toughness and hardness substrate and MT-TiCN, fine grained Al_2O_3 and TiN coatings, as a general using grade in ISO P25 application area, is suitable for semi-finishing and finishing processing of steel, stainless steel and cast iron.

JT4235

Substrate with high strength and strong resistance to plastic deformation combined with MT-TiCN, fine grained Al_2O_3 and TiN coatings, having great toughness, is suitable for light load roughing of steel, stainless steel and cast iron.

JT3105

Coatings & tough substrates combination,supporting high-temperature & unplastic-deformation,suitable for ductile cast iron,forged cast-iron with high strength,ferrosteel in finishing & semi-finishing.

JT3115

High wear-resistant substrates,perfect combinations with MTTi(CN),thick Al_2O_3 coating,initial grades for ductile cast iron,forged cast iron,highly cutting speed allowance.

JT3125

Wear-resistant & good toughness substrates,perfect combinations with MT-Ti(CN), thick Al_2O_3 coating,initial grades for ductile cast iron & forged cast iron in roughing & highly-metal.

JT4115

High wear resistant substrates combinate with MT-TiCN, thick Al_2O_3,TiN coatings,excellent grades of steel,cast steel & stainless steel materials' finish processing at high-speed cutting conditions.

JT4125

Special strength & toughness of the insert substrates,perfect combinations with MT-TiCN,ultra fine Al_2O_3,TiN coatings,common grades for steel,suitable for steel,cast steel & stainless steel in semi-finishing,finishing.

JT4135

High-strength resistantance & antiplastic deformation substrates,combinating with MT-TiCN, ultra fine Al_2O_3,TiN coatings,good toughness & anti-plastic deformation,suitable for steel,cast steel & stainless steel in light-roughing & roughing.

Higher cutting speed and longer life of insert

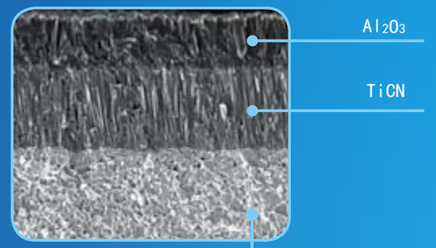
Black general insert

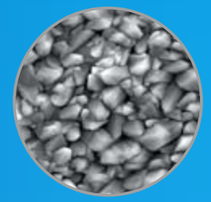
The second generation of steel processing

CVD Coated cemented carbide

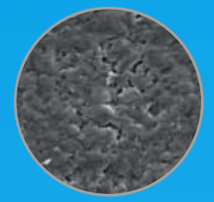
The inserts with special surface technology, greatly improved the surface roughness, effectively reduce the cutting force, reduce the adhesive between the cutter surface and the processed material, greatly improve the stability of inserts to use.

Fibrous TiCN and the perfect combination of fine grain Al_2O_3 coating significantly improved the wear resistance and resistance to collapse of insert.





Before the surface treatment

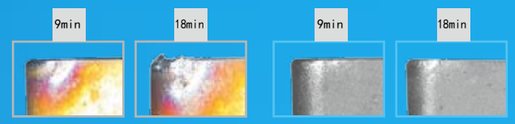


After the surface treatment

Contrast effect of insert abrasion test

Workpiece(42CrMo Type:CNMG120408-GS
Cutting parameter:Vc=390m/min ap=1mm fn=0.2mm/r

Grade of company JT4115



Black general insert

First choice for high-speed and efficient processing of cast iron

- Thick Al_2O_3 coating combined with strong impact resistance matrix, the insert has the stable high temperature red hardness and good impact resistance, improves the wear resistance of the insert under the requirement of high speed, high feed machining cast iron.
- All black product color shows more high-end

Remarkable result

- Improve the production efficiency, coating and substrate are all adapted to cast iron of high speed and high feed cutting.Cutting speed can be increased by 30% - 40%.
- Reduce the cost, improve the tool life of nearly 40% to 50%.
- High stability of processing

JT3205

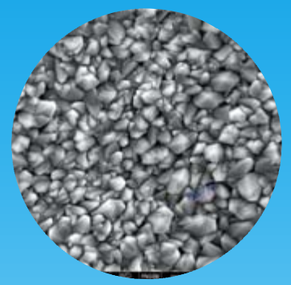
Coatings & tough substrates combination,supporting high temperature & unplastic deformation,suitable for ductile cast iron,forged cast iron with high strength,ferrosteel in finishing & semi-finishing.

JT3215

High wear-resistant substrates,perfect combinations with MTTi (CN),ultra Al_2O_3,TiN coatings,initial grades for ductile cast iron,forged cast iron,highly cutting speed allowance

JT3225

Wear-resistant & good toughness substrates,perfect combinations with MT-Ti(CN),ultra Al_2O_3,TiN coatings,initial grades for ductile cast iron & forged cast iron in roughing & highly-metal.

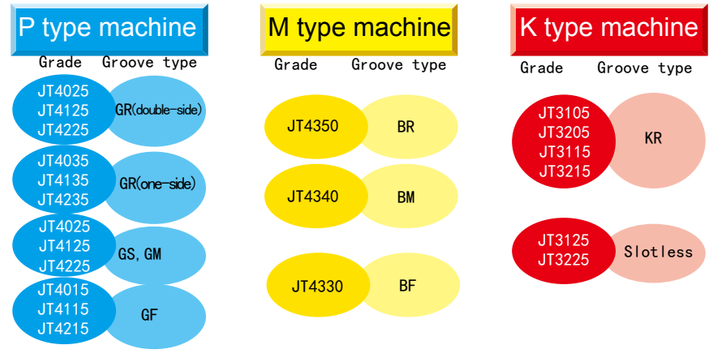


Density fine grain layer of surface

CVD Coated cemented carbide

CVD coated cemented carbide

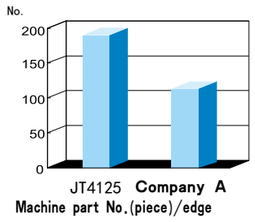
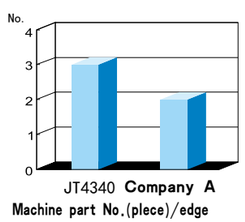
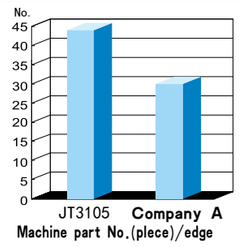
■ Recommended group of grade and groove type



■ Recommended cutting condition

Workpiece		Machine range	Grade	Recommended cutting speed (m/min)
P	Steel	Finishing	JT4015	170–450
			JT4115 JT4215	210–460
		Semi-Finishing	JT4025	150–420
			JT4125 JT4225	170–460
		Roughing	JT4035 JT4135 JT4235	120–360
M	Stainless steel	Finishing Semi-Finishing Roughing	JT4330 JT4340 JT4350	100–270
K	Cast iron	Finishing	JT3105	200–480
			JT3205	210–500
		Semi-Finishing	JT3115	160–430
			JT3215	180–430
		Roughing	JT3125 JT3225	130–360

■ Machining examples

Insert for use		CNMG120408－GM	CNMG190616-BR	TNMA220412
	Type			
	Grade	JT4125	JT4340	JT3105
Shape				
		42CrMo HB280	1Cr13 HB270	Ferrosteel HB280
		V=240m/min ap=1.5~2mm f=0.2mm/r	V=100m/min ap≧2mm f=0.3mm/r	V_{max}=220m/min ap=1.3~2.5mm f=0.4~1.1mm/r
	type	Dry cutting	Dry cutting	Dry cutting
Contrast				

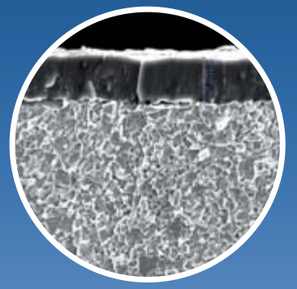
PVD coated cemented carbide

Let the difficult machining materials gets easy

New grade of nano coated

- Special coating process lead to smooth surface, low cutting resistance force and easy chip-flow.
- Unique nano structure coating,closer integration with the substrate, towards higher toughness and hardness.
- Good thermal stability and chemical stability of cutting edges provide more effective protection.

High performance TiAlN coated of nano structure ensures that the insert has a very high toughness and hardness.Unique coating technology makes the insert with smooth surface and high wear resistance, excellent thermal stability and chemical stability provide effective protection of cutting edge



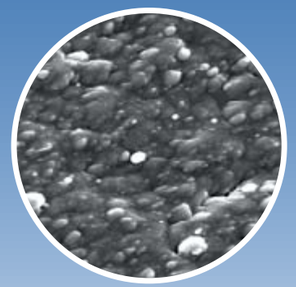
nc-TiAlN Coating(JT1025)

JT1025

2-4μm TiAlN PVD coated,combinating with ultra fine particles'substrates with high-toughness,suitable for all materials,stainless steel & high-temperature alloy in finishing,semi-finishing.

JT1015

2-4μm TiAlN PVD coated,combinating with fine particles'substrates with high-toughness,suitable for all materials, high-temperature alloy & Ti alloy in finishing,semi-finishing.



The coating surface of JT1025

JT1225

2-4μm AlCrN+AlCrSiN PVD coated,combinating with ultra fine particles'substrates with high-toughness,suitable for all materials in light & medium load milling, stainless steel & high-temperature high hardness alloy in finishing,semi-finishing.

JT1035

PVD coated,combinating with high-resistant substrates,suitable for all materials in roughing,semi-finishing.

PVD Coated cemented carbide

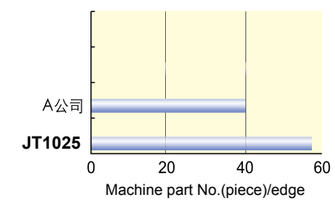
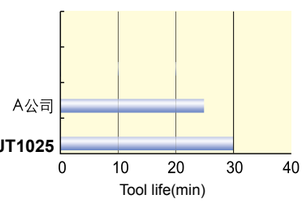
■ Recommended group of grade and slot type

P type machine		M type machine	
Grade	Groove type	Grade	Groove type
JT1035 JT1235	GR	JT1035	BR
JT1025 JT1225	GM	JT1025	BM
JT1015 JT1005 JT1215 JT1205	GF	JT1015	BF

■ Recommended cutting condition

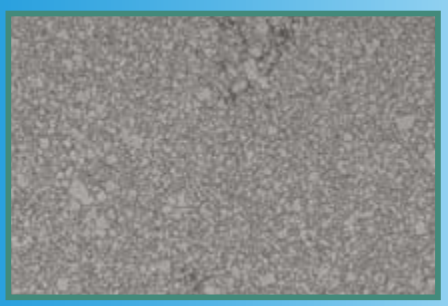
Workpiece		Machine range	Grade	Recommended cutting speed(m/min)
P	Steel	Semi-Finishing	JT1225	160-360
M	Stainless steel	Roughing	JT1235	80-100
		Semi-Finishing	JT1225	120-240
		Finishing	JT1215	150-280

■ Processing case

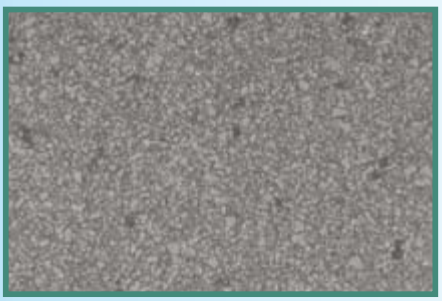
Insert for use	Type	CNMG120404-GM	DNMG150404-BM
	Grade	JT1025	JT1225
Shape			
		40Cr HB280	1Cr18Ni9Ti HB240
		V=220m/min ap=2mm f=0.15mm/r	Vc=150m/min ap=1.0mm f=0.15mm/r
	type	Dry cutting	Dry cutting
Performance			

Grades of cemented carbide

Uncoated carbide grades are widely used in non-ferrous metal, high temperature alloys and other materials processing, manifests the versatility and efficiency in application.



JK101substrate - The combination of fine grain WC hard phase and binder phase Co.



JK201 substrate, the combination of medium grain WC hard phase and binder phase Co.

JP302

Suitable for finishing and semi-finishing steel, cast steel, appropriate uses high cutting speed and medium, small feed,and suitable for profile turning.

JP402

For strong cutting steel, cast steel, should be used in low-speed and high feed processing under harsh conditions.

JK101

Suitable for finishing and semi-finishing steel, cast steel, appropriate uses high cutting speed and medium, small feed.

JK201

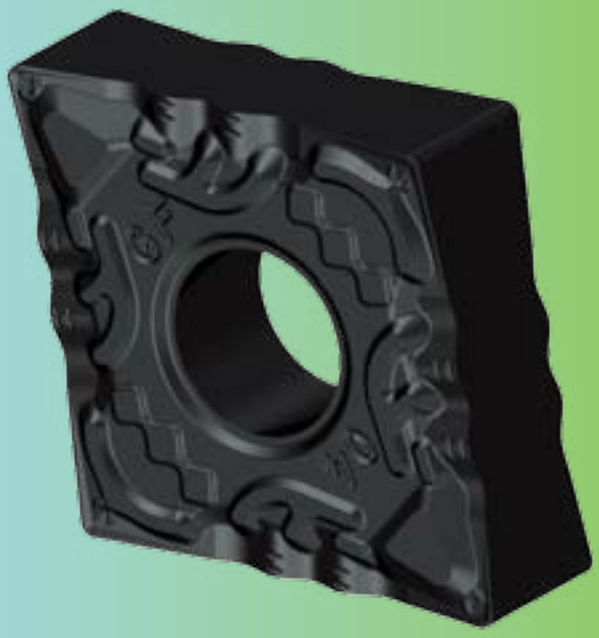
Used for semi-finishing of cast iron, heat resistant alloy,also used in plastic, rubber, wood and other non-metallic materials processing.Especially suitable for the aviation industry which has a sharp edge requirements.Appropriate use medium cutting speed and higher feed.Has good abrasion resistance and toughness

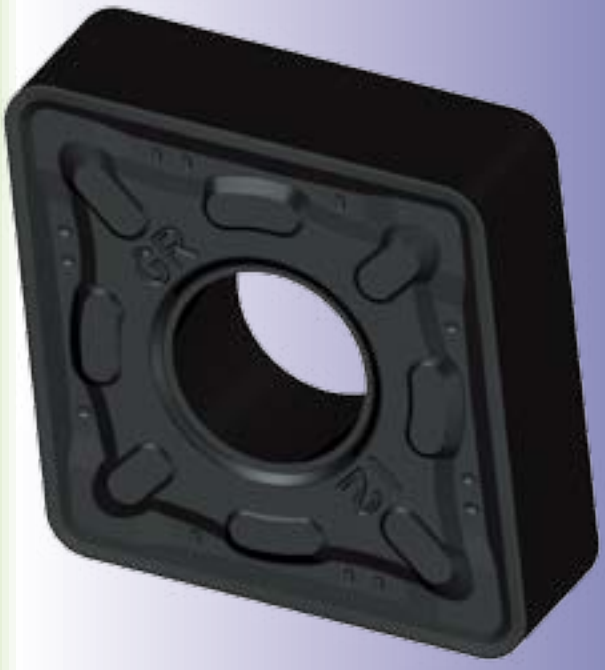
JK001

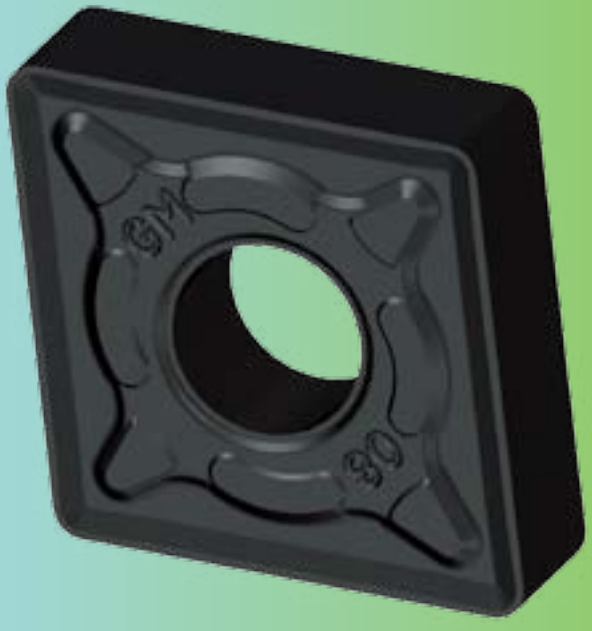
Suitable for finishing, semi-finishing cast iron,nonferrous metals, especially aluminum, and processing manganese steel, hardened steel and other hard materials.

■ Recommended cutting condition

Workpiece		Machine range	Grade	Recommended cutting speed(m/min)
P	Steel	Semi-finishing	JP302	120–300
		Roughing	JP402	90–280
K	Cast iron	Finishing	JK001	110–160
		Semi-finishing to Roughing	JK201	70–120
N	Nonferrous metal	Finishing to Semi-finishing	JK001	120–1800



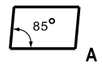
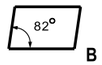
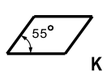
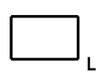




Turning Common Turning Inserts

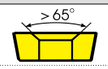
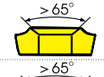
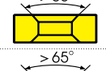
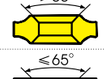
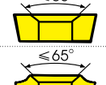
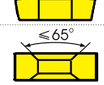
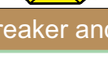
Turning Inserts Naming Rules

Shape/Code

 A	 B	 C
 D	 E	 H
 K	 L	 M
 O	 P	 R
 S	 T	 T
 V	 W	Others Z

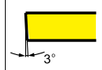
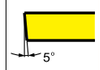
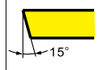
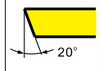
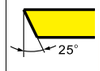
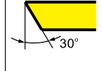
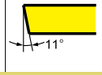
Insert shape

Metric

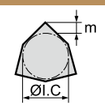
Code	Wite/Without hole	With/Without	Section plane	Code	Wite/Without hole	Chipbreaker	Section plane
B	With	Without		N	Without	Without	
H	With	One-side		R	Without	One-side	
C	With	Without		F	Without	Double-side	
J	With	Double-side		A	With	Without	
W	With	Without		M	With	One-side	
T	With	One-side		G	With	Double-side	
Q	With	Without		X	---	---	Special
U	With	Double-side					

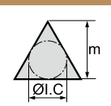
Chipbreaker and clamping type

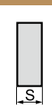
Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A		B	
C		D	
E		F	
G		N	
P		O	Others

Tolerance







Code	Nose height M tolerance(mm)	Toleranle of I.C(mm)	Thickness S tolerance(mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

(Reference) Details of M-class tolerance (Identied by shape and size)

● Nose height tolerance(mm)

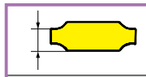
Inscribed circle	Regular triangle	Square	Diamond with 80 °	Diamond with 55 °	Diamond with 35 °	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

● Tolerance of inscribed circle(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80 °	Diamond with 55 °	Diamond with 35 °	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
25.4	---	±0.13	---	---	---	±0.13

Diameter of I.C(mm)	Shape C	D	R	S	T	V	W	K
3.97					06			
5.0			05					
5.56					09			
6.0			06					
6.35	06	07			11	11		
8.0			08					
9.525	09	11	09	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15	12	12	22	22	08	
15.875	16		15	15	27			
16.0		19	16					
19.05	19		19	19	33			
20.0			20					
25.0	25	25	25					
25.4			25	25				
31.75			31					
32			32					

Length of cutting edge



Code	Insert thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

Insert thickness

Inscribed circle

Code	Diameter of I.C(mm)
2	6.35
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4

Thickness

Code	Thickness
2	3.18
3	4.76
4	6.35
5	7.94
6	9.52

Nose radius

Code	Nose radius
0	0.2
1	0.4
2	0.8
3	1.2
4	1.6
5	2.0
6	2.4

Nose radius code

Code	Nose radius
00	No radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	
Diameter of insert(metric)	Round insert

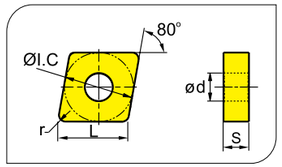
Chipbreaker code

GF	GM	GR
		
HF	HM	HR
		
BF	BM	BR
		
GS	GR	KR
		
AC		
		

Turning Common Turning Inserts

Turning Inserts Naming Rules

CN□□ (Negative)

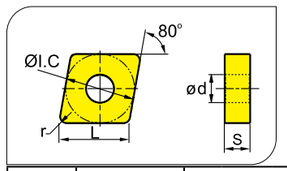


Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GR	CNMG120404-GR	12.9	12.7	4.76	5.16	0.4		★	☆					★					○													
	CNMG120408-GR	12.9	12.7	4.76	5.16	0.8		★	☆					★					○													
Roughing	CNMG120412-GR	12.9	12.7	4.76	5.16	1.2		★	☆					★					○													
GR	CNMM120412-GR	12.9	12.7	4.76	5.16	1.2		☆			☆	★		☆	★				○													
	CNMM160612-GR	16.1	15.875	6.35	6.35	1.2		☆			☆	★		☆	★				○													
	CNMM160616-GR	16.1	15.875	6.35	6.35	1.6		☆			☆	★		☆	★				○													
	CNMM190612-GR	19.3	19.05	6.35	7.94	1.2		☆			☆	★		☆	★				○													
	CNMM190616-GR	19.3	19.05	6.35	7.94	1.6		☆			☆	★		☆	★				○													
	CNMM190624-GR	19.3	19.05	6.35	7.94	2.4		☆			☆	★		☆	★				○													
Roughing	CNMM250924-GR	25.79	25.400	9.525	9.12	2.4		☆			☆	★		☆	★				○													

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

CN□□ (Negative)

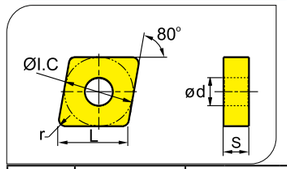


Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
KR	CNMG120404-KR	12.9	12.7	4.76	5.16	0.4																			★	○	☆						
	CNMG120408-KR	12.9	12.7	4.76	5.16	0.8																			★	○	☆						
	CNMG120412-KR	12.9	12.7	4.76	5.16	1.2																			★	○	☆						
	CNMG120416-KR	12.9	12.7	4.76	5.16	1.6																			★	○	☆						
	CNMG160612-KR	16.1	15.875	6.35	6.35	1.2																			★	○	☆						
	CNMG160616-KR	16.1	15.875	6.35	6.35	1.6																			★	○	☆						
	CNMG190608-KR	19.3	19.05	6.35	7.94	0.8																			★	○	☆						
	CNMG190612-KR	19.3	19.05	6.35	7.94	1.2																			★	○	☆						
Roughing	CNMG190616-KR	19.3	19.05	6.35	7.94	1.6																			★	○	☆						
Straight slot	CNMG120404	12.9	12.7	4.76	5.16	0.4	○	☆	○					★											★	○							
	CNMG120408	12.9	12.7	4.76	5.16	0.8	○	☆	○					★											★	○							
	CNMG120412	12.9	12.7	4.76	5.16	1.2	○	☆	○					★											★	○							
	CNMG160608	16.1	15.875	6.35	6.35	0.8	○	☆	○					★											★	○							
	CNMG160612	16.1	15.875	6.35	6.35	1.2	○	☆	○					★											★	○							
	CNMG160616	16.1	15.875	6.35	6.35	1.6		☆	○					★											○	★							
	CNMG190608	19.3	19.05	6.35	7.94	0.8		☆	○					★											○	★							
	CNMG190612	19.3	19.05	6.35	7.94	1.2		☆	○					★											○	★							
	CNMG190616	19.3	19.05	6.35	7.94	1.6		☆	○					★											○	★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

CN□□ (Negative)

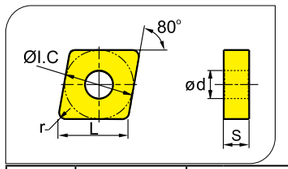


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Slotless	CNMA120404	12.9	12.7	4.76	5.16	0.4																	○	★	☆							○
	CNMA120408	12.9	12.7	4.76	5.16	0.8																	○	★	☆							○
	CNMA120412	12.9	12.7	4.76	5.16	1.2																	○	★	☆							○
	CNMA120416	12.9	12.7	4.76	5.16	1.6																	○	★	☆							○
	CNMA160608	16.1	15.875	6.35	6.35	0.8																	○	★	☆							○
	CNMA160612	16.1	15.875	6.35	6.35	1.2																	○	★	☆							○
	CNMA160616	16.1	15.875	6.35	6.35	1.6																	○	★	☆							○
	CNMA160620	16.1	15.875	6.35	6.35	2.0																	○	☆			★					○
	CNMA160630	16.1	15.875	6.35	6.35	3.0																	○	☆			★					○
	CNMA190612	19.3	19.05	6.35	7.94	1.2																	○	☆			★					○
	CNMA190616	19.3	19.05	6.35	7.94	1.6																	○	☆			★					○
GM	CNMG090304-GM	9.7	9.525	3.18	3.81	0.4	○	☆		☆	★				☆									○		○						
	CNMG090308-GM	9.7	9.525	3.18	3.81	0.8	○	☆		☆	★				☆									○		○						
	CNMG120404-GM	12.9	12.7	4.76	5.16	0.4	○	☆		☆	★				☆									○		○						
	CNMG120408-GM	12.9	12.7	4.76	5.16	0.8	○	☆		☆	★				☆									○		○						
Semi-finishing	CNMG120412-GM	12.9	12.7	4.76	5.16	1.2	○	☆		☆	★				☆									○		○						
GS	CNMG090304-GS	9.7	9.525	3.18	3.81	0.4		☆		☆	★					○																
	CNMG090308-GS	9.7	9.525	3.18	3.81	0.8		☆		☆	★					○																
	CNMG120404-GS	12.9	12.7	4.76	5.16	0.4		☆		☆	★					○																
	CNMG120408-GS	12.9	12.7	4.76	5.16	0.8		☆		☆	★					○																
Semi-finishing	CNMG120412-GS	12.9	12.7	4.76	5.16	1.2		☆		☆	★					○																
BS	CNMG120404-BS	12.9	12.7	4.76	5.16	0.4											☆			★												
	CNMG120408-BS	12.9	12.7	4.76	5.16	0.8											☆			★												
Semi-finishing																																

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

CN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
BM	CNMG090304-BM	9.7	9.525	3.18	3.81	0.4											○	☆			★												
	CNMG090308-BM	9.7	9.525	3.18	3.81	0.8											○	☆			★												
	CNMG120404-BM	12.9	12.7	4.76	5.16	0.4											○	☆			★												
	CNMG120408-BM	12.9	12.7	4.76	5.16	0.8											○	☆			★												
Semi-finishing	CNMG120412-BM	12.9	12.7	4.76	5.16	1.2											○	☆			★												
GF	CNMG090304-GF	9.7	9.525	3.18	3.81	0.4	☆	○		★								○															
	CNMG090308-GF	9.7	9.525	3.18	3.81	0.8	☆	○		★								○															
	CNMG120404-GF	12.9	12.7	4.76	5.16	0.4	☆	○		★								○															
	CNMG120408-GF	12.9	12.7	4.76	5.16	0.8	☆	○		★								○															
Finishing	CNMG120412-GF	12.9	12.7	4.76	5.16	1.2	☆	○		★								○															
BF	CNMG090304-BF	9.7	9.525	3.18	3.81	0.4											○	☆			★												
	CNMG090308-BF	9.7	9.525	3.18	3.81	0.8											○	☆			★												
	CNMG120404-BF	12.9	12.7	4.76	5.16	0.4											○	☆			★												
	CNMG120408-BF	12.9	12.7	4.76	5.16	0.8											○	☆			★												
Finishing	CNMG120412-BF	12.9	12.7	4.76	5.16	1.2											○	☆			★												

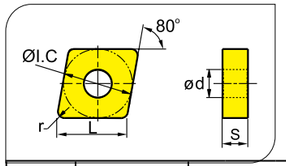
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Turning Common Turning Inserts

Turning Inserts Naming Rules

CN□□ (Negative)

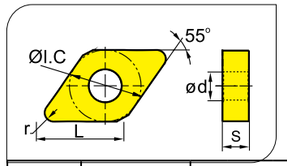


Shape	Type	Dimension(mm))					Coated cemented carbide																		Cemented carbide				
							P								M				K										
		L	ΦI.C	S	Φd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GR	DNMG150408-GR	15.5	12.7	4.76	5.16	0.8		★	☆					★					○													
	DNMG150412-GR	15.5	12.7	4.76	5.16	1.2		★	☆					★					○													
	DNMG150416-GR	15.5	12.7	4.76	5.16	1.6		★	☆					★					○													
	DNMG150608-GR	15.5	12.7	4.76	5.16	0.8		★	☆					★					○													
	DNMG150612-GR	15.5	12.7	6.35	5.16	1.2		★	☆					★					○													
Roughing	DNMG150616-GR	15.5	12.7	6.35	5.16	1.6		★	☆					★					○													
GR	DNMM150608-GR	15.5	12.7	6.35	5.16	0.8		☆			○	★		☆					○													
	DNMM150612-GR	15.5	12.7	6.35	5.16	1.2		☆			○	★		☆					○													
Roughing	DNMM150616-GR	15.5	12.7	6.35	5.16	1.6		☆			○	★		☆					○													
KR	DNMG150608-KR	15.5	12.7	6.35	5.16	0.8																		○	★	☆						○
	DNMG150612-KR	15.5	12.7	6.35	5.16	1.2																		○	★	☆						○
Roughing																																
Straight slot	DNMG150604	15.5	12.7	6.35	5.16	0.4	○	☆	○		★														★	○						
	DNMG150608	15.5	12.7	6.35	5.16	0.8	○	☆	○		★														★	○						
	DNMG150612	15.5	12.7	6.35	5.16	1.2	○	☆	○		★														★	○						
	DNMG150616	15.5	12.7	6.35	5.16	1.6	○	☆	○		★														★	○						
	DNMG190608	19.3	15.875	6.35	7.94	0.8	○	☆	○		★														★	○						
	DNMG190612	19.3	15.875	6.35	7.94	0.8	○	☆	○		★														★	○						

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

DN□□ (Negative)



Shape	Type	Dimension(mm))					Coated cemented carbide																		Cemented carbide				
							P								M				K										
		L	ΦI.C	S	Φd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Slotless	DNMA110416	11.6	9.525	4.76	3.81	1.6																		○	☆			★				○
	DNMA110424	11.6	9.525	4.76	3.81	2.4																		○	☆			★				○
	DNMA150404	15.5	12.7	4.76	5.16	0.4																		○	★	☆						○
	DNMA150408	15.5	12.7	4.76	5.16	0.8																		○	★	☆						○
	DNMA150604	15.5	12.7	6.35	5.16	0.4																		○	★	☆						○
	DNMA150608	15.5	12.7	6.35	5.16	0.8																		○	★	☆						○
	DNMA150612	15.5	12.7	6.35	5.16	1.2																		○	★	☆						○
	DNMA150616	15.5	12.7	6.35	5.16	1.6																		○	★	☆						○
GM	DNMG110404-GM	11.6	9.525	4.76	3.81	0.4	○	☆		☆	★				☆										○		○					
	DNMG110408-GM	11.6	9.525	4.76	3.81	0.8	○	☆		☆	★				☆										○		○					
	DNMG110412-GM	11.6	9.525	4.76	3.81	1.2	○	☆		☆	★				☆										○		○					
	DNMG150404-GN	15.5	12.7	4.76	5.16	0.4	○	☆		☆	★				☆										○		○					
	DNMG150408-GM	15.5	12.7	4.76	5.16	0.8	○	☆		☆	★				☆										○		○					
	DNMG150412-GM	15.5	12.7	4.76	5.16	1.2	○	☆		☆	★				☆										○		○					
	DNMG150416-GM	15.5	12.7	4.76	5.16	1.6	○	☆		☆	★				☆										○		○					
	DNMG150604-GM	15.5	12.7	6.35	5.16	0.4	○	☆		☆	★				☆										○		○					
	DNMG150608-GM	15.5	12.7	6.35	5.16	0.8	○	☆		☆	★				☆										○		○					
	DNMG150612-GM	15.5	12.7	6.35	5.16	1.2	○	☆		☆	★				☆										○		○					
Semi-finishing	DNMG150616-GM	15.5	12.7	6.35	5.16	1.6	○	☆		☆	★				☆										○		○					

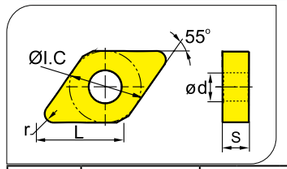
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Turning Common Turning Inserts

Turning Inserts Naming Rules

DN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GS	DNMG110412-GS	11.6	9.525	4.76	3.81	1.2		☆		☆	★						○															
	DNMG150404-GS	15.5	12.7	4.76	5.16	0.4		☆		☆	★						○															
	DNMG150408-GS	15.5	12.7	4.76	5.16	0.8		☆		☆	★						○															
	DNMG150412-GS	15.5	12.7	4.76	5.16	1.2		☆		☆	★						○															
	DNMG150416-GS	15.5	12.7	4.76	5.16	1.6		☆		☆	★						○															
	DNMG150604-GS	15.5	12.7	6.35	5.16	0.4		☆		☆	★						○															
	DNMG150608-GS	15.5	12.7	6.35	5.16	0.8		☆		☆	★						○															
	DNMG150612-GS	15.5	12.7	6.35	5.16	1.2		☆		☆	★						○															
Semi-finishing	DNMG150616-GS	15.5	12.7	6.35	5.16	1.6		☆		☆	★						○															
BM	DNMG110412-BM	11.6	9.525	4.76	3.81	1.2											○	☆			★											
	DNMG150404-BM	15.5	12.7	4.76	5.16	0.4											○	☆			★											
	DNMG150408-BM	15.5	12.7	4.76	5.16	0.8											○	☆			★											
	DNMG150412-BM	15.5	12.7	4.76	5.16	1.2											○	☆			★											
	DNMG150416-BM	15.5	12.7	4.76	5.16	1.6											○	☆			★											
	DNMG150604-BM	15.5	12.7	6.35	5.16	0.4											○	☆			★											
	DNMG150608-BM	15.5	12.7	6.35	5.16	0.8											○	☆			★											
	DNMG150612-BM	15.5	12.7	6.35	5.16	1.2											○	☆			★											
Semi-finishing	DNMG150616-BM	15.5	12.7	6.35	5.16	1.6											○	☆			★											

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

PDJNR/L Kr:93°

PDNNR/L Kr:63°

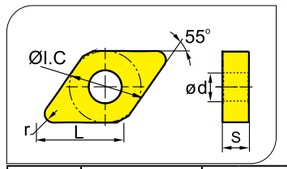
MDJNR/L Kr:93°

MDPNN Kr:62°30'

PDSNR/L Kr:62°30'

PDUNR/L Kr:93°

DN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GF	DNMG110404-GF	11.6	9.525	4.76	3.81	0.4	☆	○		★								○														
	DNMG110408-GF	11.6	9.525	4.76	3.81	0.8	☆	○		★								○														
	DNMG110412-GF	11.6	9.525	4.76	3.81	1.2	☆	○		★								○														
	DNMG150404-GF	15.5	12.7	4.76	5.16	0.4	☆	○		★								○														
	DNMG150408-GF	15.5	12.7	4.76	5.16	0.8	☆	○		★								○														
	DNMG150412-GF	15.5	12.7	4.76	5.16	1.2	☆	○		★								○														
	DNMG150604-GF	15.5	12.7	6.35	5.16	0.4	☆	○		★								○														
	DNMG150608-GF	15.5	12.7	6.35	5.16	0.8	☆	○		★								○														
Finishing	DNMG150612-GF	15.5	12.7	6.35	5.16	1.2	☆	○		★								○														
BF	DNMG110404-BF	11.6	9.525	4.76	3.81	0.4											○	☆			★											
	DNMG110408-BF	11.6	9.525	4.76	3.81	0.8											○	☆			★											
	DNMG110412-BF	11.6	9.525	4.76	3.81	1.2											○	☆			★											
	DNMG150404-BF	15.5	12.7	4.76	5.16	0.4											○	☆			★											
	DNMG150408-BF	15.5	12.7	4.76	5.16	0.8											○	☆			★											
	DNMG150412-BF	15.5	12.7	4.76	5.16	1.2											○	☆			★											
	DNMG150604-BF	15.5	12.7	6.35	5.16	0.4											○	☆			★											
	DNMG150608-BF	15.5	12.7	6.35	5.16	0.8											○	☆			★											
Finishing	DNMG150612-BF	15.5	12.7	6.35	5.16	1.2											○	☆			★											

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

PDJNR/L Kr:93°

PDNNR/L Kr:63°

MDJNR/L Kr:93°

MDPNN Kr:62°30'

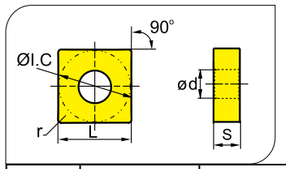
PDSNR/L Kr:62°30'

PDUNR/L Kr:93°

Turning Common Turning Inserts

Turning Inserts Naming Rules

SN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GR	SNMG120408-GR	12.7	12.7	4.76	5.15	0.8		★	☆					★					○													
	SNMG120412-GR	12.7	12.7	4.76	5.16	1.2		★	☆					★					○													
	SNMG120416-GR	12.7	12.7	4.76	5.16	1.6		★	☆					★					○													
	SNMG150608-GR	15.875	15.875	6.35	6.35	0.8		★	☆					★					○													
	SNMG150612-GR	15.875	15.875	6.35	6.35	1.2		★	☆					★					○													
	SNMG150616-GR	15.875	15.875	6.35	6.35	1.6		★	☆					★					○													
	SNMG150624-GR	15.875	15.875	6.35	6.35	2.4		★	☆					★					○													
	SNMG190612-GR	19.05	19.05	6.35	7.94	1.2		★	☆					★					○													
	SNMG190616-GR	19.05	19.05	6.35	7.94	1.6		★	☆					★					○													
Roughing	SNMG190624-GR	19.05	19.05	6.35	7.94	2.4		★	☆					★					○													
GR	SNMM120408-GR	12.7	12.7	4.76	5.15	0.8		☆			☆	★		☆	★				○													
	SNMM120412-GR	12.7	12.7	4.76	5.16	1.2		☆			☆	★		☆	★				○													
	SNMM120416-GR	12.7	12.7	4.76	5.16	1.6		☆			☆	★		☆	★				○													
	SNMM150608-GR	15.875	15.875	6.35	6.35	0.8		☆			☆	★		☆	★				○													
	SNMM150612-GR	15.875	15.875	6.35	6.35	1.2		☆			☆	★		☆	★				○													
	SNMM150616-GR	15.875	15.875	6.35	6.35	1.6		☆			☆	★		☆	★				○													
	SNMM190608-GR	19.05	19.05	6.35	7.94	0.8		☆			☆	★		☆	★				○													
	SNMM190612-GR	19.05	19.05	6.35	7.94	1.2		☆			☆	★		☆	★				○													
	SNMM190616-GR	19.05	19.05	6.35	7.94	1.6		☆			☆	★		☆	★				○													
	SNMM190624-GR	19.05	19.05	6.35	7.94	2.4		☆			☆	★		☆	★				○													
	SNMM250724-GR	25.4	25.4	7.94	9.12	2.4		☆			☆	★		☆	★				○													
Roughing	SNMM250924-GR	25.4	25.4	7.94	9.12	2.4		☆			☆	★		☆	★				○													

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


MSBNR/L Kr:75°

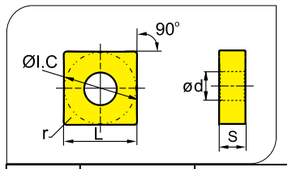

MSRNR/L Kr:75°


MSKNR/L Kr:75°


MSDNN Kr:45°


PSKNR/L Kr:75°

SN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
KR	SNMG120412-KR	12.7	12.7	4.76	5.16	1.2																			★	○	☆						
	SNMG150608-KR	15.875	15.875	6.35	6.35	0.8																			★	○	☆						
	SNMG150612-KR	15.875	15.875	6.35	6.35	1.2																			★	○	☆						
	SNMG190612-KR	19.05	19.05	6.35	7.94	1.2																			★	○	☆						
Roughing																																	
Straight slot	SNMG090304	9.525	9.525	3.18	3.81	0.4	○	☆	○					★											★	○							
	SNMG090308	9.525	9.525	3.18	3.81	0.8	○	☆	○					★											★	○							
	SNMG120404	12.7	12.7	4.76	5.16	0.4	○	☆	○					★											★	○							
	SNMG120408	12.7	12.7	4.76	5.16	0.8	○	☆	○					★											★	○							
	SNMG120412	12.7	12.7	4.76	5.16	1.2	○	☆	○					★											★	○							
	SNMG120416	12.7	12.7	4.76	5.16	1.6	○	☆	○					★											★	○							
	SNMG150608	15.875	15.875	6.35	6.35	0.8	○	☆	○					★											★	○							
	SNMG150612	15.875	15.875	6.35	6.35	1.2	○	☆	○					★											★	○							
	SNMG190612	19.05	19.05	6.35	7.94	1.2	○	☆	○					★											★	○							
	SNMG190616	19.05	19.05	6.35	7.94	1.6		☆	○					★											○	★							
	SNMG250724	25.4	25.4	7.94	9.12	2.4		☆	○					★											○	★							
	SNMG250924	25.4	25.4	7.94	9.525	2.4		☆	○					★											○	★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


MSBNR/L Kr:75°

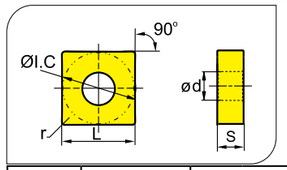

MSRNR/L Kr:75°


MSKNR/L Kr:75°


MSDNN Kr:45°


PSKNR/L Kr:75°

SN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																						Cemented carbide				
							P									M						K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Slotless	SNMA090304	9.525	9.525	3.18	3.81	0.4																		○	★	☆							○
	SNMA090308	9.525	9.525	3.18	3.81	0.8																		○	★	☆							○
	SNMA120404	12.7	12.7	4.76	5.16	0.4																		○	★	☆							○
	SNMA120408	12.7	12.7	4.76	5.16	0.8																		○	★	☆							○
	SNMA120416	12.7	12.7	4.76	5.16	1.6																		○	★	☆							○
	SNMA150608	15.875	15.875	6.35	6.35	0.8																		○	★	☆							○
	SNMA190612	19.05	19.05	6.35	7.94	1.2																		○	☆			★					○
	SNMA190616	19.05	19.05	6.35	7.94	1.6																		○	☆			★					○
GM	SNMG090304-GM	9.525	9.525	3.18	3.81	0.4	○	☆		☆	★				☆									○		○							
	SNMG090308-GM	9.525	9.525	3.18	3.81	0.8	○	☆		☆	★				☆									○		○							
	SNMG120404-GM	12.7	12.7	4.76	5.16	0.4	○	☆		☆	★				☆									○		○							
	SNMG120408-GM	12.7	12.7	4.76	5.16	0.8	○	☆		☆	★				☆									○		○							
	SNMG120412-GM	12.7	12.7	4.76	5.16	1.2	○	☆		☆	★				☆									○		○							
	SNMG120416-GM	12.7	12.7	4.76	5.16	1.6	○	☆		☆	★				☆									○		○							
	SNMG150608-GM	15.875	15.875	6.35	6.35	0.8	○	☆		☆	★				☆									○		○							
	SNMG150612-GM	15.875	15.875	6.35	6.35	1.2	○	☆		☆	★				☆									○		○							
	SNMG150616-GM	15.875	15.875	6.35	6.35	1.6	○	☆		☆	★				☆									○		○							
	SNMG190612-GM	19.05	19.05	6.35	7.94	1.2	○	☆		☆	★				☆									○		○							
Semi-finishing	SNMG190616-GM	19.05	19.05	6.35	7.94	1.6	○	☆		☆	★				☆									○		○							
GS	SNMG120404-GS	12.7	12.7	4.76	5.16	0.4		☆		☆	★						○																
	SNMG120408-GS	12.7	12.7	4.76	5.16	0.8		☆		☆	★						○																
	SNMG120412-GS	12.7	12.7	4.76	5.16	1.2		☆		☆	★						○																
	SNMG120416-GS	12.7	12.7	4.76	5.16	1.6		☆		☆	★						○																
	SNMG150612-GS	15.875	15.875	6.35	6.35	1.2		☆		☆	★						○																
Semi-finishing	SNMG150616-GS	15.875	15.875	6.35	6.35	1.6		☆		☆	★						○																

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


MSBNR/L Kr:75°

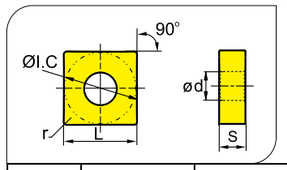

MSRNR/L Kr:75°


MSKNR/L Kr:75°


MSDNN Kr:45°


PSKNR/L Kr:75°

SN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																						Cemented carbide				
							P									M						K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3015	JT3025	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
BM	SNMG120404-BM	12.7	12.7	4.76	5.16	0.4											○	☆			★												
	SNMG120408-BM	12.7	12.7	4.76	5.16	0.8											○	☆			★												
	SNMG120412-BM	12.7	12.7	4.76	5.16	1.2											○	☆			★												
	SNMG120416-BM	12.7	12.7	4.76	5.16	1.6											○	☆			★												
	SNMG150612-BM	15.875	15.875	6.35	6.35	1.2											○	☆			★												
Semi-finishing	SNMG150616-BM	15.875	15.875	6.35	6.35	1.6											○	☆			★												
GF	SNMG120408-GF	12.7	12.7	4.76	5.16	0.8	☆	○		★								○															
	SNMG120412-GF	12.7	12.7	4.76	5.16	1.2	☆	○		★								○															
Finishing																																	
BF	SNMG090304-BF	9.525	9.525	3.18	3.81	0.4											○	☆			★												
	SNMG090308-BF	9.525	9.525	3.18	3.81	0.8											○	☆			★												
	SNMG090312-BF	9.525	9.525	3.18	3.81	1.2											○	☆			★												
	SNMG120404-BF	12.7	12.7	4.76	5.16	0.4											○	☆			★												
	SNMG120408-BF	12.7	12.7	4.76	5.16	0.8											○	☆			★												
	SNMG120412-BF	12.7	12.7	4.76	5.16	1.2											○	☆			★												
	SNMG150608-BF	15.875	15.875	6.35	6.35	0.8											○	☆			★												
Finishing	SNMG150612-BF	15.875	15.875	6.35	6.35	1.2											○	☆			★												

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


PSBNR/L Kr:75°


PSDNN Kr:45°


PSKNR/L Kr:75°


PSSNR/L Kr:45°


MSBNR/L Kr:75°

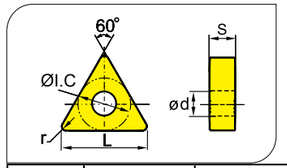

MSRNR/L Kr:75°


MSKNR/L Kr:75°


MSDNN Kr:45°


PSKNR/L Kr:75°

TN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P								M				K													
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GR	TNMG160408-GR	16.5	9.525	4.76	3.81	0.8		★	☆					★					○														
	TNMG160412-GR	16.5	9.525	4.76	3.81	1.2		★	☆					★					○														
	TNMG220408-GR	22	12.7	4.76	5.16	0.8		★	☆					★					○														
	TNMG220412-GR	22	12.7	4.76	5.16	1.2		★	☆					★					○														
	TNMG220416-GR	22	12.7	4.76	5.16	1.6		★	☆					★					○														
	TNMG270608-GR	27.515	15.875	6.35	6.35	0.8		★	☆					★					○														
	TNMG270612-GR	27.515	15.875	6.35	6.35	1.2		★	☆					★					○														
Roughing	TNMG270616-GR	27.515	15.875	6.35	6.35	1.6		★	☆					★					○														
GR	TNMM160408-GR	16.5	9.525	4.76	3.81	0.8		☆			☆	★		☆	★				○														
	TNMM160412-GR	16.5	9.525	4.76	3.81	1.2		☆			☆	★		☆	★				○														
	TNMM220408-GR	22	12.7	4.76	5.16	0.8		☆			☆	★		☆	★				○														
	TNMM220412-GR	22	12.7	4.76	5.16	1.2		☆			☆	★		☆	★				○														
	TNMM220416-GR	22	12.7	4.76	5.16	1.6		☆			☆	★		☆	★				○														
	TNMM270612-GR	27.515	15.875	6.35	6.35	1.2		☆			☆	★		☆	★				○														
Roughing	TNMM270616-GR	27.515	15.875	6.35	6.35	1.6		☆			☆	★		☆	★				○														

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

PTFNR/L Kr:90°

PTTNR/L Kr:60°

PTGNR/L Kr:90°

MTGNR/L Kr:90°

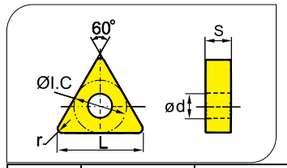
MTJNR/L Kr:93°

MTJNR/L□□-Z Kr:93°

MTFNR/L Kr:90°

PTFNR/L Kr:90°

TN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P								M				K													
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
ZR	TNMG160408-KR	16.5	9.525	4.76	3.81	0.8																			★	○	☆						
	TNMG160412-KR	16.5	9.525	4.76	3.81	1.2																			★	○	☆						
	TNMG220408-KR	22	12.7	4.76	5.16	0.8																			★	○	☆						
	TNMG220412-KR	22	12.7	4.76	5.16	1.2																			★	○	☆						
Roughing	TNMG220416-KR	22	12.7	4.76	5.16	1.6																			★	○	☆						
Slotless	TNMA160404	16.5	9.525	4.76	3.81	0.4																		○	★	☆							○
	TNMA160408	16.5	9.525	4.76	3.81	0.8																		○	★	☆							○
	TNMA160412	16.5	9.525	4.76	3.81	1.2																		○	★	☆							○
	TNMA160416	16.5	9.525	4.76	3.81	1.6																		○	★	☆							○
	TNMA220404	22	12.7	4.76	5.16	0.4																		○	★	☆							○
	TNMA220408	22	12.7	4.76	5.16	0.8																		○	★	☆							○
	TNMA270616	27.515	15.875	6.35	6.35	1.6															○				☆		★						○
Straight slot	TNMG110308	11	6.35	3.18	2.26	0.8	○	☆					★												★	○							
	TNMG160404	16.5	9.525	4.76	3.81	0.4	○	☆					★												★	○							
	TNMG160408	16.5	9.525	4.76	3.81	0.8	○	☆					★												★	○							
	TNMG160412	16.5	9.525	4.76	3.81	1.2	○	☆					★												★	○							
	TNMG220404	22	12.7	4.76	5.16	0.4	○	☆					★												★	○							
	TNMG220408	22	12.7	4.76	5.16	0.8	○	☆					★												★	○							
	TNMG220412	22	12.7	4.76	5.16	1.2	○	☆					★												★	○							
	TNMG220416	22	12.7	4.76	5.16	1.6	○	☆					★												★	○							
	TNMG270612	27.515	15.875	6.35	6.35	1.2		☆	○				★												○	★							
	TNMG270616	27.515	15.875	6.35	6.35	1.6		☆	○				★												○	★							
	TNMG330916	33	19.05	9.525	7.94	1.6		☆	○				★												○	★							
	TNMG330924	33	19.05	9.525	7.94	2.4		☆	○				★												○	★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

PTFNR/L Kr:90°

PTTNR/L Kr:60°

PTGNR/L Kr:90°

MTGNR/L Kr:90°

MTJNR/L Kr:93°

MTJNR/L□□-Z Kr:93°

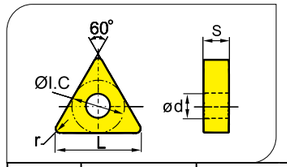
MTFNR/L Kr:90°

PTFNR/L Kr:90°

Turning Common Turning Inserts

Turning Inserts Naming Rules

TN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	φI.C	S	φd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GM	TNMG110304-GM	11	6.35	3.18	2.26	0.4		☆		☆	★				☆										○		○						
	TNMG110308-GM	11	6.35	3.18	2.26	0.8		☆		☆	★				☆										○		○						
	TNMG160404-GM	16.5	9.525	4.76	3.81	0.4		☆		☆	★				☆										○		○						
	TNMG160408-GM	16.5	9.525	4.76	3.81	0.8		☆		☆	★				☆										○		○						
	TNMG160412-GM	16.5	9.525	4.76	3.81	1.2		☆		☆	★				☆										○		○						
	TNMG220408-GM	22	12.7	4.76	5.16	0.8		☆		☆	★				☆										○		○						
	TNMG220412-GM	22	12.7	4.76	5.16	1.2		☆		☆	★				☆										○		○						
Semi-finishing	TNMG220416-GM	22	12.7	4.76	5.16	1.6		☆		☆	★				☆										○		○						
GS	TNMG160404-GS	16.5	9.525	4.76	3.81	0.4		☆		☆	★						○																
	TNMG160408-GS	16.5	9.525	4.76	3.81	0.8		☆		☆	★						○																
	TNMG160412-GS	16.5	9.525	4.76	3.81	1.2		☆		☆	★						○																
	TNMG220408-GS	22	12.7	4.76	5.16	0.8		☆		☆	★						○																
	TNMG220412-GS	22	12.7	4.76	5.16	1.2		☆		☆	★						○																
Semi-finishing	TNMG220416-GS	22	12.7	4.76	5.16	1.6		☆		☆	★						○																
BS	TNMG160404-BS	16.6	9.525	4.76	3.81	0.4												☆			★											
	TNMG160408-BS	16.6	9.525	4.76	3.81	0.8												☆			★											
Semi-finishing																																
BM	TNMG110304-BM	11	6.35	3.18	2.26	0.4											○	☆			★											
	TNMG110308-BM	11	6.35	3.18	2.26	0.8											○	☆			★											
	TNMG160404-BM	16.5	9.525	4.76	3.81	0.4											○	☆			★											
	TNMG160408-BM	16.5	9.525	4.76	3.81	0.8											○	☆			★											
	TNMG160412-BM	16.5	9.525	4.76	3.81	1.2											○	☆			★											
	TNMG220408-BM	22	12.7	4.76	5.16	0.8											○	☆			★											
	TNMG220412-BM	22	12.7	4.76	5.16	1.2											○	☆			★											
Semi-finishing	TNMG220416-BM	22	12.7	4.76	5.16	1.6											○	☆			★											

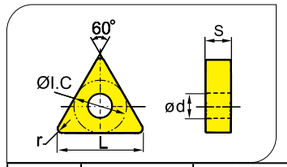
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Common Turning Inserts Turning

Turning Inserts Naming Rules

TN□□ (Negative)

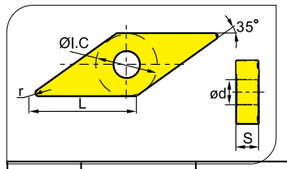


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	φI.C	S	φd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GF	TNMG160404-GF	16.5	9.525	4.76	3.81	0.4	☆	○		★								○														
	TNMG160408-GF	16.5	9.525	4.76	3.81	0.8	☆	○		★								○														
	TNMG160412-GF	16.5	9.525	4.76	3.81	1.2	☆	○		★								○														
	TNMG220408-GF	22	12.7	4.76	5.16	0.8	☆	○		★								○														
Finishing	TNMG220412-GF	22	12.7	4.76	5.16	1.2	☆	○		★								○														
BF	TNMG110304-BF	11	6.35	3.18	2.26	0.4											○	☆			★											
	TNMG110308-BF	11	6.35	3.18	2.26	0.8											○	☆			★											
	TNMG160404-BF	16.5	9.525	4.76	3.81	0.4											○	☆			★											
	TNMG160408-BF	16.5	9.525	4.76	3.81	0.8											○	☆			★											
	TNMG160412-BF	16.5	9.525	4.76	3.81	1.2											○	☆			★											
	TNMG220404-BF	22	12.7	4.76	5.16	0.4											○	☆			★											
	TNMG220408-BF	22	12.7	4.76	5.16	0.8											○	☆			★											
Finishing	TNMG220412-BF	22	12.7	4.76	5.16	1.2											○	☆			★											

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

VN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Straight slot	VNMG160404	16.6	9.525	4.76	3.81	0.4	○	☆						★											★	○							
	VNMG160408	16.6	9.525	4.76	3.81	0.8	○	☆						★											★	○							
GM	VNMG160408-GM	16.6	9.525	4.76	3.81	0.8		☆		☆	★				☆										○		○						
	VNMG160412-GM	16.6	9.525	4.76	3.81	1.2		☆		☆	★				☆										○		○						
Semi-finishing																																	
BM	VNMG160404-BM	16.6	9.525	4.76	3.81	0.4											○	☆			★												
	VNMG160408-BM	16.6	9.525	4.76	3.81	0.8											○	☆			★												
Semi-finishing																																	
GF	VNMG160404-GF	16.6	9.525	4.76	3.81	0.4	☆	○		★							○																
	VNMG160408-GF	16.6	9.525	4.76	3.81	0.8	☆	○		★							○																
Finishing																																	
BF	VNMG160404-BF	16.6	9.525	4.76	3.81	0.4	☆	○		★							○	☆			★												
	VNMG160408-BF	16.6	9.525	4.76	3.81	0.8	☆	○		★							○	☆			★												
	VNMG160412-BF	16.6	9.525	4.76	3.81	1.2	☆	○		★							○	☆			★												
Finishing																																	
UF	VNMG160404-UF	16.6	9.525	4.76	3.81	0.4											○	☆			★												

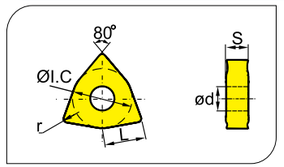
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

MVVNN
Kr:72°30'

MVJNR/L
Kr:93°

WN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
GR	WNMG060408-GR	6.5	9.525	4.76	3.81	0.8		☆			☆	★		☆					○														
	WNMG060412-GR	6.5	9.525	4.76	3.81	1.2		☆			☆	★		☆					○														
	WNMG080408-GR	8.7	12.7	4.76	5.16	0.8		☆			☆	★		☆					○														
	WNMG080412-GR	8.7	12.7	4.76	5.16	1.2		☆			☆	★		☆					○														
Roughing	WNMG080416-GR	8.7	12.7	4.76	5.16	1.6		☆			☆	★		☆					○														
KR	WNMG060412-KR	6.5	9.525	4.76	3.81	1.2																			★	○	☆						
	WNMG080408-KR	8.7	12.7	4.76	5.16	0.8																			★	○	☆						
	WNMG080412-KR	8.7	12.7	4.76	5.16	1.2																			★	○	☆						
Roughing	WNMG080416-KR	8.7	12.7	4.76	5.16	1.6																			★	○	☆						
Slotless	WNMA06T308	6.5	9.525	3.97	3.81	0.8																○			★	☆	○						○
	WNMA060404	6.5	9.525	4.76	3.81	0.4																○			★	☆							○
	WNMA060408	6.5	9.525	4.76	3.81	0.8																○			★	☆							○
	WNMA060412	6.5	9.525	4.76	3.81	1.2																○			★	☆							○
	WNMA080404	8.7	12.7	4.76	5.16	0.4																○			★	☆							○
	WNMA080408	8.7	12.7	4.76	5.16	0.8																○			★	☆							○
	WNMA080412	8.7	12.7	4.76	5.16	1.2																	○	☆			★						○
	WNMA080416	8.7	12.7	4.76	5.16	1.6																	○	☆			★						○

★Recommended grade ☆Optional grade ○Make to order

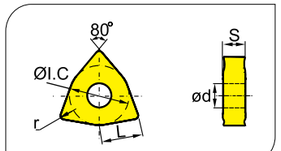
Applicable tool

PWLNR/L
Kr:95°

MWLNR/L
Kr:95°

PWLNR/L
Kr:95°

WN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																						Cemented carbide				
							P								M					K													
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Straight slot	WNMG060408	6.5	9.525	4.76	3.81	0.8	☆	☆	☆					★											★	○							
	WNMG060412	6.5	9.525	4.76	3.81	1.2	☆	☆	☆					★											★	○							
	WNMG080408	8.7	12.7	4.76	5.16	0.8	☆	☆	☆					★											★	○							
	WNMG080412	8.7	12.7	4.76	5.16	1.2	☆	☆	☆					★											★	○							
	WNMG080416	8.7	12.7	4.76	5.16	1.6	☆	☆	☆					★											★	○							
GM	WNMG060408-GM	6.5	9.525	4.76	3.81	0.8		☆		☆	★			★	☆										○		○						
	WNMG060412-GM	6.5	9.525	4.76	3.81	1.2		☆		☆	★			★	☆										○		○						
	WNMG080404-GM	8.7	12.7	4.76	5.16	0.4		☆		☆	★			★	☆										○		○						
	WNMG080408-GM	8.7	12.7	4.76	5.16	0.8		☆		☆	★			★	☆										○		○						
	WNMG080412-GM	8.7	12.7	4.76	5.16	1.2		☆		☆	★			★	☆										○		○						
	WNMG080416-GM	8.7	12.7	4.76	5.16	1.6		☆		☆	★			★	☆										○		○						
Semi-finishing	WNMG080608-GM	8.7	12.7	6.35	5.16	0.8		☆		☆	★			★	☆										○		○						
BS	WNMG080404-BS	8.7	12.7	4.76	5.16	0.4												☆			★												
	WNMG080408-BS	8.7	12.7	4.76	5.16	0.8												☆			★												
Semi-finishing																																	
BM	WNMG06T304-BM	6.5	9.525	3.97	3.81	0.4											○	☆			★												
	WNMG06T308-BM	6.5	9.525	3.97	3.81	0.8											○	☆			★												
	WNMG06T312-BM	6.5	9.525	3.97	3.81	1.2											○	☆			★												
	WNMG060404-BM	6.5	9.525	4.76	3.81	0.4											○	☆			★												
	WNMG060408-BM	6.5	9.525	4.76	3.81	0.8											○	☆			★												
	WNMG080404-BM	8.7	12.7	4.76	5.16	0.4											○	☆			★												
	WNMG080408-BM	8.7	12.7	4.76	5.16	0.8											○	☆			★												
Semi-finishing	WNMG080412-BM	8.7	12.7	4.76	5.16	1.2											○	☆			★												

★Recommended grade ☆Optional grade ○Make to order

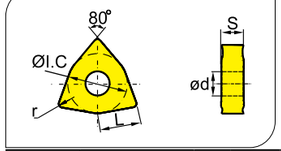
Applicable tool

PWLNR/L Kr:95°

MWLNR/L Kr:95°

PWLNR/L Kr:95°

WN□□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																						Cemented carbide				
							P								M					K													
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT4215	JT3225	JP302	JP402	JK001	JK101	JK201
GF	WNMG060404-GF	6.5	9.525	4.76	3.81	0.4	☆	○		★																							
	WNMG060408-GF	6.5	9.525	4.76	3.81	0.8	☆	○		★																							
	WNMG060412-GF	6.5	9.525	4.76	3.81	1.2	☆	○		★																							
	WNMG080404-GF	8.7	12.7	4.76	5.16	0.4	☆	○		★																							
	WNMG080408-GF	8.7	12.7	4.76	5.16	0.8	☆	○		★																							
Finishing	WNMG080412-GF	8.7	12.7	4.76	5.16	1.2	☆	○		★																							
BF	WNMG06T304-BF	6.5	9.525	3.97	3.81	0.4											○	☆			★												
	WNMG06T308-BF	6.5	9.525	3.97	3.81	0.8											○	☆			★												
	WNMG06T312-BF	6.5	9.525	3.97	3.81	1.2											○	☆			★												
	WNMG060404-BF	6.5	9.525	4.76	3.81	0.4											○	☆			★												
	WNMG060408-BF	6.5	9.525	4.76	3.81	0.8											○	☆			★												
	WNMG080404-BF	8.7	12.7	4.76	5.16	0.4											○	☆			★												
Finishing	WNMG080408-BF	8.7	12.7	4.76	5.16	0.8											○	☆			★												

★Recommended grade ☆Optional grade ○Make to order

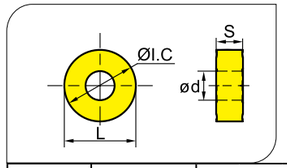
Applicable tool

PWLNR/L Kr:95°

MWLNR/L Kr:95°

PWLNR/L Kr:95°

RN□□ (Negative)

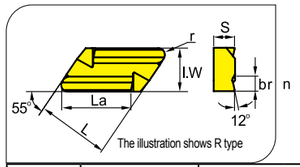


Shape	Type	Dimension(mm)				Coated cemented carbide																				Cemented carbide				
						P									M					K										
		L	ϕI.C	S	ϕd	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
Slotless	RNMA120400	12.7	12.7	4.76	5.16		★	○		☆						○								★	☆							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

KN□□ (Negative)



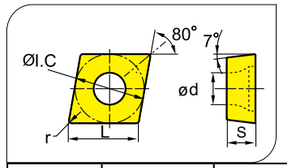
Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
	KNUX160405L12	16.0	16.2	9.525	4.76	0.5		★	☆			☆													★	☆							
	KNUX160405R12	16.0	16.2	9.525	4.76	0.5		★	☆			☆													★	☆							
	KNUX160410L12	16.0	16.2	9.525	4.76	1		★	☆			☆													★	☆							
	KNUX160410R12	16.0	16.2	9.525	4.76	1		★	☆			☆													★	☆							
	KNUX160405L11	16.0	16.2	9.525	4.76	0.5		★	☆			☆													★	☆							
Profile turning	KNUX160405R11	16.0	16.2	9.525	4.76	0.5		★	☆			☆													★	☆							

★Recommended grade ☆Optional grade ○Make to order

Note: the last two number of type represents different groove, 11 on behalf of the chute, 12 straight flute.

Applicable tool

CC□□ (Positive)

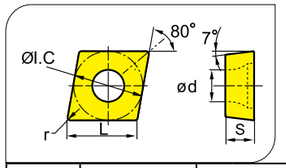


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M					K										
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HR	CCMT09T308-HR	9.7	9.525	3.97	4.4	0.8		☆							○			○			★				★	☆							
	CCMT09T312-HR	9.7	9.525	3.97	4.4	1.2		☆							○			○			★				★	☆							
	CCMT120408-HR	12.9	12.7	4.76	5.56	0.8		☆							○			○			★				★	☆							
Roughing	CCMT120412-HR	12.9	12.7	4.76	5.56	1.2		☆							○			○			★				★	☆							
HM	CCMT060204-HM	6.4	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★							
	CCMT060208-HM	6.4	6.35	2.38	2.8	0.8		★	○		☆				○			★			☆				☆	★							
	CCMT09T304-HM	9.7	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★							
	CCMT09T308-HM	9.7	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★							
	CCMT120404-HM	12.9	12.7	4.76	5.56	0.4		★	○		☆				○			★			☆				☆	★							
	CCMT120408-HM	12.9	12.7	4.76	5.56	0.8		★	○		☆				○			★			☆				☆	★							
Semi-finishing	CCMT120412-HM	12.9	12.7	4.76	5.56	1.2		★	○		☆				○			★			☆				☆	★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

CC□□ (Positive)

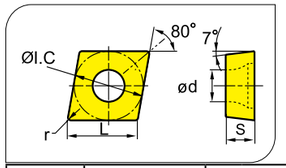


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HF	CCGT060202-HF	6.4	6.35	2.38	2.8	0.2		☆		★					○			★			☆				★							
	CCGT060204-HF	6.4	6.35	2.38	2.8	0.4		☆		★					○			★			☆				★							
	CCGT060208-HF	6.4	6.35	2.38	2.8	0.8		☆		★					○			★			☆				★							
	CCGT09T302-HF	9.7	9.525	3.97	4.4	0.2		☆		★					○			★			☆				★							
	CCGT09T304-HF	9.7	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★							
	CCGT09T308-HF	9.7	9.525	3.97	4.4	0.8		☆		★					○			★			☆				★							
	CCGT120404-HF	12.9	12.7	4.76		0.4		☆		★					○			★			☆				★							
Finishing	CCGT120408-HF	12.9	12.7	4.76	.56	0.8		☆		★					○			★			☆				★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

CC□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
AC	CCGX060202-AC	6.4	6.35	2.38	2.8	0.2																			★	☆					★	☆	
	CCGX060204-AC	6.4	6.35	2.38	2.8	0.4																			★	☆					★	☆	
	CCGX060208-AC	6.4	6.35	2.38	2.8	0.8																			★	☆					★	☆	
	CCGX09T302-AC	9.7	9.525	3.97	4.4	0.2																			★	☆					★	☆	
	CCGX09T304-AC	9.7	9.525	3.97	4.4	0.4																			★	☆					★	☆	
	CCGX09T308-AC	9.7	9.525	3.97	4.4	0.8																			★	☆					★	☆	
	CCGX120402-AC	12.9	12.7	4.76	5.56	0.2																			★	☆					★	☆	
	CCGX120404-AC	12.9	12.7	4.76	5.56	0.4																			★	☆					★	☆	
	CCGX120408-AC	12.9	12.7	4.76	5.56	0.8																			★	☆					★	☆	
Aluminium machining	CCGX120412-AC	12.9	12.7	4.76	5.56	1.2																			★	☆					★	☆	
Slotless	CCGW060204	6.4	6.35	2.38	2.8	0.4	☆																		★								☆
	CCGW09T304	9.7	9.525	3.97	4.4	0.4	☆																		★								☆
	CCGW09T308	9.7	9.525	3.97	4.4	0.8	☆																		★								☆
	CCGW120404	12.9	12.7	4.76	5.56	0.4	☆																		★								☆
	CCGW120408	12.9	12.7	4.76	5.56	0.8	☆																		★								☆

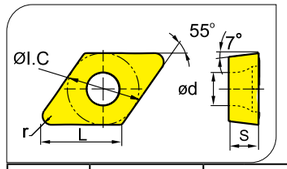
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Turning Common Turning Inserts

Turning Inserts Naming Rules

DC□□ (Positive)

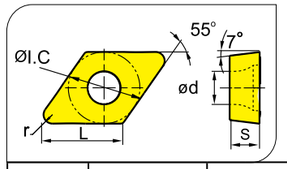


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M				K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HR	DCMT070208-HR	7.8	6.35	2.38	2.8	0.8		☆							○			○			★				★	☆						
	DCMT070212-HR	7.8	6.35	2.38	2.8	1.2		☆							○			○			★				★	☆						
	DCMT11T304-HR	11.6	9.525	3.97	4.4	0.4		☆							○			○			★				★	☆						
	DCMT11T308-HR	11.6	9.525	3.97	4.4	0.8		☆							○			○			★				★	☆						
Roughing	DCMT11T312-HR	11.6	9.525	3.97	4.4	1.2		☆							○			○			★				★	☆						
HM	DCMT070204-HM	7.8	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★						
	DCMT070208-HM	7.8	6.35	2.38	2.8	0.8		★	○		☆				○			★			☆				☆	★						
	DCMT11T304-HM	11.6	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★						
	DCMT11T308-HM	11.6	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★						
Semi-finishing	DCMT11T312-HM	11.6	9.525	3.97	4.4	1.2		★	○		☆				○			★			☆				☆	★						
HF	DCGT070202-HF	7.8	6.35	2.38	2.8	0.2		☆		★					○			★			☆				★							
	DCGT070204-HF	7.8	6.35	2.38	2.8	0.4		☆		★					○			★			☆				★							
	DCGT070208-HF	7.8	6.35	2.38	2.8	0.8		☆		★					○			★			☆				★							
	CCGT09T302-HF	11.6	9.525	3.97	4.4	0.2		☆		★					○			★			☆				★							
	CCGT09T304-HF	11.6	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★							
Finishing	CCGT09T308-HF	11.6	9.525	3.97	4.4	0.8		☆		★					○			★			☆				★							

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

DC□□ (Positive)

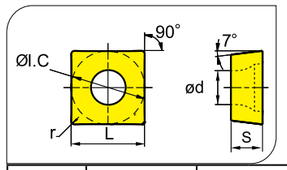


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P									M				K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
AC	DCGX070202-AC	7.8	6.35	2.38	2.8	0.2																			★	☆					★	☆	
	DCGX070204-AC	7.8	6.35	2.38	2.8	0.4																			★	☆					★	☆	
	DCGX11T302-AC	11.6	9.525	3.97	4.4	0.2																			★	☆					★	☆	
	DCGX11T304-AC	11.6	9.525	3.97	4.4	0.4																			★	☆					★	☆	
Aluminium machining	DCGX11T308-AC	11.6	9.525	3.97	4.4	0.8																			★	☆					★	☆	
Slotless	DCGW070204	7.8	6.35	2.38	2.8	0.4	☆																		★								☆
	DCGW11T304	11.6	9.525	3.97	4.4	0.4	☆																		★								☆
	DCGW11T308	11.6	9.525	3.97	4.4	0.8	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

SC□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HR	SCMT09T308-HR	9.525	9.525	3.97	4.4	0.8		☆							○			○			★				★	☆						
	SCMT09T312-HR	9.525	9.525	3.97	4.4	1.2		☆							○			○			★				★	☆						
	SCMT120408-HR	12.7	12.7	4.76	5.56	0.8		☆							○			○			★				★	☆						
Roughing	SCMT120412-HR	12.7	12.7	4.76	5.56	1.2		☆							○			○			★				★	☆						
HM	SCMT09T304-HM	9.525	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★						
	SCMT09T308-HM	9.525	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★						
	SCMT120404-HM	12.7	12.7	4.76	5.56	0.4		★	○		☆				○			★			☆				☆	★						
	SCMT120408-HM	12.7	12.7	4.76	5.56	0.8		★	○		☆				○			★			☆				☆	★						
Semi-finishing	SCMT120412-HM	12.7	12.7	4.76	5.56	1.2		★	○		☆				○			★			☆				☆	★						
HF	SCGT09T302-HF	9.525	9.525	3.97	4.4	0.2		☆		★					○			★			☆				★							
	SCGT09T304-HF	9.525	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★							
	SCGT09T304-HF	9.525	9.525	3.97	4.4	0.8		☆		★					○			★			☆				★							
Finishing																																

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


SSBCR/L Kr:75°

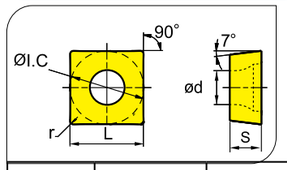

SSDCN Kr:45°


SSKCR/L Kr:75°


SSSCR/L Kr:45°


SSKCR/L Kr:75°

SC□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
AC	SCGX09T302-AC	9.525	9.525	3.97	4.4	0.2																			★	☆				★	☆	
	SCGX09T304-AC	9.525	9.525	3.97	4.4	0.4																			★	☆				★	☆	
	SCGX09T308-AC	9.525	9.525	3.97	4.4	0.8																			★	☆				★	☆	
	SCGX120404-AC	12.7	12.7	4.76	5.56	0.4																			★	☆				★	☆	
Aluminium machining	SCGX120408-AC	12.7	12.7	4.76	5.56	0.8																			★	☆				★	☆	
Slotless	SCGW09T302	9.525	9.525	3.97	4.4	0.2	☆																		★							☆
	SCGW09T304	9.525	9.525	3.97	4.4	0.4	☆																		★							☆
	SCGW09T308	9.525	9.525	3.97	4.4	0.8	☆																		★							☆
	SCGW120404	12.7	12.7	4.76	5.56	0.4	☆																		★							☆
	SCGW120408	12.7	12.7	4.76	5.56	0.8	☆																		★							☆
	SCGW120412	12.7	12.7	4.76	5.56	1.2	☆																		★							☆

★Recommended grade ☆Optional grade ○Make to order

Applicable tool


SSBCR/L Kr:75°

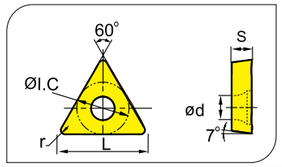

SSDCN Kr:45°


SSKCR/L Kr:75°


SSSCR/L Kr:45°


SSKCR/L Kr:75°

TC□□ (Positive)

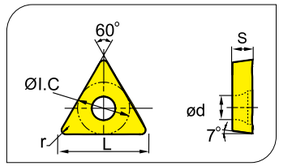


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HR	TCMT090208-HR	9.6	5.56	2.38	2.5	0.8		☆							○			○			★				★	☆						
	TCMT110208-HR	11.0	6.35	2.38	2.8	0.8		☆							○			○			★				★	☆						
	TCMT110212-HR	11.0	6.35	2.38	2.8	1.2		☆							○			○			★				★	☆						
	TCMT16T308-HR	16.5	9.525	3.97	4.4	0.8		☆							○			○			★				★	☆						
Roughing	TCMT16T312-HR	16.5	9.525	3.97	4.4	1.2		☆							○			○			★				★	☆						
HM	TCMT090204-HM	9.6	5.56	2.38	2.5	0.4		★	○		☆				○			★			☆				☆	★						
	TCMT090208-HM	9.6	5.56	2.38	2.5	0.8		★	○		☆				○			★			☆				☆	★						
	TCNT110204-HM	11.0	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★						
	TCMT110208-HM	11.0	6.35	2.38	2.8	0.8		★	○		☆				○			★			☆				☆	★						
	TCMT16T304-HM	16.5	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★						
	TCMT16T308-HM	16.5	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★						
Semi-finishing	TCMT16T312-HM	16.5	9.525	3.97	4.4	1.2		★	○		☆				○			★			☆				☆	★						

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

TC□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M				K												
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HF	TCGT06T104-HF	6.4	3.97	1.98	2.2	0.4		☆		★					☆			★			☆				★							
	TCGT06T108-HF	6.4	3.97	1.98	2.2	0.8		☆		★					☆			★			☆				★							
	TCGT090202-HF	9.6	5.56	2.38	2.5	0.2		☆		★					☆			★			☆				★							
	TCGT090204-HF	9.6	5.56	2.38	2.5	0.4		☆		★					☆			★			☆				★							
	TCGT090208-HF	9.6	5.56	2.38	2.5	0.8		☆		★					☆			★			☆				★							
	TCGT110202-HF	11.0	6.35	2.38	2.8	0.2		☆		★					☆			★			☆				★							
	TCGT110204-HF	11.0	6.35	2.38	2.8	0.4		☆		★					○			★			☆				★							
	TCGT110208-HF	11.0	6.35	2.38	2.8	0.8		☆		★					○			★			☆				★							
	TCGT16T302-HF	16.5	9.525	3.97	4.4	0.2		☆		★					○			★			☆				★							
	TCGT16T304-HF	16.5	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★							
Finishing	TCGT16T308-HF	16.5	9.525	3.97	4.4	0.8		☆		★					○			★			☆				★							

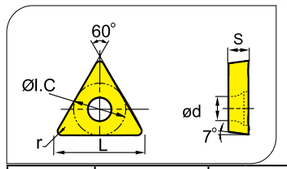
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Turning Common Turning Inserts

Turning Inserts Naming Rules

TC□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
AC	TCGX090202-AC	9.6	5.56	2.38	2.5	0.2																							★	☆	
	TCGX090204-AC	9.6	5.56	2.38	2.5	0.4																							★	☆	
	TCGX110202-AC	11.0	6.35	2.38	2.8	0.2																							★	☆	
	TCGX110204-AC	11.0	6.35	2.38	2.8	0.4																							★	☆	
	TCGX110208-AC	11.0	6.35	2.38	2.8	0.8																							★	☆	
	TCGX16T302-AC	16.5	9.525	3.97	4.4	0.2																							★	☆	
	TCGX16T304-AC	16.5	9.525	3.97	4.4	0.4																							★	☆	
Aluminium machining	TCGX16T308-AC	16.5	9.525	3.97	4.4	0.8																							★	☆	
Slotless	TCGW110204	11.0	6.35	2.38	2.8	0.4	☆																		★							☆
	TCGW16T304	16.5	9.525	3.97	4.4	0.4	☆																		★							☆
	TCGW16T308	16.5	9.525	3.97	4.4	0.8	☆																		★							☆
	TCGW16T312	16.5	9.525	3.97	4.4	1.2	☆																		★							☆

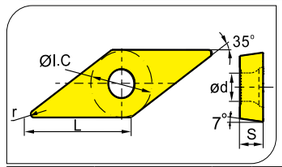
★Recommended grade ☆Optional grade ○Make to order

Applicable tool

Common Turning Inserts Turning

Turning Inserts Naming Rules

VC□□ (Positive)

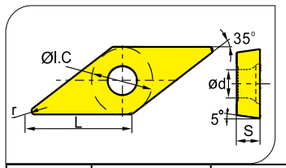


Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide				
							P								M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	VCMT110304-HM	11	6.35	3.18	2.8	0.4		★	○		☆				○			★			☆				☆	★						
Semi-finishing																																
HF	VCGT110304-HF	11	6.35	3.18	2.8	0.4		☆		★					○			★			☆				★							
Finishing																																
AC	VCGX110202-AC	11	6.35	2.38	2.8	0.2																								★	☆	
	VCGX110204-AC	11	6.35	2.38	2.8	0.4																								★	☆	
	VCGX110301-AC	11	6.35	3.18	2.8	0.1																								★	☆	
	VCGX110302-AC	11	6.35	3.18	2.8	0.2																								★	☆	
	VCGX110304-AC	11	6.35	3.18	2.8	0.4																								★	☆	
	VCGX110308-AC	11	6.35	3.18	2.8	0.8																								★	☆	
	VCGX160402-AC	16.6	9.525	4.76	4.4	0.2																								★	☆	
	VCGX160404-AC	16.6	9.525	4.76	4.4	0.4																								★	☆	
	VCGX160408-AC	16.6	9.525	4.76	4.4	0.8																								★	☆	
	VCGX160412-AC	16.6	9.525	4.76	4.4	1.2																								★	☆	
Aluminium machining	VCGX220530-AC	22	12.7	5.56	5.5	3.0																								★	☆	
Slotless	VCGW110304	11	6.35	3.18	2.8	0.4	☆																		★							☆

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

VB□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	VBMT160404-HM	16.5	9.525	4.76	4.4	0.4		★	○		☆				○			★			☆				☆	★							
	VBMT160408-HM	16.5	9.525	4.76	4.4	0.8		★	○		☆				○			★			☆				☆	★							
	VBMT160412-HM	16.5	9.525	4.76	4.4	1.2		★	○		☆				○			★			☆				☆	★							
Semi-finishing																																	
HF	VBGT110202-HF	11	6.35	2.38	2.8	0.2		☆		★					○			★			☆				★								
	VBGT110204-HF	11	6.35	2.38	2.8	0.4		☆		★					○			★			☆				★								
	VBGT110208-HF	11	6.35	2.38	2.8	0.8		☆		★					○			★			☆				★								
Finishing																																	
Slotless	VBGW160404	16.6	9.525	4.76	4.4	0.4	☆																		★								☆
	VBGW160408	16.6	9.525	4.76	4.4	0.8	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

SVJBR/L Kr:93°

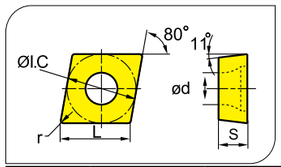
SVABR/L Kr:90°

SVVBN Kr:72°30'

SVQBR/L Kr:107°30'

SVUBR/L Kr:93°

CP□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	CPMT060204-HM	6.4	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★							
	CPMT09T304-HM	9.7	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★							
Semi-finishing																																	
HF	CPGT060202-HF	6.4	6.35	2.38	2.8	0.2		☆		★					○			★			☆				★								
	CPGT09T304-HF	9.7	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★								
Finishing																																	
Slotless	CPGW060204	6.4	6.35	2.38	2.8	0.4	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

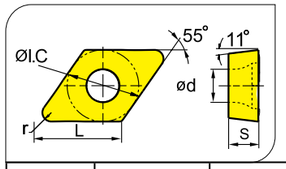
Applicable tool

SCLPR/L Kr:95°

Turning Common Turning Inserts

Turning Inserts Naming Rules

DP□□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	DPMT070204-HM	7.8	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★							
	DPMT070208-HM	7.8	6.35	2.38	2.8	0.8		★	○		☆				○			★			☆				☆	★							
	DPMT11T304-HM	11.6	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★							
Semi-finishing	DPMT11T308-HM	11.6	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★							
HF	DPGT070204-HF	7.8	6.35	2.38	2.8	0.4		☆		★					○			★			☆				★								
	DPGT070208-HF	7.8	6.35	2.38	2.8	0.8		☆		★					○			★			☆				★								
	DPGT11T304-HF	11.6	9.525	3.97	4.4	0.4		☆		★					○			★			☆				★								
Finishing	DPGT11T308-HF	11.6	9.525	3.97	4.4	0.8		☆		★					○			★			☆				★								
Slotless	DPGW11T304	11.6	9.525	3.97	4.4	0.4	☆																		★								☆
	DPGW11T308	11.6	9.525	3.97	4.4	0.8	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

Applicable tool

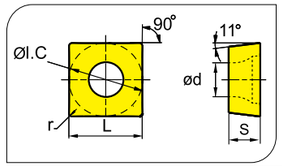
SDQPR/L
Kr:107°30'

SDUPR/L
Kr:95°

Common Turning Inserts Turning

Turning Inserts Naming Rules

SP□□ (Positive)



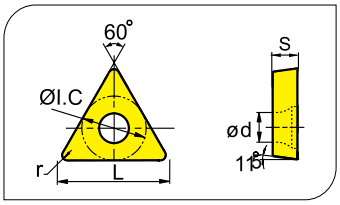
Shape	Type	Dimension(mm)					Coated cemented carbide																					Cemented carbide				
							P									M					K											
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	SPMT09T304-HM	9.525	9.525	3.97	4.4	0.4		★	○		☆				○			★			☆				☆	★							
	SPMT09T308-HM	9.525	9.525	3.97	4.4	0.8		★	○		☆				○			★			☆				☆	★							
	SPMT120404-HM	12.7	12.7	4.76	5.56	0.4		★	○		☆				○			★			☆				☆	★							
	SPMT120408-HM	12.7	12.7	4.76	5.56	0.8		★	○		☆				○			★			☆				☆	★							
Semi-finishing	SPMT120412-HM	12.7	12.7	4.76	5.56	1.2		★	○		☆				○			★			☆				☆	★							
HF	SPGT09T302-HF	9.525	9.525	3.97	4.4	0.2		☆		★					☆			★			☆				★								
	SPGT09T304-HF	9.525	9.525	3.97	4.4	0.4		☆		★					☆			★			☆				★								
	SPGT09T304-HF	9.525	9.525	3.97	4.4	0.8		☆		★					☆			★			☆				★								
Finishing																																	
Slotless	SPGW09T304	9.525	9.525	3.97	4.4	0.4	☆																		★								☆
	SPGW09T308	9.525	9.525	3.97	4.4	0.8	☆																		★								☆
	SPGW120408	12.7	12.7	4.76	5.56	0.8	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

Turning Common Turning Inserts

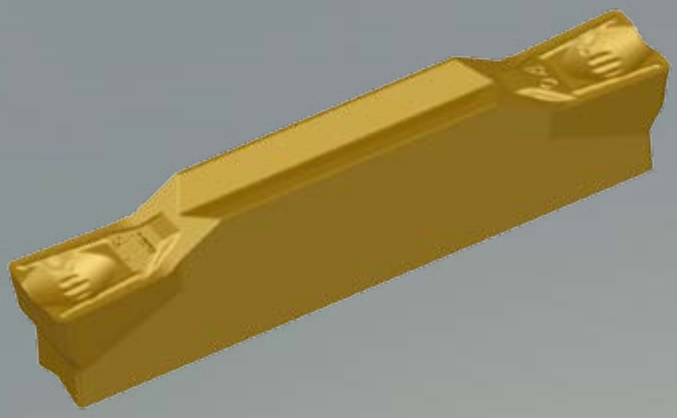
Turning Inserts Naming Rules

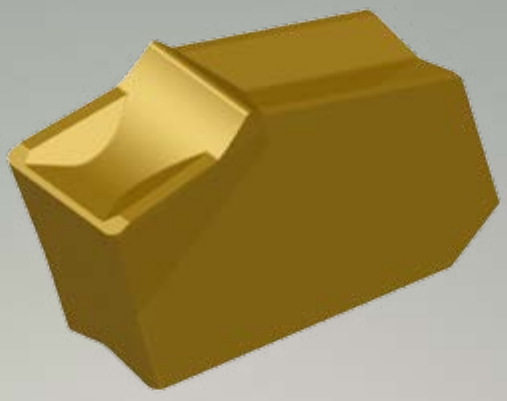
TP□□ (Positive)

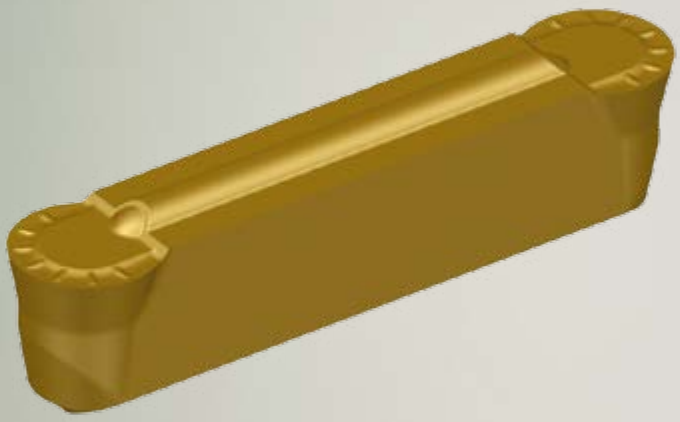


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
							P									M					K									
		L	ϕI.C	S	ϕd	r	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3025	JT3105	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
HM	TPMT090208-HM	9.6	5.56	2.38	2.5	0.8		★	○		☆				○			★			☆				☆	★							
	TPMT110202-HM	11.0	6.35	2.38	2.8	0.2		★	○		☆				○			★			☆				☆	★							
	TPMT110204-HM	11.0	6.35	2.38	2.8	0.4		★	○		☆				○			★			☆				☆	★							
Semi-finishing	TPMT110208-HM	11.0	6.35	2.38	2.8	0.8		★	○		☆				○			★			☆				☆	★							
HF	TPGT090204-HF	9.6	5.56	2.38	2.5	0.4		☆		★					☆			★			☆				★								
	TPGT090208-HF	9.6	5.56	2.38	2.5	0.8		☆		★					☆			★			☆				★								
	TPGT110202-HF	11.0	6.35	2.38	2.8	0.2		☆		★					☆			★			☆				★								
	TPGT110204-HF	11.0	6.35	2.38	2.8	0.4		☆		★					☆			★			☆				★								
Finishing	TPGT110208-HF	11.0	6.35	2.38	2.8	0.8		☆		★					☆			★			☆				★								
Slotless	TPGW090204	9.6	6.35	2.38	2.5	0.4	☆																		★								☆
	TPGW090208	9.6	6.35	2.38	2.5	0.8	☆																		★								☆
	TPGW110304	11.0	6.350	3.18	2.8	0.4	☆																		★								☆
	TPGW110308	11.0	6.350	3.18	2.8	0.8	☆																		★								☆
	TPGW160308	16.5	9.525	3.18	2.8	0.8	☆																		★								☆
	TPGW16T302	16.5	9.525	3.97	2.8	0.2	☆																		★								☆
	TPGW220408	22.0	12.70	4.76	5.5	0.8	☆																		★								☆

★Recommended grade ☆Optional grade ○Make to order

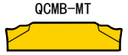
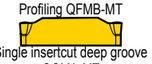


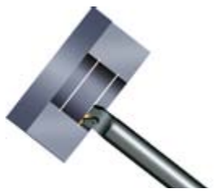




Turning

Parting and grooving tools

Processing parts	Processing form		Applicable tool	Corresponding insert	Feature and parameter
External	Parting off			Parting off insert QDMA-MT 	● Assembly structure of parting blade and holder,good rigidity,cut range is adjustable. ● The max cut-off Dia is 120mm.
				QCMB-MT 	● The blade with 3D chip breaker groove,small cutting force, chip removal performance is good. ● The max cut-off Dia is 60mm.
				QDMA□□N 	● Solid edge,suitable for the harsh condition. ● The max cut-off Dia is 70mm.
	Grooving and turning			Double edged cutting QCMB-MT  Profiling QFMB-MT  Single insertcut deep groove QCMA-MT 	● One knife is multipurpose,can be installed grooving,profiling,cutting a variety of blade, reducing the varieties of the cutting tool. ● When install groove cutting insert with functions of grooving and transverse cutting, groove insert is multifunctional. ● Max processing groove depth is 30mm
	Precise grooving			Precision groove QCGB-MF  Edge width1.2~2.4mm	● Grinded insert used for precision groove processing. ● Cutting edge size in 1.0 ~ 6.5 mm wide,customized according to user requirements. ● QC□□□□-MF insert edge during 1.2 ~2.4 mm wide, the max cutting depth is 2.5mm;Insert edge width > 2.4 ~ 6.5 mm, the max cutting depth is 22 mm.
				Precision groove QCGB-MF  Edge width2.4~6.5mm	

Processing parts		Processing form	Applicable tool	Corresponding insert	Feature and parameter
External	Shallow grooving			QCMB□□R/L 	● Fine grinding, high precision. ● Processing groove width is 1.1~5.0mm.. ● The max processing groove depth is 6mm.
Internal	Grooving and turning		C□□-Q□□R/L□ 	Grooving, turning QCGB-MF  Profile turning QFGB 	● Can be installed slot cutting,profiling etc, insert is multi-purpose,reducing the varieties of the cutting tool. ● The max processing groove depth is 13mm. ● Min machining diameter is 27mm.
	Grooving		C□R/L□□ 	GroovingQCMB□R/L 	● Fine grinding, high precision. ● Processing groove width is 1.1~5.0mm. ● Min machining diameter is 20mm. ● The max processing groove depth is 6mm.

Processing parts		Processing form	Applicable tool	Corresponding insert	Feature and parameter
Facing	Grooving and turning			Grooving, turning QCMB/A-MT  Profile turning QFGB 	● Elbow type handle, clamp pressure. ● Can be installed slot cutting, profiling etc, insert is multi-purpose, reducing the varieties of the cutting tool. ● Grooving diameter is 48~400mm. ● Grooving depth is 10~30mm.
The relief groove prolessing	The relief grooving and turning			Grooving,turning QCMB/A  Profile turningQFGB□□ 	● Used for relief groove machining Inserts are complete in specifications, ● can complete a variety of forms of relief groove processing.
Aluminum profiling	The lining and facing			QFGB-AH 	● For aluminum profile processing special groove type. ● Both the edge sharp cutting resistance and strength design, suitable for continuous and intermittent turning. ● Can be used for processing external,face,inwall of cylindrical aluminum wheel etc.
Cutting tool of aerospace	External			QFGA-DE  QCMA-DC 	● V positioning, pressed powder compact,precision positioning, clamping and safety. ● Ordinary lag and precision round head insert is suitable for high temperature nickel base alloy,titanium alloy, viscous difficult-to-machine materials such as stainless steel.

Sharp solid series grooving insert naming rules

Accuracy class	
E	±0.025
M	±0.05 ±0.13
Code	Category

Width of cutting edge	
1240	12.40
0800	8.00
0600	6.00
0500	5.00
0400	4.00
0300	3.00
0250	2.50
0200	2.00
0150	1.50
0100	1.00
Code	Width mm

Turning direction	
L	Left
N	L&R
R	Right
Code	Direction

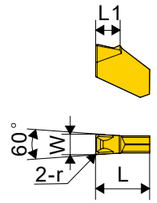
QD M B 06 00 08 R – GM

Type	
Code	Category
QC	Groove
QD	Part off
QF	Profile

Type	
Code	Number
A	Single
B	Double

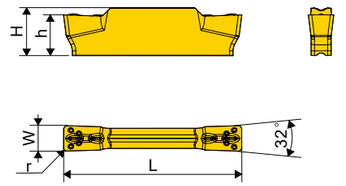
Nose radius	
Code	Radius mm
00	0.0
02	0.2
03	0.3
04	0.4
08	0.8

Groove code: According to the characters of groove type or other features



Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
						P									M				K									
	L	W	r	d		JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3015	JT3025	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
QDMA030003N	11.0	3.12	0.30	4.40		○	☆			★							★							★				○				○
QDMA040003N	11.0	4.12	0.30	4.95		○	☆			★							★							★				○				○
QDMA050003N	11.0	5.1	0.30	5.00		○	☆			★							★							★				○				○
QDMA064003N	11.0	6.40	0.30	5.28		○	☆			★							★							★				○				○
QDMA100005N	16.2	9.85	0.50	8.35		○	☆			★							★							★				○				○

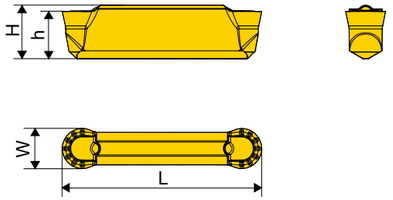
★Recommended grade for stock ☆Optional grade for stock ○Make-to-order



Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
						P									M				K									
	L	W	r	h	H	JT4015	JT4025	JT4035	JT4115	JT4125	JT4135	JT4215	JT4225	JT4235	JT4245	JT1015	JT1025	JT1035	JT1215	JT1225	JT3005	JT3015	JT3025	JT3115	JT3125	JT3215	JT3225	JP302	JP402	JK001	JK101	JK201
QCMB020002N-GM	16.0	2.00	0.20	3.50	3.98	○	☆			★							★							★								
QCMB030004N-GM	21.0	3.00	0.40	4.80	5.63	○	☆			★							★							★								
QCMB050004N-GM	21.0	4.00	0.40	4.80	5.88	○	☆			★							★							★								
QCMB050008N-GM	26.05	5.03	0.80	5.85	7.05	○	☆			★							★							★								
QCMB060008N-GM																																

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

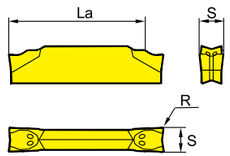
■ Profile cutting



Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
						P						M						K								
	L	W	r	h	H	JT4015	JT4115	JT4025	JT4125	JT4035	JT4135	JT1015	JT1025	JT1035	JT1045	JT4330	JT4340	JT4350	JT3105	JT3205	JT3115	JT3215	JT3125	JT3225	JP302	JP402	JK002	JK102	JK202
QFMB030000NK-GM	20. 05	3. 12	-	4. 16	4. 84	○		☆	★				★	☆							★	☆			☆				
QFMB040000NK-GM	20. 10	4. 14	-	4. 90	5. 75	○		☆	★				★	☆							★	☆			☆				
QFMB050000NK-GM	25. 15	5. 05	-	5. 95	6. 75	○		☆	★				★	☆							★	☆			☆				
QFMB060000NK-GM	30. 20	5. 15	-	5. 66	6. 95	○		☆	★				★	☆							★	☆			☆				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

■ Parting insert

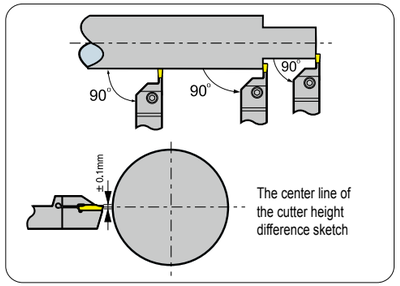


Type		Dimension(mm)			Grade						
					Coated cemented carbide CVD			Coated cemented carbide PVD			Uncoated cemented carbide
		$S^{+0.1}_{0}$	$R_{\pm 0.1}$	Max cutting depth La_{max}	JT4015	JT4025	JT4125	JT1025	JT1035	JT3115	JK101
Double-edge	QCMB0250003N-MT	2.5	0.2	17	○	●	★	★	●	★	○
	QCMB030003N-MT	3.0	0.2	17	○	●	★	★	●	★	○
	QCMB040004N-MT	4.0	0.2	22	○	●	★	★	●	★	○
	QCMB050004N-MT	5.0	0.3	22	○	●	★	★	●	★	○
	QCMB060008N-MT	6.0	0.8	22	○	●	★	★	●	★	○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

Part off and groove tool center height control

- No matter what tool you choose,only guarantee the blade and the center line of the workpiece installation into 90 degree, to obtain the ideal processing surface,and reduce the vibration phenomenon in processing.
- Blade edge line with the workpiece center height tolerance should maintain ±0.1 mm, especially bar cutting and grooving of small diameter workpiece, can increase the tool life, reduce the cutting resistance, decrease the burr.

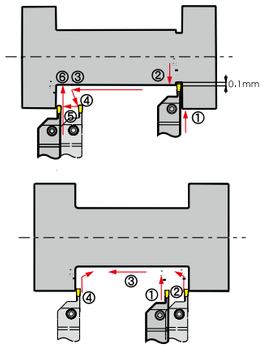


Parting off

- When the blade close to the workpiece center, should reduce the feed rate of 30%, to improve tool life and surface quality.
- Under permission, decrease overhanging as far as possible, to ensure good stability.

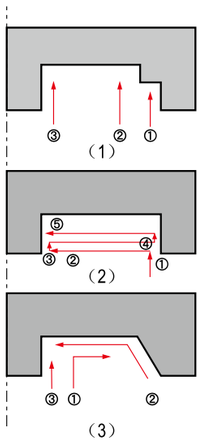
External grooving and turning, profiling

- Feeding order: cutting depth>0.5mm, the radial feed (maximum cutting depth can be 0.75 * edge width S)→ radial return around 0.1 mm→ axial feeding→ oblique knife back→ axial feeding→ radial processing to the required depth.
- Bottom diameter or chamfer (finishing), uses the operating sequence as shown,can reduce the friction of tool and chip and small vibration.



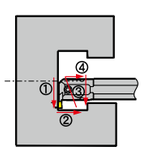
Face grooving and turning

- Finishing(multiple groove turning)
  From the max diameter cutting inside,return when the edge of the blade slightly inward migration.See(1)
- The groove turning
  The axial cutting depth is less than 0.75×S(Width of cutting edge)
  Groove width greater than groove depth, it is recommended to use groove cutting. See (2)
  Groove depth greater than groove width, it is recommended to use multiple groove cutting
- Finishing
  Finishing bottom and outside edge at the first, and then finishing bore to the required size. See (3)



Internal grooving and turning

- Using the graphic processing order
  Easy to chip outflow, away from the end of the hole direction always start to feed



Cutting dosage recommended list of parting and grooving tools

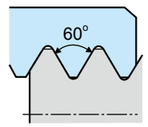
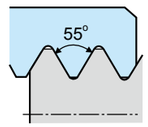
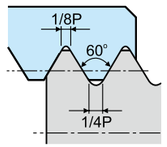
Dimension	Recommended cutting feed(mm/r)			
Width (mm)	Cutting-off	Grooving	Turning	Profiling
2.5	0.05—0.15	0.05—0.15	0.05—0.15	0.05—0.15
3	0.05—0.15	0.05—0.15	0.07—0.15	0.1—0.2
4	0.05—0.2	0.05—0.2	0.07—0.25	0.1—0.2
5	0.07—0.2	0.07—0.22	0.1—0.25	0.15—0.3
6	0.1—0.3	0.07—0.25	0.1—0.3	0.15—0.3

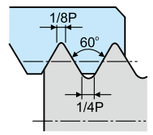
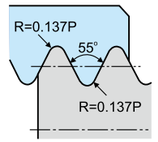
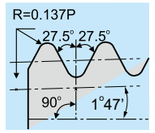
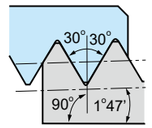
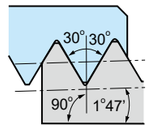
Workpiece		Hardness	JT1025	JT1225	JT4025	JT4225	JT3215	JT3225	JT1035	JK001	JK101
P	Carbon steel	125≤HB≤170	120-260	150-280	140-280	150-280				130-280	110-260
	Low alloy steel	180≤HB≤275	80-175	110-200	100-240	110-200				90-200	70-175
	High alloy steel	180≤HB≤325	80-160	110-190	100-220	110-190				90-190	70-160
	Cast iron	180≤HB≤250	75-140	100-170	80-160	100-170				80-170	60-140
M	Ferrite ,martensite	200≤HB≤300	70-170	100-200		100-200				80-200	60-170
	Austenite	180≤HB≤300	80-200	110-220		110-220				90-220	70-200
K	Malleable cast iron	130≤HB≤230	100-200	130-220				90-160			
	Gray cast iron	180≤HB≤220	90-170	120-200				80-140			
	Nodular cast iron	160≤HB≤250	80-150	110-180				60-140			
N	Aluminium alloy	--					200-400				
S	High temperature alloy	≤400					20-50		30-60		

Cutting parameter suitable for wet processing.
Suggestion:Cutting speed should be reduced by 30% - 40% for internal and face turning.

Turning

Thread turning insert

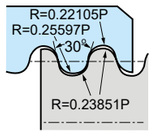
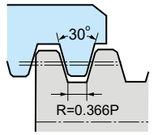
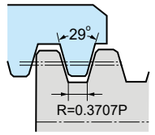
Use			General machinery		
Diagram					
Name			Partial profile 60°	Partial profile 55°	ISO Metric
Thread form			**60**	**55**	**GM**
Shape (Length,11,16,22mm)			Here is for R type external thread  A73	Here is for R type external thread  A74	Here is for R type external thread  A75
Pitch / toolholder	Tool shank size(mm) (H×W×L) (D×L× Min D)		Pitch/mm(Number/Inch)	Pitch/mm(Number/Inch)	Pitch/mm
External thread	 Here is for R type	16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250	0.5~6.0 (48~5)	0.5~6.0 (48~5)	0.35~6.0
Internal thread	 R type	16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×63	0.5~6.0 (48~5)	0.5~6.0 (48~5)	0.35~6.0

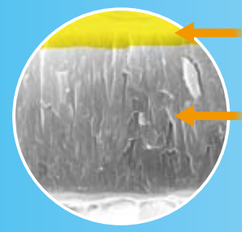
The aerospace industry	General machinery	Heating, gas, water	Gas, water	gas and conduit pipe
				
American	Whit Worth	British Standard Pipe Thread	American 60°Tape Pipe Thread	National Pipe Thread-Dry seal
UN	**W**	**BSP**	**NPT**	**NPTF**
R type,external  A79	R type,external  A83	R type,external  A87	R type,external  A88	R type,external  A89
Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)
72~5	72~5	28~11	27~8	27~8
72~5	72~5	28~11	27~8	27~8

Turning

Thread cutting tool

Thread insert overview

Usage		The food	Trapezoidal screw	Trapezoidal screw
Diagram				
Thread name		Round DIN405	Trapes DIN 103	American trapezd thread
Thread tooth form		**R**	**Tr**	**ACME**
Shape (Length: 11,16,22mm)		R type,external  A90	R type,external  A91	R type,external  A92
Toolholder dimension(mm) (H×W×L) (D×L× Min D)		Pitch/mm(Number/Inch)	Pitch/mm	Pitch/mm(Number/Inch)
External thread	16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250	10~4	1.5~6.0	16~4
Internal thread	16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×63	10~4	1.5~6.0	16~4

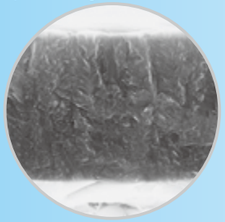


Golden yellow
TiN surface reduces friction and wear recognition effect

The inner nc - TiAlN coatings have excellent wear resistance

JT1225

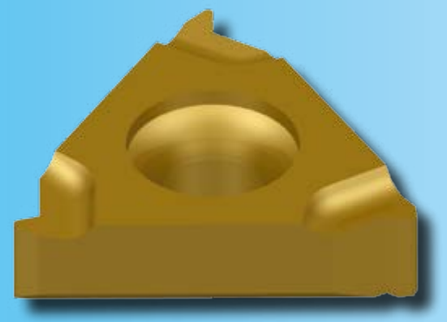
Nc - TiAlN coatings combined with ultra fine particles of strong toughness matrix, is suitable for all kinds of processed material of finishing and semi-finishing and high temperature alloy rough turning processing.

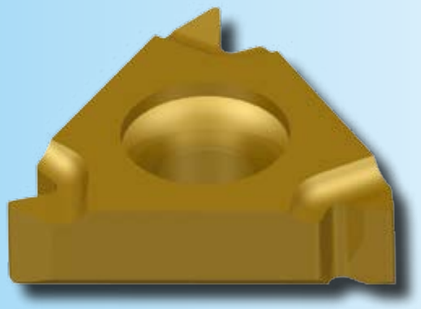


Nc - TiAlN coatings combined with ultra fine particles of strong toughness matrix, is suitable for all kinds of processed material of finishing and semi-finishing and high temperature alloy rough turning processing.

JT1025

TiN and PVD coating alloy, with good toughness and wear resistance, it is a special grade for machining of carbon steel, stainless steel and cast iron,etc.





Thread insert naming rules

Insert size

11 ➢ On behalf ofl.C=6.35 mm
16 ➢ On behalf ofl.C=9.525 mm
22 ➢ On behalf ofl.C=12.7 mm
27 ➢ On behalf ofl.C=15.875 mm

Insert size

E ➢ External thread turning insert
N ➢ Internal thread turning insert

Cutting direction

R ➢ Right L ➢ Left

16 E R - 1.5 ISO

Pitch

Full profile (The number is the pitch range)

mm	TPI
0.35-9.0	72-2

V partial (The number is the pitch range)

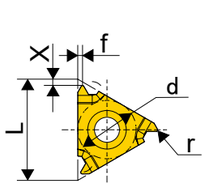
	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5
Q	5.5-6.0	41/2-4

Tooth type of thread

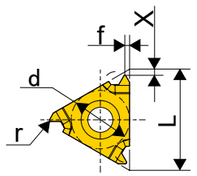
60°	Partial profile 60°
55°	Partial profile 55°
ISO	ISO Metric
UN	American UN
UNJ	Unified Constant Thread
W	Whitworth
NPT	American 60°Tape Pipe Thread
NPTF	National Pipe Threads-Dry seal
BSPT	British Standard 55°Pipe Thread
ACME	American ACME
STACME	Stub ACME
TR	Trapes DIN 103
ABUT	American Buttress
RD	Round DIN 405
APIRD	API Round Thread

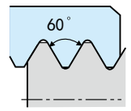
Common thread


R type




L type

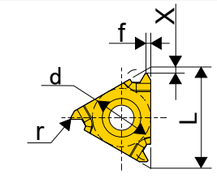




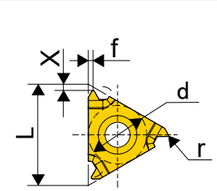
Type	Oesignnation Right	Oesignnation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
					d	L	X	f	JT1025		JT1225	
									R	L	R	L
External	11ER-A60	11EL-A60	0.5-1.5	48-16	6.35	11	0.8	0.9	★	★	★	★
	11ER-G60	11EL-G60	1.75-3.0	14-8	9.525	16	1.2	1.7	★	★	★	★
	11ER-AG60	11EL-AG60	0.5-3.0	48-8	9.525	16	1.2	1.7	★	★	★	★
	22ER-N60	22EL-N60	3.5-5.0	7-5	12.7	22	1.7	2.5	★	★	★	★
	27ER-Q60	27EL-Q60	5.5-6.0	4.5-4	15.875	27	2.1	3.1	★	★	★	★

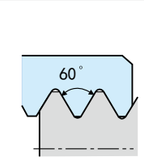
★Recommended grade ☆Optional grade ○Make to order


R type




L type

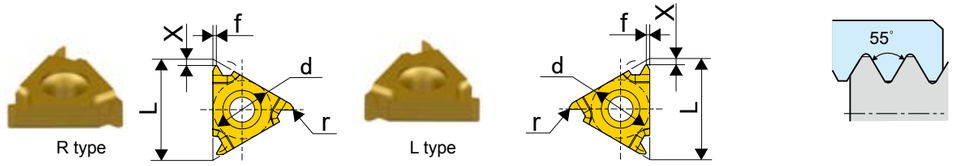




Type	Oesignnation Right	Oesignnation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
					d	L	X	f	JT1025		JT1225	
									R	L	R	L
Internal	11NR-A60	11NL-A60	0.5-1.5	48-16	6.35	11	0.8	0.9	★	★	★	★
	11NR-G60	11NL-G60	1.75-3.0	14-8	9.525	16	1.2	1.7	★	★	★	★
	11NR-AG60	11NL-AG60	0.5-3.0	48-8	9.525	16	1.2	1.7	★	★	★	★
	22NR-N60	22NL-N60	3.5-5.0	7-5	12.7	22	1.7	2.5	★	★	★	★
	27NR-Q60	27NL-Q60	5.5-6.0	4.5-4	15.875	27	1.8	2.7	★	★	★	★

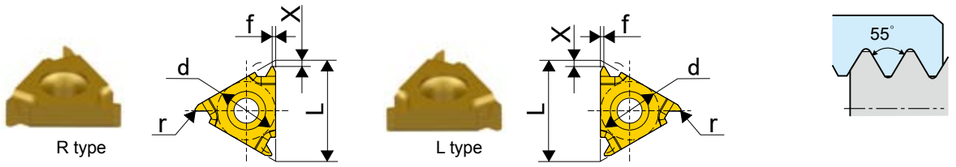
★Recommended grade ☆Optional grade ○Make to order

Common thread



Type	Oesignnation Right	Oesignnation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
					d	L	X	f	JT1025		JT1225	
									R	L	R	L
External	11ER-A55	11EL-A55	0.5-1.5	48-16	6.35	11	0.8	0.9	★	★	★	★
	11ER-G55	11EL-G55	1.75-3.0	14-8	9.525	16	1.2	1.7	★	★	★	★
	11ER-AG55	11EL-AG55	0.5-3.0	48-8	9.525	16	1.2	1.7	★	★	★	★
	22ER-N55	22EL-N55	3.5-5.0	7-5	12.7	22	1.7	2.5	★	★	★	★
	27ER-Q55	27EL-Q55	5.5-6.0	4.5-4	15.875	27	2	2.9	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

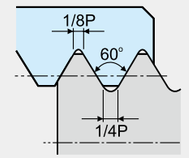


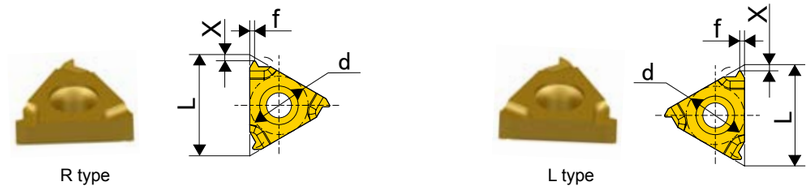
Type	Oesignnation Right	Oesignnation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
					d	L	X	f	JT1025		JT1225	
									R	L	R	L
Internal	11NR-A55	11NL-A55	0.5-1.5	48-16	6.35	11	0.8	0.9	★	★	★	★
	11NR-G55	11NL-G55	1.75-3.0	14-8	9.525	16	1.2	1.7	★	★	★	★
	11NR-AG55	11NL-AG55	0.5-3.0	48-8	9.525	16	1.2	1.7	★	★	★	★
	22NR-N55	22NL-N55	3.5-5.0	7-5	12.7	22	1.7	2.5	★	★	★	★
	27NR-Q55	27NL-Q55	5.5-6.0	4.5-4	15.875	27	2	2.9	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

ISO Metric

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H



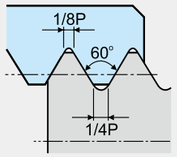


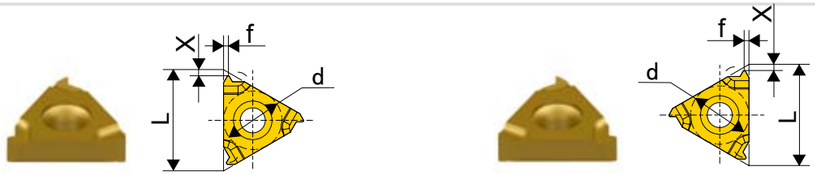
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-0.35ISO	11EL-0.35ISO	0.35	6.35	11	0.8	0.4	★	★	★	★
	11ER-0.4ISO	11EL-0.4ISO	0.4	6.35	11	0.7	0.4	★	★	★	★
	11ER-0.45ISO	11EL-0.45ISO	0.45	6.35	11	0.7	0.4	★	★	★	★
	11ER-0.5ISO	11EL-0.5ISO	0.5	6.35	11	0.6	0.4	★	★	★	★
	11ER-0.6ISO	11EL-0.6ISO	0.6	6.35	11	0.6	0.6	★	★	★	★
	11ER-0.7ISO	11EL-0.7ISO	0.7	6.35	11	0.6	0.6	★	★	★	★
	11ER-0.75ISO	11EL-0.75ISO	0.75	6.35	11	0.6	0.6	★	★	★	★
	11ER-0.8ISO	11EL-0.8ISO	0.8	6.35	11	0.6	0.6	★	★	★	★
	11ER-1.0ISO	11EL-1.0ISO	1	6.35	11	0.7	0.7	★	★	★	★
	11ER-1.25ISO	11EL-1.25ISO	1.25	6.35	11	0.8	0.9	★	★	★	★
	11ER-1.5ISO	11EL-1.5ISO	1.5	6.35	11	0.8	1	★	★	★	★
	11ER-1.75ISO	11EL-1.75ISO	1.75	6.35	11	0.8	1.1	★	★	★	★
	16ER-0.35ISO	16EL-0.35ISO	0.35	9.525	16	0.8	0.4	★	★	★	★
	16ER-0.4ISO	16EL-0.4ISO	0.4	9.525	16	0.7	0.4	★	★	★	★
	16ER-0.45ISO	16EL-0.45ISO	0.45	9.525	16	0.7	0.4	★	★	★	★
	16ER-0.5ISO	16EL-0.5ISO	0.5	9.525	16	0.6	0.4	★	★	★	★
	16ER-0.6ISO	16EL-0.6ISO	0.6	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.7ISO	16EL-0.7ISO	0.7	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.75ISO	16EL-0.75ISO	0.75	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.8ISO	16EL-0.8ISO	0.8	9.525	16	0.6	0.6	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

ISO Metric

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H





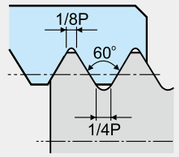
R type L type

Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	16ER-1.0ISO	16EL-1.0ISO	1	9.525	16	0.7	0.7	★	★	★	★
	16ER-1.25ISO	16EL-1.25ISO	1.25	9.525	16	0.8	0.9	★	★	★	★
	16ER-1.5ISO	16EL-1.5ISO	1.5	9.525	16	0.8	1	★	★	★	★
	16ER-1.75ISO	16EL-1.75ISO	1.75	9.525	16	0.9	1.2	★	★	★	★
	16ER-2.0ISO	16EL-2.0ISO	2	9.525	16	1	1.3	★	★	★	★
	16ER-2.5ISO	16EL-2.5ISO	2.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-3.0S0	16EL-3.0ISO	3	9.525	16	1.2	1.6	★	★	★	★
	22ER-3.5ISO	22EL-3.5ISO	3.5	12.7	22	1.6	2.3	★	★	★	★
	22ER-4.0ISO	22EL-4.0ISO	4	12.7	22	1.6	2.3	★	★	★	★
	22ER-4.5ISO	22EL-4.5ISO	4.5	12.7	22	1.7	2.4	★	★	★	★
	22ER-5.0ISO	22EL-5.0ISO	5	12.7	22	1.7	2.5	★	★	★	★
	27ER-5.5ISO	27EL-5.5ISO	5.5	15.875	27	1.9	2.7	★	★	★	★
	27ER-6.0ISO	27EL-6.0ISO	6	15.875	27	2	2.9	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

ISO Metric

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H



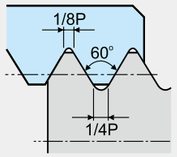
R type L type

Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-0.35ISO	11NL-0.35ISO	0.35	6.35	11	0.8	0.3	★	★	★	★
	11NR-0.4ISO	11NL-0.4ISO	0.4	6.35	11	0.8	0.4	★	★	★	★
	11NR-0.45ISO	11NL-0.45ISO	0.45	6.35	11	0.8	0.4	★	★	★	★
	11NR-0.5ISO	11NL-0.5ISO	0.5	6.35	11	0.6	0.4	★	★	★	★
	11NR-0.6ISO	11NL-0.6ISO	0.6	6.35	11	0.6	0.6	★	★	★	★
	11NR-0.7ISO	11NL-0.7ISO	0.7	6.35	11	0.6	0.6	★	★	★	★
	11NR-0.75ISO	11NL-0.75ISO	0.75	6.35	11	0.6	0.6	★	★	★	★
	11NR-0.8ISO	11NL-0.8ISO	0.8	6.35	11	0.6	0.6	★	★	★	★
	11NR-1.0ISO	11NL-1.0ISO	1	6.35	11	0.6	0.7	★	★	★	★
	11NR-1.25ISO	11NL-1.25ISO	1.25	6.35	11	0.8	0.9	★	★	★	★
	11NR-1.5ISO	11NL-1.5ISO	1.5	6.35	11	0.8	1	★	★	★	★
	11NR-1.75ISO	11NL-1.75ISO	1.75	6.35	11	0.9	1.1	★	★	★	★
	11NR-2.0ISO	11NL-2.0ISO	2	6.35	11	0.9	1.1	★	★	★	★
	11NR-2.5ISO	11NL-2.5ISO	2.5	6.35	11	0.8	1.1	★	★	★	★
	16NR-0.35ISO	16NL-0.35ISO	0.35	9.525	16	0.8	0.3	★	★	★	★
	16NR-0.4ISO	16NL-0.4ISO	0.4	9.525	16	0.8	0.4	★	★	★	★
	16NR-0.45ISO	16NL-0.45ISO	0.45	9.525	16	0.8	0.4	★	★	★	★
	16NR-0.5ISO	16NL-0.5ISO	0.5	9.525	16	0.6	0.4	★	★	★	★
	16NR-0.6ISO	16NL-0.6ISO	0.6	9.525	16	0.6	0.6	★	★	★	★
	16NR-0.7ISO	16NL-0.7ISO	0.7	9.525	16	0.6	0.6	★	★	★	★

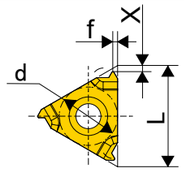
★Recommended grade ☆Optional grade ○Make to order

ISO Metric

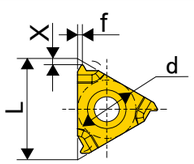
ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H




R type




L type

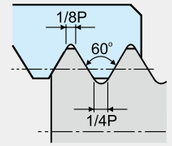


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	16NR-0.75ISO	16NL-0.75ISO	0.75	9.525	16	0.6	0.6	★	★	★	★
	16NR-0.8ISO	16NL-0.8ISO	0.8	9.525	16	0.6	0.6	★	★	★	★
	16NR-1.0ISO	16NL-1.0ISO	1	9.525	16	0.6	0.7	★	★	★	★
	16NR-1.25ISO	16NL-1.25ISO	1.25	9.525	16	0.8	0.9	★	★	★	★
	16NR-1.5ISO	16NL-1.5ISO	1.5	9.525	16	0.8	1	★	★	★	★
	16NR-1.75ISO	16NL-1.75ISO	1.75	9.525	16	0.9	1.2	★	★	★	★
	16NR-2.0ISO	16NL-2.0ISO	2	9.525	16	1	1.3	★	★	★	★
	16NR-2.5ISO	16NL-2.5ISO	2.5	9.525	16	1.1	1.5	★	★	★	★
	16NR-3.0S0	16NL-3.0ISO	3	9.525	16	1.1	1.5	★	★	★	★
	22NR-3.5ISO	22NL-3.5ISO	3.5	12.7	22	1.6	2.3	★	★	★	★
	22NR-4.0ISO	22NL-4.0ISO	4	12.7	22	1.6	2.3	★	★	★	★
	22NR-4.5ISO	22NL-4.5ISO	4.5	12.7	22	1.6	2.4	★	★	★	★
	22NR-5.0ISO	22NL-5.0ISO	5	12.7	22	1.6	2.3	★	★	★	★
	27NR-5.5ISO	27NL-5.5ISO	5.5	15.875	27	1.6	2.3	★	★	★	★
	27NR-6.0ISO	27NL-6.0ISO	6	15.875	27	1.8	2.5	★	★	★	★

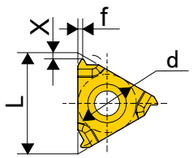
★Recommended grade ☆Optional grade ○Make to order

American UN

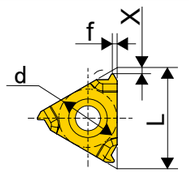
ASME B1.1-1989
Tolerance class:2A/2B




R type




L type

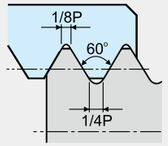


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-72UN	11EL-72UN	72	6.35	11	0.8	0.4	★	★	★	★
	11ER-64UN	11EL-64UN	64	6.35	11	0.8	0.4	★	★	★	★
	11ER-56UN	11EL-56UN	56	6.35	11	0.7	0.4	★	★	★	★
	11ER-48U	11EL-48UN	48	6.35	11	0.6	0.6	★	★	★	★
	11ER-44UN	11EL-44UN	44	6.35	11	0.6	0.6	★	★	★	★
	11ER-40UN	11EL-40UN	40	6.35	11	0.6	0.6	★	★	★	★
	11ER-36UN	11EL-36UN	36	6.35	11	0.6	0.6	★	★	★	★
	11ER-32UN	11EL-32UN	32	6.35	11	0.6	0.6	★	★	★	★
	11ER-28UN	11EL-28UN	28	6.35	11	0.6	0.7	★	★	★	★
	11ER-27UN	11EL-27UN	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-24UN	11EL-24UN	24	6.35	11	0.7	0.8	★	★	★	★
	11ER-20UN	11EL-20UN	20	6.35	11	0.8	0.9	★	★	★	★
	11ER-18UN	11EL-18UN	18	6.35	11	0.8	1	★	★	★	★
	11ER-16UN	11EL-16UN	16	6.35	11	0.9	1.1	★	★	★	★
	11ER-14UN	11EL-14UN	14	6.35	11	0.9	1.1	★	★	★	★
	16ER-72UN	16EL-72UN	72	9.525	16	0.8	0.4	★	★	★	★
	16ER-64UN	16EL-64UN	64	9.525	16	0.8	0.4	★	★	★	★
	16ER-56UN	16EL-56UN	56	9.525	16	0.7	0.4	★	★	★	★
	16ER-48UN	16EL-48UN	48	9.525	16	0.6	0.6	★	★	★	★
	16ER-44UN	16EL-44UN	44	9.525	16	0.6	0.6	★	★	★	★
	16ER-40UN	16EL-40UN	40	9.525	16	0.6	0.6	★	★	★	★

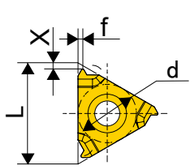
★Recommended grade ☆Optional grade ○Make to order

American UN

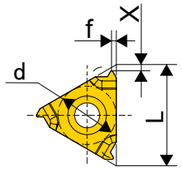
ASME B1.1-1989
Tolerance class:2A/2B




R type




L type

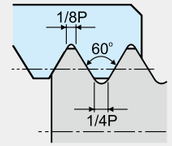


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	16ER-36UN	16EL-36UN	36	9.525	16	0.6	0.6	★	★	★	★
	16ER-32UN	16EL-32UN	32	9.525	16	0.6	0.6	★	★	★	★
	16ER-28UN	16EL-28UN	28	9.525	16	0.6	0.7	★	★	★	★
	16ER-27UN	16EL-27UN	27	9.525	16	0.7	0.8	★	★	★	★
	16ER-24UN	16EL-24UN	24	9.525	16	0.7	0.8	★	★	★	★
	16ER-20UN	16EL-20UN	20	9.525	16	0.8	0.9	★	★	★	★
	16ER-18UN	16EL-18UN	18	9.525	16	0.8	1	★	★	★	★
	16ER-16UN	16EL-16UN	16	9.525	16	0.9	1.1	★	★	★	★
	16ER-14UN	16EL-14UN	14	9.525	16	1	1.2	★	★	★	★
	16ER-13UN	16EL-13UN	13	9.525	16	1	1.3	★	★	★	★
	16ER-12UN	16EL-12UN	12	9.525	16	1.1	1.4	★	★	★	★
	16ER-11.5UN	16EL-11.5UN	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-11UN	16EL-11UN	11	9.525	16	1.1	1.5	★	★	★	★
	16ER-10UN	16ENL-10UN	10	9.525	16	1.1	1.5	★	★	★	★
	16ER-9UN	16EL-9UN	9	9.525	16	1.2	1.7	★	★	★	★
	16ER-8UN	16NEL-8UN	8	9.525	16	1.2	1.6	★	★	★	★
	22ER-7UN	22EL-7UN	7	12.7	22	1.6	2.3	★	★	★	★
	22ER-6UN	22EL-6UN	6	12.7	22	1.6	2.3	★	★	★	★
	22ER-5UN	22EL-5UN	5	12.7	22	1.7	2.5	★	★	★	★
	27ER-4.5UN	27EL-4.5UN	4.5	15.875	27	1.9	2.7	★	★	★	★
	27ER-4UN	27EL-4UN	4	15.875	27	2.1	3	★	★	★	★

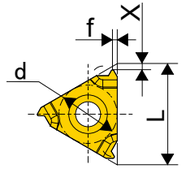
★Recommended grade ☆Optional grade ○Make to order

American UN

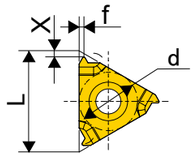
ASME B1.1-1989
Tolerance class:2A/2B




R type




L type

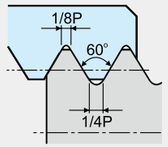


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-72W	11NL-72W	72	6.35	11	0.7	0.4	★	★	★	★
	11NR-64W	11NL-64W	64	6.35	11	0.7	0.4	★	★	★	★
	11NR-56UN	11NL-56UN	56	6.35	11	0.7	0.4	★	★	★	★
	11NR-48U	11NL-48UN	48	6.35	11	0.6	0.6	★	★	★	★
	11NR-44UN	11NL-44UN	44	6.35	11	0.6	0.6	★	★	★	★
	11NR-40UN	11NL-40UN	40	6.35	11	0.6	0.6	★	★	★	★
	11NR-36UN	11NL-36UN	36	6.35	11	0.6	0.6	★	★	★	★
	11NR-32UN	11NL-32UN	32	6.35	11	0.6	0.6	★	★	★	★
	11NR-28UN	11NL-28UN	28	6.35	11	0.6	0.7	★	★	★	★
	11NR-27UN	11NL-27UN	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-24UN	11NL-24UN	24	6.35	11	0.7	0.8	★	★	★	★
	11NR-20UN	11NL-20UN	20	6.35	11	0.8	0.9	★	★	★	★
	11NR-18UN	11NL-18UN	18	6.35	11	0.8	1	★	★	★	★
	11NR-16UN	11NL-16UN	16	6.35	11	0.9	1.1	★	★	★	★
	11NR-14UN	11NL-14UN	14	6.35	11	0.9	1.1	★	★	★	★
	11NR-12UN	11NL-12UN	12	6.35	11	0.8	1.1	★	★	★	★
	11NR-11UN	11NL-11UN	11	6.35	11	0.8	1.1	★	★	★	★
	16NR-72UN	16NL-72UN	72	9.525	16	0.8	0.4	★	★	★	★
	16NR-64UN	16NL-64UN	64	9.525	16	0.8	0.4	★	★	★	★
	16NR-56UN	16NL-56UN	56	9.525	16	0.7	0.4	★	★	★	★
	16NR-48UN	16NL-48UN	48	9.525	16	0.6	0.6	★	★	★	★
	16NR-44UN	16NL-44UN	44	9.525	16	0.6	0.6	★	★	★	★

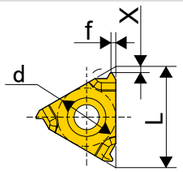
★Recommended grade ☆Optional grade ○Make to order

American UN

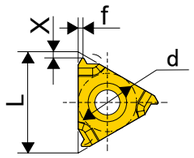
ASME B1.1-1989
Tolerance class:2A/2B




R type




L type

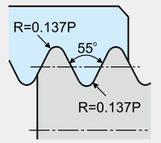


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	16NR-40UN	16NL-40UN	40	9.525	16	0.6	0.6	★	★	★	★
	16NR-36UN	16NL-36UN	36	9.525	16	0.6	0.6	★	★	★	★
	16NR-32UN	16NL-32UN	32	9.525	16	0.6	0.6	★	★	★	★
	16NR-28UN	16NL-28UN	28	9.525	16	0.6	0.7	★	★	★	★
	16NR-27UN	16NL-27UN	27	9.525	16	0.7	0.8	★	★	★	★
	16NR-24UN	16NL-24UN	24	9.525	16	0.7	0.8	★	★	★	★
	16NR-20UN	16NL-20UN	20	9.525	16	0.8	0.9	★	★	★	★
	16NR-18UN	16NL-18UN	18	9.525	16	0.8	1	★	★	★	★
	16NR-16UN	16NL-16UN	16	9.525	16	0.9	1.1	★	★	★	★
	16NR-14UN	16NL-14UN	14	9.525	16	1	1.2	★	★	★	★
	16NR-13UN	16NL-13UN	13	9.525	16	1	1.3	★	★	★	★
	16NR-12UN	16NL-12UN	12	9.525	16	1.1	1.4	★	★	★	★
	16NR-11.5UN	16NL-11.5UN	11.5	9.525	16	1.1	1.5	★	★	★	★
	16NR-11UN	16NL-11UN	11	9.525	16	1.1	1.5	★	★	★	★
	16NR-10UN	16NL-10UN	10	9.525	16	1.1	1.5	★	★	★	★
	16NR-9UN	16NL-9UN	9	9.525	16	1.2	1.7	★	★	★	★
	16NR-8UN	16NL-8UN	8	9.525	16	1.2	1.5	★	★	★	★
	22NR-7UN	22NL-7UN	7	12.7	22	1.6	2.3	★	★	★	★
	22NR-6UN	22NL-6UN	6	12.7	22	1.6	2.3	★	★	★	★
	22NR-5UN	22NL-5UN	5	12.7	22	1.7	2.3	★	★	★	★
	27NR-4.5UN	27NL-4.5UN	4.5	15.875	27	1.9	2.4	★	★	★	★
	27NR-4UN	27NL-4UN	4	15.875	27	2.1	2.7	★	★	★	★

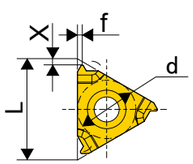
★Recommended grade ☆Optional grade ○Make to order

Whit Worth

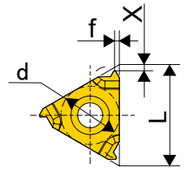
ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A




R type




L type



Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-72W	11EL-72W	72	6.35	11	0.7	0.4	★	★	★	★
	11ER-64W	11EL-64W	64	6.35	11	0.7	0.4	★	★	★	★
	11ER-56W	11EL-56W	56	6.35	11	0.7	0.4	★	★	★	★
	11ER-48W	11EL-48W	48	6.35	11	0.6	0.6	★	★	★	★
	11ER-44W	11EL-44W	44	6.35	11	0.6	0.6	★	★	★	★
	11ER-40W	11EL-40W	40	6.35	11	0.6	0.6	★	★	★	★
	11ER-36W	11EL-36W	36	6.35	11	0.6	0.6	★	★	★	★
	11ER-32W	11EL-32W	32	6.35	11	0.6	0.6	★	★	★	★
	11ER-28W	11EL-28W	28	6.35	11	0.6	0.7	★	★	★	★
	11ER-26W	11EL-26W	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-24W	11EL-24W	24	6.35	11	0.7	0.8	★	★	★	★
	11ER-22W	11EL-22W	24	6.35	11	0.8	0.9	★	★	★	★
	11ER-20W	11EL-20W	20	6.35	11	0.8	0.9	★	★	★	★
	11ER-19W	11EL-19W	19	6.35	11	0.8	1	★	★	★	★
	11ER-18W	11EL-18W	18	6.35	11	0.8	1	★	★	★	★
	11ER-16W	11EL-16W	16	6.35	11	0.9	1.1	★	★	★	★
	11ER-14W	11EL-14W	14	6.35	11	1	1.2	★	★	★	★
	16ER-72W	16EL-72W	72	9.525	16	0.7	0.4	★	★	★	★
	16ER-60W	16EL-60W	60	9.525	16	0.7	0.4	★	★	★	★
	16ER-56W	16EL-56W	56	9.525	16	0.7	0.4	★	★	★	★
	16ER-48W	16EL-48W	48	9.525	16	0.6	0.6	★	★	★	★
	16ER-44W	16EL-44W	44	9.525	16	0.6	0.6	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

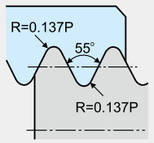
Turning

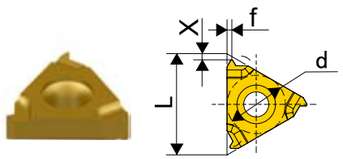
Thread cutting tool

Thread insert overview

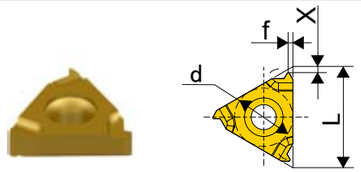
Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A





R type



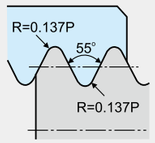
L type

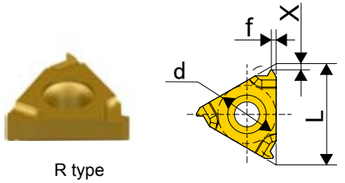
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Extemal	16ER-40W	16EL-40W	40	9.525	16	0.6	0.6	★	★	★	★
	16ER-36W	16EL-36W	36	9.525	16	0.6	0.6	★	★	★	★
	16ER-32W	16EL-32W	32	9.525	16	0.6	0.6	★	★	★	★
	16ER-28W	16EL-28W	28	9.525	16	0.6	0.7	★	★	★	★
	16ER-26W	16EL-26W	26	9.525	16	0.7	0.8	★	★	★	★
	16ER-24W	16EL-24W	24	9.525	16	0.7	0.8	★	★	★	★
	16ER-22W	16EL-22W	22	9.525	16	0.7	0.8	★	★	★	★
	16ER-20W	16EL-20W	20	9.525	16	0.8	0.9	★	★	★	★
	16ER-18W	16EL-18W	18	9.525	16	0.8	1	★	★	★	★
	16ER-16W	16EL-16W	16	9.525	16	0.9	1.1	★	★	★	★
	16ER-14W	16EL-14W	14	9.525	16	1	1.2	★	★	★	★
	16ER-12W	16EL-12W	12	9.525	16	1.1	1.4	★	★	★	★
	16ER-11W	16EL-11W	11	9.525	16	1.1	1.5	★	★	★	★
	16ER-10W	16ENL-10W	10	9.525	16	1.1	1.5	★	★	★	★
	16ER-9W	16EL-9W	9	9.525	16	1.2	1.7	★	★	★	★
	16ER-8W	16NEL-8W	8	9.525	16	1.2	1.5	★	★	★	★
	22ER-7W	22EL-7W	7	12.7	22	1.6	2.3	★	★	★	★
	22ER-6W	22EL-6W	6	12.7	22	1.6	2.3	★	★	★	★
	22ER-5W	22EL-5W	5	12.7	22	1.7	2.4	★	★	★	★
	27ER-4.5W	27EL-4.5W	4.5	15.875	27	1.8	2.6	★	★	★	★
	27ER-4UN	27EL-4UN	4	15.875	27	2.1	2.9	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order

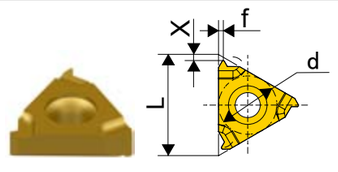
Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A





R type



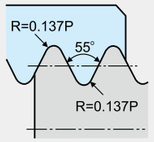
L type

Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-72W	11NL-72W	72	6.35	11	0.7	0.4	★	★	★	★
	11NR-64W	11NL-64W	64	6.35	11	0.7	0.4	★	★	★	★
	11NR-56W	11NL-56W	56	6.35	11	0.7	0.4	★	★	★	★
	11NR-48W	11NL-48W	48	6.35	11	0.6	0.6	★	★	★	★
	11NR-40W	11N-40W	40	6.35	11	0.6	0.6	★	★	★	★
	11NR-36W	11NL-36W	36	6.35	11	0.6	0.6	★	★	★	★
	11NR-32W	11NL-32W	32	6.35	11	0.6	0.6	★	★	★	★
	11NR-28W	11NL-28W	28	6.35	11	0.6	0.7	★	★	★	★
	11NR-26W	11NL-26W	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-24W	11NL-24W	24	6.35	11	0.7	0.8	★	★	★	★
	11NR-22W	11NL-22W	24	6.35	11	0.8	0.9	★	★	★	★
	11NR-20W	11NL-20W	20	6.35	11	0.8	0.9	★	★	★	★
	11NR-19W	11NL-19W	19	6.35	11	0.8	1	★	★	★	★
	11NR-18W	11NL-18W	18	6.35	11	0.8	1	★	★	★	★
	11NR-16W	11NL-16W	16	6.35	11	0.9	1.1	★	★	★	★
	11NR-14W	11NL-14W	14	6.35	11	0.9	1.1	★	★	★	★
	11NR-12W	11NL-12W	12	6.35	11	0.9	1.2	★	★	★	★
	16NR-72W	16NL-72W	72	9.525	16	0.7	0.4	★	★	★	★
	16NR-60W	16NL-60W	60	9.525	16	0.7	0.4	★	★	★	★
	16NR-56W	16NL-56W	56	9.525	16	0.7	0.4	★	★	★	★
	16NR-48W	16NL-48W	48	9.525	16	0.6	0.6	★	★	★	★
	16NR-40W	16NL-40W	40	9.525	16	0.6	0.6	★	★	★	★

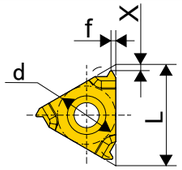
★Recommended grade ☆Optional grade ○Make to order

Whit Worth

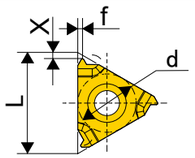
ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A




R type




L type

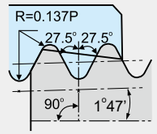


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	16NR-36W	16NL-36W	36	9.525	16	0.6	0.6	★	★	★	★
	16NR-32W	16NL-32W	32	9.525	16	0.6	0.6	★	★	★	★
	16NR-30W	16NL-30W	30	9.525	16	0.6	0.7	★	★	★	★
	16NR-28W	16NL-28W	28	9.525	16	0.6	0.7	★	★	★	★
	16NR-26W	16NL-26W	26	9.525	16	0.7	0.8	★	★	★	★
	16NR-24W	16NL-24W	24	9.525	16	0.7	0.8	★	★	★	★
	16NR-22W	16NL-22W	22	9.525	16	0.8	0.9	★	★	★	★
	16NR-20W	16NL-20W	20	9.525	16	0.8	0.9	★	★	★	★
	16NR-19W	16NL-19W	20	9.525	16	0.8	1	★	★	★	★
	16NR-18W	16NL-18W	18	9.525	16	0.8	1	★	★	★	★
	16NR-16W	16NL-16W	16	9.525	16	0.9	1.1	★	★	★	★
	16NR-14W	16NL-14W	14	9.525	16	1	1.2	★	★	★	★
	16NR-12W	16NL-12W	12	9.525	16	1.1	1.4	★	★	★	★
	16NR-11W	16NL-11W	11	9.525	16	1.1	1.5	★	★	★	★
	16NR-10W	16NL-10W	10	9.525	16	1.1	1.5	★	★	★	★
	16NR-9W	16NL-9W	9	9.525	16	1.2	1.7	★	★	★	★
	16NR-8W	16NL-8W	8	9.525	16	1.2	1.5	★	★	★	★
	22NR-7W	22NL-7W	7	12.7	22	1.6	2.3	★	★	★	★
	22NR-6W	22NL-6W	6	12.7	22	1.6	2.3	★	★	★	★
	22NR-5W	22NL-5W	5	12.7	22	1.7	2.4	★	★	★	★
	27NR-4.5W	27NL-4.5W	4.5	15.875	27	1.8	2.6	★	★	★	★
	27NR-4W	27NL-4W	4	15.875	27	2.1	2.9	★	★	★	★

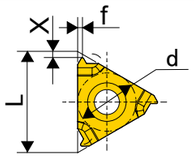
★Recommended grade ☆Optional grade ○Make to order

British Standard Thread

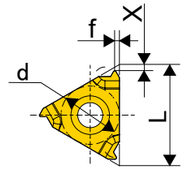
ISO 7/1:1994
B.S.21:1985
Standard BSPT




R type



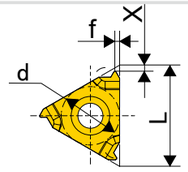

L type



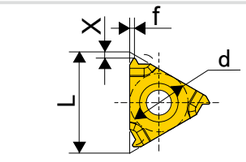
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-28BSPT	11NL-28BSPT	28	6.35	11	0.6	0.6	★	★	★	★
	11ER-19BSPT	11NL-28BSPT	19	6.35	11	0.8	0.9	★	★	★	★
	11ER-14BSPT	11NL-14BSPT	14	6.35	11	0.9	1	★	★	★	★
	16ER-28BSPT	16NL-28BSPT	28	9.525	16	0.6	0.6	★	★	★	★
	16ER-19BSPT	16NL-19BSPT	19	9.525	16	0.8	0.9	★	★	★	★
	16ER-14BSPT	16NL-14BSPT	14	9.525	16	1	1.2	★	★	★	★
	16ER-11BSPT	16NL-11BSPT	11	9.525	16	1.1	1.5	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type

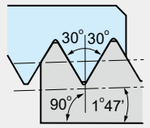


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-28BSPT	11NL-28BSPT	28	6.35	11	0.6	0.6	★	★	★	★
	11NR-19BSPT	11NL-28BSPT	19	6.35	11	0.8	0.9	★	★	★	★
	11NR-14BSPT	11NL-14BSPT	14	6.35	11	0.9	1	★	★	★	★
	16NR-28BSPT	16NL-28BSPT	28	9.525	16	0.6	0.6	★	★	★	★
	16NR-19BSPT	16NL-19BSPT	19	9.525	16	0.8	0.9	★	★	★	★
	16NR-14BSPT	16NL-14BSPT	14	9.525	16	1	1.2	★	★	★	★
	16NR-11BSPT	16NL-11BSPT	11	9.525	16	1.1	1.5	★	★	★	★

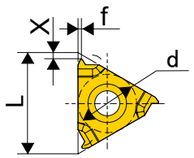
★Recommended grade ☆Optional grade ○Make to order

American 60°tape pipe thread

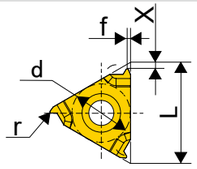
ASME B1.20.1-1983
Standard NPT




R type



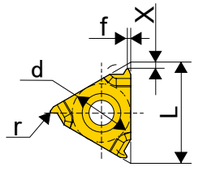

L type



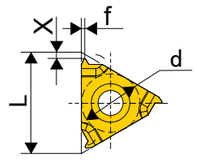
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-27NPT	11EL-27NPT	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-18NPT	11EL-18NPT	18	6.35	11	0.8	1	★	★	★	★
	11ER-14NPT	11EL-14NPT	14	6.35	11	0.8	1	★	★	★	★
	16ER-28NPT	16EL-28NPT	28	9.525	16	0.7	0.8	★	★	★	★
	16ER-18NPT	16EL-18NPT	18	9.525	16	0.8	1	★	★	★	★
	16ER-14NPT	16EL-14NPT	14	9.525	16	0.9	1.2	★	★	★	★
	16ER-11.5NPT	16EL-11.5NPT	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-8NPT	16EL-8NPT	8	9.525	16	1.3	1.8	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type

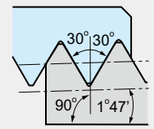


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-27NPT	11NL-27NPT	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-18NPT	11NL-18NPT	18	6.35	11	0.8	1	★	★	★	★
	11NR-14NPT	11NL-14NPT	14	6.35	11	0.8	1	★	★	★	★
	16NR-28NPT	16NL-28NPT	28	9.525	16	0.7	0.8	★	★	★	★
	16NR-18NPT	16NL-18NPT	18	9.525	16	0.8	1	★	★	★	★
	16NR-14NPT	16NL-14NPT	14	9.525	16	0.9	1.2	★	★	★	★
	16NR-11.5NPT	16NL-11.5NPT	11.5	9.525	16	1.1	1.5	★	★	★	★
	16NR-8NPT	16NL-8NPT	8	9.525	16	1.3	1.8	★	★	★	★

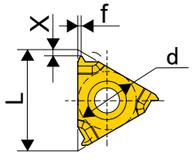
★Recommended grade ☆Optional grade ○Make to order

NPTF National Pipe Thread-Dry seal

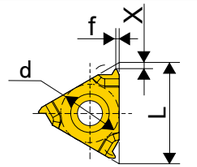
NPTF60°
Standard:ANSI B1.20.1-1983
Tolerance class:2G




R type



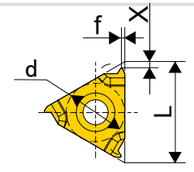

L type



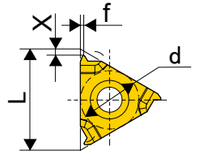
Type	Oesignnation Right	Oesignnation Lefe	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-27NPTF	11EL-27NPTF	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-18NPTF	11EL-18NPTF	18	6.35	11	0.8	1	★	★	★	★
	11ER-14NPTF	11EL-14NPTF	14	6.35	11	0.8	1	★	★	★	★
	16ER-28NPTF	16EL-28NPTF	28	9.525	16	0.7	0.8	★	★	★	★
	16ER-18NPTF	16EL-18NPTF	18	9.525	16	0.8	1	★	★	★	★
	16ER-14NPTF	16EL-14NPTF	14	9.525	16	0.9	1.2	★	★	★	★
	16ER-11.5NPTF	16EL-11.5NPTF	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-8NPTF	16EL-8NPTF	8	9.525	16	1.3	1.8	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type

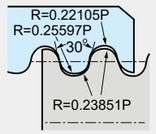


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-27NPTF	11NL-27NPTF	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-18NPTF	11NL-18NPTF	18	6.35	11	0.8	1	★	★	★	★
	11NR-14NPTF	11NL-14NPTF	14	6.35	11	0.8	1	★	★	★	★
	16NR-28NPTF	16NL-28NPTF	28	9.525	16	0.7	0.8	★	★	★	★
	16NR-18NPTF	16NL-18NPTF	18	9.525	16	0.8	1	★	★	★	★
	16NR-14NPTF	16NL-14NPTF	14	9.525	16	0.9	1.2	★	★	★	★
	16NR-11.5NPTF	16NL-11.5NPTF	11.5	9.525	16	1.1	1.5	★	★	★	★
	16NR-8NPTF	16NL-8NPTF	8	9.525	16	1.3	1.8	★	★	★	★

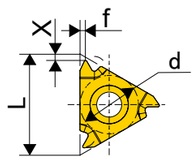
★Recommended grade ☆Optional grade ○Make to order

Round DIN405

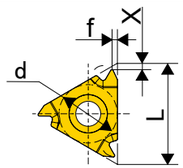
DIN 405
Tolerance class:7G




R type



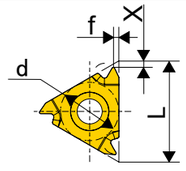

L type



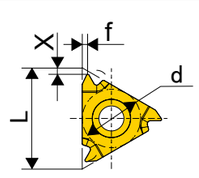
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	16ER-10RD	16EL-10RD	10	9.525	16	1.1	1.2	★	★	★	★
	16ER-8RD	16EL-8RD	8	9.525	16	1.4	1.3	★	★	★	★
	16ER-6RD	16EL-6RD	6	9.525	16	1.5	1.7	★	★	★	★
	22ER-6RD	22ER-6RD	6	12.7	22	1.5	1.7	★	★	★	★
	22ER-4RD	22ER-4RD	4	12.7	22	2.2	2.3	★	★	★	★
	27ER-4RD	27ER-4RD	4	15.875	27	2.2	2.3	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type

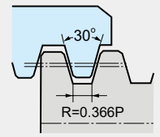


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	16ER-10RD	16EL-10RD	10	9.525	16	1.1	1.2	★	★	★	★
	16ER-8RD	16EL-8RD	8	9.525	16	1.4	1.3	★	★	★	★
	16ER-6RD	16EL-6RD	6	9.525	16	1.5	1.7	★	★	★	★
	22ER-6RD	22ER-6RD	6	12.7	22	1.5	1.7	★	★	★	★
	22ER-4RD	22ER-4RD	4	12.7	22	2.2	2.3	★	★	★	★
	27ER-4RD	27ER-4RD	4	15.875	27	2.2	2.3	★	★	★	★

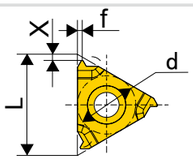
★Recommended grade ☆Optional grade ○Make to order

Trapez DIN103

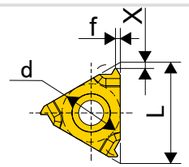
ISO 2901-2904
Tolerance class:7G




R type



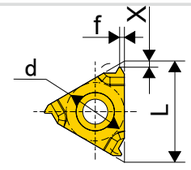

L type



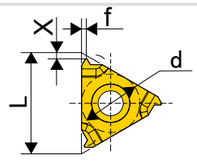
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-1.5TR	11EL-1.5TR	1.5	6.35	11	0.8	0.9	★	★	★	★
	16ER-1.5TR	16EL-1.5TR	1.5	9.525	16	1	1.1	★	★	★	★
	16ER-2.0TR	16EL-2.0TR	2	9.525	16	1.1	1.3	★	★	★	★
	16ER-3.0TR	16EL-3.0TR	3	9.525	16	1.3	1.5	★	★	★	★
	22ER-4.0TR	22EL-4.0TR	4	12.7	22	1.7	1.9	★	★	★	★
	22ER-5.0TR	22EL-5.0TR	5	12.7	22	2.1	2.5	★	★	★	★
	27ER-6.0TR	27ER-6.0TR	6	15.875	27	2.3	2.7	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type

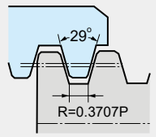


Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-1.5TR	11NL-1.5TR	1.5	6.35	11	0.8	0.9	★	★	★	★
	16NR-1.5TR	16NL-1.5TR	1.5	9.525	16	1	1.1	★	★	★	★
	16NR-2.0TR	16NL-2.0TR	2	9.525	16	1.1	1.3	★	★	★	★
	16NR-3.0TR	16NL-3.0TR	3	9.525	16	1.3	1.5	★	★	★	★
	22NR-4.0TR	22NL-4.0TR	4	12.7	22	1.7	1.9	★	★	★	★
	22NR-5.0TR	22NL-5.0TR	5	12.7	22	2.1	2.5	★	★	★	★
	27NR-6.0TR	27NR-6.0TR	6	15.875	27	2.3	2.7	★	★	★	★

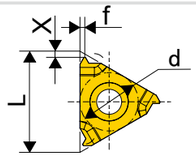
★Recommended grade ☆Optional grade ○Make to order

American trapez 29°thread

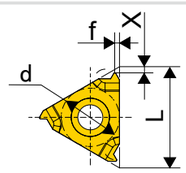
ANSI B1.5-1988 ANSI B1.5-1988
Tolerance class: 2G




R type



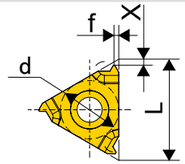

L type



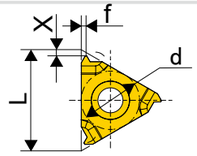
Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
External	11ER-16ACME	11EL-16ACMT	16	6.35	11	1	1.1	★	★	★	★
	16ER-16ACME	16EL-16ACME	16	9.525	16	1	1.1	★	★	★	★
	16ER-14ACME	16EL-14ACME	14	9.525	16	1	1.2	★	★	★	★
	16ER-12ACME	16EL-12ACME	12	9.525	16	1.1	1.2	★	★	★	★
	16ER-10ACME	16EL-10ACME	10	9.525	16	1.3	1.4	★	★	★	★
	16ER-8CME	16EL-8ACME	8	9.525	16	1.4	1.5	★	★	★	★
	16ER-6ACME	16EL-6ACME	6	9.525	16	1.7	1.9	★	★	★	★
	22ER-6ACME	22EL-6ACME	6	12.7	22	1.8	2.1	★	★	★	★
	22ER-5ACME	22EL-5ACME	5	12.7	22	2	2.3	★	★	★	★
	27ER-4ACME	27EL-4ACME	4	15.875	27	2.4	2.7	★	★	★	★

★Recommended grade ☆Optional grade ○Make to order


R type




L type



Type	Oesignnation Right	Oesignnation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	JT1025		JT1225	
								R	L	R	L
Internal	11NR-16ACME	11NL-16ACMT	16	6.35	11	1	1.1	★	★	★	★
	16NR-16ACME	16NL-16ACME	16	9.525	16	1	1.1	★	★	★	★
	16NR-14ACME	16NL-14ACME	14	9.525	16	1	1.2	★	★	★	★
	16NR-12ACME	16NL-12ACME	12	9.525	16	1.1	1.2	★	★	★	★
	16NR-10ACME	16NL-10ACME	10	9.525	16	1.3	1.4	★	★	★	★
	16NR-8CME	16NL-8ACME	8	9.525	16	1.4	1.5	★	★	★	★
	16NR-6ACME	16NL-6ACME	6	9.525	16	1.7	1.9	★	★	★	★
	22NR-6ACME	22NL-6ACME	6	12.7	22	1.8	2.1	★	★	★	★
	22NR-5ACME	22NL-5ACME	5	12.7	22	2	2.3	★	★	★	★
	27NR-4ACME	27NL-4ACME	4	15.875	27	2.3	2.6	★	★	★	★

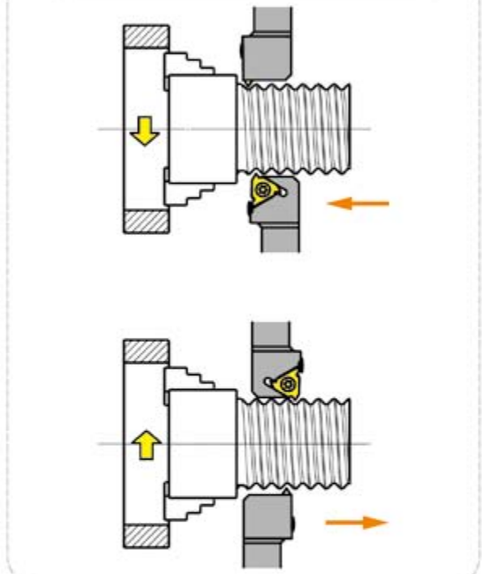
★Recommended grade ☆Optional grade ○Make to order

In order to obtain the best thread processing effect,please follow the steps below:

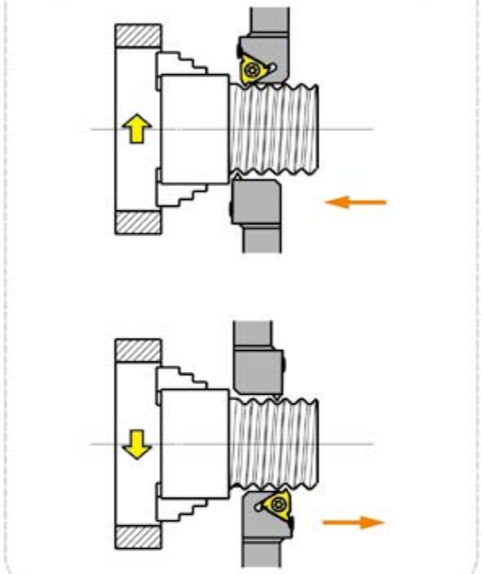
1. Choosing the right thread processing way.
2. Choose helix angle,choose shim.
3. Choose the appropriate insert and size of toolholder.
4. Reference standard thread processing programming parameter table,choose appropriate cutting data.
5. Choose feed method.

Machine type of thread tool

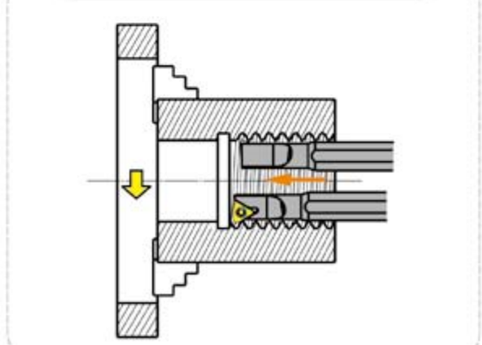
External processing Right hand thread



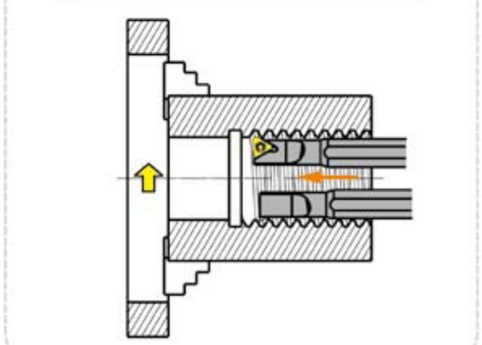
External processing Left hand thread



Internal processing Right hand thread



Internal processing Left hand thread



Choose helix angle and shim

The clearance angle of thread mainly along the edge of tool. This will significantly impact on heat dissipation, tool wear extension, tool life, production safety, the quality of the thread. The clearance angle of thread profile depend on the helix angle, because both are similar. If inclined angle different from helix angle, and the clearance angle is changed.

The inclined angle must be the same as helix angle to avoid excessive wear and lead to shorten the tool life. Helix angle is calculated by the following formula:

$$\rho = \arctan \frac{p}{d_2 \times \pi}$$

P=Pitch
d_2=Pitch diameter
Common inclined angle is 1°,MT standard shim inclined angle is 1°.
Calculation of clearance angle:
The clearance angle is calculated by the following formula:

$$\beta = \alpha rc(\tan\theta \times \tan\alpha)$$

2θ= Thread profile angle

α= Rake angle,external is 10°,internal is 15° for standard tool

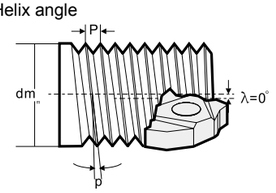
If helix angle≤clearance angle,the side insert can produce interference,must be replace the shim.
Please adjust the difference between helix angel and inclined angle to 2°-0° through replace the shim.

Ex:if P=1.5,d_2=24mm
Helix angle1.14°-(2°-0°)=Indined(-0.86°~1.14°)
Choose standard shim 1° to processe.

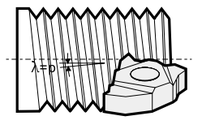
Pitch	Size	Inclined angle	Shim
0.5-3.0	16	0	MT16-00M
		1	MT16-01M
		2	MT16-02M
		3	MT16-03M
3.5-6.0	22	0	MT22-00M
		1	MT22-01M
		2	MT22-02M
		3	MT22-03M

(MT16—01M orMT22—01M)

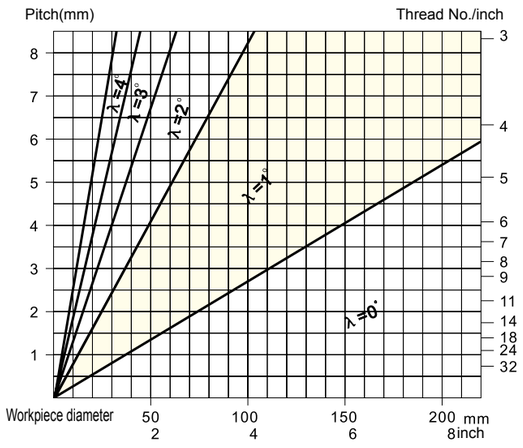
p= Helix angle



λ = Inclined angle



Thread profile 2θ	β	
	External	
60°	8.5°	6°
55°	7°	7°
30°	4°	2.5°
29°	4°	2.5°



Choose appropriate insert and size of toolholder(reference the list of thread turning tool)

Different standard thread processing programming parameter table

Metric ISO External thread with wiper feed quantity recommend table

Pitch	1.0	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
The total amount of feed	0.72	0.86	1.02	1.17	1.33	1.63	1.94	2.58	3.21
Feed time	5	6	7	8	9	11	13	15	17
Tool moving styles	Radial feed(X)and tooth side feed(Z)								
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.20/-	0.20/-	0.21/-	0.22/-	0.24/-	0.25/-	0.26/-	0.35/-	0.40/-
2	0.18/0.10	0.18/0.10	0.18/0.10	0.20/0.12	0.22/0.13	0.24/0.14	0.24/0.14	0.30/0.17	0.35/0.20
3	0.16/0.09	0.16/0.09	0.18/0.10	0.18/0.10	0.20/0.12	0.21/0.12	0.20/0.12	0.25/0.14	0.30/0.17
4	0.10/0.06	0.14/0.09	0.15/0.09	0.15/0.09	0.15/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.28/0.16
5	0.08/-	0.10/0.06	0.12/0.07	0.13/0.08	0.12/0.07	0.15/0.09	0.18/0.10	0.18/0.10	0.25/0.14
6		0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18//0.10	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.13/0.08	0.16/0.09	0.18/0.10
8				0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09	0.16/0.09
9					0.08/-	0.10/0.06	0.10/0.06	0.15/0.09	0.15/0.09
10						0.08/0.05	0.10/0.06	0.13/0.08	0.15/0.09
11						0.08/-	0.10/0.06	0.12/0.07	0.13/0.08
12							0.08/0.06	0.12/0.07	0.13/0.08
13							0.08/-	0.11/0.06	0.12/0.07
14								0.10/0.06	0.12/0.07
15								0.08/-	0.11/0.06
16									0.10/0.06
17									0.08/-

Metric ISO Internal thread with wiper feed quantity recommend table

Pitch	1.00	1.25	1.5	1.75	2.0	2.5	3.0	4.0	5.0
The total amount of feed	0.62	0.77	0.92	1.06	1.21	1.49	1.79	2.36	2.95
Feed time	5	6	7	8	9	11	13	15	17
Tool moving styles	Radial feed(X)and tooth side feed(Z)								
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.18/-	0.20/-	0.22/-	0.23/-	0.24/-	0.25/-	0.26/-	0.30/-	0.32/-
2	0.14/0.08	0.15/0.09	0.16/0.09	0.16/0.09	0.18/0.10	0.20/0.12	0.20/0.12	0.25/0.14	0.28/0.16
3	0.12/0.07	0.12/0.07	0.14/0.08	0.14/0.08	0.15/0.09	0.15/0.09	0.20/0.12	0.22/0.13	0.25/0.14
4	0.10/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.14/0.08	0.15/0.09	0.18/0.10	0.20/0.12	0.22/0.13
5	0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.15/0.09	0.18/0.10	0.21/0.12
6		0.08/-	0.09/0.05	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.20/0.12
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.12/0.07	0.15/0.09	0.18/0.10
8				0.08/-	0.09/0.05	0.10/0.06	0.10/0.06	0.15/0.09	0.18/0.10
9					0.08/-	0.10/0.06	0.10/0.06	0.12/0.07	0.15/0.09
10						0.09/0.05	0.10/0.06	0.12/0.07	0.15/0.09
11						0.08/-	0.10/0.06	0.12/0.07	0.15/0.09
12							0.08/0.05	0.11/0.06	0.15/0.09
13							0.08/-	0.11/0.06	0.12/0.07
14								0.10/0.06	0.11/0.06
15								0.08/-	0.10/0.06
16									0.10/0.06
17									0.08/-

American UN External thread feed quantity recommend table

Pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
The total amount of feed	0.649	0.779	0.866	0.974	1.113	1.299	1.416	1.558	1.731	1.948	2.226	2.597	3.116
Feed time	5	6	6	7	9	9	10	11	12	13	14	15	16
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.206/—	0.210/—	0.233/—	0.226/—	0.196/—	0.229/—	0.220/—	0.214/—	0.210/—	0.211/—	0.213/—	0.218/—	0.229/—
2	0.148/0.086	0.163/0.094	0.181/0.104	0.188/0.109	0.189/0.110	0.222/0.128	0.228/0.132	0.240/0.139	0.256/0.148	0.276/0.160	0.304/0.176	0.343/0.198	0.399/0.230
3	0.114/0.066	0.125/0.072	0.139/0.080	0.145/0.083	0.146/0.084	0.170/0.098	0.176/0.102	0.184/0.106	0.196/0.113	0.212/0.122	0.234/0.135	0.263/0.152	0.306/0.177
4	0.096/0.055	0.105/0.061	0.117/0.068	0.122/0.070	0.123/0.071	0.143/0.083	0.148/0.086	0.155/0.090	0.165/0.095	0.179/0.103	0.197/0.114	0.222/0.128	0.258/0.149
5	0.085/0.049	0.093/0.054	0.103/0.059	0.107/0.062	0.108/0.062	0.126/0.073	0.131/0.075	0.137/0.079	0.146/0.084	0.158/0.091	0.173/0.100	0.195/0.113	0.227/0.131
6		0.084/0.048	0.093/0.054	0.097/0.056	0.098/0.056	0.114/0.066	0.118/0.068	0.124/0.072	0.132/0.076	0.142/0.082	0.157/0.091	0.177/0.102	0.205/0.119
7				0.089/0.052	0.090/0.052	0.105/0.061	0.109/0.063	0.114/0.066	0.121/0.070	0.131/0.076	0.144/0.083	0.163/0.094	0.189/0.109
8					0.084/0.048	0.098/0.056	0.101/0.058	0.106/0.061	0.113/0.065	0.122/0.070	0.134/0.078	0.151/0.087	0.176/0.101
9					0.079/0.045	0.092/0.053	0.095/0.055	0.100/0.057	0.106/0.061	0.114/0.066	0.126/0.073	0.142/0.082	0.165/0.095
10							0.090/0.052	0.094/0.054	0.100/0.058	0.108/0.063	0.119/0.069	0.134/0.078	0.156/0.090
11								0.090/0.052	0.095/0.055	0.103/0.059	0.113/0.065	0.128/0.074	0.149/0.086
12									0.091/0.053	0.098/0.057	0.108/0.063	0.122/0.071	0.142/0.082
13										0.094/0.054	0.104/0.060	0.117/0.068	0.136/0.079
14											0.100/0.058	0.113/0.065	0.131/0.076
15												0.109/0.063	0.126/0.073
16													0.122/0.071

American UN Internal thread feed quantity recommend table

Pitch	24	20	18	16	14	12	11	10	9	8	7	6	5
The total amount of feed	0.573	0.687	0.764	0.860	0.982	1.146	1.250	1.375	1.528	1.719	1.964	2.291	2.750
Feed time	5	6	6	7	8	9	9	10	11	12	13	14	15
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.193/—	0.200/—	0.222/—	0.219/—	0.220/—	0.228/—	0.250/—	0.247/—	0.246/—	0.252/—	0.262/—	0.278/—	0.302/—
2	0.127/0.073	0.239/0.081	0.155/0.089	0.161/0.093	0.173/0.100	0.190/0.110	0.207/0.120	0.216/0.125	0.229/0.132	0.247/0.142	0.271/0.156	0.304/0.176	0.353/0.204
3	0.098/0.056	0.107/0.062	0.119/0.069	0.124/0.072	0.132/0.076	0.146/0.084	0.159/0.092	0.166/0.096	0.176/0.101	0.189/0.109	0.208/0.120	0.234/0.135	0.271/0.156
4	0.082/0.048	0.090/0.052	0.100/0.058	0.104/0.060	0.112/0.064	0.123/0.071	0.134/0.077	0.140/0.081	0.148/0.086	0.160/0.092	0.175/0.101	0.197/0.114	0.228/0.132
5	0.073/0.042	0.079/0.046	0.088/0.051	0.092/0.053	0.098/0.057	0.108/0.062	0.118/0.068	0.123/0.071	0.130/0.075	0.141/0.081	0.1543/0.089	0.173/0.100	0.201/0.116
6		0.072/0.041	0.080/0.046	0.083/0.048	0.089/0.051	0.098/0.056	0.107/0.062	0.111/0.064	0.118/0.068	0.127/0.073	0.140/0.081	0.157/0.091	0.182/0.105
7				0.077/0.044	0.082/0.047	0.090/0.052	0.098/0.057	0.102/0.059	0.108/0.063	0.117/0.067	0.128/0.074	0.144/0.083	0.167/0.097
8					0.076/0.044	0.084/0.048	0.091/0.053	0.095/0.055	0.101/0.058	0.109/0.063	0.119/0.069	0.134/0.078	0.156/0.090
9						0.079/0.045	0.086/0.050	0.090/0.052	0.095/0.055	0.102/0.059	0.112/0.065	0.126/0.073	0.146/0.084
10								0.085/0.049	0.090/0.052	0.097/0.056	0.106/0.061	0.119/0.069	0.138/0.080
11									0.085/0.049	0.092/0.053	0.101/0.058	0.113/0.065	0.131/0.076
12										0.088/0.051	0.096/0.056	0.108/0.063	0.126/0.073
13											0.092/0.053	0.101/0.060	0.121/0.070
14												0.100/0.058	0.116/0.067
15													0.112/0.065

British Internal and External feed quantity recommend table

Pitch	28	20	19	16	14	12	11	10	9	8	7	6	5
The total amount of feed	0.581	0.813	0.856	1.017	1.162	1.355	1.479	1.626	1.807	2.033	2.324	2.711	3.253
Feed time	5	6	6	8	8	9	9	10	11	12	14	15	16
Tool moving styles	Radial feed(X)and tooth side feed(Z)												
	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z	x/z
1	0.179/—	0.211/—	0.223/—	0.196/—	0.223/—	0.226/—	0.246/—	0.236/—	0.230/—	0.255/—	0.195/—	0.197/—	0.204/—
2	0.134/0.070	0.172/0.089	0.181/0.094	0.186/0.097	0.213/0.111	0.234/0.122	0.255/0.133	0.226/0.139	0.282/0.147	0.304/0.158	0.322/0.167	0.361/0.189	0.421/0.219
3	0.104/0.054	0.132/0.069	0.139/0.072	0.143/0.074	0.163/0.085	0.180/0.093	0.197/0.102	0.206/0.106	0.216/0.113	0.233/0.121	0.247/0.128	0.278/0.145	0.323/0.168
4	0.087/0.045	0.111/0.058	0.117/0.061	0.120/0.063	0.138/0.072	0.151/0.079	0.165/0.086	0.172/0.090	0.182/0.095	0.197/0.102	0.208/0.108	0.234/0.122	0.272/0.142
5	0.077/0.040	0.098/0.051	0.103/0.054	0.106/0.055	0.121/0.063	0.133/0.069	0.145/0.076	0.152/0.079	0.161/0.084	0.1738/0.090	0.183/0.095	0.207/0.108	0.240/0.125
6		0.089/0.046	0.093/0.049	0.096/0.050	0.110/0.057	0.121/0.063	0.131/0.068	0.137/0.071	0.145/0.076	0.157/0.082	0.166/0.086	0.187/0.097	0.217/0.113
7				0.088/0.046	0.101/0.052	0.111/0.058	0.121/0.063	0.126/0.066	0.134/0.070	0.144/0.075	0.152/0.079	0.172/0.089	0.200/0.104
8				0.082/0.043	0.093/0.049	0.103/0.054	0.113/0.059	0.117/0.061	0.124/0.065	0.134/0.070	0.142/0.074	0.160/0.083	0.186/0.097
9						0.097/0.050	0.106/0.055	0.110/0.057	0.117/0.061	0.126/0.066	0.133/0.069	0.150/0.078	0.174/0.091
10								0.104/0.054	0.111/0.058	0.119/0.062	0.126/0.066	0.142/0.074	0.165/0.086
11									0.105/0.055	0.113/0.059	0.120/0.062	0.135/0.070	0.157/0.082
12										0.108/0.056	0.114/0.060	0.129/0.067	0.150/0.078
13											0.110/0.055	0.124/0.064	0.144/0.075
14												0.119/0.062	0.138/0.072
15												0.115/0.060	0.133/0.069
16													0.129/0.067

NPT Internal and External thread feed quantity recommend table

Pitch	27	18	14	11.5	8
The total amount of feed	0.75	1.129	1.451	1.767	2.54
Feed time	6	8	10	12	14
Tool moving styles	Radial feed(X)and tooth side feed(Z)				
	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.19/-	0.22/-	0.240/-	0.24/-	0.255/-
2	0.15/0.087	0.181/0.104	0.200/0.115	0.208/0.120	0.250/0.144
3	0.13/0.075	0.152/0.088	0.170/0.098	0.182/0.105	0.245/0.141
4	0.11/0.063	0.141/0.081	0.150/0.086	0.168/0.097	0.230/0.133
5	0.09/0.052	0.131/0.075	0.140/0.081	0.155/0.089	0.210/0.121
6	0.08/0.46	0.121/0.070	0.130/0.075	0.145/0.084	0.195/0.112
7		0.101/0.058	0.120/0.069	0.138/0.079	0.180/0.104
8		0.082/0.047	0.110/0.063	0.124/0.072	0.175/0.101
9			0.100/0.058	0.117/0.067	0.170/0.098
10			0.091/0.052	0.105/0.060	0.155/0.089
11				0.095/0.055	0.140/0.080
12				0.090/0.052	0.125/0.072
13					0.110/0.063
14					0.100/0.058

BSPT Internal and External thread feed quantity recommend table

Pitch	28	19	14	11
The total amount of feed	0.581	0.856	1.162	1.479
Feed time	5	6	8	10
Tool moving styles	Radial feed(X)and tooth side feed(Z)			
	X/Z	X/Z	X/Z	X/Z
1	0.179/-	0.223/-	0.222/-	0.214/-
2	0.134/0.070	0.181/0.094	0.213/0.111	0.242/0.126
3	0.103/0.054	0.139/0.072	0.163/0.085	0.186/0.097
4	0.087/0.045	0.117/0.061	0.138/0.072	0.157/0.082
5	0.078/0.040	0.103/0.054	0.121/0.063	0.138/0.072
6		0.093/0.049	0.110/0.057	0.125//0.065
7			0.101/0.052	0.115/0.060
8			0.094/0.049	0.107/0.056
9				0.100/0.052
10				0.095//0.049

NPTF60° External thread feed quantity recommend table

Pitch	8	11.5	14	18	27
The total amount of feed	2.38	1.63	1.35	1.00	0.64
Feeding times	15	12	10	8	6
Tool moving styles	Radial feed				
1	0. 32	0. 24	0. 23	0. 19	0. 16
2	0. 27	0. 23	0. 21	0. 16	0. 14
3	0. 23	0. 19	0. 16	0. 14	0. 11
4	0. 19	0. 15	0. 14	0. 13	0. 09
5	0. 17	0. 13	0. 13	0. 12	0. 08
6	0. 16	0. 11	0. 12	0. 11	0. 06
7	0. 15	0. 11	0. 11	0. 09	
8	0. 14	0. 11	0. 10	0. 06	
9	0. 13	0. 10	0. 09		
10	0. 12	0. 10	0. 06		
11	0. 12	0. 10			
12	0. 11	0. 06			
13	0. 11				
14	0. 10				
15	0. 06				

NPTF60° Internal thread feed quantity recommend table

Pitch	8	11.5	14	18	27
The total amount of feed	2.38	1.63	1.35	1.00	0.64
Feeding times	15	12	10	8	6
Tool moving styles	Radial feed				
1	0. 35	0. 27	0. 25	0. 2	0. 15
2	0. 29	0. 22	0. 20	0. 17	0. 13
3	0. 26	0. 20	0. 18	0. 15	0. 12
4	0. 20	0. 16	0. 14	0. 12	0. 09
5	0. 17	0. 13	0. 12	0. 1	0. 08
6	0. 15	0. 12	0. 11	0. 09	0. 08
7	0. 14	0. 10	0. 10	0. 09	
8	0. 12	0. 10	0. 09	0. 08	
9	0. 12	0. 09	0. 08		
10	0. 11	0. 08	0. 08		
11	0. 10	0. 08			
12	0. 10	0. 08			
13	0. 09				
14	0. 09				
15	0. 09				

30° Round external thread feed quantity recommend table

Pitch	6	8	10
The total amount of feed	2.12	1.59	1.27
Feeding times	12	10	8
Tool moving styles	Radial feed		
1	0. 26	0. 23	0. 23
2	0. 225	0. 21	0. 21
3	0. 24	0. 20	0. 20
4	0. 22	0. 19	0. 19
5	0. 21	0. 18	0. 16
6	0. 19	0. 16	0. 12
7	0. 17	0. 14	0. 10
8	0. 16	0. 12	0. 06
9	0. 14	0. 10	
10	0. 12	0. 06	
11	0. 10		
12	0. 06		

30° Round external thread feed quantity recommend table

Pitch	6	8	10
The total amount of feed	2.12	1.59	1.27
Feeding times	12	10	8
Tool moving styles	Radial feed		
1	0. 35	0. 29	0. 26
2	0. 29	0. 24	0. 22
3	0. 26	0. 22	0. 20
4	0. 20	0. 17	0. 15
5	0. 17	0. 14	0. 13
6	0. 15	0. 13	0. 11
7	0. 14	0. 11	0. 10
8	0. 13	0. 10	0. 09
9	0. 12	0. 10	
10	0. 11	0. 09	
11	0. 10		
12	0. 10		

MJ External thread feed quantity recommend table

Pitch	1.5	2.0
The total amount of feed	0.87	1.16
Feeding times	6	8
Tool moving styles	Radial feed	
1	0. 22	0. 25
2	0. 19	0. 21
3	0. 16	0. 18
4	0. 13	0. 15
5	0. 11	0. 12
6	0. 06	0. 10
7		0. 09
8		0. 06

UNJ External thread feed quantity recommend table

Pitch	8	10	12	14	16	18	20	24	28	32
The total amount of feed	1.83	1.47	1.22	1.05	0.92	0.81	0.73	0.61	0.52	0.46
Feeding times	11	9	7	7	6	6	6	5	5	4
Tool moving styles	Radial feed									
1	0. 31	0. 30	0. 28	0. 26	0. 26	0. 23	0. 19	0. 17	0. 16	0. 16
2	0. 30	0. 29	0. 27	0. 23	0. 21	0. 18	0. 16	0. 14	0. 12	0. 14
3	0. 23	0. 21	0. 20	0. 17	0. 14	0. 14	0. 13	0. 14	0. 09	0. 10
4	0. 18	0. 15	0. 17	0. 12	0. 12	0. 10	0. 10	0. 10	0. 09	0. 06
5	0. 15	0. 13	0. 13	0. 11	0. 10	0. 010	0. 09	0. 06	0. 06	
6	0. 14	0. 12	0. 11	0. 10	0. 09	0. 06	0. 06			
7	0. 13	0. 11	0. 06	0. 06						
8	0. 12	0. 10								
9	0. 11	0. 06								
10	0. 10									
11	0. 06									

Tr External thread feed quantity recommend table

Pitch	1.5	2	3
The total amount of feed	0.90	1.25	1.75
Feeding times	6	7	9
Tool moving styles	Radial feed		
1	0. 23	0. 29	0. 32
2	0. 21	0. 26	0. 31
3	0. 16	0. 21	0. 24
4	0. 13	0. 17	0. 19
5	0. 11	0. 14	0. 18
6	0. 06	0. 12	0. 17
7		0. 06	0. 15
8			0. 13
9			0. 06

Tr Internal thread NPTF60 feed quantity recommend table

Pitch	1.5	2	3
The total amount of feed	0.90	1.25	1.75
Feeding times	6	7	9
Tool moving styles	Radial feed		
1	0. 22	0. 28	0. 34
2	0. 18	0. 23	0. 28
3	0. 17	0. 21	0. 26
4	0. 13	0. 16	0. 20
5	0. 11	0. 14	0. 17
6	0. 10	0. 12	0. 15
7		0. 11	0. 13
8			0. 12
9			0. 10

ACME Internal External thread feed quantity recommend table

Pitch	8	10	12	14	16
The total amount of feed	1.86	1.55	1.21	1.05	0.94
Feeding times	12	10	8	7	6
Tool moving styles	Radial feed				
1	0. 31	0. 28	0. 25	0. 23	0. 23
2	0. 26	0. 23	0. 21	0. 20	0. 19
3	0. 23	0. 21	0. 18	0. 18	0. 17
4	0. 18	0. 16	0. 15	0. 14	0. 14
5	0. 15	0. 15	0. 12	0. 11	0. 11
6	0. 14	0. 13	0. 11	0. 10	0. 10
7	0. 12	0. 11	0. 10	0. 09	
8	0. 11	0. 10	0. 09		
9	0. 10	0. 09			
10	0. 09	0. 09			
11	0. 09				
12	0. 08				

STUB-ACME Internal External thread feed quantity recommend table

Pitch	8	10	12	14	16
The total amount of feed	1.28	1.08	0.81	0.73	0.66
Feeding times	9	8	7	6	5
Tool moving styles	Radial feed				
1	0. 22	0. 20	0. 17	0. 17	0. 17
2	0. 20	0. 18	0. 14	0. 14	0. 15
3	0. 18	0. 15	0. 12	0. 12	0. 14
4	0. 15	0. 13	0. 1	0. 11	0. 11
5	0. 12	0. 12	0. 1	0. 1	0. 09
6	0. 11	0. 11	0. 09	0. 09	
7	0. 11	0. 10	0. 09		
8	0. 10	0. 09			
9	0. 09				

API 60°External thread feed quantity recommend table

Pitch	4(382)	4(383)	5(403)	4(502)	4(503)
The total amount of feed	3.12	3.11	3.00	3.78	3.77
Feeding times	12	12	12	15	15
Tool moving styles	Radial feed				
1	0. 51	0. 50	0. 47	0. 51	0. 51
2	0. 47	0. 47	0. 44	0. 48	0. 48
3	0. 42	0. 42	0. 40	0. 44	0. 44
4	0. 35	0. 35	0. 35	0. 39	0. 39
5	0. 31	0. 31	0. 30	0. 34	0. 34
6	0. 26	0. 26	0. 25	0. 30	0. 30
7	0. 22	0. 22	0. 21	0. 26	0. 26
8	0. 18	0. 18	0. 17	0. 22	0. 22
9	0. 13	0. 13	0. 14	0. 19	0. 19
10	0. 11	0. 11	0. 11	0. 16	0. 16
11	0. 10	0. 10	0. 10	0. 13	0. 13
12	0. 06	0. 06	0. 06	0. 11	0. 10
13				0. 10	0. 10
14				0. 09	0. 09
15				0. 06	0. 06

API 60°Internal thread feed quantity recommend table

Pitch	4(382)	4(383)	5(403)	4(502)	4(503)
The total amount of feed	3.12	3.11	3.00	3.78	3.77
Feeding times	12	12	12	15	15
Tool moving styles	Radial feed				
1	0. 52	0. 52	0. 51	0. 55	0. 54
2	0. 43	0. 43	0. 42	0. 46	0. 46
3	0. 39	0. 39	0. 38	0. 42	0. 42
4	0. 30	0. 30	0. 29	0. 32	0. 32
5	0. 25	0. 25	0. 24	0. 27	0. 27
6	0. 22	0. 22	0. 21	0. 24	0. 24
7	0. 20	0. 20	0. 19	0. 22	0. 22
8	0. 18	0. 18	0. 17	0. 20	0. 20
9	0. 17	0. 17	0. 16	0. 18	0. 18
10	0. 16	0. 16	0. 15	0. 17	0. 17
11	0. 15	0. 15	0. 14	0. 16	0. 16
12	0. 15	0. 14	0. 14	0. 16	0. 16
13				0. 15	0. 15
14				0. 14	0. 14
15				0. 14	0. 14

API Round external thread feed quantity recommend table

Pitch	8	10
The total amount of feed	1.81	1.41
Feeding times	12	10
Tool moving styles	Radial feed	
1	0. 25	0. 25
2	0. 24	0. 23
3	0. 19	0. 16
4	0. 16	0. 14
5	0. 14	0. 12
6	0. 14	0. 12
7	0. 13	0. 12
8	0. 13	0. 11
9	0. 13	0. 1
10	0. 13	0. 06
11	0. 11	
12	0. 06	

API Round external thread feed quantity recommend table

Pitch	8	10
The total amount of feed	1.81	1.41
Feeding times	12	10
Tool moving styles	Radial feed	
1	0. 30	0. 26
2	0. 25	0. 21
3	0. 22	0. 19
4	0. 17	0. 15
5	0. 15	0. 13
6	0. 13	0. 11
7	0. 12	0. 10
8	0. 11	0. 09
9	0. 10	0. 09
10	0. 09	0. 08
11	0. 09	
12	0. 08	

API Buttress thread external thread feed quantity recommend table

Pitch	5
The total amount of feed	1.55
Feeding times	11
Tool moving styles	Radial feed
1	0. 25
2	0. 23
3	0. 17
4	0. 15
5	0. 13
6	0. 12
7	0. 12
8	0. 11
9	0. 11
10	0. 1
11	0. 06

API Buttress thread external thread feed quantity recommend table

Pitch	5
The total amount of feed	1.55
Feeding times	11
Tool moving styles	Radial feed
1	0. 27
2	0. 22
3	0. 20
4	0. 16
5	0. 13
6	0. 12
7	0. 10
8	0. 10
9	0. 09
10	0. 08
11	0. 08

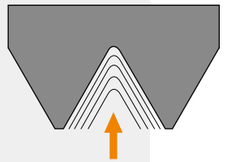
Turning condition recommended list

ISO	Material		Unit cutting force Kc0.4 N/mm²	Hardness HB	Grade JT1025 Cutting speed(m/min)	Grade JK301 Cutting speed(m/min)
P	Carbon stee	C=0.15% C=0.35% C=0.60%	1900 2100 2250	125 150 200	150-175 140-155 130-145	110-140 100-120 90-110
	Alloy steel	Annealed Hardened Hardened Hardened	2100 2600 2700 2850	180 275 300 350	110-130 80-100 70-90 60-80	70-100 60-80 50-70 40-60
	Hight alloy steel	Annealed Harde ned	2600 3900	200 325	90-115 70-90	70-90 50-70
	Cast steel	Un alloy Low alloy High alloy Martensitic steel	2000 2500 2700 3600	180 200 225 250	180-210 90-115 90-115 40-50	140-170 60-80 60-80 30-40
M	Stainless steel	Austenitic	2450	180	110-130	70-110
		Martensitic/Ferritic	2300	200	130-170	100-140
K	Malleable cast iron	Ferritic Pearlitic	1100 1100	130 230	110-140 85-105	80-120 70-90
	Grey cast iron	Low tensile strength High tensile strength	1100 1500	180 260	110-140 90-115	80-110 70-100
	Nodular cast iron	Ferritic Pearlitic	1100 1800	160 250	110-130 80-100	80-120 60-80
N	Alumium alloy	Non aging Aged	500 800	60 100	1300-1450 450-500	1100-1200 350-400
	Cast alumium alloy	Non aging Aged	750 900	75 90	430-470 250-290	400-420 200-240
S	Heat-resistant alloy	Fe based — Annealed Aged	3000 3050	200 280	35-50 25-35	25-35 20-30
		Nickel or Cobalt based — Annealed Aged Cast	3500 4150 4150	250 350 320	15-25 10-20 10-15	10-15 10-15 10-15

Note:
- The list shows the range number would choose high number in cutting,when use new cutting speed,should check the edge condition.
- Would use high cutting speed in stainless thread cutting,avoid built-up.
- Would reduce cutting parameter in small pitch threading and using small nose radius tool.
- Would use big nose radius roughing to improve small nose radius tool life in using small nose radius tool threading.

Thread tools feed method

Radial in-feed

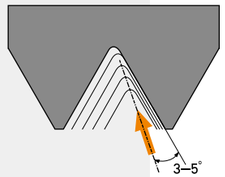


- Simple to use,high generality.
- The V type chipping caused by machining steel will produce high bend stress on cutting edge.
- It ask for small cutting depth,sharp edge and good toughness when processing.
- High cutting heat,it's hard to control the V type chipping.
- Due to the left and the right of the chipping contact length is long,easy to produce vibration,and increase the nose load.

Flank in-feed

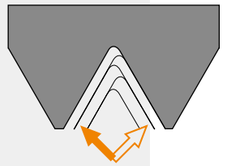
- Small bending stress of cutting edge,stable condition,better shape chipping,large cutting depth.
- There is enough space for chipping discharge when flank in-feed.
- Severe wear on right flank.

Modified flank in-feed



- Right cutting edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right size of clearance face.
- Small bending stress of cutting edge,stable condition,better shape chipping,large cutting depth
- Good cutting processing performance.

Alternate flank in-feed



- Alternate use cutting edge,even wearing of left and right side back tool face,can lengthen tool life.
- Chipping discharge from left and right direction,good chip flow.
- Suitable for big pitch thread cutting.

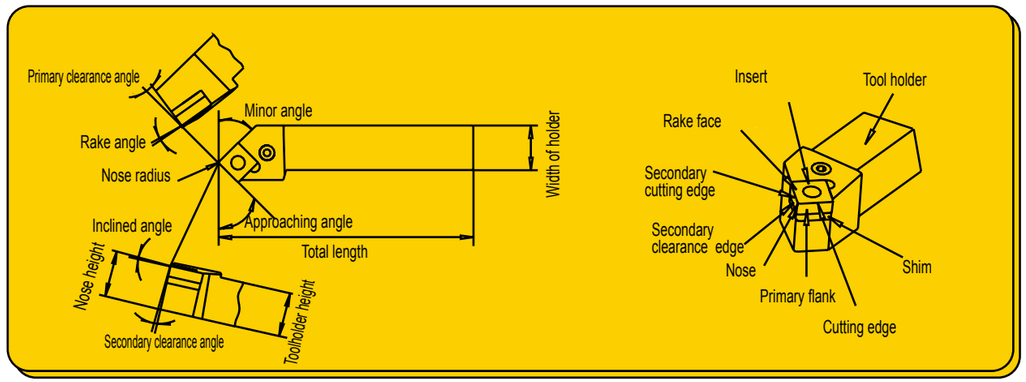
Try to use Flank in-feed or Alternate flank in-feed under the condition of machine tools and programming system allows,and can effectively eliminate vibration,enough space for chipping discharge between teeth,small stress of cutting edge,stable condition,chipping controlled when processing thread.

Thread processing common problems and solutions

Trouble	Reason	Solution
Severe abrasion of clearance face	High cutting speed	Lower cutting speed
	Small feed,cause abrasion	Reduce feed times and edge friction times
	The insert is located in the center line of the above angle of inclination	Choose proper shim to obtain correct angle of inclination
Uneven cutting edge wear	Angle of inclination and helix angle are inconsistent	Change infeed method
	Wrong infeed method	Change infeed method
Breakage	Low cutting speed	Impove the cutting speed
	High cutting force	Increase infeed times,reduce Max.cutting feed
	Turning in the unstable clamping condition	Check stability. Reduce the tool overhanging volume verify clamping of workpiece and tool.
	Chipping are twisting	Increase the cooling fluid pressure,blow chip
Plastic deformation	High cutting speed,high temperature of cutting zone	Reduce cutting speed Increase feed times,reduce max feed depth
	Insufficient cutting fluid	Increase the cooling fluid supply
Poor surface quality	Low cutting speed The insert is located in the center line of the above Chipping uncontrolled.	Increase cutting speed Adjust the center height Change the feed type of tool,proper handle chipping
Incorrect thread profile	Incorrect center height.	Adjust the center height.
	Incorrect pitch.	Check the machine tool
Shallow thread profile	Wrong set of cutting depth	Change cutting depth
Surface damage	Chipping involved or contact.	Use tooth flank cross cutting,control chipping dischanrge direction.
Built-up edge	Low temperature of cutting edge When machining stainless steel and low carbon steel.	Increase the cutting speed cutting fluid pressure and concentration, choose better toughness tool
Fracture of surface	High cutting force	Reduce cutting depth
Vibration	Incorrect clamping of workpiece or tool	check the clamping condition Min overhang of tool.
	Incorrect of cutting parameter	Increase cutting speed or largely reduce cutting speed
	Incorrect of tool clamping.	Adjust the center height

The functions of each part of turning tools

1、The names of each part of turning tools



2、Effects of rake angle

Large rake angle makes cutting edge sharper,reduces resistant forces of chip flow, diminshes friction and prevent deformation, leading to smaller cutting forces and cutting power, lower cutting temperature, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily. Serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

Value selection	Situations
Small rake angle	●When machining brittle and hard materials ●When roughing and intermittent cutting
Big rake angle	●When machining plastic or soft materials ●When finishing

3、Effects of clearance angle

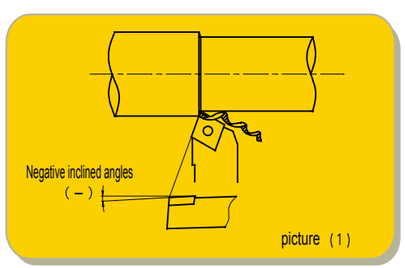
The main function of clearance angle is to reduce the friction between the clearance face of tool and surface of workpiece. When the rake angle is fixed, larger clearance angle can increase the sharpness of cutting edge, reduce cutting force and friction, and then achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life.
The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value selection	Situations
Small clearance angle	●In order to increase nose strength when roughing ●When machining brittle and hard materials
Big clearance angle	●In order to reduce friction when finishing ●When machining materials easy to be hardened

4、Effect of inclined angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

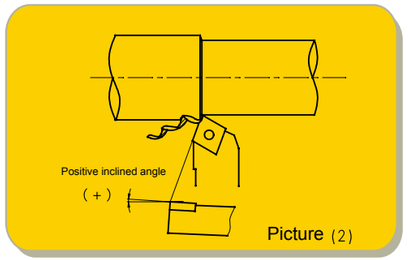
◆As diagram(1) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.



picture（1）

◆ As diagram(2) shows, when inclined angle is positive, namely the nose is in the highest point as apposed to the bottom of the tool, chips flow to the areas of workpiece surface that haven't been machined.

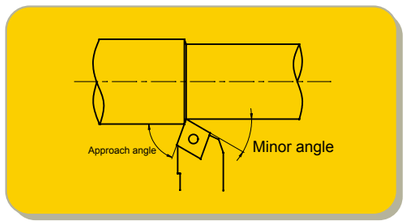
◆ The change of inclined angle also affects insert nose strength and impact resistance. When the inclined angle is negative, the nose is in the lowest point of cutting edge. When the cutting edge enters the workpiece, the contacting point is on the cutting edge or rake face, protecting the nose from impact and increase the strength of the nose. Normally, negative inlined angle should be chosen for tools with big rake angle. This can not only increase nose strength, but also prevent the impact of entry.



Picture（2）

5、Effect of approach angle

Reduced approaching angle increase the strength of tools and enable heat to diffuse easily, improving surface quality. This is because when the approach angle is small, cutting edge width is large, and then the unit width of cutting edge bears less cutting force. Meanwhile, tool life can be improved.
Normally, select 90 approach angle for turning of slender and step shaft; select 45 approach angle for external turning, end surface machining and chamfering. When approach angle is larger, radia force is reduced, cutting is stable, cutting thickness is increased, and chip breaking is excellent.



Value selection	Situauions
Small approch angle	● For those materials with high intensity,high hardness and hardened loger on the surface
Big approach angle	● When rigidity of the machine is not enough

6、Effect of minor angle

Minor angle is the main angle that can affect surface quality, and it can also affect tool strength. If the approach angle is too small, the friction between the secondary flank and machined surface of workpiece will increase, causing vibration.
The principle of selecting minor angle: Select small minor angle when roughing or when the friction is unaffected and there is no vibration. Select large minor angle when finishing.

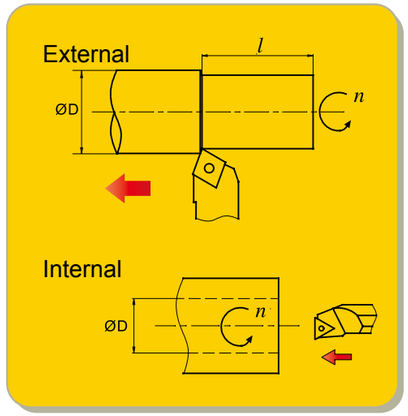
7、Nose radius

Nose radius significantly affects nose strength and surface quality. Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radias force will increase, and vibration ia easy to occur, affecting machining precision and surface quality.

Value selection	Situauions
Small nose radius	● Finishing at small cutting depth ● Machining parts such as slender shaft ● When the rigidity of the machine is not enough
Large nose radius	● When roughing ● When machining hard materials,intermittent cutting ● When the rigidity of the machine is not enough

Calculate method of turning parameter

1、Calulating the cutting speed



$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)$$

Vc: Cutting speed

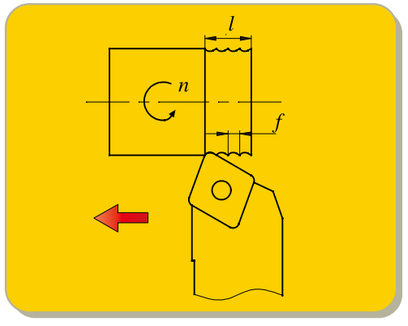
n: Spindle speed

D: Workpiece diameter

Ex: If spindle speed is 280 rev/min,turning the diameter of 150mm,the cutting speed is:

$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)\ =132(m/min)$$

2、Calculating the cutting feed



$$f=\frac{l}{n}\ (mm/rev)$$

f: Feed rate per revolution

l : Cutting length per minute

n : Spindle speed

Ex: If spindle speed is 500rev/min,cutting length per minvte is 100mm/min,the feed rate per revolution is:

$$f=\frac{l}{n}=\frac{100}{500}=0.2(mm/rev)$$

3、Calculating the cutting time of external and internal

$$T=\frac{l}{f\times n}\ (min)$$

T:Cutting time

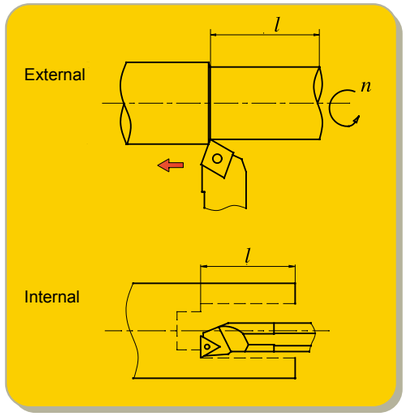
l:Lergth of cutting zone

f:Feed rate

n:Spindle speed

Ex:If spindle speed is 250rev/min,feed rate is 0.2mm/rev, the cutting length is 150mm, the time requires:

$$T=\frac{l}{f\times n}=\frac{150}{0.2\times 250}=3(min)$$



4、Calculating the time of face turning(constant line speed)

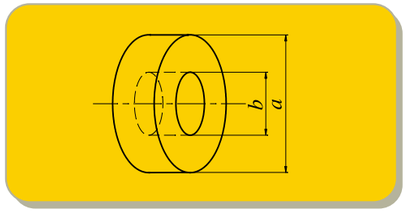
$$T=\frac{\pi\times(a^2-b^2)}{4000\times Vc\times f}\ (min)$$

T:Cutting time

Vc:Cutting speed

f:Feed rate

If it's no inner hole of turning face,b=0,the formula is still valid.



5、Calculating the theoretical value of surface roughness

$$R=\frac{f^2}{8r_c}\times 1000\ (\mu m)$$

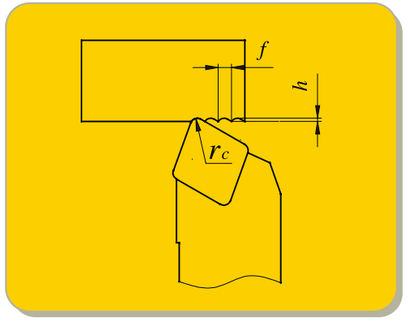
R:The theoretical value of surface roughness

f:Feed rate

rc:Nose radius

Ex: If feed rate is 0.2mm/rev,nose radius is 0.4mm,the theoretical value of surface roughness is:

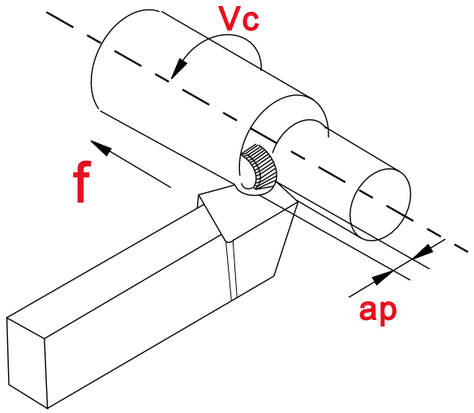
$$R=\frac{f^2}{8r_c}\times 1000=\frac{0.2^{\ 2}}{8\times 0.4}\times 1000=12.5(\mu m)$$



Effect of three main turning parameters on machining

★Effect of three main parameters

Normally, short machining time, long tool life and high machining precision are expected in machining, so the material quality, hardness, and the shape of the workpiece, and properties of machine should be fullly considered, and then we can select suitable tools adopt high-efficiency cutting parameters, namely three parameters.



★Cutting speed(Vc)

When the workpiece is rotating on the machine, the number of its rotation per minute is defined as Rotating speed of main axle (n). Because of its rotation, the cutting speed measured on the contacting point of diameter is defined as linear speed, m/min.Normally, linear speed is considered to measure the effect of cutting speed on machining.

★Effect of cutting speed

Cutting speed has significant effect on tool life. When the cutting speed is increased, cutting temperature will increase and tool life will be shortened. Cutting speed varies according to the different types and hardness of workpiece. The below conclusions are reached after many cutting experiments:

(1) Normally tool life would be reduced to half when the cutting speed is increased by 20%. Tool life would be 20% of the original life if the cutting speed is raised by 50%.
(2) Low speed (20-40m/min) cutting would easily cause vibration and shorten tool life.

★Feed rate (fn)

Feed rate is defined as the moving distance of tool after workpiece rotates for one circle, measured by mm/rotation.

★Effect of feed rate

Feed rate is a key factor that determines surface quality. Meanwhile it also affect the range of chip formig and the thickness of chips during machining.
In terms of the effect on tool life, small feed rate leads to serious abrasion on clearance face, greatly reducing tool life.

★Cutting depth (ap)

Cutting depth is defined as the difference between machined surface and unmachined surface, measured by mm. It is half the difference value between the original diameter and machined diameter.

★Effect of cutting depth

Cutting depth should be determined by the machining allowance and shape of workpiece, power and rigidity of machine, and tool rigidity.
The change of cutting depth has little effect on tool life. If the cutting depth is too low, the cutting nose only scrapes the hardened layer on the workpiece surface, reducing tool life. When there is hardened oxide layer on workpiece surface, higher cutting depth should be adopted within the possible range of machine's power to avoid cutting nose just cutting the hardened layer of workpiece.

■Turning inserts groove comparison table (negative insert)

ISO type	Processing category	JXTC 江钨刀具	SANDVIK 山特维克	KORLOY 克洛伊	TaeguTec 特固克	WALTER 瓦尔特	SECO 山高	MISTUBISHI 三菱	SUMITOMO 住友	KENNAMETAL 肯纳	DIJET 黛杰	HITACHI 日立	TUNGALOY 泰珂洛	KYOCERA 京瓷	VALANTTE 万耐特
P	Super-finishing		QF	HU		NF3	FF1	PK※ FH, FY	FA, FL	UF, FF		FE	01※, TF, ZF	DP※, GP, VF XP, XP-T	F1
	Finishing	GF	PF MF	HF		NS6	MF2	C, SA, SH	SU, LU, SX	LF, FN	PF, UR UA, UT	BE, CE	NS, 27 TS, AS	HQ, CQ	F2(2B), F5(5C)
	Finishing (mild steel)	GF		HF				SY					17	XQ, XS	
	Finishing(wiper)		WP WF	HW		NF	W-MF2	SW	LUW	FW			AFW, ASW	WP, WQ	
	Semi-finishing	GS GM	PM QM SM	HA HC HM	MC ML MP	NM4 NM6	MF3 M3 M5	MV MA MH	GU UG UX	MG MN	PG UB	AB AY AE	NM ZM TM DM 37	CJ, GS PS, HS PT, CS	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
	Semi-finishing		WM			NM	W-M3	MW	GUW	MW					
	Roughing	GR(Double side)	PR		MT, MG	NM9	MR7	GH	MU, MX	RN	UD, GG	AR, RE	TH	GT, HT	
	Heavy load roughing	GR(One side)ZR	QR PR HR	HR HH	RT, RH	NR6	R4, R6 R7, PR9	HZ, HX HV	MP, HG HP	MR, RM RH	UC	HX HE	57, 65, TU	HX	R3, R4, R6(9A) R7(9B), R9(9C)

※ Peripheral grinding type

Turning inserts groove comparison table (negative insert)

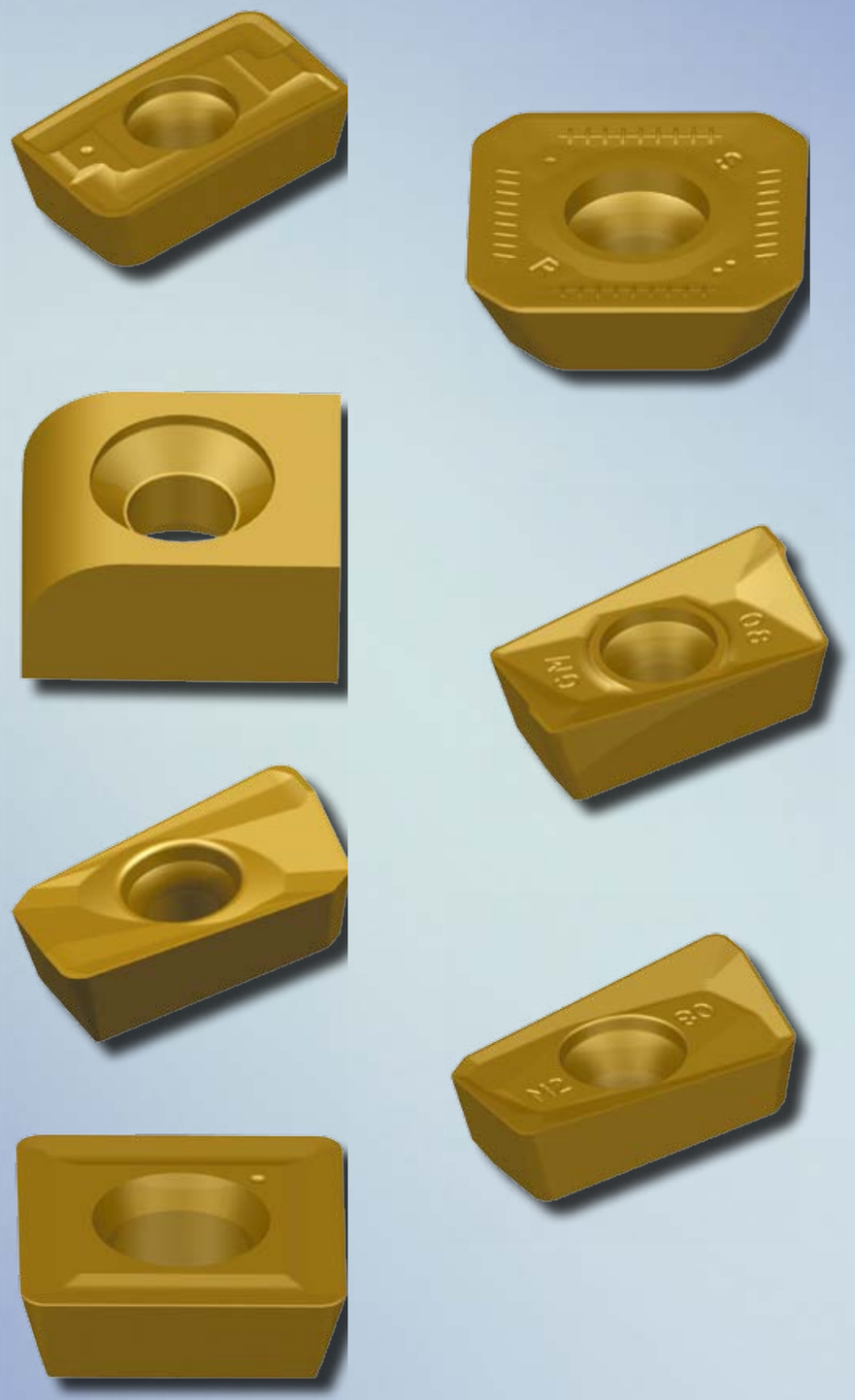
ISO type	Processing category	JXTC 江钨刀具	SANDVIK 山特维克	KORLOY 克洛伊	TaeguTec 特固克	WALTER 瓦尔特	SECO 山高	MISTUBISHI 三菱	SUMITOMO 住友	KENNAMETAL 肯纳	DIJET 黛杰	HITACHI 日立	TUNGALOY 泰珂洛	KYOCERA 京瓷	VALANTTE 万耐特
M	Finishing	BF	MF	HA	FG, SF	NF4		FS	SU	K, FP		SE	SS	GU	F1, F2(2B), F5(5C)
	Semi-finishing	BM	MM	HS	ML, MP	NM4		MS, ES	EX, UP	P, MP	SF, SG	DE	SA, SM, S	SU, HU, ST	F3, F4(8A), M2(2C), M3 M4, M5(5B), M6, M7, 55, M8
	Roughing	BR	MR	GS, HM	MT, RH	NR4	M5, MR7 56, R6	GH, HZ	MP	RP					R3, R4, R6(9A) R7(9B), R9(9C)
K	Finishing	GM	KF	No chipbreaker	FG	MA		complete cycle	UZ	FN		Y	CM	complete cycle, C	F2(2B)
	Semi-finishing	GM	KM	complete cycle, HM	MC, MT, MG	MA, NM5		complete cycle	UX	complete cycle, UN		V	33, complete cycle	ZS, GC	M5(5B), M6, M8
	Roughing	No chipbreaker KR	KR	GR, HR, GH	RT, RH	MA		No chipbreaker	No chipbreaker					No chipbreaker	R3, R4, R7(9B)
S	Finishing				SF	NF4	MF1※	FJ※		FS※, K※					F5(5C), M2(2C)
	Semi-finishing	GM	NGP※, 23			NM4	M1	MJ※	SU※	NGP※			SA		M4, M5(5B), M7, 55
	Roughing	GR	SR			NR4		GJ		MS					

※ Peripheral grinding type

Turning inserts groove comparison table (negative insert)

ISO type	Processing category	JXTC 江钨刀具	SANDVIK 山特维克	KORLOY 克洛伊	TaeguTec 特固克	WALTER 瓦尔特	SECO 山高	MISTUBISHI 三菱	SUMITOMO 住友	KENNAMETAL 肯纳	DIJET 黛杰	HITACHI 日立	TUNGALOY 泰珂洛	KYOCERA 京瓷	VALANTTE 万耐特
P	Finishing	SF, HF	UF, PF	HFP	FA, FG	PF4	FF1 F1	FV, SV	FP, LU SU, SK	11, UF LF		JQ	01※, PF FS	GP, XP VF	PF4 JQ, JZ
	Finishing (mild steel)		WK※, W WP			PF	W-F1	SW	LUW	FW					
	Semi-finishing	HM	UM PM	HMP C25	MT, CMX	PS5 PM5	F2	MV, complete cycle	MU	MF	FT	JE	PM 23, 24	HQ, XQ GK	PM2 PM4
	Semi-finishing（wiper）		WM			PM		MW		MW					
M	Finishing	HF	MF	HFP	FA, FG	PF4		SV					SS※		1A, 2A
	Semi-finishing	HM	MM	HMP C25	MT CMX	PS5 PM5		complete cycle MV							PM2 PM4
K	Semi-finishing	HM, HRNo chipbreaker	KF KM KR	HMP C25	MT CMX	MW PS5 PM5		No chipbreaker	No chipbreaker※		FT		No chipbreaker	No chipbreaker※	PM2 PM4
S	Finishing/ Semi-finishing					PF4 PS5 PM5		FJ※	SC※	LF※ HP※					PM2, 1A 2A
N	Common turning	AC	AL	TAAK MA	FL	PM2			AG	HP	ALU ACB		PP	A3	1L, 1A 2A

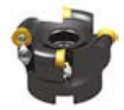
※ Peripheral grinding type



Milling

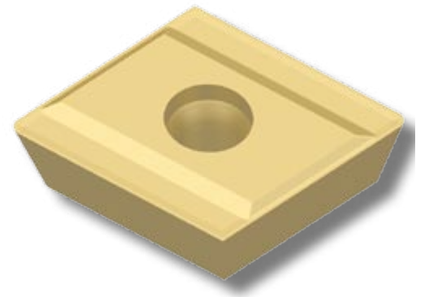
Indexable milling cutter

Machine type	Sery/Shape	The approach	Applicable inserts	Usage	Features
Face milling	**MXA03**  B13页	Kr=45° a_{pmax}=5.5	SE□N1203AF□□ SE□R1203AF□□	stainless steel, cast iron surface milling	Cutter diameter of 80-315 Big rake angle design,cutting more easier Top clamping structure, good vibration resistance
		Kr=45° a_{pmax}=7.5	SE□N1504AF□□ SE□R1504AF□□		
	MXE03  B23页	Kr=75° a_{pmax}=6.0	SP□N1203(1504)ED□□ SP□R1203(1504)ED□□	Steel, alloy steel, cast iron face milling	Cutting diameter of 80-315 Kr 75° general face milling Top clamping makes it easy to assemble and disassemble
		Kr=75° a_{pmax}=8.0	SP□N1504ED□□ SP□R1504ED□□		
	MXP01  B27页	Kr=90° a_{pmax}=18.0	TP□N2204PD□ TPKN2204PDF□ TPKN2204PDT□	Steel, alloy steel, cast iron face milling processing	Cutting diameter of 80-315 Kr 90° for square shoulder milling Top clamping makes it easy to assemble and disassemble
	MXP02  B29页	Kr=90° a_{pmax}=6.7	SEET09T308PER-GF/GM SEET09T308PER-GR	Steel, alloy steel,stainless steel, cast iron face face milling processing	Cutting diameter of 50-315 Kr 90° for square shoulder milling Coarse pitch,close pitch,extraclose pitch High precision insert,high workpiece surface quality Optimized groove and grade,suitable for finishing, semi-finishing and roughing
		Kr=90° a_{pmax}=10.8	SEET120308PER-GF/GM SEET120308PER-GR		
	MXR01  B33页	a_{pmax}=5.0	RCKT10T3MO-SM	Steel, alloy steel, stainless steel, cast iron cavity profile milling	Cutting diameter of 25-50 R type with the strong cutting edge Applicable to machine of curved surface of die Screw clamping economical milling
		a_{pmax}=6.0	RCKT1204MO-SM/SR/BR		
	MXR02  B35页	a_{pmax}=6.0	RCKT1204MO-SM/SR/BR	Steel, alloy steel, stainless steel, cast iron cavity profile milling, face milling	Cutting diameter of 63-200 R type with the strong cutting edge Applicable to machine of curved surface of die Screw clamping economical milling
		a_{pmax}=8.0	RCKT1606MO-SM/SR/BR		
		a_{pmax}=10.0	RCKT2006MO-SR/BR		
	MXR03  B37页	a_{pmax}=4.0	RDKW0803MO	Steel, alloy steel, stainless steel, cast iron cavity profile milling, face milling	Cutting diameter of 25-50 R type with the strong cutting edge Applicable to machine of curved surface of die Screw clamping economical milling
		a_{pmax}=5.0	RDKW10T3MO		
		a_{pmax}=6.0	RDKW1204MO		

Machine type	Sery/Shape	The approach	Applicable inserts	Usage	Features
Face milling	**MXR04**  B39	a_{pmax}=6.0	RDKW1204MO	Steel, alloy steel,stainless steel, cast iron cavity profile milling, face milling	Cutting diameter of 50-160 R type with the strong cutting edge Applicable to machine of curved surface of die
		a_{pmax}=8.0	RDKW1605MO		
		a_{pmax}=10.0	RDKW2006MO		
Square shoulder milling	**FXP01**  B41	Kr=90° a_{pmax}=10.5	APKT11T3□□-GF/GM/GR APKT11T3□□-AH	Steel, alloy steel,stainless steel, cast iron, aluminum alloy milling	Straight shank and weldon shank,cutting diameter of 12-63 Kr 90° used for square shoulder milling, slot milling, slope processing. With wiper insert, also suitable for face milling Insert for 3D helical cutting edge,less cutting force
		Kr=90° a_{pmax}=15.5	APKT160408- GF/GM/GR APKT160408-AH		
	FXP02  B47	Kr=90° a_{pmax}=10.5	APKT11T3□□- GF/GM/GR APKT11T3□□-AH	Steel, alloy steel, stainless steel, cast iron, aluminum alloy face milling processing	Cutting diameter of 50-160 Kr 90° used for square shoulder milling With wiper insert, also suitable for face milling Insert for 3D helical cutting edge,less cutting force
		Kr=90° a_{pmax}=15.5	APKT160408- GF/GM/GR APKT160408-AH		
	FXP03  B50	Kr=90° a_{pmax}=39.0	APKT11T3□□- GF/GM/GR APKT11T3□□-AH	Steel, alloy steel,stainless steel, cast iron, aluminum alloy large cutting depth milling	Cutting diameter of 50-100 End mills with positive helical angle,good chip removal. Used for side milling and slot machining Close pitch, high processing efficiency
	FXP04  B51	Kr=90° a_{pmax}=58.0	APKT11T3□□- GF/GM/GR APKT11T3□□-AH	Steel, alloy steel,stainless steel, cast iron, aluminum alloy large cutting depth milling	Cutting diameter of 50-100 End mills with positive helical angle,good chip removal Used for side milling and slot machining Close pitch, high processing efficiency
	FXP05  B55	Kr=90° a_{pmax}=40.0	APMT1135PDR APMT160408PDER	Steel, alloy steel, stainless steel, cast iron multifunctional drilling and milling	Cutting diameter of 25-40 End edge over center, for drilling directly

Machine type	Sery/Shape	The approach	Applicable inserts	Usage	Features
Three-side milling	**SXP03**  B58  B59	Cutting depth is determined by specification details	MPHT□□	Steel, alloy steel, stainless steel, cast iron groove milling processing	Cutting diameter of 80-250 Two mounting styles: mounting by keyway and Arbor mounting Slot cutting width series of 8,10,12, 16,18,20mm
Special milling (High feed milling)	**XXR01**  B61  B61  B63  B64	Cutting depth is determined by specification details	SDMT□□-SM/GM	Steel, alloy steel,stainless steel, cast iron cavity profile milling, face milling	Cutting diameter of 25-100 Straight shank and Arbor mounting two mounting styles Effective decomposition radial cutting force, the realization of large feed cutting Can be used for plunge milling The double clamping, solid and reliable
			WPGT□□ZSR WPGT□□ZSR-GM	Steel, alloy steel,stainless steel, cast iron cavity profile milling, face milling	Cutting diameter of 20-100 Straight shank and Arbor mounting two mounting styles Effective decomposition radial cutting force, the realization of large feed cutting The double clamping, solid and reliable
Type groove milling	**TXP01**  B68	Kr=90°	MPHT□□	Cast iron table T type groove processing	Cutting diameter of 21-60 Processing T slot with nominal size12,14, 18,22,28,36 Use 86° rhombic positive insert

Machine type	Sery/Shape	The approach angle and maximum cutting dept (mm)	Applicable inserts	Usage	Features
Helical end milling	**LXP01**  B69	Kr=90° a_{pmax}=55	APKT150412-GM/ZM SPMT120408-GM/ZM	Steel,alloy steel, cast iron large cutting depth milling	Cutting diameter of 40,80 Coarse and differential pitch structure, less vibration Holistic structure with good rigidity; interchangeable heads achieve high economical efficiency
	 B70	Kr=90° a_{pmax}=144			
Chamfer milling	**DXZ01**  B73	Kr=30°	SPMT120408	Steel,alloy steel, stainless steel, cast iron chamfering processing	Cutting diameter of 12,25,32,36 With the function of milling small surface
	DXA01  B74	Kr=45°			
	DXD01  B75	Kr=60°			

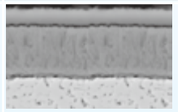
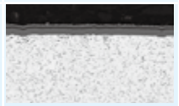
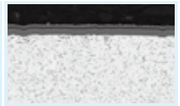


Indexable milling inserts grade overview

Material	ISO Code	Coated cemented carbide		Cemented carbide
		CVD	PVD	
P Steel	P01			
	P10	JT4330, JT4340	JT1025, JPP302	
	P20	JT4340	JPP302, JPP402, JT1225	
	P30	JT4340, JT4350	JPP402, JT1225	JP301
	P40	JT4350		JP301
M Stainless steel	M01			
	M10	JT4330	JT1025, JT1225	
	M20	JT4330, JT4340	JT1225	
	M30	JT4340, JT4350		JP301
	M40	JT4350		JP301
K Cast iron	K01			
	K10	JT3115	JT1015	JK001
	K20	JT3115, JT3125	JT1015, JT1025	JK001, JK201
	K30	JT3125	JT1025	JK201
	K40			
N Non-ferrous metal	N01			
	N10			JK001
	N20			JK001, JK101
	N30			JK101, JK201
S Heat resistant high quality alloy steel	S01			
	S10		JT1015	
	S20		JT1015, JT1025	
	S30		JT1025, JT1225	
H Harden material	H01			
	H10			
	H20			
	H30			

Indexable milling inserts grade classification

CVD Coated Cemented Carbide

Material	Coating structure	Structure picture	ISO Application	Application fields
JT4330	High toughness gradient alloy substrate and the combination of TiCN, ultrafine nano Al_2O_3 coating.		M10~30	Suitable for M material of roughing milling
JT4340	Toughness and hardness of matrix and the combination of TiCN, ultrafine nano Al_2O_3 coating.		P25~40 M20~35	Suitable for P&M material of roughing milling
JT4350	oughness and hardness of matrix and the combination of TiCN, ultrafine nano Al_2O_3 coating.		P25~40 M20~35	Suitable for P&M material of roughing millin
JT3115	High abrasion resistance matrix with good combination of TiCN, thick Al_2O_3 coating.		K05~25	Suitable for K material of semi-finishing milling and finishing milling
JT3125	High abrasion resistance matrix with good combination of TiCN, thick Al_2O_3 coating.		K15~35	Suitable for K material of semi-finishing milling and roughing milling

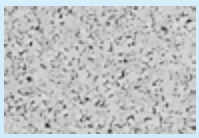
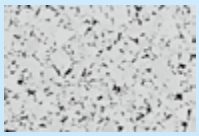
PVD Coated Cemented Carbide

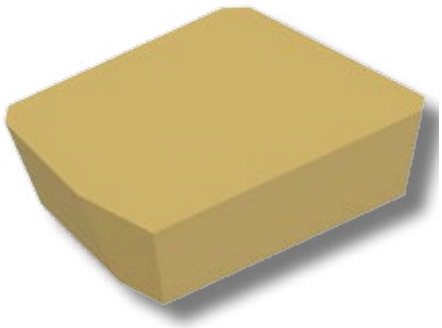
Material	Coating structure	ISO Application	Application fields
JT1015	Fine particles alloy matrix + nano coating	K05~K20	Suitable for K material of semi-finishing milling and finishing milling
JT1025	Excellent resistance to deformation ability substrate material + nano coating	P10~30 M10~30 S05~20	Strong commonality of PVD grade,widely applicable to P, M, S materials semi-finishing milling.
JT1035	High strength cemented carbide substrates + nano coating	M10~30	Suitable for M material of semi-finishing milling and roughing milling
JT1225		P25~40 M25~40	Suitable for P & M material of semi-finishing milling and finishing milling

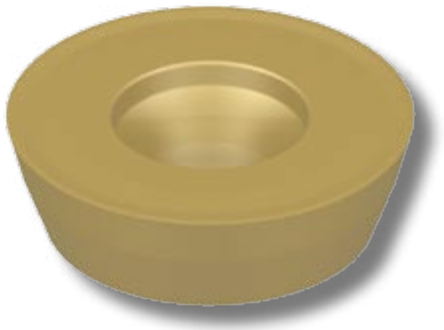
Indexable milling cutter

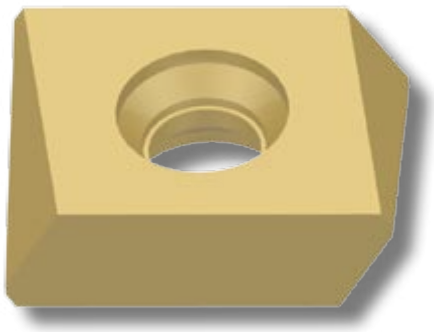
Indexable milling inserts grade classification

Cemented carbide

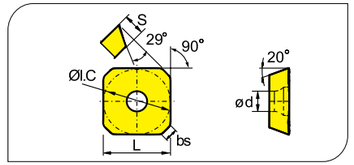
Material	Metallographical structure	ISO Application	Application fields
JP302		P15~30 M15~30	uitable for P & M material of finishing milling
JP402		P25~40 M25~40	Suitable for P & M material of roughing milling
JK001		K05~20	Suitable for K material of finishing milling
JK101		N05~25	Suitable for N material of semi-finishing milling and finishing milling
JK201		K15~35 N15~30	Suitable for K material of semi-finishing milling and roughing milling, Nmaterial of roughing milling.



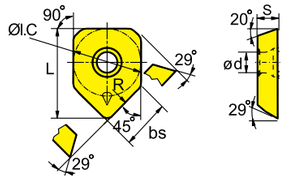




Insert selection



Shape	Type	Dimension(mm)						Coated cemented carbide													Cemented carbide				
								P							M					K						
		L	ØI.C	S	ød	bs	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SEET12T3-FM	13.4	13.4	3.97	4.1	2.55					★	●					●			★		○		●			
	SEET12T3-SM	13.4	13.4	3.97	4.1	2.55					★	○					★			★	●						
	SEET12T3-SR	13.4	13.4	3.97	4.1	2.55						★	○					★		●	●						
	SEET12T3-HL	13.4	13.4	3.97	4.1	2.55																			★	●	
	SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500					★					★				●						



★Recommended grade for stock ●Optional grade for stock ○Make-to-order

MXA01 milling insert groove selection

Materials \ Use	Finishing	Semi-finishing	Roughing
P	-SF	-FM -SM	-SR
N	AC		

Recommended cutting condition

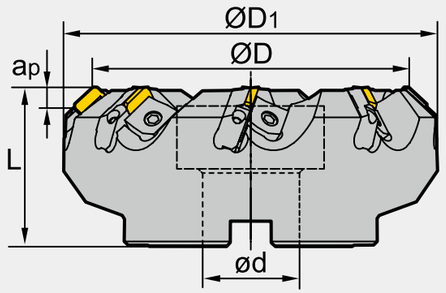
Material		Hardness HB	Grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-SF	-FM -SM	-SR
P	Low carbon steel, mild steel	≤180	JT1025 JT4130	270(220-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			JT1225	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
	High carbon steel, alloy steel	180-280	JT1025 JT4130	240 (200-320)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			JT1225	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
	Alloyed tool steel	280-350	JT1025	220 (180-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			JT1225	220 (170-340)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
M					-BF	-BM	
	Stainless stee	≤270	JT1025	150 (120-240)	0.15(0.1-0.2)	0.2 (0.1-0.3)	
			JT1225	160 (110-270)	0.15(0.1-0.2)	0.2 (0.1-0.3)	
K					-MF	-MM	-MR
	Cast iron	180-250	JT3115	210 (120-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
			JT3125	240 (180-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3(0.2-0.4)
N					-AH		
	Aluminium alloy	-	JK101	300-	0.25 (0.1-0.4)		
			JK201	300-			
S					-BF	-BM	
	High temperature alloy	≤400	JT1025	50(20-60)	0.1 (0.1-0.2)	0.15 (0.1-0.3)	
			JT1225	40(20-50)	0.1 (0.1-0.2)	0.15 (0.1-0.3)	

Face milling Kr:45°


Planar processing


Chamfering processing

MXA03 P M K



The cutting tool specifications

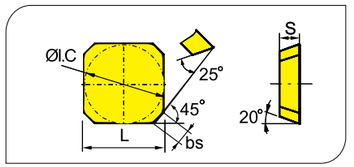
Type		Stock item		Dimension(mm)					Number Z	Form	Weight (kg)
		R	L	ØD	ØD1	ød	L	apmax			
MXA03	-080-A27-SE12-04	▲	△	80	103	27	50	5.5	4	A	1.8
	-100-B32-SE12-05	▲	△	100	122	32	50	5.5	5	B	2.4
	-125-B40-SE12-06	▲	△	125	147	40	63	5.5	6	B	4.4
	-160-B40-SE12-08	▲	△	160	181	40	63	5.5	8	B	6.4
	-200-C60-SE12-10	▲	△	200	221	60	63	5.5	10	C	8.5
	-250-C60-SE12-12	▲	△	250	270	60	63	5.5	12	C	14.1
	-315-D60-SE12-15	△	△	315	353	60	63	5.5	15	D	22.2
	-080-A27-SE15-04	▲	△	80	103	27	50	7.5	4	A	1.7
	-100-B32-SE15-05	▲	△	100	122	32	50	7.5	5	B	2.3
	-125-B40-SE15-06	▲	△	125	147	40	63	7.5	6	B	4.2
	-160-B40-SE15-08	▲	△	160	181	40	63	7.5	8	B	6.1
	-200-C60-SE15-10	▲	△	200	221	60	63	7.5	10	C	8.3
	-250-C60-SE15-12	▲	△	250	270	60	63	7.5	12	C	13.6
	-315-D60-SE15-15	▲	△	315	353	60	63	7.5	15	D	21.8

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Toolholder	Press cake	Double screw	Toolholder compress screw	Wrench
Ø80-Ø315	SE12	LSE12R/L	W01R/L	DM8×21X	LOM5×15.1	WT20T WH40T
Ø80-Ø315	SE15	LSE15R/L				

刀片选择



Shape	Type	Dimension(mm)				Coated cemented carbide											Cemented carbide				
						P							M			K					
		L	ØI.C	S	bs	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SEEN1203AFTN	12.7	12.7	3.18	1.8					●				●		★							●
	SEKN1203AFFN	12.7	12.7	3.18	1.8					●				●		★							●
	SEKN1203AFN	12.7	12.7	3.18	1.8					●				●		★							●
	SEKN1203AFTN	12.7	12.7	3.18	1.8					●				●		★							●
	SEKR1203AFN	12.7	12.7	3.18	1.8					●				●		★							
	SEKN1504AFN	15.875	15.875	4.76	1.6					●				●		★							●
	SEKN1504AFTN	15.875	15.875	4.76	1.6					●				●		★							●
	SEKR1504AFN	15.875	15.875	4.76	1.6									●		★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

Material		Hardness HB	Grade	cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1225	270（200-360）	0. 2（0. 1-0. 3）
			JT1025 JT4130	270（220-350）	0. 2（0. 1-0. 4）
			JT4140	220（180-300）	0. 25（0. 15-0. 3）
			JP301	140（100-220）	0. 27（0. 1-0. 4）
	High carbon steel, alloy steel	180-280	JT1225	240（180-350）	0. 2（0. 1-0. 3）
			JT1025 JT4130	240（200-320）	0. 2（0. 1-0. 4）
			JT4140	200（160-280）	0. 25（0. 15-0. 3）
			JP301	120（80-200）	0. 27（0. 1-0. 4）
	Alloyed tool steel	280-350	JT1225	220（170-340）	0. 2（0. 1-0. 3）
			JT1025 JT4130	220（180-300）	0. 2（0. 1-0. 4）
			JT4140	180（150-250）	0. 25（0. 15-0. 3）
			JP301	100（60-180）	0. 27（0. 1-0. 4）
M	stainless steel	≤270	JT1225	140（100-250）	0. 2（0. 1-0. 3）
			JT1025	130（100-220）	0. 2（0. 1-0. 4）
			JT4130	140（100-240）	0. 25（0. 15-0. 3）
K	cast iron	180-250	JT3115	210（120-300）	0. 2（0. 1-0. 3）
			JT3125	200（150-250）	0. 2（0. 1-0. 4）
			JK201	100（80-160）	0. 25（0. 1-0. 4）

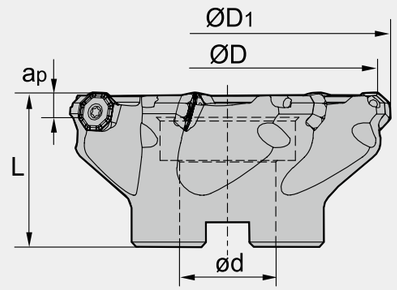
Face milling　Kr:45°


Planar processing


Chamfering processing

MXA04　P M K N


Screw press



The cutting tool specifications

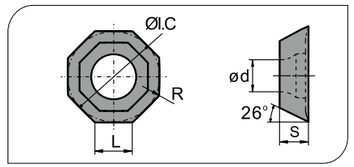
Type		Stock item		Dimension(mm)					Number Z	Form	Weight (kg)
		R	L	ØD	ØD1	ød	L	apmax			
MXA04	-050-A22-0F05-04	▲	△	50	56	22	40	3. 5	4	A	0. 3
	-050-A22-0F05-05	△	△	50	56	22	40	3. 5	5	A	0. 4
	-063-A22-0F05-05	▲	△	63	69	22	40	3. 5	5	A	0. 5
	-080-A27-0F05-06	▲	△	80	86	27	50	3. 5	6	A	0. 8
	-100-B32-0F05-07	▲	△	100	106	32	50	3. 5	7	B	1. 2
	-125-B40-0F05-08	▲	△	125	130	40	63	3. 5	8	B	2. 7
	-160-B40-0F05-10	▲	△	160	165	40	63	3. 5	10	B	5. 1
	-160-C40-0F05-10	△	△	160	165	40	63	3. 5	10	C	4. 1

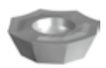
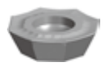
▲Always stock　△Make-to-order

The cutting tool parts

Diameter ØD	Insert compress screw	Wrench	
			
Ø50- Ø63	I60M4×8.4	WT15IS	
Ø80 -Ø160	I60M4×10		

Insert selection



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M			K						
		L	ØI.C	S	ød	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	OFKT05T3-SF	5.26	12.7	3.97	4.4	0.5				○					●		★			○				○
	OFKT05T3-SM	5.26	12.7	3.97	4.4	0.5				○					●		★			○				○
	OFKT05T3-AH	5.26	12.7	3.97	4.4	0.5																★	●	

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

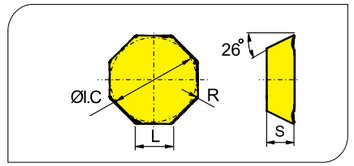
milling insert chipbreaker selection

Usage / Materials classification	Finishing	Semi-finishing
P	-SF	-SM
M		
K		
N	-AH	

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters		
				V(m/min)	f(mm/z)	
					-SF	-SM
P	Low carbon steel, mild steel	≤180	JT1025	270（220-350）	0.2（0.1-0.3）	0.25（0.1-0.4）
			JT1225	270（200-360）	0.2（0.1-0.3）	0.25（0.1-0.4）
			JT4140	220（180-300）	0.2（0.1-0.3）	0.25（0.1-0.4）
			JT1235	230（170-350）	0.2（0.1-0.3）	0.25（0.1-0.4）
	High carbon steel, alloy steel	180-280	JT1025	240（200-320）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT1225	240（180-350）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT4140	200（160-280）	0.2（0.1-0.3）	0.25（0.1-0.4）
			JT1235	220（150-330）	0.2（0.1-0.3）	0.25（0.1-0.4）
	Alloyed tool steel	280-350	JT1025	220（180-300）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT1225	220（170-340）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT4140	180（150-250）	0.2（0.1-0.3）	0.25（0.1-0.4）
			JT1235	190（130-300）	0.2（0.1-0.3）	0.25（0.1-0.4）
M	Stainless steel	≤270	JT1225	160（110-270）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT1235	140（100-250）	0.15（0.1-0.3）	0.2（0.1-0.4）
			JT1025	150（120-250）	0.15（0.1-0.3）	0.2（0.1-0.4）
K	Cast iron	180-250	JT3125	210（120-300）	0.2（0.1-0.3）	0.25（0.1-0.4）
N					-AH	
	Aluminium alloy	-	JK101	300-	0.15（0.05-0.3）	

Insert selection



Shape	Type	Dimension(mm)				Coated cemented carbide											Cemented carbide				
						P							M				K				
		L	ØI.C	S	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	OFKR0704-SF	7.45	17.94	4.76	0.8				●	○				○	●		★							
	OFKR0704-SM	7.45	17.94	4.76	0.8				●	○				○	●		★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

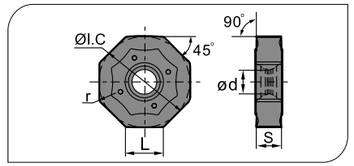
MXA04 milling insert chip breaker choice

Usage / Materials classification	Finishing	Semi-finishing
P	-SF	-SM
M		
K		

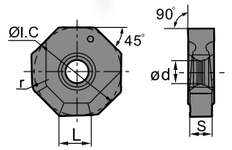
Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters		
				V(m/min)	f(mm/z)	
					-SF	-SM
P	Low carbon steel, mild steel	≤180	JT1025 JT1035	270 (220-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			JT1225	270 (200-360)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			JT4140	220 (180-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			JT1235	230 (170-350)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	High carbon steel, alloy steel	180-280	JT1025 JT1035 JT4130	240 (200-320)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT1225	240 (180-350)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT4140	200 (160-280)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
	Alloyed tool steel	280-350	JT1025 JT1035 JT4130	220 (180-300)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT1225	220 (170-340)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT4140	180 (150-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			JT1235	190 (130-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
M	Stainless steel	≤270	JT1225	160 (110-270)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT1025	150 (120-250)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
			JT1035	230 (180-300)	0.15 (0.1-0.3)	0.2 (0.1-0.4)
K	Cast iron	180-250	JT3115	210 (120-300)	0.2 (0.1-0.3)	0.25 (0.1-0.4)
			JT3125	200 (150-250)	0.2 (0.1-0.3)	0.25 (0.1-0.4)

Insert selection



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K						
		L	ØI.C	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	ONHU060408-GF	6.58	15.875	4.76	4.4	0.83					●					★		★							
	ONHU08T508-GF	8.37	20.2	5.77	5.3	0.83					●					★		★							
	ONHU060408-GM	6.58	15.875	4.76	4.4	0.83					●							★							
	ONHU08T508-GM	8.37	20.2	5.79	5.3	0.83					●							★							
	ONHU08T508-W	6.9	20.5	6.00	5.3	0.80					●					★		★							



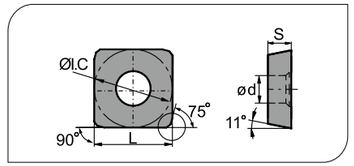
★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters			
				V_c(m/min)	f_z(mm/z)	a_{pmax}(mm)	
						ONHU06□□□□-GF/GM	ONHU08□□□□-GF/GM/W
P	Low carbon steel, mild steel	≤180	JT1025 JT1225 JT1235 JT4025	270（220-350）	0.2（0.1-0.4）	4	5
P	High carbon steel, alloy steel	180-280	JT1025 JT1225 JT4025	260（200-320）	0.2（0.1-0.4）	4	5
P	Alloyed tool steel	280-350	JT1205 JT1225 JT1235 JT4230	240（180-300）	0.2（0.1-0.4）	4	5
M	Stainless steel	≤270	JT1025 JT1225	230（180-300）	0.2（0.1-0.3）	4	5
K	Cast iron	180-250	JT3115	270（150-300）	0.4（0.1-0.5）	4	5

Note: Wiper insert recommend every tooth feeding fz≤0.25mm/.

Insert selection



Shape	Type	Dimension(mm)				Coated cemented carbide												Cemented carbide				
						P							M				K					
		L	ØI.C	S	ød	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPKW1204EDFR	12.7	12.7	4.76	5.56					★							★							★
	SPKW1204EDSR	12.7	12.7	4.76	5.56					★							★							★
	SPKT1204EDR	12.7	12.7	4.76	5.56					★							★							★

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

MXEO2 milling insert cutting edge processing forms

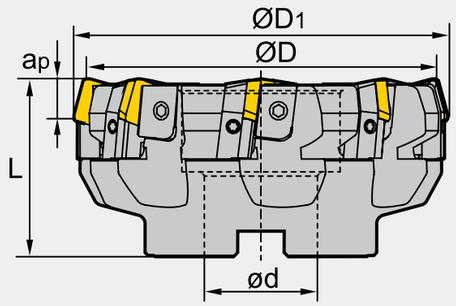
Materials classification \ Usage	Finishing	Semi-finishing	Roughing
P	EDFR	EDR	EDSR
M	EDFR	EDR	
K	EDFR	EDR	

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1025	270（200-360）	0.2（0.1-0.3）
P	High carbon steel, alloy steel	180-280	JT1225	240（180-350）	0.2（0.1-0.3）
P	Alloyed tool steel	280-350	JT1225	220（170-340）	0.2（0.1-0.3）
M	Stainless steel	≤270	JT1225	160（110-270）	0.2（0.1-0.3）
K	Cast iron	180-250	JT3125	160（120-200）	0.2（0.1-0.3）

Face milling Kr:75° Planar processing

MXE03 P M K



The cutting tool specifications

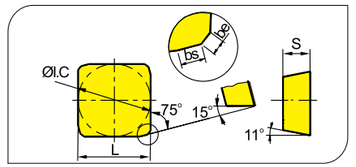
Type		Stock item		Dimension(mm)					Number Z	Form	Weight (kg)
		R	L	ØD	ØD1	ød	L	apmax			
MXE03	-080-A27-SP12-04	▲	△	80	84	27	50	6	4	A	1.1
	-100-B32-SP12-06	▲	△	100	104	32	50	6	6	B	1.9
	-125-B40-SP12-08	▲	△	125	129	40	63	6	8	B	3.5
	-160-B40-SP12-10	▲	△	160	164	40	63	6	10	B	5.7
	-200-C60-SP12-12	▲	△	200	203	60	63	6	12	C	8.2
	-250-C60-SP12-16	▲	△	250	253	60	63	6	16	C	13.8
	-315-D60-SP12-20	▲	△	315	318	60	70	6	20	D	23.5
	-080-A27-SP15-04	▲	△	80	84	27	50	8	4	A	1.0
	-100-B27-SP15-06	▲	△	100	104	27	50	8	6	B	1.8
	-125-B40-SP15-08	▲	▲	125	129	40	63	8	8	B	3.3
	-160-B40-SP15-10	▲	▲	160	164	40	63	8	10	B	5.4
	-200-C60-SP15-12	▲	▲	200	204	60	63	8	12	C	7.9
	-250-C60-SP15-16	▲	▲	250	253	60	63	8	16	C	13.6
	-315-D60-SP15-20	▲	▲	315	318	60	70	8	20	D	23.1

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Toolholder	Press cak	Press screw	Toolholder compress screw	Wrench
Ø80-Ø100	SP12	LSP12R/L	W04R/L	WM8×17	LOM5×15.1	WT20T WT25T
Ø125-Ø315				WM8×22		
Ø80-Ø315	SP15	LSP15R/L	W04R/L	WM8×22		

Insert selection



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M			K						
		L	ØI.C	S	be	bs	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPKN1203EDER	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDEL	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDFR	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDFL	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDSKR	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDSKL	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDTKR	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDTKL	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDS31R	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDS31L	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDT31R	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1203EDT31L	12.7	12.7	3.18	1	1.4					★		★					●	○		○				●
	SPKN1504EDER	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDEL	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDFR	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDFL	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDSKR	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDSKL	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDTKR	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDTKL	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDS32R	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDS32L	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDT32R	15.875	15.875	4.76	1	1.4							★								○				●
	SPKN1504EDT32L	15.875	15.875	4.76	1	1.4							★								○				●
	SPKR1504EDR-GM	15.875	15.875	4.76	1	1.4							★								○				●
	SPKR1504EDL-GM	15.875	15.875	4.76	1	1.4							★								○				●

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Ordering instructions: **SPKN1203EDT3 1 R** Chamfer Angle is 20°,chamfering width is 0.15 mm,if you want to set the other form please refer to the insert naming rules procurement.

milling insert cutting edge processing forms

Edge processing form	Recommended selection
SP□□EDER/L	Round edge processing, suitable for steel, stainless steel material semi-finishing and finishing.
SP□□EDFR/L	Sharp edge, suitable for finishing of cast iron materials.
SP□□EDSKR/L **SP□□EDS□□R/L**	After chamfering edge and circle, strong resistance to the collapse edge , suitable for roughing of steel under bad condition.
SP□□EDTKR/L **SP□□EDT□□R/L**	After chamfering edge processing, suitable for steel, stainless steel, cast iron of semi-finishing and roughing.
SP□□EDR/L-GM	Edge of three-dimensional groove type structure, can reduce the cutting force, enhance the capacity of chip control, improve the blade life, widely used in steel, stainless steel, semi-finishing of cast iron and other materials.

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1225	270(200-360)	0.2 (0.1-0.4)
			JT1235	230 (170-350)	0.24 (0.1-0.3)
			JT1025 JT4130	270(220-350)	0.2 (0.1-0.4)
			JT4140	220 (180-300)	0.25 (0.15-0.3)
			JP301	140 (100-220)	0.22 (0.1-0.3)
	High carbon steel, alloy steel	180-280	JT1225	240 (180-350)	0.2 (0.1-0.3)
			JT1235	220 (150-330)	0.24 (0.1-0.3)
			JT1025 JT4130	240 (200-320)	0.2 (0.1-0.4)
			JT4140	200 (160-280)	0.25 (0.15-0.3)
			JP301	120 (80-200)	0.22 (0.1-0.3)
	Alloyed tool steel	280-350	JT1225	220 (170-340)	0.2 (0.1-0.3)
			JT1235	190 (130-300)	0.24 (0.1-0.3)
			JT1025 JT4130	220 (180-300)	0.2 (0.1-0.4)
			JT4140	180 (150-250)	0.25 (0.15-0.3)
			JP301	100 (60-180)	0.22 (0.1-0.3)
M	Stainless steel	≤270	JT1225	160 (110-270)	0.2 (0.1-0.3)
			JT1235	140 (100-250)	0.24 (0.1-0.3)
			JT1025	150 (120-240)	0.2 (0.1-0.4)
			JT4140	140 (100-240)	0.25 (0.15-0.3)
K	Cast iron	180-250	JT3115	210 (120-300)	0.12 (0.08-0.3)
			JT3125	160 (120-200)	0.2 (0.1-0.3)
			JK101	100 (80-160)	0.24 (0.15-0.4)

Face milling

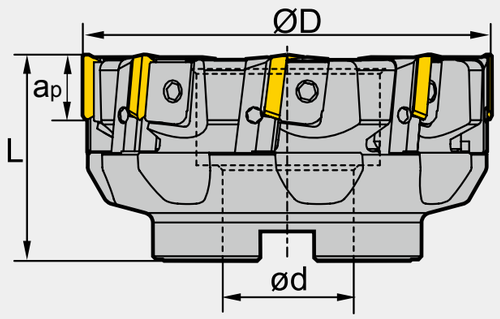
Kr:90°


Planar processing


Step processing

MXP01

P M K



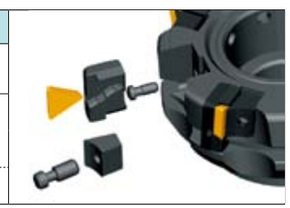
The cutting tool specifications

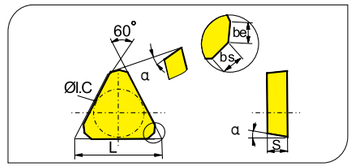
Type		Stock item		Dimension(mm)				Number Z	Form	Weight (kg)
		R	L	ØD	ød	L	apmax			
MXP01	-080-A27-TP22-04	▲	△	80	27	50	18	4	A	1.2
	-100-B32-TP22-06	▲	△	100	32	50	18	6	B	1.7
	-125-B40-TP22-08	▲	△	125	40	63	18	8	B	3.2
	-160-B40-TP22-10	▲	△	160	40	63	18	10	B	5.1
	-200-C60-TP22-12	▲	△	200	60	63	18	12	C	7.4
	-250-C60-TP22-16	▲	△	250	60	63	18	16	C	12.3
	-315-D60-TP22-20	▲	△	315	60	70	18	20	D	21.9

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Toolholder	Press cake	Press screw	Toolholder compress screw	Wrench
					
Ø80 Ø100	LTP4R1/L1	W04R/L	WM8×17	LOM5×15.1	WT20T WT25T
Ø125 ~ Ø315	LTP4R/L		WM8×22		





Shape	Type	Dimension(mm))						Coated cemented carbide											Cemented carbide				
								P							M			K					
		L	ØI.C	S	be	bs	α	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○
	TPKN2204PDFL	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	11°					★					★			●		○				○

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT4130	270 (220-350)	0.2 (0.1-0.4)
			JT4140	220 (180-300)	0.2 (0.08-0.3)
			JT1225	270 (200-360)	0.2 (0.1-0.3)
			JP1235	140 (100-220)	0.22 (0.1-0.3)
	High carbon steel, alloy steel	180—280	JT4130	240 (200-320)	0.2 (0.1-0.4)
			JT4140	200 (160-280)	0.2 (0.08-0.3)
			JT1225	240 (180-350)	0.2 (0.1-0.3)
			JP1235	120 (80-200)	0.22 (0.1-0.3)
	Alloyed tool steel	280—350	JT4130	220 (180-300)	0.2 (0.1-0.4)
			JT4140	180 (150-250)	0.2 (0.08-0.3)
			JT1225	220 (170-340)	0.2 (0.1-0.3)
			JP1235	100 (60-180)	0.22 (0.1-0.3)
M	Stainless stee	≤270	JT4140	140 (100-240)	0.2 (0.08-0.3)
			JT1225	140 (100-250)	0.2 (0.1-0.3)
K	Cast iron	180—250	JT3115	210 (120-300)	0.2 (0.1-0.3)
			JT3125	160 (120-200)	0.35 (0.10-0.4)
			JK202	100 (80-160)	0.24 (0.15-0.4)

Face milling

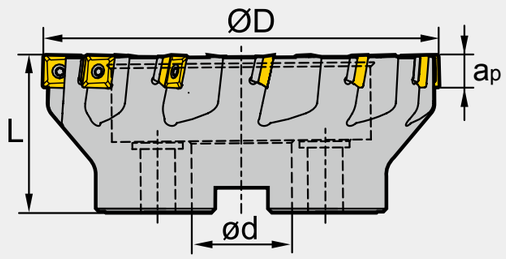
Kr:90°


Planar processing


Step processing

MXP02

P M K



The cutting tool specifications

Type		Stock item	Dimension(mm) ØD	ød	L	apmax	Number Z	Form	Weight (kg)
MXP02	-050-A22-SE09-05	▲	50	22	40	6.7	5	A	0.3
	-063-A22-SE09-06	▲	63	22	40	6.7	6	A	0.5
	-080-A27-SE09-08	▲	80	27	50	6.7	8	A	0.9
	-100-B32-SE09-08	▲	100	32	50	6.7	8	B	1.7
	-100-B32-SE09-10	△	100	32	50	6.7	10	B	1.7
	-125-B40-SE09-12	△	125	40	63	6.7	12	B	2.6

▲Always stock △Make-to-order

The cutting tool specifications

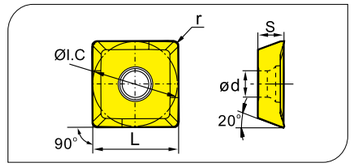
Type		Stock item	Dimension(mm) ØD	ød	L	apmax	Number Z	Form	Weight (kg)
MXP02	-050-A22-SE12-03	▲	50	22	40	10.8	3	A	0.3
	-063-A22-SE12-04	▲	63	22	40	10.8	4	A	0.4
	-080-A27-SE12-04	▲	80	27	50	10.8	4	A	0.9
	-100-B32-SE12-05	▲	100	32	50	10.8	5	B	1.2
	-125-B40-SE12-06	▲	125	40	63	10.8	6	B	3.1
	-160-C40-SE12-08	▲	160	40	63	10.8	8	C	4.1
	-250-C60-SE12-12	▲	250	60	63	10.8	12	C	11.1
	-050-A22-SE12-04	▲	50	22	40	10.8	4	A	0.3
	-063-A22-SE12-05	▲	63	22	40	10.8	5	A	0.4
	-080-A27-SE12-06	▲	80	27	50	10.8	6	A	0.8
	-100-B32-SE12-07	▲	100	32	50	10.8	7	B	1.2
	-125-B40-SE12-08	▲	125	40	63	10.8	8	B	3.0
	-160-C40-SE12-12	▲	160	40	63	10.8	12	C	3.9
	-050-A22-SE12-05	▲	50	22	40	10.8	5	A	0.2
	-063-A22-SE12-06	▲	63	22	40	10.8	6	A	0.4
	-080-A27-SE12-08	▲	80	27	50	10.8	8	A	0.8
	-100-B32-SE12-10	▲	100	32	50	10.8	10	B	1.2
	-125-B40-SE12-12	▲	125	40	63	10.8	12	B	2.9
	-200-C60-SE12-16	▲	200	60	63	10.8	16	C	6.1
	-250-C60-SE12-18	▲	250	60	63	10.8	18	C	10.9
	-315-D60-SE12-24	▲	315	60	63	10.8	24	D	21.6

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Shim	Insert compress screw	Shim compress screw	Wrench	Wrench	
Ø50 ~ Ø125	SE09	--	M3×7	--	WT09IS	--	
Ø50	SE12	--	M3.5×10	--	WT15IS	--	
Ø63 ~ Ø315		S12BSX	M3.5×12	SM5×7XA		WH35L	

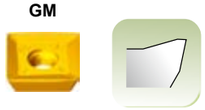
刀片选择



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K					
		L	ØI.C	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SEET09T308PER-GF	9.525	9.525	4.01	3.3	0.8				★							★							○
	SEET09T308PER-GM	9.525	9.525	4.01	3.3	0.8				★							★							○
	SEET09T308PER-GR	9.525	9.525	4.01	3.3	0.8					★						★							○
	SEET120308PER-GF	13.308	13.308	4.04	4.1	0.8	★										★							○
	SEET120308PER-GM	13.308	13.308	4.04	4.1	0.8	★										★							○
	SEET120308PER-GR	13.308	13.308	4.04	4.1	0.8	★										★							○

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

MXPO2 milling insert chip breaker choice

Materials classification \ Usage	Finishing	Semi-finishing	Roughing
P	GF 	GM 	GR 
M			
K			

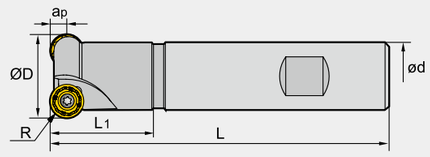
Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-PF	-PM	-PR
P	Low carbon steel, mild steel	≤180	JT1025	270(220-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1225	270(200-360)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1035	230 (170-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	High carbon steel, alloy steel	180—280	JT1025	240 (200-320)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1225	240 (180-350)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1035	220 (150-330)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	Alloyed tool steel	280—350	JT1025	220 (180-300)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1225	220 (170-340)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1035	190 (130-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
M	Stainless steel	≤270	JT1025	150 (120-240)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1225	160 (110-270)	0.1(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT1035	140 (100-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
K	Cast iron	180—250	JT3105	210 (120-300)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT3115	160 (120-200)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
			JT3125	200 (150-250)	0.15(0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)

Face milling


Profile machining Side milling(R) Slope processing Planar processing Spiral machining Cavity machining

MXR01 P M K



The cutting tool specifications

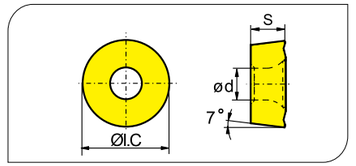
Type		Stock item	Dimension(mm)						Number Z	Weight (kg)
			ØD	ød	L	L_1	R	a_{pmax}		
MXR01	-025-XP20-RC10-02	▲	25	20	100	30	5	5	2	0.2
	-032-XP25-RC10-02	▲	32	25	120	35	5	5	2	0.5
	-040-XP32-RC12-03	▲	40	32	120	40	6	6	3	0.7
	-050-XP32-RC12-03	▲	50	32	120	40	6	6	3	0.8

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert compress screw	Wrench	
			
Ø25 -Ø32	I60M4×8.4	WT15S	
Ø40 -Ø50	I60M3.5×10		

Insert selection



Shape	Type	Dimension(mm)			Coated cemented carbide												Cemented carbide				
					P							M					K					
		ØI.C	S	ød	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RCKT10T3MO-SM	10.0	3.97	4.4					●						○		★							
	RCKT1204MO-SM	12.0	4.76	4.0					●						○		★							
	RCKT1204MO-SR	12.0	4.76	4.0					●						○		★							
	RCKT1204MO-BR	12.0	4.76	4.0					●						○		★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

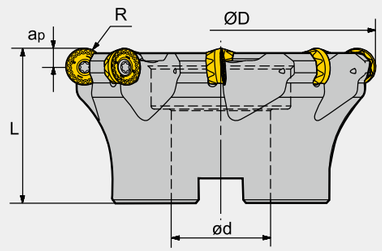
Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters		
				V(m/min)	f(mm/z)	
					-SM	-SR
P	Low carbon steel, mild steel	≤180	JT1025 JT4130	270 (220-350)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
			JT4140 JT4230	220 (180-300)	0.25 (0.1-0.5)	0.3 (0.2-0.8)
			JT1225	270 (200-360)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
	High carbon steel, alloy steel	180-280	JT1025 JT4130	240 (200-320)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
			JT4140 JT4230	200 (160-280)	0.25 (0.1-0.5)	0.3 (0.2-0.8)
			JT1225	240 (180-350)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
	Alloyed tool steel	280-350	JT1025 JT4130	220 (180-300)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
			JT4140 JT4230	180 (150-250)	0.2 (0.1-0.5)	0.3 (0.2-0.8)
			JT1225	220 (170-340)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
M	Stainless steel	≤270	JT1025	150 (120-240)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
			JT4140	150 (100-220)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
			JT1225	160 (110-270)	0.2 (0.1-0.4)	0.3 (0.2-0.6)
K	Cast iron	180-250	JT3125	210 (120-300)	0.2 (0.1-0.5)	0.3 (0.2-0.8)

B Indexable Milling Face milling tools

Face milling

MXR02



The cutting tool specifications

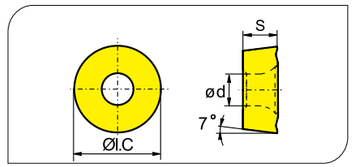
Type		Stock item	Dimension(mm)					Number Z	Form	Weight (kg)
			ØD	ød	L	R	apmax			
MXR02 Coarse pitch	-050-A22-RC12-03	△	50	22	40	6	6	3	A	0.29
	-063-A22-RC12-04	▲	63	27	50	6	6	4	A	0.41
	-080-B27-RC12-05	▲	80	27	50	6	6	5	B	0.81
	-100-B32-RC12-06	△	100	32	50	6	6	6	B	1.25
	-063-A22-RC16-04	△	63	22	40	8	8	4	A	0.35
	-080-B27-RC16-05	△	80	27	50	8	8	5	B	0.74
	-100-B32-RC16-06	▲	100	32	50	8	8	6	B	1.18
	-125-B40-RC16-07	△	125	40	63	8	8	7	B	2.49
	-080-A27-RC20-04	△	80	27	50	10	10	4	A	0.77
	-100-B32-RC20-05	△	100	32	50	10	10	5	B	1.07
	-125-B40-RC20-06	△	125	40	63	10	10	6	B	2.42
	-160-B40-RC20-06	△	160	40	63	10	10	6	B	4.17
Close pitch	-050-A22-RC12-05	△	50	22	40	6	6	5	A	0.27
	-063-A22-RC12-06	△	63	27	50	6	6	6	A	0.38
	-080-B27-RC12-07	△	80	27	50	6	6	7	B	0.79
	-100-B32-RC12-08	△	100	32	50	6	6	8	B	1.23
	-063-A22-RC16-05	△	63	22	40	8	8	5	A	0.34
	-080-B27-RC16-07	△	80	27	50	8	8	7	B	0.72
	-100-B32-RC16-08	△	100	32	50	8	8	8	B	1.17
	-125-B40-RC16-09	△	125	40	63	8	8	9	B	2.47
	-080-A27-RC20-05	△	80	27	50	10	10	5	A	0.74
	-100-B32-RC20-06	△	100	32	50	10	10	6	B	1.07
	-125-B40-RC20-07	△	125	40	63	10	10	7	B	2.39
	-160-B40-RC20-08	△	160	40	63	10	10	8	B	4.06

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Insert compress	Wrench	
				
Ø50 -Ø100	RCKT1204MO-□□	I60M3.5×10	WT15IS	--
Ø63 -Ø125	RCKT1606MO-□□	I60M5×13	--	WT20IT
Ø125 -Ø160	RCKT2006MO-□□	I43M6×16	--	WT25IT

Insert selection



Shape	Type	Dimension(mm)			Coated cemented carbide												Cemented carbide				
					P							M				K					
		ØI.C	S	ød	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RCKT1204MO-SM	12.0	4.76	4.0					●		●				○	★							
	RCKT1606MO-SM	16.0	6.35	5.56					●		●				○	★							
	RCKT1204MO-SR	12.0	4.76	4.0					●		●				○	★							
	RCKT1606MO-SR	16.0	6.35	5.56					●		●				○	★							
	RCKT2006MO-SR	20.0	6.35	6.55					●		●				○	★							

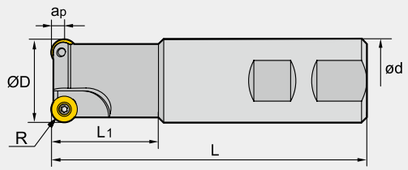
★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters			
				V(m/min)	f(mm/z)		
					-SM	-SR	-BR
P	Low carbon steel, mild steel	≤180	JT1025 JT4130	270 (220-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
			JT4140 JT1035	220 (180-300)	0.25(0.1-0.5)	0.3 (0.2-0.8)	
			JT1125	270 (200-360)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
	High carbon steel, alloy steel	180-280	JT1025 JT4130	240 (200-320)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
			JT4140 JT1035	200 (160-280)	0.25(0.1-0.5)	0.3 (0.2-0.8)	
			JT1225	240 (180-350)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
	Alloyed tool steel	280-350	JT1025 JT4130	220 (180-300)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
			JT4140 JT1035	180 (150-250)	0.2(0.1-0.5)	0.3 (0.2-0.8)	
			JT1225	220 (170-340)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
M	Stainles s steel	≤270	JT1025	150 (120-240)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
			JT1035	150 (100-220)	0.2(0.1-0.4)	0.3 (0.2-0.6)	0.3(0.2-0.6)
			JT4140	150 (100-220)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
			JT1225	160 (110-270)	0.2(0.1-0.4)	0.3 (0.2-0.6)	
K	Cast iron	180-250	JT3125	210 (120-300)	0.2(0.1-0.5)	0.3 (0.2-0.8)	

Face milling

MXR03 P M K



The cutting tool specifications

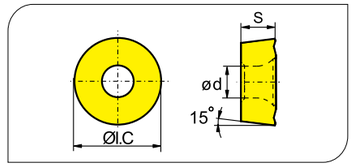
Type		Stock item	Dimension(mm)						Number Z	Weight (kg)
			ØD	ød	L	L1	R	apmax		
MXR03	-016-XP16-RD08-02	▲	16	16	100	25	4	4	2	0. 1
	-025-XP25-RD08-02	▲	25	25	100	30	4	4	2	0. 3
	-032-XP32-RD10-02	▲	32	32	120	40	5	5	2	0. 7
	-040-XP32-RD12-03	▲	40	32	120	40	6	6	3	0. 7
	-050-XP32-RD12-04	▲	50	32	120	40	6	6	4	0. 8

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert compress screw	Wrench
Ø25	I60M3×7	WT09IP
Ø32-050	I60M4×10	WT15IP

Insert selection



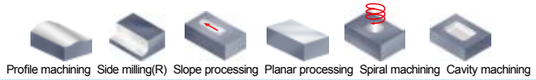
Shape	Type	Dimension(mm)			Coated cemented carbide												Cemented carbide				
					P							M				K					
		ØI.C	S	ød	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RDKW0803MO	8	3. 18	3. 4				●								★							
	RDKW10T3MO	10	3. 97	4. 4				●								★							
	RDKW1204MO	12	4. 76	4. 4				●								★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

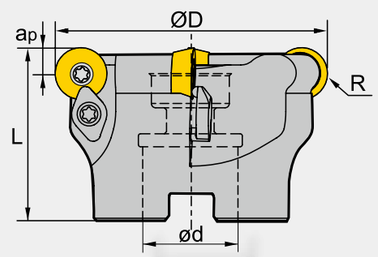
Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1025 JT4130	270（220-350）	0. 2（0. 08-0. 45）
			JT4140 JT1035	220（180-300）	0. 25（0. 15-0. 45）
			JT1225	270（200-360）	0. 2（0. 1-0. 45）
	High carbon steel, alloy steel	180-280	JT1025 JT4130	240（200-320）	0. 2（0. 08-0. 45）
			JT4140 JT1035	200（160-280）	0. 25（0. 15-0. 45）
			JT1225	240（180-350）	0. 2（0. 1-0. 45）
	Alloyed tool steel	280-350	JT1025 JT4130	220（180-300）	0. 2（0. 08-0. 45）
			JT4140 JT1035	180（150-250）	0. 25（0. 15-0. 45）
			JT1225	220（170-340）	0. 2（0. 1-0. 45）
M	Stainless steel	≤270	JT1225	150（120-240）	0. 2（0. 08-0. 45）
			JT1025	150（120-240）	0. 2（0. 08-0. 45）
			JT4140 JT1035	150（100-220）	0. 25（0. 1-0. 45）
			JT1225	160（110-270）	0. 2（0. 1-0. 45）
K	Cast iron	180-250	JT3125	210（120-300）	0. 2（0. 1-0. 45）

Face milling



MXR04



The cutting tool specifications

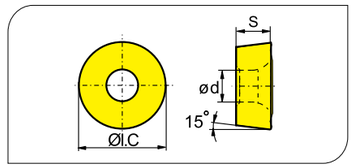
Type		Stock item	Dimension(mm)					Number Z	Form	Weight (kg)
			ØD	ød	L	R	$a_p$max			
MXR04 Coarse pitch	-050-A22-RD12-03	▲	50	22	40	6	6	3	A	0. 25
	-063-A22-RD12-04	▲	63	22	40	6	6	4	A	0. 37
	-080-B27-RD12-05	▲	80	27	50	6	6	5	B	0. 77
	-063-A22-RD16-04	△	63	22	40	8	8	4	A	0. 32
	-080-B27-RD16-05	△	80	27	50	8	8	5	B	0. 67
	-100-B32-RD16-06	▲	100	32	50	8	8	6	B	1. 18
	-125-B40-RD16-08	△	125	40	63	8	8	8	B	2. 55
	-125-B40-RD20-06	▲	125	40	63	10	10	6	B	2. 33
	-160-B40-RD20-07	▲	160	40	63	10	10	7	B	3. 83
Close pitch	-050-A22-RD12-05	△	50	22	40	6	6	5	A	0. 23
	-063-A22-RD12-06	△	63	22	40	6	6	6	A	0. 48
	-080-B27-RD12-07	△	80	27	50	6	6	7	B	0. 78
	-063-A22-RD16-05	△	63	22	40	8	8	5	A	0. 3
	-080-B27-RD16-07	△	80	27	50	8	8	7	B	0. 66
	-100-B32-RD16-08	△	100	32	50	8	8	8	B	1. 18
	-125-B40-RD16-10	△	125	40	63	8	8	10	B	2. 51
	-125-B40-RD20-08	△	125	40	63	10	10	8	B	2. 45
	-160-B40-RD20-10	△	160	40	63	10	10	10	B	3. 98

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Insert compress screw	Press cake	Press cake compress	Wrench	
Ø50-Ø80	RDKW1204MO	I60M3.5×10	WD-204	I60M4×10	WT15IP	--
Ø63 -Ø125	RDKW1605MO	I60M5×13	WD-207	I60M5×13	--	WT20IT
Ø125 -Ø160	RDKW2006MO	I43M6×16	--	--	--	WT25IT

Insert selection



Shape	Type	Dimension(mm)			Coated cemented carbide											Cemented carbide				
					P							M				K				
		ØI.C	S	ød	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RDKW1204MO	12. 0	4. 76	4. 4				●								★							
	RDKW1605MO	16. 0	5. 56	5. 5				●								★							
	RDKW2006MO	20. 0	6. 35	6. 5				●								★							

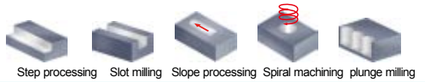
★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1025 JT4130	270 (220-350)	0. 2 (0. 08-0. 45)
			JT4140 JT1035	220 (180-300)	0. 25 (0. 15-0. 45)
			JT1125	270 (200-360)	0. 2 (0. 1-0. 45)
	High carbon steel, alloy steel	180-280	JT1025 JT4130	240 (200-320)	0. 2 (0. 08-0. 45)
			JT4140 JT1035	200 (160-280)	0. 25 (0. 15-0. 45)
			JT1225	240 (180-350)	0. 2 (0. 1-0. 45)
	Alloyed tool steel	280-350	JT1025 JT4130	220 (180-300)	0. 2 (0. 08-0. 45)
			JT4140 JT1035	180 (150-250)	0. 25 (0. 15-0. 45)
			JT1225	220 (170-340)	0. 2 (0. 1-0. 45)
M	Stainless steel	≤270	JT1225	150 (120-240)	0. 2 (0. 08-0. 45)
			JT1025	150 (120-240)	0. 2 (0. 08-0. 45)
			JT4140 JT1035	150 (100-220)	0. 25 (0. 1-0. 45)
			JT1225	160 (110-270)	0. 2 (0. 1-0. 45)
K	Cast iron	180-250	JT3125	210 (120-300)	0. 2 (0. 1-0. 45)

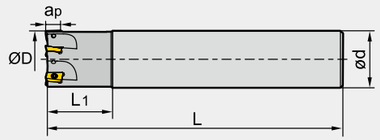
Square shoulder milling cutter

Kr:90°



FXP01 P M K N

Straight shank



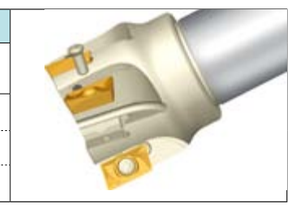
The cutting tool specifications

Size		Stock item	Dimension(mm) ØD	ød	L	L1	apmax	Number Z	Weight (kg)
FXP01 Straight shank	**-012-G16-AP11-01**	▲	12	16	85	25	10.5	1	0.1
	-016-G16-AP11-02	▲	16	16	90	25	10.5	2	0.1
	-020-G20-AP11-02	▲	20	20	100	30	10.5	2	0.2
	-025-G25-AP11-03	▲	25	25	115	35	10.5	3	0.4
	-032-G32-AP11-04	▲	32	32	125	40	10.5	4	0.7
	-025-G25-AP16-02	▲	25	25	115	35	15.5	2	0.4
	-032-G32-AP16-03	▲	32	32	125	40	15.5	3	0.7
	-040-G32-AP16-04	▲	40	32	130	42	15.5	4	0.8
	-050-G32-AP16-05	▲	50	32	135	45	15.5	5	1.0
	-063-G32-AP16-06	▲	63	32	135	45	15.5	6	1.4

▲Always stock △Make-to-order

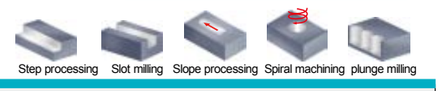
The cutting tool parts

Diameter ØD	Insert	Screw	Wrench	
Ø12-Ø32	AP11	▮60M2.5×6.5T	WT08▮P	--
Ø25-Ø63	AP16	▮60M4×8.4	--	WT15▮S



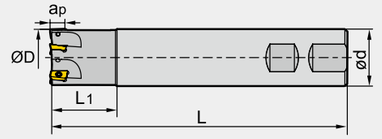
Square shoulder milling cutter

Kr:90°



FXP01 P M K N

Scapple shank



The cutting tool specifications

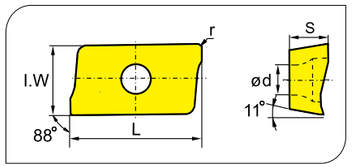
Size		Stock item	Dimension(mm) ØD	ød	L	L1	apmax	Number Z	Weight (kg)
FXP01 Weldon shank	**-012-XP16-AP11-01**	▲	12	16	85	25	10.5	1	0.1
	-016-XP16-AP11-02	▲	16	16	90	25	10.5	2	0.1
	-020-XP20-AP11-02	▲	20	20	100	30	10.5	2	0.2
	-025-XP25-AP11-03	▲	25	25	115	35	10.5	3	0.4
	-032-XP32-AP11-04	▲	32	32	125	40	10.5	4	0.7
	-025-XP25-AP16-02	▲	25	25	115	35	15.5	2	0.4
	-032-XP32-AP16-03	▲	32	32	125	40	15.5	3	0.7
	-040-XP32-AP16-04	▲	40	32	130	42	15.5	4	0.8
	-050-XP32-AP16-05	▲	50	32	135	45	15.5	5	1.0
	-063-XP32-AP16-06	▲	63	32	135	45	15.5	6	1.4

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Screw	Wrench	
Ø12-Ø32	AP11	▮60M2.5×6.5T	WT08▮P	--
Ø25-Ø63	AP16	▮60M4×8.4	--	WT15▮S

Insert selection

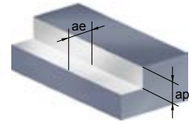


Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M			K						
		L	I.W	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**APKT11T304-GM**	12.24	6.5	3.6	2.8	0.4				★	●							★			●				
	APKT11T308-GM	12.24	6.5	3.6	2.8	0.8				★	●							★			●				
	APKT11T312-GM	12.24	6.5	3.6	2.8	1.2				★	●							★			●				
	APKT11T316-GM	12.24	6.5	3.6	2.8	1.6				★	●							★			●				
	APKT160408-GM	17.877	9.33	5.76	4.4	0.8				★	●							★			●				
	**APKT11T304-GR**	12.24	6.5	3.6	2.8	0.4					○	★						●							
	APKT11T308-GR	12.24	6.5	3.6	2.8	0.8					○	★						●							
	APKT11T312-GR	12.24	6.5	3.6	2.8	1.2					○	★						●							
	APKT11T316-GR	12.24	6.5	3.6	2.8	1.6					○	★						●							
	APKT160408-GR	17.877	9.33	5.76	4.4	0.8					○	★						●							
	**APKT11T304-AH**	12.24	6.5	3.6	2.8	0.4															●	★			
	APKT11T308-AH	12.24	6.5	3.6	2.8	0.8															●	★			
	APKT160408-AH	17.877	9.33	5.76	4.4	0.8															●	★			

★Recommended grade for stock ●Optional grade forstock ○Make-to-order

The insert chip breaker choice

Materials classification \ Usage	Finishing	Semi-finishing	Roughing
P	-GF	-GM	-GR
M	-GF	-GM	-GR
K	-GF	-GM	
N	-AH		

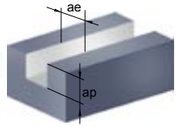


1 Square shoulder milling

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters				
				V（m/min）	f（mm/z）			ae(mm)
					-GF	-GM	-GR	
P	Low carbon steel, mild steel	≤180	JT1025 JT4030 JT4330	320（240-400）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
			JT4140	260（180-380）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
			JT1225	320（200-400）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
			JT1035	280（180-400）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
	High carbon steel, alloy steel	180-280	JT1025 JT4030 JT4330	280（210-380）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT4140	240（160-320）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
			JT1225	280（180-350）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT1035	260（150-380）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
	Alloyed tool steel	280-350	JT1025 JT4030 JT4330	260（180-350）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT4340	220（150-280）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
			JT1225	260（160-330）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT1035	240（120-350）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)	≤0.5D
M	Stainless steel	≤270	JT1025	200（120-270）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT4340	180（150-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT1225	200（110-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
			JT1035	170（100-280）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.3)	≤0.5D
K	Cast iron	180-250	JT3115	220（120-250）	0.1（0.08-0.2）	0.2（0.1-0.3）	-	≤0.5D
			JT3125	200（120-320）	0.1（0.08-0.2）	0.2（0.1-0.3）	-	≤0.5D
N					-AH			
	Aluminium alloy	----	JK101	300-	0.2（0.08-0.4）			≤0.5D
			JK201	300-	0.2（0.08-0.4）			≤0.5D

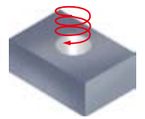
2 Groove milling



Recommended cutting condition

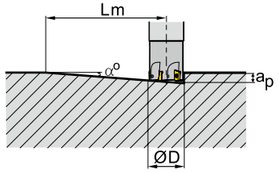
Material		Hardness HB	Grade	Cutting parameters				
				V (m/min)	f (mm/z)			a_e(mm)
					-GF	-GM	-GR	
P	Low carbon steel, mild steel	≤180	JT1025 JT4130 JT4230	190 (170-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT4140	150 (130-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1225	190 (140-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1235	170 (130-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
	High carbon steel, alloy steel	180-280	JT1025 JT4130 JT4230	170 (150-220)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT4140	140 (110-200)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1225	170 (130-250)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1235	150 (110-230)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
	Alloyed tool steel	280-350	JT1025 JT4130 JT4230	150 (130-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT4140	130 (100-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1225	150 (110-240)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1235	140 (80-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
M	Stainless steel	≤270	JT1025	110 (80-190)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT4140	100 (80-170)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1225	120 (80-190)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
			JT1235	100 (70-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	0.2 (0.2-0.3)	D
K	Cast iron	180-250	JT3115	130 (80-180)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	-	D
			JT3125	120 (80-210)	0.1 (0.08-0.15)	0.15 (0.1-0.25)	-	D
N					-AH			
	Aluminium alloy	----	JK101	300-	0.2 (0.08-0.3)			D
			JK201	300-	0.2 (0.08-0.3)			D

3 Slope milling helical interpolation milling



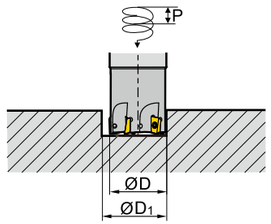
Recommended cutting condition

● Slope milling



$$L_m = \frac{a_p}{tg\alpha} \quad (\alpha: \text{The biggest sloped angle})$$

● Helical interpolation milling



$$tg\alpha = \frac{P}{\pi D_1} \quad (\alpha: \text{Lead angle})$$

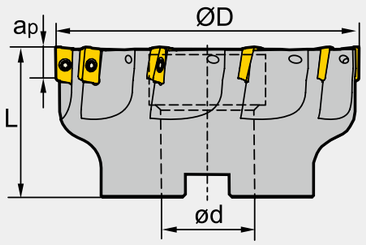
Diameter ØD(mm)	End mill,helical interpolation milling,slope milling(insert—11)				
	Slope milling			Helical interpolation milling	
	Max. depth a_p(mm)	Max. slopes Angle α°	Min. length L_m(mm)	Min diameter $ØD_1$(mm)	Max. pitch (mm)
16	10.0	10.0	56.7	20.0	2.0
20	10.0	5.0	114.4	28.0	2.0
25	10.0	4.5	127.0	40.0	2.0
32	10.0	3.0	190.8	56.0	2.0
40	10.0	2.0	286.4	70.0	2.0

Note: choose cutting speed and tooth feed refer to square shoulder milling.

Square shoulder milling cutter

Kr:90° Planar processing Step processing

FXP02 P M K N



The cutting tool specifications

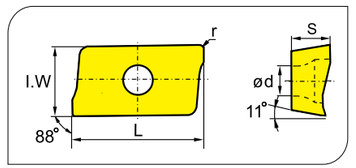
Size		Stock item	Dimension(mm)				Number Z	Form	Weight (kg)
			ØD	ød	L	$a_p$max			
FXP02	**-050-A22-AP11-06**	▲	50	22	40	11	6	A	0.3
	-063-A22-AP11-08	▲	63	22	40	11	8	A	0.6
	-080-A27-AP11-08	▲	80	27	50	11	8	A	1.2
	-100-B32-AP11-10	▲	100	32	50	11	10	B	1.7
	-050-A22-AP16-05	▲	50	22	40	15.5	5	A	0.3
	-063-A22-AP16-06	▲	63	22	40	15.5	6	A	0.5
	-080-A27-AP16-07	▲	80	27	50	15.5	7	A	1.1
	-100-B32-AP16-08	▲	100	32	50	15.5	8	B	1.6
	-125-B40-AP16-10	▲	125	40	63	15.5	10	B	3.2
	-160-B40-AP16-10	▲	160	40	63	15.5	10	B	6.3

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Screw	Wrench
			
Ø50-Ø100	AP11	M60M2.5×6.5T	WT08IS
Ø50-Ø160	AP16	M60M4×10	WT15IS

Insert selection



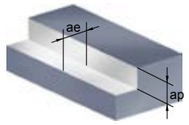
Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P							M					K					
		L	I.W	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**APKT11T304-GF**	12.24	6.5	3.6	2.8	0.4				★								● ★							
	APKT11T308-GF	12.24	6.5	3.6	2.8	0.8				★								● ★							
	APKT11T312-GF	12.24	6.5	3.6	2.8	1.2				★								● ★							
	APKT11T316-GF	12.24	6.5	3.6	2.8	1.6				★								● ★							
	APKT160408-GF	17.877	9.33	5.76	4.4	0.8				★								● ★							
	**APKT11T304-GM**	12.24	6.5	3.6	2.8	0.4				● ★								● ★							
	APKT11T308-GM	12.24	6.5	3.6	2.8	0.8				● ★								● ★							
	APKT11T312-GM	12.24	6.5	3.6	2.8	1.2				● ★								● ★							
	APKT11T316-GM	12.24	6.5	3.6	2.8	1.6				● ★								● ★							
	APKT160408-GM	17.877	9.33	5.76	4.4	0.8				● ★								● ★							
	**APKT11T304-GR**	12.24	6.5	3.6	2.8	0.4					● ★					★									
	APKT11T308-GR	12.24	6.5	3.6	2.8	0.8					● ★					★									
	APKT11T312-GR	12.24	6.5	3.6	2.8	1.2					● ★					★									
	APKT11T316-GR	12.24	6.5	3.6	2.8	1.6					● ★					★									
	APKT160408-GR	17.877	9.33	5.76	4.4	0.8					● ★					★									
	**APKT11T304-AC**	12.24	6.5	3.6	2.8	0.4																	● ★		
	APKT11T308-AC	12.24	6.5	3.6	2.8	0.8																	● ★		
	APKT160408-AC	17.877	9.33	5.76	4.4	0.8																	● ★		

★Recommended grade for stock ●Optional grade forstock ○Make-to-order

The insert chip breaker choice

Materials classification \ Usage	Finishing	Semi-finishing	Roughing
P	-GF	-GM	-GR
M	-GF	-GM	-GR
K	-GF	-GM	
N	-AH		

Square shoulder milling



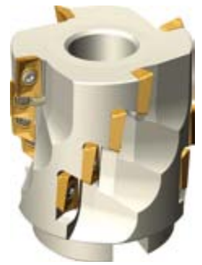
Recommended cutting condition

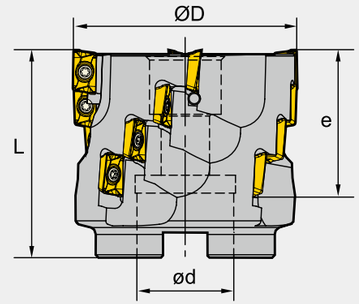
Material		Hardness HB	Grade	Cutting parameters V (m/min)	f (mm/z) -GF	f (mm/z) -GM	f (mm/z) -GR	a_e(mm)
P	carbon steel, mild steel	≤180	JT1025 JT4030 JT4330	320 (240-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
			JT4140	260 (180-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
			JT1225	320 (200-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
			JT1035	280 (180-400)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
	High carbon steel, alloy steel	180-280	JT1025 JT4030 JT4330	280 (210-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT4140	240 (160-320)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
			JT1225	280 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT1035	260 (150-380)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
	Alloyed tool steel	280-350	JT1025 JT4030 JT4330	260 (180-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT4140	220 (150-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
			JT1225	260 (160-330)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT1035	240 (120-350)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.35)	≤0.5D
M	Stainless steel	≤270	JT1025	200 (120-270)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT4030	180 (150-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT1225	200 (110-300)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
			JT1035	170 (100-280)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	0.25 (0.2-0.3)	≤0.5D
K	Cast iron	180-250	JT3115	220 (120-250)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	-	≤0.5D
			JT3125	200 (120-320)	0.1 (0.08-0.2)	0.2 (0.1-0.3)	-	≤0.5D
N					-AH			
	Aluminium alloy	----	JK101	300-	0.2 (0.08-0.4)			≤0.5D
			JK201	300-	0.2 (0.08-0.4)			≤0.5D

Square shoulder milling cutter

Kr:90°

FXP03 P M K N





The cutting tool specifications

Size		Stock item	Dimension(mm) ØD	ød	L	e	Slot No. z	Quantity	Form	Weight (kg)
FXP03	**-050-A22-AP11-04**	▲	50	22	58	39	4	16	A	0.5
	-063-A27-AP11-04	▲	63	27	58	39	4	16	A	0.9
	-080-B32-AP11-05	▲	80	32	63	39	5	20	B	1.3
	-100-B40-AP11-06	▲	100	40	63	39	6	24	B	2.0

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Screw	Wrench	
			
Ø50-Ø100	M6×2.5×6.5T	WT08S	

Square shoulder milling cutter

Kr:90°


Step processing

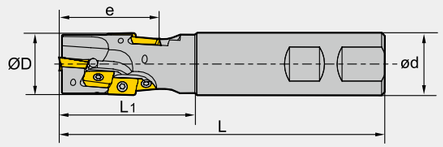

Slot milling


Side machining

FXP04

P M K N

Weldon shank

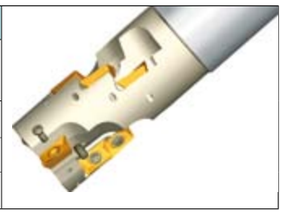


The cutting tool specifications

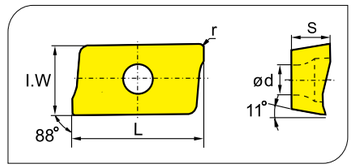
Size		Stock item	Dimension(mm)					Slot No. z	Quantity	Weight (kg)
			ØD	ød	L	L_1	e			
FXP04	-020-XP20-AP11-01	▲	20	20	120	45	29.4	1	3	0.3
	-025-XP25-AP11-02	▲	25	25	130	55	38.9	2	8	0.4
	-032-XP32-AP11-02	▲	32	32	140	65	48.5	2	10	0.7
	-040-XP40-AP11-02	▲	40	40	150	75	58.0	2	14	1.3

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Screw	Wrench	
			
Ø20-Ø40	▮60M2.5×6.5T	WT08▮S	

Insert selection



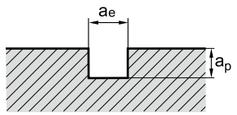
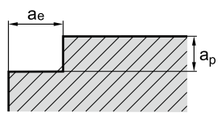
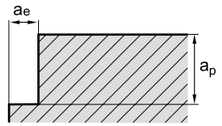
Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K					
		L	I.W	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	APKT11T304-GF	12.24	6.5	3.6	2.8	0.4	★	●							★		●									
	APKT11T308-GF	12.24	6.5	3.6	2.8	0.8	★	●							★		●									
	APKT11T312-GF	12.24	6.5	3.6	2.8	1.2	★	●							★		●									
	APKT11T316-GF	12.24	6.5	3.6	2.8	1.6	★	●							★		●									
	APKT11T304-GM	12.24	6.5	3.6	2.8	0.4		★	●						★	●										
	APKT11T308-GM	12.24	6.5	3.6	2.8	0.8		★	●						★	●										
	APKT11T312-GM	12.24	6.5	3.6	2.8	1.2		★	●						★	●										
	APKT11T316-GM	12.24	6.5	3.6	2.8	1.6		★	●						★	●										
	APKT11T304-GR	12.24	6.5	3.6	2.8	0.4		●	★						●	★										
	APKT11T308-GR	12.24	6.5	3.6	2.8	0.8		●	★						●	★										
	APKT11T312-GR	12.24	6.5	3.6	2.8	1.2		●	★						●	★										
	APKT11T316-GR	12.24	6.5	3.6	2.8	1.6		●	★						●	★										
	APKT11T304-AC	12.24	6.5	3.6	2.8	0.4																		●	★	
	APKT11T308-AC	12.24	6.5	3.6	2.8	0.8																		●	★	

★Recommended grade for stock ●Optional grade forstock ○Make-to-order

The insert chip breaker choice

Materials classification \ Usage	Finishing	Semi-finishing	Roughing
P	-GF	-GM	-GR
M	-GF	-GM	-GR
K	-GF	-GM	
N	-AH		

Recommended cutting condition

Slot-milling	Square shoulder milling	Deep square shoulder milling
		
ae Consistent with the cutter diameter a_p≤0.5D	a_e≤0.5D a_p≤1.2D	a_e≤0.2D ap Less than cutting edge length

Material		Hardness HB	Grade	Cutting parameters			
				Square shoulder milling			
				V（m/min）	f（mm/z）		
					-GF	-GM	-GR
P	Low carbon steel, mild steel	≤180	JT1025 JT4030 JT4330	270（240-350）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT4040	220（180-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1225	270（200-360）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1035	240（180-350）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
	High carbon steel, alloy steel	180-280	JT1025 JT4030 JT4330	240（210-320）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT4040	200（160-280）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1225	240（180-360）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1035	220（150-330）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
	Alloyed tool steel	280-350	JT1025 JT4030 JT4330	220（180-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT4040	180（150-250）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1225	220（160-340）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1035	200（120-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
M	Stainles s steel	≤270	JT1025	170（120-240）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT4040	160（150-270）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1225	150（110-270）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
			JT1035	140（100-250）	0.1（0.08-0.2）	0.2（0.1-0.3）	0.25(0.2-0.35)
K	Cast iron	180-250	JT3115	200（120-240）	0.1（0.08-0.2）	0.2（0.1-0.3）	
			JT3125	180（120-300）	0.1（0.08-0.2）	0.2（0.1-0.3）	
N					-AH		
	Aluminiu m alloy	----	JK101	300-	0.2（0.08-0.4）		
			JK201	300-	0.2（0.08-0.4）		

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters			
				Slot-milling,deep square shoulder milling			
				V（m/min）	f（mm/z）		
					-GF	-GM	-GR
P	Low carbon steel, mild steel	≤180	JT1025 JT4030 JT4330	270（240-350）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT4040	220（180-300）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1225	270（200-360）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1035	240（180-350）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
	High carbon steel, alloy steel	180-280	JT1025 JT4030 JT4330	240（210-320）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT4040	200（160-280）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1225	240（180-360）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1035	220（150-330）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
	Alloyed tool steel	280-350	JT1025 JT4030 JT4330	220（180-300）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT4040	180（150-250）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1225	220（160-340）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1035	200（120-300）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
M	Stainless steel	≤270	JT1025	170（120-240）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT4040	160（150-270）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1225	150（110-270）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
			JT1035	140（100-250）	0.1（0.08-0.15）	0.15（0.1-0.25）	0.2（0.2-0.3）
K	Cast iron	180-250	JT3115	200（120-240）	0.1（0.08-0.15）	0.15（0.1-0.25）	
			JT3125	180（120-300）	0.1（0.08-0.15）	0.15（0.1-0.25）	
N					-AH		
	Aluminium alloy	----	JK101	300-	0.2（0.08-0.3）		
			JK201	300-	0.2（0.08-0.3）		

Square shoulder milling cutter

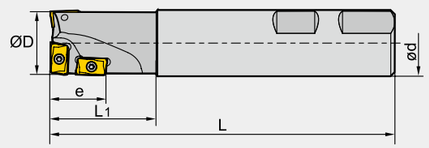
Kr:90°

Step processing

Key slot milling

FXP05 P M K

Weldon shank



The cutting tool specifications

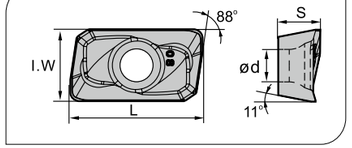
Size		Stock item	Dimension(mm)					Quantity		Weight (kg)
		R	ØD	ød	L	L_1	e	APMT11	APMT16	
FXP05	**-025-XP25**	▲	25	25	130	40	20	3	--	0.5
	-032-XP32	▲	32	32	140	50	30	--	3	0.8
	-040-XP32	▲	40	32	150	60	40	--	4	1.0

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Screw	Wrench	
				
Ø25-Ø40	APMT11	I60M2.5×6.5T	WT08IP	
	APMT16	I60M4×10	WT15IP	

Insert selection



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K					
		L	I.W	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**APMT1135PDR**	11.25	6.2	3.5	2.8	0.8		●										○	★							
	**APMT160408PDER**	17.25	9.25	4.76	4.4	0.8		●										○	★							

★Recommended grade for stock ●Optional grade forstock ○Make-to-order

1 Drilling

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V (m/min)	f (mm/z)
P	Low carbon steel, mild steel	≤180	JT1225	180 (150-220)	0.2 (0.08-0.25)
	High carbon steel, alloy steel	180-280	JT1225	160 (130-200)	0.15 (0.08-0.2)
	Alloyed tool steel	280-350	JT1225	140 (120-180)	0.12 (0.05-0.2)
M	Stainless steel	≤270	JT1225	80 (50-150)	0.08 (0.03-0.15)
K	Cast iron	180-250	JT3125	150 (100-220)	0.15 (0.08-0.2)

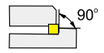
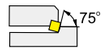
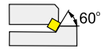
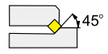
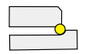
2 Milling

Recommended cutting condition

Material		Hardness HB	Grade	Cutting parameters	
				V (m/min)	f (mm/z)
P	Low carbon steel, mild steel	≤180	JT1225	190 (140-250)	0.08 (0.04-0.15)
	High carbon steel, alloy steel	180-280	JT1225	170 (130-250)	0.08 (0.04-0.15)
	Alloyed tool steel	280-350	JT1225	150 (110-240)	0.08 (0.04-0.15)
M	Stainless steel	≤270	JT1225	120 (80-190)	0.08 (0.04-0.15)
K	Cast iron	180-250	JT3125	120 (80-210)	0.08 (0.04-0.15)

Three sides edge milling cutter naming rules

Milling tool type	
MX	Face milling tool
FX	Square milling tool
LX	Helical end milling tool
SX	Three-side milling tool
PX	Profiling milling tool
DX	Chamfer milling tool
XX	special milling tool

Approach angle		
P	90°	
E	75°	
D	60°	
A	45°	
R		

Category code

Diameter of tools

Width of milling tool

Tool installation position and size			
A	A type connection	D	D type connection
B	B type connection	K	Key connection
C	C type connection		

SX P 03 - 160 × 16 - K40 - M P 12 - 12 L

Shape	
C	Diamond with 80°
D	Diamond with 55°
R	Round
S	Square
T	Regular triangle
V	Diamond with 35°
M	Diamond with 86°

Insert clearance angle	
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°

Length of cutting edge (mm)						
Diameter of I.C	Shape					
	C	D	R	S	T	V
5.556	—	—	—	—	09	—
6.350	06	07	—	—	11	—
9.525	09	11	09	09	16	16
12.700	12	15	12	12	22	22
15.875	16	19	15	15	27	—
19.050	19	—	19	19	33	—
25.400	25	—	25	25	44	—

Cutting direction

R:Right L:Left

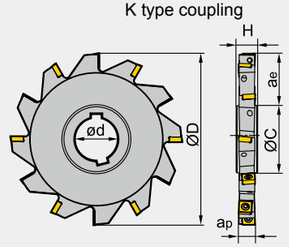
Tooth No.

Three sides edge milling cutter

Lathe Grooving machining

SXP03 P M K

K type coupling

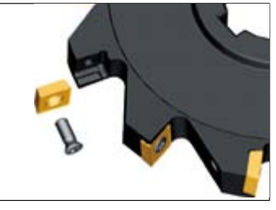


The cutting tool specifications

Type		Stock item	Dimension(mm) ØD	øc	ød	aemax	ap	H	Applicable insert	Number Z	Form	Weight (kg)
SXP03 key joint	-080×8-K27-MP06-10	△	80	43	27	17	8	12	MPHT060304-SM	10	K	0.2
	-100×8-K32-MP06-14	△	100	47	32	25	8	12		14	K	0.3
	-100×10-K32-MP06-14	△	100	47	32	25	10	14		14	K	0.4
	-125×10-K40-MP06-16	△	125	55	40	34	10	14		16	K	0.6
	-125×12-K40-MP08-12	△	125	55	40	34	12	16	MPHT080305-SM	12	K	0.7
	-160×12-K40-MP08-14	△	160	62	40	47	12	16		14	K	1.3
	-160×16-K40-MP12-12	△	160	62	40	49	16	20	MPHT120408-SM	12	K	1.6
	-160×18-K40-MP12-12	△	160	62	40	49	18	24		12	K	1.9
	-160×20-K40-MP12-12	△	160	62	40	49	20	26		12	K	2.1
	-200×16-K50-MP12-14	△	200	72	50	62	16	20		14	K	2.5
	-200×18-K50-MP12-14	△	200	72	50	62	18	24		14	K	2.9
	-200×20-K50-MP12-14	△	200	72	50	62	20	26		14	K	3.3

▲Always stock △Make-to-order

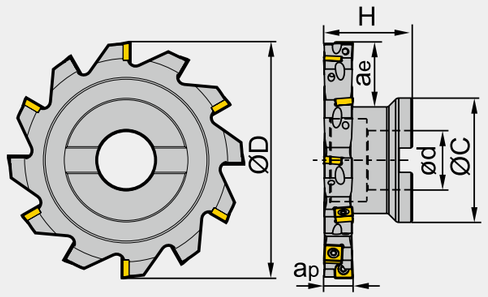
The cutting tool parts

Diameter Ød	Insert	Screw	Wrench		
					
Ø80-Ø125	MP06	I60M2.5x6.5	WT07IP	--	
Ø125-Ø160	MP08	I60M3x7	WT09IP	--	
Ø160-Ø200	MP12	I60M5x13	--	WT20IS	

Three sides edge milling cutter

Lathe Grooving machining

SXP03 P M K



The cutting tool specifications

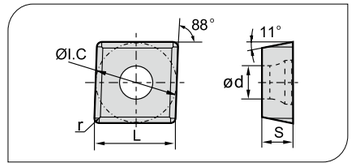
Type		Stock item R	Stock item L	Dimension(mm) ØD	øc	ød	a_{emax}	a_p	H	Applicable insert	Number Z	Form	Weight (kg)
SXP03 Core shaft connection	**-080×8-A22-MP06-10**	△	△	80	45	22	21	8	40	MPHT060304-DM	10	A	0.4
	-100×8-B27-MP06-14	△	△	100	55	27	24	8	40		14	B	0.6
	-100×10-B27-MP06-14	△	△	100	55	27	24	10	40		14	B	0.7
	-125×10-B32-MP06-16	△	△	125	65	32	33	10	45		16	B	1.1
	-125×12-B32-MP08-12	△	△	125	65	32	33	12	45	MPHT080305-DM	12	B	1.4
	-160×12-B40-MP08-14	△	△	160	80	40	33	12	50		14	B	1.9
	-200×12-C40-MP08-18	△	△	200	92	40	53	12	50		18	C	3.2
	-125×16-B32-MP12-10	△	△	125	65	32	45	16	50	MPHT120408-DM	10	B	2.3
	-160×16-B40-MP12-12	△	△	160	80	40	45	16	60		12	B	2.3
	-160×18-B40-MP12-12	△	△	160	80	40	45	18	60		12	B	2.4
	-200×16-C40-MP12-14	△	△	200	92	40	53	16	50		14	C	3.6
	-200×18-C40-MP12-14	△	△	200	92	40	53	18	50		14	C	3.9
	-200×20-C40-MP12-14	△	△	200	92	40	53	20	50		14	C	4.2

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Insert	Screw	Wrench	
				
Ø80-Ø125	MP06	I60M2.5×6.5	WT07IP	--
Ø125-Ø200	MP08	I60M3×7	WT09IP	--
Ø125-Ø200	MP12	I60M5×13	--	WT20IS

Insert selection



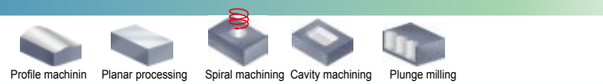
Shape	Type	Dimension(mm) ØI.C	L	S	ød	r	Coated cemented carbide P JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	M JT1015	JT1025	JT1035	JT1215	JT1225	K JT3315	JT3125	Cemented carbide JP302	JK402	JT001	JK101	JK201
	**MPHT060304-SM**	6.35	6.35	3.18	2.8	0.4																★				
	MPHT080305-SM	8.3	8.3	3.18	3.4	0.5																★				
	MPHT120408-SM	12.7	12.7	4.76	5.56	0.8																★				

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Recommended cutting condition

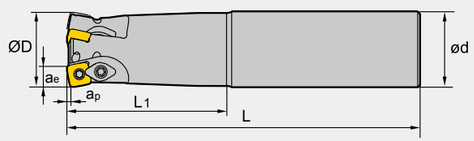
Material		Hardness HB	Grade	Cutting parameters V(m/min)	f(mm/z)
P	Low carbon steel, mild steel	≤180	JT1225	180 (100-250)	0.1(0.08-0.25)
			JT1035	150 (100-200)	0.15(0.1-0.3)
	High carbon steel, alloy steel	180-280	JT1225	150 (80-250)	0.1(0.08-0.25)
			JT1035	120 (80-200)	0.15(0.1-0.3)
	Alloyed Tool Steel	280-350	JT1225	120 (80-250)	0.1(0.08-0.25)
			JT1035	100 (80-200)	0.15(0.1-0.3)
M	Stainless steel	≤270	JT1225	120 (80-250)	0.1(0.05-0.15)
			JT1035	100 (80-200)	0.08(0.05-0.15)
K	Cast iron	180-250	JT3115	120 (80-250)	0.1(0.05-0.15)
			JT3125	150 (100-250)	0.08(0.05-0.15)

High feed cutter



XXR01 P M K

S type insert straight shank type



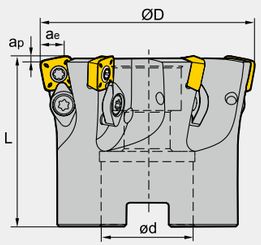
The cutting tool specifications

Type		Stock item	Dimension(mm)						Number Z	Weight (kg)
			ØD	a_p	a_e	L_1	L	ød		
XXR01	**-025-G25-SD09-02**	▲	25	1.4	8.8	60	140	25	2	0.5
	-032-G32-SD09-03	▲	32	1.4	8.8	70	150	32	3	0.8
	-035-G32-SD09-03	▲	35	1.4	8.8	70	150	32	3	0.8
	-032-G32-SD12-02	▲	32	1.8	11.7	70	150	32	2	0.8
	-040-G40-SD12-03	▲	40	1.8	11.7	70	150	40	3	1.3

▲Always stock △Make-to-order

XXR01 P M K

S type insert arbor mounting



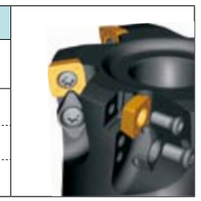
The cutting tool specifications

Type		Stock item	Dimension(mm)					Number Z	Form	Weight (kg)
			ØD	a_p	a_e	L	ød			
XXR01	**-050-A22-SD09-04**	▲	50	1.4	8.8	40	22	4	A	0.3
	-063-A22-SD09-06	▲	63	1.4	8.8	40	22	6	A	0.5
	-063-A27-SD09-06	▲	63	1.4	8.8	50	27	6	A	0.6
	-063-A22-SD12-05	▲	63	1.8	11.7	40	22	5	A	0.5
	-063-A27-SD12-05	▲	63	1.8	11.7	50	27	5	A	0.6
	-080-A27-SD12-05	▲	80	1.8	11.7	50	27	5	A	0.9
	-100-B32-SD12-06	▲	100	1.8	11.7	50	32	6	B	1.8

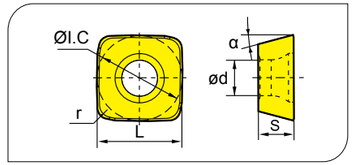
▲Always stock △Make-to-order

The cutting tool parts

Type	Insert screw	Clamp screw	Clamp	Wrench	Wrench
XXR01□□-SD09□□	I60M3.5×08TT	I60M4×8.4	WD-204	WT10IP	WT15IP
XXR01□□-SD12□□	I60M4×8.4			WT15IP	



Insert selection



Shape	Type	Dimension(mm)						Coated cemented carbide													Cemented carbide				
								P							M					K					
		ØI.C	L	r	S	ød	α	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**SDMT09T312-SM**	9.525	9.525	1.2	3.97	4.0	15°				★	●								★							
	SDMT120412-SM	12.7	12.7	2.0	4.76	4.4	15°				★	●								★							
	**SDMT09T312-GM**	9.525	9.525	1.2	3.97	4.0	15°				★	○						●		★							
	SDMT120412-GM	12.7	12.7	2.0	4.76	4.4	15°				★	○						●		★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

Groove introduction:

-GM groove edge is sharp, suitable for application in machine tool power shortage and the adhesive material such as stainless steel, titanium alloy milling.

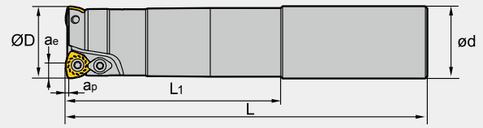
-SM groove edge is dull, suitable for milling of hardened steel and cast iron and other hard materials.

High feed cutter

Profile machinin | Planar processing | Spiral machining | Cavity machining | Plunge milling

XXR01 P M K

W type insert straight shank type



The cutting tool specifications

Type		Stock item	Dimension(mm)						Number Z	Weight (kg)
			ØD	a_p	a_e	L_1	L	ød		
XXR01	**-020-G20-WP05-02-M**	△	20	1.5	3.8	50	130	20	2	0.2
	-020-G20-WP05-02-L	△	20	1.5	3.8	100	180	20	2	0.3
	-020-G20-WP05-02-XL	△	20	1.5	3.8	130	250	20	2	0.8
	-025-G25-WP06-02-M	△	25	1.5	4.35	60	140	25	2	0.4
	-025-G25-WP06-02-L	△	25	1.5	4.35	120	200	25	2	0.6
	-025-G25-WP06-02-XL	△	25	1.5	4.35	180	300	25	2	1.0
	-032-G32-WP06-03-M	△	32	1.5	4.35	70	150	32	3	0.8
	-032-G32-WP06-03-L	△	32	1.5	4.35	120	200	32	3	1.0
	-032-G32-WP06-03-XL	△	32	1.5	4.35	180	300	32	3	1.6
	-040-G32-WP06-03-M	△	40	1.5	4.35	50	150	32	3	0.9
	-040-G32-WP06-03-L	△	40	1.5	4.35	50	250	32	3	1.5
	-040-G32-WP06-03-XL	△	40	1.5	4.35	50	300	32	3	1.8
	-040-G32-WP08-02-M	△	40	1.5	5.66	50	150	32	2	0.9
	-040-G32-WP08-02-L	△	40	1.5	5.66	50	250	32	2	1.5
	-040-G32-WP08-02-XL	△	40	1.5	5.66	50	300	32	2	1.9
	-050-G32-WP09-02-M	△	50	3.0	6.8	50	150	32	2	1.9
	-050-G32-WP09-02-L	△	50	3.0	6.8	50	250	32	2	2.5

▲Always stock △Make-to-order

The cutting tool parts

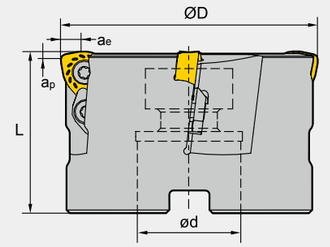
Type	Clamp/Insert compress screw	Clamp	Wrench		
					
XXR01□□-WP05□□	I60M3.5×08TT	--	WT10P	--	
XXR01□□-WP06□□	I60M4×8.4		WT15P		
XXR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT	
XXR01□□-WP09□□					

High feed cutter

Profile machinin | Planar processing | Spiral machining | Cavity machining | Plunge milling

XXR01 P M K

W type insert sleeve type



The cutting tool specifications

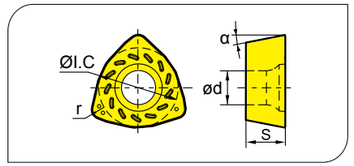
Type		Stock item	Dimension(mm)					Number Z	Form	Weight (kg)
			ØD	a_p	a_e	L	ød			
XXR01	**-050-A22-WP06-04**	△	50	1.5	4.35	40	22	4	A	0.4
	-050-A22-WP08-03	△	50	1.5	5.66	50	22	3	A	0.4
	-063-A22-WP08-04	△	63	1.5	5.66	50	22	4	A	0.7
	-063-A27-WP08-04	△	63	1.5	5.66	50	27	4	A	0.7
	-080-A27-WP08-05	△	80	1.5	5.66	63	27	5	A	1.5
	-100-B32-WP08-06	△	100	1.5	5.66	63	32	6	B	2.2
	-125-B40-WP08-07	△	125	1.5	5.66	63	40	7	B	3.5
	-160-B40-WP08-08	△	160	1.5	5.66	63	40	8	B	6.0
	-063-A22-WP09-03	△	63	3.0	6.8	50	22	3	A	0.7
	-080-A27-WP09-04	△	80	3.0	6.8	63	27	4	A	1.4
	-100-B32-WP09-05	△	100	3.0	6.8	63	32	5	B	2.1
	-125-B40-WP09-06	△	125	3.0	6.8	63	40	6	B	3.7
	-160-B40-WP09-07	△	160	3.0	6.8	63	40	7	B	6.3

▲Always stock △Make-to-order

The cutting tool parts

Type	Clamp/Insert compress screw	Clamp	Wrench		
					
XXR01□□-WP06□□	I60M4×8.4	--	WT15S	--	
XXR01□□-WP08□□	I60M5×13	WD-208	--	WT20IT	
XXR01□□-WP09□□	I60M5×13	WD-208	--		

Insert selection



Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K						
		ØI.C	r	S	ød	α	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**WPGT050315ZSR**	7.94	1.5	3.5	4.0	11°				○					●				★							
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°				○					●				★							
	WPGT080615ZSR	12.85	1.5	6.35	5.5	11°				○					●				★							
	WPGT090725ZSR	15	2.5	7	5.5	11°				○					●				★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

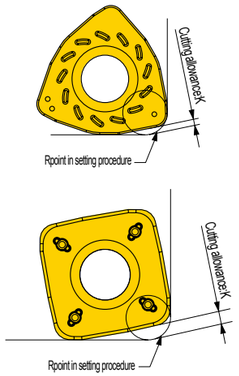
Groove introduction:

-GM groove edge is sharp, suitable for application in machine tool power shortage and the adhesive material such as stainless steel, titanium alloy milling.

Common groove edge is dull, suitable for milling of hardened steel and cast iron and other hard materials

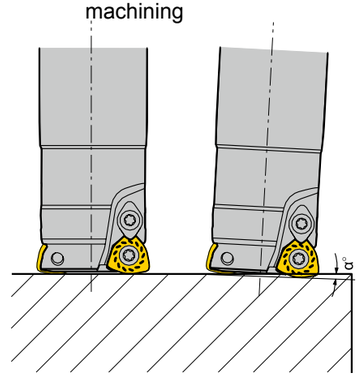
Processing procedure approximate R value

Insert	approximation R(mm)	Cutting allowance K(mm)
WPGT050315ZSR/-GM	2	0.5
WPGT060415ZSR/-GM	2.5	0.7
WPGT080615ZSR/-GM	2.0	0.7
WPGT090725ZSR/-GM	4.0	1.2
SDMT09T312-DM/-GM	2.5	0.87
SDMT120412-DM/-GM	4.0	0.93

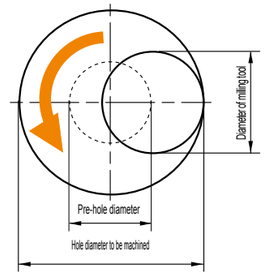


Different form processing

■ Inclined plane machining



■ Spiral reaming processing



- Please reduce the feed speed for inclined plane machining and spiral processing
- Please put the axial feed in below 0.2 mm/ rev for drilling
- There may be a long chip fly out when drilling,just be careful
- When spiral reaming processing, weekly cutting depth can not exceed the maximum cutting depth ap
- S-shaped insert in addition to the above processing, can also be plunge milling

XXR01 series cutting tool choice

XXR01 series tool (install SD insert), good cutting edge intensity,good economy,has more advantages in face milling

series tool (install WP insert), chip capacitors and chip removal performance is good, the more advantages in the mold processing

Recommend cutting condition

Material		Hardness HB	Grade	Cutting speed (m/min)	Ø25		Ø30/32/35	
					Cutting depth of axial	Feed per Tooth	Cutting depth of axial	Feed per Tooth
P	Mild steel,carbon steel	≤**HB180** **HB180-280**	**JT4330/ JT4040**	170(120-220) 150(100-200)	0.6~1.0	0.8~1.2	0.8~1.2	1.0~1.4
	Alloy steel,alloyed tool steel	**HB280-350**	**JT4330/ JT4040**	130(80-180)	0.4~0.8	0.8~1.2	0.6~1.0	1.0~1.4
	Perhardened steel	≤**HRC35**	**JT4330/ JT4040**	120(80-160)	0.4~0.8	0.6~1.0	0.6~1.0	0.8~1.2
M	Stainless steel	≤**HB270**	**JT4040**	120(80-160)	0.6~1.0	0.6~1.0	0.8~1.2	0.8~1.2
			JT1225	120(80-190)				
K	Plain cast iron	Strength of extension ≤**350MPa**	**JT3125**	150(100-200)	0.6~1.0	1.0~1.4	0.8~1.2	1.2~1.6
	Nodular cast iron	Strength of extension ≤**800MPa**	**JT3125**	120(80-160)	0.4~0.8	0.8~1.2	0.6~1.0	1.0~1.4

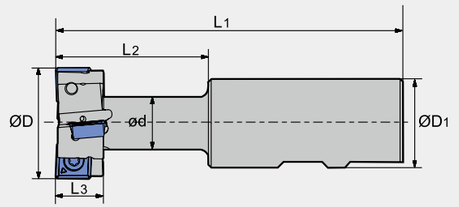
Recommend cutting condition

Material		Hardness HB	Grade	Cutting speed (m/min)	Ø40		Ø50/63		Ø80/100	
					Cutting depth of axial	Feed per Tooth	Cutting depth of axial	Feed per Tooth	Cutting depth of axial	Feed per Tooth
P	Mild steel,carbon steel	≤**HB180** **HB180-280**	**JT4330/JT4040**	170(120-220) 150(100-200)	0.8~1.2	1.0~1.4	1.1~1.5	1.1~1.5	1.0~1.5	1.0~1.5
	Alloy steel,alloyed tool steel	**HB280-350**	**JT4330/JT4040**	130(80-180)	0.6~1.0	1.0~1.4	0.9~1.3	1.1~1.5	0.8~1.3	1.0~1.5
	Perhardened steel	≤**HRC35**	**JT4330/JT4040**	120(80-160)	0.6~1.0	0.8~1.2	0.9~1.3	0.9~1.3	0.8~1.3	0.8~1.3
M	Stainless steel	≤**HB270**	**JT4040**	120(80-160)	0.8~1.2	0.8~1.2	1.1~1.5	0.9~1.3	1.0~1.5	0.8~1.3
			JT1225	120(80-190)						
K	Plain cast iron	Tension strength ≤**350MPa**	**JT3125**	150(100-200)	0.8~1.2	1.2~1.6	1.1~1.5	1.3~1.7	1.0~1.5	1.2~1.7
	Nodular cast iron	Tension strength ≤**800MPa**	**JT3125**	120(80-160)	0.6~1.0	1.0~1.4	0.9~1.3	1.1~1.5	0.8~1.3	1.0~1.5

T-slot milling cutter Kr:90° T-slot processing

TXP01

Weldon shank



The cutting tool specifications

Type		Stock item	Dimension(mm)						Tooth NO.Z	Number of inserts	T-slot specification
			ØD	ØD1	ød	L1	L2	L3			
TXP01	**-021-XP25-MP06-01**	▲	21	25	10	100	32	9	1	2	**12**
	-025-XP25-MP06-01	▲	25	25	12	100	35	11	1	2	**14**
	-032-XP32-MP08-02	▲	32	32	15	110	45	14	2	4	**18**
	-040-XP32-MP12-02	▲	40	32	19	125	55	18	2	4	**22**
	-050-XP40-MP12-02	▲	50	40	25	140	65	22	2	4	**28**
	-060-XP50-MP12-02	▲	60	50	32	160	80	28	2	6	**36**

▲Always stock △Make-to-order

The cutting tool parts

Type	Screw	Wrench		
				
TXP01-021-XP25-MP06-01	I60M2.5×5.5	WT07IP	--	
TXP01-025-XP25-MP06-01	I60M2.5×5.5			
TXP01-032-XP32-MP08-02	I60M3×7	WT10IP	--	
TXP01-040-XP32-MP12-02	I60M5×10	--	WT20IT	
TXP01-050-XP40-MP12-02	I60M5×10			
TXP01-060-XP50-MP12-02	I60M5×10			

Helical end mills

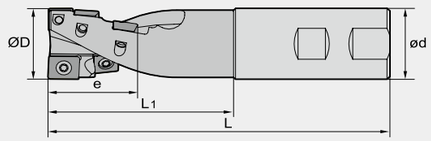
Kr:90°


Side machining


Slot milling

LXP01

Weldon shank

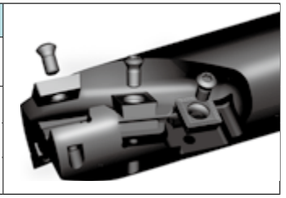


The cutting tool specifications

Type		Stock item		Dimension(mm)					Slot NO. Z	Insert NO.		Shank form
		R	L	ØD	ød	e	L1	L		APKT 150412-PM/KM	SPMT 120408-PM/KM	
LXP01	**-040×55-XP40-SP12-02**	△	△	40	40	55	95	175	2	1	5	Weldon shank
	-050×55-XP40-SP12-04	△	△	50	40	55	95	175	4	2	10	Weldon shank

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Screw	Wrench	
			
Ø40	I60M5×10	WT20T	
Ø50	I60M5×13	WT20T	

Helical end mills

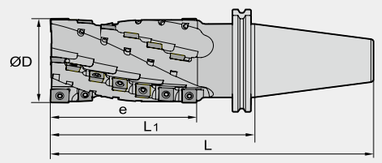
Kr:90°


Side machining


Slot milling

LXP01

JT handle/BT handle(chart for JT handle)

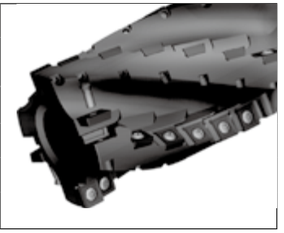


The cutting tool specifications

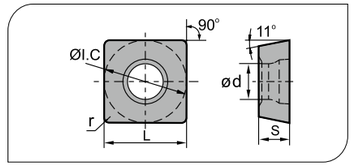
Type		Stock item		Dimension(mm)				Slot NO. Z	Insert NO.		Shank form
		R	L	ØD	e	L1	L		APKT 150412-PM/KM	SPMT 120408-PM/KM	
LXP01	**-050×84-JT50-SP12-04**	△	△	50	84	145	246.75	4	2	16	JT
	-063×74-JT50-SP12-04	△	△	63	74	135	236.75	4	2	14	JT
	-063×104-JT50-SP12-04	△	△	63	104	165	266.75	4	2	20	JT
	-063×134-JT50-SP12-04	△	△	63	134	195	296.75	4	2	26	JT
	-080×104-JT50-SP12-04	△	△	80	104	165	266.75	4	2	20	JT
	-080×144-JT50-SP12-04	△	△	80	144	205	306.75	4	2	28	JT
	-050×84-BT50-SP12-04	△	△	50	84	145	246.8	4	2	16	BT
	-063×74-BT50-SP12-04	△	△	63	74	135	236.8	4	2	14	BT
	-063×104-BT50-SP12-04	△	△	63	104	165	266.8	4	2	20	BT
	-063×134-BT50-SP12-04	△	△	63	134	195	296.8	4	2	26	BT
	-080×104-BT50-SP12-04	△	△	80	104	165	266.8	4	2	20	BT
	-080×144-BT50-SP12-04	△	△	80	144	205	306.8	4	2	28	BT

▲Always stock △Make-to-order

Insert selection

Diameter ØD	Screw	Wrench	
			
Ø50	I60M5×13	WT20IS	
Ø63	I60M5×13	WT20IS	
Ø80	I60M5×13	WT20IS	

Insert selection



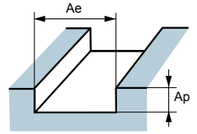
Shape	Type	Dimension(mm)					Coated cemented carbide												Cemented carbide				
							P							M				K						
		L	ØI.C	S	ød	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1035	JT1215	JT1225	JT3315	JT3125	JP302	JP402	JK001	JK101	JK201
	**SPMT120408-GM**	12.7	12.7	4.76	5.5	0.8													★							
	SPMT120408-ZM	12.7	12.7	4.76	5.5	0.8													★							

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

LXP01 milling insert chip breaker choice

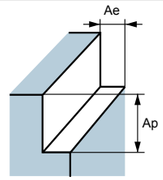
Materials classification / Usage	Semi-finishing	Roughing
P	-GM	-GM
K	-ZM	-ZM

FigureA Milling groove



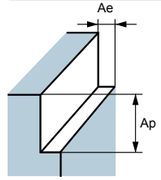
Ae=D
Ap=0.5D(cast iron)
Max12mm(steel)

FigureB Square shoulder milling



Ae=0.5D
Ap=1.5D(cast iron)
1.0D(steel)

FigureC A narrow side shoulder milling



Ae=0.1D
Ap=Below the maximum cutting edge length

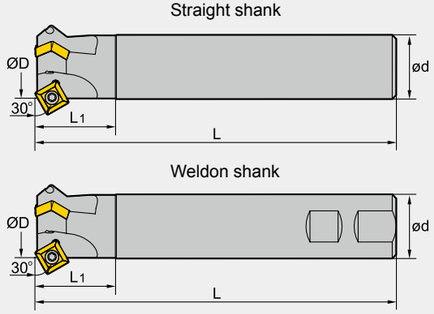
Recommend cutting condition

Material		Hardness HB	Grade	Cutting parameter		Processing condition (figure)
				Cutting speed(m/min)	Feed speed(mm/z)	
P	Low carbon steel, mild steel	≤180	JT1225 JT1035	80 (60-90)	0. 25 (0. 1-0. 35)	A
				90 (70-120)	0. 3 (0. 15-0. 4)	B
				90 (70-120)	0. 3 (0. 15-0. 4)	C
	High carbon steel, alloy steel	180-280	JT1225 JT1035	70 (60-100)	0. 2 (0. 1-0. 35)	A
				80 (60-120)	0. 25 (0. 15-0. 35)	B
				90 (70-120)	0. 25 (0. 15-0. 35)	C
	Alloyed tool steel	280-350	JT1225 JT1035	50 (40-80)	0. 15 (0. 08-0. 25)	A
				60 (50-100)	0. 2 (0. 1-0. 35)	B
				70 (50-100)	0. 2 (0. 1-0. 35)	C
K	Cast iron	180-250	JT3115 JT3125	70 (50-100)	0. 2 (0. 1-0. 35)	A
				80 (60-120)	0. 25 (0. 15-0. 35)	B
				90 (80-120)	0. 25 (0. 15-0. 35)	C

Chamfer cutter Kr:30°

Chamfering processing Planar processing Orifice chamfering

DXZ01 P M K



The cutting tool specifications

Type		Stock item	Dimension(mm) ØD	ød	L	L1	Tooth NO. Z	Weight kg
DXZ01 Straight shank	**-012-G20-SP12-01**	△	12	20	100	40	1	0.2
	-025-G25-SP12-02	△	25	25	120	40	2	0.8
	-032-G32-SP12-03	△	32	32	180	40	3	1.1
Weldon shank	**-012-XP20-SP12-01**	△	12	20	100	40	1	0.2
	-025-XP25-SP12-02	△	25	25	120	40	2	0.6
	-032-XP32-SP12-03	△	32	32	180	40	3	1.0

▲Always stock △Make-to-order

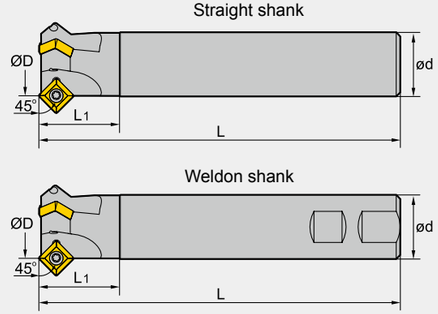
The cutting tool parts

Diameter ØD	Screw	Wrench	
Ø12-Ø32	I43M5×11	WT20IS	

Chamfer cutter Kr:45°

Chamfering processing Planar processing Orifice chamfering

DXA01 P M K



The cutting tool specifications

Type		Stock item	Dimension(mm) ØD	ød	L	L1	Tooth NO. Z	Weight kg
DXA01 Straight shank	-012-G20-SP12-01	▲	12	20	100	40	1	0. 2
	-025-G25-SP12-02	▲	25	25	120	40	2	0. 8
	-032-G32-SP12-03	▲	32	32	180	40	3	1. 1
Weldon shank	-012-XP20-SP12-01	▲	12	20	100	40	1	0. 2
	-025-XP25-SP12-02	▲	25	25	120	40	2	0. 6
	-032-XP32-SP12-03	▲	32	32	180	40	3	1. 0

▲Always stock △Make-to-order

The cutting tool parts

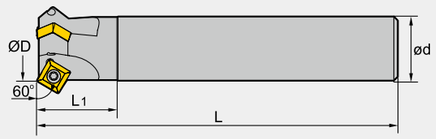
Diameter ØD	Screw	Wrench	
Ø12-Ø32	I43M5×11	WT20IS	

Chamfer cutter Kr:60°

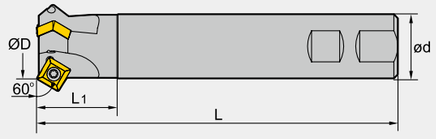

Chamfering processing Planar processing Orifice chamfering

DXD01 P M K

Straight shank



Weldon shank



The cutting tool specifications

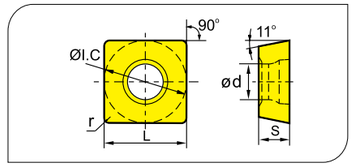
Type		Stock item	Dimension(mm) ØD	ød	L	L1	Tooth NO. Z	Weight kg
DXD01 Straight shank	-012-G20-SP12-01	▲	12	20	100	40	1	0.2
	-025-G25-SP12-02	▲	25	25	120	40	2	0.8
	-036-G32-SP12-03	▲	36	32	180	40	3	1.0
Weldon shank	-012-XP20-SP12-01	▲	12	20	100	40	1	0.2
	-025-XP25-SP12-02	▲	25	25	120	40	2	0.6
	-036-XP32-SP12-03	▲	36	32	180	40	3	1.0

▲Always stock △Make-to-order

The cutting tool parts

Diameter ØD	Screw	Wrench	
			
Ø12-Ø32	I43M5×11	WT20IS	

Insert selection

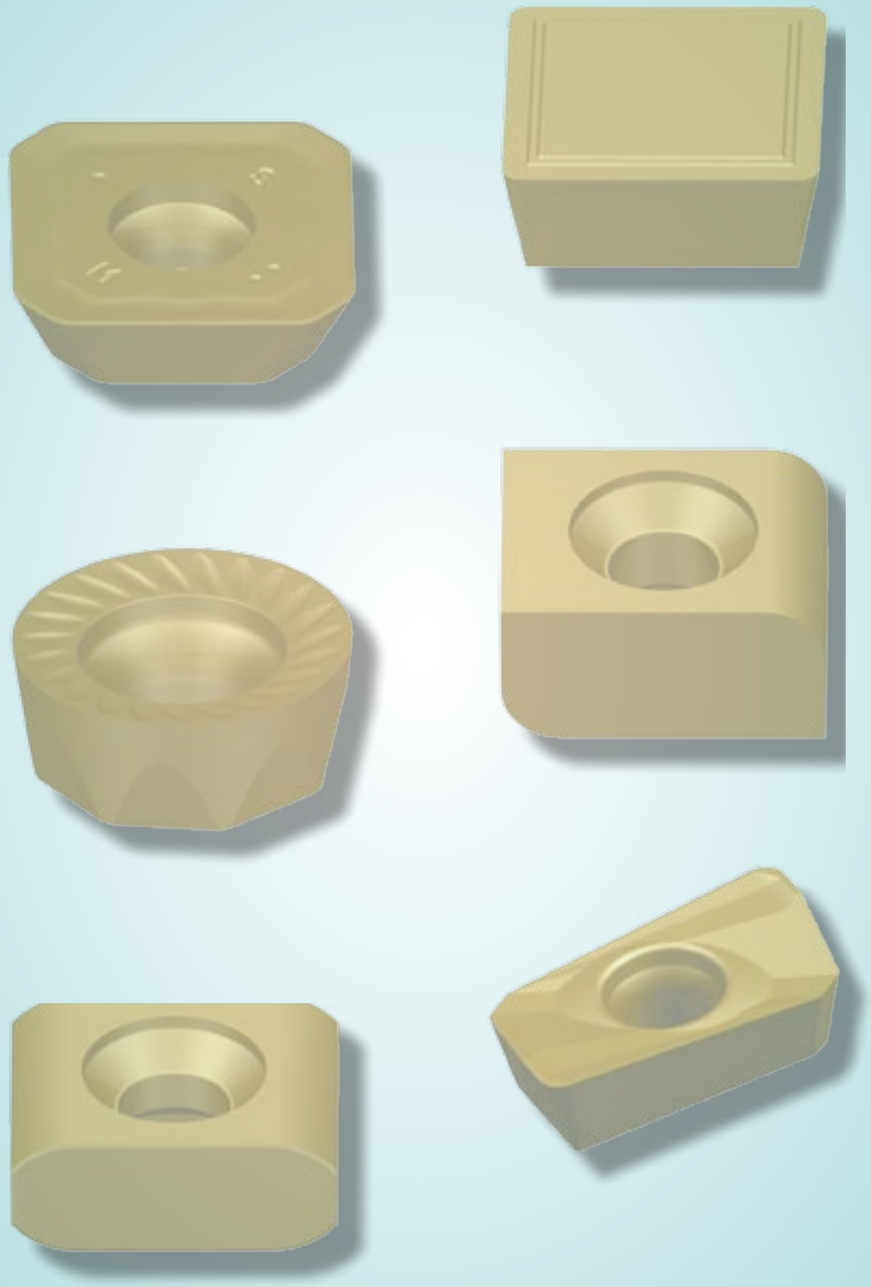


Shape	Type	Dimension(mm) ØI.C	L	r	S	ød	Coated cemented carbide P JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	M JT1015	JT1025	JT1035	JT1215	JT1225	K JT3315	JT3125	Cemented carbide JP302	JP402	JK001	JK101	JK201
	SPMT120408	12.7	12.7	0.8	4.76	5.5				●									★			○				

★Recommended grade for stock ●Optional grade for stock ○Make-to-order

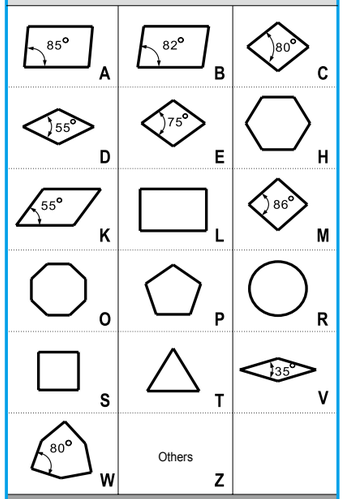
Recommend cutting condition

Material		Hardness HB	Grade	Cutting parameter Cutting speed(m/min)	Feed speed(mm/z)
P	ow carbon steel, mild steel	≤180	JT1025 JT4030	180(100—250)	0.25 (0.1-0.4)
			JT4040 JT1225	150(100—200)	0.3 (0.1-0.5)
			JP302	120(80—150)	0.4 (0.1-0.5)
	High carbon steel, alloy steel	180—280	JT1025 JT4030	160(100—220)	0.3 (0.1-0.4)
			JT4040 JT1225	130(100—180)	0.3 (0.1-0.5)
			JP302	100(60—150)	0.4 (0.1-0.5)
	Alloyed tool steel	280—350	JT1025 JT4030	120(80—180)	0.3 (0.1-0.4)
			JT4040 JT1225	100(80—150)	0.3 (0.1-0.5)
			JP302	80(60—120)	0.4 (0.1-0.5)
M	Stainless steel	≤270	JT1025 JT4030	120(80—180)	0.3 (0.1-0.4)
			JT4040 JT1225	100(80—150)	0.3 (0.1-0.5)
			JP302	80(60—120)	0.4 (0.1-0.5)
K	Cast iron	180-250	JT3115	130(100—180)	0.4 (0.1-0.5)



Indexable milling insert naming rules

Shape/Code



Insert shape

Metric

Code	Wite/Without hole	With/Without	Section plane	Code	Wite/Without hole	Chipbreaker	Section plane
B	With	Without	>65°	N	Without	Without	
H	With	One-side	>65°	R	Without	One-side	
C	With	Without	>65°	F	Without	Double-side	
J	With	Double-side	>65°	A	With	Without	
W	With	Without	≤65°	M	With	One-side	
T	With	One-side	≤65°	G	With	Double-side	
Q	With	Without	≤65°	X	---	---	Special
U	With	Double-side	≤65°				

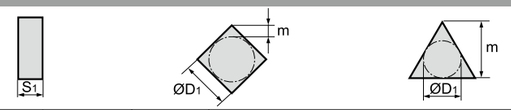
Chipbreaker and clamping type

S P K N

Clearance angle of main cutting edge

Code	Clearance angle	Code	Clearance angle
A	3°	B	5°
C	7°	D	15°
E	20°	F	25°
G	30°	N	0°
P	11°	O	Others

Tolerance



Code	Nose height M tolerance(mm)	Toleranle of I.C(mm)	Thickness S tolerance(mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

(Reference) Details of M-class tolerance (Identied by shape and size)

● Nose height tolerance(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80	Diamond with 55	Diamond with 35	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
12.7	±0.13	±0.13	±0.13	±0.15	---	---
15.875	±0.15	±0.15	±0.15	±0.18	---	---
19.05	±0.15	±0.15	±0.15	±0.18	---	---
25.4	---	±0.18	---	---	---	---

● Tolerance of inscribed circle(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80	Diamond with 55	Diamond with 35	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
25.4	---	±0.13	---	---	---	±0.13

Diameter of I.C(mm)	Insert shape C	D	R	S	T	V	W
3.97					06		
5.0			05				
5.56					09		
6.0			06				
6.35	06	07			11	11	
8.0			08				
9.525	09	11	09	09	16	16	06
10.0			10				
12.0			12				
12.7	12	15	12	12	22	22	08
15.875	16		15	15	27		
16.0		19	16				
19.05	19		19	19	33		
20.0			20				
25.0	25	25	25				
25.4			25	25			
31.75			31				
32			32				

Length of cutting edge

Thickness is defined as height from bottom of insert to the highest part of cutting edge

Code	Insert thickness(mm)
00	0.79
T0	0.99
01	1.59
T1	1.98
02	2.38
T2	2.58
03	3.18
T3	3.97
04	4.76
T4	4.96
05	5.56
T5	5.95
06	6.35
T6	6.75
07	7.94
09	9.52
T9	9.72
11	11.11
12	12.70

Insert thickness

15 04 ED S32 L - SM

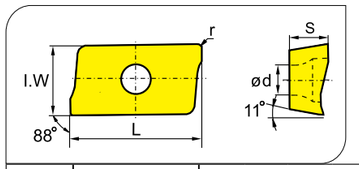
Wiper			
	Kr		αn
A	45°	**A**	3°
D	60°	**B**	5°
E	75°	**C**	7°
F	85°	**D**	15°
P	90°	**E**	20°
Z	Others	**F**	25°
		G	30°
		N	0°
		P	11°
		Z	Others

Chamfer(mm)			
F	0-5°	0-0.10	K
	1-10°	1-0.15	
E	2-15°	2-0.20	P
	3-20°	3-0.25	
T	4-25°	4-0.30	W
	5-30°	5-0.35	
		6-0.40	
S		7-0.45	Nose mark

Chipbreaker code

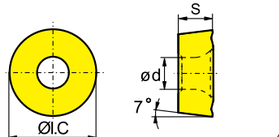
Cutting direction	
R	Right hand
L	Left hand
N	Neutral

APㅁㅁ



Shape	Type	Dimension(mm) L	W	S	d	r	Coated cemented carbide P JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	M JT1015	JT1025	JT1215	JT1225	K JT3115	JT3125	Cemented carbide JP302	JP402	JK001	JK101	JK201
	APKT11T304-GM	12.24	6.50	3.60	2.8	0.4	○									★	☆	☆							
	APKT11T308-GM	12.24	6.50	3.60	2.8	0.8	○									★	☆	☆							
	APKT11T312-GM	12.24	6.50	3.60	2.8	1.2	○									★	☆	☆							
	APKT11T316-GM	12.24	6.50	3.60	2.8	1.6	○									★	☆	☆							
	APKT160408-GM	17.88	9.3	5.76	4.4	0.8	○									★	☆	☆							
	APKT11T304-AH	12.24	6.50	3.60	2.8	0.4																	☆	★	
	APKT11T308-AH	12.24	6.50	3.60	2.8	0.8																	☆	★	
	APKT160408-AH	17.88	9.3	5.76	4.4	0.8																	☆	★	
	APMT1135PDER-M2	11.40	6.20	3.65	2.80	0.8		○			○					☆		★	☆						
	APMT1604PDER-M2	17.26	9.24	4.76	4.40	0.5		○			○					☆		★	☆						
	APMT1135PDER-H2	11.40	6.20	3.50	2.80	0.8		○			○					☆		★	☆						
	APMT1604PDER-H2	17.25	9.25	4.76	4.40	0.8		○			○					☆		★	☆						
	APGT160416PDER	17.0	9.52	4.76	4.40	1.6		★			☆					○		○		○					
	APGT160416PDEL	17.0	9.52	4.76	4.40	1.6		★			☆					○		○		○					
	APMT1504T-WT	16.2	12.7	4.76	5.50	0.4		★			☆					○									

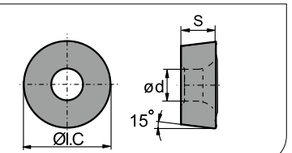
RC□□



Shape	Type	Dimension(mm)			Coated cemented carbide														Cemented carbide				
					P								M				K						
		ϕI.C	S	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RCKT10T3MO	10	3.97	4.4				☆	☆						○	★							
	RCKT1204MO	12	4.76	4.4				☆	☆						○	★							
	RCMX2507MO	25.0	7.94	7.4				○	○					☆		★							
	RCMX3209MO	32.0	9.52	9.5				○	○					☆		★							

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

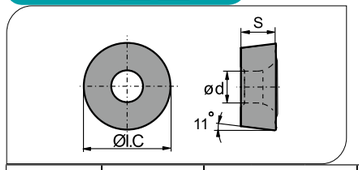
RD□□



Shape	Type	Dimension(mm)				Coated cemented carbide													Cemented carbide				
						P								M				K					
		R	I.C	S	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RDKW0802MO	4	8	3.18	3.4					☆		○					★							
	RDKW10T3MO	5	10	3.97	4.4					☆		○					★							
	RDKW1204MO	6	12	4.76	4.4					☆		○					★							
	RDKW1605MO	8	16	5.56	5.5					☆		○					★							
	RDKW2006MO	10	20	6.35	6.5					☆		○					★							
	RDKT1204MOTN	6	12	4.76	4.4					☆		○					★							
	RDKT1604MOTN	8	16	4.76	5.5					☆		○					★							
	RDMT10T3MOTN	5	10	3.97	4.4					☆		○					★							
	RDMT1204MOTN	6	12	4.76	4.4					☆		○					★							
	RDMX1604MOTN	8	16	4.76	5.5					☆		○					★							

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

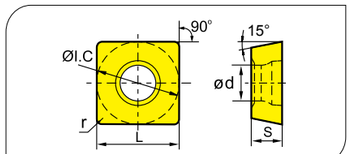
RP□□



Shape	Type	Dimension(mm)			Coated cemented carbide														Cemented carbide				
					P								M				K						
		ϕI.C	S	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	RPMW0802MO	8	2.38	3.4					☆		○					★							
	RPMW08T2MO	8	2.58	3.4					☆		○					★							
	RPMW10T3MO	10	3.97	4.4					☆		○					★							
	RPMW1204MO	12	4.76	4.4					☆		○					★							

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

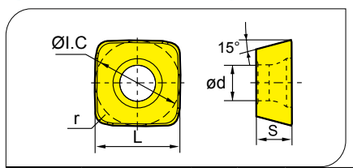
SD□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K					
		L	ϕI.C	S	d	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SDMT090308	9.525	9.525	3.18	4.4	0.8				☆								★		★	☆				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

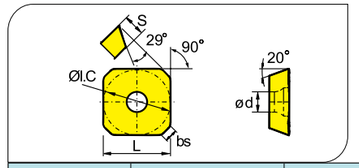
SD□□



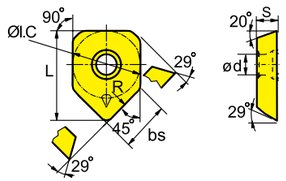
Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K					
		L	ϕI.C	S	d	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SDMT09T312-SM	9.525	9.525	3.18	4.4	1.2					☆	☆						★		★	○				
	SDMT120412-SM	12.7	12.7	4.76	4.4	1.2					☆	☆						★		★	○				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

SE□□

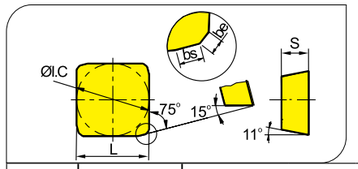


Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P							M				K							
		L	ØI.C	S	ød	bs	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SEET12T3-SF	13.4	13.4	3.97	4.1	2.55										★		★	●							
	SEET12T3-FM	13.4	13.4	3.97	4.1	2.55		●								★		★	●							
	SEET12T3-SR	13.4	13.4	3.97	4.1	2.55		●			○					★		●								
	SEET12T3-AH	13.4	13.4	3.97	4.1	2.55		○								★		●						★	●	
	SEET12T3-W	17.82	13.4	3.97	4.1	9.46	500	●								★		★								



★Recommended grade for stock ●Optional grade for stock ○Make-to-order

SP□N

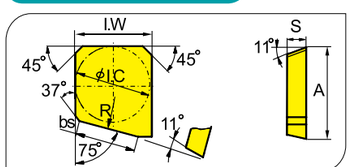


Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K							
		L	ϕI.C	S	bs	be	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPEN1203EDR	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDL	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDER	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDEL	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDFR	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDFL	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDSR	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDSL	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDTR	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPEN1203EDTL	12.7	12.7	3.18	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDER	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDEL	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDFR	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDFL	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDSR	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDSL	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDTR	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				
	SPKN1504EDTL	15.875	15.875	4.76	1	1.4				★	☆					☆		☆	○		○				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

Ordering instructions : **SPKN1203EDT3 1 R** 20°chamfer Angle, chamfering width is 0.15 mm, if you want to set the other form please refer to the insert edge naming standard procurement.

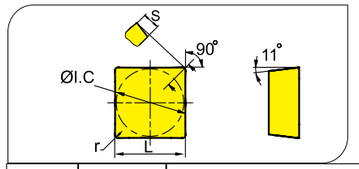
SP□X



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P							M				K							
		A	ϕI.C	I.W	S	bs	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPEX1203EDL-1	15	12.7	12.7	3.18	10	500				★	☆							☆	☆		○				★
	SPEX1203EDR-1	15	12.7	12.7	3.18	10	500				★	☆							☆	☆		○				★
	SPEX1504EDL-1	18.2	15.875	15.875	4.76	10	500				★	☆							☆	☆		○				★
	SPEX1504EDR-1	18.2	15.875	15.875	4.76	10	500				★	☆							☆	☆		○				★

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

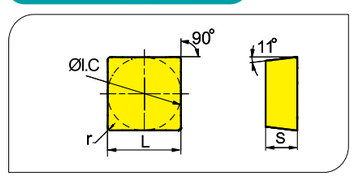
SP□□



Shape	Type	Dimension(mm)				Coated cemented carbide													Cemented carbide				
						P								M				K						
		L	I.C	S	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPMR090304	9.525	9.525	3.18	0.4				★								☆			○				
	SPMR090308	9.525	9.525	3.18	0.8				★								☆			○				
	SPMR09T304	9.525	9.525	3.97	0.4				★								☆			○				
	SPMR09T308	9.525	9.525	3.97	0.8				★								☆			○				
	SPMR120304	12.7	12.7	3.18	0.4				★								☆			○				
	SPMR120308	12.7	12.7	3.18	0.8				★								☆			○				
	SPMR120312	12.7	12.7	3.18	1.2				★								☆			○				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

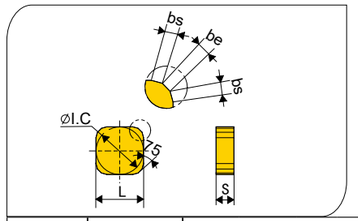
SP□□



Shape	Type	Dimension(mm)				Coated cemented carbide													Cemented carbide				
						P								M				K						
		L	φI.C	S	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SPUN090304	9.525	9.525	3.18	0.4	★											★	☆		○				○
	SPUN090308	9.525	9.525	3.18	0.8	★											★	☆		○				○
	SPUN120304	12.7	12.7	3.18	0.4	★											★	☆		○				○
	SPUN120308	12.7	12.7	3.18	0.8	★											★	☆		○				○
	SPUN120312	12.7	12.7	3.18	1.2	★											★	☆		○				○
	SPUN150408	15.875	15.875	4.76	0.8	★											★	☆		○				○
	SPUN150412	15.875	15.875	4.76	1.2	★											★	☆		○				○
	SPUN190408	19.05	19.05	4.76	0.8	★											★	☆		○				○
	SPUN190412	19.05	19.05	4.76	1.2	★											★	☆		○				○
	SPUN190416	19.05	19.05	4.76	1.6	★											★	☆		○				○
	SPGN090304	9.525	9.525	3.18	0.4	★											★	☆		○				○
	SPGN090308	9.525	9.525	3.18	0.8	★											★	☆		○				○
	SPGN120308	12.7	12.7	3.18	0.8	★											★	☆		○				○
	SPGN120404	12.7	12.7	4.76	0.4	★											★	☆		○				○
	SPGN120408	12.7	12.7	4.76	0.8	★											★	☆		○				○
	SPGN120412	12.7	12.7	4.76	1.2	★											★	☆		○				○
	SPGN150408	15.875	15.875	4.76	0.8	★											★	☆		○				○
	SPGN150412	15.875	15.875	4.76	1.2	★											★	☆		○				○
	SPGN190412	19.05	19.05	4.76	1.2	★											★	☆		○				○
	SPGN190416	19.05	19.05	4.76	1.6	★											★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

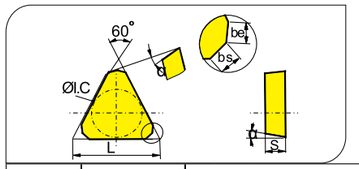
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P							M				K						
		L	I.C	S	be	bs	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNKN1204ENN	12.7	12.7	4.76	0.9	1.5	★											★	☆		○				○
	SNKN1504ENN	15.875	15.875	4.76	0.9	1.5	★											★	☆		○				○
	SNKN1904ENN	19.05	19.05	4.76	1.0	1.5	★											★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

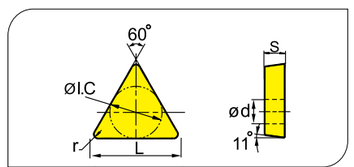
TP□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P							M				K						
		L	I.C	S	be	bs	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	TPKN2204PDFR	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○
	TPKN2204PDEL	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○
	TPKN2204PDR	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○
	TPKN2204PDL	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○
	TPKN2204PDTR	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○
	TPKN2204PDTL	22	12.7	4.76	1.4	0.7	★						○					★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

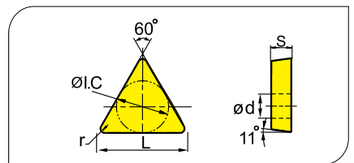
TP□□



Shape	Type	Dimension(mm)				Coated cemented carbide												Cemented carbide				
						P								M				K								
		L	I.C	S	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	TPGN160304	16.5	9.525	3.18	0.4	★											★	☆		○				○
	TPGN160308	16.5	9.525	3.18	0.8	★											★	☆		○				○
	TPGN160312	16.5	9.525	3.18	1.2	★											★	☆		○				○
	TPGN160316	16.5	9.525	3.18	1.6	★											★	☆		○				○
	TPGN220308	22	12.7	4.76	0.8	★											★	☆		○				○
	TPGN220404	22	12.7	4.76	0.4	★											★	☆		○				○
	TPGN220408	22	12.7	4.76	0.8	★											★	☆		○				○
	TPGN220412	22	12.7	4.76	1.2	★											★	☆		○				○
	TPGN220416	22	12.7	4.76	1.6	★											★	☆		○				○
	TPGN270408	27.5	15.875	4.76	0.8	★											★	☆		○				○
	TPGN270412	27.5	15.875	4.76	1.2	★											★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

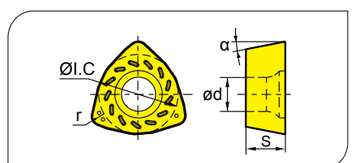
TP□□



Shape	Type	Dimension(mm)				Coated cemented carbide												Cemented carbide				
						P								M				K								
		L	I.C	S	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	TPUN160304	16.5	9.525	3.18	0.4	★											★	☆		○				○
	TPUN160308	16.5	9.525	3.18	0.8	★											★	☆		○				○
	TPUN160312	16.5	9.525	3.18	1.2	★											★	☆		○				○
	TPUN160408	16.5	9.525	4.76	0.8	★											★	☆		○				○
	TPUN160412	16.5	9.525	4.76	1.2	★											★	☆		○				○
	TPUN220404	22	12.7	4.76	0.4	★											★	☆		○				○
	TPUN220408	22	12.7	4.76	0.8	★											★	☆		○				○
	TPUN220412	22	12.7	4.76	1.2	★											★	☆		○				○
	TPUN220416	22	12.7	4.76	1.6	★											★	☆		○				○
	TPMR160304	16.5	9.525	4.76	0.4	★											★	☆		○				○
	TPMR160308	16.5	9.525	4.76	0.8	★											★	☆		○				○
	TPMR160312	16.5	9.525	4.76	1.2	★											★	☆		○				○
	TPMR220412	22	12.7	4.76	1.2	★											★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

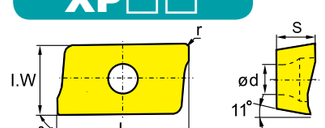
WP□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K					
		ϕI.C	r	S	ϕd	a	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	WPGT050315ZSR	7.94	1.5	3.5	4.0	11°									☆		★	☆		○				○
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°									☆		★	☆		○				○
	WPGT080615ZSR	12.85	1.5	6.35	5.5	11°									☆		★	☆		○				○
	WPGT090725ZSR	12.7	2.5	7	5.5	11°									☆		★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

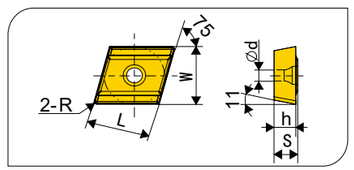
XP□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K					
		L	W	S	d	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	XPHT110304-AH	11.1	6.4	3.18	2.80																			★	☆
	XPHT160404-AH	16.4	9.52	4.76	4.40																			★	☆

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

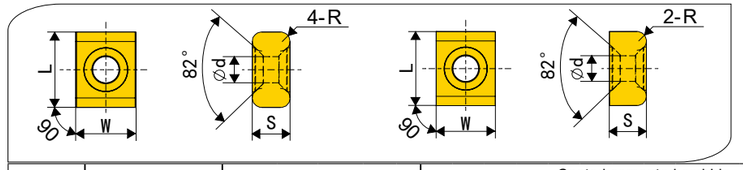
XP□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K					
		L	W	S	h	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	XPGT120406R-DH	13.00	12.5	4.6	3.25	5				☆	○							★	○						
	XPGT120406L-DH	13.00	12.5	4.6	3.25	5				☆	○							★	○						

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

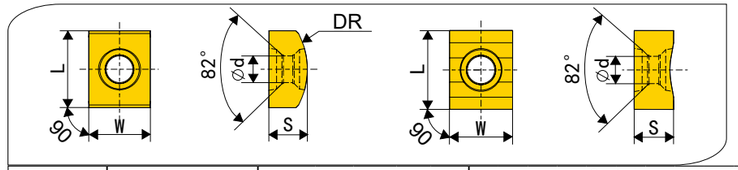
LN□□ Track special milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K						
		L	IC	S	d	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-4R10	15.875	12.7	7.94	5.5	1										☆		★	☆		○				○
	LNEC151207-4R20	15.875	12.7	7.94	5.5	2										☆		★	☆		○				○
	LNEC151207-4R30	15.875	12.7	7.94	5.5	3										☆		★	☆		○				○
	LNEC151207-2-R20	15.875	12.7	7.94	5.5	1										☆		★	☆		○				○
	LNEC151207-2-R30	15.875	12.7	7.94	5.5	2										☆		★	☆		○				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

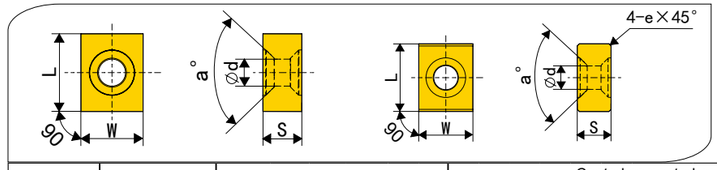
LN□□



Shape	Type	Dimension(mm)					Coated cemented carbide													Cemented carbide				
							P								M				K						
		L	W	S	d	DR	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1025	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-DR115	15.875	12.7	7.94	5.5	11.5				☆	○							★		○	★				
	LNEC151207-DR130	15.875	12.7	7.94	5.5	13				☆	○							★		○	★				
	LNEC151207-DR145	15.875	12.7	7.94	5.5	14.5				☆	○							★		○	★				
	LNEC151207-DR160	15.875	12.7	7.94	5.5	16				☆	○							★		○	★				
	LNEC151207-DR200	15.875	12.7	7.94	5.5	20				☆	○							★		○	★				
	LNEC151207-DR250	15.875	12.7	7.94	5.5	25				☆	○							★		○	★				
	LNEC151207-DR400	15.875	12.7	7.94	5.5	40				☆	○							★		○	★				
	LNEC151207-DR800	15.875	12.7	7.94	5.5	80				☆	○							★		○	★				
	LNEC151207-NR100	15.875	12.7	7.94	5.5	10				☆	○							★		○	★				
	LNEC151207-2NR100	15.875	12.7	7.94	5.5	10				☆	○							★		○	★				
	LNEC151207-NR130	15.875	12.7	7.94	5.5	13				☆	○							★		○	★				
	LNEC151207-2NR130	15.875	12.7	7.94	5.5	13				☆	○							★		○	★				
	LNEC151207-2NR130	15.875	12.7	7.94	5.5	16				☆	○							★		○	★				
	LNEC151207-NR140	15.875	12.7	7.94	5.5	14				☆	○							★		○	★				
	LNEC151207-2NR140	15.875	12.7	7.94	5.5	14				☆	○							★		○	★				
	LNEC151207-NR150	15.875	12.7	7.94	5.5	15				☆	○							★		○	★				
	LNEC151207-NR800	15.875	12.7	7.94	5.5	80				☆	○							★		○	★				
	LNEC151207-2NR3000	15.875	12.7	7.94	5.5	300				☆	○							★		○	★				

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

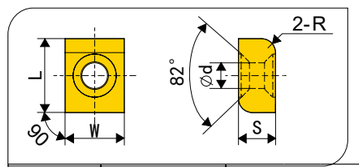
LN□□ Track special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M					K					
		L	W	S	a	d	e	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207	15.875	12.7	7.94	82°	5.5					☆						○		★			★				○
	LNEQ151207	15.875	12.7	7.94	60°	5.5					☆						○		★			★				○
	LNEC151207-404	15.875	12.7	7.94	82°	5.5					☆						○		★			★				○
	LNEQ151207-404	15.875	12.7	7.94	60°	5.5	0.4				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

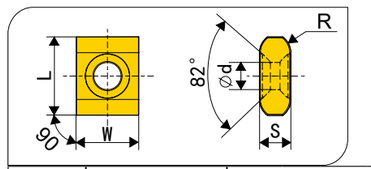
LN□□ Crankshaft special milling insert

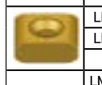


Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M				K							
		L	W	S		d	e	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-2R30	15.875	12.7	7.94		5.5	3				☆						○		★			★				○
	LNEC151207-2R35	15.875	12.7	7.94		5.5	3.5				☆						○		★			★				○
	LNEC151207-2R40	15.875	12.7	7.94		5.5	4				☆						○		★			★				○
	LNEC151207-2R45	15.875	12.7	7.94		5.5	4.5				☆						○		★			★				○
	LNEC151207-2R50	15.875	12.7	7.94		5.5	5				☆						○		★			★				○
	LNEC151207-2R55	15.875	12.7	7.94		5.5	5.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

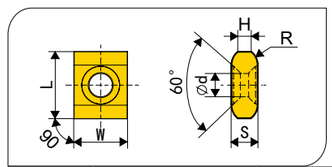
LN□□



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M				K							
		L	W	S		R	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-4R50H	15.875	12.7	7.94		5	5.5				☆						○		★			★				○
	LNEC151206-4R40H	15.875	12.7	6.35		4	5.5				☆						○		★			★				○
	LNEC151206D-4R40H	15.875	12.7	6.35		4	5.5				☆						○		★			★				○
	LNEC151206D-4R50H	15.875	12.7	7.94		5	5.5				☆						○		★			★				○
	LNEC151206D-4R55H	15.875	12.7	7.94		5.5	5.5				☆						○		★			★				○
	LNEC151206D-4R65H	15.875	12.7	7.94		6.5	5.5				☆						○		★			★				○
	LNEC151207D-4R40H	15.875	12.7	7.94		4	5.5				☆						○		★			★				○
	LNEC181206D-4R50H	18.47	12.7	6.35		5	5.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

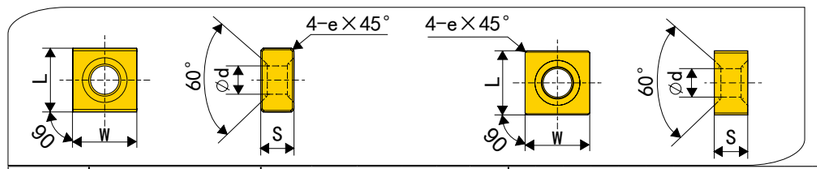
LN□□ Crankshaft special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M				K							
		L	W	S	a	R	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEQ150904-4R30H-T22	15.875	9.525	4.76	60°	3	4.4				☆						○		★			★				○
	LNEQ151104-4R30H-T32	15.875	11.00	4.76	60°	3	5.5				☆						○		★			★				○
	LNEQ151206-4R50H-T21	15.875	12.7	6.35	60°	5	5.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

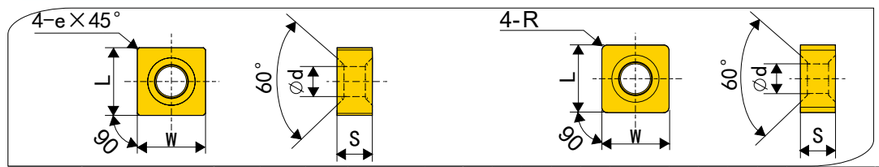
SN□□



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M				K							
		L	W	S	d		e	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEQ1206-405-T40	12.7	12.7	6.35	5.5		0.5				☆						○		★			★				○
	SNEQ1206A-405-T33	12.7	12.7	6.35	4.4		0.5				☆						○		★			★				○
	SNEQ12A06-403-T33	12.0	12.0	6.35	4.4		0.3				☆						○		★			★				○
	SNEQ14A06-405-T32	12.0	12.0	6.35	4.4		0.5				☆						○		★			★				○
	SNEQ1206-405X-T40	12.7	12.7	6.35	5.5		0.5				☆						○		★			★				○
	SNEQ1206A-405X-T33	12.7	12.7	6.35	4.4		0.5				☆						○		★			★				○
	SNEQ12A06-403X-T33	12.0	12.0	6.35	4.4		0.3				☆						○		★			★				○
	SNEQ14A06-405X-T32	12.0	12.0	6.35	4.4		0.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

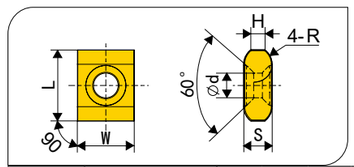
SN□□ Crankshaft special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P							M				K							
		L	W	S	d	R	e	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEQ1206-403X	12.7	12.7	6.35	5.5		0.3				☆						○		★			★				○
	SNEQ1206-408X	12.7	12.7	6.35	5.5		0.8				☆						○		★			★				○
	SNEQ120602-4R02X	12.7	12.7	6.35	5.5	0.2					☆						○		★			★				○
	SNEQ120604-4R04X	12.7	12.7	6.35	5.5	0.4					☆						○		★			★				○
	SNEQ120608-4R08X	12.7	12.7	6.35	5.5	0.8					☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

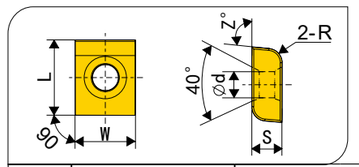
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K							
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEX0904-4R30H	9.525	9.525	4.76	5.5	3				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

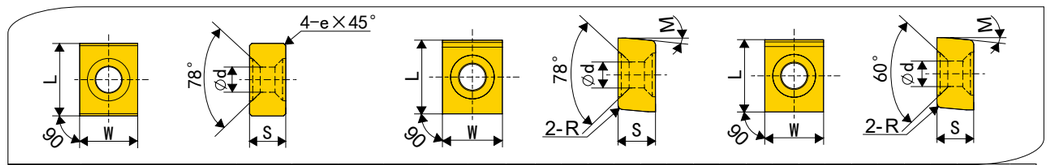
XN□□ Crankshaft special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P							M				K							
		L	W	S	a	Z	d	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	XNEQ151207A-2R40-T20	15.875	12.7	7.15	5.5	88°	5.5				☆						○		★			★				○
	XNEQ151207A-2R27-T20	15.875	12.7	7.15	5.5	88°	5.5				☆						○		★			★				○
	XNEQ151207A-2R47-T20	15.875	12.7	7.15	5.5	88°	5.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

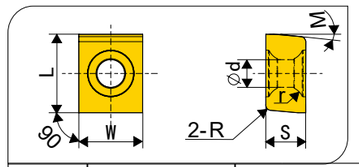
LN□□ Gear special milling insert



Shape	Type	Dimension(mm)							Coated cemented carbide														Cemented carbide				
									P								M				K							
		L	W	S	M	d	e	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC191406-400	19.05	14.29	6.35		5.5	0					☆						○		★			★				○
	LNEC191406-402-22	19.05	14.29	6.35		5.5	0.2					☆						○		★			★				○
	LNEC281409-400	28.575	14.29	6.35		5.5	0					☆						○		★			★				○
	LNEC191207A-2R20A23	19.05	12.7	7.15	23°	5.5		2				☆						○		★			★				○
	LNEC191406-2R20A15	19.05	12.7	6.35	15°	5.5		2				☆						○		★			★				○
	LNEQ191405-2R25A23	19.05	12.7	5	23°	5.5		2.5				☆						○		★			★				○
	LNEQ191406-2R25A23	19.05	12.7	6.35	23°	5.5		2.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

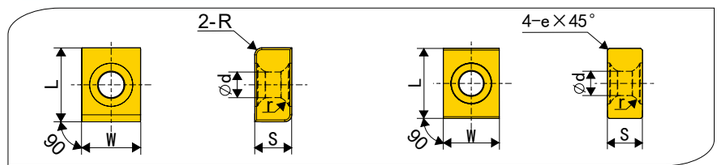
LN□□



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P								M				K							
		L	W	S	M	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEX191408-2R35A20	19.05	14.29	8.5	20°	5.5	3.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

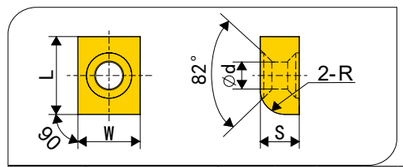
LN□□ Gear special milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide															Cemented carbide				
							P									M				K							
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEX191406-2R24-T31	19.05	14.29	6.35	5.5	2.4				☆						○		★			★				○
	LNEX191406-400	19.05	14.29	6.35	5.5					☆						○		★			★				○
	LNEX191406-408-T31	19.05	14.29	6.35	5.5					☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

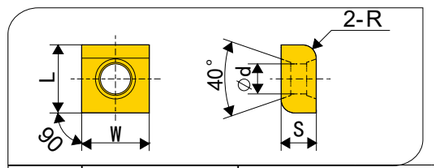
LN□□



Shape	Type	Dimension(mm)					Coated cemented carbide															Cemented carbide				
							P									M				K							
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-1R70	15.875	12.7	7.94	5.5	7				☆						○		★			★				○
	LNEC151207-1R180	15.875	12.7	7.94	5.5	18				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

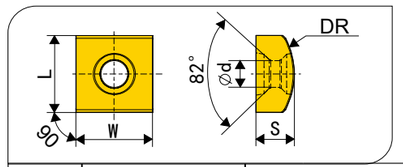
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEQ1507-2R40-T24	15.875	15.875	7.94	5.5	4.0				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

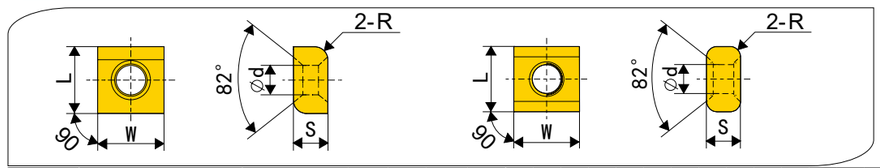
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEC1507-DR130-T50	15.875	15.875	7.94	5.5	13				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

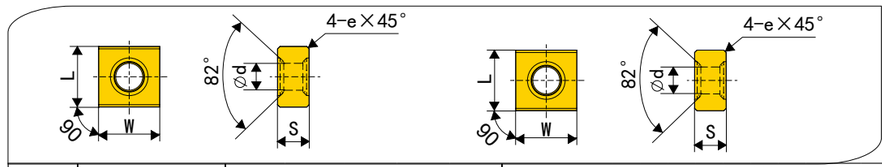
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide				
								P							M				K						
		L	W	S	d	a	r	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEC1507-2R20-T23	15.875	15.875	7.94	5.50	82°	2				☆						○		★			★				○
	SNEC1507-2R20-T24	15.875	15.875	7.94	5.50	82°	5				☆						○		★			★				○
	SNEC1507-2R115-T51	15.875	15.875	7.94	5.50	82°	11.5				☆						○		★			★				○
	SNEC1507-4R20-T23	15.875	15.875	7.94	5.50	82°	3.2				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

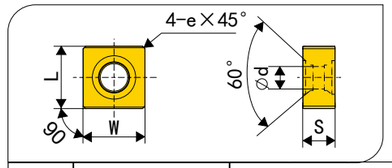
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	e	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEC1507-400	15.875	15.875	7.94	5.50	0.00				☆						○		★			★				○
	SNEC1507-408	15.875	15.875	7.94	5.50	0.80				☆						○		★			★				○
	SNEC1507-408-T34	15.875	15.875	7.94	5.50	0.80				☆						○		★			★				○
	SNEC1507-407-T12	15.875	15.875	7.94	5.50	0.70				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

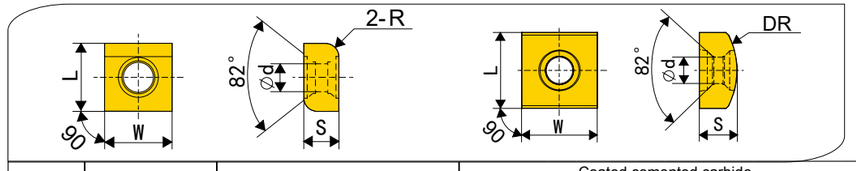
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEQ1106-403X-T22	15.875	15.875	7.94	5.50					☆						○		★			★				○
	SNEQ1708A-416X	15.875	15.875	7.94	5.50					☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

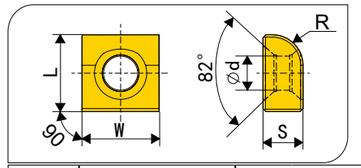
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEC1507-2R32	15.875	15.875	7.94	5.50	3.2				☆						○		★			★				○
	SNEC1507-DR235	15.875	15.875	7.94	5.50	23.5				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

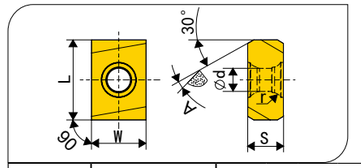
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	R	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	SNEC1507-1R70-T33	15.875	15.875	7.94	5.50	3.2				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

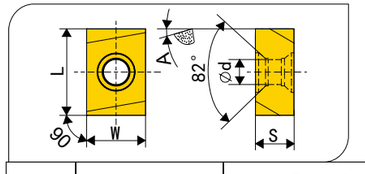
LN□□



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	A	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEX191308A-4A8	19.03	13	8.50	5.50	8°				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

LN□□



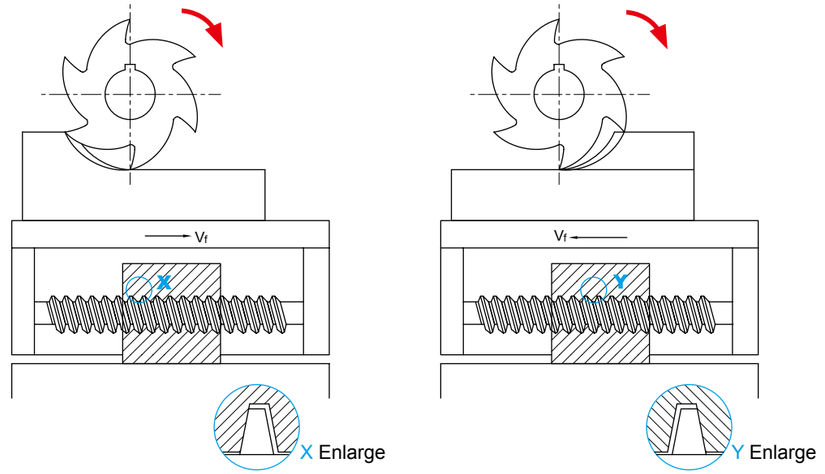
Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P								M				K						
		L	W	S	d	A	JT4030	JT4040	JT4050	JT4330	JT4340	JT4350	JPP302	JPP402	JT1015	JT1035	JT1215	JT1225	JT3115	JT3125	JP302	JP402	JK001	JK101	JK201
	LNEC151207-4A5	15.875	12.7	7.94	5.50	5°				☆						○		★			★				○
	LNEC151207-4A6-T23	15.875	12.7	7.94	5.50	6°				☆						○		★			★				○
	LNEC191406-4A8	19.050	14.29	6.35	5.50	8°				☆						○		★			★				○
	LNEC191406-4A8-T23	19.050	14.29	6.35	5.50	8°				☆						○		★			★				○
	LNEC281409-4A8	19.050	14.29	9.52	5.50	8°				☆						○		★			★				○

★Recommended grade for stock ☆Optional grade for stock ○Make-to-order

The milling processing common problems and solutions

Trouble		Solutions and check points	Cutting tool material selection		Cutting condition					Shape								Machine tool clamping		
			Material with higher hardness	Material with better tough ness	Cutting speed	Feed rate	Cutting depth	Change the diameter and width of milling tool	Cutting liquid	Rake angle	Approach angle	Strength of cutting edge	Number of teeth	Increase the width of chip pocket	Examine the geometry shape of minor cutting edge	Check the run-out of and face	Improve the rigidity of tool	Clamping system of workpiece	Overhang of tool	Power gap
Fracture of tool nose	Severe abrasion of clearance face	Improper cutting condition			↓				✓											
		Improper geometry shape of cutting edge	✓							↑		↓								
	Severe abrasion of rake face	Improper geometry shape of cutting edge			↓	↓	↓		✓											
		Improper geometry shape of cutting edge	✓							↑	↓	↓								
	Fracture of cutting edge	Improper cutting condition				↓	↓													
		Improper geometry shape of cutting edge		✓							↓	↑			✓	✓	✓	✓	✓	✓
	Thermal cracking	Improper cutting condition			↓	↓	↓		✓											
		Improper geometry shape of cutting edge								↑		↓								
	Built-up edge	Improper cutting condition			↑	↑			✓											
		Improper geometry shape of cutting edge								↑		↓								
Machining precision	Coarse surface	Abrasion of tool,great vibration of milling tool	✓		↑	↓	↓		✓			↓			Wiper	✓				
	Causing burr	Improper cutting condition			↓	↓	↓	✓												
		Improper geometry shape of cutting edge								↑	↑	↓			✓					
	Side collapse	Improper cutting condition				↓	↓													
		Improper geometry shape of cutting edge								↑	↓	↓	↑		✓		✓			
	Worse planeness and parallelism	Improper geometry shape of cutting edge				↓	↓			↑	↑		↓		✓	✓	✓	✓	✓	✓
Others	Great vibration	Cutting condition improper technology			↓	↓	↓	✓		↑	↑	↓					✓	✓	✓	✓
	Chippings are twisting and jamming	Improper cutting condition			↑	↑↓		✓	✓				↓							
		Improper geometry shape of cutting edge								↑			↓	✓						

Difference and selection between down milling and up milling



Up milling　　Down milling

Down milling:the feed direction of workpiece is the same as that of the milling rotation at the connecting position.
Up milling:the feed direction of workpiece is opposite to the milling rotation at the connecting position.

In down milling,the major force of cutting edge is compressive stress; in up milling,cutting edge bears the tensile stress.The compressive strength of cemented carbide material is larger than its tensile strength. In down milling,chip becomes thin from thick gradually,cutting edge and workpiece press each other. The friction between edge and workpiece is small, thus can reduce the abrasion of edge, the hardening of workpiece surface and the surface roughness(Ra). In up milling, chip becomes thin gradually. When insert cutting into the workpiece, it generates strong friction and more heat than down milling, and make workpiece surface harden.

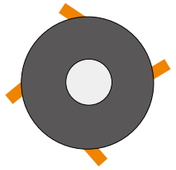
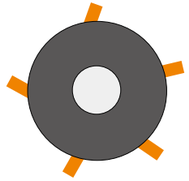
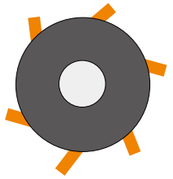
In up milling, because horizontal direction of cutting force that milling cutter conduction on workpiece is opposite to the feed direction of workpiece, therefore the lead screw of work table joints closely with one side of screw nut. In down milling, the direction of cutting force is same as the feed direction. When edge's radial force on workpiece is big enough to some extend, the work table will bounce left and right, thus make the gap fall behind.The gap will return to front side along with the continuing rotation of lead screw. At this moment the work table stops motion, however it will bounce left and right again when the radial cutting force is big enough to some extend again. The periodical bounce of work table will cause poor surface quality of workpiece and tool breakage.

When use end mills for down milling,every time the edges begin the cutting at workpiece surface,therefore end mills are not suitable for machining the workpiece with the hardened surface.

Up milling is recommended for milling the thin-wall components or square milling with the demand of high precision.

Pitch selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

Stability of operation		
L (Low)	**M** (Medium)	**H** (High)
Coarse pitch	Close pitch	Extra close pitch
		
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, selecting coarse pitch can achieve high productive efficiency.	General milling function and multiple mixed productions	When the milling width is less than diameter of cutter,cutting by maximum edges can achieve high productive efficiency.

Approach angle selection

The approach angle is composed by insert and tool body,chip thickness, cutting forces and tool-life are affected especially by the approach thickness and spreads the cutting area between cutting edge and workpiece for a given feed rate.

A smaller approach angle also guarantee that it is stable entrying into or exiting workpiece, to protect the cutting edge and extend tool life. However this will increase higher axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Approach angle	Feed rate per tooth	maximum cutting depth
90°	f_z	$h_{ex}=f_z\times sinkr$
75°	f_z	$h_{ex}=0.96\times f_z$
60°	f_z	$h_{ex}=0.86\times f_z$
45°	f_z	$h_{ex}=0.707\times f_z$
Round insert	f_z	$h_{ex}=\frac{\sqrt{iC^2\times(iC-2a_p)^2}}{iC}\times f_z$

General formule

V_c : Cutting speed(m/min) V_f : Feed rate of worktable(feed speed)(mm/min) D_c : Nominal diameter of milling tool(mm)
f_z : Feed rate per tooth(mm/z) n : Spindle speed(rev/min)
π : Circumference ratio≈3.14
z_n : Tooth NO. T_c : Machining time(min)
Q : Metal removal rate(cm^3/min)
f_z : Feed rate per revolution(mm/rev) L : Real cutting distance(mm)

- Cutting speed

$$V_c=\frac{\pi\times D_c\times n}{1000}\ (m/min)$$

- Spindle speed

$$n=\frac{1000\times V_c}{\pi\times D_c}\ (rev/min)$$

- Feed rate of worktable(feed speed)

$$V_f=f_z\times n\times z_n\ (mm/min)$$

- Feed rate per tooth

$$f_z=\frac{V_f}{n\times Z_n}\ (mm/z)$$

- Feed rate per revolution

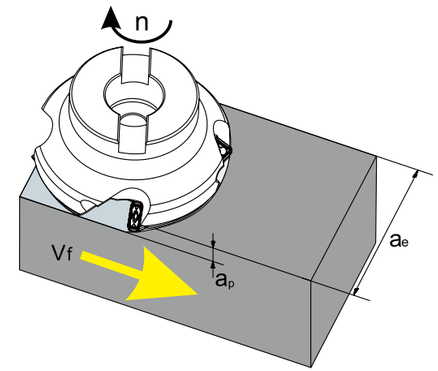
$$f_n=\frac{V_f}{n}\ (mm/rev)$$

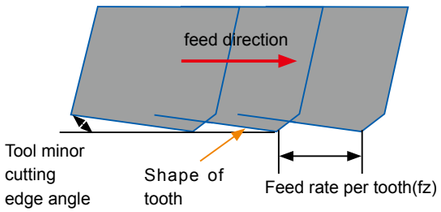
- Machining time

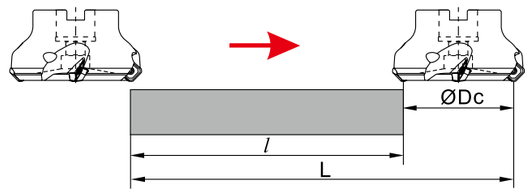
$$T_c=\frac{L}{V_f}\ (min)$$

- Metal removal rate

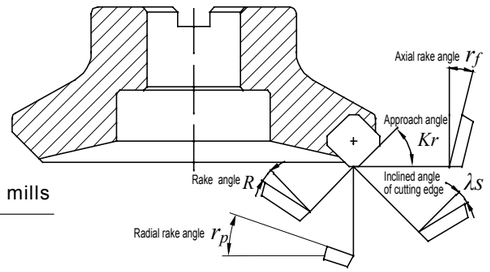
$$Q=\frac{a_p\times a_e\times V_f}{1000}\ (cm^3/min)$$







Function of each part in face milling

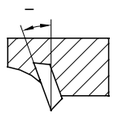
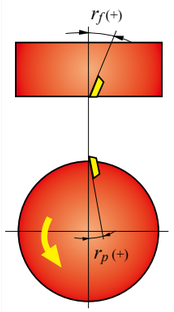
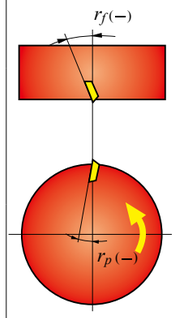
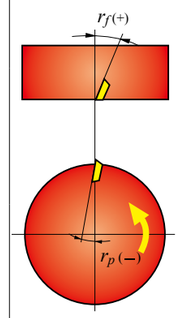
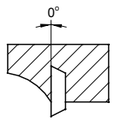
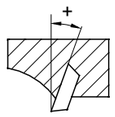


Main angles of face mills

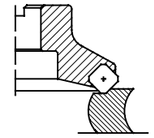
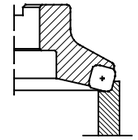
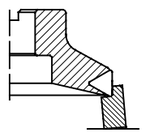
Main angles of face mills

Name	Function	Effect		
Axial rake angle rf r_f	Determining the chip direction	Negative angle: good chip removal performance		
Radial rake angle r_p	Determining whether the cutting is light and fast or not	Positive angle: good chip removal performance		
Approach angle Kr	Determining the chip direction	Kr↑, chip thickness↑; Kr↓, chip thickness↓;		
Rake angle R	Determining whether the cutting is light and fast or not	Poor cutting performance,high strength of cutting edge	(−) ←0→ (+)	Good cutting performance,low strength of cutting edge
Inclined angle of cutting edge λs	Determining the chip direction	Poor cutting performance,high strength of cutting edge	(−) ←0→ (+)	Good cutting performance,low strength of cutting edge

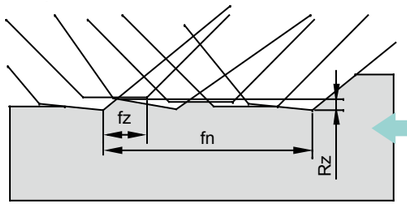
Characteristics of different rake angles combined

		Double positive	Double negative	positive, one negative
Negative rake Angle				
0°rake Angle				
Positive rake angle				
Axial rake angle		+	−	+
Radial rake angle		+	−	−
Applicable material machined	**P**	√		√
	M	√		√
	K		√	√
	N	√		
	S	√		√

Cutting performances of different approach angles

Approach angle	45°	75°	90°
Schematic diagram			
Instruction	Axial force is the largest. It will bend when machining thin-wall workpiece,and reduces the precision of workpiece. It is benefit to avoid fringe breakage of workpiece when machining cast iron.	The main purpose is to resolve the radial cutting force, it is often used for general face milling.	The axial force is zero in theory, suitable for milling thin plate workpiece.

Wiper insert

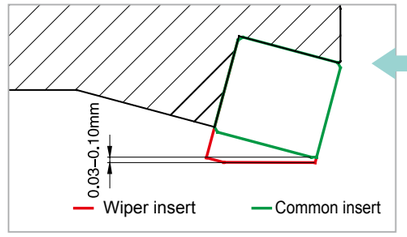


It has axial and radial run out because of tools and inserts exist manufacturing tolerance.The axial runout lead to poor surface roughness.

Solution

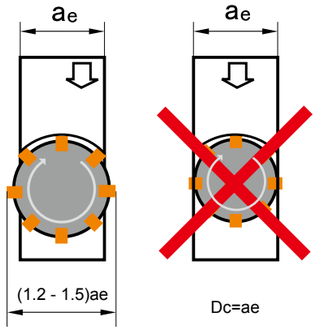
Assembling wiper insert

Usage



The wiper insert must protrude below the other insert by 0.03-0.05mm at axial direction, only that the wiping function can take into effect.Generally speaking, a cutter can just assemble only one one wiper insert. If the diameter of cutter is much bigger or cutter's feed rate per revolution is bigger than the length of wiper edge,2 to 3 wiper inserts can be assembled.

Selection of cutting width and tool cutting diameter in face milling



Dc:Tool cutting diameter
ae:Cutting width

Generally speaking, the relation between cutting width and tool cutting diameter is Dc=(1.2-1.5) ae.
In the machining practice, it need to avoid coincidence of tool center and workpiece center as much as possible.

Cutting tool used in security matters needing attention

Risk	Measure
Direct contact with sharp cutting edge may cause harm to human body	When you install or remove the cutting tool in the machine tool, please use gloves and other protective labor insurance supplies.
Inappropriate use tool can lead to the breakage, attachment, cause damage	Read the sample and safety standards before use
	Please use the protective glasses and protective clothing
Excessive wear and dramatic impact the cutting resistance, can lead to rupture and the splash, cause harm to the operator	Replace the excessive wear of cutting tool in a timely manner
	Please use the protective glasses and protective clothing.
In the process of cutting chip may cause burns and scratches to the people	Use tools such as forceps to remove scraps in a timely manner
	Please use the protective glasses and protective clothing and protective glove
Sparks in cutting process and high temperature chip is in danger of fire and explosion.	Remove flammable items in the cutting area
	Please get everything ready for fire extinguishing equipment
Speed of machine tools such as fixture balance difference caused by violent vibration, result in tool breakage.	Before cutting, check whether the device is loose or abnormal sound
	Please use the protective glasses and protective clothing
The defects such as burrs on the work piece is very sharp,easy to scratch the body	Please don't touch the burr on the work piece
	Please use the protective gloves and protective clothing
No clamp work piece processed directly causes tool breakage and splash of work piece.	Must be firmly clamp the work piece
	Please use the protective glasses and protective clothing
In the insert or insert attachments were not tightened properly under the situation of cutting, tool shed fly out the risk of damage.	Confirmation before processing blades and other accessories have tighten properly with proper tools
With auxiliary tools such as excessive fastening screw pin or shim, insert or with broken splash of danger.	Please don't use auxiliary tools such as casing too tighten
When high speed cutting insert or attachment, likely due to the inertia fall off under the action of centrifugal force.	Please don't use auxiliary tools such as casing too tighten
	Please use the protective glasses and protective clothing
As a result of the milling cutter winger, directly touch may cause scratches	For your safety, under the condition of the blade must contact your protective gloves
Rotary cutting, clothing, gloves, etc. It is easy to ground to the high speed running equipment, causing casualties	When rotate cutting,please don't wear gloves in processing.
	Attention : don't let the clothes contact with the running machine parts
Eccentric rotating or balance tool in spinning processing will produce bad shake vibration damage caused by flying lead to harm	Please use cutting tools within the scope of permissible speed
	Check the balance of mechanical properties
When high speed cutting, high speed flying out of the chip is likely to cause harm	Use safety cover, protection screen, housing,etc
	Please use the protective glasses and protective clothing and gloves
With minimal cutting tools for drilling, easy to cause break splash and unable to remove the cutting tool	Reduce the vibration of the cutting tool and under appropriate speed processing
	Please use the protective glasses and protective clothing and gloves
The improper use, will cause the acceleration damage of machine tools and cutting tools, and other hazards.	Please use according to instructions and regulations

Remark: if without our permission, without authorization to modify tool caused by the accident, the company is not responsible for

Diameter of thread bottom hole

The metric system common thread

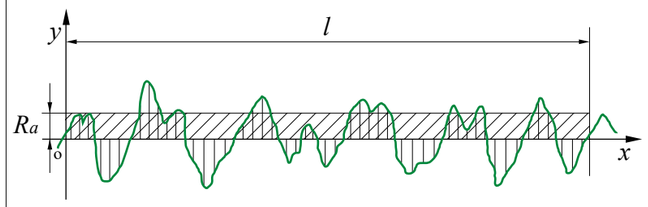
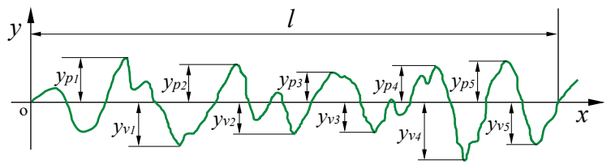
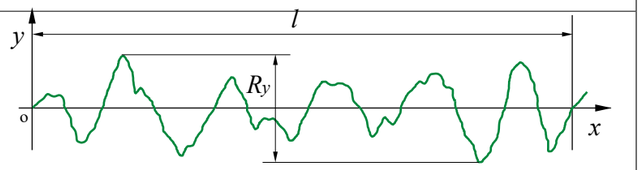
Thread Code	Recommended bottom hole diameter(mm)
M3×0.5	2.5
M3.5×0.6	2.9
M4×0.7	3.3
M5×0.8	4.2
M6×1.0	5.0
M7×1.0	6.0
M8×1.25	6.75
M9×1.25	7.75
M10×1.5	8.5
M11×1.5	9.5
M12×1.75	10.25
M14×2.0	12.0
M16×2.0	14.0
M18×2.5	15.5
M20×2.5	17.5
M24×3.0	21.0
M27×3.0	24.0
M30×3.5	26.5

metric fine thread

Thread Code	Recommended bottom hole diameter(mm)	Thread Code	Recommended bottom hole diameter(mm)
M3×0.35	2.65	M14×1.5	12.5
M3.5×0.35	3.15	M14×1.0	13.0
M4×0.5	3.5	M15×1.5	13.5
M4.5×0.5	4.0	M15×1.0	14.0
M5×0.5	4.5	M16×1.5	14.5
M5.5×0.5	5.0	M16×1.0	15.0
M6×0.75	5.25	M17×1.5	15.5
M7×0.75	6.25	M17×1.0	16.0
M8×1.0	7.0	M18×2.0	16.0
M8×0.75	7.25	M18×1.5	16.5
M9×1.0	8.0	M18×1.0	17.0
M9×0.75	8.25	M20×2.0	18.0
M10×1.25	8.75	M20×1.5	18.5
M10×1.0	9.0	M20×1.0	19.0
M10×0.75	9.25	M22×2.0	20.0
M11×1.0	10.0	M22×1.5	20.5
M11×0.75	10.25	M22×1.0	21.0
M12×1.5	10.5	M24×2.0	22.0
M12×1.25	10.75	M24×1.5	22.5
M12×1.0	11.0	M24×1.0	23.0

Surface roughness

Surface roughness is refers to the processed surface of small spacing and small peak valley roughness.
Surface roughness has close relation with the properties of mechanical parts, abrasion resistance, working accuracy and corrosion resistance, impact to the machine or equipment reliability and life expectancy.

variety	Code	computing method	Calculation method (figure)
Profile arithmetic average error	Ra	Within the sampling length l contour offset distance absolute value of the arithmetic average $Ra=\frac{1}{l}\int_0^l \lvert y(x)\rvert dx$ Type in the contour offset y refers to the distance between the ontour points and the the reference line. Reference line for least squares line O outline.The line dividing profile and make it within the sampling length profile deviation from the line of sum of squares to a minimum.	
Ten point height of irregularities	Rz	Within the sampling length l of the outline of the five biggest peak height and the outline of the five biggest deep valley of the average the sum of the average $Rz=\frac{\sum_{i=1}^{5} y_{pi}+\sum_{i=1}^{5} y_{vi}}{5}$ Type: ypi is the outline of the ith a maximum peak height, yvi is one of the largest outline the ith a deep valley.Outline of the maximum height Ry: peak within the sampling length l contour line and contour of the distance between the bottom line.	
Maximum height of the profile	Ry	Peak within the sampling length l contour line and the contour of the distance between the bottom line. Outline the summit line is parallel to the baseline and peak by contour line;Outline the bottom line is parallel to the baseline and low by contour lines.	

Sampling length l and assess value of length ln

Ra / μm	*Rz / μm*	*l/mm*	*ln=5l /mm*
⩾0. 008~0. 02	⩾0. 025~0. 10	0. 08	0. 4
>0. 02~0. 1	>0. 1~0. 50	0. 25	1. 25
>0. 1~0. 2	>0. 50~10. 0	0. 8	4. 0
>0. 2~10. 0	>10. 0~50. 0	2. 5	12. 5
>10. 0~80. 0	>50~320	8. 0	40. 0

Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	15	1015	1.0401	C15	080M15	-	1350	CC12	C15C16	F.111	-
	20	1020	1.0402	C22	050A20	2C	1450	CC20	C20C21	F.112	-
	35	1035	1.0501	C35	060A35	-	1550	CC35	C35	F.113	-
	45	1045	1.0503	C45	080M40	-	1650	CC45	C45	F.114	-
	55	1055	1.0535	C55	070M55	-	1655	-	C55	-	-
	60	1060	1.0601	C60	080A62	43D	-	CC55	C60	-	-
	Y15	1213	1.7015	9SMn28	230M07	-	1912	S250	CF9SMn28	11SMn28	SUM22
	-	12L13	1.0718	9SMnPb28	-	-	1914	S250Pb	CF9MnPb28	11SMnPb28	SUM22L
	-	-	1.0722	10SPb20	-	-	-	10PbF2	CF10Pb20	10SPb20	-
	-	1140	1.0726	35S20	212M36	8M	1957	35MF4	-	F210G	-
	Y13	1215	1.0736	9SMn36	240M07	1B	-	S300	CF9SMn36	12SMn35	-
	-	12L14	1.0737	9SMnPb36	-	-	1926	S300Pb	CF9SMnPb36	12SMnP35	-
	55Si2Mn	9255	1.0904	55Si9	250A53	45	2085	55S7	55Si8	56Si7	-
	-	9262	1.0961	60SiCr7	-	-	-	60SC7	60SiCr8	60SiCr8	-
	15	1015	1.1141	Ck15	080M15	32C	1370	XC12	C16	C15K	S15C
	40Mn	1039	1.1157	40Mn4	150M36	15	-	35M5	-	-	-
	25	1025	1.1158	Ck25	-	-	-	-	-	-	S25C
	35Mn2	1335	1.1167	36Mn5	-	-	2120	40Mn5	-	36Mn5	SMn438(H)
	30Mn	1330	1.1170	28Mn6	150M28	14A	-	20M5	C28Mn	-	SCMn1
	35Mn	1035	1.1183	Cf35	060A35	-	1572	XS38TS	C36	-	S35C
	Ck45	1045	1.1191	45	080M46	-	1672	XC42	C45	C45K	S45C
	55	1055	1.1203	Ck55	070M55	-	-	XC45	C50	C55K	S55C
	50	1050	1.1213	Cf53	060A52	-	1674	XC48TS	C53	-	S50C
	60Mn	1060	1.1221	Ck60	080A62	43D	1678	XC60	C60	-	S58C
	-	1095	1.1274	Ck101	060A96	-	1870	-	-	-	SUP4
	-	-	1.3401	X120Mn12	Z120M12	-	-	X120M12	XG120Mn12	X120Mn12	SCMnH/1
	Gr15;45Gr	52100	1.3505	100Cr6	534A99	31	2258	100C6	100Cr6	F.131	SUJ2
	-	ASTM A204Gr.A	1.5415	15Mo3	1501-240	-	2912	15D3	16Mo3KW	16Mo3	-
	-	4520	1.5426	16Mo5	1503-245-420	-	-	-	16Mo5	16Mo5	-
	-	ASTM A350LF5	1.5622	14Ni6	-	-	-	16N6	14Ni6	15Ni6	-
	-	ASTM A353	1.5662	X8Ni9	1501-509;510	-	-	-	X10Ni9	XBNi09	-

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Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	-	2515	1.5680	12Ni19	-	-	-	Z18N5	-	-	-
	-	3135	1.5710	36NiCr6	640A35	111A	-	35NC6	-	-	SNC236
	-	3415	1.5732	14NiCr10	-	-	-	14NC11	16NiCr11	15NiCr11	SNC415(H)
	-	3415 3310	1.5752	14NiCr14	655M13 655A12	36A	-	12NC15	-	-	SNC815(H)
	-	9840	1.6511	36CrNiMo4	816M40	110	-	40NCD3	38CrNiMo4(KB)	35CrNiMo4	-
	-	8620	1.6523	21NiCrMo2	850M20	362	2503	20NCD2	20NiCrMo2	20NiCrMo2	SNCCM220(H)
	-	8740	1.6546	40NiCrMo2	311-Type7	-	-	-	40NiCrMo2(KB)	40NiCrMo2	SNC240
	40CrNiMoA	4340	1.6582	34CrNiMo6	817M40	24	2541	35NCD6	35CrNiMo6(KB)	-	-
	-	-	1.6587	17CrNiMo6	820A16	-	-	18NCD6	-	14CrNiMo13	-
	15Cr	5015	1.7015	15Cr3	523M15	-	-	12C3	-	-	SCr415(H)
	35Cr	5132	1.7033	34Cr4	530A32	18B	-	32C4	34Cr4(KB)	35Cr4	SCr430(H)
	40Cr	5140	1.7035	41Cr4	530M40	18	-	42C4	41Cr4	42Cr4	SCr440(H)
	40Cr	5140	1.7045	42Cr4	-	-	2245	-	-	42Cr4	SCr440
	18CrMn	5115	1.7131	16MnCr15	(527M20)	-	2511	16MC5	16MnCr15	16MnCr15	-
	20CrMn	5155	1.7176	55Cr3	527A60	48	-	55C3	-	-	SUP9(A)
	30CrMn	4130	1.7218	25CrMo4	1717CDS110	-	2225	25CD4	25CrMo4(KB)	55Cr3	SCM420; SCM430
	35CrMo	4137;4135	1.7220	34CrMo4	708A37	19B	2234	35CD4	35CrMo4	34CrMo4	SCM432; SCRRM3
	40CrMoA	4140;4142	1.7223	41CrMo4	708M40	19A	2244	42CD4TS	41CrMo4	41CrMo4	SCM440
	42CrMo 42CrMnMo	4140	1.7225	42CrMo4	708M40	19A	2244	42CD4	42CrMo4	42CrMo4	SCM440(H)
	-	-	1.7262	15CrMo5	-	-	2216	12CD4	-	12CrMo4	SCM415(H)
	-	ASTM A182 F11;F12	1.7335	13CrMo44	1501- 620Gr.27	-	-	15CD3.5; 15CD4.5	14CrMo44	14CrMo45	-
	-	-	1.7361	32CrMo12	722M24	40B	2240	30CD12	32CrMo12	F.124.A	-
	-	ASTM A182 F.22	1.7380	10CrMo910	1501- 622Gr.31;45	-	2218	12CD9;10	12CrMo9,10	TU.H	-
	-	-	1.7715	14MoV63	1503-660-440	-	-	-	-	13MoCrV6	-
	50CrVA	6150	1.8159	50CrV4	735A50	47	2230	50CV4	50CrV4	51CrV4	SUP10
	-	-	1.8509	41CrAlMo7	905M39	41B	2940	40CAD6,12	41CrAlMo7	41CrAlMo7	-
	-	-	1.8523	39CrMoV139	897M39	40C	-	-	36CrMoV12	-	-

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Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Chisel tool steel										
	T10	W.110	1.1545	C105W1	-	-	1880	$Y_1$105	C98KU C100KU	F.515 F.516	-
	T12A	W.112	1.1663	C125W	-	-	-	$Y_2$120	C120KU	(C120)	SK2
	CrV;9SiCr	L3	1.2067	100Cr6	BL3	-	-	Y100C6	-	100Cr6	-
	Cr12	D3	1.2080	X210Cr12	BD3	-	-	Z200Cr12	X210Cr13KU X250Cr12KU	X210Cr12	SKD1
	4Cr5MoVSi	H13	1.2344	X40CrMoV5 1	BH13	-	2242	Z40CDV5	X35CrMoV05KU X40CrMoV51KU	X40CrMoV5	SKD61
	Cr6WV	A2	1.2363	X100CrMoV5 1	BA2	-	2260	Z100CDV5	X100CrMoV51KU	X100CrMoV5	SKD12
	CrWMo	-	1.2419	105WCr6	-	-	2140	105WC13	10WCr6 107WCr5KU	105WCr5	SKS31 SKS2 SKS3
	Cr12W	-	1.2436	X210CrW12	-	-	2312	-	X215CrW12 1KU	X210CrW12	SKD2
	5CrNiMo	S1	1.2542	45WCrV7	BS1	-	2710	-	45WCrV8KU	45WCrSi8	-
	3Cr2W8V	H21	1.2581	X30WCrV9 3 X30WCrV93KU	BH21	-	-	Z30WCV9	X28W09KU X30WCrV9 3KU	X30WCrV9	SKD5
	Cr12MoV	-	1.2601	X165CrMoV 12	-	-	2310	-	X165CrMoW12KU	X160CrMoV12	SKD11
	5CrNiMo	L6	1.2713	55NiCrMoV6	-	-	-	55NCDV7	-	F.250.S	SKT4
	V	W210	1.2833	100V1	BW2	-	-	$Y_1$105V	-	-	SKS43
	W6Mo5Cr4V2Co5	-	1.3243	S6-5-2-5	-	-	2723	Z85WDKCV	HS6-5-2-5	HS6-5-2-5	SKH55
	W18Cr4VCo5	T4	1.3255	S18-1-2-5	BT4	-	-	Z80WKCV 10-05-04-01	X78WCo1805KU	HS18-1-1-5	SKH3
	W6Mo5Cr4V2	M2	1.3343	S6-5-2	BM2	-	2722	Z85WDCV 06-05-04-02	X82WMo0605KU	HS6-5-2	SKH9
	-	M7	1.3348	S2-9-2	-	-Z-	2782	Z100WCWV 09-02-04-02	HS2-9-2	HS2-9-2	-
	W18Cr4V	T1	1.3355	S18-0-1	BT1	-	-	Z80WCV 18-04-01	X75W18KU	HS18-0-1	SKH2
	W6Mo5Cr4V3	M3	-	S6-5-3	-	-	-	-	-	-	SKH52
	-	M42	-	-	BM42	-	-	-	-	-	SKH59

General technical information

Material comparison table

ISO	Country and standard					Main application
	China	America	Germany	Japan	Datong (Japan)	
	GB	AISI/SAE	DIN	JIS	DAIDO	
P	**Plastic die steel**					
	-	P20 mod.		-	PX5N	Mass production with large mirror mould. Auto tail lamp, mirror before the shell baffle, cameras, home appliances, etc
	-	-		-	NAK55	High precision mirror mould. Camera, music, cosmetic containers, transparent cover class, transparent film, etc
	-	-		-	NAK80	High mirror high precision mold. Cameras, cosmetic containers, transparent cover, transparent film, etc
	3Cr13	420 mod.		SUS420J2 mod.	S-STAR	Super mirror corrosion precision mold. Camera parts, CD, lens, watch case
	Cold-work die steel					
	-	02	-	SKS93	YK30	Stamping mold, gauge, paper knife, auxiliary tools
	9CrWMn	01 mod.	-	SKS3 mod.	GOA	Blanking die, gauge, die, tap, a hole punch
	Cr12MoV	D2	X165CrMoV12	SKD11	DC11	Die, cold, cold die, die forming roll, the punch
	-	D2 mod.	-	SKD11 mod.	DC53	Die, cold, cold die, die forming roll, the punch
	Hot-work die steel					
	4Cr5MoSiV1	H13	X40CrMoV51	SKD61	DHA1	Aluminum die-casting mould, die-casting mould connection parts, stamping dies, hot extrusion die, hot shear blades
	-	-	-	-	DH21	Long-life aluminum die-casting mould
	-	-	-	-	DH31-S	Eavy die casting dies
	-	-	-	-	DH2F	Die mold, plastic mold

General technical information

General technical information

Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
M	**Stainless steel**										
	0Cr13; 1Cr12	403	1.4000	X6Cr13	403S17	-	2301	Z6C13	X6Cr13	F.3110	SUS403
	-	-	1.4001	X7Cr14	-	-	-	-	-	F.8401	-
	1Cr13	410	1.4006	X10Cr13	410S21	56A	2302	Z10C14	X12Cr13	F.3401	SUS410
	1Cr17	430	1.4016	X6Cr17	430S15	60	220	Z8C17	X8Cr17	F.3113	SUS430
	2Cr13	410	1.4021	X20Cr13	S62	56B; 56C	-	Z20C13	X20C13	F.3401	SUS410
	-	-	1.4027	G-X20Cr14	420C29	56B	-	Z20C13M	-	-	SCS2
	4Cr13	-	1.4034	X46Cr13	420S45	56D	2304	Z40CM Z38C13M	X40Cr14	F.3405	SUS420J2
	1Cr17Ni2	431	1.4057	X20CrNi172	431S29	57	2321	Z15CNi6.02	X16CNi16	F.3427	SUS431
	Y1Cr17	430F	1.4104	X12CrMoS17	-	-	2383	Z10CF17	X10CrS17	F.3117	SUS430F
	1Cr17Mo	434	1.4113	X6CrMo171	434S17	-	2325	Z8CD17.01	X8CrMo17	-	SUS434
	-	-	1.4313	X5CrNi134	425C11	-	-	Z4CND13.4M	-	-	SCS5
	-	-	1.4408	G-X6CrNiMo1810	316C16	-	-	-	-	F.8414	SCS14
	4Cr9Si2	HW3	1.4718	X45CrSi93	401S45	52	-	Z45CS9	X45CrSi8	F.322	SUH1
	0Cr13Al	405	1.4724	X10CrAl13	403S17	-	-	Z10C13	X10CrAl12	F.311	SUS405
	Cr17	430	1.4742	X10CrAl18	430S15	60	-	Z10CAS18	X8Cr17	F.3113	SUS430
	8Cr20Si2Ni	HNV6	1.4757	X80CrNiSi20	443S65	59	-	Z80CSN20.02	X80CrSiNi20	F.320V	SUH4
	2Cr25N	446	1.4762	X10CrAl24	-	-	2322	Z10CAS24	X16Cr26	-	SUH446
	Austenitic stainless steel										
	0Cr18Ni9	304	1.4301	X5CrNi1810	304S15	58E	2332	Z6CN18.09	X5CrNi1810	F.3551; F.3541; F.3504	SUS304
	1Cr18Ni9MoZr	303	1.4305	X10CrNiS189	303S21	58M	2346	Z10CNF18.09	X10CrNiS18.09	F.3508	SUS303
	0Cr19Ni10	304L	1.4306	X2CrNi1911	304S12	-	2352	Z2CN18.10	X2CrNi18.11	F.3503	SCS19
	-	-	1.4308	G-X6CrNi189	304C15	-	-	Z6CN18.10M	-	-	SCS13
	Cr17Ni7	301	1.4310	X12CrNi177	-	-	2331	Z12CN17.07	X12CrNi1707	F.3517	SUS301
	-	304LN	1.4311	X2CrNiN1810	304S62	-	2371	Z2CN18.10	-	-	SUS304LN
	0Cr19Ni9	304	1.4350	X5CrNi189	304S31	58E	-	Z6CN18.09	X5CrNi1810	-	SUS304
	0Cr17Ni11Mo2	316	1.4401	X5CrNiMo1712	316S16	Z6CND17.11	2347	1.4401	X5CrNiMo1712	F.3543	SUS316
	00Cr17Ni13Mo2	316LN	1.4429	X2CrNiMoN17133	-	-	2375	Z2CND17.13	-	-	SUS316LN
	0Cr27Ni12Mo3	316L	1.4435	X2CrNiMo18143	316S12	-	2353	Z2CDN17.13	X2CrNiMo1713	-	SCS16,
	00Cr19Ni13Mo3	317L	1.4438	X2CrNiMo17133	317S12	-	2367	Z2CND19.15	X2CrNiMo18.16	-	SUS317L
	-	329L	1.4460	X8CrNiMo275	-	-	2324	-	-	-	SUS329L; SCH11; SCS11
	1Cr18Ni9Ti	321	1.4541	X6CrNiTi1810	2337	321S12	58B	Z6CNT18.10	X6CrNiTi1811	F.3553	SUS321
	1Cr18Ni11Nb	347	1.4550	X6CrNiNb1810	347S17	58F	2338	Z6CNNb18.1	X6CrNiTi1811	F.3552	SUS347
	Cr18Ni12Mo2Ti	316Ti	1.4571	X6CrNiMoTi17122	320S17	58J	2350	Z6NDT17.12	X6CrNiMoTi17	F.3535	-

General technical information

Material comparison table

ISO	Country and standard									
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
M	Austenitic stainless steel										
	-	-	1.4581	G-X5CrNiMoNb1810	318C7	-	-	Z4CNDNb1812M	XG8CrNiMo18	-	SCS22
	Cr17Ni12Mo3Nb	318	1.4583	X10CrNiMoNb1812	-	-	-	Z6CNDNb1713B	X6CrNiMoTiNb17	-	-
	1Cr23Ni13	309	1.4828	X15CrNiSi2012	309S24	-	-	Z15CNS20.1	-	-	SUH309
	0Cr25Ni20	310S	1.4845	X12CrNi2521	310S24	-	2361	Z12CN2520	X6CrNi2520	F.331	SUH310
	Cr15Ni36W3Ti	330	1.4864	X12NiCrSi3616	-	-	-	Z12CNS35.1	-	-	SUH330
	-	-	1.4865	G-X40NiCrSi3818	330C11	-	-	-	XG50NiCr3919	-	SCH15
	5Cr2Mn9Ni4N	EV8	1.4871	X53CrMnNiN219	349S54; 321S12	- 58B	-	Z52CMN21.0	X53CrMnNiN219	-	SUH35
	1Cr18Ni9Ti	321	1.4878	X12CrNiTi189	321S320	58C	-	Z6CNT18.12	X6CrNiTi1811	F.3523	SU321

ISO	Country and standard								
	China	America	Germany	England	Sweden	France	Italy	Spain	Japan
K	Nodular cast iron								
	QT400-18	60-40-18	GGG40	400/17	0717-02	FGS370-17	GS370-17	FGE38-17	FCD400
	QT450-10	65-45-12	--	420/12	--	FGS400-12	GS400-12	FGE42-12	FCD450
	QT500-7	70-50-05	GGG50	500/7	0727-02	FGS500-7	GS500-7	FGE50-7	FCD500
	QT600-3	80-60-03	GGG60	600/7	0732-03	FGS600-2	GS600-2	FGE60-2	FCD600
	QT700-2	100-70-03	GGG70	700/2	0737-01	FGS700-2	GS700-2	FGE70-2	FCD700
	QT800-2	120-90-02	GGG80	800/2	0864-03	FGS800-2	GS800-2	FGE80-2	FCD800
	QT900-2	--	--	900/2	--	--	--	--	--
	Grey cast iron								
	--	NO.60	GG40	--	0140	FGL400	--	--	
	HT350	NO.50	GG35	350	0135	FGL350	G35	FG35	FC350
	HT300	NO.45	GG30	300	0130	FGL300	G30	FG30	FC300
	HT250	NO.35	GG25	250	0125	FGL250	G25	FG25	FC250
	HT200	NO.30	GG20	200	0120	FGL200	G20	FG20	FC200
	HT150	NO.20	GG15	150	0115	FGL150	G15	FG15	FC150
	HT100	--	--	100	0110	--	G10	--	FC100

General technical information

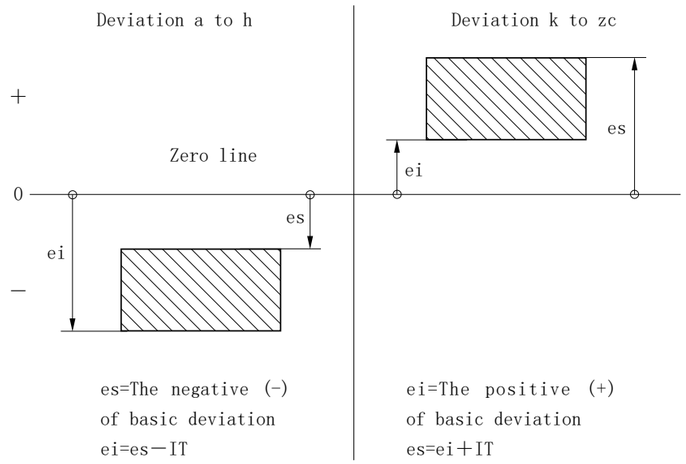
Fit dimension tolerance

Fit dimension tolerance

Dimension mm		Standard tolerance grade																
		IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16	IT17	IT18
Greater than	To	μm											mm						
---	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.1	0.14	0.25	0.4	0.6	1	1.4
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.3	0.48	0.75	1.2	1.8
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.9	1.5	2.2
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.7	1.1	1.8	2.7
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.3	2.1	3.3
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1	1.6	2.5	3.9
50	80	2	3	5	8	13	19	30	46	74	120	190	0.3	0.46	0.74	1.2	1.9	3.	4.6
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.4	2.2	3.5	5.4
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.4	0.63	1	1.6	2.5	4	6.3
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.9	4.6	7.2
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.3	2.1	3.2	5.2	8.1
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.4	2.3	3.6	5.7	8.9
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.5	4	6.3	9.7
500	630	9	11	16	22	32	44	70	110	175	280	440	0.7	1.1	1.75	2.8	4.4	7	11
630	800	10	13	18	25	36	50	80	125	200	320	500	0.8	1.25	2	3.2	5	8	12.5
800	1000	11	15	21	28	40	56	90	140	230	360	560	0.9	1.4	2.3	3.6	5.6	9	14
1000	1250	13	18	24	33	47	66	105	165	260	420	660	1.05	1.65	2.6	4.2	6.6	10.5	16.5
1250	1600	15	21	29	39	55	78	125	195	310	500	780	1.25	1.95	3.1	5	7.8	12.5	19.5
1600	2000	18	25	35	46	65	92	150	230	370	600	920	1.5	2.3	3.7	6	9.2	15	23
2000	2500	22	30	41	55	78	110	175	280	440	700	1100	1.75	2.8	4.4	7	11	17.5	28
2500	3150	26	36	50	68	96	135	210	330	540	860	1350	2.1	3.3	5.4	8.6	13.5	21	33

Note
1. The basic size greater than 500 mm, IT1 to IT5 standard tolerance value for trial.
2. The basic size less than or equal to 1 mm, no IT4 to IT18.

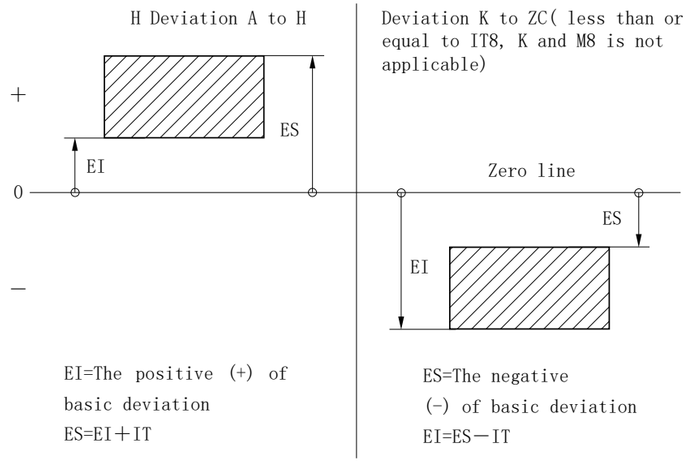
Lower deviation (ei) and upper deviation (es) of axis can be made of axis basic eviation and the standard of tolerance(IT)



es=The negative (-) of basic deviation
ei=es－IT

ei=The positive (+) of basic deviation
es=ei＋IT

Lower deviation (ei) and upper deviation (es) of hole can be made of hole basic eviation and the standard of tolerance(IT)



EI=The positive (+) of basic deviation
ES=EI＋IT

ES=The negative (-) of basic deviation
EI=ES－IT

For example: for a Ø 3, tolerance grade for the H7 hole, from the basic principle of hole deviation value in the table to check the size range of tolerance grade class H
Lower deviation EI = 0, and tolerance to 7 class corresponding to the standard tolerance of IT =10μm , the upper deviation ES = EI + IT =10μm .
hole fit dimension is Ø3 $^{+0.01}_{0}$ mm。

● The basic deviation value

Dimension mm		Basic deviation value											
		upper deviation es											
		All the standard tolerance grade											
Greater than	To	a	b	c	cd	d	e	ef	f	fg	g	h	js
---	3	-270	-140	-60	-34	-20	-14	-10	-6	-4	-2	0	
3	6	-270	-140	-70	-46	-30	-20	-14	-10	-6	-4	0	
6	10	-280	-150	-80	-56	-40	-25	-18	-13	-8	-5	0	
10	14	-290	-150	-95		-50	-32		-16		-6	0	
14	18												
18	24	-300	-160	-110		-65	-40		-20		-7	0	
24	30												
30	40	-310	-170	-120		-80	-50		-25		-9	0	
40	50	-320	-180	-130									
50	65	-340	-190	-140		-100	-60		-30		-10	0	
65	80	-360	-200	-150									
80	100	-380	-220	-170		-120	-72		-36		-12	0	
100	120	-410	-240	-180									
120	140	-460	-260	-200		-145	-85		-43		-14	0	
140	160	-520	-280	-210									
160	180	-580	-310	-230									
180	200	-660	-340	-240		-170	-100		-50		-15	0	
200	225	-740	-380	-260									
225	250	-820	-420	-280									
250	280	-920	-480	-300		-190	-110		-56		-17	0	
280	315	-1050	-540	-330									
315	355	-1200	-600	-360		-210	-125		-62		-18	0	
355	400	-1350	-680	-400									
400	450	-1500	-760	-440		-230	-135		-68		-20	0	
450	500	-1650	-840	-480									
500	560					-260	-145		-76		-22	0	
560	630												
630	710					-290	-160		-80		-24	0	
710	800												
800	900					-320	-170		-86		-26	0	
900	1000												
1000	1120					-350	-195		-98		-28	0	
1120	1250												
1250	1400					-390	-220		-110		-30	0	
1400	1600												
1600	1800					-430	-240		-120		-32	0	
1800	2000												
2000	2240					-480	-260		-130		-34	0	
2240	2500												
2500	2800					-520	-290		-145		-38	0	
2800	3150												

Deviation=$\pm\frac{IT_n}{2}$, and ITn is the number of IT

Note: 1. The basic size less than or equal to 1 mm, basic deviation of a and b are not used.
2. If tolerance zone js7 to js11, ITn number values is odd, the deviation=$\pm\frac{IT_n-1}{2}$

μm

Basic deviation value																		
lower deviation ei																		
IT5 and IT6	IT7	IT8	IT4 and IT7	≤IT3 >IT7	All the standard tolerance grade													
j			k		m	n	p	r	s	t	u	v	x	y	z	zn	zb	zc
-2	-4	-6	0	0	+2	+4	+6	+10	+14		+18		+20		+26	+32	+40	+60
-2	-4		+1	0	+4	+8	+12	+15	+19		+23		+28		+35	+42	+50	+80
-2	-5		+1	0	+6	+10	+15	+19	+23		+28		+34		+42	+52	+67	+97
-3	-6		+1	0	+7	+12	+18	+23	+28		+33		+40		+50	+64	+90	+130
												+39	+45		+60	+77	+108	+150
-4	-8		+2	0	+8	+15	+22	+28	+35		+41	+47	+54	+63	+73	+98	+136	+188
										+41	+48	+55	+64	+75	+88	+118	+160	+218
-5	-10		+2	0	+9	+17	+26	+34	+43	+48	+60	+68	+80	+94	+112	+148	+200	+274
										+54	+70	+81	+97	+114	+136	+180	+242	+325
-7	-12		+2	0	+11	+20	+32	+41	+53	+66	+87	+102	+122	+144	+172	+226	+300	+405
								+43	+59	+75	+102	+120	+146	+174	+210	+274	+360	+480
-9	-15		+3	0	+13	+23	+37	+51	+71	+91	+124	+146	+178	+214	+258	+335	+445	+585
								+54	+79	+104	+144	+172	+210	+254	+310	+400	+525	+690
-11	-18		+3	0	+15	+27	+43	+63	+92	+122	+170	+202	+248	+300	+365	+470	+620	+800
								+65	+100	+134	+190	+228	+280	+340	+415	+535	+700	+900
								+68	+108	+146	+210	+252	+310	+380	+465	+600	+780	+1000
-13	-21		+4	0	+17	+31	+50	+77	+122	+166	+236	+284	+350	+425	+520	+670	+880	+1150
								+80	+130	+180	+258	+310	+385	+470	+575	+740	+960	+1250
								+84	+140	+196	+284	+340	+425	+520	+640	+820	+1050	+1350
-16	-26		+4	0	+20	+34	+56	+94	+158	+218	+315	+385	+475	+580	+710	+920	+1200	+1550
								+98	+170	+240	+350	+425	+525	+650	+790	+1000	+1300	+1700
-18	-28		+4	0	+21	+37	+62	+108	+190	+268	+390	+475	+590	+730	+900	+1150	+1500	+1900
								+114	+208	+294	+435	+530	+660	+820	+1000	+1300	+1650	+2100
-20	-32		+5	0	+23	+40	+68	+126	+232	+330	+490	+595	+740	+920	+1100	+1450	+1850	+2400
								+132	+252	+360	+540	+660	+820	+1000	+1250	+1600	+2100	+2600
			0	0	+26	+44	+78	+150	+280	+400	+600							
								+155	+310	+450	+660							
			0	0	+30	+50	+88	+175	+340	+500	+740							
								+185	+380	+560	+840							
			0	0	+34	+56	+100	+210	+430	+620	+940							
								+220	+470	+680	+1050							
			0	0	+40	+66	+120	+250	+520	+780	+1150							
								+260	+580	+840	+1300							
			0	0	+48	+78	+140	+300	+640	+960	+1450							
								+330	+720	+1050	+1600							
			0	0	+58	+92	+170	+370	+820	+1200	+1850							
								+400	+920	+1350	+2000							
			0	0	+68	+110	+195	+440	+1000	+1500	+2300							
								+460	+1100	+1650	+2500							
			0	0	+76	+135	+240	+550	+1250	+1900	+2900							
								+580	+1400	+2100	+3200							

● Basic deviation value

Dimension mm		Basic deviation value																						
		lower deviation EI											upper deviation ES											
		All the standard tolerance grade											IT6	IT7	IT8	≤IT8	>IT8	≤IT8	>IT8	≤IT8	>IT8	≤IT7
Greater than	To	A	B	C	CD	D	E	EF	F	FG	G	H	JS	J			K		M		N		PtoZC
---	3	+270	+140	+60	+34	+20	+14	+10	+6	+4	+2	0		+2	+4	+6	0	0	-2	-2	-4	-4		
3	6	+270	+140	+70	+46	+30	+20	+14	+10	+6	+4	0		+5	+6	+10	-1+Δ		-4+Δ	-4	-8+Δ	0		
6	10	+280	+150	+80	+56	+40	+25	+18	+13	+8	+5	0		+5	+8	+12	-1+Δ		-6+Δ	-6	-10+Δ	0		
10	14	+290	+150	+95		+50	+32		+16		+6	0		+6	+10	+15	-1+Δ		-7+Δ	-7	-12+Δ	0		
14	18																							
18	24	+300	+160	+110		+65	+40		+20		+7	0		+8	+12	+20	-2+Δ		-8+Δ	-8	-15+Δ	0		
24	30																							
30	40	+310	+170	+120		+80	+50		+25		+9	0		+10	+14	+24	-2+Δ		-9+Δ	-9	-17+Δ	0		
40	50	+320	+180	+130																				
50	65	+340	+190	+140		+100	+60		+30		+10	0		+13	+18	+28	-2+Δ		-11+Δ	-11	-20+Δ	0		
65	80	+360	+200	+150																				
80	100	+380	+220	+170		+120	+72		+36		+12	0		+16	+22	+34	-3+Δ		-13+Δ	-13	-23+Δ	0		
100	120	+410	+240	+180																				
120	140	+460	+260	+200		+145	+85		+43		+14	0		+18	+26	+41	-3+Δ		-15+Δ	-15	-27+Δ	0		
140	160	+520	+280	+210																				
160	180	+580	+310	+230																				
180	200	+660	+340	+240		+170	+100		+50		+15	0		+22	+30	+47	-4+Δ		-17+Δ	-17	-31+Δ	0		
200	225	+740	+380	+260																				
225	260	+820	+420	+280																				
260	280	+920	+480	+300		+190	+110		+56		+17	0		+25	+36	+55	-4+Δ		-20+Δ	-20	-34+Δ	0		
280	315	+1050	+540	+330																				
315	355	+1200	+600	+360		+210	+125		+62		+18	0		+29	+39	+60	-4+Δ		-21+Δ	-21	-37+Δ	0		
355	400	+1350	+680	+400																				
400	450	+1500	+760	+440		+230	+135		+68		+20	0		+33	+43	+66	-5+Δ		-23+Δ	-23	-40+Δ	0		
450	500	+1650	+840	+480																				
500	560					+260	+145		+76		+22	0					0		-26		-44			
560	630																							
630	710					+290	+160		+80		+24	0					0		-30		-50			
710	800																							
800	900					+320	+170		+86		+26	0					0		-34		-56			
900	1000																							
1000	1120					+350	+195		+98		+28	0					0		-40		-66			
1120	1250																							
1250	1400					+390	+220		+110		+30	0					0		-48		-78			
1400	1600																							
1600	1800					+430	+240		+120		+32	0					0		-58		-92			
1800	2000																							
2000	2240					+480	+260		+130		+34	0					0		-68		-110			
2240	2500																							
2500	2800					+520	+290		+145		+38	0					0		-76		-135			
2800	3150																							

Deviation=$\pm\frac{IT_n}{2}$, and ITn is the number of IT

More than IT7 corresponding numerical increase a Δ value

Note: 1. The basic size less than or equal to 1 mm, basic deviation of A and B and is greater than IT8, N are not used

2. If tolerance zone js7 to js11, ITn number values is odd, the deviation =±(ITn-1)/2

3. For less than or equal to IT8 K, M, N and less than or equal to IT7 P to ZC, required Δ values from a table in the right selection

For example: 18~30mm, K7: Δ=8μm, so ES=-2+8=+6μm

18~30mm, S6: Δ=4μm, so ES=-35+4=-31μm

4. Special cases: 250 ~ 315 mm segment of the M5, ES= -9μm (instead of -11μm).

General technical information

Fit dimension tolerance

μm

Basic deviation value												The number of Δ					
upper deviation ES																	
Standard tolerance grade more than IT7												standard tolerance grade					
P	R	S	T	U	V	X	Y	Z	ZA	ZB	ZC	IT3	IT4	IT5	IT6	IT7	IT8
-6	-10	-14		-18		-20		-26	-32	-40	-60	0	0	0	0	0	0
-12	-15	-19		-23		-28		-35	-42	-50	-80	1	1.5	1	3	4	6
-15	-19	-23		-28		-34		-42	-52	-67	-97	1	1.5	2	3	6	7
-18	-23	-28		-33		-40		-50	-64	-90	-130	1	2	3	3	7	9
					-39	-45		-60	-77	-108	-150						
-22	-28	-35		-41	-47	-54	-63	-73	-98	-136	-188	1.5	2	3	4	8	12
			-41	-48	-55	-64	-75	-88	-118	-160	-218						
-26	-34	-43	-48	-60	-68	-80	-94	-112	-148	-200	-274	1.5	3	4	5	9	14
			-54	-70	-81	-97	-114	-136	-180	-242	-325						
-32	-41	-53	-66	-87	-102	-122	-144	-172	-226	-300	-405	2	3	5	6	11	16
	-43	-59	-75	-102	-120	-146	-174	-210	-274	-360	-480						
-37	-51	-71	-91	-124	-146	-178	-214	-258	-335	-445	-585	2	4	5	7	13	19
	-54	-79	-104	-144	-172	-210	-254	-310	-400	-525	-690						
-43	-63	-92	-122	-170	-202	-248	-300	-365	-470	-620	-800	3	4	6	7	15	23
	-65	-100	-134	-190	-228	-280	-340	-415	-535	-700	-900						
	-68	-108	-146	-210	-252	-310	-380	-465	-600	-780	-1000						
-50	-77	-122	-166	-236	-284	-350	-425	-520	-670	-880	-1150	3	4	6	9	17	26
	-80	-130	-180	-258	-310	-385	-470	-575	-740	-960	-1250						
	-84	-140	-196	-284	-340	-425	-520	-640	-820	-1050	-1350						
-56	-94	-158	-218	-315	-385	-475	-580	-710	-920	-1200	-1550	4	4	7	9	20	29
	-98	-170	-240	-350	-425	-525	-650	-790	-1000	-1300	-1700						
-62	-108	-190	-268	-390	-475	-590	-730	-900	-1150	-1500	-1900	4	5	7	11	21	32
	-114	-208	-294	-435	-530	-660	-820	-1000	-1300	-1650	-2100						
-68	-126	-232	-330	-490	-595	-740	-920	-1100	-1450	-1850	-2400	5	5	7	13	23	34
	-132	-252	-360	-540	-660	-820	-1000	-1250	-1600	-2100	-2600						
-78	-150	-280	-400	-600													
	-155	-310	-450	-660													
-88	-175	-340	-500	-740													
	-185	-380	-560	-840													
100	-210 -220	-430 -470	-620 -680	-940 -1050													
-120	-250 -260	-520 -580	-780 -840	-1150 -1300													
-140	-300 -330	-640 -720	-960 -1050	-1450 -1600													
-170	-370	-820	-1200	-1850													
	-400	-920	-1350	-2000													
-195	-440 -460	-1000 -1100	-1500 -1650	-2300 -2500													
-240	-550 -580	-1250 -1400	-1900 -2100	-2900 -3200													

General technical information

Hardness comparison table

Hardness comparison table (Black metal hardness and strength of approximate conversion value)

Hardness				Tensile Strength N/mm²
Rockwell		Vickers	Brinell	
HRC	HRA	HV	HB	
70.0	86.6	1037	—	—
69.5	86.3	1017	—	—
69.0	86.1	997	—	—
68.5	85.8	978	—	—
68.0	85.5	959	—	—
67.5	85.2	941	—	—
67.0	85.0	923	—	—
66.5	84.7	906	—	—
66.0	84.4	889	—	—
65.5	84.1	872	—	—
65.0	83.9	856	—	—
64.5	83.6	840	—	—
64.0	83.3	825	—	—
63.5	83.1	810	—	—
63.0	82.8	795	—	—
62.5	82.5	780	—	—
62.0	82.2	766	—	—
61.5	82.0	752	—	—
61.0	81.7	739	—	—
60.5	81.4	726	—	—
60.0	81.2	713	—	2555
59.5	80.9	700	—	2500
59.0	80.6	688	—	2450
58.5	80.3	676	—	2395
58.0	80.1	664	—	2345
57.5	79.8	653	—	2295
57.0	79.5	642	—	2250
56.5	79.3	631	—	2205
56.0	79.0	620	—	2160
55.5	78.7	609	—	2115
55.0	78.5	599	—	2075
54.5	78.2	589	—	2035
54.0	77.9	579	—	1995
53.5	77.7	570	—	1955
53.0	77.4	561	—	1920
52.5	77.1	551	—	1885
52.0	76.9	543	—	1850
51.5	76.6	534	—	1815

Hardness				Tensile Strength N/mm²
Rockwell		Vickers	Brinell	
HRC	HRA	HV	HB	
51.0	76.3	525	501	1780
50.5	76.1	517	494	1750
50.0	75.8	509	488	1720
49.5	75.5	501	481	1690
49.0	75.3	493	474	1660
48.5	75.0	485	468	1630
48.0	74.7	478	461	1605
47.5	74.5	470	455	1575
47.0	74.2	463	449	1550
46.5	73.9	456	442	1525
46.0	73.7	449	436	1500
45.5	73.4	443	430	1475
45.0	73.2	436	424	1450
44.5	72.9	429	418	1430
44.0	72.6	423	413	1405
43.5	72.4	417	407	1385
43.0	72.1	411	401	1360
42.5	71.8	405	396	1340
42.0	71.6	399	391	1320
41.5	71.3	393	385	1300
41.0	71.1	388	380	1280
40.0	70.8	382	375	1260
40.0	70.5	377	370	1245
39.5	70.3	372	365	1225
39.0	70.0	367	360	1210
38.5	—	362	355	1190
38.0	—	357	350	1175
37.5	—	352	345	1160
37.0	—	347	341	1140
36.5	—	342	336	1125
36.0	—	338	332	1110
35.5	—	333	327	1095
35.0	—	329	323	1080
34.5	—	324	318	1065
34.0	—	320	314	1050
33.5	—	316	310	1035
33.0	—	312	306	1020
32.5	—	308	302	1010

General technical information

Hardness comparison table

Hardness				Tensile Strength N/mm²		Hardness				Tensile Strength N/mm²
Rockwell		Vickers	Brinell			Rockwell		Vickers	Brinell	
HRC	HRA	HV	HB			HRC	HRA	HV	HB	
32.0	—	304	298	995		24.0	—	249	245	820
31.5	—	300	294	980		23.5	—	246	242	810
31.0	—	296	291	970		23.0	—	243	240	800
30.5	—	292	287	960		22.5	—	240	237	790
30.0	—	289	283	950		22.0	—	237	234	785
29.5	—	285	280	935		21.5	—	234	232	775
29.0	—	281	276	920		21.0	—	231	229	765
28.5	—	278	273	910		20.5	—	229	227	760
28.0	—	274	269	900		20.0	—	226	225	750
27.5	—	271	266	890		19.5	—	223	222	745
27.0	—	268	263	880		19.0	—	221	220	735
26.5	—	264	260	870		18.5	—	218	218	730
26.0	—	261	257	860		18.0	—	216	216	725
25.5	—	258	254	850		17.5	—	214	214	715
25.0	—	255	251	835		17.0	—	211	211	710
24.5	—	252	248	830						

Note: this table listed all the equivalent value of steel tie, applicable to steel from low to high carbon content
Tensile strength values listed in this table, suitable for general steel grade of conversion accuracy is not high, $1N/mm^2=1Mpa$。
This table from GB1172-74。

General technical information

The world tool grade comparison table

■ CVD coated grade

Category	Material	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	KYOCERA	DIJET	ZCCT
Turning	P	P01		GC4005	KC9110 TN7005	TP1000		UE6005	CR7015	JC110V	
		P10	JT4015 JT4115 JT4215	GC4005 GC4015 GC3115	KC9110 TN7005 TN7010	TP1000 TP2000 TP200 TX150	IC9015	UE6005 UE6010 UE6020 UC6010	CA5515 CR7015	JC110V JC215V	YBC151
		P20	JT4025 JT4125 JT4225	GC4015 GC4025 GC2015 GC3025	KC9125 TN7015	TP2000 TP200	IC9025	UE6010 UE6020 UC6020	CA5515 CA5525 CA5025 CR9025	JC110V JC215V	YBC251
		P30	JT4035 JT4135 JT4235	GC4025 GC4035 GC2025 GC2135	KC8050 KC850 TN7025	TP3000 TP300 TP400	IC656 IC9054	UE6035 UH6400 US735	CA5525 CA5025 CA9025	JC215V JC325V	YBC351
		P40	JT4135 JT4235 JT4245	GC4035 GC235	KC9040	TP400 TP40	IC9054 IC635	UE6035 UH6400 US735		JC325V JC450V	YBC351 YB235
	M	M10		GC2015	TN7010	TP200		US7020	CA6015	JC110V	YBM151
		M20	JT4330	GC2025	KC9225 TN7015 TN7525	TP200 TP300	IC9025	US7020	CA6015	JC110V	YBM251
		M30	JT4340	GC2135 GC235	KC9040 KC8050 TN7025 TN8025	TP300 TP400 TP40	IC9025	US735			YB235
		M40	JT4350	GC235	KC9240 KC9245	TP400 TP40		US735			YB235
	K	K01	JT3105 JT3205	GC3205 GC3210		TX100	IC9007	UC5105 UC5005		JC105V	YBD052 YBD102
		K10	JT3105 JT3115	GC3005 GC3015 GC3115 GC3205 GC3210	KC9315 TN5015 TN7010	TX100 TX150	IC418 IC428	UC5115 UC5015 UE6010 UC6010	CA4010 CA4115	JC105V JC110V	YBD102 YBD151 YBD152
		K20	JT3125 JT3115	GC3215 GC3025	KC9325 TN5020 TN7015	TP200 TX150	IC9015	UE6010 UC6010	CA4120	JC100V JC215V	YBD252
		K30	JT3125 JT3135		KC8050 KC9040 TN7025	TP200				JC215V	YBD252

General technical information

The world tool grade comparison table

CVD coated grade

Category	Classification	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
Milling	P	P10				T200M T250M							
		P20	JT4330	GC4020		T200M T250M T350M T25M	IC520M	F7030				JC730U	YBC201 YBM251
		P30	JT4330	GC4030	KC930M	T250M T350M T25M	IC4050 IC450	F7030	AC230	T3030			YBC301
		P40	JT4340 JT4350	GC4030		T350M	IC4050 IC635						YBC401 YBM351 YB235
	M	M10											
		M20	JT4330		KC925M	T250M T25M		F7030				JC730U	YB235
		M30	JT4330 JT4340	GC2040	KC930M	T350M T25M		F7030		T3030			YBM351 YBC401
		M40	JT4350										
	K	K01											
		K10	JT3115		KC915M		IC4010 IC418	F5010	AC211	T1015		JC600	
		K20	JT3125	GC3020	KC925M	T150M T200M	IC520M	F5020		T1020		JC610	
		K30		GC3040	KC930M	T200M	IC4050 IC450						YBG40

PVD coated grade

Category	Classification	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
Turning	P	P01									PR951	JC5003	
		P10	JT1015		KC5010 KC5510	CP200	IC507	VP10MF			PR630PR915PR930	JC5003	YBG102
		P20	JT1025	GC1020GC4125 GC1025		CP250	IC507IC570 IC308IC908	VP15TF VP20MF			PR630 PR930	JC5015	YBG202 YBM252 YBG201
		P30	JT1035			CP500	IC308IC908 IC328IC3028 IC354	VP15TF VP20MF			PR660	JC5015	YBG302
		P40		GC1020 GC2145		CP500	IC328IC3028 IC354						
	M	M01							EH51Z				
		M10	JT1015	GC1005GC1025	KC5010KC5510	CP200	IC507IC907	VP10MF	EH51Z		PR630PR915	JC5003	YBG102
		M20	JT1025 JT1225	GC1020GC1025 GC4125		CP200 CP500	IC507IC908 IC1028	VP15TF VP20MF	EH52Z	GH330	PR630 PR915	JC5015	YBG202 YBM252 YBG201
		M30	JT1025 JT1035	GC1020 GC2035	KC5025 KC5525 KC710	CP500	IC328IC3028 IC1028	VP15TF VP20MF		AH120	PR660	JC5015	YBG302
		M40		GC2145			IC328 IC3028						
	K	K01							EH10Z	AH110		JC5003	
		K10	JT1015		KC5010KC5510	CP200	IC507IC907		EH10ZEH20Z	GH110AH110		JC5003JC5015	YBG102
		K20	JT1025	GC1020		CP200CP250	IC308IC908	VP15TF	EH20Z	AH120		JC5015	YBG202 YBM252 YBG201
		K30	JT1025	GC4125		CP500	IC328IC3028 IC1028	VP15TF					
	S	S01						VP05RT		AH110		JC5003	
		S10		GC1005 GC1025	KC5410KC5014KC5510	CP200CP250 CP500		VP05RT VP10RT	EH51Z	AH120		JC5015	YBG102 YBG202
		S20		GC4125	KC5025 KC5525	CP250 CP500		VP10RT VP15TF	EH20Z EH520Z				YBG202
		S30						VP15TF					

PVD coated grade

Category	Classification	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
Milling	P	P01										JC5003	
		P10	JT1015 JT1025		KC792M KC715M				ACZ310		PR630PR730PR830	JC5003 JC5030	YBG102
		P20	JT1025 JT1035	GC1025	KC522M KC525M	F25M	IC950 IC908	VP15TF	ACZ310 ACZ330		PR630PR730PR830	JC5015JC5030JC5040	YBG202 YBM252
		P30	JT1035 JT1025 JPP302		KC725M	F25M F30M	IC250	VP15TF VP30RT	ACZ330 ACZ350	GH330AH330 AH120 AH740	PR660	JC5015 JC5040	YBG202 YB302
		P40	JT1035 JPP402		KC735M	F40M T60M	IC328 IC928	VP30RT	ACZ350	AH120		JC5040	YBG302 YBG402
	M	M01											
		M10			KC715M						PR630PR730PR830	JC5003	
		M20	JT1025 JT1225	GC1025	KC522M KC525M	F25M	IC908	VP15TF	ACZ310	GH330	PR630PR730PR830	JC5015JC5030JC5040	YBG202 YBM252
		M30	JT1035	GC2030	KC725M KC7355M	F30M F40M	IC928	VP15TF VP30RT	ACZ330 ACZ350	AH120	PR660	JC5015JC5030JC5040	YBG302
		M40	JT1035				IC328	VP30RT	ACZ350	AH140			YBG302 YBG402

PVD coated grade

Category	Classification	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
Milling	K	K01								AH110	PR510	JC5003	
		K10	JT1015		KC510M				ACZ310	AH110 GH110	PR510 PR905	JC5003 JC5015	YBG102
		K20	JT1025		KC520M KC522N KC525M		IC910 IC950	VP15TF	ACZ310	AH120	PR905	JC5015	YBG202
		K30	JT1025		KC725M		IC328 IC908 IC928	VP15TF					YBG302
	S	S01										JC5003	
		S10	JT1025	GC1025	KC510M		IC908	VP15TF		AH120		JC5015	YBG202
		S20	JT1025		KC522M KC525M		IC908	VP15TF					YBG202
		S30	JT1025		KC725M	F40M	IC328 IC928						YBG302
	H	H01										JC5003	
		H10	JT1015 JT1025			F15M		VP15TF				JC5015	YBG102 YBG202
		H20	JT1025			F15M		VP15TF					YBG202
		H30				F30M							

Hard alloy material

Category	Classification		JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	泰克洛	KYOCERA	DIJET	ZCCT
Turning	P	P01										SRN	
		P10	JP101	S1P	P10		IC70		ST10P ST15E	TX10S		SRT	YC10
		P20	JP201	SMA	K125M TTM		IC70 IC50M	UTi20T	ST20E	TX20 TX25		SRT DX30	YC25S
		P30	JP302	SM30	GK K600 TTR		IC50M IC54	UTi20T	A30 A30N	TX30 UX30	PW30	SR30 DX30 DX35	YC30S
		P40	JP402	S6	G13		IC54		ST40E	TX40		SR30 DX35	YC40
	M	M10		H10A	K313	890			EH510 U10E	TU10		UMN UM10	
		M20		H13A	K68 KMF K125M TTM	HX 883	IC08	UTi20T	EH520 U2	TU20		DX25 UM20 UMS	YD201
		M30	JP301	H10F SM30	K600 TTR		IC08 IC28	UTi20T	A30 A30N	UX30		DX25 UM30 UMS	YM30 YC30S
		M40	JP401	S6	G13		IC128			TU40		UM40	YC40
	K	K01	JK001	H1P	K605			HTi05T	H1 H2	TH03		KG03	YD051
		K10	JK001 JK101	H1P H10HM	KU10 K313 K08	890	IC20	HTi10	EH10 EH510	G1F TH10	KW10	KG10 KT9 CR1	YD051 YD101 YD15S
		K20	JK101 JK201	H13A	KU10 K313 K08	890 HX 883	IC20 IC10	UTi20T	G10E EH20 EH520	G2F G2 KS20		KT9 CR1 KG20	YD201
		K30	JK301			883	IC10 IC28	UTi20T	G10E	G3		KG30	
	N	N01	JK101 JK001	H10 H13A	K605				H1 H2			KG03	YD101 YD201
		N10			KU10 K313 K08	890 H15		HTi10	EH10 EH510	TH10 H10T KS05F		KG10 KT9	
		N20			K715 KMF K600	HX KX 883 H15 H25			G10E EH20 EH520			CR1 KG20	
		N30			G13 THR	H25						KG30	
	S	S01						RT9005				KG03	
		S10	JK001 JK201	H10 H10A H10F H13A	K10 K313 THM	890		RT9005 RT9010	EH10 EH510	TH10		FZ05 KG10	YD101 YM30 YD201
		S20			K715 KMF	890 883 HX H25		RT9010 TF15	EH20 EH520	KS20		FZ15 KG20	
		S30			G13 K600 THR			TF15				KG30	

Hard alloy material

Category	Classification	Code	JXTC	SANDVIK	KENNAMETAL	SECO	ISCAR	MITSUBISHI	SUMITOMO	TUNMALOY	KYOCERA	DIJET	ZCCT
Milling	P	P10	JP101	S1P								SRT	YC10
		P20	JP201		K125		IC50M IC28	UTi20T	A30N	TX25		SRT DX30	
		P30	JP302		GX K600		IC50M IC28	UTi20T	A30N	UX30	PW30	SR30 DX30	
		P40	JP402				IC28				PW30	SR30	
	M	M10			K110M							UMN	
		M20	JP201		K313			UTi20T	A30N			DX25 UMS	
		M30	JP302		KFM K600		IC28	UTi20T	A30N	UX30		DX25 UMS	
		M40	JP402				IC28			TU40			
	K	K01	JK001					HTi05T				KG03	
		K10	JK101	H1P	K110M K313		IC20	HTi10	G10E	TH10	KW10	KG10	YD051
		K20	JK201		KFM	HX	IC20 IC10	HTi20T	G10E			KT9 CR1 KG20	
		K30	JK301				IC10 IC18	HTi20T				KG30	