GÜHRING

СВЕРЛА

ТОЧНОСТЬ

Д-р Йорг Гюринг

Председатель правления

Оливер Гюринг

Член правления
Сбыт и маркетинг

7000

Сотрудников
по всему миру

3500

Сотрудников
в Германии

Внутренняя программа по обучению и повышению квалификации

Международный трансфер Ноу-Хау по программе международного обмена для сотрудников

GÜHRING

Дитмар Пфрэнгер

Член правления
НИОКР, логистика, техника и производство

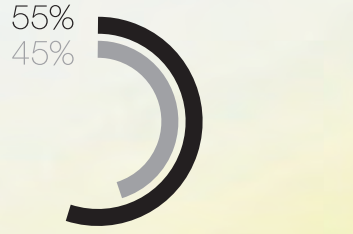
Бернд Шатц

Член правления
Руководство и финансы

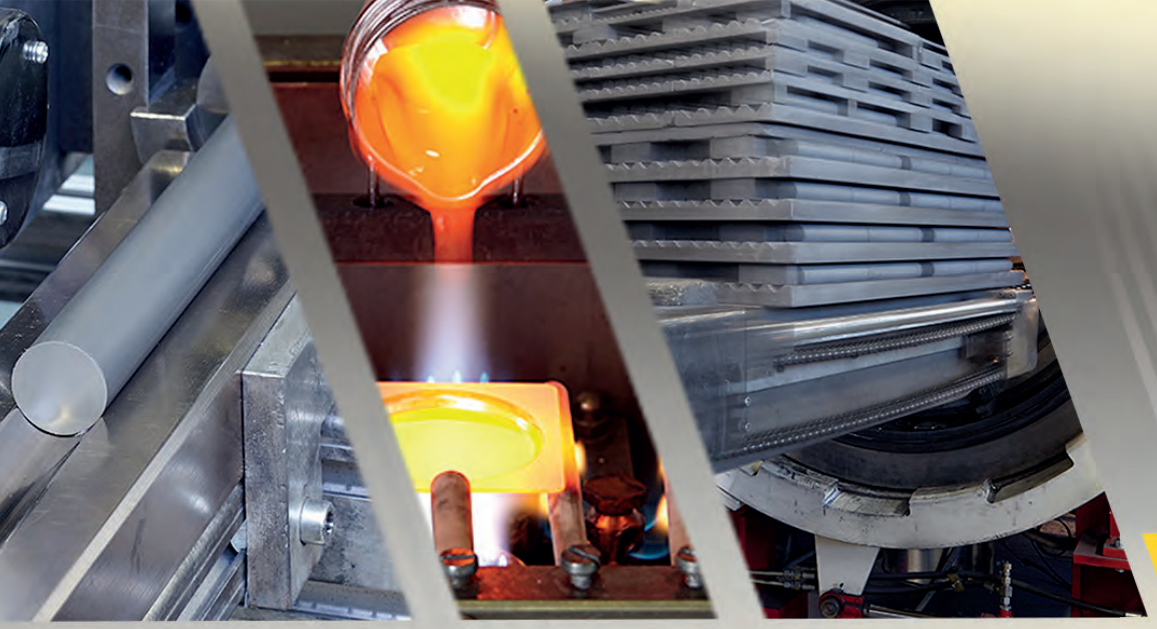
Ключевой сегмент Инструмент

90000
Стандартных артикулов

4000
Видов инструмента



GÜHRING



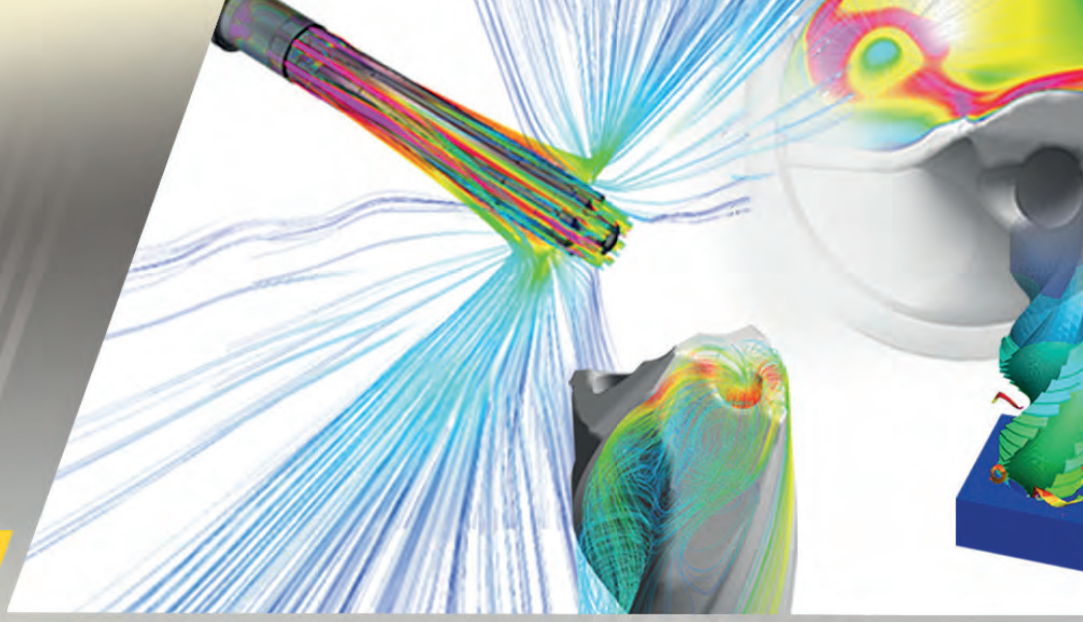
РЕЖУЩИЕ МАТЕРИАЛЫ

Собственное производство
твёрдого сплава

Оптимальная адаптация
всех параметров инструмента
благодаря собственным
подразделениям НИОКР

ПРОИЗВОДСТВО ОБОРУДОВАНИЯ И СТАНКОВ

Собственное машиностроение и собственная разработка
оборудования



ГЕОМЕТРИЯ

Собственные НИОКР для разработки инструмента

ИЗНОСОСТОЙКИЕ ПОКРЫТИЯ

Собственное производство установок для нанесения покрытий и собственные разработки износостойких покрытий

Всё из одних рук – по всему миру и в полном объёме

Благодаря глобальной сети производственных центров фирма Гюринг разрабатывает и производит прецизионный инструмент для всех важных рынков: клиенты из автомобильной, аэрокосмической промышленностей или общего машиностроения делают ставку на задающий тенденции инструмент, который по всему миру изготавливается по единым стандартам качества на самом высоком уровне.

48
РЕГИОНАЛЬНЫХ ПРЕДСТАВИТЕЛЬСТВ

70
РЕГИОНАЛЬНЫХ ПРЕДСТАВИТЕЛЬСТВ И СЕРВИСНЫХ ЦЕНТРОВ

CANADA 1
Guhring Corp.
sales@guhring.com
www.guhring.com

USA 2
BROOKFIELD
Guhring Inc.
sales@guhring.com
www.guhring.com

USA 3
NEW HUDSON
Guhring Inc.
sales@guhring.com
www.guhring.com

MEXICO 4
Guhring Mexicana S.A. de C.V.
guhring.mexicana@guhring.com
www.guhring.com.mx

BRAZIL 5
Guhring Brasil Ferramentas Ltda
vendas@guhring.brasil.com
www.guhring.com.br

SOUTH AFRICA 6
Guhring Cutting Tools (Pty) Ltd.
info@guhring.co.za
www.guhring.co.za

SWEDEN 7
Guhring Sweden AB
info@guhring.se
www.guehring.se

GREAT BRITAIN 8
Guhring Ltd.
info@guhring.co.uk
www.guhring.co.uk

NETHERLANDS 9
Guhring Nederland B.V.
info@guhring.nl
www.guhring.nl

BELGIUM 10
N.V. Guhring S.A.
info@guhring.be
www.guehring.be

SWITZERLAND 11
ROTKREUZ
Guhring (Schweiz) AG
info@guehring.ch
www.guehring.ch

SWITZERLAND 12
ALTDORF
Grat-Rotationswerkzeuge GmbH
mario.jung@guehring.de
www.guehring.de

ALBSTADT 13
HEADQUARTER
Guhring KG
info@guehring.de
www.guehring.de

ALBSTADT 14
FACTORY 2
Guhring KG
info@guehring.de
www.guehring.de

ALBSTADT 15
ONSTMETTINGEN
Guhring KG
info@guehring.de
www.guehring.de

SIGMARINGEN 16
LAIZ
Guhring KG
info@guehring.de
www.guehring.de

RAMSTEIN-MIESENBACH 17
Guhring KG
info@guehring.de
www.guehring.de

LEVERKUSEN 18
Guhring KG
info@guehring.de
www.guehring.de

WEHINGEN 19
Guhring KG
info@guehring.de
www.guehring.de

EISENACH 20
SL Werkzeug KG
info@guehring.de
www.guehring.de

GEISLINGEN 21
Guhring KG
info@guehring.de
www.guehring.de

MINDELHEIM 22
Guhring KG
info@guehring.de
www.guehring.de

NUREMBERG 23
Hollfelder Guhring Cutting Tools
info@hollfelder-guehring.de
www.hollfelder-guehring.de

REGENSBURG 24
Guhring KG
info@guehring.de
www.guehring.de

GÜHRING

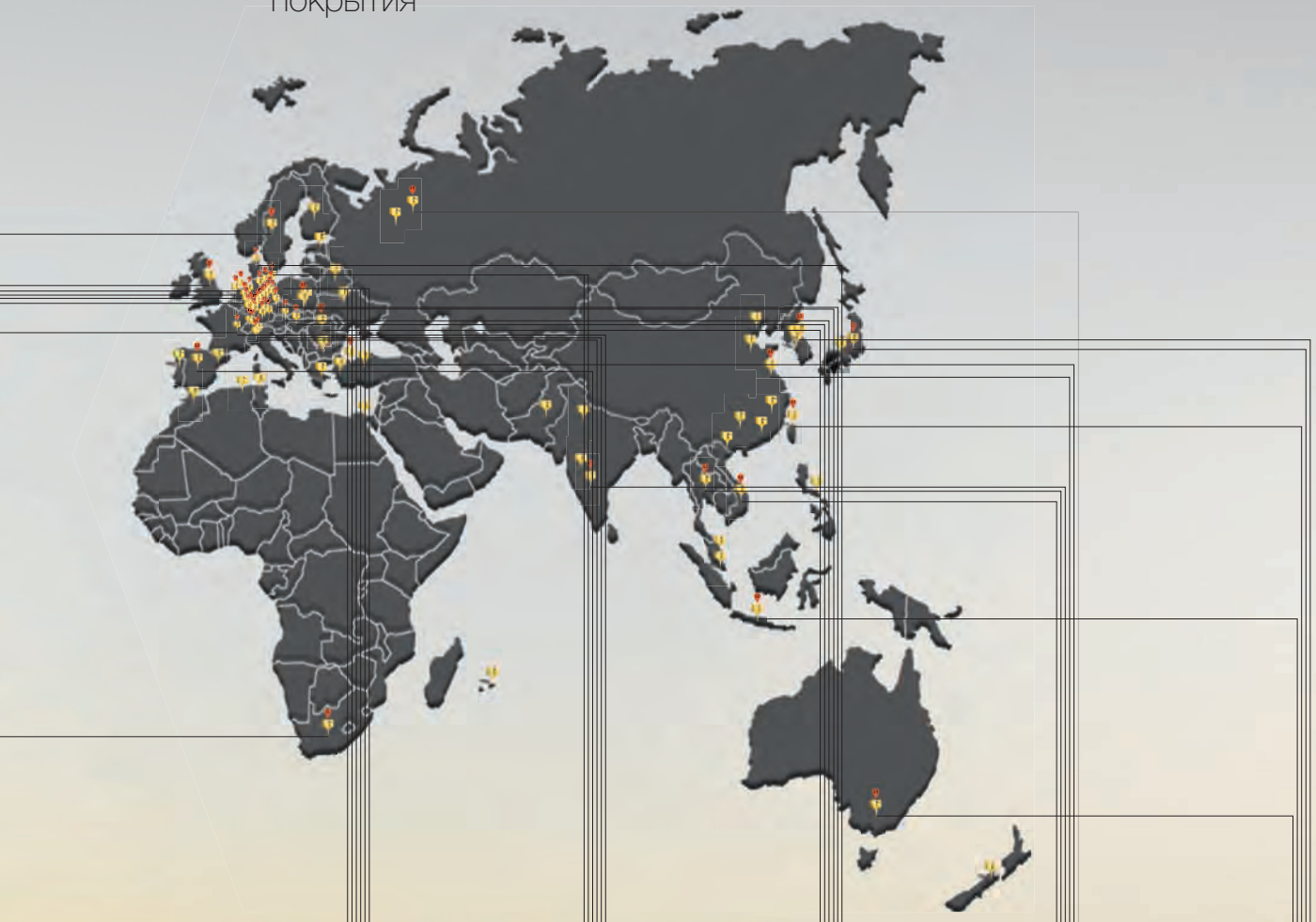
Благодаря инновационным технологиям фирма Гюринг претворяет в жизнь специфические пожелания заказчиков, начиная от разработки процесса, до серийного применения прецизионного инструмента – гибко, быстро, глобально. Над этим работают международные эксперты, курирующие заказчика на местах. Тем самым производство, услуги и контактные лица доступны из первых рук по всему миру.

Собственное производство твёрдого сплава

Собственное машиностроение

Собственные износостойкие покрытия

Самый высокий стандарт качества по всему миру



CHEMNITZ 25
Dr. Gühring KG
info@guehring.de
www.guehring.de

KULMBACH 26
Gühring KG
service@german-carbide.com

MARKT-ERLBACH 27
Gühring KG
info@guehring.de
www.guehring.de

TREUEN 28
FACTORY 1
Dr. Gühring KG
info@guehring.de
www.guehring.de

TREUEN 29
FACTORY 2
Dr. Gühring KG
info@guehring.de
www.guehring.de

TREUEN 30
FACTORY 3
Dr. Gühring KG
info@guehring.de
www.guehring.de

BERLIN 31
G-Ett
Präzisionswerkzeuge
info@guehring.de
www.guehring.de

ZORBAU 32
Holfelder-Gühring GmbH
info@holfelder-guehring.de

SPAIN 33
Gühring S.A.S
guhring@guhring.es
www.guhring.es

ITALY 34
UBIEMME
Ubiemme Gühring Italia s.r.l.
info@ubiemme.it
www.ubiemme.it

ITALY 35
MISSAGLIA
Gühring s.r.l. Unipersonale
info@guhring-italy.com
www.guhring-italy.com

FRANCE 36
Guhring France S.A.R.L.
info@guhring-france.com

RUMANIA 37
Gühring s.r.l.-Romania
romania@guehring.de

HUNGARY 38
Tritan-Gühring KFT.
info@tritan.hu
www.tritan.hu

AUSTRIA 39
Gühring Ges.m.b.H.
verkauf@guehring.at
www.guehring.at

POLAND 40
Gühring Sp. z.o.o.
handel@guehring.pl
www.guehring.pl

CZECH REPUBLIC 41
Gühring s.r.o.
informace@guehring.cz
www.guehring.cz

DENMARK 42
Gühring Aps
info@guehring.dk
www.guehring.dk

VIETNAM 43
Gühring Vietnam LLC
info@guhring.vn

THAILAND 44
Guehring (Thailand) Co., Ltd.
info.thailand@guehring.de
www.guehring.co.th

INDIA 45
Gühring India Pvt. Ltd.
info@guhring.in
www.guhring.in

CHINA 46
Gühring (Changzhou)
info@guhringchina.com
www.guhringchina.com

TURKEY 47
Gühring Takım San. Tic. Ltd. Şti.
guhring@guhring.com.tr
www.guhring.com.tr

РОССИЯ 48
ООО Гюринг
info@guhring.ru
www.guhring.ru

AUSTRALIA 49
Gühring Pty. Ltd.
guhring@guhring.com.au
www.guhring.com.au

INDONESIA 50
PT. Gühring Indonesia
sales@guhring.co.id
www.guhring.co.id

TAIWAN 51
Gühring Taiwan Ltd.
info@guhring.com.tw
www.guhring.com.tw

JAPAN 52
Gühring Japan Co., Ltd.
tokyo.sales@guhring.co.jp
www.guhring.co.jp

KOREA 53
Gühring Korea Co. Ltd.
info@guhring.co.kr
www.guhring.co.kr

GÜHRING

ВСЁ ИЗ НАШИХ РУК

Многообразие сверл от мелкоразмерных
Ø 0,05 мм до специальных решений до Ø 180 мм
из HSS и VHM. 25.000 артикулов для любого применения.

VHM-RATIO СВЕРЛА

со стр. 3

СИСТЕМЫ СО СМЕННЫМИ ПЛАСТИНАМИ HT800

со стр.123

HSS/HSCO-СПИРАЛЬНЫЕ СВЕРЛА

- с цилиндрическим хвостовиком
- с конусом Морзе

со стр. 175, 435

РУЖЕЙНЫЕ СВЕРЛА

- однолезвийные и двухлезвийные ружейные сверла
- спиральные

со стр. 515

1:1

МЕЛКОРАЗМЕРНЫЕ СВЕРЛА

VHM + HSSE

со стр. 645

СВЕРЛА ДЛЯ ЗАСВЕРЛИВАНИЯ & ЦЕНТРОВОЧНЫЕ СВЕРЛА

со стр. 665

СТУПЕНЧАТЫЕ СВЕРЛА & ЗЕНКЕРА

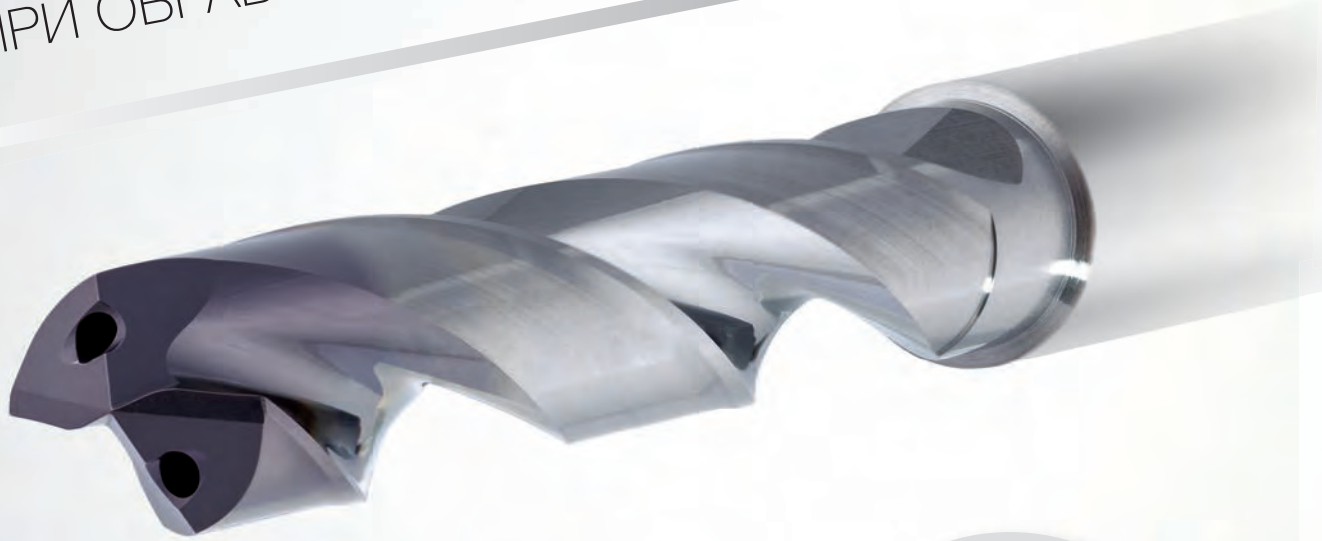
со стр. 711

Новинки

Каждой новинкой Гюринг устанавливает новую планку.
Совершенство в исследованиях, развитии и поставках инструмента.
Совершенство зажима - наше требование.

СУПЕР КАЧЕСТВО ПРИ ОБРАБОТКЕ СТАЛЕЙ

NEW



//RATIO//

RT 100 S

// Оптимизированная геометрия для обработки стали
// Высокие параметры резания
// Стабильность процесса и высокая стойкость

→ со стр. 59, 96

GÜHRING

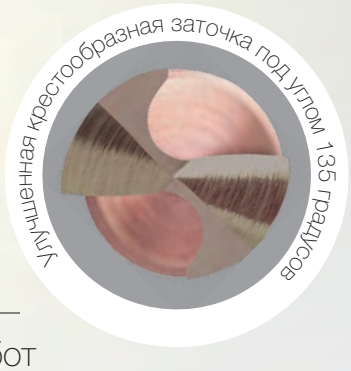
NEW

AeroX

// Спиральное сверло для монтажных работ в конструкционных и высоколегированных сталях, титане и алюминиевых сплавах
// Быстрая скорость сверления благодаря оптимизированной крестообразной подточке 135 град.

→ со стр. 313

ОПТИМИЗИРОВАННАЯ СЕРДЦЕВИНА СВЕРЛА
Значительно уменьшенная сердцевина с увеличенным конусом для дополнительной стабилизации инструмента при одновременном снижении усилий резания



NEW

Для высочайшей тепло - и износостойкости

M42 nanoFire

// Высочайшая производительность особенно при обработке высоколегированных и высокопрочных сталей, специальных сплавов
// Надежное исполнение благодаря специальной сердцевине, углу 135° и крестообразной подточке

→ со стр. 317

GÜHRING

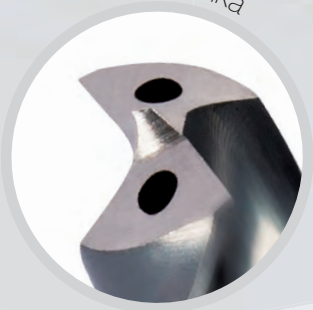
NEW

HSS-Сверло с каналами под COTC

// Для обработки стальных балок, а также в нестабильных условиях
// Оптимальное охлаждение при аксиальном и радиальном подводе COTC
// Минимальное образование заусенцев

→ со стр. 499

Подточка



NEW

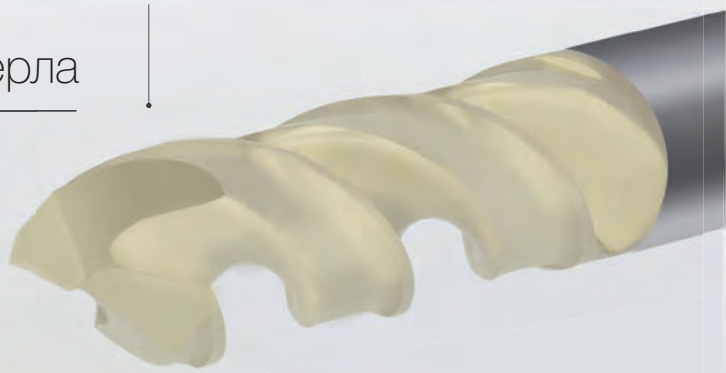
SIRIUS-ПОКРЫТИЕ

для высочайшей производительности
особенно в нержавеющих сталях

VA-HSCO Sirius спиральные сверла

// Высочайшая стойкость благодаря износостойкому покрытию Sirius в комбинации с оптимизированной крестообразной подточкой 135 градусов.

→ со стр. 231

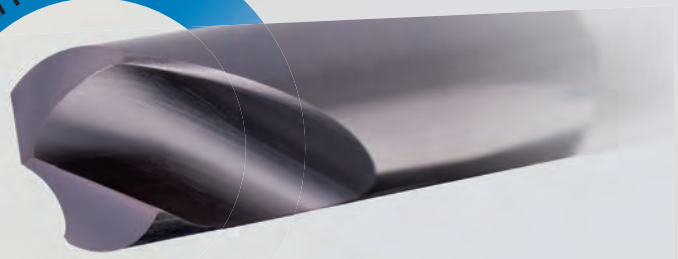


GÜHRING

NEW

NanoFIRE-покрытие
Для высочайшей тепло - и износостойкости

покрытие NanoFire



HSCO-NC-Центровочное сверло
с покрытием NanoFIRE

// Точное засверливание при одновременно высоких свойствах резания и стойкости
// Высочайшая производительность благодаря покрытию NanoFire

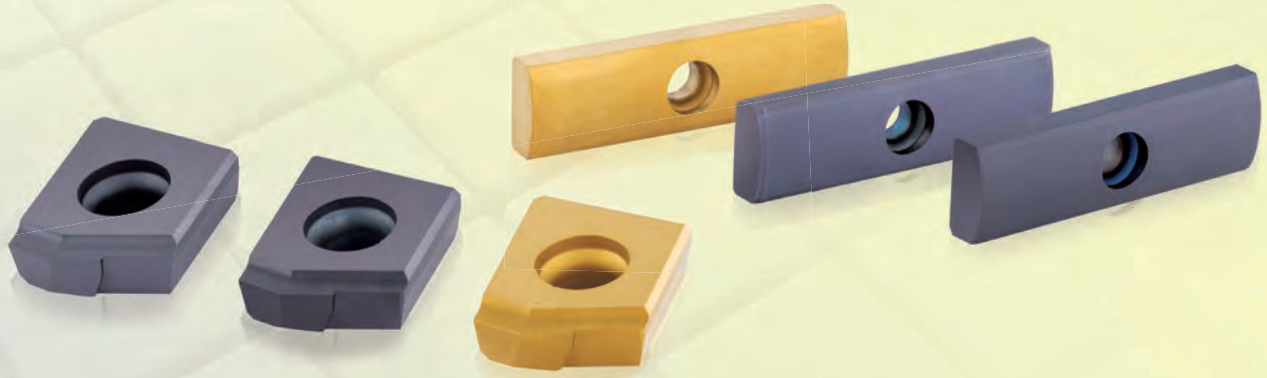
→ со стр. 705

NEW

EB800-Направляющие и режущие пластины
с новым покрытием

// Универсальное применение по любому материалу благодаря использованию различных покрытий

→ со стр. 556



GÜHRING

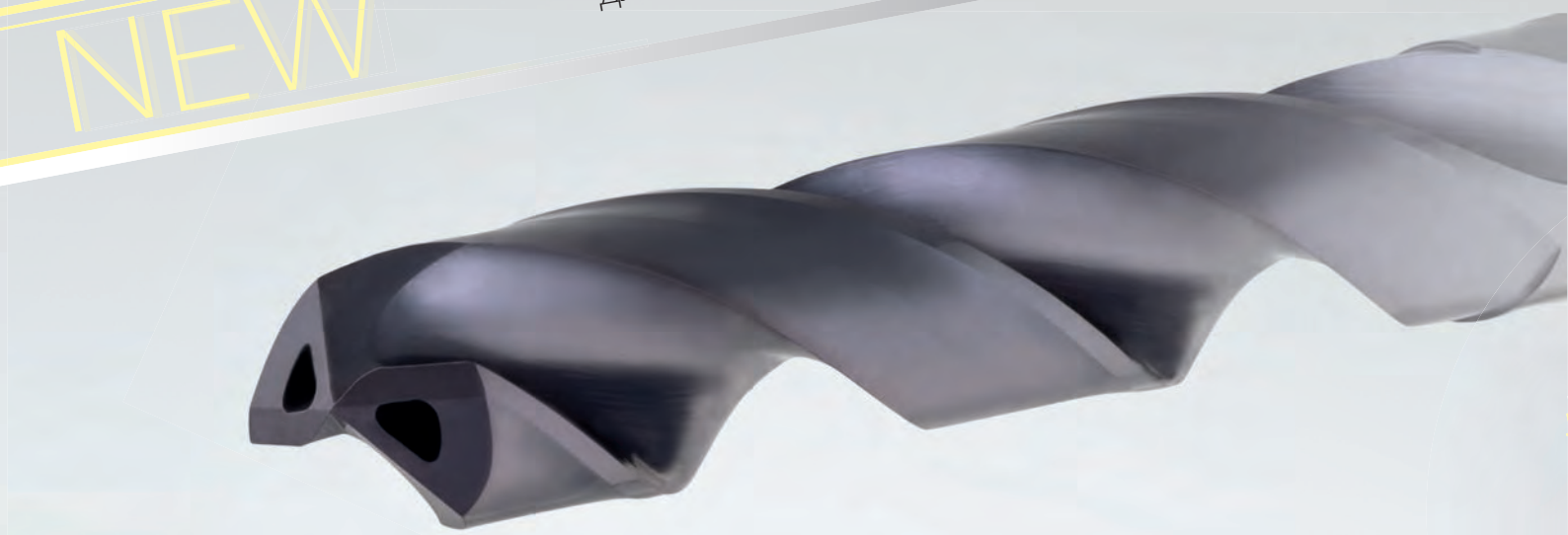
Инновации

Современные материалы требуют прогрессивных методов обработки. Благодаря многочисленным исследованиям и оригинальным концепциям Guhring обеспечивает себе лидерство в сфере обработки металла.

NEW

Инновационный дизайн
для эффективного охлаждения

NEW

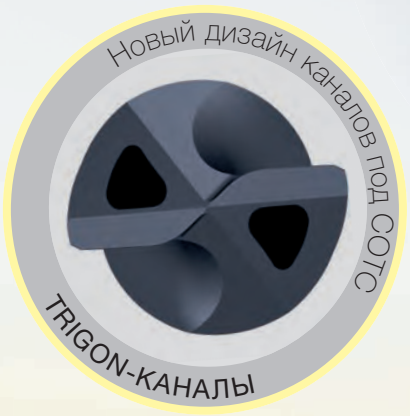


//RATIO//

RT 100 Trigon®

// Оптимизированная скорость потока
// Предназначено для обработки нержавеющих сталей, титана и специальных сплавов
// Большие объемы СОТС

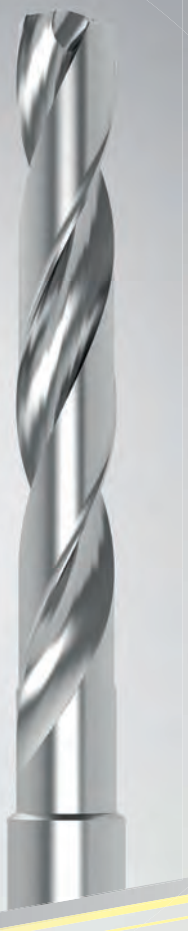
→ со стр. 813



GÜHRING

NEW

ЭКОНОМИЧЕСКИ ВЫГОДНОЕ СВЕРЛЕНИЕ
по алюминиевым сплавам



ALUMINIUM
N

//RATIO//

RT 100 AL

// Полный спектр материалов от мягких и термообработанных до литых алюминиевых сплавов
// Специальные сверла диам. от 3 до 20 мм и глубиной сверления до 12xD
// Возможна обработка с СОТС и системой MMS

→ со стр. 815

NEW

NEW

//RATIO//

RT 100 C

// Предназначено для обработки длинностружечных сталей
// Превосходный отвод стружки даже при низких скоростях резания
// Оптимальная форма канавки и режущая геометрия

→ со стр. 814

GÜHRING

R&D

Армированные волокном комбинированные пластмассы

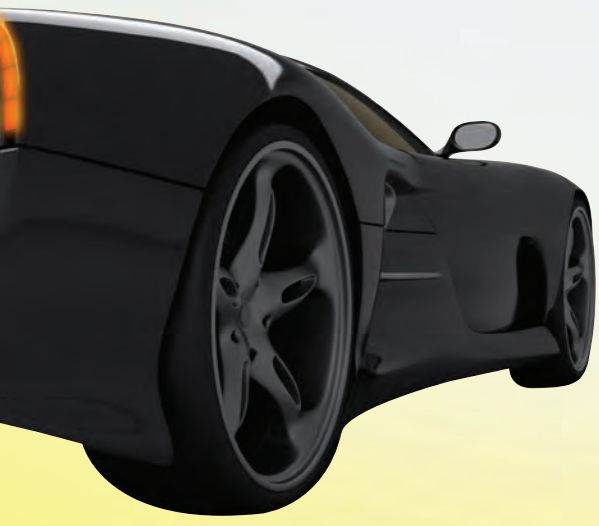
Инструментальные решения для материалов с сильным абразивным износом

ОБРАБОТКА FVK

Оптимальный инструмент для обработки материалов CFK и GFK, а также пакетированных материалов

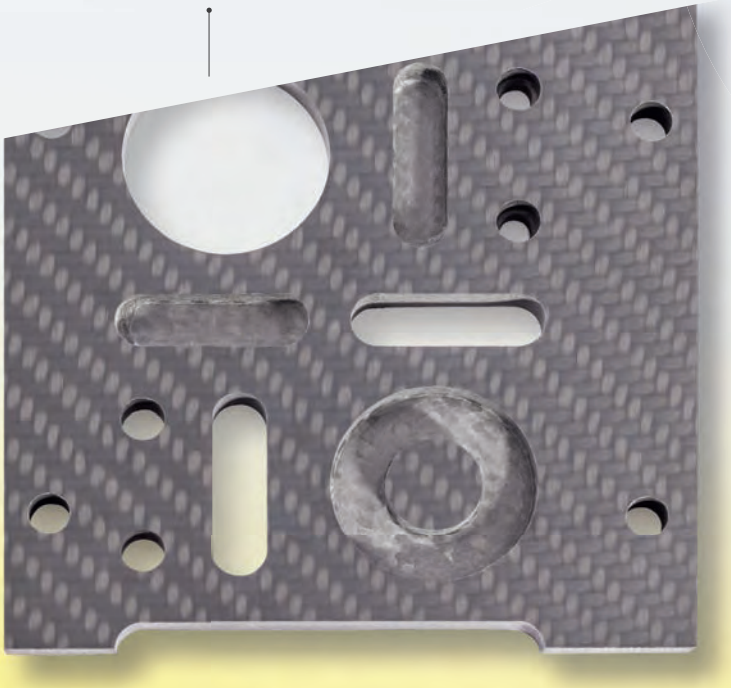
// Детали без выступающих волокон
// Неламинированные поверхности деталей
// Отсутствие повреждения детали из-за расслоения или вытеснения волокон“
// Предотвращение вырывания волокон при отводе
// Минимизация образования заусенцев
// Предотвращение термических повреждений

→ со стр. 816



FVK-ОБРАБОТКА СВЕРЛОМ

с оптимальным качеством

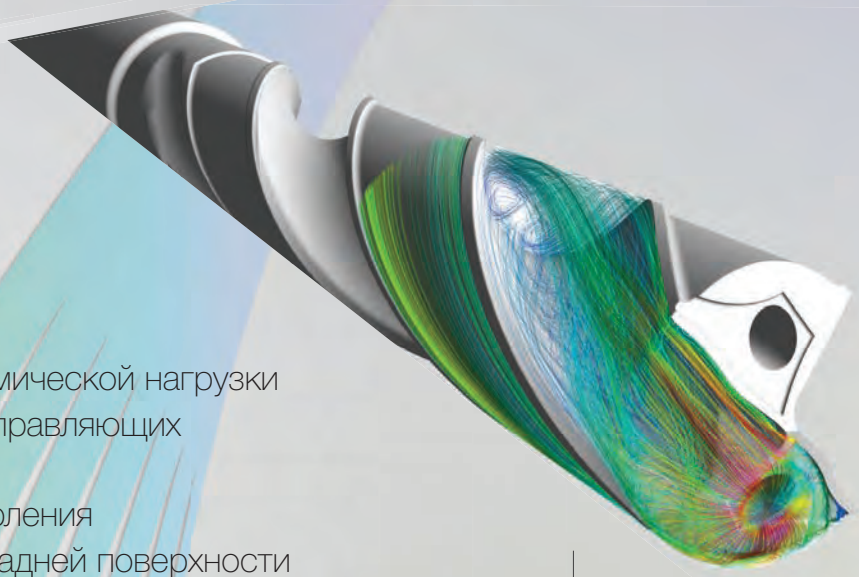


GÜHRING

NEW

СТРУКТУРИРОВАННЫЕ ЛАЗЕРОМ ЗАДНИЕ ПОВЕРХНОСТИ

Оптимизированная стойкость благодаря регулировке потоков СОТС



Симуляция расчетной гидродинамики (CFD)

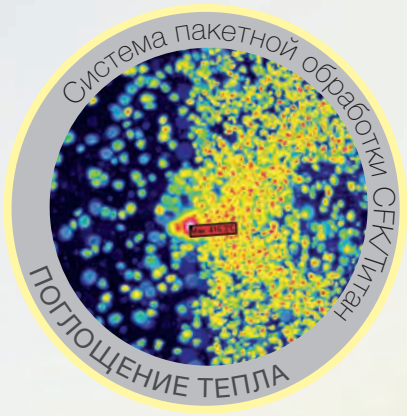
// Уменьшение высокой термической нагрузки на режущих кромках и направляющих
// Улучшенное смазывание
// Повышение качества сверления
// Свобода выбора формы задней поверхности благодаря обработке лазером

→ со стр. 819

NEW

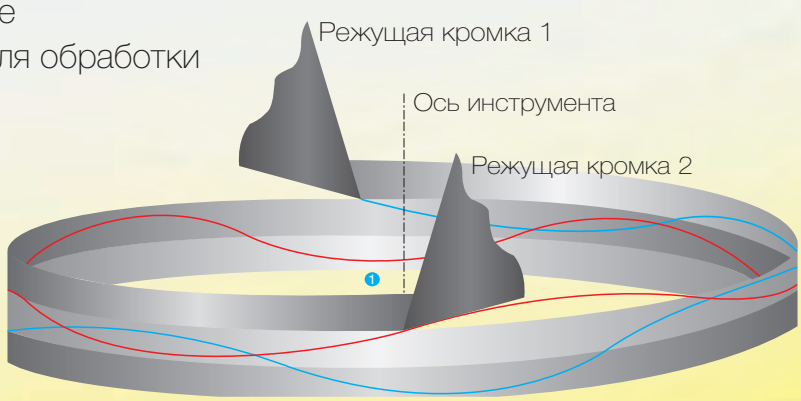
ОБРАБОТКА С ДОПОЛНИТЕЛЬНОЙ ВИБРАЦИЕЙ

Обработка с наложением дополнительного движения



// Улучшенное образование стружки /улучшенный стружколом
// Улучшенная транспортировка стружки
// Образование мест будущего разлома стружки
// Сокращение образования наростов на режущей кромке
// Меньшие усилия для обработки и температуры

→ со стр. 821



GÜHRING

Переточка, нанесение и снятие износостойких покрытий, модифицирование инструмента, мелкосерийное производство

ДЛЯ ВАС ИЗ ОДНИХ РУК

Переточка и нанесение износостойких покрытий

GÜHRING

Изготовление специального инструмента по желанию заказчика - рецепт успеха Guhring

Мы отвечаем требованиям наших клиентов с **Превосходством в обработке.** Начиная от определения параметров процесса до выпуска серии прецизионного инструмента, **эксперты** Guhring поддерживают своими **идеями** и **инновациями.**

GÜHRING

Производственная площадка Троен

GÜHRING

ЦЕНТР

ТРОЕН

GÜHRING

УСЛОВНЫЕ ОБОЗНАЧЕНИЯ

с первого взгляда

Код ISO

P	Стали, высоколегированные стали
M	Нержавеющие стали
K	Серые, высокопрочные и ковкие чугуны
N	Алюминий и другие цветные металлы
S	Титановые и специальные сплавы
H	Закаленная сталь и отбеленный чугун

На страницах продуктов Вы найдете рекомендации по применению каждого инструмента к вышеперечисленным группам материалов, а также данные по максимальной твердости и прочности материалов:

● Оптимальный выбор

○ Выбор при соблюдении определённых условий

Условные обозначения

Режущий материал	HSS	HSS-E	HSCO	M42	HSS-E-PM				
	Быстрорежущие стали								
	HM		VHM						
	Цельный твердый сплав (HM-UF)								
Глубина обработки	1xD	1,5xD	3xD	4xD	5xD	7xD	8xD	10xD	....
Допуск Ø	m7	h5	h6	h7	h8	0/-0,004	....		
Форма хвостовика	HA	HB	HE		Cyl		MK		
	Согласно DIN 6535				цилиндрический		конус Морзе		
Направление резания	R			L			N		
	правое			левое			нейтральное		
Внутр. охлаждение									
	с ВО			без ВО					
Форма	A	B	R	....					
Угол при вершине	90°	118°	120°	130°	135°	140°	150°	....	
подточка									
Стандарт	DIN 333	DIN 338	DIN 340	DIN 345	DIN 1869	DIN 6537 K	DIN 6537 L	DIN 6539	....
	Согласно DIN								
	WN								
	Согласно нормам Guhring (СТП)								
Тип	EB 100	GT 100	HT 800 WP	H	N	RT 100 T	RT 100 U	W	....

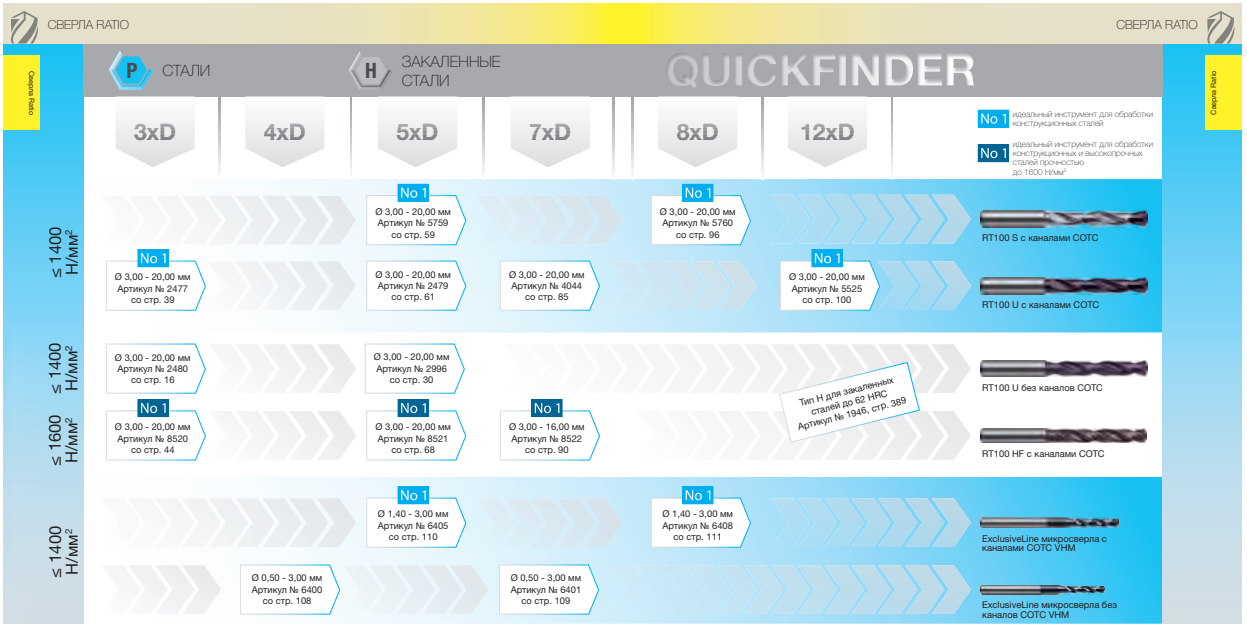
Покрытия

без покрытия	AlCrN	FIRE/nanoFIRE	Signum
обработка паром	TiAlN	TiCN	никелирование
азотирование	TiAlN SuperA	TiN	MolyGlide
азотир. ленточки	TiAlN nanoA	Sirius	Carbo

Выбор инструмента стал еще проще

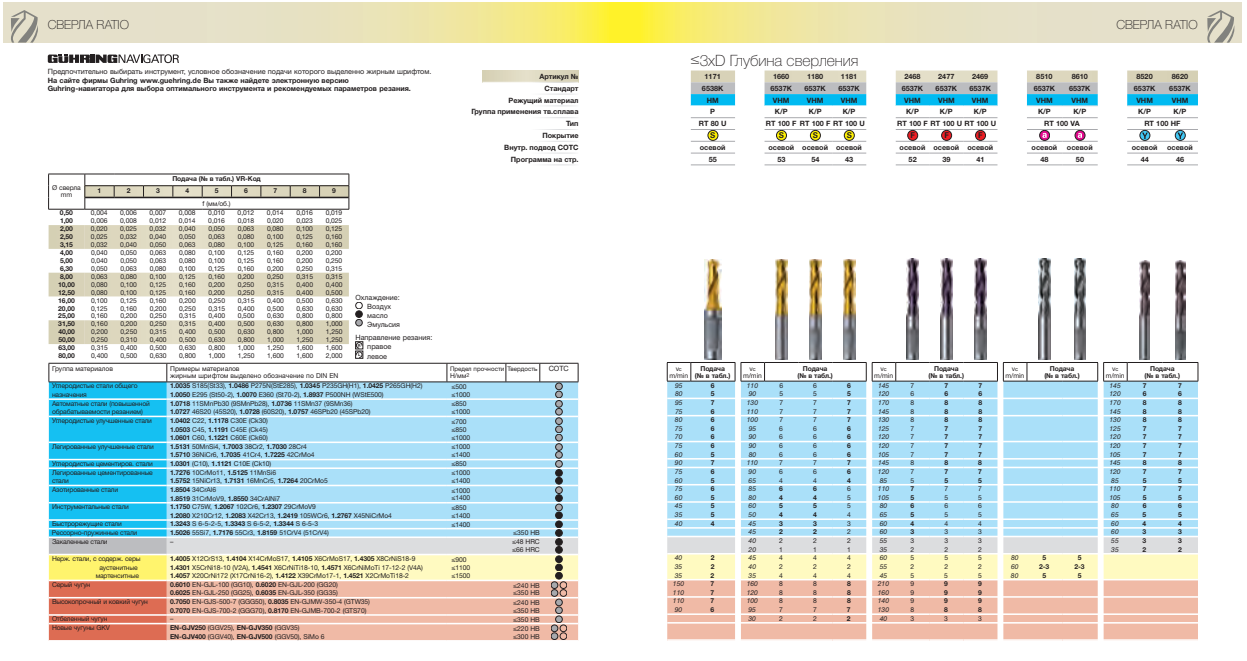
БЫСТРЫЙ ПОИСК

Быстрый и простой выбор идеального инструмента в зависимости от условий применения!



NAVIGATOR

Вся программа от а до я - в том числе рекомендации по применению и параметры резания!



ОБЗОР ПРОДУКТА

Вся информация с первого взгляда!

Свёрла Ratio с каналами под COTC

3xD | RT 100 U | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	S
Форма хвостовика	HE

P	●	подточка ≥ Ø 3,300 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

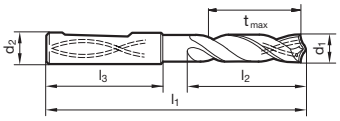
GÜHRING NAVIGATOR

Параметры резания см. стр. 750

Рекомендации по применению:

- ● Оптимальный выбор
- ○ Выбор при соблюдении определённых условий

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1181**

1 Артикул №

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
4,000		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,510	29/64	12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,900		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,500		16,000	115,000	65,000	48,000
14,680	37/64	16,000	115,000	65,000	48,000

2 Номинальный размер

Пожалуйста, при заказе всегда указывайте **арт. № и номинальный размер**, например: сверло Ratio с каналами под COTC d1 5,5 = **1181 5,500**

Актуальные цены в отдельном прайс-листе.

Перепечатка, в том числе отрывков, не разрешается.

Возможные опечатки или промежуточные изменения любого рода не дают право высказывать претензии. Вся продукция со знаком DIN может поставляться с отклонением от размеров, указанных в каталоге до тех пор, пока они соответствуют указанному стандарту DIN.

Напечатано в Герма́нии

Gühring KG
P.O. Box 10 02 47 · D-72423 Albstadt
Herderstraße 50-54 · D-72458 Albstadt

Тел.: +49 74 31 17-0
Факс: +49 74 31 17-21 279

Интернет: www.guehring.de
E-Mail: info@guehring.de

Сверла Ratio

P M K N Быстрый поиск по классу материалов ..... со стр. 4
Сверла Ratio ..... со стр. 12
Программа ..... со стр. 16

Сверлильные системы со сменными пластинами HT 800

Сверла Ratio ..... со стр. 124
Программа ..... со стр. 128

Спиральные сверла с цилиндрическим хвостовиком

Сверла Ratio ..... со стр. 176
P M K N Быстрый поиск по классу материалов ..... со стр. 184
Программа ..... со стр. 192

Спиральные сверла с конусом Морзе

Сверла Ratio ..... со стр. 436
P M K N Быстрый поиск по классу материалов ..... со стр. 440
Программа ..... со стр. 448

Сверла для глубокого сверления

Сверла Ratio ..... со стр. 516
Программа ..... со стр. 523

Малоразмерные сверла

Сверла Ratio ..... со стр. 646
Программа ..... со стр. 649

Центровочные свёрла / центровочные свёрла с ЧПУ

Сверла Ratio ..... со стр. 666
Программа ..... со стр. 668

Ступенчатые сверла / зенкера

Сверла Ratio ..... со стр. 712
Программа ..... со стр. 714

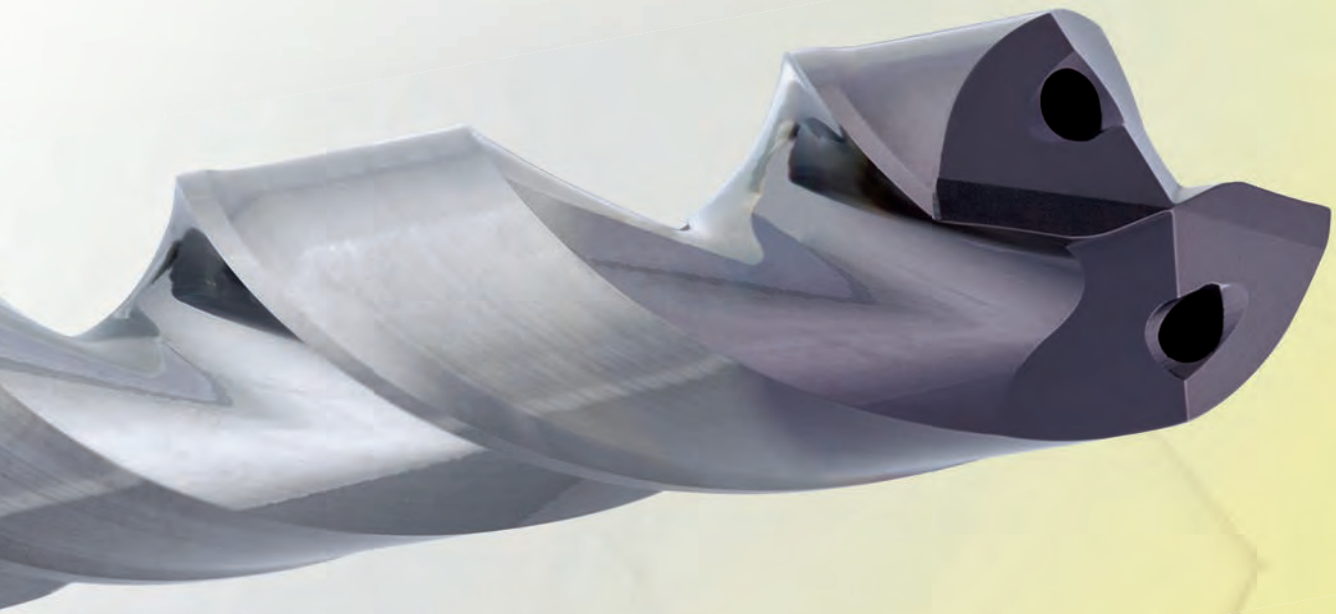
GÜHRING NAVIGATOR ..... со стр. 749

Техническая часть ..... со стр. 811

Перечень артикулов ..... со стр. 871

СВЕРЛА RATIO

Ratio®



Сверла Ratio

P СТАЛИ

H ЗАКАЛЕННЫЕ СТАЛИ

	3xD	4xD	5xD	7xD
≤ 1400 Н/мм²	No 1 Ø 3,00 - 20,00 мм Артикул № 2477 со стр. 39		No 1 Ø 3,00 - 20,00 мм Артикул № 5759 со стр. 59 Ø 3,00 - 20,00 мм Артикул № 2479 со стр. 61	Ø 3,00 - 20,00 мм Артикул № 4044 со стр. 85
≤ 1400 Н/мм²	Ø 3,00 - 20,00 мм Артикул № 2480 со стр. 16		Ø 3,00 - 20,00 мм Артикул № 2996 со стр. 30	
≤ 1600 Н/мм²	No 1 Ø 3,00 - 20,00 мм Артикул № 8520 со стр. 44		No 1 Ø 3,00 - 20,00 мм Артикул № 8521 со стр. 68	No 1 Ø 3,00 - 16,00 мм Артикул № 8522 со стр. 90
≤ 1400 Н/мм²		Ø 0,50 - 3,00 мм Артикул № 6400 со стр. 108	No 1 Ø 1,40 - 3,00 мм Артикул № 6405 со стр. 110	Ø 0,50 - 3,00 мм Артикул № 6401 со стр. 109

	15xD	20xD	25xD	30xD
≤ 1400 Н/мм²	No 1 Ø 1,40 - 3,00 мм Артикул № 6412 со стр. 112			
≤ 1400 Н/мм²	No 1 Ø 3,00 - 14,00 мм Артикул № 6509 со стр. 102	No 1 Ø 3,00 - 14,00 мм Артикул № 6511 со стр. 104	No 1 Ø 3,00 - 12,00 мм Артикул № 6512 со стр. 105	No 1 Ø 3,00 - 10,00 мм Артикул № 6513 со стр. 106

QUICKFINDER

8xD

12xD

No 1 идеальный инструмент для обработки конструкционных сталей

No 1 идеальный инструмент для обработки конструкционных и высокопрочных сталей прочностью до 1600 Н/мм²

No 1
Ø 3,00 - 20,00 мм
Артикул № 5760
со стр. 96

RT100 S с каналами COTC

No 1
Ø 3,00 - 20,00 мм
Артикул № 5525
со стр. 100

RT100 U с каналами COTC

Тип H для закаленных сталей до 62 HRC
Артикул № 1946, стр. 389

RT100 U без каналов COTC

RT100 HF с каналами COTC

No 1
Ø 1,40 - 3,00 мм
Артикул № 6408
со стр. 111

ExclusiveLine микросверла с каналами COTC VHM

ExclusiveLine микросверла без каналов COTC VHM

40xD

ExclusiveLine микросверла с каналами COTC VHM

No 1
Ø 3,00 - 8,00 мм
Артикул № 6514
со стр. 107

RT 100 T

M НЕРЖАВЕЮЩИЕ СТАЛИ

S ТИТАН И СПЕЦИАЛЬНЫЕ СПЛАВЫ

3xD	4xD	5xD	7xD
No 1 No 1 Ø 3,00 - 20,00 мм Артикул № 8510 со стр. 48		No 1 No 1 Ø 3,00 - 20,00 мм Артикул № 8511 со стр. 72	
No 1 Ø 3,00 - 20,00 мм Артикул № 8520 со стр. 44		No 1 Ø 3,00 - 20,00 мм Артикул № 8521 со стр. 68	No 1 Ø 3,00 - 16,00 мм Артикул № 8522 со стр. 90
S Ø 3,50 - 20,00 мм Артикул № 2468 со стр. 52		S Ø 3,00 - 20,00 мм Артикул № 2478 со стр. 76	
		No 1 No 1 Ø 1,40 - 3,00 мм Артикул № 6405 со стр. 110	

15xD	20xD	25xD	30xD
No 1 No 1 Ø 1,40 - 3,00 мм Артикул № 6412 со стр. 112			
No 1 No 1 Ø 3,00 - 14,00 мм Артикул № 6509 со стр. 102	No 1 No 1 Ø 3,00 - 14,00 мм Артикул № 6511 со стр. 104	No 1 No 1 Ø 3,00 - 12,00 мм Артикул № 6512 со стр. 105	No 1 No 1 Ø 3,00 - 10,00 мм Артикул № 6513 со стр. 106

QUICKFINDER

8xD

No 1 идеальный инструмент для нержавеющей стали

No 1 идеальный инструмент для специальных и титановых сплавов

RT100 VA

RT100 HF с каналами COTC

RT100 F с каналами COTC

No 1 No 1

Ø 1,40 - 3,00 мм
Артикул № 6408
со стр. 111

ExclusiveLine микросверла с каналами COTC VHM

40xD

ExclusiveLine микросверла с каналами COTC VHM

No 1 No 1

Ø 3,00 - 8,00 мм
Артикул № 6514
со стр. 107

RT 100 T

K ЧУГУНЫ

3xD	4xD	5xD	7xD
		No 1 Ø 3,00 - 20,00 мм Артикул № 6501 со стр. 82	No 1 Ø 4,00 - 20,00 мм Артикул № 6502 со стр. 91
No 1 Ø 3,00 - 20,00 мм Артикул № 2477 со стр. 39		Ø 3,00 - 20,00 мм Артикул № 2479 со стр. 61	Ø 3,00 - 20,00 мм Артикул № 4044 со стр. 85
Ø 3,00 - 20,00 мм Артикул № 2480 со стр. 16		Ø 3,00 - 20,00 мм Артикул № 2996 со стр. 30	
	No 1 Ø 3,00 - 20,00 мм Артикул № 768 со стр. 56		Ø 3,00 - 20,00 мм Артикул № 769 со стр. 93
		No 1 Ø 1,40 - 3,00 мм Артикул № 6405 со стр. 110	
	Ø 0,50 - 3,00 мм Артикул № 6400 со стр. 108		Ø 0,50 - 3,00 мм Артикул № 6401 со стр. 109

15xD	20xD	25xD	30xD
No 1 Ø 1,40 - 3,00 мм Артикул № 6412 со стр. 112			
No 1 Ø 3,00 - 14,00 мм Артикул № 6509 со стр. 102	No 1 Ø 3,00 - 14,00 мм Артикул № 6511 со стр. 104	No 1 Ø 3,00 - 12,00 мм Артикул № 6512 со стр. 105	No 1 Ø 3,00 - 10,00 мм Артикул № 6513 со стр. 106
Ø 5,00 - 14,00 мм Артикул № 773 со стр. 103			

QUICKFINDER

8xD | 10xD | 12xD

No 1 идеальный инструмент

RT 100 R

No 1
Ø 3,00 - 20,00 мм
Артикул № 5525
со стр. 100

RT100 U с каналами COTC

RT100 U без каналов COTC

No 1
Ø 3,00 - 20,00 мм
Артикул № 770
со стр. 98

RT100 GG Чугуны

No 1
Ø 1,40 - 3,00 мм
Артикул № 6408
со стр. 111

ExclusiveLine микросверла с каналами COTC VHM

ExclusiveLine микросверла без каналов COTC VHM

40xD

ExclusiveLine микросверла с каналами COTC VHM

No 1
Ø 3,00 - 8,00 мм
Артикул № 6514
со стр. 107

RT 100 T

RT 150 GN

N АЛЮМИНИЙ, ЦВЕТНЫЕ МЕТАЛЛЫ

4xD

No 1
Ø 3,00 - 20,00 мм
Артикул № 6068
со стр. 58

5xD

Ø 3,00 - 20,00 мм
Артикул № 2713
со стр. 113

No 1
Ø 3,00 - 20,00 мм*

No 1
Ø 1,40 - 3,00 мм
Артикул № 6405
со стр. 110

7xD

No 1
Ø 3,00 - 19,50 мм
Артикул № 6069
со стр. 94

8xD

No 1
Ø 1,40 - 3,00 мм
Артикул № 6408
со стр. 111

15xD

No 1
Ø 5,00 - 14,00 мм
Артикул № 773
со стр. 103

No 1
Ø 1,40 - 3,00 мм
Артикул № 6412
со стр. 112

20xD

No 1
Ø 3,00 - max. 14,00 мм*

25xD

30xD

*специальные инструменты по запросу

QUICKFINDER

10xD

No 1 идеальный инструмент

No 1

Ø 3,00 - 19,50 мм
Артикул № 6070
со стр. 99

RT150 GG

FT 200 G с каналами COTC

RT100 AL

ExclusiveLine микросверла с каналами COTC VHM

RT 150 GN

Сверла по кевлару
Артикул № 1149
стр. 431

RT 100 T Алюминий

Тип N для обработки алюминия и пластиков
Артикул № 732 стр. 319

ExclusiveLine микросверла с каналами COTC VHM

Свёрла Ratio без каналов под COTC

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
●	○	●	○	○	○		3xD	HA	RT 100 U	DIN 6537 K	VHM	F	3,000 - 20,000	2480	752	16
●	○	●	○	○	○		3xD	HE	RT 100 U	DIN 6537 K	VHM	F	3,100 - 20,000	2472	752	18
●	○	●	○	○	○		3xD	Cyl	RT 100 U	DIN 6539	VHM	F	3,000 - 15,500	2473	752	20
●	○	●	○	○	○		3xD	HE	RT 100 U	DIN 6537 K	VHM	S	3,000 - 20,000	1184	752	21
●	○	●	○	○	○		3xD	Cyl	RT 100 U	DIN 6539	VHM	S	3,000 - 16,000	1242	752	23
●				●	○		3xD	HA	RT 100 HF	DIN 6537 K	VHM	Y	3,000 - 20,000	8524	752	25
○	○	○	○	●	○		3xD	HA	RT 100 F	DIN 6537 K	VHM	F	3,700 - 12,000	2475	752	27
○	●	○	○	○	○		3xD	Cyl	RT 100 F	DIN 6539	VHM	S	3,000 - 14,000	1702	752	28
●	○	●	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	F	3,000 - 20,000	2996	756	30
●	○	●	○	○	○		5xD	HE	RT 100 U	DIN 6537 L	VHM	F	3,100 - 20,000	2719	756	32
●	○	●	○	○	○		5xD	Cyl	RT 100 U	WN	VHM	F	5,000 - 14,000	2474	756	34
●	○	●	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	S	3,300 - 12,000	2717	756	35
●	○	●	○	○	○		5xD	Cyl	RT 100 U	WN	VHM	S	5,000 - 16,000	1243	756	36
○	○	○	○	●	○		5xD	HA	RT 100 F	DIN 6537 L	VHM	F	3,000 - 15,000	2712	756	38

Свёрла Ratio с каналами под COTC

●	○	●	○	○	○		3xD	HA	RT 100 U	DIN 6537 K	VHM	F	3,000 - 20,000	2477	750	39
●	○	●	○	○	○		3xD	HE	RT 100 U	DIN 6537 K	VHM	F	3,000 - 20,000	2469	750	41
●	○	●	○	○	○		3xD	HE	RT 100 U	DIN 6537 K	VHM	S	3,300 - 19,500	1181	750	43
●				●	○		3xD	HA	RT 100 HF	DIN 6537 K	VHM	Y	3,000 - 20,000	8520	750	44
●				●	○		3xD	HE	RT 100 HF	DIN 6537 K	VHM	Y	3,000 - 20,000	8620	750	46
	●			●			3xD	HA	RT 100 VA	DIN 6537 K	VHM	a	3,000 - 20,000	8510	750	48
	●			●			3xD	HE	RT 100 VA	DIN 6537 K	VHM	a	3,000 - 20,000	8610	750	50
○	○	○	○	●	○		3xD	HE	RT 100 F	DIN 6537 K	VHM	F	3,500 - 20,000	2468	750	52
○	○	○	○	●	○		3xD	HA	RT 100 F	DIN 6537 K	VHM	S	3,100 - 22,000	1660	750	53

Свёрла Ratio с каналами под СОТС

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
○	○	○	○	●	○		3xD	HE	RT 100 F	DIN 6537 K	VHM	S	4,000 - 25,000	1180	750	54
●	○	○	○				3xD	HE	RT 80 U	DIN 6538 K	HM	S	9,500 - 25,500	1171	750	55
		●	○				4xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	768	752	56
		○	●				4xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	6068	752	58
●	○	○	○	○	○		5xD	HA	RT 100 S	DIN 6537 L	VHM	F	3,000 - 20,000	5759	754	59
●	○	●	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	F	3,000 - 20,000	2479	754	61
●	○	●	○	○	○		5xD	HE	RT 100 U	DIN 6537 L	VHM	F	3,300 - 20,000	2471	754	63
●	○	●	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	S	3,000 - 19,500	1663	754	65
●	○	●	○	○	○		5xD	HE	RT 100 U	DIN 6537 L	VHM	S	3,300 - 20,000	1183	754	66
●				●	○		5xD	HA	RT 100 HF	DIN 6537 L	VHM	Y	3,000 - 20,000	8521	756	68
●				●	○		5xD	HE	RT 100 HF	DIN 6537 L	VHM	Y	3,000 - 20,000	8621	756	70
	●			●			5xD	HA	RT 100 VA	DIN 6537 L	VHM	a	3,000 - 20,000	8511	756	72
	●			●			5xD	HE	RT 100 VA	DIN 6537 L	VHM	a	3,000 - 20,000	8611	756	74
○	○	○	○	●	○		5xD	HA	RT 100 F	DIN 6537 L	VHM	F	3,000 - 20,000	2478	754	76
○	○	○	○	●	○		5xD	HE	RT 100 F	DIN 6537 L	VHM	F	3,000 - 20,000	2470	754	77
○	○	○	○	●	○		5xD	HA	RT 100 F	DIN 6537 L	VHM	S	3,000 - 23,500	1662	754	78
○	○	○	○	●	○		5xD	HE	RT 100 F	DIN 6537 L	VHM	S	3,000 - 25,000	1182	754	80
		●					5xD	HA	RT 100 R	DIN 6537 L	VHM	F	3,000 - 20,000	6501	754	82
●	○	○	○				5xD	HE	RT 80 U	DIN 6538 M	HM	S	9,800 - 25,500	1172	754	84
●	○	●	○	○	○		7xD	HA	RT 100 U	WN	VHM	F	3,000 - 20,000	4044	758	85
●	○	●	○	○	○		7xD	HE	RT 100 U	WN	VHM	F	3,000 - 19,500	4045	758	87
●	○	●	○	○	○		7xD	HA	RT 100 U	WN	VHM	S	3,000 - 19,500	2711	758	89
●				●	○		7xD	HA	RT 100 HF	WN	VHM	Y	3,000 - 16,000	8522	758	90
		●					7xD	HA	RT 100 R	WN	VHM	F	4,000 - 20,000	6502	758	91

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Свёрла Ratio с каналами под COTC																
		●	○				7xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	769	758	93
		○	●				7xD	HA	RT 150 GG	WN	VHM	○	3,000 - 19,500	6069	758	94
●	○	○	○				7xD	HE	RT 80 U	DIN 6538 L	HM	S	9,600 - 25,000	1173	758	95
●	○	○	○	○	○		8xD	HA	RT 100 S	WN	VHM	F	3,000 - 20,000	5760	758	96
		●	○				10xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	770	758	98
		○	●				10xD	HA	RT 150 GG	WN	VHM	○	3,000 - 19,500	6070	758	99
●	○	●	○	○	○		12xD	HA	RT 100 U	WN	VHM	F	3,000 - 20,000	5525	758	100
●	●	●	○	○	○		15xD	HA	RT 100 T	WN	VHM	A	3,000 - 14,000	6509	760	102
		●	●				15xD	HA	RT 150 GN	WN	VHM	○	5,000 - 14,000	773	760	103
●	●	●	○	○	○		20xD	HA	RT 100 T	WN	VHM	A	3,000 - 14,000	6511	760	104
●	●	●	○	○	○		25xD	HA	RT 100 T	WN	VHM	A	3,000 - 12,000	6512	760	105
●	●	●	○	○	○		30xD	HA	RT 100 T	WN	VHM	A	3,000 - 10,000	6513	760	106
●	●	●	○	○	○		40xD	HA	RT 100 T	WN	VHM	A	3,000 - 8,000	6514	760	107
ExclusiveLine микросверла без каналов COTC VHM																
●	●	●	○	○			4xD	Cyl	N	WN	VHM	A	0,500 - 3,000	6400	796	108
●	●	●	○	○			7xD	Cyl	N	WN	VHM	A	0,500 - 3,000	6401	796	109
ExclusiveLine микросверла с каналами COTC VHM																
●	●	●	○	○			5xD	Cyl	N	WN	VHM	A	1,400 - 3,000	6405	796	110
●	●	●	○	○			8xD	Cyl	N	WN	VHM	A	1,400 - 3,000	6408	796	111
●	●	●	○	○			15xD	Cyl	N	WN	VHM	A	1,400 - 3,000	6412	796	112
Свёрла Ratio, 3-х лезвийные																
		●	●				5xD	HA	FT 200 G	DIN 6537 L	VHM	○	3,000 - 20,000	2713	762	113
○		○	○				5xD	Cyl	GS 200 U	DIN 6539	VHM	S	3,000 - 14,400	611	762	114
○		○	○				5xD	Cyl	GS 200 U	DIN 6539	VHM	○	3,000 - 20,000	731	762	115
		○	○				5xD	Cyl	GS 200 G	DIN 6539	VHM	○	3,570 - 12,500	745	762	116

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Свёрла Ratio, 3-х лезвийные																
		○	○				5xD	Cyl	GS 200 G	DIN 6539	VHM	◯	3,000 - 20,000	1025	762	117
○		○	○				5xD	Cyl	GS 200 F	DIN 6539	VHM	Ⓢ	3,000 - 11,000	1027	762	119
Ступенчатые сверла Ratio, 3-лезвийные																
		○	○				3xD	Cyl	GS 200 G	WN	VHM	◯	3,400 - 20,000	1032		120

Свёрла Ratio без каналов под COTC

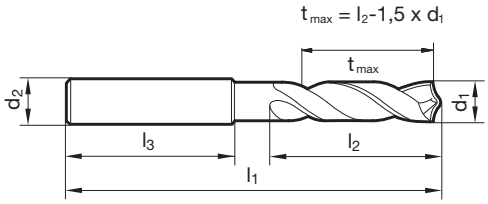
3xD | RT 100 U | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **2480**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,650		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,400		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,100		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,600		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio без каналов под COTC

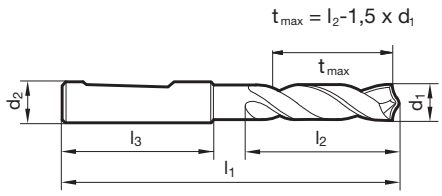
3xD | RT 100 U | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,100 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **2472**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,100		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,900		6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,250		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,600		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,800		16,000	115,000	65,000	48,000
16,200		18,000	123,000	73,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,300		20,000	131,000	79,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio без каналов под COTC

3xD | RT 100 U | DIN 6539 | 140° | m7

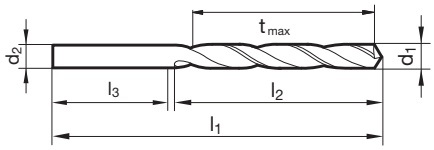
Режущий материал	VHM
Покрытие	F
Форма хвостовика	Цил.

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2473**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		3,000	46,000	16,000	30,000
3,200		3,200	49,000	18,000	31,000
3,300		3,300	49,000	18,000	31,000
3,500		3,500	52,000	20,000	32,000
3,800		3,800	55,000	22,000	33,000
3,900		3,900	55,000	22,000	33,000
4,000		4,000	55,000	22,000	33,000
4,200		4,200	55,000	22,000	33,000
4,500		4,500	58,000	24,000	34,000
4,600		4,600	58,000	24,000	34,000
4,900		4,900	62,000	26,000	36,000
5,000		5,000	62,000	26,000	36,000
5,200		5,200	62,000	26,000	36,000
5,500		5,500	66,000	28,000	38,000
5,800		5,800	66,000	28,000	38,000
6,000		6,000	66,000	28,000	38,000
6,100		6,100	70,000	31,000	39,000
6,200		6,200	70,000	31,000	39,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,400		6,400	70,000	31,000	39,000
7,000		7,000	74,000	34,000	40,000
7,400		7,400	74,000	34,000	40,000
8,100		8,100	79,000	37,000	42,000
8,500		8,500	79,000	37,000	42,000
8,800		8,800	84,000	40,000	44,000
9,100		9,100	84,000	40,000	44,000
9,400		9,400	84,000	40,000	44,000
10,000		10,000	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,500		10,500	89,000	43,000	46,000
11,500		11,500	95,000	47,000	48,000
11,800		11,800	95,000	47,000	48,000
12,000		12,000	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
14,000		14,000	107,000	54,000	53,000
15,500		15,500	115,000	58,000	57,000

Свёрла Ratio без каналов под COTC

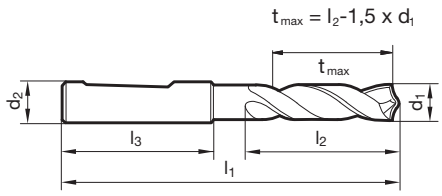
3xD | RT 100 U | DIN 6537K | 140° | m7

Режущий материал	VHM
Покрытие	S
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **1184**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,600		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,400		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,400		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,800		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,400		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,200		16,000	115,000	65,000	48,000
15,480	39/64	16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,800		16,000	115,000	65,000	48,000
15,870	5/8	16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,270	41/64	18,000	123,000	73,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,800		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,460	11/16	18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
17,860	45/64	18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,100		20,000	131,000	79,000	50,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,650	47/64	20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,200		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,600		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio без каналов под COTC

3xD | RT 100 U | DIN 6539 | 140° | m7

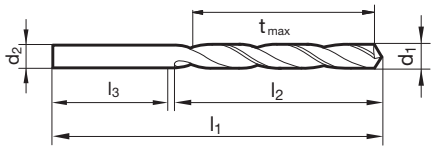
Режущий материал	VHM
Покрытие	S
Форма хвостовика	Цил.

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
N	○	
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1242**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		3,000	46,000	16,000	30,000
3,100		3,100	49,000	18,000	31,000
3,170	1/8	3,170	49,000	18,000	31,000
3,200		3,200	49,000	18,000	31,000
3,300		3,300	49,000	18,000	31,000
3,400		3,400	52,000	20,000	32,000
3,500		3,500	52,000	20,000	32,000
3,570	9/64	3,570	52,000	20,000	32,000
3,600		3,600	52,000	20,000	32,000
3,700		3,700	52,000	20,000	32,000
3,800		3,800	55,000	22,000	33,000
3,900		3,900	55,000	22,000	33,000
3,970	5/32	3,970	55,000	22,000	33,000
4,000		4,000	55,000	22,000	33,000
4,100		4,100	55,000	22,000	33,000
4,200		4,200	55,000	22,000	33,000
4,300		4,300	58,000	24,000	34,000
4,370	11/64	4,370	58,000	24,000	34,000
4,400		4,400	58,000	24,000	34,000
4,500		4,500	58,000	24,000	34,000
4,600		4,600	58,000	24,000	34,000
4,700		4,700	58,000	24,000	34,000
4,760	3/16	4,760	62,000	26,000	36,000
4,800		4,800	62,000	26,000	36,000
4,900		4,900	62,000	26,000	36,000
5,000		5,000	62,000	26,000	36,000
5,100		5,100	62,000	26,000	36,000
5,160	13/64	5,160	62,000	26,000	36,000
5,200		5,200	62,000	26,000	36,000
5,300		5,300	62,000	26,000	36,000
5,400		5,400	66,000	28,000	38,000
5,500		5,500	66,000	28,000	38,000
5,560	7/32	5,560	66,000	28,000	38,000
5,600		5,600	66,000	28,000	38,000
5,700		5,700	66,000	28,000	38,000
5,800		5,800	66,000	28,000	38,000
5,900		5,900	66,000	28,000	38,000
5,950	15/64	5,950	66,000	28,000	38,000
6,000		6,000	66,000	28,000	38,000
6,100		6,100	70,000	31,000	39,000
6,200		6,200	70,000	31,000	39,000
6,300		6,300	70,000	31,000	39,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,350	1/4	6,350	70,000	31,000	39,000
6,400		6,400	70,000	31,000	39,000
6,500		6,500	70,000	31,000	39,000
6,600		6,600	70,000	31,000	39,000
6,700		6,700	70,000	31,000	39,000
6,750	17/64	6,750	74,000	34,000	40,000
6,800		6,800	74,000	34,000	40,000
6,900		6,900	74,000	34,000	40,000
7,000		7,000	74,000	34,000	40,000
7,100		7,100	74,000	34,000	40,000
7,140	9/32	7,140	74,000	34,000	40,000
7,200		7,200	74,000	34,000	40,000
7,300		7,300	74,000	34,000	40,000
7,400		7,400	74,000	34,000	40,000
7,500		7,500	74,000	34,000	40,000
7,540	19/64	7,540	79,000	37,000	42,000
7,600		7,600	79,000	37,000	42,000
7,700		7,700	79,000	37,000	42,000
7,800		7,800	79,000	37,000	42,000
7,900		7,900	79,000	37,000	42,000
7,940	5/16	7,940	79,000	37,000	42,000
8,000		8,000	79,000	37,000	42,000
8,100		8,100	79,000	37,000	42,000
8,200		8,200	79,000	37,000	42,000
8,300		8,300	79,000	37,000	42,000
8,330	21/64	8,330	79,000	37,000	42,000
8,400		8,400	79,000	37,000	42,000
8,500		8,500	79,000	37,000	42,000
8,600		8,600	84,000	40,000	44,000
8,700		8,700	84,000	40,000	44,000
8,730	11/32	8,730	84,000	40,000	44,000
8,800		8,800	84,000	40,000	44,000
8,900		8,900	84,000	40,000	44,000
9,000		9,000	84,000	40,000	44,000
9,100		9,100	84,000	40,000	44,000
9,130	23/64	9,130	84,000	40,000	44,000
9,200		9,200	84,000	40,000	44,000
9,300		9,300	84,000	40,000	44,000
9,400		9,400	84,000	40,000	44,000
9,500		9,500	84,000	40,000	44,000
9,520	3/8	9,520	89,000	43,000	46,000
9,600		9,600	89,000	43,000	46,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,700		9,700	89,000	43,000	46,000
9,800		9,800	89,000	43,000	46,000
9,900		9,900	89,000	43,000	46,000
9,920	25/64	9,920	89,000	43,000	46,000
10,000		10,000	89,000	43,000	46,000
10,100		10,100	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,300		10,300	89,000	43,000	46,000
10,320	13/32	10,320	89,000	43,000	46,000
10,400		10,400	89,000	43,000	46,000
10,500		10,500	89,000	43,000	46,000
10,600		10,600	89,000	43,000	46,000
10,700		10,700	95,000	47,000	48,000
10,720	27/64	10,720	95,000	47,000	48,000
10,800		10,800	95,000	47,000	48,000
10,900		10,900	95,000	47,000	48,000
11,000		11,000	95,000	47,000	48,000
11,100		11,100	95,000	47,000	48,000
11,110	7/16	11,110	95,000	47,000	48,000
11,200		11,200	95,000	47,000	48,000
11,300		11,300	95,000	47,000	48,000
11,400		11,400	95,000	47,000	48,000
11,500		11,500	95,000	47,000	48,000
11,510	29/64	11,510	95,000	47,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,600		11,600	95,000	47,000	48,000
11,800		11,800	95,000	47,000	48,000
11,900		11,900	102,000	51,000	51,000
11,910	15/32	11,910	102,000	51,000	51,000
12,000		12,000	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
12,700	1/2	12,700	102,000	51,000	51,000
13,000		13,000	102,000	51,000	51,000
13,500		13,500	107,000	54,000	53,000
14,000		14,000	107,000	54,000	53,000
14,500		14,500	111,000	56,000	55,000
15,000		15,000	111,000	56,000	55,000
15,500		15,500	115,000	58,000	57,000
16,000		16,000	115,000	58,000	57,000

Свёрла Ratio без каналов под COTC

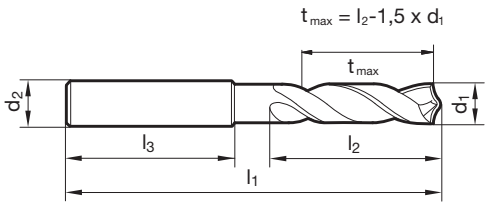
3xD | RT 100 HF | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки
M		
K		
N		легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **8524**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000

FRIZAR
www.frizar.ru

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio без каналов под COTC

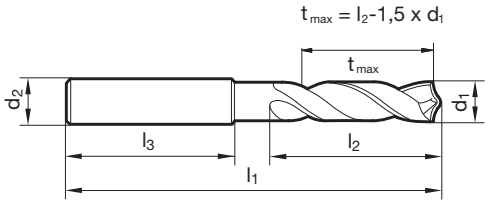
3xD | RT 100 F | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	○	подточка ≥ Ø 5,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **2475**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,700		6,000	62,000	20,000	36,000
4,650		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,500		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
8,000		8,000	79,000	41,000	36,000
8,500		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,000		10,000	89,000	47,000	40,000
10,500		12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000

Свёрла Ratio без каналов под COTC

3xD | RT 100 F | DIN 6539 | 140° | m7

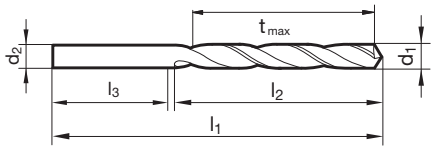
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	Цил.

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	●	
K	○	
N	○	нержавеющие/кислотостойкие/жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы • высоколегированные стали
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1702**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		3,000	46,000	16,000	30,000
3,100		3,100	49,000	18,000	31,000
3,170	1/8	3,170	49,000	18,000	31,000
3,200		3,200	49,000	18,000	31,000
3,300		3,300	49,000	18,000	31,000
3,400		3,400	52,000	20,000	32,000
3,500		3,500	52,000	20,000	32,000
3,570	9/64	3,570	52,000	20,000	32,000
3,600		3,600	52,000	20,000	32,000
3,700		3,700	52,000	20,000	32,000
3,800		3,800	55,000	22,000	33,000
3,900		3,900	55,000	22,000	33,000
3,970	5/32	3,970	55,000	22,000	33,000
4,000		4,000	55,000	22,000	33,000
4,100		4,100	55,000	22,000	33,000
4,200		4,200	55,000	22,000	33,000
4,300		4,300	58,000	24,000	34,000
4,370	11/64	4,370	58,000	24,000	34,000
4,400		4,400	58,000	24,000	34,000
4,500		4,500	58,000	24,000	34,000
4,600		4,600	58,000	24,000	34,000
4,700		4,700	58,000	24,000	34,000
4,760	3/16	4,760	62,000	26,000	36,000
4,800		4,800	62,000	26,000	36,000
4,900		4,900	62,000	26,000	36,000
5,000		5,000	62,000	26,000	36,000
5,100		5,100	62,000	26,000	36,000
5,160	13/64	5,160	62,000	26,000	36,000
5,200		5,200	62,000	26,000	36,000
5,300		5,300	62,000	26,000	36,000
5,400		5,400	66,000	28,000	38,000
5,500		5,500	66,000	28,000	38,000
5,560	7/32	5,560	66,000	28,000	38,000
5,600		5,600	66,000	28,000	38,000
5,700		5,700	66,000	28,000	38,000
5,800		5,800	66,000	28,000	38,000
5,950	15/64	5,950	66,000	28,000	38,000
6,000		6,000	66,000	28,000	38,000
6,100		6,100	70,000	31,000	39,000
6,200		6,200	70,000	31,000	39,000
6,300		6,300	70,000	31,000	39,000
6,350	1/4	6,350	70,000	31,000	39,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,400		6,400	70,000	31,000	39,000
6,500		6,500	70,000	31,000	39,000
6,600		6,600	70,000	31,000	39,000
6,700		6,700	70,000	31,000	39,000
6,750	17/64	6,750	74,000	34,000	40,000
6,800		6,800	74,000	34,000	40,000
6,900		6,900	74,000	34,000	40,000
7,000		7,000	74,000	34,000	40,000
7,100		7,100	74,000	34,000	40,000
7,140	9/32	7,140	74,000	34,000	40,000
7,200		7,200	74,000	34,000	40,000
7,300		7,300	74,000	34,000	40,000
7,400		7,400	74,000	34,000	40,000
7,540	19/64	7,540	79,000	37,000	42,000
7,600		7,600	79,000	37,000	42,000
7,700		7,700	79,000	37,000	42,000
7,800		7,800	79,000	37,000	42,000
7,900		7,900	79,000	37,000	42,000
7,940	5/16	7,940	79,000	37,000	42,000
8,000		8,000	79,000	37,000	42,000
8,100		8,100	79,000	37,000	42,000
8,200		8,200	79,000	37,000	42,000
8,300		8,300	79,000	37,000	42,000
8,330	21/64	8,330	79,000	37,000	42,000
8,400		8,400	79,000	37,000	42,000
8,500		8,500	79,000	37,000	42,000
8,600		8,600	84,000	40,000	44,000
8,700		8,700	84,000	40,000	44,000
8,730	11/32	8,730	84,000	40,000	44,000
8,800		8,800	84,000	40,000	44,000
8,900		8,900	84,000	40,000	44,000
9,000		9,000	84,000	40,000	44,000
9,100		9,100	84,000	40,000	44,000
9,130	23/64	9,130	84,000	40,000	44,000
9,400		9,400	84,000	40,000	44,000
9,500		9,500	84,000	40,000	44,000
9,520	3/8	9,520	89,000	43,000	46,000
9,600		9,600	89,000	43,000	46,000
9,700		9,700	89,000	43,000	46,000
9,800		9,800	89,000	43,000	46,000
9,900		9,900	89,000	43,000	46,000
9,920	25/64	9,920	89,000	43,000	46,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,000		10,000	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,300		10,300	89,000	43,000	46,000
10,320	13/32	10,320	89,000	43,000	46,000
10,720	27/64	10,720	95,000	47,000	48,000
11,000		11,000	95,000	47,000	48,000
11,110	7/16	11,110	95,000	47,000	48,000
11,300		11,300	95,000	47,000	48,000
11,500		11,500	95,000	47,000	48,000
11,510	29/64	11,510	95,000	47,000	48,000
11,910	15/32	11,910	102,000	51,000	51,000
12,000		12,000	102,000	51,000	51,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,300	31/64	12,300	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
12,700	1/2	12,700	102,000	51,000	51,000
13,000		13,000	102,000	51,000	51,000
13,500		13,500	107,000	54,000	53,000
14,000		14,000	107,000	54,000	53,000

Свёрла Ratio без каналов под COTC

5xD | RT 100 U | DIN 6537 L | 140° | m7

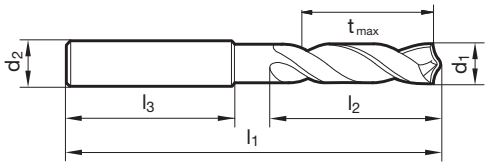
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2996**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio без каналов под COTC

5xD | RT 100 U | DIN 6537 L | 140° | m7

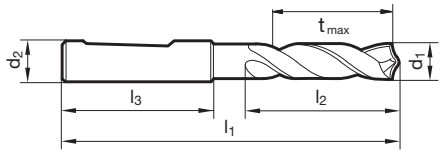
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,100 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2719**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio без каналов под COTC

5xD | RT 100 U | WN | 140° | m7

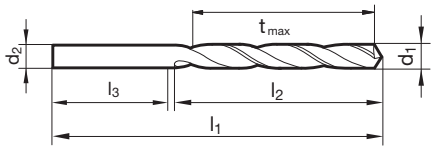
Режущий материал	VHM
Покрытие	F
Форма хвостовика	Цил.

P	•	подточка ≥ Ø 5,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2474**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
5,000		5,000	73,000	34,000	39,000
5,400		5,400	76,000	38,000	38,000
5,500		5,500	76,000	38,000	38,000
5,600		5,600	81,000	41,000	40,000
5,700		5,700	81,000	41,000	40,000
6,200		6,200	81,000	41,000	40,000
6,400		6,400	81,000	41,000	40,000
6,500		6,500	81,000	41,000	40,000
6,600		6,600	83,000	43,000	40,000
6,800		6,800	83,000	43,000	40,000
7,100		7,100	87,000	45,000	42,000
7,200		7,200	87,000	45,000	42,000
7,400		7,400	87,000	45,000	42,000
7,700		7,700	90,000	48,000	42,000
8,000		8,000	90,000	48,000	42,000
8,100		8,100	96,000	53,000	43,000
8,500		8,500	96,000	53,000	43,000
8,700		8,700	98,000	55,000	43,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
9,000		9,000	98,000	55,000	43,000
9,200		9,200	102,000	58,000	44,000
9,300		9,300	102,000	58,000	44,000
9,700		9,700	105,000	60,000	45,000
9,800		9,800	105,000	60,000	45,000
10,200		10,200	112,000	66,000	46,000
10,300		10,300	112,000	66,000	46,000
10,400		10,400	112,000	66,000	46,000
10,500		10,500	112,000	66,000	46,000
10,600		10,600	114,000	68,000	46,000
10,800		10,800	114,000	68,000	46,000
10,900		10,900	114,000	68,000	46,000
11,000		11,000	114,000	68,000	46,000
11,600		11,600	121,000	73,000	48,000
11,800		11,800	121,000	73,000	48,000
13,000		13,000	137,000	78,000	59,000
14,000		14,000	147,000	86,000	61,000

Свёрла Ratio без каналов под COTC

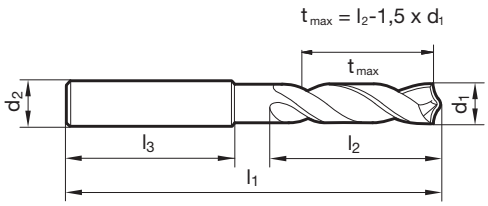
5xD | RT 100 U | DIN 6537 L | 140° | m7

Режущий материал	**VHM**
Покрытие	(S)
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,300 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756



Артикул № **2717**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,800		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000

Свёрла Ratio без каналов под COTC

5xD | RT 100 U | WN | 140° | m7

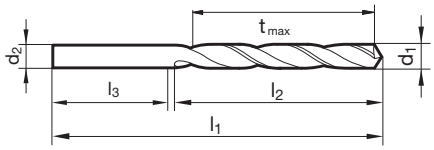
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	Цил.

P	•	подточка ≥ Ø 5,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1243**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
5,000		5,000	73,000	34,000	39,000
5,100		5,100	76,000	38,000	38,000
5,160	13/64	5,160	76,000	38,000	38,000
5,200		5,200	76,000	38,000	38,000
5,300		5,300	76,000	38,000	38,000
5,400		5,400	76,000	38,000	38,000
5,500		5,500	76,000	38,000	38,000
5,560	7/32	5,560	81,000	41,000	40,000
5,600		5,600	81,000	41,000	40,000
5,700		5,700	81,000	41,000	40,000
5,800		5,800	81,000	41,000	40,000
5,900		5,900	81,000	41,000	40,000
5,950	15/64	5,950	81,000	41,000	40,000
6,000		6,000	81,000	41,000	40,000
6,100		6,100	81,000	41,000	40,000
6,200		6,200	81,000	41,000	40,000
6,300		6,300	81,000	41,000	40,000
6,350	1/4	6,350	81,000	41,000	40,000
6,400		6,400	81,000	41,000	40,000
6,500		6,500	81,000	41,000	40,000
6,600		6,600	83,000	43,000	40,000
6,700		6,700	83,000	43,000	40,000
6,750	17/64	6,750	83,000	43,000	40,000
6,800		6,800	83,000	43,000	40,000
6,900		6,900	83,000	43,000	40,000
7,000		7,000	83,000	43,000	40,000
7,100		7,100	87,000	45,000	42,000
7,140	9/32	7,140	87,000	45,000	42,000
7,200		7,200	87,000	45,000	42,000
7,300		7,300	87,000	45,000	42,000
7,400		7,400	87,000	45,000	42,000
7,500		7,500	87,000	45,000	42,000
7,540	19/64	7,540	90,000	48,000	42,000
7,600		7,600	90,000	48,000	42,000
7,700		7,700	90,000	48,000	42,000
7,800		7,800	90,000	48,000	42,000
7,900		7,900	90,000	48,000	42,000
7,940	5/16	7,940	90,000	48,000	42,000
8,000		8,000	90,000	48,000	42,000
8,100		8,100	96,000	53,000	43,000
8,200		8,200	96,000	53,000	43,000
8,300		8,300	96,000	53,000	43,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
8,330	21/64	8,330	96,000	53,000	43,000
8,400		8,400	96,000	53,000	43,000
8,500		8,500	96,000	53,000	43,000
8,600		8,600	98,000	55,000	43,000
8,700		8,700	98,000	55,000	43,000
8,730	11/32	8,730	98,000	55,000	43,000
8,800		8,800	98,000	55,000	43,000
8,900		8,900	98,000	55,000	43,000
9,000		9,000	98,000	55,000	43,000
9,100		9,100	102,000	58,000	44,000
9,130	23/64	9,130	102,000	58,000	44,000
9,200		9,200	102,000	58,000	44,000
9,300		9,300	102,000	58,000	44,000
9,500		9,500	102,000	58,000	44,000
9,520	3/8	9,520	105,000	60,000	45,000
9,600		9,600	105,000	60,000	45,000
9,700		9,700	105,000	60,000	45,000
9,800		9,800	105,000	60,000	45,000
9,900		9,900	105,000	60,000	45,000
9,920	25/64	9,920	105,000	60,000	45,000
10,000		10,000	105,000	60,000	45,000
10,100		10,100	112,000	66,000	46,000
10,200		10,200	112,000	66,000	46,000
10,300		10,300	112,000	66,000	46,000
10,320	13/32	10,320	112,000	66,000	46,000
10,400		10,400	112,000	66,000	46,000
10,500		10,500	112,000	66,000	46,000
10,600		10,600	114,000	68,000	46,000
10,700		10,700	114,000	68,000	46,000
10,720	27/64	10,720	114,000	68,000	46,000
10,800		10,800	114,000	68,000	46,000
10,900		10,900	114,000	68,000	46,000
11,000		11,000	114,000	68,000	46,000
11,100		11,100	118,000	71,000	47,000
11,110	7/16	11,110	118,000	71,000	47,000
11,400		11,400	118,000	71,000	47,000
11,500		11,500	118,000	71,000	47,000
11,600		11,600	121,000	73,000	48,000
11,700		11,700	121,000	73,000	48,000
11,800		11,800	121,000	73,000	48,000
11,900		11,900	121,000	73,000	48,000
11,910	15/32	11,910	121,000	73,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	121,000	73,000	48,000
12,500		12,500	135,000	76,000	59,000
12,700	1/2	12,700	137,000	78,000	59,000
13,000		13,000	137,000	78,000	59,000
13,500		13,500	144,000	84,000	60,000
14,000		14,000	147,000	86,000	61,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,500		14,500	151,000	89,000	62,000
15,000		15,000	153,000	91,000	62,000
15,500		15,500	157,000	94,000	63,000
16,000		16,000	160,000	96,000	64,000

Свёрла Ratio без каналов под COTC

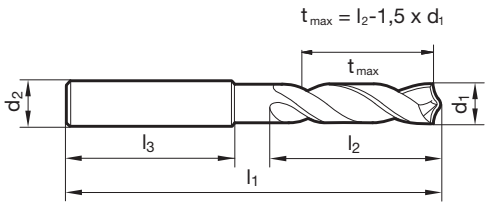
5xD | RT 100 F | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756



Артикул № **2712**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
5,000		6,000	82,000	44,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
15,000		16,000	133,000	83,000	48,000

Свёрла Ratio с каналами под COTC

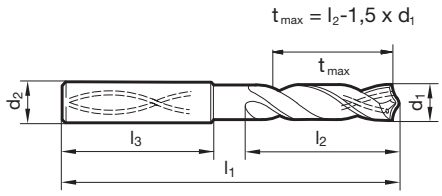
3xD | RT 100 U | DIN 6537K | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **2477**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,040		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,450		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,110		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,410		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,650		6,000	66,000	28,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,700		6,000	66,000	28,000	36,000
5,750		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,530		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,450		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,550		8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,650		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,550		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,050		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,340		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,550		10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	15,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,510	29/64	12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,400		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,600		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
12,900		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,490	17/32	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,550		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
13,900		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,680	37/64	16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,900		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,080	19/32	16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,480	39/64	16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,800		16,000	115,000	65,000	48,000
15,870	5/8	16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,270	41/64	18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,670	21/32	18,000	123,000	73,000	48,000
16,700		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,070	43/64	18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,460	11/16	18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
17,860	45/64	18,000	123,000	73,000	48,000
17,900		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,260	23/32	20,000	131,000	79,000	50,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,700		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,250		20,000	131,000	79,000	50,000
19,446		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,700		20,000	131,000	79,000	50,000
19,840	25/32	20,000	131,000	79,000	50,000
19,900		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

3xD | RT 100 U | DIN 6537 K | 140° | m7

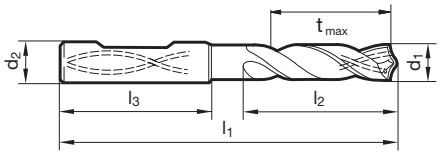
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2469**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,450		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,800		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,650		6,000	66,000	28,000	36,000
5,750		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,450		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,650		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,200		10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
8,550		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,050		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,550		10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,550		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,400		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,550		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,700		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,550		16,000	115,000	65,000	48,000
15,600		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,200		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,550		18,000	123,000	73,000	48,000
17,900		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,550		20,000	131,000	79,000	50,000
19,900		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

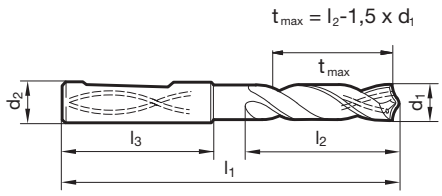
3xD | RT 100 U | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	S
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,300 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **1181**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
4,000		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,510	29/64	12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,900		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,500		16,000	115,000	65,000	48,000
14,680	37/64	16,000	115,000	65,000	48,000
14,900		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,480	39/64	16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,200		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,700		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

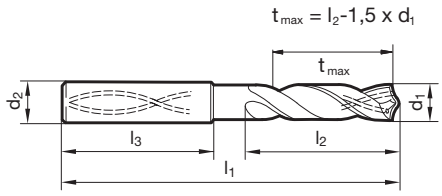
3xD | RT 100 HF | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки
M		
K		
N		легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **8520**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,490	17/32	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

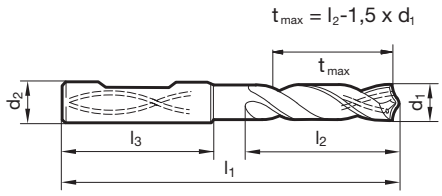
3xD | RT 100 HF | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки
M		
K		
N		легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **8620**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

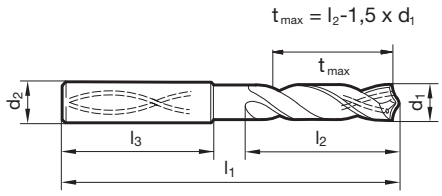
3xD | RT 100 VA | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	•	
K		
N		нержавеющие/кислотостойкие/жаропрочные стали • титан и титановые сплавы • хастеллой, инконель, монель
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **8510**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

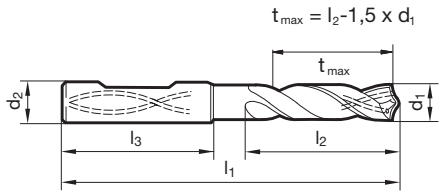
3xD | RT 100 VA | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	HE

P		подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	•	
K		
N		нержавеющие/кислотостойкие/жаропрочные стали • титан и титановые сплавы • хастеллой, инконель, монель
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **8610**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

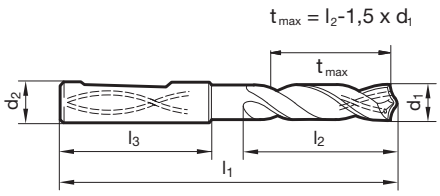
3xD | RT 100 F | DIN 6537 K | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **2468**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,500		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,300		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,500		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,500		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
20,000		20,000	131,000	79,000	50,000

Свёрла Ratio с каналами под COTC

3xD | RT 100 F | DIN 6537 K | 140° | m7

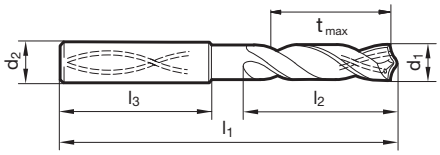
Режущий материал	VHM
Покрытие	S
Форма хвостовика	HA

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1660**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,100		6,000	62,000	20,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,500		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,200		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,500		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
15,000		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
19,600		20,000	131,000	79,000	50,000
20,500		25,000	146,000	84,000	56,000
21,500		25,000	146,000	84,000	56,000
22,000		25,000	146,000	84,000	56,000

Свёрла Ratio с каналами под COTC

3xD | RT 100 F | DIN 6537 K | 140° | m7

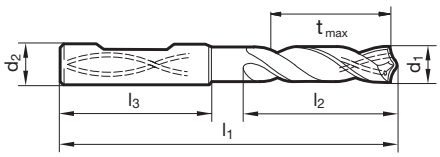
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HE

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1180**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,510	29/64	12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,600		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,290	9/16	16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,450	49/64	20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000
20,500		25,000	146,000	84,000	56,000
21,000		25,000	146,000	84,000	56,000
22,000		25,000	146,000	84,000	56,000
22,500		25,000	153,000	91,000	56,000
23,000		25,000	153,000	91,000	56,000
24,000		25,000	153,000	91,000	56,000
25,000	63/64	25,000	153,000	91,000	56,000

Свёрла Ratio с каналами под COTC

3xD | RT80U | DIN 6538K | 140° | h7

Режущий материал	HM
Покрытие	S
Форма хвостовика	HE

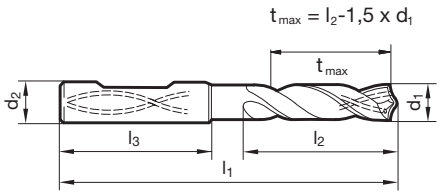
P	•
M	○
K	○
N	○
S	
H	

подточка ≥ Ø 9,500 • конусная заточка • корпус сверла из HSS с впаянной твердосплавной пластиной • смягчает колебания и удары

нелегированная/низколегированная сталь • чугун, чугун с шаровидным графитом • латунь, бронза, пластмасса, графит

GÜHRINGNAVIGATOR

Параметры резания см. стр. 750



Артикул № **1171**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,500		16,000	103,000	51,000	48,000
9,700		16,000	103,000	51,000	48,000
9,800		16,000	103,000	51,000	48,000
9,900		16,000	103,000	51,000	48,000
10,000		16,000	103,000	51,000	48,000
10,100		16,000	103,000	51,000	48,000
10,200		16,000	103,000	51,000	48,000
10,400		16,000	103,000	51,000	48,000
10,500		16,000	103,000	51,000	48,000
10,600		16,000	103,000	51,000	48,000
10,700		16,000	103,000	51,000	48,000
10,800		16,000	103,000	51,000	48,000
10,900		16,000	103,000	51,000	48,000
11,000		16,000	103,000	51,000	48,000
11,200		16,000	103,000	51,000	48,000
11,500		16,000	103,000	51,000	48,000
11,600		16,000	103,000	51,000	48,000
11,700		16,000	103,000	51,000	48,000
12,000		16,000	103,000	51,000	48,000
12,100		16,000	111,000	59,000	48,000
12,200		16,000	111,000	59,000	48,000
12,300	31/64	16,000	111,000	59,000	48,000
12,400		16,000	111,000	59,000	48,000
12,500		16,000	111,000	59,000	48,000
12,600		16,000	111,000	59,000	48,000
12,700	1/2	16,000	111,000	59,000	48,000
13,000		16,000	111,000	59,000	48,000
13,500		16,000	111,000	59,000	48,000
13,700		16,000	111,000	59,000	48,000
13,800		16,000	111,000	59,000	48,000
14,000		16,000	111,000	59,000	48,000
14,200		20,000	122,000	68,000	50,000
14,400		20,000	122,000	68,000	50,000
14,600		20,000	122,000	68,000	50,000
14,700		20,000	122,000	68,000	50,000
15,000		20,000	122,000	68,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,100		20,000	122,000	68,000	50,000
15,500		20,000	122,000	68,000	50,000
15,600		20,000	122,000	68,000	50,000
15,700		20,000	122,000	68,000	50,000
15,800		20,000	122,000	68,000	50,000
16,000		20,000	122,000	68,000	50,000
16,200		20,000	130,000	76,000	50,000
16,500		20,000	130,000	76,000	50,000
16,700		20,000	130,000	76,000	50,000
17,000		20,000	130,000	76,000	50,000
17,300		20,000	130,000	76,000	50,000
17,500		20,000	130,000	76,000	50,000
17,700		20,000	130,000	76,000	50,000
17,800		20,000	130,000	76,000	50,000
17,860	45/64	20,000	130,000	76,000	50,000
18,000		20,000	130,000	76,000	50,000
18,500		25,000	144,000	84,000	56,000
19,000		25,000	144,000	84,000	56,000
19,500		25,000	144,000	84,000	56,000
19,600		25,000	144,000	84,000	56,000
19,700		25,000	144,000	84,000	56,000
20,000		25,000	144,000	84,000	56,000
20,500		25,000	153,000	93,000	56,000
21,000		25,000	153,000	93,000	56,000
21,500		25,000	153,000	93,000	56,000
22,000		25,000	153,000	93,000	56,000
22,220	7/8	25,000	161,000	101,000	56,000
22,500		25,000	161,000	101,000	56,000
23,000		25,000	161,000	101,000	56,000
23,500		25,000	161,000	101,000	56,000
24,000		25,000	161,000	101,000	56,000
24,500		32,000	174,000	110,000	60,000
25,000	63/64	32,000	174,000	110,000	60,000
25,500		32,000	174,000	110,000	60,000

Свёрла Ratio с каналами под COTC

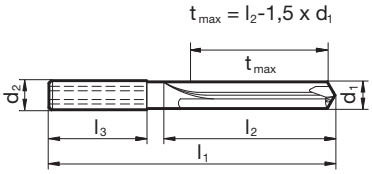
4xD | RT 150 GG | WN | 120° | m7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • конусная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	•	
N	○	серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752



Артикул № **768**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	24,000	36,000
3,100		6,000	66,000	24,000	36,000
3,200		6,000	66,000	24,000	36,000
3,300		6,000	66,000	24,000	36,000
3,400		6,000	66,000	24,000	36,000
3,500		6,000	66,000	24,000	36,000
3,600		6,000	66,000	24,000	36,000
3,700		6,000	66,000	24,000	36,000
3,800		6,000	74,000	30,000	36,000
3,900		6,000	74,000	30,000	36,000
4,000		6,000	74,000	30,000	36,000
4,100		6,000	74,000	30,000	36,000
4,200		6,000	74,000	30,000	36,000
4,300		6,000	74,000	30,000	36,000
4,400		6,000	74,000	30,000	36,000
4,500		6,000	74,000	30,000	36,000
4,600		6,000	74,000	30,000	36,000
4,700		6,000	74,000	30,000	36,000
4,800		6,000	74,000	36,000	36,000
4,900		6,000	74,000	36,000	36,000
5,000		6,000	74,000	36,000	36,000
5,100		6,000	74,000	36,000	36,000
5,160	13/64	6,000	74,000	36,000	36,000
5,200		6,000	74,000	36,000	36,000
5,300		6,000	74,000	36,000	36,000
5,400		6,000	74,000	36,000	36,000
5,500		6,000	74,000	36,000	36,000
5,560	7/32	6,000	74,000	36,000	36,000
5,600		6,000	74,000	36,000	36,000
5,700		6,000	74,000	36,000	36,000
5,800		6,000	74,000	36,000	36,000
5,900		6,000	74,000	36,000	36,000
5,950	15/64	6,000	74,000	36,000	36,000
6,000		6,000	74,000	36,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,300	31/64	14,000	124,000	74,000	45,000
12,500		14,000	124,000	74,000	45,000
12,700	1/2	14,000	124,000	74,000	45,000
13,000		14,000	124,000	74,000	45,000
13,500		14,000	124,000	74,000	45,000
14,000		14,000	124,000	74,000	45,000
14,500		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

4xD | RT 150 GG | WN | 130° | m7

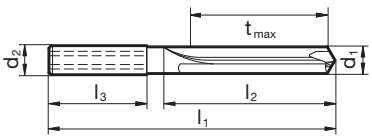
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	○	
N	•	алюминий и алюминиевые сплавы • алюминиевые сплавы с высоким содержанием кремния
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 752

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **6068**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	24,000	36,000
3,200		6,000	66,000	24,000	36,000
3,300		6,000	66,000	24,000	36,000
3,500		6,000	66,000	24,000	36,000
3,800		6,000	74,000	30,000	36,000
3,900		6,000	74,000	30,000	36,000
4,000		6,000	74,000	30,000	36,000
4,200		6,000	74,000	30,000	36,000
5,000		6,000	74,000	36,000	36,000
5,300		6,000	74,000	36,000	36,000
5,400		6,000	74,000	36,000	36,000
5,500		6,000	74,000	36,000	36,000
5,800		6,000	74,000	36,000	36,000
6,000		6,000	74,000	36,000	36,000
6,100		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,300	31/64	14,000	124,000	74,000	45,000
12,500		14,000	124,000	74,000	45,000
12,700	1/2	14,000	124,000	74,000	45,000
13,000		14,000	124,000	74,000	45,000
13,500		14,000	124,000	74,000	45,000
14,000		14,000	124,000	74,000	45,000
15,000		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 S | DIN 6537 L | 140° | m7

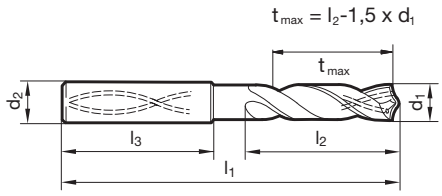
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

NEW

P	●	плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки • максимальная производительность
M	○	
K	○	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • стали (легированные/нелегированные) прочностью до 1400 Н/мм²
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754



Артикул № **5759**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,040		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,110		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,410		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,650		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,530		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,550		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,650		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,340		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,550		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510		12,000	118,000	71,000	45,000
11,550		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300		14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,490		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,680		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
14,900		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,080		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,480		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,550		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870		16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,270		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670		18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070		18,000	143,000	93,000	48,000
17,460		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,550		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,860		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,260		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,250		20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,446		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,550		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,840		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

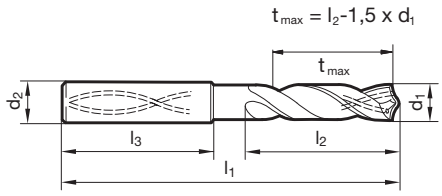
5xD | RT 100 U | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754



Артикул № **2479**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,040		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,110		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,410		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,650		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,530		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,550		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,650		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,340		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,550		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,550		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,490	17/32	14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890	35/64	14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,680	37/64	16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,080	19/32	16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,480	39/64	16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,270	41/64	18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670	21/32	18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070	43/64	18,000	143,000	93,000	48,000
17,460	11/16	18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,860	45/64	18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,260	23/32	20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,250		20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,446		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,840	25/32	20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 U | DIN 6537 L | 140° | m7

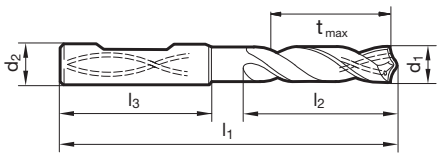
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,300 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2471**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,600		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000

FRIZAR
www.frizar.ru

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,200		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,600		20,000	153,000	101,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

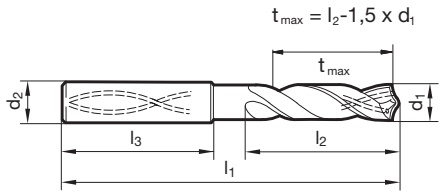
5xD | RT 100 U | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754



Артикул № **1663**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,200		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
13,000		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 U | DIN 6537 L | 140° | m7

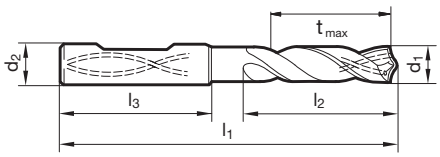
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,300 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1183**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,300		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890	35/64	14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,680	37/64	16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
14,900		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,480	39/64	16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,100		18,000	143,000	93,000	48,000
16,200		18,000	143,000	93,000	48,000
16,270	41/64	18,000	143,000	93,000	48,000
16,400		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,600		18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
16,800		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070	43/64	18,000	143,000	93,000	48,000
17,200		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,400		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,600		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,800		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,100		20,000	153,000	101,000	50,000
18,200		20,000	153,000	101,000	50,000
18,300		20,000	153,000	101,000	50,000
18,400		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,600		20,000	153,000	101,000	50,000
18,650	47/64	20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,800		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,800		20,000	153,000	101,000	50,000
19,900		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

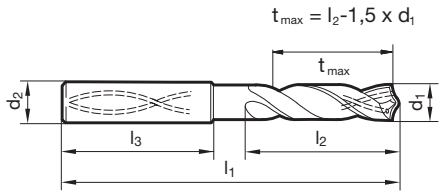
5xD | RT 100 HF | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки
M		
K		
N		легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756



Артикул № **8521**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 HF | DIN 6537 L | 140° | m7

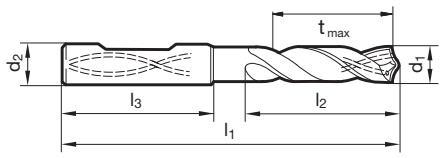
Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки
M		
K		
N		легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **8621**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

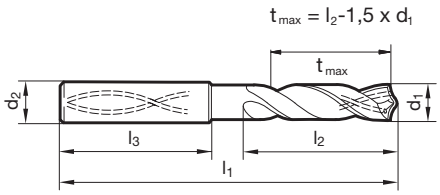
5xD | RT 100 VA | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	•	
K		
N		нержавеющие/кислотостойкие/жаропрочные стали • титан и титановые сплавы • хастеллой, инконель, монель
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756



Артикул № **8511**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

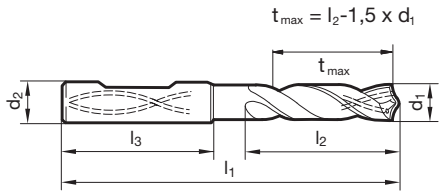
5xD | RT 100 VA | DIN 6537 L | 140° | m7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	HE

P		подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	•	
K		
N		нержавеющие/кислотостойкие/жаропрочные стали • титан и титановые сплавы • хастеллой, инконель, монель
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 756



Артикул № **8611**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 F | DIN 6537 L | 140° | m7

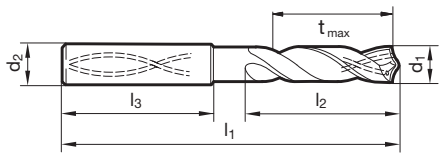
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2478**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,500		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,550		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 F | DIN 6537 L | 140° | m7

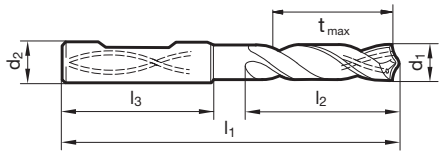
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза • алюминий и алюминиевые сплавы • магний и магниевые сплавы • титан и титановые сплавы • металлокерамические сплавы
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **2470**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 F | DIN 6537 L | 140° | m7

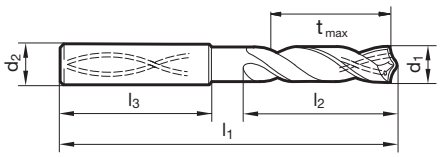
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HA

P	○	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза
S	●	• алюминий и алюминиевые сплавы • магний и магниевые сплавы
H	○	• титан и титановые сплавы • металлокерамические сплавы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1662**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,550		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000
6,100		8,000	91,000	53,000	36,000	9,400		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000
20,500		25,000	165,000	105,000	56,000
21,000		25,000	165,000	105,000	56,000
22,500		25,000	180,000	117,000	56,000
23,500		25,000	180,000	117,000	56,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 F | DIN 6537 L | 140° | m7

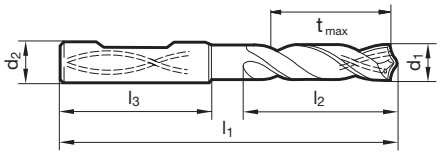
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HE

P	○	подточка ≥ Ø 10,100 • конусная заточка • вогнутая режущая кромка • оптимизированная геометрия режущей кромки • низкие усилия резания
M	○	
K	○	
N	○	высоколегированные стали • нержавеющие/кислотостойкие/ жаропрочные стали • хастеллой, инконель, монель • латунь, бронза
S	●	• алюминий и алюминиевые сплавы • магний и магниевые сплавы
H	○	• титан и титановые сплавы • металлокерамические сплавы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1182**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,000		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,500		14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,890	35/64	14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
16,600		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
20,000		20,000	153,000	101,000	50,000
20,500		25,000	165,000	105,000	56,000
21,000		25,000	165,000	105,000	56,000
21,500		25,000	165,000	105,000	56,000
22,000		25,000	165,000	105,000	56,000
22,500		25,000	180,000	117,000	56,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
24,000		25,000	180,000	117,000	56,000
24,500		25,000	180,000	117,000	56,000
25,000	63/64	25,000	180,000	117,000	56,000

Свёрла Ratio с каналами под COTC

5xD | RT 100 R | DIN 6537 L | m7

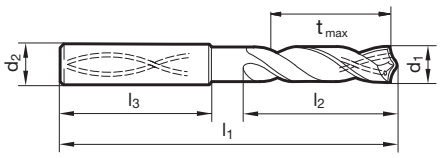
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	подточка ≥ Ø 3,000 • запатентованная радиусная заточка • режущая кромка прямая (благодаря корректировке)
M	
K	•
N	Новые чугуны: GGV, ADI, CDI • серый чугун, ковкий чугун, высокопрочный чугун
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **6501**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,100		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670	21/32	18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio с каналами под COTC

5xD | RT80U | DIN 6538M | 140° | h7

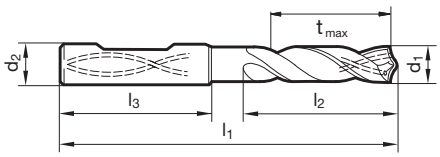
Режущий материал	HM
Покрытие	(S)
Форма хвостовика	HE

P	•	подточка ≥ Ø 9,800 • конусная заточка • корпус сверла из HSS с впаянной твердосплавной пластиной • Смягчает колебания и удары
M	○	
K	○	
N	○	нелегированная/низколегированная сталь • чугун, чугун с шаровидным графитом • латунь, бронза, пластмасса, графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 754

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1172**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,800	W	16,000	127,000	75,000	48,000
10,000		16,000	127,000	75,000	48,000
10,200		16,000	127,000	75,000	48,000
10,500		16,000	127,000	75,000	48,000
10,600		16,000	127,000	75,000	48,000
10,700		16,000	127,000	75,000	48,000
10,800		16,000	127,000	75,000	48,000
11,000		16,000	127,000	75,000	48,000
11,500		16,000	127,000	75,000	48,000
11,900		16,000	127,000	75,000	48,000
12,000		16,000	127,000	75,000	48,000
12,300	31/64	16,000	139,000	87,000	48,000
12,500		16,000	139,000	87,000	48,000
12,700	1/2	16,000	139,000	87,000	48,000
12,900		16,000	139,000	87,000	48,000
13,000		16,000	139,000	87,000	48,000
13,100	33/64	16,000	139,000	87,000	48,000
13,500		16,000	139,000	87,000	48,000
13,700		16,000	139,000	87,000	48,000
13,900		16,000	139,000	87,000	48,000
14,000		16,000	139,000	87,000	48,000
14,500		20,000	154,000	100,000	50,000
14,600		20,000	154,000	100,000	50,000
15,000		20,000	154,000	100,000	50,000
15,200		20,000	154,000	100,000	50,000
15,500		20,000	154,000	100,000	50,000
15,700		20,000	154,000	100,000	50,000
16,000		20,000	154,000	100,000	50,000
16,200		20,000	166,000	112,000	50,000
16,500		20,000	166,000	112,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,700		20,000	166,000	112,000	50,000
16,800		20,000	166,000	112,000	50,000
17,000		20,000	166,000	112,000	50,000
17,200		20,000	166,000	112,000	50,000
17,300		20,000	166,000	112,000	50,000
17,500		20,000	166,000	112,000	50,000
18,000		20,000	166,000	112,000	50,000
18,500		25,000	184,000	124,000	56,000
19,000		25,000	184,000	124,000	56,000
19,500		25,000	184,000	124,000	56,000
19,600		25,000	184,000	124,000	56,000
19,700		25,000	184,000	124,000	56,000
20,000		25,000	184,000	124,000	56,000
20,500		25,000	197,000	137,000	56,000
21,000		25,000	197,000	137,000	56,000
21,500		25,000	197,000	137,000	56,000
22,000		25,000	197,000	137,000	56,000
22,220	7/8	25,000	209,000	149,000	56,000
22,500		25,000	209,000	149,000	56,000
23,000		25,000	209,000	149,000	56,000
23,500		25,000	209,000	149,000	56,000
24,000		25,000	209,000	149,000	56,000
24,500		32,000	226,000	162,000	60,000
25,000	63/64	32,000	226,000	162,000	60,000
25,500		32,000	226,000	162,000	60,000

Свёрла Ratio с каналами под COTC

7xD | RT 100 U | WN | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

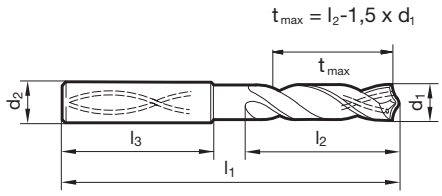
P	•
M	○
K	•
N	○
S	○
H	○

подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки

конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758



Артикул № **4044**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,040		6,000	75,000	37,500	36,000
4,100		6,000	75,000	37,500	36,000
4,200		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,600		6,000	85,000	45,000	36,000
4,650		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000
4,800		6,000	90,000	50,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,110		6,000	90,000	50,000	36,000
5,160	13/64	6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,400		6,000	97,000	57,000	36,000
5,410		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
5,550		6,000	97,000	57,000	36,000
5,560	7/32	6,000	97,000	57,000	36,000
5,600		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,900		6,000	97,000	57,000	36,000
5,950	15/64	6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,100		8,000	106,000	66,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,350	1/4	8,000	106,000	66,000	36,000
6,400		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,530		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,750	17/64	8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,140	9/32	8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,300		8,000	116,000	76,000	36,000
7,400		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,540	19/64	8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
7,900		8,000	116,000	76,000	36,000
7,940	5/16	8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,300		10,000	131,000	87,000	40,000
8,330	21/64	10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
8,730	11/32	10,000	131,000	87,000	40,000
8,800		10,000	131,000	87,000	40,000
8,900		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,130	23/64	10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,340		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
9,600		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
9,920	25/64	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,100		12,000	155,000	106,000	45,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,320	13/32	12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,600		12,000	155,000	106,000	45,000
10,700		12,000	155,000	106,000	45,000
10,720	27/64	12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
10,900		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,100		12,000	163,000	114,000	45,000
11,110	7/16	12,000	163,000	114,000	45,000
11,200		12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,400		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510	29/64	12,000	163,000	114,000	45,000
11,600		12,000	163,000	114,000	45,000
11,700		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,900		12,000	163,000	114,000	45,000
11,910	15/32	12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,200		14,000	182,000	133,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100	33/64	14,000	182,000	133,000	45,000
13,490	17/32	14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,890	35/64	14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,200		16,000	204,000	152,000	48,000
14,290	9/16	16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,480	39/64	16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,870	5/8	16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
16,900		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
18,900		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

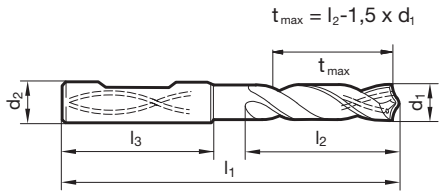
7xD | RT 100 U | WN | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HE

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758



Артикул № **4045**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,100		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,650		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,160	13/64	6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,400		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000
5,900		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,350	1/4	8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,100		8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,400		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,200		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,200		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,200		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000

FRIZAR
www.frizar.ru

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm

Свёрла Ratio с каналами под COTC

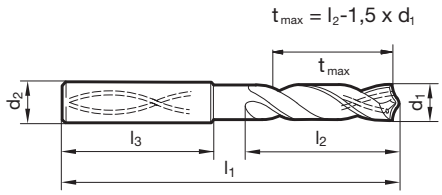
7xD | RT 100 U | WN | 140° | m7

Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
N	○	
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758



Артикул № **2711**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
5,000		6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,500		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,100		8,000	106,000	66,000	36,000
6,200		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,300		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,300		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,500		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,200		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,800		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
15,000		16,000	204,000	152,000	48,000
15,200		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,800		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

7xD | RT 100 HF | WN | 140° | m7

Режущий материал	VHM
Покрытие	Y
Форма хвостовика	HA

P	•
M	
K	
N	
S	•
H	○

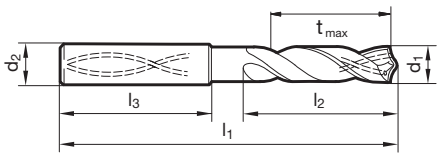
подточка ≥ Ø 3,000 • конусная заточка • форма режущей кромки вогнутая • оптимизированная геометрия режущей кромки

легированные и высокопрочные стали до 1600 Н/мм² • хастеллой, инконель, монель • титан и титановые сплавы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **8522**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,200		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,650		6,000	85,000	45,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,160	13/64	6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,500		6,000	97,000	57,000	36,000
5,550		6,000	97,000	57,000	36,000
5,560	7/32	6,000	97,000	57,000	36,000
5,950	15/64	6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,350	1/4	8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,530		8,000	106,000	66,000	36,000
6,750	17/64	8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,140	9/32	8,000	116,000	76,000	36,000
7,400		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,540	19/64	8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
7,940	5/16	8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,330	21/64	10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,730	11/32	10,000	131,000	87,000	40,000
8,800		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,130	23/64	10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,340		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
9,920	25/64	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,320	13/32	12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,720	27/64	12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,110	7/16	12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,400		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510	29/64	12,000	163,000	114,000	45,000
11,910	15/32	12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100	33/64	14,000	182,000	133,000	45,000
13,490	17/32	14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,290	9/16	16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,870	5/8	16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000

Свёрла Ratio с каналами под COTC

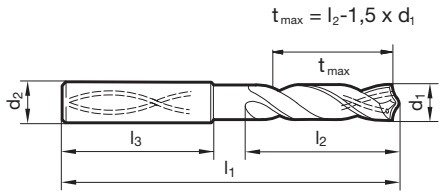
7xD | RT 100 R | WN | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P		подточка ≥ Ø 4,000 • запатентованная радиусная заточка • режущая кромка прямая (благодаря корректировке)
M		
K	•	
N		новые чугуны: GGV, ADI, CDI • серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758



Артикул № **6502**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
4,000		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,600		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,160	13/64	6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,500		6,000	97,000	57,000	36,000
5,550		6,000	97,000	57,000	36,000
5,560	7/32	6,000	97,000	57,000	36,000
5,600		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000
5,900		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,100		8,000	106,000	66,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,400		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,140	9/32	8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,300		10,000	131,000	87,000	40,000
8,330	21/64	10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,800		10,000	131,000	87,000	40,000
8,900		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,600		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,100		12,000	155,000	106,000	45,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,320	13/32	12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,700		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
10,900		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,100		12,000	163,000	114,000	45,000
11,200		12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,600		12,000	163,000	114,000	45,000
11,700		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,400		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,600		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
12,800		14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100	33/64	14,000	182,000	133,000	45,000
13,300		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000

FRIZAR
www.frizar.ru

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,700		14,000	182,000	133,000	45,000
13,900		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,290	9/16	16,000	204,000	152,000	48,000
14,400		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
14,600		16,000	204,000	152,000	48,000
14,700		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,200		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,600		16,000	204,000	152,000	48,000
15,800		16,000	204,000	152,000	48,000
15,900		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,670	21/32	18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

7xD | RT 150 GG | WN | 120° | m7

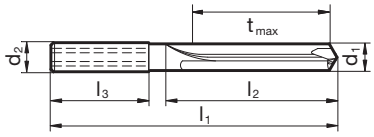
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • конусная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	•	
N	○	серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **769**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	74,000	32,000	36,000
3,100		6,000	74,000	32,000	36,000
3,200		6,000	74,000	32,000	36,000
3,300		6,000	74,000	32,000	36,000
3,500		6,000	74,000	34,000	36,000
3,600		6,000	74,000	34,000	36,000
3,700		6,000	74,000	34,000	36,000
3,800		6,000	97,000	45,000	36,000
3,900		6,000	97,000	45,000	36,000
4,000		6,000	97,000	45,000	36,000
4,100		6,000	97,000	45,000	36,000
4,200		6,000	97,000	45,000	36,000
4,300		6,000	97,000	45,000	36,000
4,400		6,000	97,000	45,000	36,000
4,500		6,000	97,000	45,000	36,000
4,700		6,000	97,000	45,000	36,000
4,800		6,000	97,000	57,000	36,000
4,900		6,000	97,000	57,000	36,000
5,000		6,000	97,000	57,000	36,000
5,160	13/64	6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,350	1/4	8,000	116,000	76,000	36,000
6,500		8,000	116,000	76,000	36,000
6,800		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,140	9/32	8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
7,940	5/16	8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,330	21/64	10,000	139,000	95,000	40,000
8,500		10,000	139,000	95,000	40,000
8,730	11/32	10,000	139,000	95,000	40,000
9,000		10,000	139,000	95,000	40,000
9,130	23/64	10,000	139,000	95,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	163,000	114,000	45,000
10,320	13/32	12,000	163,000	114,000	45,000
10,500		12,000	163,000	114,000	45,000
10,720	27/64	12,000	163,000	114,000	45,000
11,000		12,000	163,000	114,000	45,000
11,110	7/16	12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510	29/64	12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

7xD | RT 150 GG | WN | 130° | m7

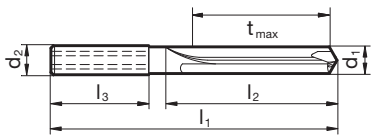
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	○	
N	•	алюминий и алюминиевые сплавы • алюминиевые сплавы с высоким содержанием кремния
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **6069**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	74,000	32,000	36,000
3,200		6,000	74,000	32,000	36,000
3,300		6,000	74,000	32,000	36,000
3,500		6,000	74,000	34,000	36,000
3,600		6,000	74,000	34,000	36,000
4,000		6,000	97,000	45,000	36,000
4,200		6,000	97,000	45,000	36,000
4,300		6,000	97,000	45,000	36,000
4,500		6,000	97,000	45,000	36,000
5,000		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,350	1/4	8,000	116,000	76,000	36,000
6,500		8,000	116,000	76,000	36,000
6,800		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,500		10,000	139,000	95,000	40,000
8,730	11/32	10,000	139,000	95,000	40,000
9,000		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	163,000	114,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	163,000	114,000	45,000
10,500		12,000	163,000	114,000	45,000
10,720	27/64	12,000	163,000	114,000	45,000
11,000		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

7xD | RT80U | DIN 6538L | 140° | h7

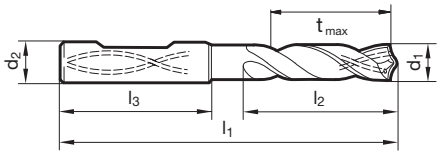
Режущий материал	HM
Покрытие	(S)
Форма хвостовика	HE

P	•	подточка ≥ Ø 9,600 • конусная заточка • корпус сверла из HSS с впаянной твердосплавной пластиной • смягчает колебания и удары
M	○	
K	○	
N	○	нелегированная/низколегированная сталь • чугун, чугун с шаровидным графитом • латунь, бронза, пластмасса, графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1173**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,600		16,000	151,000	99,000	48,000
9,700		16,000	151,000	99,000	48,000
10,000		16,000	151,000	99,000	48,000
10,200		16,000	151,000	99,000	48,000
10,400		16,000	151,000	99,000	48,000
11,000		16,000	151,000	99,000	48,000
11,500		16,000	151,000	99,000	48,000
11,700		16,000	151,000	99,000	48,000
12,000		16,000	151,000	99,000	48,000
12,200		16,000	167,000	115,000	48,000
12,400		16,000	167,000	115,000	48,000
12,500		16,000	167,000	115,000	48,000
12,700	1/2	16,000	167,000	115,000	48,000
13,000		16,000	167,000	115,000	48,000
13,500		16,000	167,000	115,000	48,000
14,000		16,000	167,000	115,000	48,000
14,500		20,000	186,000	132,000	50,000
15,000		20,000	186,000	132,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,700		20,000	186,000	132,000	50,000
15,800		20,000	186,000	132,000	50,000
16,000		20,000	186,000	132,000	50,000
16,500		20,000	202,000	148,000	50,000
17,000		20,000	202,000	148,000	50,000
17,200		20,000	202,000	148,000	50,000
17,460	11/16	20,000	202,000	148,000	50,000
17,500		20,000	202,000	148,000	50,000
18,000		20,000	202,000	148,000	50,000
18,500		25,000	224,000	164,000	56,000
19,000		25,000	224,000	164,000	56,000
20,000		25,000	224,000	164,000	56,000
21,000		25,000	241,000	181,000	56,000
22,000		25,000	241,000	181,000	56,000
22,500		25,000	257,000	197,000	56,000
25,000	63/64	32,000	278,000	214,000	60,000

Свёрла Ratio с каналами под COTC

8xD | RT 100 S | WN | 140° | m7

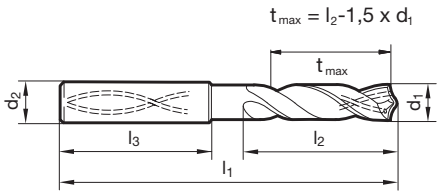
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

NEW

P	•	плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки • максимальная производительность
M	○	
K	○	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • стали (легированные/нелегированные) прочностью до 1400 Н/мм²
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758



Артикул № **5760**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,040		6,000	75,000	37,500	36,000
4,100		6,000	75,000	37,500	36,000
4,200		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,600		6,000	85,000	45,000	36,000
4,650		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000
4,800		6,000	90,000	50,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,110		6,000	90,000	50,000	36,000
5,160	13/64	6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,400		6,000	97,000	57,000	36,000
5,410		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
5,550		6,000	97,000	57,000	36,000
5,560		6,000	97,000	57,000	36,000
5,600		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,900		6,000	97,000	57,000	36,000
5,950		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,100		8,000	106,000	66,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,350	1/4	8,000	106,000	66,000	36,000
6,400		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,530		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,750		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,140		8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,300		8,000	116,000	76,000	36,000
7,400		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,540		8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
7,900		8,000	116,000	76,000	36,000
7,940		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,300		10,000	131,000	87,000	40,000
8,330		10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
8,730		10,000	131,000	87,000	40,000
8,800		10,000	131,000	87,000	40,000
8,900		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,130		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,340		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
9,600		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
9,920		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,100		12,000	155,000	106,000	45,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,320		12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,600		12,000	155,000	106,000	45,000
10,700		12,000	155,000	106,000	45,000
10,720		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
10,900		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,100		12,000	163,000	114,000	45,000
11,110		12,000	163,000	114,000	45,000
11,200		12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,400		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510		12,000	163,000	114,000	45,000
11,600		12,000	163,000	114,000	45,000
11,700		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
11,900		12,000	163,000	114,000	45,000
11,910		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,200		14,000	182,000	133,000	45,000
12,300		14,000	182,000	133,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100		14,000	182,000	133,000	45,000
13,490		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,700		14,000	182,000	133,000	45,000
13,890		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,200		16,000	204,000	152,000	48,000
14,290		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
14,700		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,480		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,700		16,000	204,000	152,000	48,000
15,870		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
16,900		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
17,700		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
18,900		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Свёрла Ratio с каналами под COTC

10xD | RT 150 GG | WN | 120° | m7

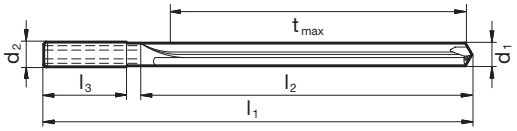
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • конусная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	•	
N	○	серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2\text{-}1{,}5 \times d_1$



Артикул № **770**

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	91,000	42,000	36,000
3,100		6,000	91,000	42,000	36,000
3,300		6,000	91,000	42,000	36,000
3,800		6,000	121,000	77,000	36,000
4,000		6,000	121,000	77,000	36,000
4,100		6,000	121,000	77,000	36,000
4,200		6,000	121,000	77,000	36,000
4,300		6,000	121,000	77,000	36,000
4,400		6,000	121,000	77,000	36,000
4,500		6,000	121,000	77,000	36,000
4,800		6,000	121,000	82,000	36,000
4,900		6,000	121,000	82,000	36,000
5,000		6,000	121,000	82,000	36,000
5,160	13/64	6,000	121,000	82,000	36,000
5,500		6,000	121,000	82,000	36,000
5,560	7/32	6,000	121,000	82,000	36,000
6,000		6,000	121,000	82,000	36,000
6,500		8,000	146,000	106,000	36,000
6,750	17/64	8,000	146,000	106,000	36,000
6,800		8,000	146,000	106,000	36,000
7,000		8,000	146,000	106,000	36,000
7,140	9/32	8,000	146,000	106,000	36,000
7,500		8,000	146,000	106,000	36,000
7,800		8,000	146,000	106,000	36,000
7,940	5/16	8,000	146,000	106,000	36,000
8,000		8,000	146,000	106,000	36,000
8,500		10,000	175,000	130,000	40,000
8,730	11/32	10,000	175,000	130,000	40,000
9,000		10,000	175,000	130,000	40,000
9,500		10,000	175,000	130,000	40,000

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
10,000		10,000	175,000	130,000	40,000
10,200		12,000	209,000	159,000	45,000
10,500		12,000	209,000	159,000	45,000
10,720	27/64	12,000	209,000	159,000	45,000
11,000		12,000	209,000	159,000	45,000
11,500		12,000	209,000	159,000	45,000
11,510	29/64	12,000	209,000	159,000	45,000
12,000		12,000	209,000	159,000	45,000
12,300	31/64	14,000	233,000	183,000	45,000
12,500		14,000	233,000	183,000	45,000
12,700	1/2	14,000	233,000	183,000	45,000
13,000		14,000	233,000	183,000	45,000
13,500		14,000	233,000	183,000	45,000
14,000		14,000	233,000	183,000	45,000
14,500		16,000	260,000	207,000	48,000
15,000		16,000	260,000	207,000	48,000
15,500		16,000	260,000	207,000	48,000
16,500		18,000	284,000	231,000	48,000
17,000		18,000	284,000	231,000	48,000
17,500		18,000	284,000	231,000	48,000
18,000		18,000	284,000	231,000	48,000
19,000		20,000	308,000	255,000	50,000
20,000		20,000	308,000	255,000	50,000

Свёрла Ratio с каналами под COTC

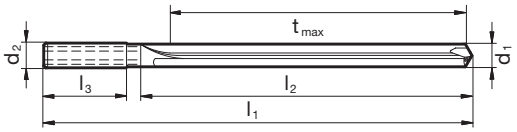
Режущий материал	**VHM**
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность исполнения отверстия • высокое качество отверстия • обращать внимание на давление COTC
M		
K	○	
N	•	алюминий и алюминиевые сплавы • алюминиевые сплавы с высоким содержанием кремния
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **6070**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	91,000	42,000	36,000
3,100		6,000	91,000	42,000	36,000
3,300		6,000	91,000	42,000	36,000
3,500		6,000	91,000	48,000	36,000
3,800		6,000	121,000	77,000	36,000
4,000		6,000	121,000	77,000	36,000
4,700		6,000	121,000	77,000	36,000
4,800		6,000	121,000	82,000	36,000
5,000		6,000	121,000	82,000	36,000
5,500		6,000	121,000	82,000	36,000
6,000		6,000	121,000	82,000	36,000
6,350	1/4	8,000	146,000	106,000	36,000
6,500		8,000	146,000	106,000	36,000
6,800		8,000	146,000	106,000	36,000
7,500		8,000	146,000	106,000	36,000
7,800		8,000	146,000	106,000	36,000
7,940	5/16	8,000	146,000	106,000	36,000
8,000		8,000	146,000	106,000	36,000
8,500		10,000	175,000	130,000	40,000
8,730	11/32	10,000	175,000	130,000	40,000
9,000		10,000	175,000	130,000	40,000
9,500		10,000	175,000	130,000	40,000
9,520	3/8	10,000	175,000	130,000	40,000
10,000		10,000	175,000	130,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	209,000	159,000	45,000
11,000		12,000	209,000	159,000	45,000
11,110	7/16	12,000	209,000	159,000	45,000
12,000		12,000	209,000	159,000	45,000
12,700	1/2	14,000	233,000	183,000	45,000
13,000		14,000	233,000	183,000	45,000
14,000		14,000	233,000	183,000	45,000
15,000		16,000	260,000	207,000	48,000
16,000		16,000	260,000	207,000	48,000
17,000		18,000	284,000	231,000	48,000
17,500		18,000	284,000	231,000	48,000
18,000		18,000	284,000	231,000	48,000
18,500		20,000	308,000	255,000	50,000
19,500		20,000	308,000	255,000	50,000

Свёрла Ratio с каналами под COTC

12xD | RT 100 U | WN | 135° | h7

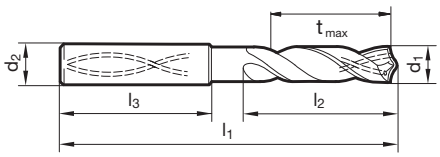
Режущий материал	VHM
Покрытие	F
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • плоскостная заточка • форма режущей кромки прямая • оптимизированная геометрия режущей кромки
M	○	
K	•	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны • бронза, латунь • высоколегированные сплавы AlSi
N	○	
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 758

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **5525**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	90,000	50,000	36,000
3,100		6,000	90,000	50,000	36,000
3,170	1/8	6,000	90,000	50,000	36,000
3,200		6,000	90,000	50,000	36,000
3,300		6,000	90,000	50,000	36,000
3,400		6,000	90,000	50,000	36,000
3,500		6,000	90,000	50,000	36,000
3,600		6,000	90,000	50,000	36,000
3,700		6,000	90,000	50,000	36,000
3,800		6,000	102,000	64,000	36,000
3,900		6,000	102,000	64,000	36,000
4,000		6,000	102,000	64,000	36,000
4,100		6,000	102,000	64,000	36,000
4,200		6,000	102,000	64,000	36,000
4,300		6,000	102,000	64,000	36,000
4,400		6,000	102,000	64,000	36,000
4,500		6,000	102,000	64,000	36,000
4,600		6,000	102,000	64,000	36,000
4,700		6,000	102,000	64,000	36,000
4,800		6,000	116,000	78,000	36,000
4,900		6,000	116,000	78,000	36,000
5,000		6,000	116,000	78,000	36,000
5,100		6,000	116,000	78,000	36,000
5,200		6,000	116,000	78,000	36,000
5,300		6,000	116,000	78,000	36,000
5,400		6,000	116,000	78,000	36,000
5,500		6,000	116,000	78,000	36,000
5,600		6,000	116,000	78,000	36,000
5,700		6,000	116,000	78,000	36,000
5,800		6,000	116,000	78,000	36,000
5,900		6,000	116,000	78,000	36,000
6,000		6,000	116,000	78,000	36,000
6,100		8,000	146,000	108,000	36,000
6,200		8,000	146,000	108,000	36,000
6,300		8,000	146,000	108,000	36,000
6,350	1/4	8,000	146,000	108,000	36,000
6,400		8,000	146,000	108,000	36,000
6,500		8,000	146,000	108,000	36,000
6,600		8,000	146,000	108,000	36,000
6,700		8,000	146,000	108,000	36,000
6,800		8,000	146,000	108,000	36,000
6,900		8,000	146,000	108,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
7,000		8,000	146,000	108,000	36,000
7,100		8,000	146,000	108,000	36,000
7,200		8,000	146,000	108,000	36,000
7,300		8,000	146,000	108,000	36,000
7,400		8,000	146,000	108,000	36,000
7,500		8,000	146,000	108,000	36,000
7,600		8,000	146,000	108,000	36,000
7,700		8,000	146,000	108,000	36,000
7,800		8,000	146,000	108,000	36,000
7,900		8,000	146,000	108,000	36,000
8,000		8,000	146,000	108,000	36,000
8,100		10,000	162,000	120,000	40,000
8,200		10,000	162,000	120,000	40,000
8,300		10,000	162,000	120,000	40,000
8,400		10,000	162,000	120,000	40,000
8,500		10,000	162,000	120,000	40,000
8,600		10,000	162,000	120,000	40,000
8,700		10,000	162,000	120,000	40,000
8,800		10,000	162,000	120,000	40,000
8,900		10,000	162,000	120,000	40,000
9,000		10,000	162,000	120,000	40,000
9,100		10,000	162,000	120,000	40,000
9,200		10,000	162,000	120,000	40,000
9,300		10,000	162,000	120,000	40,000
9,400		10,000	162,000	120,000	40,000
9,500		10,000	162,000	120,000	40,000
9,520	3/8	10,000	162,000	120,000	40,000
9,600		10,000	162,000	120,000	40,000
9,700		10,000	162,000	120,000	40,000
9,800		10,000	162,000	120,000	40,000
9,900		10,000	162,000	120,000	40,000
10,000		10,000	162,000	120,000	40,000
10,200		12,000	204,000	156,000	45,000
10,500		12,000	204,000	156,000	45,000
11,000		12,000	204,000	156,000	45,000
11,500		12,000	204,000	156,000	45,000
12,000		12,000	204,000	156,000	45,000
12,500		14,000	230,000	182,000	45,000
12,700	1/2	14,000	230,000	182,000	45,000
13,000		14,000	230,000	182,000	45,000
13,500		14,000	230,000	182,000	45,000
14,000		14,000	230,000	182,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,500		16,000	260,000	208,000	48,000
15,000		16,000	260,000	208,000	48,000
15,500		16,000	260,000	208,000	48,000
16,000		16,000	260,000	208,000	48,000
16,500		18,000	285,000	234,000	48,000
17,000		18,000	285,000	234,000	48,000
17,500		18,000	285,000	234,000	48,000
18,000		18,000	285,000	234,000	48,000
18,500		20,000	310,000	258,000	50,000
19,000		20,000	310,000	258,000	50,000
19,050	3/4	20,000	310,000	258,000	50,000
19,500		20,000	310,000	258,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
20,000		20,000	310,000	258,000	50,000

Свёрла Ratio с каналами под COTC

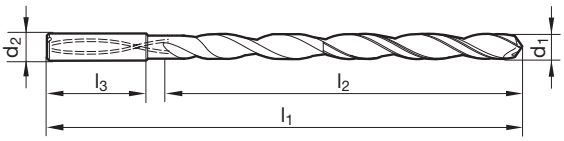
15xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под СОЖ • обращать внимание на давление COTC
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6509**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	95,000	55,000	36,000
3,170	1/8	6,000	106,000	67,000	36,000
3,500		6,000	116,000	76,000	36,000
3,570	9/64	6,000	116,000	76,000	36,000
3,970	5/32	6,000	116,000	76,000	36,000
4,000		6,000	116,000	76,000	36,000
4,370	11/64	6,000	133,000	93,000	36,000
4,500		6,000	133,000	93,000	36,000
4,760	3/16	6,000	133,000	93,000	36,000
5,000		6,000	133,000	93,000	36,000
5,100		6,000	150,000	110,000	36,000
5,160	13/64	6,000	150,000	110,000	36,000
5,410		6,000	150,000	110,000	36,000
5,500		6,000	150,000	110,000	36,000
5,560	7/32	6,000	150,000	110,000	36,000
5,950	15/64	6,000	150,000	110,000	36,000
6,000		6,000	150,000	110,000	36,000
6,350	1/4	8,000	167,000	127,000	36,000
6,500		8,000	167,000	127,000	36,000
6,750	17/64	8,000	167,000	127,000	36,000
7,000		8,000	167,000	127,000	36,000
7,140	9/32	8,000	183,000	143,000	36,000
7,500		8,000	183,000	143,000	36,000
7,540	19/64	8,000	183,000	143,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
7,940	5/16	8,000	183,000	143,000	36,000
8,000		8,000	183,000	143,000	36,000
8,330	21/64	10,000	204,000	160,000	40,000
8,500		10,000	204,000	160,000	40,000
8,730	11/32	10,000	204,000	160,000	40,000
9,000		10,000	204,000	160,000	40,000
9,130	23/64	10,000	221,000	177,000	40,000
9,520	3/8	10,000	221,000	177,000	40,000
9,920	25/64	10,000	221,000	177,000	40,000
10,000		10,000	221,000	177,000	40,000
10,320	13/32	12,000	247,000	198,000	45,000
10,720	27/64	12,000	247,000	198,000	45,000
11,000		12,000	247,000	198,000	45,000
11,110	7/16	12,000	263,000	214,000	45,000
11,510	29/64	12,000	263,000	214,000	45,000
11,910	15/32	12,000	263,000	214,000	45,000
12,000		12,000	263,000	214,000	45,000
12,300	31/64	14,000	297,000	248,000	45,000
12,700	1/2	14,000	297,000	248,000	45,000
13,100	33/64	14,000	297,000	248,000	45,000
13,490	17/32	14,000	297,000	248,000	45,000
13,890	35/64	14,000	297,000	248,000	45,000
14,000		14,000	297,000	248,000	45,000

Свёрла Ratio с каналами под COTC

15xD | RT 150 GN | WN | 120° | m7

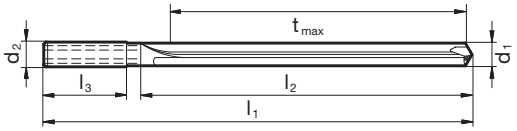
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 5,000 • конусная заточка • очень хорошие хар-ки центрирования • высокая точность получаемых отверстий • высокое качество отверстия • обращать внимание на давление COTC
M		
K	•	
N	•	алюминий и алюминиевые сплавы • алюминиевые сплавы с высоким содержанием кремния • серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **773**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	145,000	105,000	36,000
6,000		6,000	145,000	105,000	36,000
8,000		8,000	180,000	137,000	36,000
9,000		10,000	217,000	170,000	40,000
10,000		10,000	217,000	170,000	40,000
11,000		12,000	258,000	205,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	258,000	205,000	45,000
14,000		14,000	290,000	236,000	45,000

Свёрла Ratio с каналами под COTC

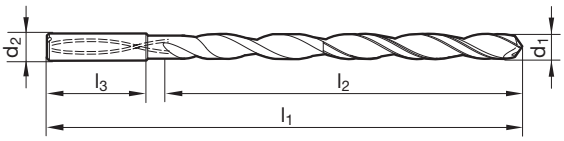
20xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под СОЖ • обращать внимание на давление COTC
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6511**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	110,000	70,000	36,000
3,100		6,000	123,000	83,000	36,000
3,170	1/8	6,000	123,000	83,000	36,000
3,500		6,000	136,000	96,000	36,000
3,570	9/64	6,000	136,000	96,000	36,000
3,970	5/32	6,000	136,000	96,000	36,000
4,000		6,000	136,000	96,000	36,000
4,200		6,000	158,000	118,000	36,000
4,370	11/64	6,000	158,000	118,000	36,000
4,500		6,000	158,000	118,000	36,000
4,760	3/16	6,000	158,000	118,000	36,000
5,000		6,000	158,000	118,000	36,000
5,100		6,000	180,000	140,000	36,000
5,160	13/64	6,000	180,000	140,000	36,000
5,410		6,000	180,000	140,000	36,000
5,500		6,000	180,000	140,000	36,000
5,560	7/32	6,000	180,000	140,000	36,000
5,950	15/64	6,000	180,000	140,000	36,000
6,000		6,000	180,000	140,000	36,000
6,350	1/4	8,000	202,000	162,000	36,000
6,500		8,000	202,000	162,000	36,000
6,750	17/64	8,000	202,000	162,000	36,000
7,000		8,000	202,000	162,000	36,000
7,140	9/32	8,000	223,000	183,000	36,000
7,500		8,000	223,000	183,000	36,000
7,540	19/64	8,000	223,000	183,000	36,000
7,940	5/16	8,000	223,000	183,000	36,000
8,000		8,000	223,000	183,000	36,000
8,330	21/64	10,000	249,000	205,000	40,000
8,500		10,000	249,000	205,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,730	11/32	10,000	249,000	205,000	40,000
9,000		10,000	249,000	205,000	40,000
9,130	23/64	10,000	271,000	227,000	40,000
9,520	3/8	10,000	271,000	227,000	40,000
9,920	25/64	10,000	271,000	227,000	40,000
10,000		10,000	271,000	227,000	40,000
10,320	13/32	12,000	302,000	253,000	45,000
10,720	27/64	12,000	302,000	253,000	45,000
11,000		12,000	302,000	253,000	45,000
11,110	7/16	12,000	323,000	274,000	45,000
11,510	29/64	12,000	323,000	274,000	45,000
11,910	15/32	12,000	323,000	274,000	45,000
12,000		12,000	323,000	274,000	45,000
12,300	31/64	14,000	367,000	318,000	45,000
12,700	1/2	14,000	367,000	318,000	45,000
13,100	33/64	14,000	367,000	318,000	45,000
13,490	17/32	14,000	367,000	318,000	45,000
13,890	35/64	14,000	367,000	318,000	45,000
14,000		14,000	367,000	318,000	45,000

Свёрла Ratio с каналами под COTC

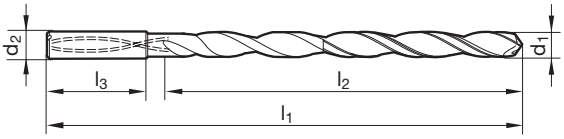
25xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под СОЖ • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6512**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	125,000	85,000	36,000
3,100		6,000	141,000	101,000	36,000
3,170	1/8	6,000	141,000	101,000	36,000
3,500		6,000	156,000	116,000	36,000
3,570	9/64	6,000	156,000	116,000	36,000
3,800		6,000	156,000	116,000	36,000
3,970	5/32	6,000	156,000	116,000	36,000
4,000		6,000	156,000	116,000	36,000
4,200		6,000	183,000	143,000	36,000
4,370	11/64	6,000	183,000	143,000	36,000
4,500		6,000	183,000	143,000	36,000
4,760	3/16	6,000	183,000	143,000	36,000
5,000		6,000	183,000	143,000	36,000
5,100		6,000	210,000	170,000	36,000
5,160	13/64	6,000	210,000	170,000	36,000
5,410		6,000	210,000	170,000	36,000
5,500		6,000	210,000	170,000	36,000
5,560	7/32	6,000	210,000	170,000	36,000
5,950	15/64	6,000	210,000	170,000	36,000
6,000		6,000	210,000	170,000	36,000
6,300		8,000	237,000	197,000	36,000
6,350	1/4	8,000	237,000	197,000	36,000
6,500		8,000	237,000	197,000	36,000
6,750	17/64	8,000	237,000	197,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,000		8,000	237,000	197,000	36,000
7,140	9/32	8,000	263,000	223,000	36,000
7,500		8,000	263,000	223,000	36,000
7,540	19/64	8,000	263,000	223,000	36,000
7,940	5/16	8,000	263,000	223,000	36,000
8,000		8,000	263,000	223,000	36,000
8,330	21/64	10,000	294,000	250,000	40,000
8,500		10,000	294,000	250,000	40,000
8,730	11/32	10,000	294,000	250,000	40,000
8,800		10,000	294,000	250,000	40,000
9,000		10,000	294,000	250,000	40,000
9,130	23/64	10,000	321,000	277,000	40,000
9,520	3/8	10,000	321,000	277,000	40,000
9,920	25/64	10,000	321,000	277,000	40,000
10,000		10,000	321,000	277,000	40,000
10,320	13/32	12,000	359,000	310,000	45,000
10,720	27/64	12,000	359,000	310,000	45,000
11,000		12,000	359,000	310,000	45,000
11,110	7/16	12,000	386,000	337,000	45,000
11,510	29/64	12,000	386,000	337,000	45,000
11,910	15/32	12,000	386,000	337,000	45,000
12,000		12,000	386,000	337,000	45,000

Свёрла Ratio с каналами под COTC

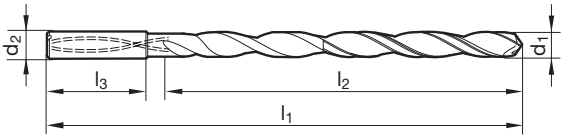
30xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под СОЖ • обращать внимание на давление COTC
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6513**

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	140,000	100,000	36,000
3,100		6,000	158,000	118,000	36,000
3,170	1/8	6,000	158,000	118,000	36,000
3,500		6,000	176,000	136,000	36,000
3,570	9/64	6,000	176,000	136,000	36,000
3,800		6,000	176,000	136,000	36,000
3,970	5/32	6,000	176,000	136,000	36,000
4,000		6,000	176,000	136,000	36,000
4,200		6,000	208,000	168,000	36,000
4,370	11/64	6,000	208,000	168,000	36,000
4,500		6,000	208,000	168,000	36,000
4,760	3/16	6,000	208,000	168,000	36,000
5,000		6,000	208,000	168,000	36,000
5,100		6,000	240,000	200,000	36,000
5,160	13/64	6,000	240,000	200,000	36,000
5,410		6,000	240,000	200,000	36,000
5,500		6,000	240,000	200,000	36,000
5,560	7/32	6,000	240,000	200,000	36,000
5,950	15/64	6,000	240,000	200,000	36,000
6,000		6,000	240,000	200,000	36,000
6,300		8,000	272,000	232,000	36,000
6,350	1/4	8,000	272,000	232,000	36,000
6,500		8,000	272,000	232,000	36,000
6,750	17/64	8,000	272,000	232,000	36,000

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,000		8,000	272,000	232,000	36,000
7,140	9/32	8,000	303,000	263,000	36,000
7,500		8,000	303,000	263,000	36,000
7,540	19/64	8,000	303,000	263,000	36,000
7,940	5/16	8,000	303,000	263,000	36,000
8,000		8,000	303,000	263,000	36,000
8,330	21/64	10,000	339,000	295,000	40,000
8,500		10,000	339,000	295,000	40,000
8,730	11/32	10,000	339,000	295,000	40,000
8,800		10,000	339,000	295,000	40,000
9,000		10,000	339,000	295,000	40,000
9,130	23/64	10,000	371,000	327,000	40,000
9,520	3/8	10,000	371,000	327,000	40,000
9,920	25/64	10,000	371,000	327,000	40,000
10,000		10,000	371,000	327,000	40,000

Свёрла Ratio с каналами под COTC

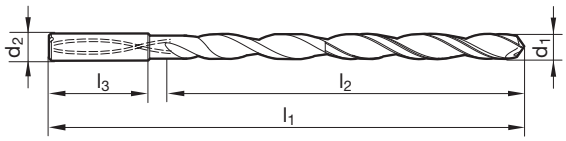
40xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под СОЖ • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6514**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000
3,100		6,000	193,000	153,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000
3,500		6,000	193,000	153,000	36,000
3,570	9/64	6,000	216,000	176,000	36,000
3,800		6,000	216,000	176,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000
4,000		6,000	216,000	176,000	36,000
4,200		6,000	238,000	198,000	36,000
4,370	11/64	6,000	238,000	198,000	36,000
4,500		6,000	238,000	198,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000
5,000		6,000	258,000	218,000	36,000
5,100		6,000	280,000	240,000	36,000
5,160	13/64	6,000	280,000	240,000	36,000
5,410		6,000	280,000	240,000	36,000
5,500		6,000	280,000	240,000	36,000
5,560	7/32	6,000	300,000	260,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,950	15/64	6,000	300,000	260,000	36,000
6,000		6,000	300,000	260,000	36,000
6,300		8,000	322,000	282,000	36,000
6,350	1/4	8,000	322,000	282,000	36,000
6,500		8,000	322,000	282,000	36,000
6,750	17/64	8,000	342,000	302,000	36,000
7,000		8,000	342,000	302,000	36,000
7,140	9/32	8,000	363,000	323,000	36,000
7,500		8,000	363,000	323,000	36,000
7,540	19/64	8,000	383,000	343,000	36,000
7,940	5/16	8,000	383,000	343,000	36,000
8,000		8,000	383,000	343,000	36,000

ExclusiveLine микросверла без каналов COTC VHM

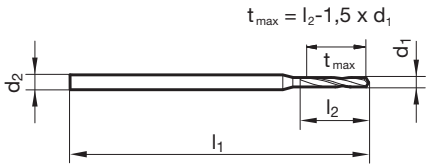
4xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000

ExclusiveLine микросверла без каналов COTC VHM

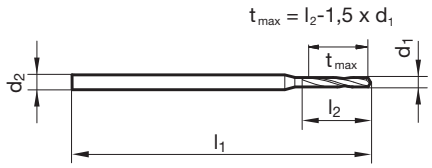
7xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6401**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000

ExclusiveLine микросверла с каналами COTC VHM

5xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

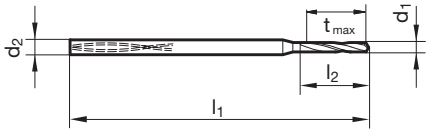
NEW

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000

ExclusiveLine микросверла с каналами COTC VHM

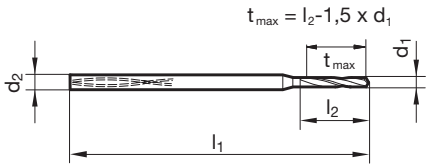
8xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000

ExclusiveLine микросверла с каналами COTC VHM

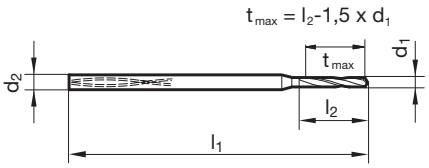
15xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000

Свёрла Ratio, 3-х лезвийные

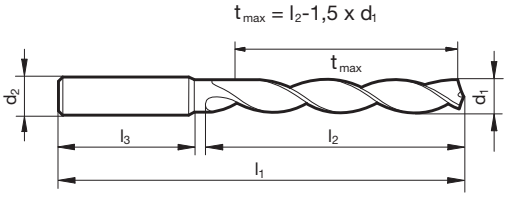
5xD | FT 200 G | DIN 6537 L | 130° | m7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P		подточка ≥ Ø 3,000 • спиральная заточка вершины • широкая стружечная канавка • оптимальное центрирование • подходит для пересекающихся отверстий
M		
K	•	
N	•	чугуны • длинностружечные алюминиевые сплавы • латунь, бронза
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762



Артикул № **2713**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Свёрла Ratio, 3-х лезвийные

5xD | GS 200 U | DIN 6539 | 150° | h7

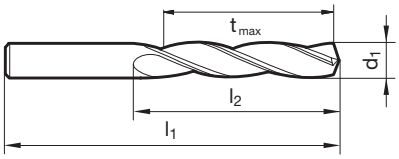
Режущий материал	VHM
Покрытие	(S)
Форма хвостовика	Цил.

P	○	подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	стальное литье • легированная/нелегированная сталь до 1000 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **611**

d1 mm	inch	l1 mm	l2 mm
3,000		46,000	22,000
3,100		49,000	24,000
3,900		55,000	30,000
4,000		55,000	30,000
4,100		55,000	30,000
4,200		55,000	30,000
5,000		62,000	35,000
6,000		66,000	39,000
6,200		70,000	42,000
6,800		74,000	45,000
7,000		74,000	45,000
8,000		79,000	48,000

d1 mm	inch	l1 mm	l2 mm
8,500		79,000	48,000
10,000		89,000	55,000
10,200		89,000	55,000
12,000		102,000	65,000
14,000		107,000	66,000
14,400		111,000	70,000

Свёрла Ratio, 3-х лезвийные

5xD | GS 200 U | DIN 6539 | 150° | h7

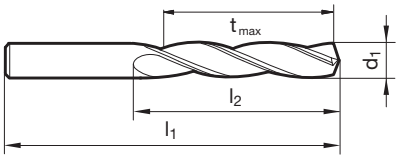
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	Цил.

P	○	подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	стальное литье • легированная/нелегированная сталь до 1000 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **731**

d1 mm	inch	l1 mm	l2 mm
3,000		46,000	22,000
3,100		49,000	24,000
3,200		49,000	24,000
3,300		49,000	24,000
3,400		52,000	27,000
3,500		52,000	27,000
3,600		52,000	27,000
3,700		52,000	27,000
3,800		55,000	30,000
3,900		55,000	30,000
3,970	5/32	55,000	30,000
4,000		55,000	30,000
4,200		55,000	30,000
4,300		58,000	32,000
4,500		58,000	32,000
4,700		58,000	32,000
4,760	3/16	62,000	35,000
4,800		62,000	35,000
5,000		62,000	35,000
5,100		62,000	35,000
5,200		62,000	35,000
5,300		62,000	35,000
5,400		66,000	39,000
5,500		66,000	39,000
5,600		66,000	39,000
5,800		66,000	39,000
6,000		66,000	39,000
6,100		70,000	42,000
6,400		70,000	42,000
6,500		70,000	42,000
6,700		70,000	42,000
6,750	17/64	74,000	45,000
6,800		74,000	45,000
7,000		74,000	45,000
7,500		74,000	45,000
7,700		79,000	48,000

d1 mm	inch	l1 mm	l2 mm
7,800		79,000	48,000
8,000		79,000	48,000
8,100		79,000	48,000
8,300		79,000	48,000
8,400		79,000	48,000
8,500		79,000	48,000
9,000		84,000	52,000
9,600		89,000	55,000
9,700		89,000	55,000
9,800		89,000	55,000
9,900		89,000	55,000
10,000		89,000	55,000
10,200		89,000	55,000
10,320	13/32	89,000	55,000
10,400		89,000	55,000
10,500		89,000	55,000
10,800		95,000	60,000
11,000		95,000	60,000
11,300		95,000	60,000
11,500		95,000	60,000
11,600		95,000	60,000
11,700		95,000	60,000
12,000		102,000	65,000
12,100		102,000	65,000
12,500		102,000	65,000
13,000		102,000	65,000
13,200		102,000	65,000
13,500		107,000	66,000
14,000		107,000	66,000
14,300		111,000	70,000
16,000		115,000	73,000
17,500		123,000	76,000
20,000		131,000	79,000

Свёрла Ratio, 3-х лезвийные

5xD | GS 200 G | DIN 6539 | 150° | h7

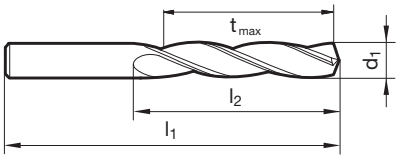
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	Цил.

P		подточка ≥ Ø 3,570 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	чугуны • литейные сплавы Al
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **745**

d1		l1	l2
mm	inch	mm	mm
3,570	9/64	52,000	27,000
4,370	11/64	58,000	32,000
6,900		74,000	45,000
7,300		74,000	45,000
7,940	5/16	79,000	48,000
8,330	21/64	79,000	48,000

d1		l1	l2
mm	inch	mm	mm
8,800		84,000	52,000
9,700		89,000	55,000
10,720	27/64	95,000	60,000
12,500		102,000	65,000

Свёрла Ratio, 3-х лезвийные

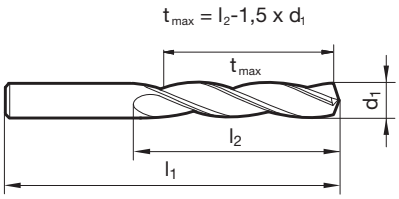
5xD | GS 200 G | DIN 6539 | 150° | h7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	Цил.

P		подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	чугуны • литейные сплавы Al
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762



Артикул № **1025**

d1 mm	inch	l1 mm	l2 mm
3,000		46,000	22,000
3,100		49,000	24,000
3,200		49,000	24,000
3,300		49,000	24,000
3,400		52,000	27,000
3,500		52,000	27,000
3,570	9/64	52,000	27,000
3,600		52,000	27,000
3,700		52,000	27,000
3,800		55,000	30,000
3,900		55,000	30,000
3,970	5/32	55,000	30,000
4,000		55,000	30,000
4,100		55,000	30,000
4,200		55,000	30,000
4,300		58,000	32,000
4,370	11/64	58,000	32,000
4,500		58,000	32,000
4,600		58,000	32,000
4,700		58,000	32,000
4,800		62,000	35,000
4,900		62,000	35,000
5,000		62,000	35,000
5,100		62,000	35,000
5,200		62,000	35,000
5,300		62,000	35,000
5,400		66,000	39,000
5,500		66,000	39,000
5,600		66,000	39,000
5,700		66,000	39,000
5,800		66,000	39,000
5,900		66,000	39,000
6,000		66,000	39,000
6,100		70,000	42,000
6,200		70,000	42,000
6,300		70,000	42,000
6,400		70,000	42,000
6,500		70,000	42,000
6,600		70,000	42,000
6,700		70,000	42,000
6,800		74,000	45,000
7,000		74,000	45,000

d1 mm	inch	l1 mm	l2 mm
7,100		74,000	45,000
7,200		74,000	45,000
7,300		74,000	45,000
7,400		74,000	45,000
7,500		74,000	45,000
7,600		79,000	48,000
7,700		79,000	48,000
7,800		79,000	48,000
7,900		79,000	48,000
8,000		79,000	48,000
8,100		79,000	48,000
8,200		79,000	48,000
8,400		79,000	48,000
8,500		79,000	48,000
8,600		84,000	52,000
8,700		84,000	52,000
8,800		84,000	52,000
9,000		84,000	52,000
9,100		84,000	52,000
9,300		84,000	52,000
9,500		84,000	52,000
9,520	3/8	89,000	55,000
9,600		89,000	55,000
9,700		89,000	55,000
9,800		89,000	55,000
10,000		89,000	55,000
10,100		89,000	55,000
10,200		89,000	55,000
10,300		89,000	55,000
10,500		89,000	55,000
10,700		95,000	60,000
11,000		95,000	60,000
11,110	7/16	95,000	60,000
11,200		95,000	60,000
11,500		95,000	60,000
11,510	29/64	95,000	60,000
11,700		95,000	60,000
11,800		95,000	60,000
11,910	15/32	102,000	65,000
12,000		102,000	65,000
12,200		102,000	65,000
12,500		102,000	65,000

d1		l1	l2
mm	inch	mm	mm
12,700	1/2	102,000	65,000
13,000		102,000	65,000
13,500		107,000	66,000
13,800		107,000	66,000
14,000		107,000	66,000
14,300		111,000	70,000
14,500		111,000	70,000
15,000		111,000	70,000
15,870	5/8	115,000	73,000
16,000		115,000	73,000
17,000		119,000	73,000
18,500		127,000	76,000

d1		l1	l2
mm	inch	mm	mm
19,000		127,000	76,000
20,000		131,000	79,000

Свёрла Ratio, 3-х лезвийные

5xD | GS 200 F | DIN 6539 | 150° | h7

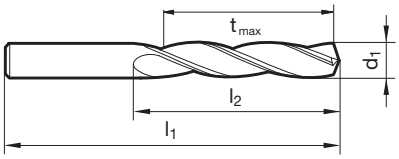
Режущий материал	**VHM**
Покрытие	(S)
Форма хвостовика	Цил.

P	○	подточка ≥ Ø 3,000 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	автоматные стали, конструкционные стали • легированная/ нелегированная сталь прочностью до 1000 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 762

$t_{max} = l_2 - 1{,}5 \times d_1$



Артикул № **1027**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	22,000
3,200		49,000	24,000
3,900		55,000	30,000
4,000		55,000	30,000
4,900		62,000	35,000
5,000		62,000	35,000
5,300		62,000	35,000
5,500		66,000	39,000
6,000		66,000	39,000
6,200		70,000	42,000
7,000		74,000	45,000
9,000		84,000	52,000

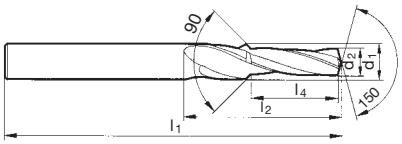
d1		l1	l2
mm	inch	mm	mm
10,000		89,000	55,000
11,000		95,000	60,000

Ступенчатые сверла Ratio, 3-лезвийные

3xD | GS 200 G | WN | 150° | h7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	Цил.

P		подточка ≥ Ø 3,400 • плоскостная заточка • высокая точность получаемых отверстий • высокое качество отверстия • подходит для пересекающихся отверстий
M		
K	○	
N	○	чугуны • литейные сплавы Al
S		
H		



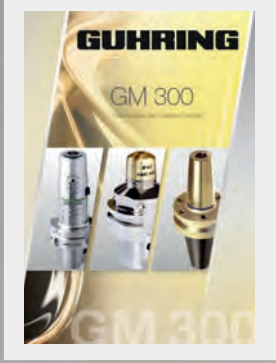
Артикул № **1032**

d1	d2	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
3,400	2,500	52,000	27,000	9,000	M 3
4,500	3,300	58,000	32,000	11,000	M 4
5,500	4,200	66,000	39,000	14,000	M 5
5,500	4,700	66,000	39,000	14,000	
6,600	5,000	70,000	42,000	16,000	M 6
9,000	6,800	84,000	52,000	22,000	M 8
11,000	8,500	95,000	60,000	28,000	M10
11,000	8,800	95,000	60,000	28,000	M10X1,25
13,500	10,200	107,000	66,000	33,000	M12
15,500	13,200	115,000	73,000	38,000	
17,500	15,000	123,000	76,000	41,000	M16 X1
20,000	16,000	131,000	79,000	43,000	M18X2

GM 300

Оправки и зажимные приспособления для любого применения

Дополнительную информацию можно найти на страницах каталога GM 300.



СВЕРЛА СО СМЕННЫМИ ПЛАСТИНАМИ НТ 800

FRIZAR
www.frizar.ru

HT 800 WP модульные инструментальные системы

С новой системой сверл со сменными пластинами HT 800, фирма Gühring предлагает высокопроизводительные и экономичные системы для обработки отверстий в диапазоне диаметров от 11.00 до 40.0 мм.

Система сверления HT 800 WP идеально подходит для производства больших, очень точных отверстий в различных материалах, например: в энергетической отрасли, автомобилестроение, тяжолом машиностроение и строительной отрасли.

ДЛИТЕЛЬНЫЙ СРОК СЛУЖБЫ ИНСТРУМЕНТА

- сменные пластины идеальны по своим характеристикам: режущий материал, геометрия и обработка поверхности
- оптимальные результаты по обработке сталей, в том числе нержавеющих, чугуна или алюминия

ЭФФЕКТИВНОЕ УДАЛЕНИЕ СТРУЖКИ

- особый профиль стружечной канавки
- ультра-гладкая поверхность канавки

НАДЕЖНЫЕ КОРПУСА

- небольшой шаг ранжирования посадочных диаметров уменьшают износ
- улучшеное качество поверхности заготовки
- улучшенное позиционирование инструмента повышает стабильность процесса
- увеличение стойкости

ВЫСОКАЯ ТОЧНОСТЬ И ЖЕСТКАЯ ПОСАДКА

- смена пластин не снимая со станка
- патрон остается зажатым
- смена инструмента и повторная настройка не требуется
- повышенная надежность процесса и сокращение времени настройки

ИДЕАЛЬНАЯ СМАЗКА И ОХЛАЖДЕНИЕ

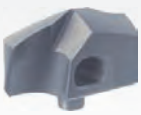
- охлаждающие каналы с максимальным поперечным сечением
- выход из стружечной канавки

Универсальная режущая пластина для любого материала и применения

арт.-№ 4112

арт.-№ 4113

арт.-№ 4115



арт.-№ 4114

для пилотного сверления

арт.-№ 4111

HT 800 WP

Патрон подходящий для любой глубины сверления и применения

арт.-№	4105	4106	4107	4108	4109	4110
Глубина сверления	1 x D	1,5 x D	3 x D	5 x D	7 x D	10 x D
Диаметр	11,0 - 40,00	11,0 - 40,00	11,0 - 40,00	11,0 - 40,00	11,0 - 31,99	11,0 - 31,99
форма хвостовика	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE

пилотное сверление / зенкование 45°

Пилотный корпус,арт. 4105, оснащен зенковочными пластинами. Это дает возможность одновременной обработки фаски 45 ° в процессе производства пилотного отверстия.

FRIZAR
www.frizar.ru

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	Диапазон диаметров/mm	Артикул №	Параметры резания см. стр.	Стр.
Корпуса для сменных пластин HT 800																
							1xD	HE	HT 800 WP	WN		Ni		4105	764	138
							1,5xD	HE	HT 800 WP	WN		Ni		4106	764	128
							3xD	HE	HT 800 WP	WN		Ni		4107	764	130
							5xD	HE	HT 800 WP	WN		Ni		4108	766	132
							7xD	HE	HT 800 WP	WN		Ni		4109	766	134
							10xD	HE	HT 800 WP	WN		Ni		4110	768	136
Сменные пластины HT 800																
○		●							HT 800 WP	WN	VHM	F	11,000 - 40,000	4113	764	142
			●						HT 800 WP	WN	VHM		11,000 - 40,000	4114	764	148
●	○	○							HT 800 WP	WN	VHM	F	11,000 - 40,000	4112	764	139
○	●			○	○				HT 800 WP	WN	VHM	a	11,000 - 40,000	4115	764	145
○	○	○	○	○	○				HT 800 WP	WN	VHM	a	11,000 - 40,000	4111	768	151
Пластины HT 800																
			●							WN	VHM			7635		156
●	○	○		○	○					WN	VHM	S		7645		154
○		●								WN	VHM	A		7632		155
Зажимные винты																
										WN				6128		157
										WN				4071		158
Корпуса для сменных пластин RT 800																
							3xD	HE	RT 800 WP	WN		Ni		5242	770	159
							5xD	HE	RT 800 WP	WN		Ni		5243	770	160
							7xD	HE	RT 800 WP	WN		Ni		5248	770	161
Сменные пластины RT 800																
●	○	●	○						RT 800 WP	WN	VHM	F	16,000 - 40,500	2485	770	164

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Форма хвостовика	Тип	Стандарты	Режущий материал	Покрытие	Диапазон диаметров/mm	Артикул №	Параметры резания см. стр.	Стр.
Сменные пластины RT 800																
		○	●						RT 800 WP	WN	VHM	◯	16,000 - 40,000	**2747**	770	166
●	○	●	○						RT 800 WP	WN	VHM	Ⓢ	16,000 - 40,500	**1047**	770	162
Зажимные винты RT 800																
										WN				**1071**		168
Динамометрический ключ																
										WN				**4915**		169
Вставки Torx-Bit																
										WN				**4917**		170
Отвертки Torx																
										WN				**1612**		171

Державка HT 800

HT 800 WP | 1,5xD | WN | R

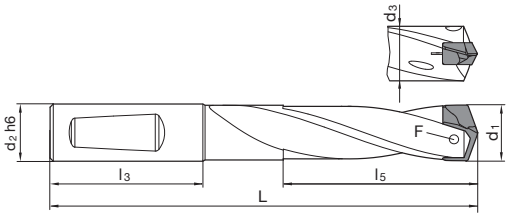
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4106**

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	84,000	45,000	19,300	4071 2.200	11,000
11,00-11,49	12,700	10,700	84,000	45,000	19,300	4071 2.200	11,005
11,50-11,99	12,000	11,200	85,000	45,000	20,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	85,000	45,000	20,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	87,000	45,000	21,000	4071 2.201	12,000
12,00-12,49	12,700	11,700	87,000	45,000	21,000	4071 2.201	12,005
12,50-12,99	14,000	12,200	89,000	45,000	21,900	4071 2.201	12,500
12,50-12,99	15,875	12,200	89,000	45,000	21,900	4071 2.201	12,505
13,00-13,49	14,000	12,700	90,000	45,000	22,600	4071 2.500	13,000
13,00-13,49	15,875	12,700	90,000	45,000	22,600	4071 2.500	13,005
13,50-13,99	14,000	13,200	92,000	45,000	23,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	92,000	45,000	23,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	93,000	45,000	24,500	4071 3.000	14,000
14,00-14,49	15,875	13,700	93,000	45,000	24,500	4071 3.000	14,005
14,50-14,99	16,000	14,200	98,000	48,000	25,300	4071 3.000	14,500
14,50-14,99	15,875	14,200	98,000	48,000	25,300	4071 3.000	14,505
15,00-15,49	16,000	14,700	100,000	48,000	26,100	4071 3.001	15,000
15,00-15,49	15,875	14,700	100,000	48,000	26,100	4071 3.001	15,005
15,50-15,99	16,000	15,200	101,000	48,000	27,000	4071 3.001	15,500
15,50-15,99	15,875	15,200	101,000	48,000	27,000	4071 3.001	15,505
16,00-16,49	16,000	15,700	102,000	48,000	27,800	4071 3.500	16,000
16,00-16,49	15,875	15,700	102,000	48,000	27,800	4071 3.500	16,005
16,50-16,99	18,000	16,200	105,000	48,000	28,700	4071 3.500	16,500
16,50-16,99	19,050	16,200	105,000	48,000	28,700	4071 3.500	16,505
17,00-17,49	18,000	16,700	106,000	48,000	29,600	4071 3.500	17,000
17,00-17,49	19,050	16,700	106,000	48,000	29,600	4071 3.500	17,005
17,50-17,99	18,000	17,200	107,000	48,000	30,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	107,000	48,000	30,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	109,000	48,000	31,200	4071 4.000	18,000
18,00-18,49	19,050	17,700	109,000	48,000	31,200	4071 4.000	18,005
18,50-18,99	20,000	18,200	113,000	50,000	32,100	4071 4.000	18,500
18,50-18,99	19,050	18,200	113,000	50,000	32,100	4071 4.000	18,505
19,00-19,49	20,000	18,700	114,000	50,000	32,900	4071 4.000	19,000
19,00-19,49	19,050	18,700	114,000	50,000	32,900	4071 4.000	19,005
19,50-19,99	20,000	19,200	116,000	50,000	33,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	116,000	50,000	33,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	117,000	50,000	34,600	4071 4.500	20,000
20,00-20,49	19,050	19,700	117,000	50,000	34,600	4071 4.500	20,005
20,50-20,99	25,000	20,200	128,000	56,000	35,500	4071 4.500	20,500
20,50-20,99	25,400	20,200	128,000	56,000	35,500	4071 4.500	20,505
21,00-21,49	25,000	20,700	129,000	56,000	36,400	4071 4.500	21,000
21,00-21,49	25,400	20,700	129,000	56,000	36,400	4071 4.500	21,005

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	130,000	56,000	37,200	4071 4.500	21,500
21,50-21,99	25,400	21,200	130,000	56,000	37,200	4071 4.500	21,505
22,00-22,49	25,000	21,700	131,000	56,000	38,000	4071 5.000	22,000
22,00-22,49	25,400	21,700	131,000	56,000	38,000	4071 5.000	22,005
22,50-22,99	25,000	22,200	134,000	56,000	38,900	4071 5.000	22,500
22,50-22,99	25,400	22,200	134,000	56,000	38,900	4071 5.000	22,505
23,00-23,49	25,000	22,700	135,000	56,000	39,800	4071 5.000	23,000
23,00-23,49	25,400	22,700	135,000	56,000	39,800	4071 5.000	23,005
23,50-23,99	25,000	23,200	137,000	56,000	40,600	4071 5.000	23,500
23,50-23,99	25,400	23,200	137,000	56,000	40,600	4071 5.000	23,505
24,00-24,49	25,000	23,700	138,000	56,000	41,500	4071 5.001	24,000
24,00-24,49	25,400	23,700	138,000	56,000	41,500	4071 5.001	24,005
24,50-24,99	25,000	24,200	140,000	56,000	42,300	4071 5.001	24,500
24,50-24,99	25,400	24,200	140,000	56,000	42,300	4071 5.001	24,505
25,00-25,49	25,000	24,700	142,000	56,000	43,200	4071 5.001	25,000
25,00-25,49	25,400	24,700	142,000	56,000	43,200	4071 5.001	25,005
25,50-25,99	32,000	25,200	148,000	60,000	44,000	4071 5.001	25,500
25,50-25,99	31,750	25,200	148,000	60,000	44,000	4071 5.001	25,505
26,00-26,49	32,000	25,700	151,000	60,000	44,300	4071 5.003	26,000
26,00-26,49	31,750	25,700	151,000	60,000	44,300	4071 5.003	26,005
26,50-26,99	32,000	26,200	153,000	60,000	45,100	4071 5.003	26,500
26,50-26,99	31,750	26,200	153,000	60,000	45,100	4071 5.003	26,505
27,00-27,49	32,000	26,700	155,000	60,000	46,000	4071 5.003	27,000
27,00-27,49	31,750	26,700	155,000	60,000	46,000	4071 5.003	27,005
27,50-27,99	32,000	27,200	156,000	60,000	46,800	4071 5.003	27,500
27,50-27,99	31,750	27,200	156,000	60,000	46,800	4071 5.003	27,505
28,00-28,49	32,000	27,700	157,000	60,000	47,700	4071 5.003	28,000
28,00-28,49	31,750	27,700	157,000	60,000	47,700	4071 5.003	28,005
28,50-28,99	32,000	28,200	159,000	60,000	48,500	4071 5.003	28,500
28,50-28,99	31,750	28,200	159,000	60,000	48,500	4071 5.003	28,505
29,00-29,49	32,000	28,700	161,000	60,000	49,400	4071 5.003	29,000
29,00-29,49	31,750	28,700	161,000	60,000	49,400	4071 5.003	29,005
29,50-29,99	32,000	29,200	162,000	60,000	50,200	4071 5.003	29,500
29,50-29,99	31,750	29,200	162,000	60,000	50,200	4071 5.003	29,505
30,00-30,49	32,000	29,700	164,000	60,000	50,900	4071 6.000	30,000
30,00-30,49	31,750	29,700	164,000	60,000	50,900	4071 6.000	30,005
30,50-30,99	32,000	30,200	166,000	60,000	51,700	4071 6.000	30,500
30,50-30,99	31,750	30,200	166,000	60,000	51,700	4071 6.000	30,505
31,00-31,49	32,000	30,700	167,000	60,000	52,600	4071 6.000	31,000
31,00-31,49	31,750	30,700	167,000	60,000	52,600	4071 6.000	31,005
31,50-31,99	32,000	31,200	168,000	60,000	53,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	168,000	60,000	53,400	4071 6.000	31,505
32,00-32,99	32,000	31,700	172,000	60,000	55,100	4071 6.001	32,000
32,00-32,99	31,750	31,700	172,000	60,000	55,100	4071 6.001	32,005
33,00-33,99	32,000	32,700	175,000	60,000	56,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	175,000	60,000	56,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	178,000	60,000	58,500	4071 6.001	34,000
34,00-34,99	31,750	33,700	178,000	60,000	58,500	4071 6.001	34,005
35,00-35,99	32,000	34,700	181,000	60,000	60,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	181,000	60,000	60,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	184,000	60,000	61,800	4071 6.002	36,000
36,00-36,99	31,750	35,700	184,000	60,000	61,800	4071 6.002	36,005
37,00-37,99	32,000	36,700	188,000	60,000	63,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	188,000	60,000	63,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	191,000	60,000	65,200	4071 6.002	38,000
38,00-38,99	31,750	37,700	191,000	60,000	65,200	4071 6.002	38,005
39,00-40,00	32,000	38,700	194,000	60,000	66,900	4071 6.002	39,000
39,00-40,00	31,750	38,700	194,000	60,000	66,900	4071 6.002	39,005

Державка HT 800

HT 800 WP | 3xD | WN | R

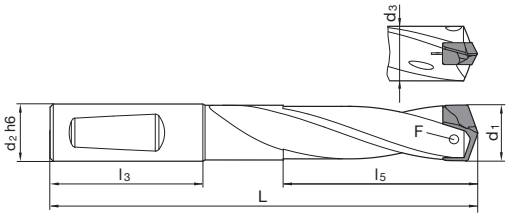
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4107**

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	101,000	45,000	36,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	101,000	45,000	36,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	103,000	45,000	38,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	103,000	45,000	38,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	106,000	45,000	39,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	106,000	45,000	39,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	108,000	45,000	41,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	108,000	45,000	41,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	110,000	45,000	42,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	110,000	45,000	42,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	113,000	45,000	44,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	113,000	45,000	44,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	115,000	45,000	46,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	115,000	45,000	46,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	120,000	48,000	47,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	120,000	48,000	47,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	123,000	48,000	49,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	123,000	48,000	49,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	125,000	48,000	50,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	125,000	48,000	50,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	127,000	48,000	52,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	127,000	48,000	52,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	130,000	48,000	54,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	130,000	48,000	54,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	132,000	48,000	55,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	132,000	48,000	55,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	134,000	48,000	57,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	134,000	48,000	57,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	137,000	48,000	58,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	137,000	48,000	58,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	141,000	50,000	60,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	141,000	50,000	60,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	143,000	50,000	62,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	143,000	50,000	62,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	146,000	50,000	63,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	146,000	50,000	63,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	148,000	50,000	65,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	148,000	50,000	65,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	159,000	56,000	67,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	159,000	56,000	67,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	161,000	56,000	68,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	161,000	56,000	68,600	4071 4.500	21,005

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	163,000	56,000	70,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	163,000	56,000	70,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	165,000	56,000	71,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	165,000	56,000	71,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	168,000	56,000	73,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	168,000	56,000	73,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	170,000	56,000	74,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	170,000	56,000	74,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	173,000	56,000	76,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	173,000	56,000	76,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	175,000	56,000	78,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	175,000	56,000	78,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	177,000	56,000	79,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	177,000	56,000	79,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	180,000	56,000	81,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	180,000	56,000	81,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	187,000	60,000	82,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	187,000	60,000	82,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	191,000	60,000	84,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	191,000	60,000	84,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	193,000	60,000	86,100	4071 5.003	26,500
26,50-26,99	31,750	26,200	193,000	60,000	86,100	4071 5.003	26,505
27,00-27,49	32,000	26,700	196,000	60,000	87,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	196,000	60,000	87,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	198,000	60,000	88,900	4071 5.003	27,500
27,50-27,99	31,750	27,200	198,000	60,000	88,900	4071 5.003	27,505
28,00-28,49	32,000	27,700	200,000	60,000	90,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	200,000	60,000	90,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	202,000	60,000	92,500	4071 5.003	28,500
28,50-28,99	31,750	28,200	202,000	60,000	92,500	4071 5.003	28,505
29,00-29,49	32,000	28,700	205,000	60,000	94,600	4071 5.003	29,000
29,00-29,49	31,750	28,700	205,000	60,000	94,600	4071 5.003	29,005
29,50-29,99	32,000	29,200	207,000	60,000	95,100	4071 5.003	29,500
29,50-29,99	31,750	29,200	207,000	60,000	95,100	4071 5.003	29,505
30,00-30,49	32,000	29,700	210,000	60,000	96,700	4071 6.000	30,000
30,00-30,49	31,750	29,700	210,000	60,000	96,700	4071 6.000	30,005
30,50-30,99	32,000	30,200	212,000	60,000	98,300	4071 6.000	30,500
30,50-30,99	31,750	30,200	212,000	60,000	98,300	4071 6.000	30,505
31,00-31,49	32,000	30,700	214,000	60,000	99,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	214,000	60,000	99,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	216,000	60,000	101,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	216,000	60,000	101,400	4071 6.000	31,505
32,00-32,99	32,000	31,700	221,000	60,000	104,600	4071 6.001	32,000
32,00-32,99	31,750	31,700	221,000	60,000	104,600	4071 6.001	32,005
33,00-33,99	32,000	32,700	226,000	60,000	107,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	226,000	60,000	107,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	230,000	60,000	111,000	4071 6.001	34,000
34,00-34,99	31,750	33,700	230,000	60,000	111,000	4071 6.001	34,005
35,00-35,99	32,000	34,700	235,000	60,000	114,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	235,000	60,000	114,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	240,000	60,000	117,300	4071 6.002	36,000
36,00-36,99	31,750	35,700	240,000	60,000	117,300	4071 6.002	36,005
37,00-37,99	32,000	36,700	245,000	60,000	120,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	245,000	60,000	120,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	249,000	60,000	123,700	4071 6.002	38,000
38,00-38,99	31,750	37,700	249,000	60,000	123,700	4071 6.002	38,005
39,00-40,00	32,000	38,700	254,000	60,000	126,900	4071 6.002	39,000
39,00-40,00	31,750	38,700	254,000	60,000	126,900	4071 6.002	39,005

Державка HT 800

HT 800 WP | 5xD | WN | R

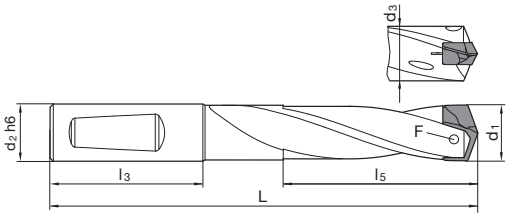
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4108**

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	124,000	45,000	59,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	124,000	45,000	59,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	127,000	45,000	62,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	127,000	45,000	62,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	131,000	45,000	64,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	131,000	45,000	64,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	134,000	45,000	67,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	134,000	45,000	67,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	137,000	45,000	69,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	137,000	45,000	69,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	141,000	45,000	72,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	141,000	45,000	72,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	144,000	45,000	75,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	144,000	45,000	75,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	150,000	48,000	77,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	150,000	48,000	77,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	154,000	48,000	80,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	154,000	48,000	80,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	157,000	48,000	82,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	157,000	48,000	82,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	160,000	48,000	85,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	160,000	48,000	85,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	164,000	48,000	88,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	164,000	48,000	88,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	167,000	48,000	90,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	167,000	48,000	90,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	170,000	48,000	93,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	170,000	48,000	93,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	174,000	48,000	95,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	174,000	48,000	95,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	179,000	50,000	98,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	179,000	50,000	98,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	182,000	50,000	101,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	182,000	50,000	101,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	186,000	50,000	103,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	186,000	50,000	103,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	189,000	50,000	106,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	189,000	50,000	106,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	201,000	56,000	109,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	201,000	56,000	109,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	204,000	56,000	111,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	204,000	56,000	111,600	4071 4.500	21,005

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	207,000	56,000	114,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	207,000	56,000	114,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	210,000	56,000	116,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	210,000	56,000	116,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	214,000	56,000	119,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	214,000	56,000	119,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	217,000	56,000	121,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	217,000	56,000	121,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	221,000	56,000	124,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	221,000	56,000	124,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	224,000	56,000	127,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	224,000	56,000	127,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	227,000	56,000	129,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	227,000	56,000	129,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	231,000	56,000	132,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	231,000	56,000	132,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	239,000	60,000	134,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	239,000	60,000	134,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	244,000	60,000	137,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	244,000	60,000	137,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	247,000	60,000	140,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	247,000	60,000	140,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	251,000	60,000	142,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	251,000	60,000	142,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	254,000	60,000	144,800	4071 5.003	27,500
28,00-28,49	32,000	27,700	257,000	60,000	147,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	257,000	60,000	147,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	260,000	60,000	150,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	260,000	60,000	150,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	264,000	60,000	153,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	264,000	60,000	153,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	267,000	60,000	155,100	4071 5.003	29,500
30,00-30,49	32,000	29,700	271,000	60,000	157,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	271,000	60,000	157,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	274,000	60,000	160,200	4071 6.000	30,500
31,00-31,49	32,000	30,700	277,000	60,000	162,800	4071 6.000	31,000
31,50-31,99	32,000	31,200	280,000	60,000	165,400	4071 6.000	31,500
32,00-32,99	32,000	31,700	287,000	60,000	170,600	4071 6.001	32,000
32,00-32,99	31,750	31,700	287,000	60,000	170,600	4071 6.001	32,005
33,00-33,99	32,000	32,700	294,000	60,000	175,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	294,000	60,000	175,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	300,000	60,000	181,000	4071 6.001	34,000
34,00-34,99	31,750	33,700	300,000	60,000	181,000	4071 6.001	34,005
35,00-35,99	32,000	34,700	307,000	60,000	186,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	307,000	60,000	186,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	314,000	60,000	191,300	4071 6.002	36,000
37,00-37,99	32,000	36,700	321,000	60,000	196,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	321,000	60,000	196,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	327,000	60,000	201,700	4071 6.002	38,000
38,00-38,99	31,750	37,700	327,000	60,000	201,700	4071 6.002	38,005
39,00-40,00	32,000	38,700	334,000	60,000	206,900	4071 6.002	39,000

Державка HT 800

HT 800 WP | 7xD | WN | R

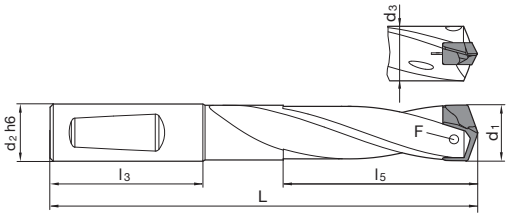
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4109**

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	147,000	45,000	82,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	147,000	45,000	82,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	151,000	45,000	86,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	151,000	45,000	86,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	156,000	45,000	89,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	156,000	45,000	89,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	160,000	45,000	93,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	160,000	45,000	93,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	164,000	45,000	96,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	164,000	45,000	96,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	169,000	45,000	100,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	169,000	45,000	100,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	173,000	45,000	104,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	173,000	45,000	104,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	180,000	48,000	107,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	180,000	48,000	107,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	185,000	48,000	111,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	185,000	48,000	111,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	189,000	48,000	114,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	189,000	48,000	114,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	193,000	48,000	118,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	193,000	48,000	118,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	198,000	48,000	122,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	198,000	48,000	122,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	202,000	48,000	125,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	202,000	48,000	125,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	206,000	48,000	129,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	206,000	48,000	129,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	211,000	48,000	132,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	211,000	48,000	132,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	217,000	50,000	136,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	217,000	50,000	136,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	221,000	50,000	140,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	221,000	50,000	140,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	226,000	50,000	143,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	226,000	50,000	143,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	230,000	50,000	147,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	230,000	50,000	147,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	243,000	56,000	151,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	243,000	56,000	151,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	247,000	56,000	154,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	247,000	56,000	154,600	4071 4.500	21,005

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	251,000	56,000	158,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	251,000	56,000	158,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	255,000	56,000	161,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	255,000	56,000	161,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	260,000	56,000	165,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	260,000	56,000	165,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	264,000	56,000	168,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	264,000	56,000	168,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	269,000	56,000	172,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	269,000	56,000	172,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	273,000	56,000	176,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	273,000	56,000	176,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	277,000	56,000	179,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	277,000	56,000	179,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	282,000	56,000	183,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	282,000	56,000	183,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	291,000	60,000	186,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	291,000	60,000	186,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	297,000	60,000	190,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	297,000	60,000	190,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	301,000	60,000	194,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	301,000	60,000	194,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	306,000	60,000	197,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	306,000	60,000	197,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	310,000	60,000	200,800	4071 5.003	27,500
27,50-27,99	31,750	27,200	310,000	60,000	200,800	4071 5.003	27,505
28,00-28,49	32,000	27,700	314,000	60,000	204,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	314,000	60,000	204,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	318,000	60,000	208,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	318,000	60,000	208,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	323,000	60,000	212,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	323,000	60,000	212,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	327,000	60,000	215,100	4071 5.003	29,500
29,50-29,99	31,750	29,200	327,000	60,000	215,100	4071 5.003	29,505
30,00-30,49	32,000	29,700	332,000	60,000	218,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	332,000	60,000	218,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	336,000	60,000	222,200	4071 6.000	30,500
30,50-30,99	31,750	30,200	336,000	60,000	222,200	4071 6.000	30,505
31,00-31,49	32,000	30,700	340,000	60,000	225,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	340,000	60,000	225,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	344,000	60,000	229,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	344,000	60,000	229,400	4071 6.000	31,505
33,00-33,99	32,000	32,700	362,000	60,000	244,600	4071 6.001	33,000
39,00-40,00	32,000	38,700	413,000	60,000	287,400	4071 6.002	39,000

FRIZAR
www.frizar.ru

Державка HT 800

HT 800 WP | 10xD | WN | R

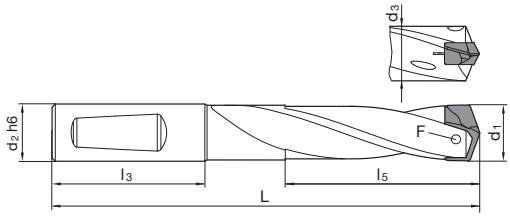
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4110**

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	182,000	45,000	117,100	4071 2.200	11,000
11,00-11,49	12,700	10,700	182,000	45,000	117,100	4071 2.200	11,005
11,50-11,99	12,000	11,200	187,000	45,000	122,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	187,000	45,000	122,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	194,000	45,000	127,200	4071 2.201	12,000
12,00-12,49	12,700	11,700	194,000	45,000	127,200	4071 2.201	12,005
12,50-12,99	14,000	12,200	199,000	45,000	132,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	199,000	45,000	132,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	205,000	45,000	137,500	4071 2.500	13,000
13,00-13,49	15,875	12,700	205,000	45,000	137,500	4071 2.500	13,005
13,50-13,99	14,000	13,200	211,000	45,000	142,500	4071 2.500	13,500
13,50-13,99	15,875	13,200	211,000	45,000	142,500	4071 2.500	13,505
14,00-14,49	14,000	13,700	217,000	45,000	147,700	4071 3.000	14,000
14,00-14,49	15,875	13,700	217,000	45,000	147,700	4071 3.000	14,005
14,50-14,99	16,000	14,200	225,000	48,000	152,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	225,000	48,000	152,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	232,000	48,000	157,800	4071 3.001	15,000
15,00-15,49	15,875	14,700	232,000	48,000	157,800	4071 3.001	15,005
15,50-15,99	16,000	15,200	237,000	48,000	162,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	237,000	48,000	162,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	243,000	48,000	168,000	4071 3.500	16,000
16,00-16,49	15,875	15,700	243,000	48,000	168,000	4071 3.500	16,005
16,50-16,99	18,000	16,200	249,000	48,000	170,000	4071 3.500	16,500
16,50-16,99	19,050	16,200	249,000	48,000	170,000	4071 3.500	16,505
17,00-17,49	18,000	16,700	255,000	48,000	178,300	4071 3.500	17,000
17,00-17,49	19,050	16,700	255,000	48,000	178,300	4071 3.500	17,005
17,50-17,99	18,000	17,200	260,000	48,000	183,500	4071 3.500	17,500
17,50-17,99	19,050	17,200	260,000	48,000	183,500	4071 3.500	17,505
18,00-18,49	18,000	17,700	267,000	48,000	188,400	4071 4.000	18,000
18,00-18,49	19,050	17,700	267,000	48,000	188,400	4071 4.000	18,005
18,50-18,99	20,000	18,200	274,000	50,000	193,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	274,000	50,000	193,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	280,000	50,000	198,700	4071 4.000	19,000
19,00-19,49	19,050	18,700	280,000	50,000	198,700	4071 4.000	19,005
19,50-19,99	20,000	19,200	286,000	50,000	203,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	286,000	50,000	203,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	292,000	50,000	208,900	4071 4.500	20,000
20,00-20,49	19,050	19,700	292,000	50,000	208,900	4071 4.500	20,005
20,50-20,99	25,000	20,200	306,000	56,000	214,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	306,000	56,000	214,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	312,000	56,000	219,100	4071 4.500	21,000
21,00-21,49	25,400	20,700	312,000	56,000	219,100	4071 4.500	21,005

d1	d2 h6	d3	L	l3	l5	F	Код-№.
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	317,000	56,000	224,200	4071 4.500	21,500
21,50-21,99	25,400	21,200	317,000	56,000	224,200	4071 4.500	21,505
22,00-22,49	25,000	21,700	323,000	56,000	229,300	4071 5.000	22,000
22,00-22,49	25,400	21,700	323,000	56,000	229,300	4071 5.000	22,005
22,50-22,99	25,000	22,200	329,000	56,000	234,400	4071 5.000	22,500
22,50-22,99	25,400	22,200	329,000	56,000	234,400	4071 5.000	22,505
23,00-23,49	25,000	22,700	335,000	56,000	239,500	4071 5.000	23,000
23,00-23,49	25,400	22,700	335,000	56,000	239,500	4071 5.000	23,005
23,50-23,99	25,000	23,200	341,000	56,000	244,600	4071 5.000	23,500
23,50-23,99	25,400	23,200	341,000	56,000	244,600	4071 5.000	23,505
24,00-24,49	25,000	23,700	347,000	56,000	249,700	4071 5.001	24,000
24,00-24,49	25,400	23,700	347,000	56,000	249,700	4071 5.001	24,005
24,50-24,99	25,000	24,200	352,000	56,000	254,800	4071 5.001	24,500
24,50-24,99	25,400	24,200	352,000	56,000	254,800	4071 5.001	24,505
25,00-25,49	25,000	24,700	359,000	56,000	259,900	4071 5.001	25,000
25,00-25,49	25,400	24,700	359,000	56,000	259,900	4071 5.001	25,005
25,50-25,99	32,000	25,200	369,000	60,000	265,000	4071 5.001	25,500
25,50-25,99	31,750	25,200	369,000	60,000	265,000	4071 5.001	25,505
26,00-26,49	32,000	25,700	377,000	60,000	270,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	377,000	60,000	270,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	382,000	60,000	275,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	382,000	60,000	275,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	388,000	60,000	280,100	4071 5.003	27,000
27,00-27,49	31,750	26,700	388,000	60,000	280,100	4071 5.003	27,005
27,50-27,99	32,000	27,200	394,000	60,000	285,200	4071 5.003	27,500
27,50-27,99	31,750	27,200	394,000	60,000	285,200	4071 5.003	27,505
28,00-28,49	32,000	27,700	400,000	60,000	290,300	4071 5.003	28,000
28,00-28,49	31,750	27,700	400,000	60,000	290,300	4071 5.003	28,005
28,50-28,99	32,000	28,200	405,000	60,000	295,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	405,000	60,000	295,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	412,000	60,000	300,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	412,000	60,000	300,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	418,000	60,000	305,600	4071 5.003	29,500
29,50-29,99	31,750	29,200	418,000	60,000	305,600	4071 5.003	29,505
30,00-30,49	32,000	29,700	424,000	60,000	310,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	424,000	60,000	310,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	429,000	60,000	315,700	4071 6.000	30,500
30,50-30,99	31,750	30,200	429,000	60,000	315,700	4071 6.000	30,505
31,00-31,49	32,000	30,700	435,000	60,000	320,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	435,000	60,000	320,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	441,000	60,000	325,900	4071 6.000	31,500
31,50-31,99	31,750	31,200	441,000	60,000	325,900	4071 6.000	31,505

FRIZAR
www.frizar.ru

Державка HT 800

HT 800 WP | 1xD | WN | R

Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

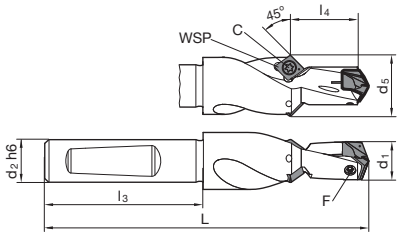
P
M
K
N
S
H

никелирование • высокая износостойкость • оптимальный профиль канавки • оптимизированный выход канала СОТС • Зажимные винты вкл. в Арт.-№ 4071 и 6128 • Отвёртка вкл. в Арт.-№ 1612

для пилотной обработки и зенкования 45°

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4105**

d1	d2 h6	d5	L	l3	l4	WSP	C	F	Код-№.
mm	mm	mm	mm	mm	mm				
11,00-11,99	12,000	17,000	81,000	45,000	12,000	CP..0502..	6128 2.000	4071 2.200	11,000
11,00-11,99	12,700	17,000	81,000	45,000	12,000	CP..0502..	6128 2.000	4071 2.200	11,005
12,00-12,99	12,000	18,000	84,000	45,000	13,000	CP..0502..	6128 2.000	4071 2.201	12,000
12,00-12,99	12,700	18,000	84,000	45,000	13,000	CP..0502..	6128 2.000	4071 2.201	12,005
13,00-13,99	14,000	18,000	86,000	45,000	14,000	CP..0502..	6128 2.000	4071 2.500	13,000
13,00-13,99	15,875	18,000	86,000	45,000	14,000	CP..0502..	6128 2.000	4071 2.500	13,005
14,00-15,99	16,000	18,000	93,000	48,000	16,000	CP..0502..	6128 2.000	4071 3.000	14,000
14,00-15,99	15,875	18,000	93,000	48,000	16,000	CP..0502..	6128 2.000	4071 3.000	14,005
16,00-17,99	18,000	20,000	99,000	48,000	18,000	CP..0602..	6128 2.500	4071 3.500	16,000
16,00-17,99	19,050	20,000	99,000	48,000	18,000	CP..0602..	6128 2.500	4071 3.500	16,005
18,00-19,99	20,000	22,000	106,000	50,000	20,000	CP..0602..	6128 2.500	4071 4.000	18,000
18,00-19,99	19,050	22,000	106,000	50,000	20,000	CP..0602..	6128 2.500	4071 4.000	18,005
20,00-21,99	25,000	25,000	117,000	56,000	22,000	CP..0602..	6128 2.500	4071 4.500	20,000
20,00-21,99	25,400	25,400	117,000	56,000	22,000	CP..0602..	6128 2.500	4071 4.500	20,005
22,00-23,99	25,000	26,000	122,000	56,000	24,000	CP..0602..	6128 2.500	4071 5.000	22,000
22,00-23,99	25,400	26,000	122,000	56,000	24,000	CP..0602..	6128 2.500	4071 5.000	22,005
24,00-25,99	25,000	28,000	128,000	56,000	26,000	CP..0602..	6128 2.500	4071 5.001	24,000
24,00-25,99	25,400	28,000	128,000	56,000	26,000	CP..0602..	6128 2.500	4071 5.001	24,005
26,00-27,99	32,000	32,000	142,000	60,000	28,000	CP..0602..	6128 2.500	4071 5.003	26,000
26,00-27,99	31,750	32,000	142,000	60,000	28,000	CP..0602..	6128 2.500	4071 5.003	26,005
28,00-29,99	32,000	34,000	147,000	60,000	30,000	CP..0602..	6128 2.500	4071 5.003	28,000
28,00-29,99	31,750	34,000	147,000	60,000	30,000	CP..09T3..	6128 2.500	4071 5.003	28,005
30,00-31,99	32,000	38,000	152,000	60,000	32,000	CP..09T3..	6128 4.006	4071 6.000	30,000
30,00-31,99	31,750	38,000	152,000	60,000	32,000	CP..09T3..	6128 4.006	4071 6.000	30,005
32,00-35,99	32,000	42,000	163,000	60,000	36,000	CP..09T3..	6128 4.006	4071 6.001	32,000
32,00-35,99	31,750	42,000	163,000	60,000	36,000	CP..09T3..	6128 4.006	4071 6.001	32,005
36,00-40,00	32,000	46,000	173,000	60,000	40,000	CP..09T3..	6128 4.006	4071 6.002	36,000
36,00-40,00	31,750	46,000	173,000	60,000	40,000	CP..09T3..	6128 4.006	4071 6.002	36,005

Сменные пластины HT 800

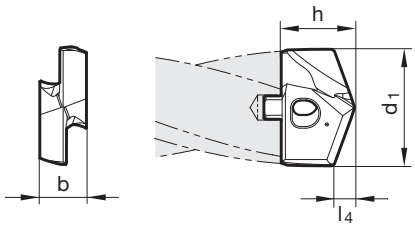
HT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	

P	•	подточка ≥ Ø 11,000 • плоскостная заточка • режущая кромка прямая (благодаря корректировке) • Зажимные винты вкл. в Арт.-№ 4071
M	○	
K	○	
N		конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4112**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,300		2,500	5,500	8,500	13,300
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,680	37/64	2,700	6,000	9,600	14,680
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,480	39/64	2,900	6,000	9,800	15,480
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
15,700		2,900	6,000	9,800	15,700
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,300		3,200	7,000	11,000	17,300
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
18,900		3,500	8,000	12,600	18,900
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,300		3,600	8,000	12,600	19,300
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
20,900		3,900	9,000	13,900	20,900
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,700		4,000	9,000	13,900	21,700
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
22,700		4,200	10,000	15,300	22,700
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,700		4,400	10,000	15,300	23,700
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,670		4,700	11,000	15,800	25,670
25,700		4,700	11,000	15,800	25,700
25,810		4,700	11,000	15,800	25,810
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,600		5,400	13,000	20,700	29,600
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
32,940	1 19/64	6,000	15,000	23,100	32,940
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000

Сменные пластины HT 800

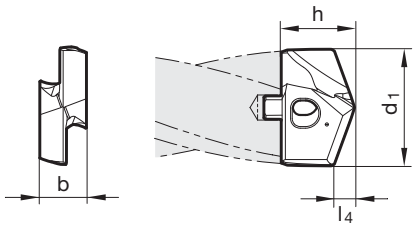
HT 800 WP | WN | R | 140° | m7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	

P	○	подточка ≥ Ø 11,000 • плоскостная заточка • режущая кромка прямая (благодаря корректировке) • Зажимные винты вкл. в Арт.-№ 4071
M		
K	•	
N		Новый чугун GGV • серый чугун, ковкий чугун, высокопрочный чугун
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4113**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
11,000		2,700	4,500	7,500	11,000
11,200		2,700	4,500	7,500	11,200
11,500		2,800	4,500	7,500	11,500
11,510	29/64	2,800	4,500	7,500	11,510
11,700		2,800	4,500	7,500	11,700
11,800		2,800	4,500	7,500	11,800
11,910	15/32	2,800	4,500	7,500	11,910
12,000		2,900	5,000	7,700	12,000
12,100		2,900	5,000	7,700	12,100
12,200		2,900	5,000	7,700	12,200
12,300	31/64	2,900	5,000	7,700	12,300
12,500		3,100	5,000	7,700	12,500
12,600		3,100	5,000	7,700	12,600
12,700	1/2	3,100	5,000	7,700	12,700
12,800		3,100	5,000	7,700	12,800
12,900		3,100	5,000	7,700	12,900
13,000		3,200	5,500	8,500	13,000
13,100	33/64	3,200	5,500	8,500	13,100
13,300		3,200	5,500	8,500	13,300
13,490	17/32	3,200	5,500	8,500	13,490
13,500		3,300	5,500	8,500	13,500
13,600		3,300	5,500	8,500	13,600
13,700		3,300	5,500	8,500	13,700
13,800		3,300	5,500	8,500	13,800
13,890	35/64	3,300	5,500	8,500	13,890
14,000		3,400	6,000	9,600	14,000
14,100		3,400	6,000	9,600	14,100
14,290	9/16	3,400	6,000	9,600	14,290
14,400		3,400	6,000	9,600	14,400
14,500		3,600	6,000	9,600	14,500
14,600		3,600	6,000	9,600	14,600
14,680	37/64	3,600	6,000	9,600	14,680
14,700		3,600	6,000	9,600	14,700
14,800		3,600	6,000	9,600	14,800
15,000		3,700	6,000	9,800	15,000
15,080	19/32	3,700	6,000	9,800	15,080
15,100		3,700	6,000	9,800	15,100
15,200		3,700	6,000	9,800	15,200
15,300		3,700	6,000	9,800	15,300
15,480	39/64	3,700	6,000	9,800	15,480
15,500		3,800	6,000	9,800	15,500
15,600		3,800	6,000	9,800	15,600

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
15,700		3,800	6,000	9,800	15,700
15,800		3,800	6,000	9,800	15,800
15,870	5/8	3,800	6,000	9,800	15,870
16,000		3,900	7,000	11,000	16,000
16,270	41/64	3,900	7,000	11,000	16,270
16,500		4,100	7,000	11,000	16,500
16,670	21/32	4,100	7,000	11,000	16,670
17,000		4,200	7,000	11,000	17,000
17,070	43/64	4,200	7,000	11,000	17,070
17,300		4,200	7,000	11,000	17,300
17,460	11/16	4,200	7,000	11,000	17,460
17,500		4,300	7,000	11,000	17,500
17,600		4,300	7,000	11,000	17,600
17,860	45/64	4,300	7,000	11,000	17,860
18,000		4,400	8,000	12,600	18,000
18,260	23/32	4,400	8,000	12,600	18,260
18,500		4,500	8,000	12,600	18,500
18,650	47/64	4,500	8,000	12,600	18,650
18,900		4,500	8,000	12,600	18,900
19,000		4,700	8,000	12,600	19,000
19,050	3/4	4,700	8,000	12,600	19,050
19,250		4,700	8,000	12,600	19,250
19,300		4,700	8,000	12,600	19,300
19,450	49/64	4,700	8,000	12,600	19,450
19,500		4,800	8,000	12,600	19,500
19,600		4,800	8,000	12,600	19,600
19,840	25/32	4,800	8,000	12,600	19,840
20,000		4,900	9,000	13,900	20,000
20,240	51/64	4,900	9,000	13,900	20,240
20,500		5,100	9,000	13,900	20,500
20,640	13/16	5,100	9,000	13,900	20,640
20,900		5,100	9,000	13,900	20,900
21,000		5,200	9,000	13,900	21,000
21,030	53/64	5,200	9,000	13,900	21,030
21,100		5,200	9,000	13,900	21,100
21,430	27/32	5,200	9,000	13,900	21,430
21,500		5,300	9,000	13,900	21,500
21,700		5,300	9,000	13,900	21,700
21,830	55/64	5,300	9,000	13,900	21,830
22,000		5,400	10,000	15,300	22,000
22,220	7/8	5,400	10,000	15,300	22,220
22,500		5,600	10,000	15,300	22,500
22,620	57/64	5,600	10,000	15,300	22,620
22,700		5,600	10,000	15,300	22,700
23,000		5,700	10,000	15,300	23,000
23,020	29/32	5,700	10,000	15,300	23,020
23,420	59/64	5,700	10,000	15,300	23,420
23,500		5,800	10,000	15,300	23,500
23,700		5,800	10,000	15,300	23,700
23,810	15/16	5,800	10,000	15,300	23,810
24,000		6,000	11,000	15,800	24,000
24,100		6,000	11,000	15,800	24,100
24,210	61/64	6,000	11,000	15,800	24,210
24,500		6,100	11,000	15,800	24,500
24,610	31/32	6,100	11,000	15,800	24,610
25,000	63/64	6,200	11,000	15,800	25,000
25,400	1	6,200	11,000	15,800	25,400
25,500		6,300	11,000	15,800	25,500
25,670		6,300	11,000	15,800	25,670
25,700		6,300	11,000	15,800	25,700
25,810		6,300	11,000	15,800	25,810
26,000		6,400	12,000	20,000	26,000
26,190	1 1/32	6,400	12,000	20,000	26,190
26,500		6,500	12,000	20,000	26,500
26,590	1 3/64	6,500	12,000	20,000	26,590
27,000		6,600	12,000	20,000	27,000
27,500		6,700	12,000	20,000	27,500
27,700		6,700	12,000	20,000	27,700
27,780	1 3/32	6,700	12,000	20,000	27,780
28,000		6,800	13,000	20,700	28,000
28,180	1 7/64	6,800	13,000	20,700	28,180
28,500		6,900	13,000	20,700	28,500

FRIZAR
www.frizar.ru

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
28,580		6,900	13,000	20,700	28,580
29,000		7,100	13,000	20,700	29,000
29,370	1 5/32	7,100	13,000	20,700	29,370
29,500		7,200	13,000	20,700	29,500
29,770	1 11/64	7,200	13,000	20,700	29,770
30,000		7,300	14,000	22,300	30,000
30,160	1 3/16	7,300	14,000	22,300	30,160
30,500		7,400	14,000	22,300	30,500
30,960	1 7/32	7,400	14,000	22,300	30,960
31,000		7,500	14,000	22,300	31,000
31,500		7,600	14,000	22,300	31,500
31,750	1 1/4	7,600	14,000	22,300	31,750
32,000		7,700	15,000	23,100	32,000
32,500		7,800	15,000	23,100	32,500
32,540	1 9/32	7,800	15,000	23,100	32,540
32,940	1 19/64	7,800	15,000	23,100	32,940
33,000		7,900	15,000	23,100	33,000
33,340	1 5/16	7,900	15,000	23,100	33,340
33,500		8,100	15,000	23,100	33,500
34,000		8,200	15,000	23,100	34,000
34,130	1 11/32	8,200	15,000	23,100	34,130
34,500		8,400	15,000	23,100	34,500
34,930		8,400	15,000	23,100	34,930
35,000		8,500	15,000	23,100	35,000
35,500		8,600	15,000	23,100	35,500
35,720	1 13/32	8,600	15,000	23,100	35,720
36,000		8,700	16,000	23,900	36,000
36,500		8,800	16,000	23,900	36,500
36,510	1 7/16	8,800	16,000	23,900	36,510
37,000		9,000	16,000	23,900	37,000
37,310	1 15/32	9,000	16,000	23,900	37,310
37,500		9,100	16,000	23,900	37,500
38,000		9,200	16,000	23,900	38,000
38,100	1 1/2	9,200	16,000	23,900	38,100
38,500	1 33/64	9,400	16,000	23,900	38,500
39,000		9,500	16,000	23,900	39,000
39,500		9,700	16,000	23,900	39,500
40,000		9,700	16,000	23,900	40,000

Сменные пластины HT 800

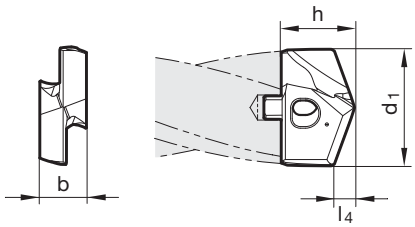
HT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	

P	○	подточка ≥ Ø 11,000 • конусная заточка • режущая кромка прямая (благодаря корректировке) • Зажимные винты вкл. в Арт.-№ 4071
M	●	
K		
N		
S	○	нержавеющие стали
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4115**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600
15,700		2,900	6,000	9,800	15,700
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,700		4,700	11,000	15,800	25,700
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000

Сменные пластины HT 800

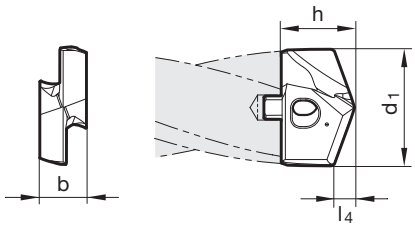
HT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	

P		подточка ≥ Ø 11,000 • конусная заточка • режущая кромка вогнутая • Зажимные винты вкл. в Арт.-№ 4071
M		
K		
N	•	алюминий и алюминиевые сплавы • цветные металлы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 764-768



Артикул № **4114**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,680	37/64	2,700	6,000	9,600	14,680
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,480	39/64	2,900	6,000	9,800	15,480
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600
15,700		2,900	6,000	9,800	15,700

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,670		4,700	11,000	15,800	25,670
25,700		4,700	11,000	15,800	25,700
25,810		4,700	11,000	15,800	25,810
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500

FRIZAR
www.frizar.ru

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
32,940	1 19/64	6,000	15,000	23,100	32,940
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000

Сменные пластины HT 800

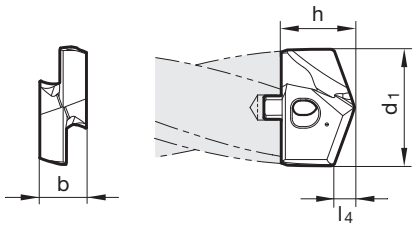
HT 800 WP | WN | R | 145° | m7

Режущий материал	VHM
Покрытие	a
Форма хвостовика	

P	○	подточка ≥ Ø 11,000 • плоскостная заточка • режущая кромка прямая (благодаря корректировке) • Зажимные винты вкл. в Арт.-№ 4071
M	○	
K	○	
N	○	Пилотные отверстия во всех материалах
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 768



Артикул № **4111**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
11,000		1,800	4,500	7,200	11,000
11,200		1,800	4,500	7,200	11,200
11,500		1,900	4,500	7,200	11,500
11,510	29/64	1,900	4,500	7,200	11,510
11,700		1,900	4,500	7,200	11,700
11,800		1,900	4,500	7,200	11,800
11,910	15/32	1,900	4,500	7,200	11,910
12,000		1,900	5,000	7,400	12,000
12,100		2,000	5,000	7,400	12,100
12,200		2,000	5,000	7,400	12,200
12,300	31/64	2,000	5,000	7,400	12,300
12,500		2,000	5,000	7,400	12,500
12,600		2,000	5,000	7,400	12,600
12,700	1/2	2,100	5,000	7,400	12,700
12,800		2,100	5,000	7,400	12,800
12,900		2,100	5,000	7,400	12,900
13,000		2,100	5,500	8,200	13,000
13,100	33/64	2,100	5,500	8,200	13,100
13,490	17/32	2,200	5,500	8,200	13,490
13,500		2,200	5,500	8,200	13,500
13,600		2,200	5,500	8,200	13,600
13,700		2,200	5,500	8,200	13,700
13,800		2,200	5,500	8,200	13,800
13,890	35/64	2,200	5,500	8,200	13,890
14,000		2,300	6,000	9,400	14,000
14,100		2,300	6,000	9,400	14,100
14,290	9/16	2,300	6,000	9,400	14,290
14,400		2,300	6,000	9,400	14,400
14,500		2,300	6,000	9,400	14,500
14,600		2,400	6,000	9,400	14,600
14,680	37/64	2,400	6,000	9,400	14,680
14,700		2,400	6,000	9,400	14,700
14,800		2,400	6,000	9,400	14,800
15,000		2,400	6,000	9,400	15,000
15,080	19/32	2,400	6,000	9,400	15,080
15,100		2,400	6,000	9,400	15,100
15,200		2,400	6,000	9,400	15,200
15,300		2,500	6,000	9,400	15,300
15,480	39/64	2,500	6,000	9,400	15,480
15,500		2,500	6,000	9,400	15,500
15,600		2,500	6,000	9,400	15,600
15,700		2,500	6,000	9,400	15,700

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
15,800		2,500	6,000	9,400	15,800
15,870	5/8	2,600	6,000	9,400	15,870
16,000		2,600	7,000	10,600	16,000
16,270	41/64	2,600	7,000	10,600	16,270
16,500		2,700	7,000	10,600	16,500
16,670	21/32	2,700	7,000	10,600	16,670
17,000		2,700	7,000	10,600	17,000
17,070	43/64	2,700	7,000	10,600	17,070
17,460	11/16	2,800	7,000	10,600	17,460
17,500		2,800	7,000	10,600	17,500
17,600		2,800	7,000	10,600	17,600
17,860	45/64	2,900	7,000	10,600	17,860
18,000		2,900	8,000	12,100	18,000
18,260	23/32	2,900	8,000	12,100	18,260
18,500		3,000	8,000	12,100	18,500
18,650	47/64	3,000	8,000	12,100	18,650
19,000		3,000	8,000	12,100	19,000
19,050	3/4	3,100	8,000	12,100	19,050
19,450	49/64	3,100	8,000	12,100	19,450
19,500		3,100	8,000	12,100	19,500
19,600		3,100	8,000	12,100	19,600
19,840	25/32	3,200	8,000	12,100	19,840
20,000		3,200	9,000	13,300	20,000
20,240	51/64	3,200	9,000	13,300	20,240
20,500		3,300	9,000	13,300	20,500
20,640	13/16	3,300	9,000	13,300	20,640
21,000		3,400	9,000	13,300	21,000
21,030	53/64	3,400	9,000	13,300	21,030
21,100		3,400	9,000	13,300	21,100
21,430	27/32	3,400	9,000	13,300	21,430
21,500		3,400	9,000	13,300	21,500
21,830	55/64	3,500	9,000	13,300	21,830
22,000		3,500	10,000	14,800	22,000
22,220	7/8	3,600	10,000	14,800	22,220
22,500		3,600	10,000	14,800	22,500
22,620	57/64	3,600	10,000	14,800	22,620
23,000		3,700	10,000	14,800	23,000
23,020	29/32	3,700	10,000	14,800	23,020
23,420	59/64	3,700	10,000	14,800	23,420
23,500		3,800	10,000	14,800	23,500
23,810	15/16	3,800	10,000	14,800	23,810
24,000		3,800	11,000	15,300	24,000
24,100		3,800	11,000	15,300	24,100
24,210	61/64	3,900	11,000	15,300	24,210
24,500		3,900	11,000	15,300	24,500
24,610	31/32	3,900	11,000	15,300	24,610
25,000	63/64	4,000	11,000	15,300	25,000
25,400	1	4,100	11,000	15,300	25,400
25,500		4,100	11,000	15,300	25,500
25,700		4,100	11,000	15,300	25,700
26,000		4,100	12,000	19,400	26,000
26,190	1 1/32	4,200	12,000	19,400	26,190
26,500		4,200	12,000	19,400	26,500
26,590	1 3/64	4,200	12,000	19,400	26,590
27,000		4,300	12,000	19,400	27,000
27,500		4,400	12,000	19,400	27,500
27,700		4,400	12,000	19,400	27,700
27,780	1 3/32	4,400	12,000	19,400	27,780
28,000		4,500	13,000	20,100	28,000
28,180	1 7/64	4,500	13,000	20,100	28,180
28,500		4,500	13,000	20,100	28,500
28,580		4,600	13,000	20,100	28,580
29,000		4,600	13,000	20,100	29,000
29,370	1 5/32	4,700	13,000	20,100	29,370
29,500		4,700	13,000	20,100	29,500
30,000		4,800	14,000	21,700	30,000
30,160	1 3/16	4,800	14,000	21,700	30,160
30,500		4,900	14,000	21,700	30,500
30,960	1 7/32	4,900	14,000	21,700	30,960
31,000		4,900	14,000	21,700	31,000
31,500		5,000	14,000	21,700	31,500
31,750	1 1/4	5,100	14,000	21,700	31,750

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
32,000		5,100	15,000	22,400	32,000
32,500		5,200	15,000	22,400	32,500
32,540	1 9/32	5,200	15,000	22,400	32,540
33,000		5,300	15,000	22,400	33,000
33,340	1 5/16	5,300	15,000	22,400	33,340
33,500		5,300	15,000	22,400	33,500
34,000		5,400	15,000	22,400	34,000
34,130	1 11/32	5,400	15,000	22,400	34,130
34,500		5,500	15,000	22,400	34,500
34,930		5,600	15,000	22,400	34,930
35,000		5,600	15,000	22,400	35,000
35,500		5,600	15,000	22,400	35,500
35,720	1 13/32	5,700	15,000	22,400	35,720
36,000		5,700	16,000	23,200	36,000
36,500		5,800	16,000	23,200	36,500
36,510	1 7/16	5,800	16,000	23,200	36,510
37,000		5,900	16,000	23,200	37,000
37,310	1 15/32	5,900	16,000	23,200	37,310
37,500		6,000	16,000	23,200	37,500
38,000		6,000	16,000	23,200	38,000
38,100	1 1/2	6,100	16,000	23,200	38,100
38,500	1 33/64	6,100	16,000	23,200	38,500
39,000		6,200	16,000	23,200	39,000
39,500		6,300	16,000	23,200	39,500
40,000		6,400	16,000	23,200	40,000

Пластины HT 800

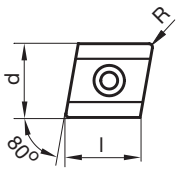
WN R

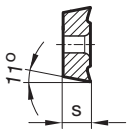
Режущий материал	VHM
Покрытие	S
Форма хвостовика	

P	•
M	○
K	○
N	
S	○
H	○

Зажимные винты не вкл. в Арт.-№ 6128

сталь и стальное литье (легированное и нелегированное)





Артикул № **7645**

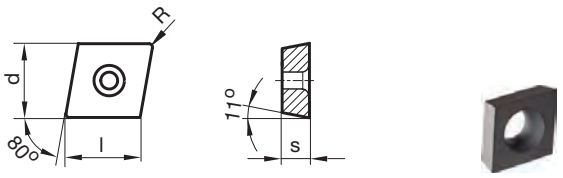
ISO	d	s	R	l	Код-№.
	mm	mm	mm	mm	
CPGT050202FR-P	5,560	2,380	0,200	5,640	52,020
CPGT050204FR-P	5,560	2,380	0,400	5,640	52,040
CPGT060202FR-P	6,350	2,380	0,200	6,450	62,020
CPGT060204FR-P	6,350	2,380	0,400	6,450	62,040
CPGT09T308FR-P	9,525	3,970	0,800	9,670	93,080

Пластины HT 800

WN N

Режущий материал	VHM
Покрытие	A
Форма хвостовика	

P ○	Зажимные винты не вкл. в Арт.-№ 6128
M	
K •	
N	серый чугун, ковкий чугун, высокопрочный чугун
S	
H	



Артикул № **7632**

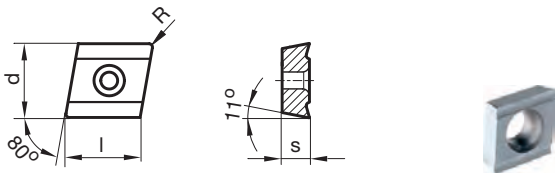
ISO	d	s	R	l	Код-№.
	mm	mm	mm	mm	
CPGW050202FN-K	5,560	2,380	0,200	5,640	52,020
CPGW050204FN-K	5,560	2,380	0,400	5,640	52,040
CPGW060202FN-K	6,350	2,380	0,200	6,450	62,020
CPGW060204FN-K	6,350	2,380	0,400	6,450	62,040
CPGW09T308FN-K	9,525	3,970	0,800	9,670	93,080

Пластины HT 800

WN R

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	

P	Зажимные винты не вкл. в Арт.-№ 6128
M	
K	
N •	алюминий и алюминиевые сплавы • цветные металлы
S	
H	

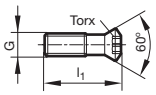


Артикул № **7635**

ISO	d	s	R	l	Код-№.
	mm	mm	mm	mm	
CPGT050202FR-AL	5,560	2,380	0,200	5,640	52,020
CPGT050204FR-AL	5,560	2,380	0,400	5,640	52,040
CPGT060202FR-AL	6,350	2,380	0,200	6,450	62,020
CPGT060204FR-AL	6,350	2,380	0,400	6,450	62,040
CPGT09T308FR-AL	9,525	3,970	0,800	9,670	93,080

Зажимные винты

WN



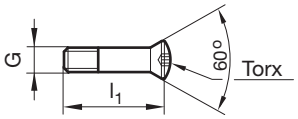
Артикул № **6128**

G	l1	Torx	Код-№.
	mm		
M2 x 5,5	5,500	T6	2,000
M2,2 x 5	5,000	T6	2,200
M2 x 5,3	5,300	T7	2,500
M2,5 x 6,5	6,500	T7	2,501
M2,5 x 5,7	5,700	T7	2,502
M3,5 x 10	10,000	T15	3,500
M3,5 x 12	12,000	T15	3,501
M3,5 x 8,5	8,500	T15	3,502
M3,5 x 8	8,000	T15	3,503
M4 x 13,5	13,500	T15	4,000
M4 x 8,4	8,400	T15	4,001
M4 x 10,8	10,800	T15	4,002
M4 x 0,5	11,000	T15	4,003
M4 x 9,5	9,500	T20	4,004
M4 x 0,5	9,000	T15	4,005
M4 x 9,5	9,500	T15	4,006
M4,5 x 11	11,000	T15	4,500
M4,5 x 7,5	7,500	T15	4,501
M4,5 x 11	11,000	T20	4,502
M5 x 17	17,000	T20	5,000
M5 x 11	11,000	T20	5,001

FRIZAR
www.frizar.ru

Зажимные винты

WN



Артикул № **4071**

G	l1	Torx	Код-№.
	mm		
M1,6	4,000	T5	1,600
M1,6	4,400	T5	1,601
M2,2	9,500	T7	2,200
M2,2	10,500	T7	2,201
M2,2	5,600	T7	2,202
M2,2	4,600	T7	2,203
M2,5	11,400	T8	2,500
M2,5	6,400	T8	2,501
M2,5	5,200	T8	2,502
M3	13,100	T9	3,001
M3	6,400	T9	3,002
M3	8,000	T9	3,003
M3,5	14,250	T10	3,500
M4	16,000	T15	4,000
M4	7,700	T15	4,001
M4	10,600	T15	4,002
M4,5	18,000	T15	4,500
M5	19,750	T20	5,000
M5	21,750	T20	5,001
M5	14,200	T20	5,002
M5	23,400	T20	5,003
M6	27,000	T25	6,000
M6	28,500	T25	6,001
M6	32,500	T25	6,002

Державка RT 800

RT 800 WP | 3xD | WN | R

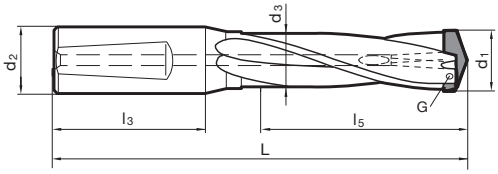
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

подточка ≥ Ø 17,000 • Компактная конструкция • Надёжное крепление сменных пластин в державке • Зажимные винты вкл. в Арт.-№ 1071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **5242**

d1	d2	d3	L	l3	l5	G	Код-№.
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	130,000	50,000	54,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	130,000	50,000	54,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	130,000	50,000	54,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	130,000	50,000	54,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	138,000	50,000	60,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	138,000	50,000	60,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	138,000	50,000	60,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	138,000	50,000	60,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	153,000	56,000	66,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	153,000	56,000	66,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	153,000	56,000	66,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	153,000	56,000	66,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	161,000	56,000	72,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	161,000	56,000	72,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	170,000	56,000	78,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	170,000	56,000	78,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	182,000	60,000	84,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	182,000	60,000	84,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	190,000	60,000	90,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	190,000	60,000	90,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	198,000	60,000	96,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	198,000	60,000	96,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	206,000	60,000	102,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	206,000	60,000	102,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	218,000	60,000	114,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	218,000	60,000	114,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	231,000	60,000	120,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	231,000	60,000	120,000	1071 5.000	40,505

FRIZAR
www.frizar.ru

Державка RT 800

RT 800 WP | 5xD | WN | R

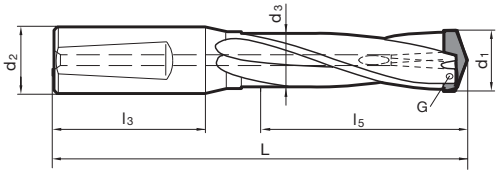
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

подточка ≥ Ø 17,000 • Компактная конструкция • Надёжное крепление сменных пластин в державке • Зажимные винты вкл. в Арт.-№ 1071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **5243**

d1	d2	d3	L	l3	l5	G	Код-№.
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	166,000	50,000	90,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	166,000	50,000	90,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	166,000	50,000	90,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	166,000	50,000	90,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	178,000	50,000	100,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	178,000	50,000	100,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	178,000	50,000	100,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	178,000	50,000	100,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	197,000	56,000	110,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	197,000	56,000	110,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	197,000	56,000	110,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	197,000	56,000	110,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	209,000	56,000	120,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	209,000	56,000	120,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	222,000	56,000	130,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	222,000	56,000	130,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	238,000	60,000	140,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	238,000	60,000	140,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	250,000	60,000	150,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	250,000	60,000	150,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	262,000	60,000	160,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	262,000	60,000	160,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	274,000	60,000	170,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	274,000	60,000	170,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	292,000	60,000	190,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	292,000	60,000	190,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	311,000	60,000	200,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	311,000	60,000	200,000	1071 5.000	40,505

Державка RT 800

RT 800 WP | 7xD | WN | R

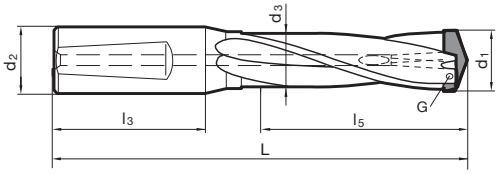
Режущий материал	
Покрытие	Ni
Форма хвостовика	HE

P
M
K
N
S
H

подточка ≥ Ø 17,000 • Компактная конструкция • Надёжное крепление сменных пластин в державке • Зажимные винты вкл. в Арт.-№ 1071 • Отвёртка вкл. в Арт.-№ 1612

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **5248**

d1	d2	d3	L	l3	l5	G	Код-№.
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	202,000	50,000	126,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	202,000	50,000	126,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	202,000	50,000	126,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	202,000	50,000	126,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	218,000	50,000	140,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	218,000	50,000	140,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	218,000	50,000	140,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	218,000	50,000	140,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	241,000	56,000	154,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	241,000	56,000	154,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	241,000	56,000	154,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	241,000	56,000	154,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	257,000	56,000	168,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	257,000	56,000	168,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	274,000	56,000	182,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	274,000	56,000	182,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	294,000	60,000	196,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	294,000	60,000	196,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	310,000	60,000	210,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	310,000	60,000	210,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	326,000	60,000	224,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	326,000	60,000	224,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	342,000	60,000	238,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	342,000	60,000	238,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	366,000	60,000	266,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	366,000	60,000	266,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	391,000	60,000	280,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	391,000	60,000	280,000	1071 5.000	40,505

Сменные пластины RT 800

RT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	S
Форма хвостовика	

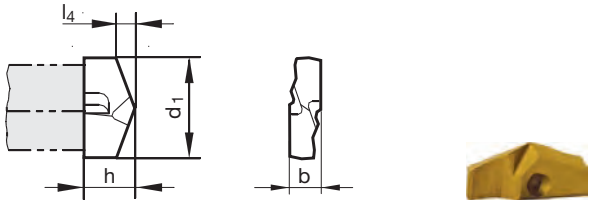
P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 16,000 • конусная заточка • режущая кромка вогнутая • Зажимные винты вкл. в Арт.-№ 1071

сталь прочностью до 1000 Н/мм²

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **1047**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000
16,270	41/64	3,000	4,500	8,000	16,270
16,500		3,100	4,500	8,000	16,500
16,670	21/32	3,100	4,500	8,000	16,670
17,000		3,100	4,500	8,000	17,000
17,070	43/64	3,200	4,500	8,000	17,070
17,460	11/16	3,200	4,500	8,000	17,460
17,500		3,200	4,500	8,000	17,500
17,860	45/64	3,300	4,500	8,000	17,860
18,000		3,300	5,000	8,000	18,000
18,260	23/32	3,400	5,000	8,000	18,260
18,500		3,400	5,000	8,000	18,500
18,650	47/64	3,400	5,000	8,000	18,650
19,000		3,500	5,000	8,000	19,000
19,050	3/4	3,500	5,000	8,000	19,050
19,250		3,600	5,000	8,000	19,250
19,450	49/64	3,600	5,000	8,000	19,450
19,500		3,600	5,000	8,000	19,500
19,840	25/32	3,700	5,000	8,000	19,840
20,000		3,700	5,000	8,000	20,000
20,240	51/64	3,700	5,500	8,800	20,240
20,500		3,800	5,500	8,800	20,500
20,640	13/16	3,800	5,500	8,800	20,640
21,000		3,900	5,500	8,800	21,000
21,030	53/64	3,900	5,500	8,800	21,030
21,430	27/32	3,900	5,500	8,800	21,430
21,500		4,000	5,500	8,800	21,500
21,830	55/64	4,000	5,500	8,800	21,830
22,000		4,100	5,500	8,800	22,000
22,220	7/8	4,100	5,500	8,800	22,220
22,500		4,100	5,500	8,800	22,500
22,620	57/64	4,200	6,300	10,000	22,620
23,000		4,200	6,300	10,000	23,000
23,020	29/32	4,200	6,300	10,000	23,020
23,420	59/64	4,300	6,300	10,000	23,420
23,500		4,300	6,300	10,000	23,500
23,810	15/16	4,400	6,300	10,000	23,810
24,000		4,400	6,300	10,000	24,000
24,210	61/64	4,500	6,300	10,000	24,210
24,500		4,500	6,300	10,000	24,500
24,610	31/32	4,500	6,300	10,000	24,610
25,000	63/64	4,600	6,300	10,000	25,000

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
25,400	1	4,700	6,300	10,000	25,400
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
28,500		5,200	7,300	11,600	28,500
29,000		5,300	7,300	11,600	29,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
37,500		6,900	10,000	16,000	37,500
38,000		7,000	10,000	16,000	38,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000
40,500		7,400	10,000	16,000	40,500

Сменные пластины RT 800

RT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	F
Форма хвостовика	

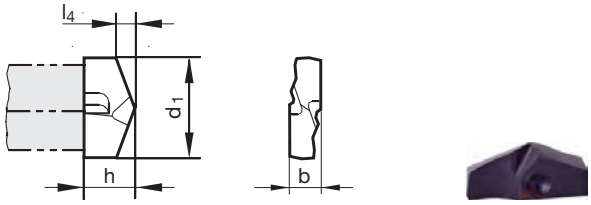
P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 16,000 • конусная заточка • режущая кромка вогнутая • Зажимные винты вкл. в Арт.-№ 1071

сталь прочностью до 1000 Н/мм²

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **2485**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000
16,270	41/64	3,000	4,500	8,000	16,270
16,500		3,100	4,500	8,000	16,500
16,670	21/32	3,100	4,500	8,000	16,670
17,000		3,100	4,500	8,000	17,000
17,070	43/64	3,200	4,500	8,000	17,070
17,460	11/16	3,200	4,500	8,000	17,460
17,500		3,200	4,500	8,000	17,500
17,860	45/64	3,300	4,500	8,000	17,860
18,000		3,300	5,000	8,000	18,000
18,260	23/32	3,400	5,000	8,000	18,260
18,500		3,400	5,000	8,000	18,500
18,650	47/64	3,400	5,000	8,000	18,650
19,000		3,500	5,000	8,000	19,000
19,050	3/4	3,500	5,000	8,000	19,050
19,250		3,600	5,000	8,000	19,250
19,450	49/64	3,600	5,000	8,000	19,450
19,500		3,600	5,000	8,000	19,500
19,840	25/32	3,700	5,000	8,000	19,840
20,000		3,700	5,000	8,000	20,000
20,240	51/64	3,700	5,500	8,800	20,240
20,500		3,800	5,500	8,800	20,500
20,640	13/16	3,800	5,500	8,800	20,640
21,000		3,900	5,500	8,800	21,000
21,030	53/64	3,900	5,500	8,800	21,030
21,430	27/32	3,900	5,500	8,800	21,430
21,500		4,000	5,500	8,800	21,500
21,830	55/64	4,000	5,500	8,800	21,830
22,000		4,100	5,500	8,800	22,000
22,220	7/8	4,100	5,500	8,800	22,220
22,500		4,100	5,500	8,800	22,500
22,620	57/64	4,200	6,300	10,000	22,620
23,000		4,200	6,300	10,000	23,000
23,020	29/32	4,200	6,300	10,000	23,020
23,420	59/64	4,300	6,300	10,000	23,420
23,500		4,300	6,300	10,000	23,500
23,810	15/16	4,400	6,300	10,000	23,810
24,000		4,400	6,300	10,000	24,000
24,210	61/64	4,500	6,300	10,000	24,210
24,500		4,500	6,300	10,000	24,500
24,610	31/32	4,500	6,300	10,000	24,610
25,000	63/64	4,600	6,300	10,000	25,000

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
25,400	1	4,700	6,300	10,000	25,400
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
28,500		5,200	7,300	11,600	28,500
29,000		5,300	7,300	11,600	29,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
37,500		6,900	10,000	16,000	37,500
38,000		7,000	10,000	16,000	38,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000
40,500		7,400	10,000	16,000	40,500

Сменные пластины RT 800

RT 800 WP | WN | R | 140° | h7

Режущий материал	VHM
Покрытие	◯
Форма хвостовика	

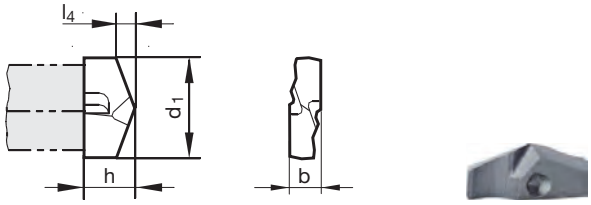
P
M
K ○
N ●
S
H

подточка ≥ Ø 16,000 • конусная заточка • режущая кромка вогнутая • Зажимные винты вкл. в Арт.-№ 1071

литье и AlSi - сплавы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 770



Артикул № **2747**

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000
16,500		3,100	4,500	8,000	16,500
17,000		3,100	4,500	8,000	17,000
17,070	43/64	3,200	4,500	8,000	17,070
17,500		3,200	4,500	8,000	17,500
18,000		3,300	5,000	8,000	18,000
18,260	23/32	3,400	5,000	8,000	18,260
18,650	47/64	3,400	5,000	8,000	18,650
19,000		3,500	5,000	8,000	19,000
19,050	3/4	3,500	5,000	8,000	19,050
19,250		3,600	5,000	8,000	19,250
19,450	49/64	3,600	5,000	8,000	19,450
19,500		3,600	5,000	8,000	19,500
19,840	25/32	3,700	5,000	8,000	19,840
20,000		3,700	5,000	8,000	20,000
20,500		3,800	5,500	8,800	20,500
20,640	13/16	3,800	5,500	8,800	20,640
21,000		3,900	5,500	8,800	21,000
21,030	53/64	3,900	5,500	8,800	21,030
21,430	27/32	3,900	5,500	8,800	21,430
21,830	55/64	4,000	5,500	8,800	21,830
22,000		4,100	5,500	8,800	22,000
23,000		4,200	6,300	10,000	23,000
23,420	59/64	4,300	6,300	10,000	23,420
23,500		4,300	6,300	10,000	23,500
24,000		4,400	6,300	10,000	24,000
24,210	61/64	4,500	6,300	10,000	24,210
24,500		4,500	6,300	10,000	24,500
25,000	63/64	4,600	6,300	10,000	25,000
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500

d1		l4	b	h	Код-№.
mm	inch	mm	mm	mm	
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000

FRIZAR
www.frizar.ru

Зажимные винты RT 800

WN

Артикул № **1071**

G	l1	Torx	Код-№.
	mm		
M3 x 0,35	7,000	T6	3,000
M3 x 0,35	6,000	T6	3,006
M3,5 x 0,35	8,000	T7	3,500
M4 x 0,5	9,000	T8	4,000
M4 x 0,5	10,000	T8	4,500
M5 x 0,5	11,000	T10	5,000

Динамометрический ключ

WN

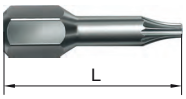
Артикул № **4915**

Привод			Тип	Код-№.
		Nm		
1/4»	шестигранник	0,4-1	A	1,001
1/4»	шестигранник	0,8-2	A	2,000
1/4»	шестигранник	1-5	A	5,001
1/4»	шестигранник	2-8	A	8,000
1/4»	шестигранник	12	D	12,000
1/4»	шестигранник	5-14	D	14,000
3/8»	квадрат	5-50	B	50,000
1/2»	квадрат	20-200	C	200,000

FRIZAR
www.frizar.ru

Вставки Torx-Bit

WN

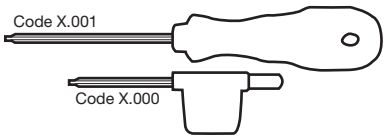


Артикул № **4917**

Привод		Torx	L	Код №
			mm	
1/4	шестигранник	T5	25,000	5,000
1/4	шестигранник	T6	25,000	6,000
1/4	шестигранник	T7	25,000	7,000
1/4	шестигранник	T8	25,000	8,000
1/4	шестигранник	T9	25,000	9,000
1/4	шестигранник	T10	25,000	10,000
1/4	шестигранник	T15	25,000	15,000
1/4	шестигранник	T20	25,000	20,000
1/2	квадрат	T25	25,000	25,000

Отвертки Torx

WN



Артикул № **1612**

Torx	Код-№.
T5	5,001
T6	6,000
T6	6,001
T7	7,001
T8	8,000
T8	8,001
T9	9,001
T10	10,001
T15	15,000
T15	15,001
T20	20,001
T25	25,001
T30	30,001

HT 800 WP

Пожалуйста, соблюдайте следующие указания и рекомендации по применению ситем Guhring HT 800 WP:

При замене пластины рекомендуется также заменить зажимной винт! Каждый корпус сверла снабжен зажимным винтом , арт. 4071, и отверткой, арт. 1612. Каждый сменная пластина также поставляется с зажимным винтом, арт. 4071.

При замене пластины необходимо соблюдать правила затяжки для зажимного винта. Это является необходимым условием для достижения оптимальных результатов обработки!

диапазон диаметров	**11,0 - 12,99**	**13,0 - 13,99**	**14,0 - 15,99**	**16,0 - 17,99**	**18,0 - 19,99**	**20,0 - 21,99**	**22,0 - 29,99**	**30,0 - 40,00**
Резьба	M2,2	M2,5	M3	M3,5	M4	M4,5	M5	M6
Размер Torx	T7	T8	T9	T10	T15	T15	T20	T25
Момент затяжки [Нм]	**0,8**	**1,0**	**1,7**	**2,7**	**4,0**	**6,0**	**8,0**	**14,0**

Детали применяются для фиксации резьбы (Loctite)!

- Для сквозных отверстий направляющие элементы пластины должны оставаться в постоянном контакте с деталью. Кроме того, мы рекомендуем уменьшить подачу и скорость на выходе.
- Для сверления глубин свыше 5xD мы обычно рекомендуем обработку с центровкой или пилотным отверстием, например с использованием корпуса, арт. 4105, и пилотной пластиной, арт. 4111. В качестве альтернативы, в зависимости от обрабатываемого материала, могут быть применены сверла типа RT100U или RT100VA.
- Для сверления без центровки и пилота рекомендуется уменьшить скорость и подачу в начале сверления.
- Не применять сверла без тестирования на пересекающихся отверстиях (канавках, поперечных отверстий и т.п.). Для пересекающихся отверстий (макс. 0,2xD) рекомендуется уменьшить скорость и подачу до минимума.
- В отличие от обычных режущих пластин, HT 800 также пригодны для сверления пакетированных листов.
- На токарном станке (стационарно установленный инструмент) необходимо убедиться в том, что сверло выставлено точно по центру.
- Важным условием для достижения оптимальных результатов обработки является достаточная подача СОТС
- Инструмент имеет ограниченную пригодность для сухой обработки или MQL. Для применения с MQL мы рекомендуем использовать конический MQL хвостовик, а также компоненты фирмы Gühring MQL. Пожалуйста, свяжитесь с отделом продаж.

RT 800 WP

Пожалуйста, соблюдайте следующие указания и рекомендации по применению RT 800 WP Guhring:

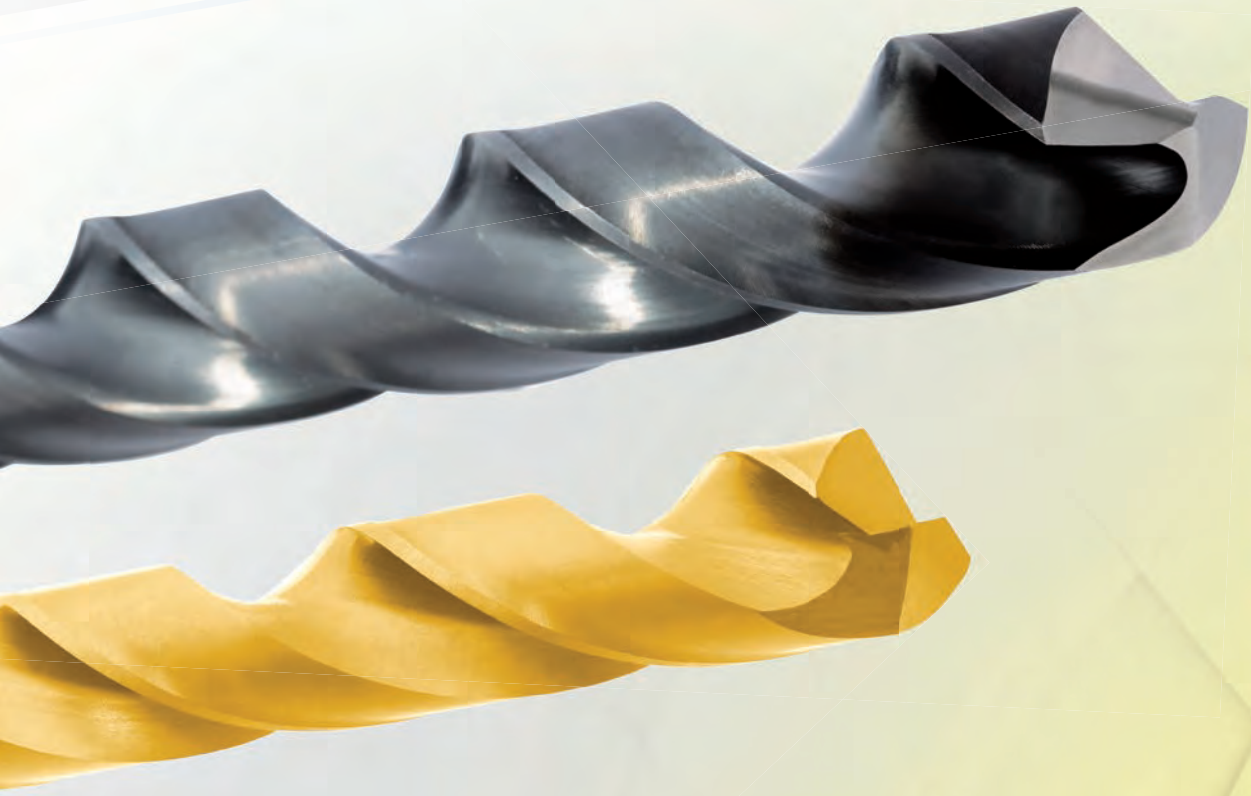
- Для сквозных отверстий направляющие элементы пластины должны оставаться в постоянном контакте.
- Для отверстий 7xD , центрирование рекомендуется с равным или большим углом чем 140 ° до мин. 2/3 от диаметра режущей пластины.
- Не применять сверла без тестирования на пересекающихся отверстиях (канавках, поперечных отверстий и т.п.). Для пересекающихся отверстий (макс. 0,2xD) рекомендуется уменьшить скорость и подачу до минимума.
- В отличие от обычных режущих пластин, RT 800 также пригодны для сверления пакетированных листов.
- При замене пластин рекомендуется также заменить оригинальный зажимной винт (со специальными резьбовыми замками).

HR 500 T

Твердосплавные высокопроизводительные развертки выполнены с хвостовиком HA, благодаря чему возможно их применение в плавающих патронах

Дополнительную информацию можно найти в каталоге разверток.

СПИРАЛЬНЫЕ СВЕРЛА С ЦИЛИНДРИЧЕСКИМ ХВОСТОВИКОМ



FRIZAR
www.frizar.ru

Спиральные сверла, короткие

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
●		●	○				~3xD	DIN 1897	N	R	HSS	>Ø 2,36	0,350 - 44,000	223	772	192
●		●	○				~3xD	DIN 1897	N	R	HSS	S	0,500 - 30,160	653	772	196
●		●	●				~3xD	DIN 1897	N	R	HSS	F	1,000 - 15,000	2460	772	199
●		●	○				~3xD	DIN 1897	N	L	HSS	>Ø 6,00	0,320 - 50,000	226	772	200
●		●	○				~3xD	DIN 1897	N	L	HSS	S	0,900 - 13,000	672	772	203
			●				~3xD	DIN 1897	H	R	HSS		0,690 - 21,000	224	772	204
			●				~3xD	DIN 1897	H	L	HSS		0,750 - 24,000	227	772	206
			●				~3xD	DIN 1897	W	R	HSS		1,000 - 20,000	225	772	208
			●				~3xD	DIN 1897	W	L	HSS		1,000 - 20,000	228	772	210
●	○	○	●				~3xD	DIN 1897	GT 80	R	HSS	>Ø 16,0	1,000 - 20,000	552	772	212
●	○	○	●				~3xD	DIN 1897	GT 80	L	HSS	>Ø 16,0	1,000 - 19,840	553	772	215
●	●	●	○	●	○		~3xD	DIN 1897	GV 120	R	HSCO	>Ø 2,36	0,400 - 48,000	329	772	218
●	●	●	○	●	○		~3xD	DIN 1897	GV 120	R	HSCO	S	0,500 - 15,500	659	774	222
●	●	●	○	●	○		~3xD	DIN 1897	GV 120	R	HSCO	F	1,000 - 13,000	2461	774	224
●	●	●	○	●	○		~3xD	DIN 1897	GV 120	L	HSCO	>Ø 6,00	0,450 - 32,000	330	772	225
●	○	○	○				~3xD	DIN 1897	GT 80	R	HSCO	S	1,000 - 20,000	1228	774	227
●	○	○	○				~3xD	DIN 1897	GT 80	R	HSCO	F	1,000 - 16,000	2498	774	229
○	●		○	○			~3xD	DIN 1897	VA	R	HSCO		1,000 - 12,000	1261	772	230
○	●	○	○	●			~3xD	DIN 1897	VA	R	HSCO	S	1,000 - 13,000	572	774	231
●	○	○	○				~3xD	DIN 1897	P2000	R	HSCO	M	1,000 - 13,000	2048	774	233
●	○	○	●	●	○		~3xD	DIN 1897	N	R	M42		1,000 - 15,870	1259	772	235
●	○	●	○	○	○		~3xD	DIN 1897	GT 500	R	HSS-E-PM	F	1,000 - 14,290	515	774	237
○	○	○	●	○			3xD	DIN 6539	N	R	VHM		0,500 - 16,000	730	776	239
○	○	○	●	○			~3xD	DIN 6539	N	R	VHM	F	1,000 - 16,000	2463	776	241

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла, короткие																
							~3xD	WN	N	R	VHM		0,500 - 6,500	702	776	243
Спиральные сверла, средние																
•		•	○				~5xD	DIN 338	N	R	HSS	>Ø 2,36	0,200 - 20,000	205	778	244
•		•	○				~5xD	DIN 338	N	R	HSS	S	0,200 - 19,000	651	780	250
•		•	•				~5xD	DIN 338	N	R	HSS	F	1,000 - 14,500	2456	780	254
•		•	○				~5xD	DIN 338	N	R	HSS		2,400 - 5,610	560	778	256
•		•	○				~5xD	DIN 338	N	R	HSS		3,000 - 16,000	240	778	257
•		•	○				~5xD	DIN 338	N	L	HSS	>Ø 6,00	0,200 - 20,000	208	778	258
•		•	○				~5xD	DIN 338	N	L	HSS	S	0,250 - 14,250	664	780	261
			•				~5xD	DIN 338	H	R	HSS		0,200 - 20,000	206	778	263
			•				~5xD	DIN 338	H	L	HSS		0,300 - 20,000	209	778	266
			•				~5xD	DIN 338	W	R	HSS		0,200 - 20,000	207	778	269
			•				~5xD	DIN 338	W	L	HSS		0,250 - 20,000	210	778	272
•		•	•				~5xD	DIN 338	GT 100	R	HSS	>Ø 2,36	0,600 - 16,000	549	778	274
•		•	•				~5xD	DIN 338	GT 100	R	HSS	S	1,000 - 15,000	652	780	277
•		•	•				~5xD	DIN 338	GT 100	R	HSS	F	1,000 - 15,000	2457	780	280
•		•	•				~5xD	DIN 338	GT 100	L	HSS	>Ø 2,36	1,000 - 15,500	550	778	281
•		•	•				~5xD	DIN 338	GT 100	L	HSS	S	1,300 - 9,800	665	780	283
•	○	•	○				~5xD	DIN 338	N	R	HSCO	>Ø 2,36	0,200 - 20,000	305	780	284
•	○	•	○				~5xD	DIN 338	N	R	HSCO	S	1,200 - 13,000	2997	782	288
•	○	•	○				~5xD	DIN 338	N	L	HSCO	>Ø 6,00	0,360 - 18,500	308	780	289
•	○	•	•				~5xD	DIN 338	GT 100	R	HSCO	>Ø 2,36	1,000 - 16,000	622	780	291
•	○	•	○				~5xD	DIN 338	GT 100	R	HSCO	S	1,000 - 15,000	658	782	294
•	○	•	•		○		~5xD	DIN 338	GT 100	R	HSCO	F	1,000 - 14,000	2459	782	296

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла, средние																
●		○					~5xD	DIN 338	GT 100	R	HSCO	C	3,000 - 11,910	1221	782	298
○		●	○				~5xD	DIN 338	GT 100	R	HSCO	A	3,000 - 12,000	1223	782	299
○	●			●			~5xD	DIN 338	Ti	R	HSCO		0,200 - 19,000	605	780	301
○	●			●			~5xD	DIN 338	Ti	R	HSCO	S	0,500 - 14,500	657	782	304
○	●			●			~5xD	DIN 338	Ti	R	HSCO	F	0,400 - 15,000	2458	782	306
○	●			●			~5xD	DIN 338	Ti	L	HSCO		1,300 - 9,500	608	780	308
○	●		○	○			~5xD	DIN 338	VA	R	HSCO		1,000 - 13,000	1260	780	309
●	○	○	○				~5xD	DIN 338	P2000	R	HSCO		1,000 - 13,000	2047	784	311
●	●	●	●	●	○		~5xD	DIN 338	AeroX	R	M42		1,000 - 13,000	1018	784	313
●	○	○	●	●	○		~5xD	DIN 338	N	R	M42		0,400 - 16,000	1146	780	315
●	●	●	○	●			~5xD	DIN 338	N	R	M42	F	1,000 - 16,000	1199	784	317
○	○	○	●	○			~5xD	WN	N	R	VHM		1,000 - 12,700	732	784	319
○	○	○	●	○			~5xD	WN	N	R	VHM	F	1,000 - 12,700	2464	784	321
○		○			●		~5xD	WN	Duro 150	R	HM		3,000 - 14,000	710	776	323
Сверла под кондукторную втулку																
●		●	○				~10xD	DIN 339	N	R	HSS	>Ø 2,36	0,800 - 20,000	211	786	325
●		●	○				~10xD	DIN 339	N	R	HSS		2,400 - 5,000	561	786	327
●		●	●				~10xD	DIN 339	N	R	HSS	S	1,000 - 13,000	666	786	328
●	○	●	●	○			~10xD	DIN 339	N	R	HSCO	>Ø 2,36	1,100 - 19,000	311	792	330
Спиральные сверла, длинные																
●		●	○				~10xD	DIN 340	N	R	HSS	>Ø 2,36	0,400 - 36,510	217	786	331
●		●	○				~10xD	DIN 340	N	R	HSS	S	0,500 - 22,220	667	786	334
●		●	○				~10xD	DIN 340	N	L	HSS	>Ø 6,00	0,450 - 29,000	220	786	336
●		●	○				~10xD	DIN 340	N	R	HSS		2,950 - 25,250	204	786	338
			●				~10xD	DIN 340	H	R	HSS		0,500 - 16,000	218	786	339

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла, длинные																
			•				~10xD	DIN 340	H	L	HSS		0,450 - 15,000	221	786	341
			•				~10xD	DIN 340	W	R	HSS		0,500 - 20,640	219	786	342
•		•	•				~10xD	DIN 340	GT 100	R	HSS	>Ø 2,36	1,000 - 14,000	535	786	344
•		•	•				~10xD	DIN 340	GT 100	R	HSS	S	1,000 - 14,000	668	786	347
•		•	•				~10xD	DIN 340	GT 100	R	HSS	F	1,000 - 10,000	2462	786	349
•		•	•				~10xD	DIN 340	GT 100	L	HSS	>Ø 2,36	1,400 - 13,000	506	786	350
○			•				~10xD	DIN 340	GT 50	R	HSS		1,000 - 32,600	501	786	351
•	○	•	•	○			~10xD	DIN 340	N	R	HSCO	>Ø 2,36	0,500 - 22,000	317	792	353
•	•	•	•		○		~10xD	DIN 340	GT 100	R	HSCO	>Ø 2,36	1,000 - 16,000	336	792	355
•	•	•	•		○		~10xD	DIN 340	GT 100	R	HSCO	F	1,000 - 12,000	396	792	357
○	•			•			~10xD	DIN 340	Ti	R	HSCO		1,000 - 15,000	617	792	358
○	•			•			~10xD	DIN 340	Ti	R	HSCO	S	1,000 - 10,200	669	792	360
							~10xD	WN	N	R	VHM		0,500 - 1,450	706	792	362
Спиральные сверла сверхдлинные, серия 1																
•		•	○				~15xD	DIN 1869	N	R	HSS	>Ø 2,36	1,600 - 13,000	235	788	363
•		•	•				~15xD	DIN 1869	GT 100	R	HSS	>Ø 2,36	1,950 - 13,000	502	790	365
•		•	•	○			~15xD	DIN 1869	GT 100	R	HSS	S	2,000 - 12,700	670	790	367
○			•				~15xD	DIN 1869	GT 50	R	HSS		2,000 - 12,700	524	788	368
•	•	•	•	•	○		~15xD	DIN 1869	GT 100	R	HSCO		2,700 - 10,000	618	794	370
Спиральные сверла сверхдлинные, серия 2																
•		•	○				~20xD	DIN 1869	N	R	HSS		2,700 - 13,000	236	788	371
•		•	•				~20xD	DIN 1869	GT 100	R	HSS	>Ø 2,36	2,000 - 13,000	503	790	372
•		•	•	○			~20xD	DIN 1869	GT 100	R	HSS	S	2,700 - 8,500	671	790	374
○			•				~20xD	DIN 1869	GT 50	R	HSS		3,000 - 13,000	528	788	375
•	•	•	•	•	○		~20xD	DIN 1869	GT 100	R	HSCO		3,000 - 10,000	619	794	376

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла сверхдлинные, серия 3																
•		•	○				~25xD	DIN 1869	N	R	HSS		3,500 - 13,000	237	788	377
•		•	•				~25xD	DIN 1869	GT 100	R	HSS		2,500 - 13,000	504	790	378
○			•				~25xD	DIN 1869	GT 50	R	HSS		2,500 - 10,000	529	788	379
•	•	•	•	•	○		~25xD	DIN 1869	GT 100	R	HSCO		2,500 - 13,000	571	794	380
Спиральные сверла сверхдлинные																
•		•	•				>25xD	WN	GT 100	R	HSS		6,000 - 12,000	242	790	381
•		•	•				>25xD	WN	GT 100	R	HSS		8,000 - 12,000	243	790	382
•		•	•				>25xD	WN	GT 100	R	HSS		10,000 - 12,000	244	790	383
Спиральные сверла с усиленным хвостовиком																
•	•	•	•				~3xD	WN	GU 500	R	HSCO	S	2,000 - 20,000	512	774	384
•	•	•	•				~5xD	WN	GU 500	R	HSCO	S	2,000 - 20,000	511	784	386
•	○	•	○	○	○		~5xD	WN	GT 500	R	HSS-E-PM	F	2,000 - 12,900	513	784	388
○		○			•		~3xD	DIN 6537 K	H	R	VHM	A	2,600 - 14,100	1946	776	389
Спиральные сверла, длина 6 дюймов																
•		•	•					NAS 907	N	R	HSS		1,500 - 8,000	577		390
•		•	•					NAS 907	N	R	HSS	>Ø 2,36	1,500 - 8,000	579		391
Свёрла глубокого сверления, длина 12 дюймов																
•		•	•					NAS 907	N	R	HSS		1,500 - 8,000	578		392
•		•	•					NAS 907	N	R	HSS	>Ø 2,36	1,500 - 8,000	580		393
Спиральные сверла с каналами COTC																
•	○	•	•	○			~10xD	WN	N	R	HSS		3,000 - 13,000	390	788	394
•	•	•	•	•	○		~5xD	WN	GT 80 IK	R	HSCO		5,000 - 20,000	1131	784	395
•	•	•	•	•	○		~5xD	WN	GT 80 IK	R	HSCO	S	5,000 - 20,000	1132	784	396
Спиральные микросверла без каналов COTC HSS-E-PM																
•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM		0,050 - 1,920	301	796	397
•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM	S	0,160 - 1,900	660	796	400

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные микросверла без каналов COTC HSS-E-PM																
•	•	•	•	○			~5xD	DIN 1899	N	L	HSS-E-PM	○	0,130 - 1,850	303	796	402
Спиральные микросверла без каналов COTC VHM																
•	○	•	○	○	○		~5xD	WN	N	R	VHM	○	0,200 - 1,400	701	796	404
•		•						WN	N	R	VHM	A	0,100 - 3,000	3899	796	405
ExclusiveLine микросверла без каналов COTC VHM																
•	•	•	○	○			4xD	WN	N	R	VHM	A	0,500 - 3,000	6400	796	407
•	•	•	○	○			7xD	WN	N	R	VHM	A	0,500 - 3,000	6401	796	408
ExclusiveLine микросверла с каналами COTC VHM																
•	•	•	○	○			5xD	WN	N	R	VHM	A	1,400 - 3,000	6405	796	409
•	•	•	○	○			8xD	WN	N	R	VHM	A	1,400 - 3,000	6408	796	410
•	•	•	○	○			15xD	WN	N	R	VHM	A	1,400 - 3,000	6412	796	411
Спиральные сверла короткие, хвостовик Ø 12,7 мм																
•		•	○					WN	N	R	HSS	●	13,000 - 28,570	268	778	412
Спиральные полуфабрикаты без заточки, хв. Ø 16,0 мм																
•	•	○	○	○				WN	V72	R	HSCO	○	16,000 - 40,000	128	772	413
Спиральные полуфабрикаты без заточки, хв. Ø 25,4 мм																
•	•	○	○	○				WN	V72	R	HSCO	○	25,000 - 40,000	129	772	414
•	•	○	○	○				WN	V72	L	HSCO	○	25,000 - 39,000	136	772	415
Спиральные сверла для отверстий под штифт																
•	○	•	○					DIN 1898	N	R	HSS	>Ø 2,36	2,000 - 12,000	531		416
Наборы сверл																
•		•	○				~5xD	DIN 338	N	R	HSS	>Ø 2,36		201		417

FRIZAR
www.frizar.ru

Наборы сверл

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
●		●	○				~5xD	DIN 338	N	R	HSS	>Ø 2,36		200		418
●		●	○				~5xD	DIN 338	N	R	HSS	S		17		419
●	○	●	○				~5xD	DIN 338	N	R	HSCO			16		420
○	●			●			~5xD	DIN 338	Ti	R	HSCO			18		421
○	●		○	○			~5xD	DIN 338	VA	R	HSCO			195		422
●	○	○	○				~5xD	DIN 338	P2000	R	HSCO			2049		423
●	○	○	○				~3xD	DIN 1897	P2000	R	HSCO	M		2050		424
●	●	●	●	●	○		~5xD	DIN 338	AeroX	R	M42			1083		425

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Наборы сверл																
								WN						36		426
								WN						73		427
								WN						11		428
Спиральные сверла с впайными твердосплавными пластинами																
○		○			○			DIN 8037	N	R	HM	◯	1,700 - 24,000	703	776	429
								DIN 8038	N	R	HM	◯	1,900 - 24,000	704	776	430
Спиральные свёрла FK																
								WN	FK	R	VHM	◯	2,500 - 10,000	1149	776	431
Перовые сверла с впайной твердосплавной пластиной																
○		○			○			WN	H	R	HM	◯	3,000 - 12,000	707	776	432
Сверла для камня с впайной твердосплавной пластиной																
								WN	N	R	HM	◯	4,000 - 12,000	716		433

P СТАЛИ

~ 3xD DIN 1897	~ 5xD DIN 338	~10xD DIN 340	~15xD DIN 1869 R1
	No 1 Ø 1,00 - 14,00 мм Артикул № 2459 со стр. 296 F S C A	No 1 Ø 1,00 - 12,00 мм Артикул № 396 со стр. 357 F	No 1 Ø 2,70 - 10,00 мм Артикул № 618 со стр. 370
	Ø 1,00 - 15,00 мм Артикул № 2457 со стр. 280 F S	Ø 1,00 - 10,00 мм Артикул № 2462 со стр. 349 F S	Ø 2,00 - 12,70 мм Артикул № 670 со стр. 367 S
No 1 Ø 1,00 - 13,00 мм Артикул № 2461 со стр. 224 F S			
Ø 1,00 - 15,00 мм Артикул № 2460 со стр. 199 F S	Ø 1,00 - 14,50 мм Артикул № 2456 со стр. 254 F S	Ø 0,50 - 22,22 мм Артикул № 667 со стр. 334 S	Ø 1,60 - 13,00 мм Артикул № 235 со стр. 363
	Ø 1,20 - 13,00 мм Артикул № 2997 со стр. 288 S	Ø 0,50 - 22,00 мм Артикул № 317 со стр. 353	
No 1 Ø 2,00 - 20,00 мм Артикул № 512 со стр. 384 S	No 1 Ø 2,00 - 20,00 мм Артикул № 511 со стр. 386 S		
	Ø 2,00 - 12,90 мм Артикул № 513 со стр. 388 F		
	No 1 Ø 5,00 - 20,00 мм Артикул № 1132 со стр. 396 S		

ДЛЯ СОКРАЩЕНИЯ РУЧНЫХ ОПЕРАЦИЙ ПРИ ЗАЖИМЕ

ДЛЯ ИСПОЛЬЗОВАНИЯ С ВНУТРЕННИМ ОХЛАЖДЕНИЕМ

Спиральные сверла с цилиндрическим хвостовиком

цилиндрический хвостовик

усиленный цилиндрический хвостовик

с внутренним охлаждением

QUICKFINDER

~20xD DIN 1869 R2	~25xD DIN 1869 R3	>25xD СТП очень длинный	No 1 Идеальный инструмент
No 1 Ø 3,00 - 10,00 мм Артикул № 619 со стр. 376	No 1 Ø 2,50 - 13,00 мм Артикул № 571 со стр. 380		GT100, HSCO
Ø 2,70 - 8,50 мм Артикул № 671 со стр. 374	Ø 2,50 - 13,00 мм Артикул № 504 со стр. 378	No 1 Ø 6,00 - 12,00 мм Артикул № 242 со стр. 381	GT100, HSS
			GV120, HSCO
Ø 2,70 - 13,00 мм Артикул № 236 со стр. 371	Ø 3,50 - 13,00 мм Артикул № 237 со стр. 377		Тип N, HSS
			Тип N, HSCO
			GU500, HSCO
			GT500, HSS-E-PM
			GT80IK, HSCO

FRIZAR
www.frizar.ru

M НЕРЖАВЕЮЩИЕ СТАЛИ

S ТИТАН И СПЕЦИАЛЬНЫЕ СПЛАВЫ

цилиндрический хвостовик

~ 3xD DIN 1897	~ 5xD DIN 338	~10xD DIN 340	~15xD DIN 1869 R1
	No 1 No 1 Ø 0,40 - 15,00 мм Артикул № 2458 со стр. 306 F S ○	No 1 No 1 Ø 1,00 - 10,2 мм Артикул № 669 со стр. 360 S ○	
No 1 No 1 Ø 1,00 - 13,00 мм Артикул № 572 со стр. 231 S ○	Ø 1,00 - 13,00 мм Артикул № 1260 со стр. 309 ○		
	Ø 1,00 - 14,00 мм Артикул № 2459 со стр. 296 F S ◓	Ø 1,00 - 12,00 мм Артикул № 396 со стр. 357 F ◓	No 1 No 1 Ø 2,70 - 10,00 мм Артикул № 618 со стр. 370 ◓
Ø 1,00 - 13,00 мм Артикул № 2461 со стр. 224 F S ●			
Ø 1,00 - 15,87 мм Артикул № 1259 со стр. 235 ○	Ø 1,00 - 16,00 мм Артикул № 1199 со стр. 317 F ○		

усиленный цилиндрический хвостовик

No 1 Ø 2,00 - 20,00 мм Артикул № 512 со стр. 384 S	No 1 Ø 2,00 - 20,00 мм Артикул № 511 со стр. 386 S	
	Ø 2,00 - 12,900 мм Артикул № 513 со стр. 388 F	ДЛЯ СОКРАЩЕНИЯ РУЧНЫХ ОПЕРАЦИЙ ПРИ ЗАЖИМЕ

с внутренним охлаждением

	No 1 No 1 Ø 5,00 - 20,00 мм Артикул № 1132 со стр. 396 S ○	ДЛЯ ИСПОЛЬЗОВАНИЯ С ВНУТРЕННИМ ОХЛАЖДЕНИЕМ

QUICKFINDER

~20xD DIN 1869 R2	~25xD DIN 1869 R3	>25xD СТП очень длинный

No 1 Идеальный инструмент для нержавеющей стали

No 1 Идеальный инструмент для специальных и титановых сплавов

Тип Ti, HSCO

Тип VA, HSCO

No 1 No 1
Ø 3,00 - 10,00 мм
Артикул № 619
со стр. 376

No 1 No 1
Ø 2,50 - 13,00 мм
Артикул № 571
со стр. 380

GT100, HSCO

GV120, HSCO

Тип N, M42

GU500, HSCO

GT500, HSS-E-PM

GT80IK, HSCO

FRIZAR
www.frizar.ru

K ЧУГУНЫ

~ 3xD DIN 1897	~ 5xD DIN 338	~10xD DIN 340	~15xD DIN 1869 R1
	No 1 Ø 1,00 - 14,00 мм Артикул № 2459 со стр. 296 F S C A	No 1 Ø 1,00 - 12,00 мм Артикул № 396 со стр. 357 F	No 1 Ø 2,70 - 10,00 мм Артикул № 618 со стр. 370
	Ø 1,00 - 15,00 мм Артикул № 2457 со стр. 280 F S	Ø 1,00 - 10,00 мм Артикул № 2462 со стр. 349 F S	Ø 2,00 - 12,70 мм Артикул № 670 со стр. 367 S
No 1 Ø 1,00 - 15,00 мм Артикул № 2460 со стр. 199 F S	Ø 1,00 - 14,50 мм Артикул № 2456 со стр. 254 F S	Ø 0,50 - 22,22 мм Артикул № 667 со стр. 334 S	Ø 1,60 - 13,00 мм Артикул № 235 со стр. 363
	Ø 1,20 - 13,00 мм Артикул № 2997 со стр. 288 S	Ø 0,50 - 22,00 мм Артикул № 317 со стр. 353	
No 1 Ø 2,00 - 20,00 мм Артикул № 512 со стр. 384 S	No 1 Ø 2,00 - 20,00 мм Артикул № 511 со стр. 386 S	ДЛЯ СОКРАЩЕНИЯ РУЧНЫХ ОПЕРАЦИЙ ПРИ ЗАЖИМЕ	
	Ø 2,00 - 12,90 мм Артикул № 513 со стр. 388 F		
	No 1 Ø 5,00 - 20,00 мм Артикул № 1132 со стр. 396 S	ДЛЯ ИСПОЛЬЗОВАНИЯ С ВНУТРЕННИМ ОХЛАЖДЕНИЕМ	

QUICKFINDER

~20xD DIN 1869 R2	~25xD DIN 1869 R3	>25xD СТП очень длинный	
No 1 Ø 3,00 - 10,00 мм Артикул № 619 со стр. 376	No 1 Ø 2,50 - 13,00 мм Артикул № 571 со стр. 380		GT100, HSCO
Ø 2,70 - 8,50 мм Артикул № 671 со стр. 374	Ø 2,50 - 13,00 мм Артикул № 504 со стр. 378	No 1 Ø 6,00 - 12,00 мм Артикул № 242 со стр. 381	GT100, HSS
Ø 2,70 - 13,00 мм Артикул № 236 со стр. 371	Ø 3,50 - 13,00 мм Артикул № 237 со стр. 377		Тип N, HSS
			Тип N, HSCO
			GU500, HSCO
			GT500, HSS-E-PM
			GT80IK, HSCO

N АЛЮМИНИЙ, ЦВЕТНЫЕ МЕТАЛЛЫ

цилиндрический хвостовик

~ 3xD DIN 1897	~ 5xD DIN 338	~10xD DIN 340	~15xD DIN 1869 R1
No 1 Ø 1,00 - 20,00 мм Артикул № 225 со стр. 208	No 1 Ø 0,20 - 20,00 мм Артикул № 207 со стр. 269	No 1 Ø 0,50 - 20,64 мм Артикул № 219 со стр. 342	Тип W для мягких, вязких материалов с образованием длинной стружки
No 1 Ø 0,69 - 21,00 мм Артикул № 224 со стр. 204	No 1 Ø 0,20 - 20,00 мм Артикул № 206 со стр. 263	No 1 Ø 0,50 - 16,00 мм Артикул № 218 со стр. 339	Тип H для твердых, хрупких материалов
	Тип GT50 для мягких, вязких материалов с образованием длинной стружки	Ø 1,00 - 32,60 мм Артикул № 501 со стр. 351	No 1 Ø 2,00 - 12,70 мм Артикул № 524 со стр. 368
	Ø 1,00 - 15,50 мм Артикул № 550 со стр. 281 S F	Ø 1,00 - 14,00 мм Артикул № 535 со стр. 344 S F	Ø 1,95 - 13,00 мм Артикул № 502 со стр. 365 S
	Ø 1,00 - 16,00 мм Артикул № 622 со стр. 291 S F A	Ø 1,00 - 16,00 мм Артикул № 336 со стр. 355 F	Ø 2,70 - 10,00 мм Артикул № 618 со стр. 370

усиленный цилиндрический хвостовик

No 1 Ø 2,00 - 20,00 мм Артикул № 512 со стр. 384 S	No 1 Ø 2,00 - 20,00 мм Артикул № 511 со стр. 386 S	ДЛЯ СОКРАЩЕНИЯ РУЧНЫХ ОПЕРАЦИЙ ПРИ ЗАЖИМЕ

с внутренним охлаждением

	No 1 Ø 5,00 - 20,00 мм Артикул № 1131 со стр. 395 S	ДЛЯ ИСПОЛЬЗОВАНИЯ С ВНУТРЕННИМ ОХЛАЖДЕНИЕМ

QUICKFINDER

~20xD DIN 1869 R2	~25xD DIN 1869 R3	>25xD СТП очень длинный	No 1 Идеальный инструмент
			Тип W, HSS
			Тип H, HSS
No 1 Ø 3,00 - 13,00 мм Артикул № 528 со стр. 375 ◯	No 1 Ø 2,50 - 10,00 мм Артикул № 529 со стр. 379 ◯		GT50, HSS
Ø 2,70 - 8,50 мм Артикул № 671 со стр. 374 ◓ S	Ø 2,50 - 13,00 мм Артикул № 504 со стр. 378 ◓	No 1 Ø 6,00 - 12,00 мм Артикул № 242 со стр. 381 ◯ ◓	GT100, HSS
Ø 3,00 - 10,00 мм Артикул № 619 со стр. 376 ◓	Ø 2,50 - 13,00 мм Артикул № 571 со стр. 380 ◓		GT100, HSCO
			GU500, HSCO
			GT80IK, HSCO

Спиральные сверла, короткие

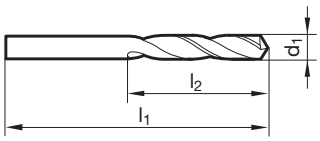
~3xD | DIN 1897 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для автоматов/ револьверных станков • для ручных дрелей
M		
K	•	
N	○	тонкостенные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **223**

d1		l1	l2
mm	inch	mm	mm
0,350		19,000	2,000
0,400	1/64	19,000	2,500
0,480		19,000	2,500
0,500		20,000	3,000
0,550		21,000	3,500
0,575		21,000	3,500
0,600		21,000	3,500
0,650		22,000	4,000
0,660		22,000	4,000
0,700		23,000	4,500
0,720		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,820		24,000	5,000
0,850		24,000	5,000
0,890		25,000	5,500
0,900		25,000	5,500
0,930		25,000	5,500
0,950		25,000	5,500
0,980		26,000	6,000
1,000		26,000	6,000
1,020		26,000	6,000
1,030		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,110		28,000	7,000
1,120		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,220		30,000	8,000
1,250		30,000	8,000
1,260		30,000	8,000
1,280		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000

d1		l1	l2
mm	inch	mm	mm
1,400		32,000	9,000
1,430		32,000	9,000
1,450		32,000	9,000
1,480		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,520		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,720		36,000	11,000
1,730		36,000	11,000
1,740		36,000	11,000
1,750		36,000	11,000
1,770		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,020		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,120		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,220		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000

d1		l1	l2
mm	inch	mm	mm
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,480		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,520		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,920		46,000	16,000
2,950		46,000	16,000
2,970		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,220		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,580		52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,960		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,020		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,080		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,380		58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,020		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,350		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,550		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,550		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,760		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
6,800		74,000	34,000
6,850		74,000	34,000
6,900		74,000	34,000
6,950		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,150		74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,850		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,050		79,000	37,000
8,100		79,000	37,000
8,150		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,450		79,000	37,000
8,500		79,000	37,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,650		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
8,950		84,000	40,000
9,000		84,000	40,000
9,050		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,150		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,270		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,650		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
9,800		89,000	43,000
9,850		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000
10,080		89,000	43,000
10,100		89,000	43,000
10,150		89,000	43,000
10,200		89,000	43,000
10,250		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,750		95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,600		95,000	47,000
11,700		95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
11,900		102,000	51,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,050		102,000	51,000
12,100		102,000	51,000
12,150		102,000	51,000
12,200		102,000	51,000
12,250		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
12,500		102,000	51,000
12,600		102,000	51,000
12,700	1/2	102,000	51,000
12,750		102,000	51,000
12,800		102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,200		102,000	51,000
13,250		107,000	54,000
13,300		107,000	54,000
13,400		107,000	54,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,600		107,000	54,000
13,700		107,000	54,000
13,750		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,100		111,000	56,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,300		111,000	56,000
14,400		111,000	56,000
14,500		111,000	56,000

d1		l1	l2
mm	inch	mm	mm
14,600		111,000	56,000
14,680	37/64	111,000	56,000
14,700		111,000	56,000
14,750		111,000	56,000
14,800		111,000	56,000
14,900		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,100		115,000	58,000
15,200		115,000	58,000
15,250		115,000	58,000
15,400		115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,600		115,000	58,000
15,700		115,000	58,000
15,750		115,000	58,000
15,800		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,100		119,000	60,000
16,150		119,000	60,000
16,200		119,000	60,000
16,250		119,000	60,000
16,270	41/64	119,000	60,000
16,300		119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
16,750		119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,100		123,000	62,000
17,200		123,000	62,000
17,250		123,000	62,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,600		123,000	62,000
17,750		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,100		127,000	64,000
18,200		127,000	64,000
18,250		127,000	64,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
18,750		127,000	64,000
19,000		127,000	64,000

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	66,000
19,100		131,000	66,000
19,250		131,000	66,000
19,500		131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,100		136,000	68,000
20,240	51/64	136,000	68,000
20,250		136,000	68,000
20,500		136,000	68,000
20,640	13/16	136,000	68,000
20,750		136,000	68,000
20,800		136,000	68,000
21,000		136,000	68,000
21,030	53/64	136,000	68,000
21,430	27/32	141,000	70,000
21,500		141,000	70,000
21,830	55/64	141,000	70,000
22,000		141,000	70,000
22,220	7/8	141,000	70,000
22,500		146,000	72,000
23,000		146,000	72,000
23,020	29/32	146,000	72,000
23,420	59/64	146,000	72,000
23,500		146,000	72,000
23,810	15/16	151,000	75,000
24,000		151,000	75,000
24,210	61/64	151,000	75,000
24,500		151,000	75,000
24,610	31/32	151,000	75,000
25,000	63/64	151,000	75,000
25,400	1	156,000	78,000
26,000		156,000	78,000
26,500		156,000	78,000
27,000		162,000	81,000
27,500		162,000	81,000
28,000		162,000	81,000
28,570	1 1/8	168,000	84,000
29,000		168,000	84,000
29,370	1 5/32	168,000	84,000
30,000		168,000	84,000
31,000		174,000	87,000
32,000		180,000	90,000
33,000		180,000	90,000
40,000		200,000	100,000
44,000		214,000	108,000

Спиральные сверла, короткие

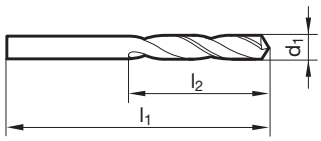
~3xD | DIN 1897 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для ручных дрелей • для автоматов/револьверных станков
M		
K	•	
N	○	тонкостенные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **653**

d1		l1	l2
mm	inch	mm	mm
0,500		20,000	3,000
0,600		21,000	3,500
0,700		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,110		28,000	7,000
1,120		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000

d1		l1	l2
mm	inch	mm	mm
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,520		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000

d1		l1	l2
mm	inch	mm	mm
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,720	27/64	95,000	47,000
10,750		95,000	47,000

d1		l1	l2
mm	inch	mm	mm
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
11,900		102,000	51,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,700		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,800		111,000	56,000
14,900		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,250		115,000	58,000
15,500		115,000	58,000
15,800		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,250		119,000	60,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000

d1		l1	l2
mm	inch	mm	mm
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,250		127,000	64,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,500		131,000	66,000
20,000		131,000	66,000
20,500		136,000	68,000
20,640	13/16	136,000	68,000
21,000		136,000	68,000
21,500		141,000	70,000
22,000		141,000	70,000
22,500		146,000	72,000
22,620	57/64	146,000	72,000
23,000		146,000	72,000
23,420	59/64	146,000	72,000
24,000		151,000	75,000
24,500		151,000	75,000
25,000	63/64	151,000	75,000
25,400	1	156,000	78,000
27,500		162,000	81,000
28,500		168,000	84,000
29,370	1 5/32	168,000	84,000
29,500		168,000	84,000
30,000		168,000	84,000
30,160	1 3/16	174,000	87,000

Спиральные сверла, короткие

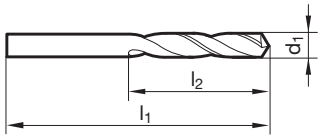
~3xD | DIN 1897 | N | 118° | h8

Режущий материал	HSS
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для автоматов/ револьверных станков • для ручных дрелей
M		
K	•	
N	•	тонкостенные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **2460**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
2,000		38,000	12,000
2,200		40,000	13,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000

d1		l1	l2
mm	inch	mm	mm
6,200		70,000	31,000
6,300		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
7,100		74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,800		79,000	37,000
8,300		79,000	37,000
8,500		79,000	37,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,300		84,000	40,000
9,600		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,500		89,000	43,000
11,200		95,000	47,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,500		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000

Спиральные сверла, короткие

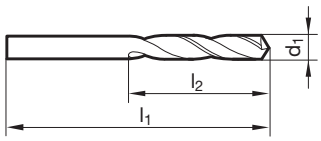
~3xD | DIN 1897 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 6,00
Направление резания	L

P	•	подточка ≥ Ø 14,050 • конусная заточка • для автоматов/ револьверных станков
M		
K	•	
N	○	тонкостенные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **226**

d1 mm	inch	l1 mm	l2 mm	d1 mm	inch	l1 mm	l2 mm
0,320		19,000	2,000	1,610		34,000	10,000
0,500		20,000	3,000	1,650		34,000	10,000
0,550		21,000	3,500	1,670		34,000	10,000
0,580		21,000	3,500	1,700		34,000	10,000
0,620		22,000	4,000	1,720		36,000	11,000
0,650		22,000	4,000	1,750		36,000	11,000
0,700		23,000	4,500	1,780		36,000	11,000
0,740		23,000	4,500	1,800		36,000	11,000
0,750		23,000	4,500	1,810		36,000	11,000
0,800		24,000	5,000	1,850		36,000	11,000
0,810		24,000	5,000	1,900		36,000	11,000
0,850		24,000	5,000	1,930		38,000	12,000
0,875		25,000	5,500	1,940		38,000	12,000
0,890		25,000	5,500	1,950		38,000	12,000
0,900		25,000	5,500	1,980	5/64	38,000	12,000
0,950		25,000	5,500	1,990		38,000	12,000
0,970		26,000	6,000	2,000		38,000	12,000
0,975		26,000	6,000	2,010		38,000	12,000
1,000		26,000	6,000	2,050		38,000	12,000
1,020		26,000	6,000	2,060		38,000	12,000
1,030		26,000	6,000	2,080		38,000	12,000
1,040		26,000	6,000	2,100		38,000	12,000
1,050		26,000	6,000	2,180		40,000	13,000
1,060		26,000	6,000	2,200		40,000	13,000
1,070		28,000	7,000	2,220		40,000	13,000
1,090		28,000	7,000	2,260		40,000	13,000
1,100		28,000	7,000	2,300		40,000	13,000
1,150		28,000	7,000	2,350		40,000	13,000
1,190	3/64	30,000	8,000	2,360		40,000	13,000
1,200		30,000	8,000	2,370		43,000	14,000
1,220		30,000	8,000	2,380	3/32	43,000	14,000
1,250		30,000	8,000	2,400		43,000	14,000
1,320		30,000	8,000	2,440		43,000	14,000
1,330		32,000	9,000	2,450		43,000	14,000
1,350		32,000	9,000	2,490		43,000	14,000
1,450		32,000	9,000	2,500		43,000	14,000
1,500		32,000	9,000	2,520		43,000	14,000
1,510		34,000	10,000	2,530		43,000	14,000
1,550		34,000	10,000	2,550		43,000	14,000
1,580		34,000	10,000	2,580		43,000	14,000
1,590	1/16	34,000	10,000	2,600		43,000	14,000
1,600		34,000	10,000	2,640		43,000	14,000

d1		l1	l2
mm	inch	mm	mm
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,720		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,880		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,230		49,000	18,000
3,250		49,000	18,000
3,300		49,000	18,000
3,330		49,000	18,000
3,400		52,000	20,000
3,420		52,000	20,000
3,450		52,000	20,000
3,480		52,000	20,000
3,500		52,000	20,000
3,530		52,000	20,000
3,700		52,000	20,000
3,710		52,000	20,000
3,720		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,770		55,000	22,000
3,800		55,000	22,000
3,840		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,020		55,000	22,000
4,030		55,000	22,000
4,033		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,230		55,000	22,000
4,250		55,000	22,000
4,290		58,000	24,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,520		58,000	24,000
4,560		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,920		62,000	26,000
4,930		62,000	26,000
4,950		62,000	26,000
4,970		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
5,050		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,620		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,150		70,000	31,000
6,170		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,540		70,000	31,000
6,550		70,000	31,000
6,570		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
6,920		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,350		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,850		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,150		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000
10,080		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,200		102,000	51,000
12,450		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,200		102,000	51,000
13,250		107,000	54,000
13,750		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,050		111,000	56,000
14,200		111,000	56,000

d1		l1	l2
mm	inch	mm	mm
14,250		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,700		111,000	56,000
15,000		111,000	56,000
15,200		115,000	58,000
15,480	39/64	115,000	58,000
15,600		115,000	58,000
15,750		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,200		119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,750		123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
19,050	3/4	131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,640	13/16	136,000	68,000
21,000		136,000	68,000
21,250		141,000	70,000
21,750		141,000	70,000
21,830	55/64	141,000	70,000
22,000		141,000	70,000
22,400		141,000	70,000
23,000		146,000	72,000
24,000		151,000	75,000
25,500		156,000	78,000
26,190	1 1/32	156,000	78,000
26,590	1 3/64	162,000	81,000
26,990	1 1/16	162,000	81,000
27,380	1 5/64	162,000	81,000
29,000		168,000	84,000
30,960	1 7/32	174,000	87,000
31,500		174,000	87,000
32,150	1 17/64	180,000	90,000
32,940	1 19/64	180,000	90,000
33,000		180,000	90,000
34,500		186,000	93,000
34,920	1 3/8	186,000	93,000
36,000		193,000	96,000
37,000		193,000	96,000
40,000		200,000	100,000
45,000		214,000	108,000
48,000		228,000	116,000
50,000		228,000	116,000

Спиральные сверла, короткие

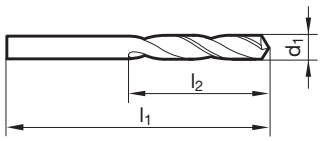
~3xD | DIN 1897 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	L

P	•	подточка ≥ Ø 2,400 • конусная заточка • для автоматов/ револьверных станков
M		
K	•	
N	○	тонкостенные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **672**

d1		l1	l2
mm	inch	mm	mm
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,100		28,000	7,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,800		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,920		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,150		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,600		66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,500		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,500		74,000	34,000
7,900		79,000	37,000
8,000		79,000	37,000
8,500		79,000	37,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
10,000		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000

Спиральные сверла, короткие

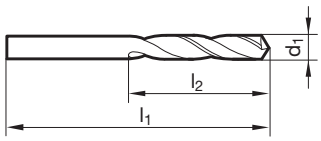
~3xD | DIN 1897 | H | 118° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	®

P		подточка ≥ Ø 14,500 • конусная заточка
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **224**

d1 mm	inch	l1 mm	l2 mm
0,690		23,000	4,500
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,620		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,020		38,000	12,000
2,050		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000

d1 mm	inch	l1 mm	l2 mm
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,050		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000

d1		l1	l2
mm	inch	mm	mm
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,750		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
9,000		84,000	40,000

d1		l1	l2
mm	inch	mm	mm
9,200		84,000	40,000
9,500		84,000	40,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000
17,000		119,000	60,000
18,000		123,000	62,000
19,000		127,000	64,000
20,000		131,000	66,000
21,000		136,000	68,000

Спиральные сверла, короткие

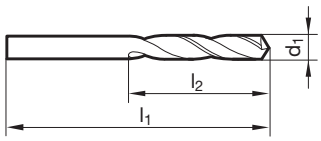
~3xD | DIN 1897 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P		подточка ≥ Ø 15,000 • конусная заточка
M		
K		
N	•	для твёрдых и хрупких материалов • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **227**

d1		l1	l2
mm	inch	mm	mm
0,750		23,000	4,500
1,040		26,000	6,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,350		32,000	9,000
1,540		34,000	10,000
1,590	1/16	34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,200		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,480		43,000	14,000
2,500		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,970	5/32	55,000	22,000
4,100		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,600		70,000	31,000
6,750	17/64	74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,750		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,500		79,000	37,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
9,130	23/64	84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,320	13/32	89,000	43,000
10,720	27/64	95,000	47,000

d1		l1	l2
mm	inch	mm	mm
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
13,500		107,000	54,000
15,000		111,000	56,000

d1		l1	l2
mm	inch	mm	mm
22,200		141,000	70,000
24,000		151,000	75,000

Спиральные сверла, короткие

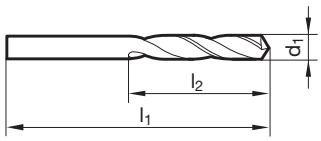
~3xD | DIN 1897 | W | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 2,380 • конусная заточка
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **225**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,560	7/32	66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,200		79,000	37,000

d1		l1	l2
mm	inch	mm	mm
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,400		84,000	40,000
9,520	3/8	89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
12,000		102,000	51,000
12,100		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000
17,500		123,000	62,000
18,000		123,000	62,000
19,050	3/4	131,000	66,000
19,750		131,000	66,000
20,000		131,000	66,000

FRIZAR
www.frizar.ru

Спиральные сверла, короткие

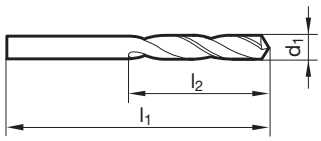
~3xD | DIN 1897 | W | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	L

P		подточка ≥ Ø 2,380 • конусная заточка
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **228**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,500		43,000	14,000
2,570		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,920		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,400		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,100		70,000	31,000
6,150		70,000	31,000
6,350	1/4	70,000	31,000
6,500		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,730	11/32	84,000	40,000
9,000		84,000	40,000
9,130	23/64	84,000	40,000
9,500		84,000	40,000
9,920	25/64	89,000	43,000
10,320	13/32	89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,910	15/32	102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000

d1		l1	l2
mm	inch	mm	mm
14,500		111,000	56,000
14,700		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,500		119,000	60,000
18,000		123,000	62,000
20,000		131,000	66,000

Спиральные сверла, короткие

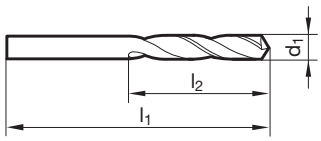
~3xD | DIN 1897 | GT 80 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для высокопрочной стали • без покрытия < 2,36 мм
M	○	
K	○	
N	•	автоматные стали (повышенной обрабатываемости резанием) • нержав./кислотостойк. сталь • цементированные/улучшенные стали до 800 Н/мм² • коротко-/среднестружечные Al- и Cu-сплавы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **552**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,820		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,130		40,000	13,000

d1		l1	l2
mm	inch	mm	mm
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,320		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000

d1		l1	l2
mm	inch	mm	mm
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000

d1		l1	l2
mm	inch	mm	mm
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
10,600		89,000	43,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,890	35/64	107,000	54,000

d1		l1	l2
mm	inch	mm	mm
14,000		107,000	54,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,260	23/32	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000

Спиральные сверла, короткие

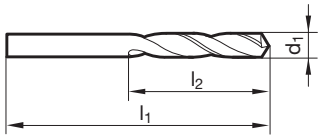
~3xD | DIN 1897 | GT 80 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	L

P	•	подточка ≥ Ø 1,000 • конусная заточка • для высокопрочной стали • без покрытия < 2,36 мм
M	○	
K	○	
N	•	автоматные стали (повышенной обрабатываемости резанием) • нержав./кислотостойк. сталь • цементированные/улучшенные стали до 800 Н/мм² • коротко-/среднестружечные Al- и Cu-сплавы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № 553

d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,020		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000

d1 mm	inch	l1 mm	l2 mm
2,350		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,680		52,000	20,000
3,700		52,000	20,000
3,750		52,000	20,000

d1		l1	l2
mm	inch	mm	mm
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
7,030		74,000	34,000
7,140	9/32	74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,200		79,000	37,000
8,330	21/64	79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,730	11/32	84,000	40,000
8,840		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,250		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,270	41/64	119,000	60,000

d1		l1	l2
mm	inch	mm	mm
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000

d1		l1	l2
mm	inch	mm	mm
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,500		131,000	66,000
19,840	25/32	131,000	66,000

Спиральные сверла, короткие

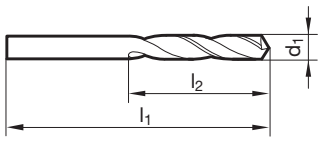
~3xD | DIN 1897 | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	○	нержав./кислотостойк. сталь • рессорно-пружинные стали • аустенитная сталь • Хастеллой, Инконель, Нимоник
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **329**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	19,000	2,500
0,500		20,000	3,000
0,510		20,000	3,000
0,520		20,000	3,000
0,550		21,000	3,500
0,570		21,000	3,500
0,580		21,000	3,500
0,590		21,000	3,500
0,600		21,000	3,500
0,610		22,000	4,000
0,640		22,000	4,000
0,650		22,000	4,000
0,700		23,000	4,500
0,730		23,000	4,500
0,740		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,810		24,000	5,000
0,820		24,000	5,000
0,840		24,000	5,000
0,850		24,000	5,000
0,860		25,000	5,500
0,870		25,000	5,500
0,900		25,000	5,500
0,910		25,000	5,500
0,940		25,000	5,500
0,950		25,000	5,500
0,960		26,000	6,000
0,970		26,000	6,000
0,990		26,000	6,000
1,000		26,000	6,000
1,020		26,000	6,000
1,030		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,170		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000

d1		l1	l2
mm	inch	mm	mm
1,200		30,000	8,000
1,210		30,000	8,000
1,230		30,000	8,000
1,250		30,000	8,000
1,280		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,330		32,000	9,000
1,350		32,000	9,000
1,370		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,470		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,630		34,000	10,000
1,650		34,000	10,000
1,680		34,000	10,000
1,700		34,000	10,000
1,730		36,000	11,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,820		36,000	11,000
1,830		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,030		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,100		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,320		40,000	13,000
2,350		40,000	13,000
2,360		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,470		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,520		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,830		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,520		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,020		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,350		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,550		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,850		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,320		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,550		70,000	31,000

d1		l1	l2
mm	inch	mm	mm
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,850		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,350		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,050		79,000	37,000
8,100		79,000	37,000
8,150		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,520		84,000	40,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,050		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,080		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,600		95,000	47,000
11,700		95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,600		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,200		102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,600		107,000	54,000
13,750		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
14,750		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,200		119,000	60,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,450	49/64	131,000	66,000
19,500		131,000	66,000

d1		l1	l2
mm	inch	mm	mm
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,250		136,000	68,000
20,500		136,000	68,000
20,640	13/16	136,000	68,000
21,000		136,000	68,000
22,000		141,000	70,000
22,200		141,000	70,000
23,000		146,000	72,000
24,000		151,000	75,000
24,500		151,000	75,000
25,000	63/64	151,000	75,000

d1		l1	l2
mm	inch	mm	mm
25,400	1	156,000	78,000
25,500		156,000	78,000
26,000		156,000	78,000
28,000		162,000	81,000
48,000		228,000	116,000

Спиральные сверла, короткие

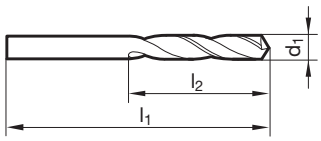
~3xD | DIN 1897 | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	○	нержав./кислотостойк. сталь • рессорно-пружинные стали • аустенитная сталь • Хастеллой, Инконель, Нимоник
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № 659

d1		l1	l2
mm	inch	mm	mm
0,500		20,000	3,000
0,600		21,000	3,500
0,650		22,000	4,000
0,700		23,000	4,500
0,740		23,000	4,500
0,750		23,000	4,500
0,780		24,000	5,000
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,850		24,000	5,000
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,050		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,030		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000

d1		l1	l2
mm	inch	mm	mm
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,250		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,300		107,000	54,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000

Спиральные сверла, короткие

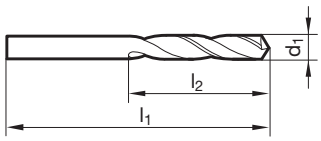
~3xD | DIN 1897 | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	○	нержав./кислотостойк. сталь • рессорно-пружинные стали • аустенитная сталь • Хастеллой, Инконель, Нимоник
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **2461**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,800		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,800		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
13,000		102,000	51,000

Спиральные сверла, короткие

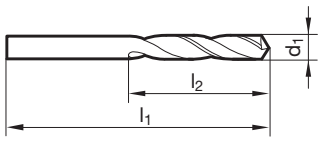
~3xD | DIN 1897 | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 6,00
Направление резания	L

P	•	подточка ≥ Ø 2,370 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	○	нержав./кислотостойк. сталь • рессорно-пружинные стали • аустенитная сталь • Хастеллой, Инконель, Нимоник
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **330**

d1		l1	l2
mm	inch	mm	mm
0,450		19,000	2,500
0,500		20,000	3,000
0,620		22,000	4,000
0,700		23,000	4,500
0,710		23,000	4,500
0,750		23,000	4,500
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,030		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,060		26,000	6,000
1,090		28,000	7,000
1,150		28,000	7,000
1,170		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,210		30,000	8,000
1,220		30,000	8,000
1,230		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,420		32,000	9,000
1,450		32,000	9,000
1,470		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,020		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,440		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,750		46,000	16,000
2,770		46,000	16,000
2,780	7/64	46,000	16,000
2,820		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,860		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,570		58,000	24,000
4,620		58,000	24,000
4,760	3/16	62,000	26,000
4,850		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,370		74,000	34,000
7,490		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,330	21/64	79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,610		84,000	40,000

d1		l1	l2
mm	inch	mm	mm
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,260		89,000	43,000
10,490		89,000	43,000
10,720	27/64	95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,700		111,000	56,000
15,100		115,000	58,000
15,500		115,000	58,000
16,000		115,000	58,000
19,500		131,000	66,000
19,750		131,000	66,000
22,500		146,000	72,000
23,500		146,000	72,000
24,000		151,000	75,000
25,000	63/64	151,000	75,000
25,500		156,000	78,000
26,000		156,000	78,000
27,000		162,000	81,000
32,000		180,000	90,000

Спиральные сверла, короткие

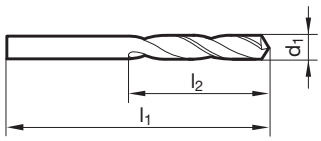
~3xD | DIN 1897 | GT 80 | 130° | h8

Режущий материал	HSCO
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость
M	○	
K	○	
N	○	для высокопрочной стали • длинностружечные материалы до 1000 Н/мм² • сплавы Al и Cu • мягкая бронза • электролитная медь • вязкая латунь
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **1228**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,500		79,000	37,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
8,600		84,000	40,000
8,700		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000

d1		l1	l2
mm	inch	mm	mm
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,000		115,000	58,000
16,500		119,000	60,000
17,000		119,000	60,000
17,500		123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
19,000		127,000	64,000
20,000		131,000	66,000

Спиральные сверла, короткие

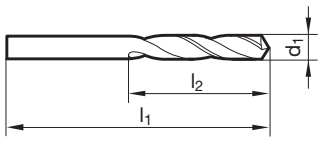
~3xD | DIN 1897 | GT 80 | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	○	
K	○	
N	○	длинностружечные материалы до 1000 Н/мм² • сплавы Al и Cu • мягкая бронза • электролитная медь • вязкая латунь
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **2498**

d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,200		30,000	8,000
1,300		30,000	8,000
1,500		32,000	9,000
1,600		34,000	10,000
1,800		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,500		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,600		66,000	28,000
6,000		66,000	28,000
6,200		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
8,000		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
9,000		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000

FRIZAR
www.frizar.ru

Спиральные сверла, короткие

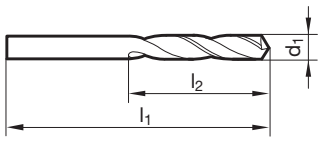
~3xD | DIN 1897 | VA | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	○	конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N	○	нержав./кислотостойкая/жаропрочная аустенит. сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **1261**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,900		36,000	11,000
2,000		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,500		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,500		66,000	28,000
5,600		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000

d1		l1	l2
mm	inch	mm	mm
6,100		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,900		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000

Спиральные сверла, короткие

~3xD | DIN 1897 | VA | 130° | h8

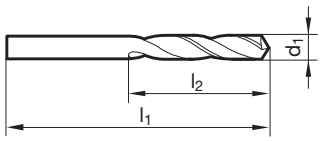
Режущий материал	HSCO
Покрытие	S
Направление резания	R

NEW

P	○	подточка ≥ Ø 1,000 • оптимизированная крестообразная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	○	
N	○	нержав./кислотостойкая/жаропрочная аустенит. сталь • специальные сплавы
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № 572

d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000

d1 mm	inch	l1 mm	l2 mm
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,550		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,100		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
11,000		95,000	47,000
11,200		95,000	47,000
11,500		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000

Спиральные сверла, короткие

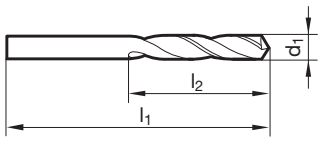
~3xD | DIN 1897 | P2000 | 118° | h8

Режущий материал	HSCO
Покрытие	M
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • универсальное применение • легированная кобальтом HSS • высокая износостойкость • для ручных дрелей
M	○	
K	○	
N	○	длинностружечная сталь до 1000 Н/мм² • AlSi - сплавы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **2048**

d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000

d1		l1	l2
mm	inch	mm	mm

Спиральные сверла, короткие

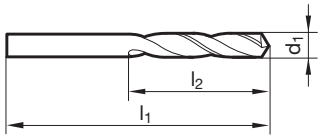
~3xD | DIN 1897 | N | 135° | h8

Режущий материал	M42
Покрытие	○
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • высокое содержание Co и Mo • высокая износостойкость
M	○	
K	○	
N	•	прочные и высокопрочные сплавы на CrNi-основе • Хастеллой, Инконель, Нимоник • нержавеющие/кислотостойкие/жаропрочные стали • износостойкий листовой металл • сталь/бронза прочностью до 1400 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **1259**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
9,000		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000

d1		l1	l2
mm	inch	mm	mm
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
14,000		107,000	54,000
15,000		111,000	56,000
15,870	5/8	115,000	58,000

Спиральные сверла, короткие

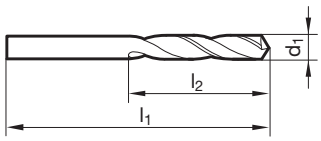
~3xD | DIN 1897 | GT 500 | 130° | h8

Режущий материал	HSS-E-PM
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • коническая заточка со специальным типом подточки B • легированная кобальтом порошковая HSS • высокая стабильность • высокая износостойкость
M	○	
K	•	специальная геометрия для снижения вероятности появления заусенцев • упрочненные стали • чугуны, латунь, бронза
N	○	
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **515**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000

d1		l1	l2
mm	inch	mm	mm
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000

Спиральные сверла, короткие

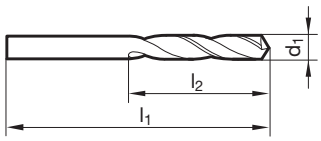
3xD | DIN 6539 | N | 118° | h7

Режущий материал	VHM
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,060 • плоскостная заточка • форма режущей кромки прямая
M	○	
K	○	
N	•	конструкционные и цементированные стали • автоматные стали, улучшенные стали • серый чугун • бронза, латунь • алюминий и алюминиевые сплавы • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **730**

d1 mm	inch	l1 mm	l2 mm
0,500		20,000	3,000
0,600		21,000	3,500
0,700		23,000	4,500
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000

d1 mm	inch	l1 mm	l2 mm
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000

d1		l1	l2
mm	inch	mm	mm
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,700		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,490	17/32	107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000

Спиральные сверла, короткие

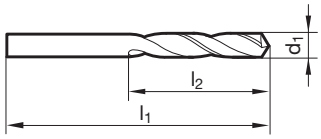
~3xD | DIN 6539 | N | 118° | h7

Режущий материал	VHM
Покрытие	F
Направление резания	R

P	○	подточка ≥ Ø 2,060 • плоскостная заточка • форма режущей кромки прямая
M	○	
K	○	
N	●	конструкционные и цементированные стали • автоматные стали, улучшенные стали • чугуны • латуни • алюминиевые сплавы с высоким содержанием кремния • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **2463**

d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000

d1 mm	inch	l1 mm	l2 mm
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000

d1		l1	l2
mm	inch	mm	mm
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,490	17/32	107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000

Спиральные сверла, короткие

~3xD | WN | N | 130° | h7

Режущий материал	VHM
Покрытие	◯
Направление резания	(R)

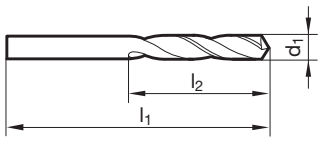
P
M
K
N
S
H

плоскостная заточка • форма режущей кромки прямая

стеклопластики • дуропласты с наждачным эффектом

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **702**

d1		l1	l2
mm	inch	mm	mm
0,500		30,000	6,500
0,550		30,000	6,500
0,600		30,000	6,500
0,650		30,000	6,500
0,700		30,000	6,500
0,750		30,000	8,500
0,800		30,000	8,500
0,900		30,000	9,500
1,000		30,000	11,000
1,050		30,000	11,000
1,100		30,000	11,000
1,200		30,000	13,000
1,350		30,000	13,000
1,400		30,000	13,000
1,450		30,000	13,000
1,500		30,000	13,000
1,600		40,000	17,500
1,650		40,000	17,500
1,700		40,000	17,500
1,800		40,000	17,500
1,850		40,000	17,500
1,900		40,000	17,500
2,000		40,000	17,500
2,010		40,000	17,500
2,050		40,000	17,500
2,100		40,000	17,500
2,200		40,000	17,500
2,260		40,000	17,500
2,300		40,000	17,500
2,400		40,000	17,500
2,490		40,000	17,500
2,500		40,000	17,500
2,530		45,000	20,000
2,600		45,000	20,000
2,700		45,000	20,000
2,800		45,000	20,000

d1		l1	l2
mm	inch	mm	mm
3,000		45,000	20,000
3,050		50,000	22,000
3,100		50,000	22,000
3,200		50,000	22,000
3,260		50,000	22,000
3,300		50,000	22,000
3,400		50,000	22,000
3,450		50,000	22,000
3,500		50,000	22,000
3,570	9/64	50,000	22,000
3,600		50,000	22,000
3,910		50,000	22,000
4,000		50,000	22,000
4,200		50,000	25,000
4,300		50,000	25,000
4,400		50,000	25,000
4,700		50,000	25,000
5,000		50,000	25,000
5,200		50,000	25,000
5,310		50,000	25,000
5,610		50,000	25,000
5,790		50,000	25,000
5,950	15/64	50,000	25,000
6,000		50,000	25,000
6,250		65,000	30,000
6,350	1/4	65,000	30,000
6,500		65,000	30,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

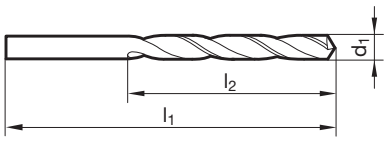
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **205**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,210		19,000	2,500
0,220		19,000	2,500
0,230		19,000	2,500
0,240		19,000	2,500
0,250		19,000	3,000
0,260		19,000	3,000
0,270		19,000	3,000
0,280		19,000	3,000
0,290		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,380		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000

d1		l1	l2
mm	inch	mm	mm
0,620		26,000	8,000
0,630		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,010		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000

d1		l1	l2
mm	inch	mm	mm
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,340		40,000	18,000
1,350		40,000	18,000
1,360		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,630		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,690		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000

d1		l1	l2
mm	inch	mm	mm
1,760		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,860		46,000	22,000
1,870		46,000	22,000
1,880		46,000	22,000
1,890		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,920		49,000	24,000
1,930		49,000	24,000
1,940		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,090		49,000	24,000
2,100		49,000	24,000
2,110		49,000	24,000
2,120		49,000	24,000
2,130		53,000	27,000
2,140		53,000	27,000
2,150		53,000	27,000
2,170		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,210		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,270		53,000	27,000
2,280		53,000	27,000
2,290		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,330		53,000	27,000
2,340		53,000	27,000
2,350		53,000	27,000
2,360		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,390		57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,430		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,460		57,000	30,000
2,470		57,000	30,000
2,480		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,510		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,520		57,000	30,000
2,530		57,000	30,000
2,540		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,610		57,000	30,000
2,620		57,000	30,000
2,630		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,660		61,000	33,000
2,670		61,000	33,000
2,680		61,000	33,000
2,700		61,000	33,000
2,710		61,000	33,000
2,720		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,760		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,880		61,000	33,000
2,900		61,000	33,000
2,910		61,000	33,000
2,920		61,000	33,000
2,930		61,000	33,000
2,940		61,000	33,000
2,950		61,000	33,000
2,960		61,000	33,000
2,970		61,000	33,000
2,980		61,000	33,000
2,990		61,000	33,000
3,000		61,000	33,000
3,010		65,000	36,000
3,020		65,000	36,000
3,030		65,000	36,000
3,040		65,000	36,000
3,050		65,000	36,000
3,060		65,000	36,000
3,070		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,120		65,000	36,000
3,130		65,000	36,000
3,150		65,000	36,000
3,160		65,000	36,000
3,170	1/8	65,000	36,000
3,180		65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,230		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,320		65,000	36,000
3,330		65,000	36,000
3,350		65,000	36,000
3,360		70,000	39,000
3,370		70,000	39,000
3,380		70,000	39,000
3,400		70,000	39,000
3,420		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,520		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,610		70,000	39,000
3,620		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,680		70,000	39,000
3,700		70,000	39,000
3,725		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,820		75,000	43,000
3,830		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,920		75,000	43,000
3,930		75,000	43,000
3,940		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,980		75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,010		75,000	43,000
4,020		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,060		75,000	43,000
4,070		75,000	43,000
4,080		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,270		80,000	47,000
4,300		80,000	47,000
4,320		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,380		80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,420		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,530		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,730		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,770		86,000	52,000
4,800		86,000	52,000
4,830		86,000	52,000
4,850		86,000	52,000
4,860		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
4,930		86,000	52,000
4,950		86,000	52,000
4,970		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,025		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,080		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,120		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,190		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,260		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,350		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,420		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,630		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,920		93,000	57,000
5,930		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
5,960		93,000	57,000
5,970		93,000	57,000
5,980		93,000	57,000
5,990		93,000	57,000
6,000		93,000	57,000
6,030		101,000	63,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,170		101,000	63,000
6,200		101,000	63,000
6,210		101,000	63,000
6,220		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,380		101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,760		109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,050		109,000	69,000
7,070		109,000	69,000
7,100		109,000	69,000
7,130		109,000	69,000
7,140	9/32	109,000	69,000
7,150		109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,320		109,000	69,000
7,350		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,550		117,000	75,000
7,600		117,000	75,000
7,650		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
7,950		117,000	75,000
7,980		117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,130		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,350		117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,610		125,000	81,000
8,650		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,850		125,000	81,000
8,900		125,000	81,000
8,950		125,000	81,000
9,000		125,000	81,000
9,050		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,150		125,000	81,000

d1		l1	l2
mm	inch	mm	mm
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,450		125,000	81,000
9,500		125,000	81,000
9,510		133,000	87,000
9,520	3/8	133,000	87,000
9,570		133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,650		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,850		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
9,950		133,000	87,000
10,000		133,000	87,000
10,050		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,150		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,350		133,000	87,000
10,400		133,000	87,000
10,450		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,550		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,050		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,150		142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,350		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,050		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,650		151,000	101,000
12,700	1/2	151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,750		151,000	101,000
12,800		151,000	101,000
12,850		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,250		160,000	108,000
13,300		160,000	108,000
13,400		160,000	108,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,530		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,300		169,000	114,000
14,400		169,000	114,000
14,450		169,000	114,000
14,500		169,000	114,000
14,600		169,000	114,000
14,680	37/64	169,000	114,000
14,700		169,000	114,000
14,750		169,000	114,000
14,800		169,000	114,000
14,900		169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,100		178,000	120,000
15,200		178,000	120,000
15,250		178,000	120,000
15,300		178,000	120,000
15,400		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,600		178,000	120,000
15,700		178,000	120,000
15,750		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
15,900		178,000	120,000
16,000		178,000	120,000
16,100		184,000	125,000
16,200		184,000	125,000
16,250		184,000	125,000
16,270	41/64	184,000	125,000
16,300		184,000	125,000
16,400		184,000	125,000
16,500		184,000	125,000
16,600		184,000	125,000
16,670	21/32	184,000	125,000
16,700		184,000	125,000
16,750		184,000	125,000
16,800		184,000	125,000
16,900		184,000	125,000
17,000		184,000	125,000
17,070	43/64	191,000	130,000
17,200		191,000	130,000
17,250		191,000	130,000
17,300		191,000	130,000
17,400		191,000	130,000
17,460	11/16	191,000	130,000
17,500		191,000	130,000
17,600		191,000	130,000

d1		l1	l2
mm	inch	mm	mm
17,700		191,000	130,000
17,750		191,000	130,000
17,800		191,000	130,000
17,860	45/64	191,000	130,000
17,900		191,000	130,000
18,000		191,000	130,000
18,100		198,000	135,000
18,200		198,000	135,000
18,260	23/32	198,000	135,000
18,400		198,000	135,000
18,500		198,000	135,000
18,650	47/64	198,000	135,000

d1		l1	l2
mm	inch	mm	mm
18,750		198,000	135,000
18,800		198,000	135,000
19,000		198,000	135,000
19,050	3/4	205,000	140,000
19,100		205,000	140,000
19,200		205,000	140,000
19,250		205,000	140,000
19,500		205,000	140,000
19,600		205,000	140,000
19,750		205,000	140,000
19,840	25/32	205,000	140,000
20,000		205,000	140,000

Спиральные свёрла, средние

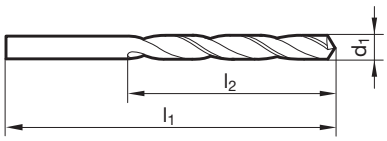
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **651**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,250		19,000	3,000
0,280		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,380		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,630		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000

d1		l1	l2
mm	inch	mm	mm
0,720		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,770		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000

d1		l1	l2
mm	inch	mm	mm
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,340		40,000	18,000
1,350		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,750		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000
1,870		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000

d1		l1	l2
mm	inch	mm	mm
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,720		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,020		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,030		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,850		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,050		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,550		133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,060		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,550		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,650		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000

d1		l1	l2
mm	inch	mm	mm
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,300		169,000	114,000
14,400		169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,250		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
16,750		184,000	125,000
17,000		184,000	125,000
17,250		191,000	130,000
17,500		191,000	130,000
18,000		191,000	130,000
18,500		198,000	135,000
18,800		198,000	135,000
19,000		198,000	135,000

Спиральные свёрла, средние

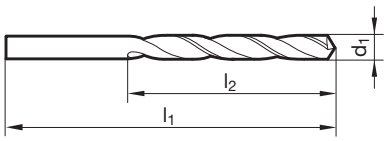
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка
M		
K	•	
N	•	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **2456**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,800		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,500		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,400		133,000	87,000
10,700		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,400		142,000	94,000
11,700		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,900		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
14,500		169,000	114,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

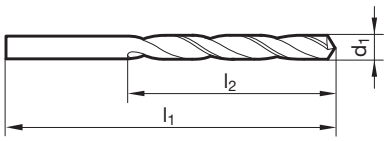
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 2,370 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **560**

d1		l1	l2
mm	inch	mm	mm
2,400		57,000	30,000
2,500		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,200		65,000	36,000
3,240		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,860		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,610		93,000	57,000

Спиральные свёрла, средние

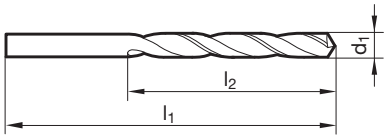
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка • для поводковых патронов согласно DIN 1809
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **240**

d1 mm	inch	l1 mm	l2 mm
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
13,000		151,000	101,000
13,490	17/32	160,000	108,000
15,000		169,000	114,000
16,000		178,000	120,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

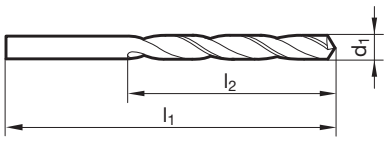
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 6,00
Направление резания	L

P	•	подточка ≥ Ø 14,700 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **208**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,240		19,000	2,500
0,290		19,000	3,000
0,300		19,000	3,000
0,340		19,000	4,000
0,350		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,630		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000

d1		l1	l2
mm	inch	mm	mm
0,750		28,000	9,000
0,770		30,000	10,000
0,775		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000

d1		l1	l2
mm	inch	mm	mm
1,270		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,380		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,465		40,000	18,000
1,470		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,630		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,760		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,880		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,940		49,000	24,000
1,950		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,360		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,580		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,660		61,000	33,000
2,670		61,000	33,000
2,700		61,000	33,000
2,710		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,870		61,000	33,000
2,880		61,000	33,000
2,900		61,000	33,000
2,910		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,280		65,000	36,000
3,300		65,000	36,000
3,320		65,000	36,000
3,330		65,000	36,000
3,340		65,000	36,000
3,370		70,000	39,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,530		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,130		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,530		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,680		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,930		86,000	52,000
4,950		86,000	52,000
4,970		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,080		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,520		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,570		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,880		109,000	69,000
6,900		109,000	69,000
6,910		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,220		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,520		117,000	75,000
7,540	19/64	117,000	75,000
7,550		117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,330	21/64	117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,650		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,750		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,250		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,250		160,000	108,000
13,400		160,000	108,000
13,600		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,700		169,000	114,000
14,800		169,000	114,000
14,900		169,000	114,000
15,000		169,000	114,000
15,050		178,000	120,000
15,500		178,000	120,000
15,600		178,000	120,000
15,700		178,000	120,000
15,750		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
17,250		191,000	130,000
17,500		191,000	130,000
19,000		198,000	135,000
19,050	3/4	205,000	140,000
19,500		205,000	140,000
20,000		205,000	140,000

Спиральные свёрла, средние

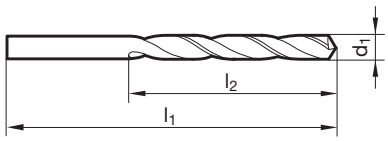
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	L

P	•	подточка ≥ Ø 2,380 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № 664

d1 mm	inch	l1 mm	l2 mm
0,250		19,000	3,000
0,420		20,000	5,000
0,430		20,000	5,000
0,450		20,000	5,000
0,500		22,000	6,000
0,550		24,000	7,000
0,575		24,000	7,000
0,600		24,000	7,000
0,670		26,000	8,000
0,680		28,000	9,000
0,770		30,000	10,000
0,800		30,000	10,000
0,900		32,000	11,000
0,950		32,000	11,000
1,000		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,420		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000

d1 mm	inch	l1 mm	l2 mm
2,050		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,300		53,000	27,000
2,360		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,700		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,200		101,000	63,000
6,250		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,000		117,000	75,000
8,500		117,000	75,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,800		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,320	13/32	133,000	87,000
10,900		142,000	94,000
11,000		142,000	94,000
12,000		151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
13,500		160,000	108,000
14,250		169,000	114,000

Спиральные свёрла, средние

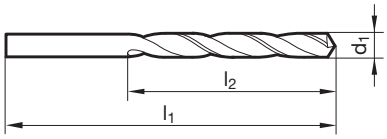
~5xD | DIN 338 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P		подточка ≥ Ø 14,500 • конусная заточка
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **206**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,210		19,000	2,500
0,220		19,000	2,500
0,240		19,000	2,500
0,250		19,000	3,000
0,280		19,000	3,000
0,290		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,480		20,000	5,000
0,500		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000

d1		l1	l2
mm	inch	mm	mm
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000

d1		l1	l2
mm	inch	mm	mm
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,670		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,730		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000
1,870		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,250		53,000	27,000
2,270		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,480		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000

d1		l1	l2
mm	inch	mm	mm
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,840		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,920		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,010		65,000	36,000
3,020		65,000	36,000
3,030		65,000	36,000
3,040		65,000	36,000
3,050		65,000	36,000
3,060		65,000	36,000
3,070		65,000	36,000
3,100		65,000	36,000
3,120		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,410		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,520		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,720		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,830		75,000	43,000
3,850		75,000	43,000
3,870		75,000	43,000
3,880		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,420		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000

d1		l1	l2
mm	inch	mm	mm
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,350		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,150		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,700		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,200		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
17,000		184,000	125,000
18,000		191,000	130,000
19,000		198,000	135,000
20,000		205,000	140,000

Спиральные свёрла, средние

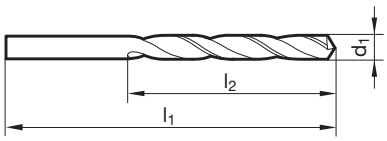
~5xD | DIN 338 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P		подточка ≥ Ø 14,200 • конусная заточка
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **209**

d1		l1	l2
mm	inch	mm	mm
0,300		19,000	3,000
0,400	1/64	20,000	5,000
0,450		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,640		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,780		30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,860		32,000	11,000
0,880		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,060		34,000	12,000
1,080		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000

d1		l1	l2
mm	inch	mm	mm
1,130		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,165		36,000	14,000
1,170		36,000	14,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,380		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,450		40,000	18,000
1,480		40,000	18,000
1,500		40,000	18,000
1,520		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000

d1		l1	l2
mm	inch	mm	mm
1,860		46,000	22,000
1,870		46,000	22,000
1,890		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,100		49,000	24,000
2,140		53,000	27,000
2,150		53,000	27,000
2,200		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,280		53,000	27,000
2,290		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,390		57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,930		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,070		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,160		65,000	36,000
3,170	1/8	65,000	36,000
3,175		65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,270		65,000	36,000
3,300		65,000	36,000
3,340		65,000	36,000
3,350		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,580		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,710		70,000	39,000
3,730		70,000	39,000
3,830		75,000	43,000
3,900		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,950		75,000	43,000
3,960		75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,280		80,000	47,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,850		86,000	52,000
4,870		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,650		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,120		101,000	63,000
6,130		101,000	63,000
6,150		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,150		109,000	69,000
7,200		109,000	69,000
7,220		109,000	69,000
7,300		109,000	69,000
7,350		109,000	69,000
7,550		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,250		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,750		133,000	87,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,800		133,000	87,000
9,850		133,000	87,000
10,000		133,000	87,000
10,500		133,000	87,000
11,100		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
12,050		151,000	101,000
12,100		151,000	101,000
12,150		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,800		151,000	101,000
13,100	33/64	151,000	101,000
13,300		160,000	108,000
13,500		160,000	108,000
13,800		160,000	108,000
14,200		169,000	114,000

d1		l1	l2
mm	inch	mm	mm
14,300		169,000	114,000
14,400		169,000	114,000
14,500		169,000	114,000
15,100		178,000	120,000
15,300		178,000	120,000
15,500		178,000	120,000
16,000		178,000	120,000
17,000		184,000	125,000
18,000		191,000	130,000
20,000		205,000	140,000

Спиральные свёрла, средние

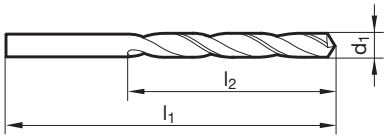
~5xD | DIN 338 | W | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 14,500 • конусная заточка
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • пластмассы (мягкие) • дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **207**

d1 mm	inch	l1 mm	l2 mm
0,200		19,000	2,500
0,250		19,000	3,000
0,300		19,000	3,000
0,340		19,000	4,000
0,350		19,000	4,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,500		22,000	6,000
0,520		22,000	6,000
0,550		24,000	7,000
0,570		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,700		28,000	9,000
0,720		28,000	9,000
0,750		28,000	9,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,900		32,000	11,000
0,950		32,000	11,000
0,970		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,010		34,000	12,000
1,020		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000

d1 mm	inch	l1 mm	l2 mm
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,630		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000

d1		l1	l2
mm	inch	mm	mm
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,270		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,930		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
14,700		169,000	114,000
15,000		169,000	114,000
15,600		178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
17,000		184,000	125,000
17,500		191,000	130,000
18,000		191,000	130,000
20,000		205,000	140,000

Спиральные свёрла, средние

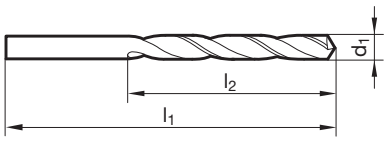
~5xD | DIN 338 | W | 130° | h8 |

Режущий материал	HSS
Покрытие	◯
Направление резания	(L)

P		подточка ≥ Ø 14,500 • конусная заточка
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • пластмассы (мягкие) • дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **210**

d1		l1	l2
mm	inch	mm	mm
0,250		19,000	3,000
0,270		19,000	3,000
0,280		19,000	3,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,360		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,450		20,000	5,000
0,470		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,525		22,000	6,000
0,530		22,000	6,000
0,560		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,660		26,000	8,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,825		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,950		32,000	11,000
0,970		34,000	12,000

d1		l1	l2
mm	inch	mm	mm
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000
1,150		36,000	14,000
1,210		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,450		40,000	18,000
1,480		40,000	18,000
1,500		40,000	18,000
1,540		43,000	20,000
1,550		43,000	20,000
1,580		43,000	20,000
1,600		43,000	20,000
1,630		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,340		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,130		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,280		65,000	36,000
3,300		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,820		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,920		75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,400		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,720		80,000	47,000
4,750		80,000	47,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,100		86,000	52,000
5,150		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,620		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,030		101,000	63,000
6,050		101,000	63,000
6,080		101,000	63,000
6,100		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,150		101,000	63,000
6,200		101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,250		109,000	69,000
7,350		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,900		117,000	75,000
8,050		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,750		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,650		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,750		142,000	94,000
11,100		142,000	94,000
11,500		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,950		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,500		151,000	101,000
12,800		151,000	101,000
13,200		151,000	101,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
16,200		184,000	125,000
17,000		184,000	125,000
17,300		191,000	130,000
17,500		191,000	130,000
17,600		191,000	130,000
18,000		191,000	130,000
19,000		198,000	135,000
19,500		205,000	140,000
19,800		205,000	140,000
20,000		205,000	140,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

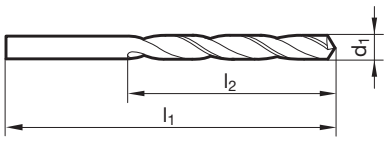
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 0,970 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M		
K	•	
N	•	серый чугун • сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **549**

d1		l1	l2
mm	inch	mm	mm
0,600		24,000	7,000
0,700		28,000	9,000
0,710		28,000	9,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,890		32,000	11,000
0,900		32,000	11,000
0,950		32,000	11,000
0,970		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,305		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000

d1		l1	l2
mm	inch	mm	mm
1,620		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,690		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000
1,860		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,330		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,480		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
2,980		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,230		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,580		70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,680		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,210		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,350		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,830		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,290		109,000	69,000
7,300		109,000	69,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,580		117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,150		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,890	35/64	160,000	108,000
14,000		160,000	108,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,400		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,750		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000

Спиральные свёрла, средние

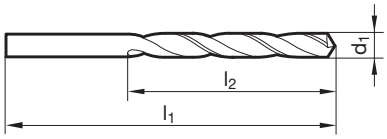
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M		
K	•	
N	•	серый чугун • сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **652**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000

d1 mm	inch	l1 mm	l2 mm
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,490	17/32	160,000	108,000
13,890	35/64	160,000	108,000

d1		l1	l2
mm	inch	mm	mm
14,000		160,000	108,000
14,290	9/16	169,000	114,000
15,000		169,000	114,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла, средние

~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	F
Направление резания	R

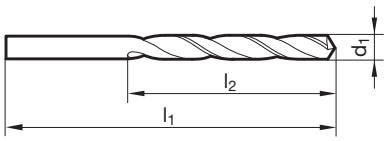
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD

серый чугун • сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **2457**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,300		38,000	16,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,400		57,000	30,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,800		75,000	43,000
4,000		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000

d1		l1	l2
mm	inch	mm	mm
5,600		93,000	57,000
5,700		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,600		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,100		125,000	81,000
9,400		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
10,300		133,000	87,000
10,700		142,000	94,000
11,400		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
15,000		169,000	114,000

Спиральные свёрла, средние

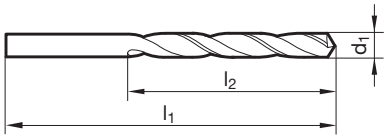
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSS	
Покрытие	>Ø 2,36	
Направление резания	L	

P	•	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M		
K	•	
N	•	серый чугун • сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **550**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,300		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,485		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,670		61,000	33,000
2,700		61,000	33,000

d1 mm	inch	l1 mm	l2 mm
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,175	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,620		80,000	47,000
4,760	3/16	86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,700		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,600		133,000	87,000
10,800		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,900		151,000	101,000
12,400		151,000	101,000
12,800		151,000	101,000
14,290	9/16	169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000

Спиральные свёрла, средние

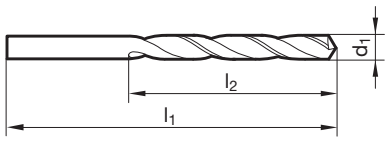
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	L

P •	подточка ≥ Ø 1,300 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M	
K •	
N •	серый чугун • сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **665**

d1 mm	inch	l1 mm	l2 mm
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,570	9/64	70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000

d1 mm	inch	l1 mm	l2 mm
3,900		75,000	43,000
4,000		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,500		101,000	63,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,540	19/64	117,000	75,000
7,800		117,000	75,000
7,940	5/16	117,000	75,000
8,600		125,000	81,000
9,130	23/64	125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,800		133,000	87,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

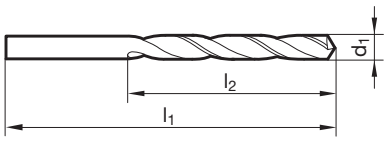
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	○	
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **305**

d1 mm	inch	l1 mm	l2 mm
0,200		19,000	2,500
0,220		19,000	2,500
0,230		19,000	2,500
0,250		19,000	3,000
0,260		19,000	3,000
0,270		19,000	3,000
0,280		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,380		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000

d1 mm	inch	l1 mm	l2 mm
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,010		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000

d1		l1	l2
mm	inch	mm	mm
1,100		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,280		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,360		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000
1,760		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,860		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,930		49,000	24,000

d1		l1	l2
mm	inch	mm	mm
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,230		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,510		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,920		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,330		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,150		75,000	43,000
4,170		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000

d1		l1	l2
mm	inch	mm	mm
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,760		109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000

d1		l1	l2
mm	inch	mm	mm
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,050		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,300		160,000	108,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,250		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,750		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
16,670	21/32	184,000	125,000
17,000		184,000	125,000
17,460	11/16	191,000	130,000
17,500		191,000	130,000
18,000		191,000	130,000
18,500		198,000	135,000
19,000		198,000	135,000
19,500		205,000	140,000
20,000		205,000	140,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

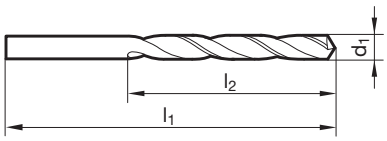
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,200 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость
M	○	
K	•	
N	○	легированная и нелегированная сталь • виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **2997**

d1 mm	inch	l1 mm	l2 mm
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,500		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,800		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,200		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000

Спиральные свёрла, средние

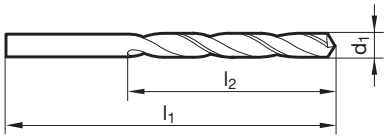
~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSCO
Покрытие	>Ø 6,00
Направление резания	L

P	•	подточка ≥ Ø 2,370 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость
M	○	
K	•	
N	○	легированная и нелегированная сталь • виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **308**

d1 mm	inch	l1 mm	l2 mm
0,360		19,000	4,000
0,390		20,000	5,000
0,500		22,000	6,000
0,560		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,630		26,000	8,000
0,650		26,000	8,000
0,750		28,000	9,000
0,780		30,000	10,000
0,800		30,000	10,000
0,820		30,000	10,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,980		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,050		34,000	12,000
1,080		36,000	14,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,230		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000

d1 mm	inch	l1 mm	l2 mm
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,420		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,530		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,830		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,570		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,530		101,000	63,000
6,700		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	109,000	69,000
7,040		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,040		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,260		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,050		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,750		160,000	108,000
14,300		169,000	114,000
14,500		169,000	114,000
16,200		184,000	125,000
16,500		184,000	125,000
18,000		191,000	130,000
18,500		198,000	135,000

Спиральные свёрла, средние

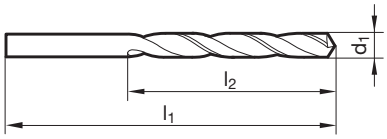
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость
M	○	• особенно подходит для глубины более 3xD
K	•	
N	•	сталь (лег .и нелег.) • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения
S		• высоколегированные стали • упрочненные стали
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **622**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000

d1 mm	inch	l1 mm	l2 mm
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000

d1		l1	l2
mm	inch	mm	mm
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,700		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
16,000		178,000	120,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

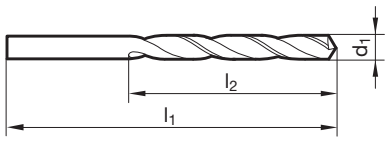
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • особенно подходит для глубины более 3xD
M	○	
K	•	
N	○	легированная и нелегированная сталь • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № 658

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,020		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,100		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,630		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000

d1 mm	inch	l1 mm	l2 mm
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000

Спиральные свёрла, средние

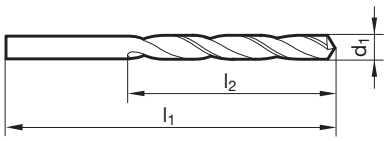
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • особенно подходит для глубины более 3xD
M	○	
K	•	
N	•	легированная и нелегированная сталь • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **2459**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,500		142,000	94,000
12,000		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

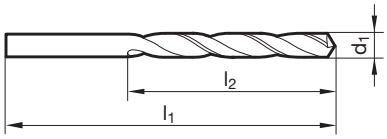
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	C
Направление резания	R

P •	подточка ≥ Ø 3,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • особенно подходит для глубины более 3xD
M	
K ○	
N	легированная и нелегированная сталь • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **1221**

d1 mm	inch	l1 mm	l2 mm
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,700		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,400		109,000	69,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,400		133,000	87,000
10,700		142,000	94,000
11,200		142,000	94,000
11,910	15/32	151,000	101,000

Спиральные свёрла, средние

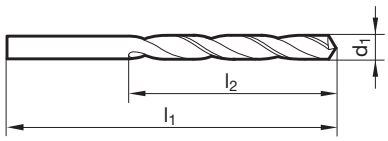
~5xD | DIN 338 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	A
Направление резания	R

P	○	подточка ≥ Ø 3,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • особенно подходит для глубины более 3xD
M		
K	•	
N	○	легированная и нелегированная сталь • чугуны более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **1223**

d1 mm	inch	l1 mm	l2 mm
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,530		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
10,500		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
12,000		151,000	101,000

Спиральные свёрла, средние

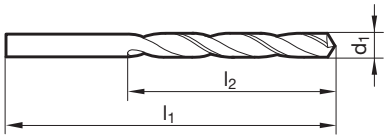
~5xD | DIN 338 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 0,970 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **605**

d1 mm	inch	l1 mm	l2 mm
0,200		19,000	2,500
0,300		19,000	3,000
0,380		19,000	4,000
0,400	1/64	20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,500		22,000	6,000
0,510		22,000	6,000
0,530		22,000	6,000
0,550		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,887		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000

d1 mm	inch	l1 mm	l2 mm
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,570		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,730		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000

d1		l1	l2
mm	inch	mm	mm
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,810		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,790		75,000	43,000
3,800		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,980		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,790		86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,080		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,200		142,000	94,000
11,300		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,970		160,000	108,000
14,000		160,000	108,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
17,000		184,000	125,000
17,500		191,000	130,000
18,000		191,000	130,000
19,000		198,000	135,000

Спиральные свёрла, средние

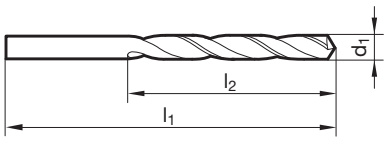
~5xD | DIN 338 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	(S)
Направление резания	(R)

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **657**

d1 mm	inch	l1 mm	l2 mm
0,500		22,000	6,000
0,530		22,000	6,000
0,600		24,000	7,000
0,650		26,000	8,000
0,700		28,000	9,000
0,750		28,000	9,000
0,800		30,000	10,000
0,850		30,000	10,000
0,880		32,000	11,000
0,900		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000

d1 mm	inch	l1 mm	l2 mm
1,900		46,000	22,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,750		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000

Спиральные свёрла, средние

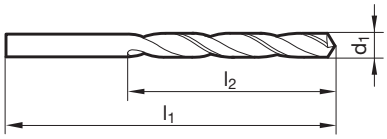
~5xD | DIN 338 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **2458**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	20,000	5,000
0,810		30,000	10,000
1,000		34,000	12,000
1,100		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,530		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
6,900		109,000	69,000
7,000		109,000	69,000
7,140	9/32	109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,800		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,490	17/32	160,000	108,000
14,000		160,000	108,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
15,000		169,000	114,000

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

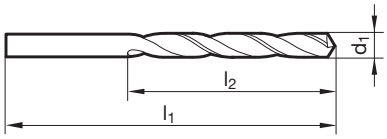
~5xD | DIN 338 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	L

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № 608

d1 mm	inch	l1 mm	l2 mm
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,600		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,150		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,750		61,000	33,000
2,800		61,000	33,000
3,000		61,000	33,000
3,300		65,000	36,000
3,320		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,900		75,000	43,000
4,000		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
4,920		86,000	52,000
5,000		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,580		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,300		101,000	63,000
6,600		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,100		117,000	75,000
8,400		117,000	75,000
8,750		125,000	81,000
8,800		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,500		125,000	81,000

Спиральные свёрла, средние

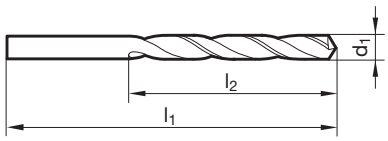
~5xD | DIN 338 | VA | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	○	конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N	○	нержав./кислотостойкая/жаропрочная аустенит. сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **1260**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,800		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,000		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

Спиральные свёрла, средние

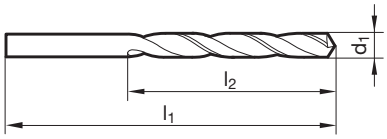
~5xD | DIN 338 | P2000 | 118° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • универсальное применение • легированная кобальтом HSS • высокая износостойкость
M	○	
K	○	
N	○	сталь до 1000 Н/мм² • сплавы AlSi
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **2047**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,500		151,000	101,000
13,000		151,000	101,000

Спиральное сверло AeroX с крестообразной заточкой

~5xD | DIN 338 | AeroX | 135° | h8

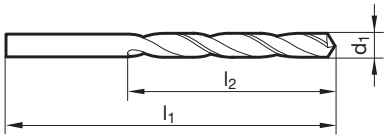
Режущий материал	M42
Покрытие	
Направление резания	R

NEW

P	•	подточка ≥ Ø 1,000 • оптимизированная крестообразная заточка • Быстрорежущая сталь HSCO легированная 8-% кобальта для увеличения срока службы инструмента, увеличения красностойкости и твердости
M	•	
K	•	
N	•	нелегированные и легированные стальные материалы • чугуны • цветные металлы • титан и титановые сплавы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № 1018

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000

d1 mm	inch	l1 mm	l2 mm
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000

Спиральные свёрла, средние

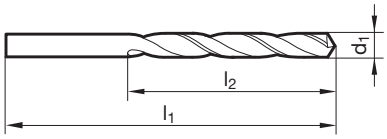
~5xD | DIN 338 | N | 135° | h8

Режущий материал	M42
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • высокое содержание Co и Mo • высокая износостойкость
M	○	
K	○	
N	•	прочные и высокопрочные сплавы на CrNi-основе • Хастеллой, Инконель, Нимоник • нержавеющие/кислотостойкие/жаропрочные стали • износостойкий листовой металл • сталь/бронза прочностью до 1400 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **1146**

d1 mm	inch	l1 mm	l2 mm
0,400	1/64	20,000	5,000
0,500		22,000	6,000
0,800		30,000	10,000
0,900		32,000	11,000
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000

d1 mm	inch	l1 mm	l2 mm
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
15,000		169,000	114,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000

Спиральные свёрла, средние

~5xD | DIN 338 | N | 135° | h8

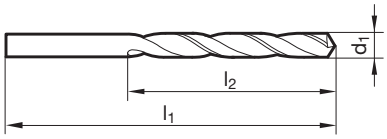
Режущий материал	M42
Покрытие	F
Направление резания	R

NEW

P	•	подточка ≥ Ø 1,000 • оптимизированная крестообразная заточка • Быстрорежущая сталь HSCO легированная 8-% кобальта • высокая износостойкость
M	•	
K	•	
N	○	прочные и высокопрочные сплавы на CrNi-основе • Хастеллой, Инконель, Нимоник • нержавеющие/кислотостойкие/жаропрочные стали • изностойкий листовой металл • сталь/бронза прочностью до 1400 Н/мм²
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **1199**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000

d1 mm	inch	l1 mm	l2 mm
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,100		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,200		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
15,000		169,000	114,000
16,000		178,000	120,000

Спиральные свёрла, средние

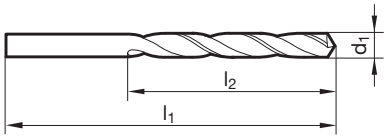
~5xD | WN | N | 118° | h7

Режущий материал	VHM
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,060 • плоскостная заточка • форма режущей кромки прямая
M	○	
K	○	
N	●	конструкционные и цементированные стали • автоматные стали, улучшенные стали • серый чугун • бронза, латунь • алюминий и алюминиевые сплавы • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **732**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,700	1/2	151,000	101,000

Спиральные свёрла, средние

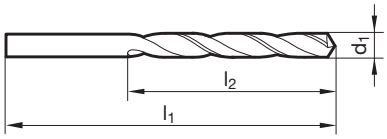
~5xD | WN | N | 118° | h7

Режущий материал	VHM
Покрытие	F
Направление резания	R

P	○	подточка ≥ Ø 2,060 • плоскостная заточка • форма режущей кромки прямая
M	○	
K	○	
N	●	конструкционные и цементированные стали • автоматные стали, улучшенные стали • чугуны • латуни • алюминиевые сплавы с высоким содержанием кремния • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **2464**

d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000

d1 mm	inch	l1 mm	l2 mm
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,700	1/2	151,000	101,000

Спиральные свёрла, средние

~5xD | WN | Duro 150 | 118° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

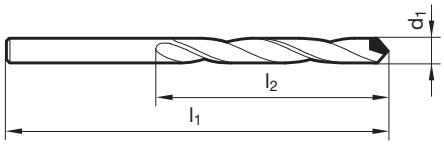
P	○
M	
K	○
N	
S	
H	•

подточка ≥ Ø 2,700 • плоскостная заточка • специальные сверла • твердосплавная впайная пластина

абразивные материалы • термообработанная/закаленная сталь • отбеленный чугун, сталь с Mn, твердая бронза

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **710**

d1		l1	l2
mm	inch	mm	mm
3,000		61,000	33,000
3,100		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
4,000		75,000	43,000
4,200		75,000	43,000
4,500		80,000	47,000
4,700		80,000	47,000
5,000		86,000	52,000
5,100		86,000	52,000
5,500		93,000	57,000
6,000		93,000	57,000
6,300		101,000	63,000
6,500		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,200		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
8,000		117,000	75,000
8,500		117,000	75,000
9,000		125,000	81,000
9,500		125,000	81,000
10,000		133,000	87,000
10,200		133,000	87,000
11,000		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000

Специалисты в области HSS

Быстрорежущие сверла в специальном исполнении для выполнения специальных задач.

Guhring преуспел в производстве быстрорежущей стали благодаря более чем 100 годам исследований, ультрасовременным технологиям производства, минимальным срокам изготовления специального инструмента, проблемно-ориентированным износостойким покрытиям, а также лучшему соотношению цена – производительность.

Сверла под кондукторную втулку

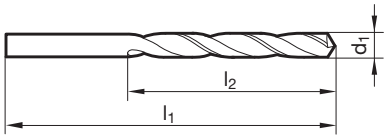
~10xD | DIN 339 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **211**

d1 mm	inch	l1 mm	l2 mm	d1 mm	inch	l1 mm	l2 mm
0,800		42,000	22,000	2,350		70,000	44,000
1,000		48,000	26,000	2,360		70,000	44,000
1,050		48,000	26,000	2,400		74,000	47,000
1,080		50,000	28,000	2,450		74,000	47,000
1,100		50,000	28,000	2,470		74,000	47,000
1,110		50,000	28,000	2,500		74,000	47,000
1,150		50,000	28,000	2,550		74,000	47,000
1,200		52,000	30,000	2,600		74,000	47,000
1,230		52,000	30,000	2,620		74,000	47,000
1,250		52,000	30,000	2,650		74,000	47,000
1,300		52,000	30,000	2,680		79,000	51,000
1,350		55,000	33,000	2,700		79,000	51,000
1,380		55,000	33,000	2,730		79,000	51,000
1,400		55,000	33,000	2,800		79,000	51,000
1,430		55,000	33,000	2,900		79,000	51,000
1,450		55,000	33,000	2,950		79,000	51,000
1,460		55,000	33,000	2,960		79,000	51,000
1,480		55,000	33,000	3,000		79,000	51,000
1,500		55,000	33,000	3,050		84,000	55,000
1,520		58,000	35,000	3,070		84,000	55,000
1,580		58,000	35,000	3,100		84,000	55,000
1,600		58,000	35,000	3,150		84,000	55,000
1,620		58,000	35,000	3,170	1/8	84,000	55,000
1,650		58,000	35,000	3,200		84,000	55,000
1,700		58,000	35,000	3,250		84,000	55,000
1,800		62,000	38,000	3,300		84,000	55,000
1,810		62,000	38,000	3,400		91,000	60,000
1,850		62,000	38,000	3,480		91,000	60,000
1,870		62,000	38,000	3,500		91,000	60,000
1,900		62,000	38,000	3,600		91,000	60,000
1,930		66,000	41,000	3,700		91,000	60,000
1,980	5/64	66,000	41,000	3,730		91,000	60,000
1,990		66,000	41,000	3,800		96,000	64,000
2,000		66,000	41,000	3,900		96,000	64,000
2,020		66,000	41,000	3,950		96,000	64,000
2,030		66,000	41,000	4,000		96,000	64,000
2,050		66,000	41,000	4,100		96,000	64,000
2,100		66,000	41,000	4,200		96,000	64,000
2,150		70,000	44,000	4,300		102,000	69,000
2,200		70,000	44,000	4,400		102,000	69,000
2,220		70,000	44,000	4,500		102,000	69,000
2,320		70,000	44,000	4,580		102,000	69,000

d1		l1	l2
mm	inch	mm	mm
4,600		102,000	69,000
4,700		102,000	69,000
4,750		102,000	69,000
4,800		108,000	74,000
4,900		108,000	74,000
4,950		108,000	74,000
5,000		108,000	74,000
5,100		108,000	74,000
5,200		108,000	74,000
5,300		108,000	74,000
5,330		116,000	80,000
5,350		116,000	80,000
5,400		116,000	80,000
5,500		116,000	80,000
5,550		116,000	80,000
5,600		116,000	80,000
5,700		116,000	80,000
5,800		116,000	80,000
5,900		116,000	80,000
6,000		116,000	80,000
6,100		124,000	86,000
6,150		124,000	86,000
6,200		124,000	86,000
6,350	1/4	124,000	86,000
6,400		124,000	86,000
6,500		124,000	86,000
6,600		124,000	86,000
6,700		124,000	86,000
6,800		133,000	93,000
6,900		133,000	93,000
7,000		133,000	93,000
7,050		133,000	93,000
7,100		133,000	93,000
7,150		133,000	93,000
7,200		133,000	93,000
7,300		133,000	93,000
7,400		133,000	93,000
7,600		142,000	100,000
7,750		142,000	100,000
7,800		142,000	100,000
7,950		142,000	100,000
8,000		142,000	100,000
8,100		142,000	100,000
8,120		142,000	100,000
8,200		142,000	100,000
8,300		142,000	100,000
8,500		142,000	100,000
8,600		151,000	107,000

d1		l1	l2
mm	inch	mm	mm
8,700		151,000	107,000
8,730	11/32	151,000	107,000
8,900		151,000	107,000
9,000		151,000	107,000
9,100		151,000	107,000
9,200		151,000	107,000
9,300		151,000	107,000
9,500		151,000	107,000
9,600		162,000	116,000
9,650		162,000	116,000
9,700		162,000	116,000
9,750		162,000	116,000
9,800		162,000	116,000
10,000		162,000	116,000
10,200		162,000	116,000
10,500		162,000	116,000
10,800		173,000	125,000
10,900		173,000	125,000
11,000		173,000	125,000
11,300		173,000	125,000
11,400		173,000	125,000
11,500		173,000	125,000
11,700		173,000	125,000
11,750		173,000	125,000
12,000		184,000	134,000
12,100		184,000	134,000
12,300	31/64	184,000	134,000
12,500		184,000	134,000
13,000		184,000	134,000
13,200		184,000	134,000
13,500		194,000	142,000
13,800		194,000	142,000
14,200		202,000	147,000
14,500		202,000	147,000
15,000		202,000	147,000
15,500		211,000	153,000
16,500		218,000	159,000
17,000		218,000	159,000
18,000		226,000	165,000
18,250		234,000	171,000
18,500		234,000	171,000
19,000		234,000	171,000
19,500		242,000	177,000
20,000		242,000	177,000

Сверла под кондукторную втулку

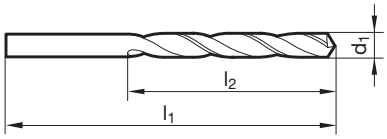
~10xD | DIN 339 | N | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 2,400 • конусная заточка • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **561**

d1		l1	l2
mm	inch	mm	mm
2,400		74,000	47,000
2,500		74,000	47,000
2,600		74,000	47,000
3,000		79,000	51,000
3,100		84,000	55,000
3,120		84,000	55,000
3,200		84,000	55,000
3,300		84,000	55,000
4,000		96,000	64,000
4,250		96,000	64,000
4,400		102,000	69,000
4,800		108,000	74,000

d1		l1	l2
mm	inch	mm	mm
5,000		108,000	74,000

Сверла под кондукторную втулку

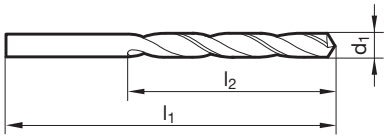
~10xD | DIN 339 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P •	подточка ≥ Ø 1,000 • конусная заточка • для сверления через кондукторные втулки
M	
K •	
N •	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **666**

d1		l1	l2
mm	inch	mm	mm
1,000		48,000	26,000
1,100		50,000	28,000
1,200		52,000	30,000
1,280		52,000	30,000
1,300		52,000	30,000
1,350		55,000	33,000
1,400		55,000	33,000
1,450		55,000	33,000
1,500		55,000	33,000
1,510		58,000	35,000
1,550		58,000	35,000
1,600		58,000	35,000
1,700		58,000	35,000
1,800		62,000	38,000
1,900		62,000	38,000
1,980	5/64	66,000	41,000
1,990		66,000	41,000
2,000		66,000	41,000
2,020		66,000	41,000
2,100		66,000	41,000
2,200		70,000	44,000
2,300		70,000	44,000
2,400		74,000	47,000
2,450		74,000	47,000
2,500		74,000	47,000
2,550		74,000	47,000
2,600		74,000	47,000
2,800		79,000	51,000
2,900		79,000	51,000
3,000		79,000	51,000
3,100		84,000	55,000
3,150		84,000	55,000
3,200		84,000	55,000
3,300		84,000	55,000
3,400		91,000	60,000
3,500		91,000	60,000
3,570	9/64	91,000	60,000
3,600		91,000	60,000
3,700		91,000	60,000
3,800		96,000	64,000
3,900		96,000	64,000
4,000		96,000	64,000

d1		l1	l2
mm	inch	mm	mm
4,100		96,000	64,000
4,200		96,000	64,000
4,300		102,000	69,000
4,400		102,000	69,000
4,500		102,000	69,000
4,600		102,000	69,000
4,800		108,000	74,000
5,000		108,000	74,000
5,100		108,000	74,000
5,150		108,000	74,000
5,300		108,000	74,000
5,400		116,000	80,000
5,500		116,000	80,000
5,600		116,000	80,000
5,700		116,000	80,000
5,800		116,000	80,000
6,000		116,000	80,000
6,100		124,000	86,000
6,200		124,000	86,000
6,350	1/4	124,000	86,000
6,400		124,000	86,000
6,500		124,000	86,000
6,600		124,000	86,000
6,700		124,000	86,000
6,800		133,000	93,000
6,900		133,000	93,000
7,000		133,000	93,000
7,100		133,000	93,000
7,200		133,000	93,000
7,300		133,000	93,000
7,500		133,000	93,000
7,600		142,000	100,000
7,700		142,000	100,000
7,800		142,000	100,000
7,900		142,000	100,000
7,940	5/16	142,000	100,000
8,000		142,000	100,000
8,200		142,000	100,000
8,500		142,000	100,000
8,600		151,000	107,000
9,000		151,000	107,000
9,600		162,000	116,000

d1		l1	l2
mm	inch	mm	mm
9,800		162,000	116,000
10,000		162,000	116,000
10,200		162,000	116,000
11,000		173,000	125,000
11,500		173,000	125,000
11,910	15/32	184,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,500		184,000	134,000
13,000		184,000	134,000

Сверла под кондукторную втулку

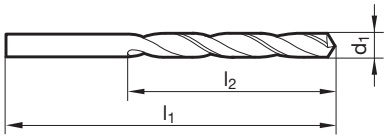
~10xD | DIN 339 | N | 118° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,100 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	○	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **311**

d1 mm	inch	l1 mm	l2 mm
1,100		50,000	28,000
1,300		52,000	30,000
1,500		55,000	33,000
1,600		58,000	35,000
1,800		62,000	38,000
1,900		62,000	38,000
1,950		66,000	41,000
2,000		66,000	41,000
2,500		74,000	47,000
3,000		79,000	51,000
3,100		84,000	55,000
3,200		84,000	55,000
4,000		96,000	64,000
4,500		102,000	69,000
5,000		108,000	74,000
5,100		108,000	74,000
6,100		124,000	86,000
6,400		124,000	86,000

d1 mm	inch	l1 mm	l2 mm
6,800		133,000	93,000
7,000		133,000	93,000
8,200		142,000	100,000
8,500		142,000	100,000
10,000		162,000	116,000
10,800		173,000	125,000
17,500		226,000	165,000
19,000		234,000	171,000

Спиральные свёрла, длинные

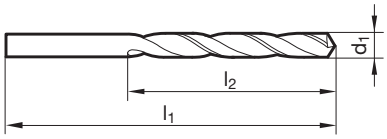
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **217**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	30,000	10,000
0,440		30,000	10,000
0,450		30,000	10,000
0,470		30,000	10,000
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,570		35,000	15,000
0,600		35,000	15,000
0,620		38,000	18,000
0,650		38,000	18,000
0,700		42,000	21,000
0,730		42,000	21,000
0,750		42,000	21,000
0,760		46,000	25,000
0,790	1/32	46,000	25,000
0,800		46,000	25,000
0,820		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,910		51,000	29,000
0,920		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,080		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,120		60,000	37,000
1,130		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,490		70,000	45,000

d1		l1	l2
mm	inch	mm	mm
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,030		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,420		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,620		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000

d1		l1	l2
mm	inch	mm	mm
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,030		106,000	69,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,950		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,450		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,650		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,950		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,030		132,000	87,000
5,050		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,150		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,350		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,550		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,060		148,000	97,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,250		184,000	121,000
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,600		195,000	128,000
11,700		195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,100		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
12,800		205,000	134,000
13,000		205,000	134,000
13,200		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,200		220,000	144,000
14,250		220,000	144,000
14,290	9/16	220,000	144,000
14,490		220,000	144,000
14,500		220,000	144,000
14,900		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,200		227,000	149,000
15,250		227,000	149,000
15,400		227,000	149,000
15,480	39/64	227,000	149,000
15,500		227,000	149,000
15,600		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
16,270	41/64	235,000	154,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
17,000		235,000	154,000
17,070	43/64	241,000	158,000
17,460	11/16	241,000	158,000
17,500		241,000	158,000
18,000		241,000	158,000
18,500		247,000	162,000
18,650	47/64	247,000	162,000
19,000		247,000	162,000
19,050	3/4	254,000	166,000
19,500		254,000	166,000
20,000		254,000	166,000
20,500		261,000	171,000
20,640	13/16	261,000	171,000
21,000		261,000	171,000
21,500		268,000	176,000
22,000		268,000	176,000
23,300		275,000	180,000
23,810	15/16	282,000	185,000
24,000		282,000	185,000
25,000	63/64	282,000	185,000
26,190	1 1/32	290,000	190,000
26,500		290,000	190,000
26,990	1 1/16	298,000	195,000
28,570	1 1/8	307,000	201,000
29,000		307,000	201,000
29,370	1 5/32	307,000	201,000
29,500		307,000	201,000
30,160	1 3/16	316,000	207,000
30,960	1 7/32	316,000	207,000
31,000		316,000	207,000
36,510	1 7/16	345,000	225,000

Спиральные свёрла, длинные

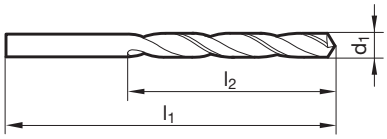
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 1,000 • конусная заточка • для глубоких отверстий • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **667**

d1 mm	inch	l1 mm	l2 mm	d1 mm	inch	l1 mm	l2 mm
0,500		32,000	12,000	2,800		100,000	66,000
0,600		35,000	15,000	2,850		100,000	66,000
0,700		42,000	21,000	2,870		100,000	66,000
0,750		42,000	21,000	2,900		100,000	66,000
0,800		46,000	25,000	3,000		100,000	66,000
0,900		51,000	29,000	3,030		106,000	69,000
0,950		51,000	29,000	3,050		106,000	69,000
1,000		56,000	33,000	3,100		106,000	69,000
1,100		60,000	37,000	3,170	1/8	106,000	69,000
1,150		60,000	37,000	3,200		106,000	69,000
1,200		65,000	41,000	3,250		106,000	69,000
1,250		65,000	41,000	3,260		106,000	69,000
1,300		65,000	41,000	3,300		106,000	69,000
1,350		70,000	45,000	3,350		106,000	69,000
1,400		70,000	45,000	3,400		112,000	73,000
1,450		70,000	45,000	3,500		112,000	73,000
1,500		70,000	45,000	3,570	9/64	112,000	73,000
1,550		76,000	50,000	3,600		112,000	73,000
1,590	1/16	76,000	50,000	3,650		112,000	73,000
1,600		76,000	50,000	3,700		112,000	73,000
1,650		76,000	50,000	3,730		112,000	73,000
1,700		76,000	50,000	3,750		112,000	73,000
1,800		80,000	53,000	3,800		119,000	78,000
1,850		80,000	53,000	3,850		119,000	78,000
1,900		80,000	53,000	3,900		119,000	78,000
1,950		85,000	56,000	3,950		119,000	78,000
1,980	5/64	85,000	56,000	3,970	5/32	119,000	78,000
2,000		85,000	56,000	4,000		119,000	78,000
2,100		85,000	56,000	4,050		119,000	78,000
2,200		90,000	59,000	4,100		119,000	78,000
2,300		90,000	59,000	4,200		119,000	78,000
2,350		90,000	59,000	4,250		119,000	78,000
2,370		95,000	62,000	4,300		126,000	82,000
2,380	3/32	95,000	62,000	4,370	11/64	126,000	82,000
2,440		95,000	62,000	4,400		126,000	82,000
2,450		95,000	62,000	4,500		126,000	82,000
2,500		95,000	62,000	4,570		126,000	82,000
2,530		95,000	62,000	4,600		126,000	82,000
2,650		95,000	62,000	4,620		126,000	82,000
2,700		100,000	66,000	4,650		126,000	82,000
2,750		100,000	66,000	4,700		126,000	82,000
2,780	7/64	100,000	66,000	4,750		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,050		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,100		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,750		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,500		220,000	144,000
14,750		220,000	144,000
14,800		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
16,000		227,000	149,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
16,750		235,000	154,000
17,000		235,000	154,000
17,460	11/16	241,000	158,000
18,000		241,000	158,000
18,250		247,000	162,000
22,220	7/8	268,000	176,000

Спиральные свёрла, длинные

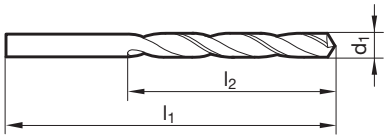
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 6,00
Направление резания	L

P	•	подточка ≥ Ø 14,750 • конусная заточка • для глубоких отверстий • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **220**

d1 mm	inch	l1 mm	l2 mm
0,450		30,000	10,000
0,470		30,000	10,000
0,900		51,000	29,000
0,950		51,000	29,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,630		76,000	50,000
1,660		76,000	50,000
1,730		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,300		90,000	59,000
2,500		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,070		106,000	69,000
3,100		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000

d1 mm	inch	l1 mm	l2 mm
4,500		126,000	82,000
4,600		126,000	82,000
4,780		132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,600		139,000	91,000
5,700		139,000	91,000
6,000		139,000	91,000
6,050		148,000	97,000
6,100		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,800		175,000	115,000
9,000		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,900		205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,750		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
19,000		247,000	162,000
20,000		254,000	166,000
22,000		268,000	176,000
25,000	63/64	282,000	185,000
25,500		290,000	190,000
29,000		307,000	201,000

d1		l1	l2
mm	inch	mm	mm

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

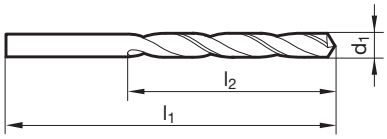
P	•
M	
K	•
N	○
S	
H	

подточка ≥ Ø 2,950 • конусная заточка • с лапкой на хвостовике

сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **204**

d1		l1	l2
mm	inch	mm	mm
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,080		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,800		139,000	91,000
5,850		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,000		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,450		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000
25,250		290,000	190,000

Спиральные свёрла, длинные

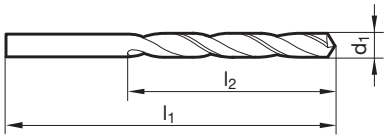
~10xD | DIN 340 | H | 118° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 15,000 • конусная заточка • для глубоких отверстий
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **218**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,820		46,000	25,000
0,840		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,560		76,000	50,000
1,570		76,000	50,000
1,580		76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,820		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,300		90,000	59,000
2,350		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,830		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
3,000		100,000	66,000
3,020		106,000	69,000
3,050		106,000	69,000
3,060		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,420		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,350		156,000	102,000
7,500		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,700		175,000	115,000
9,000		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
11,250		195,000	128,000
12,100		205,000	134,000
14,000		214,000	140,000
15,000		220,000	144,000
16,000		227,000	149,000

Спиральные свёрла, длинные

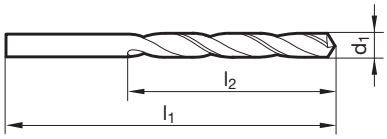
~10xD | DIN 340 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P		подточка ≥ Ø 15,000 • конусная заточка • для глубоких отверстий
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **221**

d1		l1	l2
mm	inch	mm	mm
0,450		30,000	10,000
0,600		35,000	15,000
0,650		38,000	18,000
0,900		51,000	29,000
1,100		60,000	37,000
1,240		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,370		70,000	45,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,160		90,000	59,000
2,180		90,000	59,000
2,200		90,000	59,000
2,270		90,000	59,000
2,350		90,000	59,000
2,850		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,510		112,000	73,000
3,700		112,000	73,000
4,100		119,000	78,000
4,200		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000
4,900		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,100		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,800		156,000	102,000
8,000		165,000	109,000
9,000		175,000	115,000
12,800		205,000	134,000
15,000		220,000	144,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

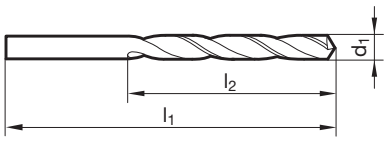
~10xD | DIN 340 | W | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 14,500 • конусная заточка • для глубоких отверстий
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **219**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,740		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
0,980		56,000	33,000
1,000		56,000	33,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,220		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,370		70,000	45,000
1,400		70,000	45,000
1,440		70,000	45,000
1,500		70,000	45,000
1,520		76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,760		80,000	53,000
1,770		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,970		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,070		85,000	56,000

d1		l1	l2
mm	inch	mm	mm
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,430		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,800		100,000	66,000
2,850		100,000	66,000
2,880		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,830		119,000	78,000
3,900		119,000	78,000

d1		l1	l2
mm	inch	mm	mm
3,920		119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,830		132,000	87,000
4,870		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,430		139,000	91,000
5,500		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,980		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,450		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,550		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,850		165,000	109,000
7,900		165,000	109,000
7,950		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,550		175,000	115,000
8,600		175,000	115,000
8,700		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,300		184,000	121,000
10,700		195,000	128,000
10,750		195,000	128,000
11,000		195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
12,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,750		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000
15,000		220,000	144,000
15,500		227,000	149,000
17,000		235,000	154,000
18,000		241,000	158,000
18,250		247,000	162,000
19,000		247,000	162,000
19,840	25/32	254,000	166,000
20,000		254,000	166,000
20,640	13/16	261,000	171,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

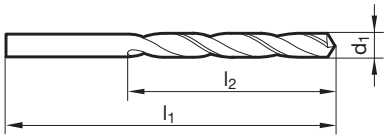
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P •	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **535**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,520		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,670		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,180		90,000	59,000

d1 mm	inch	l1 mm	l2 mm
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,480		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,830		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,130		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,050		148,000	97,000
6,100		148,000	97,000

d1		l1	l2
mm	inch	mm	mm
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
6,910		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,040		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,850		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,490		184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,100		195,000	128,000
11,110	7/16	195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,000		205,000	134,000
12,150		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,600		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000

Спиральные свёрла, длинные

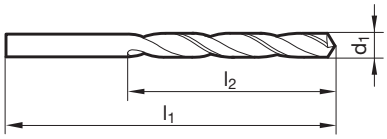
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P •	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **668**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,780	7/64	100,000	66,000

d1 mm	inch	l1 mm	l2 mm
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,870		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,850		132,000	87,000
4,900		132,000	87,000
4,910		132,000	87,000
4,920		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,760		156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,340		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
14,000		214,000	140,000

Спиральные свёрла, длинные

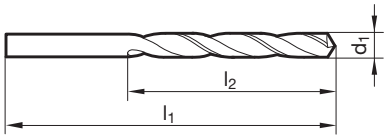
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	F
Направление резания	R

P •	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **2462**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,800		119,000	78,000
4,000		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,600		165,000	109,000
8,000		165,000	109,000
9,000		175,000	115,000
10,000		184,000	121,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

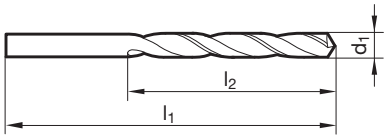
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	L

P •	подточка ≥ Ø 1,400 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **506**

d1 mm	inch	l1 mm	l2 mm
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,680		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,500		95,000	62,000
2,800		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,800		119,000	78,000
3,950		119,000	78,000
4,000		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000

d1 mm	inch	l1 mm	l2 mm
4,600		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
7,400		156,000	102,000
7,800		165,000	109,000
8,500		165,000	109,000
9,000		175,000	115,000
9,900		184,000	121,000
10,320	13/32	184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000

Спиральные свёрла, длинные

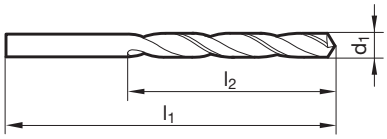
~10xD | DIN 340 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,370 • конусная заточка • Очень большая стружечная канавка
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **501**

d1 mm	inch	l1 mm	l2 mm	d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000	2,350		90,000	59,000
1,020		56,000	33,000	2,370		95,000	62,000
1,030		56,000	33,000	2,380	3/32	95,000	62,000
1,040		56,000	33,000	2,400		95,000	62,000
1,070		60,000	37,000	2,440		95,000	62,000
1,090		60,000	37,000	2,450		95,000	62,000
1,100		60,000	37,000	2,490		95,000	62,000
1,180		60,000	37,000	2,500		95,000	62,000
1,190	3/64	65,000	41,000	2,520		95,000	62,000
1,200		65,000	41,000	2,530		95,000	62,000
1,250		65,000	41,000	2,550		95,000	62,000
1,300		65,000	41,000	2,580		95,000	62,000
1,320		65,000	41,000	2,600		95,000	62,000
1,400		70,000	45,000	2,640		95,000	62,000
1,450		70,000	45,000	2,650		95,000	62,000
1,480		70,000	45,000	2,700		100,000	66,000
1,500		70,000	45,000	2,710		100,000	66,000
1,510		76,000	50,000	2,750		100,000	66,000
1,550		76,000	50,000	2,780	7/64	100,000	66,000
1,590	1/16	76,000	50,000	2,790		100,000	66,000
1,600		76,000	50,000	2,800		100,000	66,000
1,610		76,000	50,000	2,820		100,000	66,000
1,700		76,000	50,000	2,850		100,000	66,000
1,750		80,000	53,000	2,870		100,000	66,000
1,780		80,000	53,000	2,900		100,000	66,000
1,800		80,000	53,000	2,950		100,000	66,000
1,850		80,000	53,000	3,000		100,000	66,000
1,900		80,000	53,000	3,050		106,000	69,000
1,930		85,000	56,000	3,100		106,000	69,000
1,950		85,000	56,000	3,170	1/8	106,000	69,000
1,980	5/64	85,000	56,000	3,200		106,000	69,000
1,990		85,000	56,000	3,250		106,000	69,000
2,000		85,000	56,000	3,260		106,000	69,000
2,050		85,000	56,000	3,300		106,000	69,000
2,060		85,000	56,000	3,350		106,000	69,000
2,080		85,000	56,000	3,400		112,000	73,000
2,100		85,000	56,000	3,450		112,000	73,000
2,180		90,000	59,000	3,500		112,000	73,000
2,200		90,000	59,000	3,570	9/64	112,000	73,000
2,250		90,000	59,000	3,600		112,000	73,000
2,260		90,000	59,000	3,650		112,000	73,000
2,300		90,000	59,000	3,660		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,700		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,030		148,000	97,000
6,040		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,040		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,025		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,580		184,000	121,000
9,600		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,200		184,000	121,000
10,260		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
14,000		214,000	140,000
32,600		325,000	213,000

Спиральные свёрла, длинные

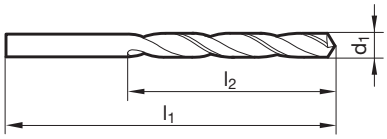
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	○	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № 317

d1 mm	inch	l1 mm	l2 mm	d1 mm	inch	l1 mm	l2 mm
0,500		32,000	12,000	2,500		95,000	62,000
0,600		35,000	15,000	2,600		95,000	62,000
0,700		42,000	21,000	2,700		100,000	66,000
0,750		42,000	21,000	2,780	7/64	100,000	66,000
0,800		46,000	25,000	2,800		100,000	66,000
0,850		46,000	25,000	2,900		100,000	66,000
0,900		51,000	29,000	3,000		100,000	66,000
0,950		51,000	29,000	3,050		106,000	69,000
0,960		56,000	33,000	3,100		106,000	69,000
1,000		56,000	33,000	3,170	1/8	106,000	69,000
1,020		56,000	33,000	3,200		106,000	69,000
1,050		56,000	33,000	3,250		106,000	69,000
1,100		60,000	37,000	3,300		106,000	69,000
1,150		60,000	37,000	3,400		112,000	73,000
1,190	3/64	65,000	41,000	3,500		112,000	73,000
1,200		65,000	41,000	3,550		112,000	73,000
1,250		65,000	41,000	3,570	9/64	112,000	73,000
1,300		65,000	41,000	3,600		112,000	73,000
1,350		70,000	45,000	3,700		112,000	73,000
1,400		70,000	45,000	3,800		119,000	78,000
1,450		70,000	45,000	3,900		119,000	78,000
1,500		70,000	45,000	3,970	5/32	119,000	78,000
1,510		76,000	50,000	4,000		119,000	78,000
1,550		76,000	50,000	4,040		119,000	78,000
1,590	1/16	76,000	50,000	4,100		119,000	78,000
1,600		76,000	50,000	4,200		119,000	78,000
1,650		76,000	50,000	4,300		126,000	82,000
1,700		76,000	50,000	4,370	11/64	126,000	82,000
1,780		80,000	53,000	4,400		126,000	82,000
1,800		80,000	53,000	4,500		126,000	82,000
1,850		80,000	53,000	4,600		126,000	82,000
1,900		80,000	53,000	4,700		126,000	82,000
1,950		85,000	56,000	4,760	3/16	132,000	87,000
1,980	5/64	85,000	56,000	4,800		132,000	87,000
2,000		85,000	56,000	4,850		132,000	87,000
2,050		85,000	56,000	4,900		132,000	87,000
2,060		85,000	56,000	5,000		132,000	87,000
2,100		85,000	56,000	5,050		132,000	87,000
2,200		90,000	59,000	5,100		132,000	87,000
2,300		90,000	59,000	5,160	13/64	132,000	87,000
2,380	3/32	95,000	62,000	5,200		132,000	87,000
2,400		95,000	62,000	5,300		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,400		220,000	144,000
14,600		220,000	144,000
14,680	37/64	220,000	144,000
14,700		220,000	144,000
14,750		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,480	39/64	227,000	149,000
15,800		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
22,000		268,000	176,000

Спиральные свёрла, длинные

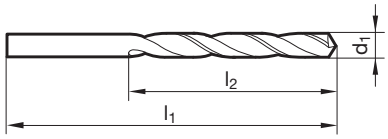
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • использовать при плохом отводе стружки
M	•	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № 336

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000

d1 mm	inch	l1 mm	l2 mm
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,440		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000

d1		l1	l2
mm	inch	mm	mm
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
6,900		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
10,750		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,500		227,000	149,000
16,000		227,000	149,000

Спиральные свёрла, длинные

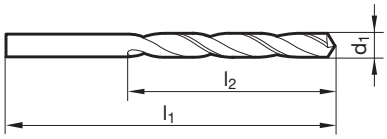
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • использовать при плохом отводе стружки
M	•	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № 396

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,200		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000

Спиральные свёрла, длинные

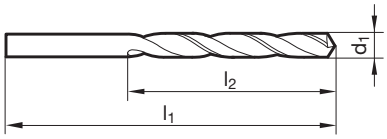
~10xD | DIN 340 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • стали для подшипников качения • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **617**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,800		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,510	29/64	195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,000		220,000	144,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

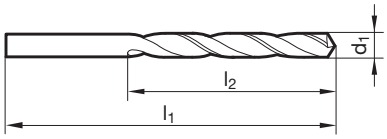
~10xD | DIN 340 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • стали для подшипников качения • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № 669

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000

d1 mm	inch	l1 mm	l2 mm
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,500		165,000	109,000
8,730	11/32	175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,300		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла, длинные

~10xD | WN | N | 130° | h7

Режущий материал	VHM
Покрытие	◯
Направление резания	R

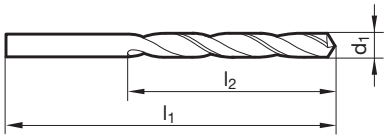
P
M
K
N
S
H

плоскостная заточка • форма режущей кромки прямая

стеклопластики • дуропласты с наждачным эффектом

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **706**

d1		l1	l2
mm	inch	mm	mm
0,500		38,000	8,500
0,600		38,000	9,500
0,650		38,000	10,500
0,700		38,000	10,500
0,750		38,000	12,500
0,800		38,000	12,500
0,850		38,000	14,500
0,900		38,000	14,500
1,000		38,000	17,000
1,050		38,000	17,000
1,100		38,000	17,000
1,400		38,000	17,000

d1		l1	l2
mm	inch	mm	mm
1,450		38,000	17,000

Спиральные свёрла сверхдлинные, серия 1

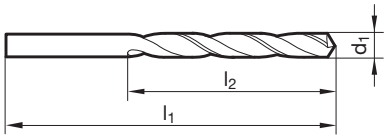
~15xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 2,380 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **235**

d1 mm	inch	l1 mm	l2 mm
1,600		115,000	75,000
1,700		115,000	75,000
1,800		120,000	80,000
1,900		120,000	80,000
1,930		125,000	85,000
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,650		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000

d1 mm	inch	l1 mm	l2 mm
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,340		205,000	140,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,200		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,700		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,250		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,100		295,000	205,000
12,250		295,000	205,000
12,300	31/64	295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000

Спиральные свёрла сверхдлинные, серия 1

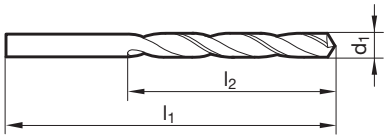
~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,950 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № 502

d1 mm	inch	l1 mm	l2 mm
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,370		140,000	95,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,550		140,000	95,000
2,580		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,850		150,000	100,000
2,870		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,030		155,000	105,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,860		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000

d1 mm	inch	l1 mm	l2 mm
4,400		185,000	125,000
4,500		185,000	125,000
4,570		185,000	125,000
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,110		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,750		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
6,900		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,200		225,000	155,000
7,300		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
7,700		240,000	165,000
7,750		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000
8,430		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,200		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,200		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
10,720	27/64	280,000	195,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000
11,200		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,750		280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000

Спиральные свёрла сверхдлинные, серия 1

~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

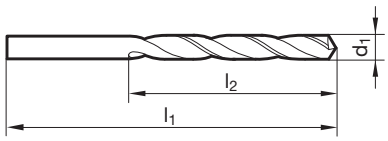
P	•
M	
K	•
N	•
S	○
H	

подточка ≥ Ø 1,980 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **670**

d1 mm	d1 inch	l1 mm	l2 mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,200		175,000	120,000
4,370	11/64	185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000

d1 mm	d1 inch	l1 mm	l2 mm
6,350	1/4	215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,500		240,000	165,000
8,730	11/32	250,000	175,000
9,000		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,900		280,000	195,000
11,000		280,000	195,000
11,900		295,000	205,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные, серия 1

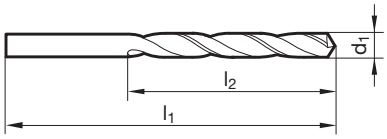
~15xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,380 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **524**

d1 mm	inch	l1 mm	l2 mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,450		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,350		155,000	105,000
3,400		165,000	115,000
3,450		165,000	115,000
3,500		165,000	115,000
3,530		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,250		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,760	3/16	195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000

d1 mm	inch	l1 mm	l2 mm
5,200		195,000	135,000
5,400		205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,140	9/32	225,000	155,000
7,300		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,330	21/64	240,000	165,000
8,600		250,000	175,000
8,730	11/32	250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,200		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000

d1		l1	l2
mm	inch	mm	mm
11,500		280,000	195,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,700	1/2	295,000	205,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла сверхдлинные, серия 1

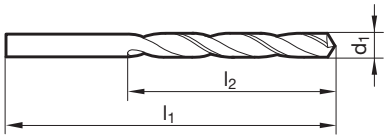
~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,700 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • использовать при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **618**

d1 mm	inch	l1 mm	l2 mm
2,700		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,850		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000

d1 mm	inch	l1 mm	l2 mm
5,800		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,700		265,000	185,000
10,000		265,000	185,000

Спиральное сверло сверхдлинные, серия 2

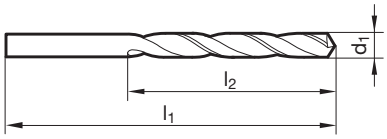
~20xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,700 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **236**

d1 mm	inch	l1 mm	l2 mm
2,700		190,000	130,000
2,800		190,000	130,000
2,900		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,800		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1 mm	inch	l1 mm	l2 mm
6,500		275,000	190,000
6,700		275,000	190,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,100		305,000	210,000
8,500		305,000	210,000
8,700		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
8,900		320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,800		340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
12,000		375,000	260,000
13,000		375,000	260,000

Спиральное сверло сверхдлинные, серия 2

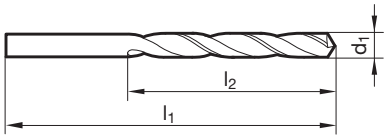
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P •	подточка ≥ Ø 2,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **503**

d1 mm	inch	l1 mm	l2 mm
2,000		160,000	110,000
2,200		170,000	115,000
2,300		170,000	115,000
2,500		180,000	120,000
2,800		190,000	130,000
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,400		210,000	145,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,700		210,000	145,000
3,800		220,000	150,000
3,900		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,300		235,000	160,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,100		245,000	170,000
5,160	13/64	245,000	170,000
5,200		245,000	170,000
5,300		245,000	170,000
5,400		260,000	180,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,700		260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000

d1 mm	inch	l1 mm	l2 mm
6,100		275,000	190,000
6,150		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000
6,400		275,000	190,000
6,500		275,000	190,000
6,600		275,000	190,000
6,700		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
6,900		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,330	21/64	305,000	210,000
8,500		305,000	210,000
8,600		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
9,000		320,000	220,000
9,100		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,700		340,000	235,000
9,800		340,000	235,000
9,920	25/64	340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
10,720	27/64	365,000	250,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
11,910	15/32	375,000	260,000

d1		l1	l2
mm	inch	mm	mm
12,000		375,000	260,000
12,300	31/64	375,000	260,000
12,500		375,000	260,000
12,700	1/2	375,000	260,000
13,000		375,000	260,000

d1		l1	l2
mm	inch	mm	mm

FRIZAR
www.frizar.ru

Спиральное сверло сверхдлинные, серия 2

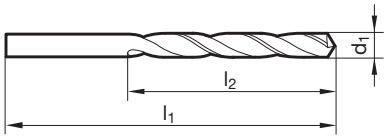
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	(S)
Направление резания	(R)

P •	подточка ≥ Ø 2,300 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S ○	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **671**

d1 mm	d1 inch	l1 mm	l2 mm
2,700		190,000	130,000
2,800		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,090		220,000	150,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,600		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000

d1 mm	d1 inch	l1 mm	l2 mm
5,300		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
6,000		260,000	180,000
6,350	1/4	275,000	190,000
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,500		305,000	210,000

Спиральное сверло сверхдлинные, серия 2

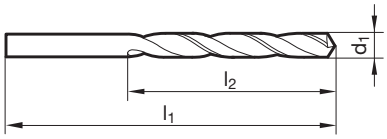
~20xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,800 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **528**

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,500		210,000	145,000
3,650		210,000	145,000
3,800		220,000	150,000
4,000		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000
5,110		245,000	170,000
5,500		260,000	180,000
5,800		260,000	180,000
6,000		260,000	180,000
7,000		290,000	200,000

d1		l1	l2
mm	inch	mm	mm
7,500		290,000	200,000
8,000		305,000	210,000
8,500		305,000	210,000
9,000		320,000	220,000
10,000		340,000	235,000
10,500		340,000	235,000
11,500		365,000	250,000
13,000		375,000	260,000

FRIZAR
www.frizar.ru

Спиральное сверло сверхдлинные, серия 2

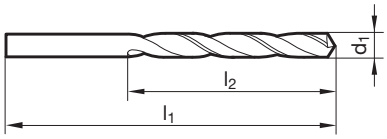
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • использовать при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **619**

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,370	11/64	235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,100		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1		l1	l2
mm	inch	mm	mm
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,400		290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,600		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,500		305,000	210,000
8,730	11/32	320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,600		340,000	235,000
9,900		340,000	235,000
10,000		340,000	235,000

Спиральное сверло сверхдлинные, серия 3

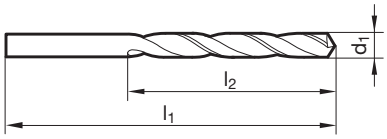
~25xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,500 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № 237

d1		l1	l2
mm	inch	mm	mm
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,800		330,000	225,000
5,900		330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,000		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,500		370,000	250,000
7,800		390,000	265,000
8,000		390,000	265,000
8,500		390,000	265,000
9,000		410,000	280,000
9,500		410,000	280,000
9,800		430,000	295,000
10,000		430,000	295,000
10,300		430,000	295,000
10,500		430,000	295,000
11,000		455,000	310,000
11,500		455,000	310,000
11,750		455,000	310,000
12,000		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

FRIZAR
www.frizar.ru

Спиральное сверло сверхдлинные, серия 3

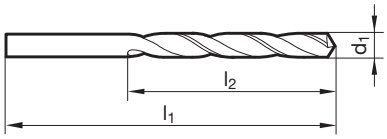
~25xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,500 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **504**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,570	9/64	265,000	180,000
3,600		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,370	11/64	295,000	200,000
4,400		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,750	17/64	370,000	250,000
6,800		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,540	19/64	390,000	265,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,330	21/64	390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
8,900		410,000	280,000
9,000		410,000	280,000
9,200		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
9,530		430,000	295,000
9,920	25/64	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

Спиральное сверло сверхдлинные, серия 3

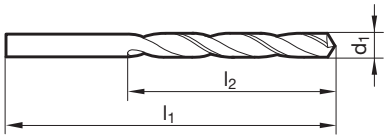
~25xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 2,500 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **529**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
6,000		330,000	225,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,500		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
8,000		390,000	265,000
9,500		410,000	280,000
10,000		430,000	295,000

Спиральное сверло сверхдлинные, серия 3

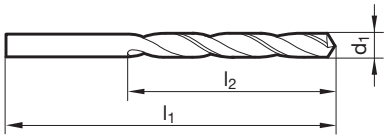
~25xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,500 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • для очень глубоких отверстий • использовать при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **571**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	370,000	250,000
6,800		370,000	250,000
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
9,000		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

Спиральные свёрла сверхдлинные

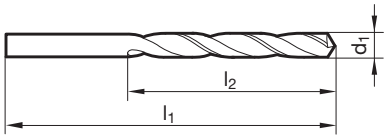
>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 6,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **242**

d1		l1	l2
mm	inch	mm	mm
6,000		500,000	400,000
8,000		500,000	400,000
10,000		600,000	500,000
11,000		600,000	500,000
12,000		600,000	500,000

d1		l1	l2
mm	inch	mm	mm

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные

>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

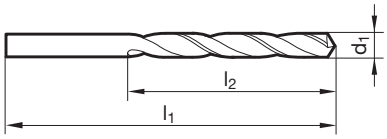
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 8,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **243**

d1		l1	l2
mm	inch	mm	mm
8,000		750,000	650,000
10,000		750,000	650,000
11,000		750,000	650,000
12,000		750,000	650,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла сверхдлинные

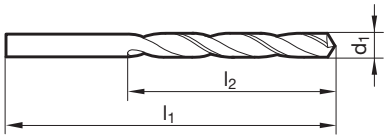
>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **244**

d1		l1	l2
mm	inch	mm	mm
10,000		1000,000	850,000
11,000		1000,000	850,000
12,000		1000,000	850,000

d1		l1	l2
mm	inch	mm	mm

FRIZAR
www.frizar.ru

Спиральное сверло с усиленным хвостовиком

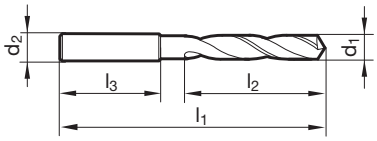
~3xD | WN | GU500 | 118° | h8 | HA

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 2,000 • плоскостная заточка • легированная кобальтом HSS • небольшое усилие подачи • низкий крутящий момент
M	•	• высокая износостойкость • универсальное применение
K	•	
N	•	стали (легированные/нелегированные) прочность до 800 Н/мм²
S		• холодно/горячекатанные стали • нержавеющие стали • цветные
H		металлы • чугуны • пластмассы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **512**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,000	3,000	44,000	12,000	28,000
2,100	3,000	44,000	12,000	28,000
2,200	3,000	45,000	13,000	28,000
2,300	3,000	45,000	13,000	28,000
2,400	3,000	46,000	14,000	28,000
2,500	3,000	46,000	14,000	28,000
2,600	3,000	46,000	14,000	28,000
2,700	3,000	48,000	16,000	28,000
2,780	3,000	48,000	16,000	28,000
2,800	3,000	48,000	16,000	28,000
2,900	3,000	48,000	16,000	28,000
3,000	3,000	48,000	16,000	28,000
3,100	4,000	50,000	18,000	28,000
3,170	4,000	50,000	18,000	28,000
3,200	4,000	50,000	18,000	28,000
3,300	4,000	50,000	18,000	28,000
3,400	4,000	52,000	20,000	28,000
3,500	4,000	52,000	20,000	28,000
3,570	4,000	52,000	20,000	28,000
3,600	4,000	52,000	20,000	28,000
3,700	4,000	52,000	20,000	28,000
3,800	4,000	54,000	22,000	28,000
3,900	4,000	54,000	22,000	28,000
4,000	4,000	54,000	22,000	28,000
4,100	6,000	66,000	22,000	36,000
4,200	6,000	66,000	22,000	36,000
4,300	6,000	68,000	24,000	36,000
4,370	6,000	68,000	24,000	36,000
4,400	6,000	68,000	24,000	36,000
4,500	6,000	68,000	24,000	36,000
4,700	6,000	68,000	24,000	36,000
4,760	6,000	70,000	26,000	36,000
4,800	6,000	70,000	26,000	36,000
4,900	6,000	70,000	26,000	36,000
5,000	6,000	70,000	26,000	36,000
5,100	6,000	70,000	26,000	36,000
5,200	6,000	70,000	26,000	36,000
5,300	6,000	70,000	26,000	36,000
5,400	6,000	72,000	28,000	36,000
5,500	6,000	72,000	28,000	36,000
5,560	6,000	72,000	28,000	36,000
5,600	6,000	72,000	28,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
5,800	6,000	72,000	28,000	36,000
5,900	6,000	72,000	28,000	36,000
5,950	6,000	72,000	28,000	36,000
6,000	6,000	72,000	28,000	36,000
6,100	8,000	75,000	31,000	36,000
6,200	8,000	75,000	31,000	36,000
6,300	8,000	75,000	31,000	36,000
6,350	8,000	75,000	31,000	36,000
6,400	8,000	75,000	31,000	36,000
6,500	8,000	75,000	31,000	36,000
6,600	8,000	75,000	31,000	36,000
6,750	8,000	78,000	34,000	36,000
6,800	8,000	78,000	34,000	36,000
6,900	8,000	78,000	34,000	36,000
7,000	8,000	78,000	34,000	36,000
7,100	8,000	78,000	34,000	36,000
7,140	8,000	78,000	34,000	36,000
7,200	8,000	78,000	34,000	36,000
7,300	8,000	78,000	34,000	36,000
7,500	8,000	78,000	34,000	36,000
7,600	8,000	81,000	37,000	36,000
7,800	8,000	81,000	37,000	36,000
7,900	8,000	81,000	37,000	36,000
7,940	8,000	81,000	37,000	36,000
8,000	8,000	81,000	37,000	36,000
8,100	10,000	87,000	37,000	40,000
8,200	10,000	87,000	37,000	40,000
8,300	10,000	87,000	37,000	40,000
8,330	10,000	87,000	37,000	40,000
8,500	10,000	87,000	37,000	40,000
8,600	10,000	91,000	40,000	40,000
8,730	10,000	91,000	40,000	40,000
8,800	10,000	91,000	40,000	40,000
8,900	10,000	91,000	40,000	40,000
9,000	10,000	91,000	40,000	40,000
9,100	10,000	91,000	40,000	40,000
9,130	10,000	91,000	40,000	40,000
9,200	10,000	91,000	40,000	40,000
9,300	10,000	91,000	40,000	40,000
9,400	10,000	91,000	40,000	40,000
9,500	10,000	91,000	40,000	40,000
9,520	10,000	93,000	43,000	40,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
9,800	10,000	93,000	43,000	40,000
9,900	10,000	93,000	43,000	40,000
9,920	10,000	93,000	43,000	40,000
10,000	10,000	93,000	43,000	40,000
10,100	12,000	100,000	43,000	45,000
10,200	12,000	100,000	43,000	45,000
10,300	12,000	100,000	43,000	45,000
10,320	12,000	100,000	43,000	45,000
10,500	12,000	100,000	43,000	45,000
10,800	12,000	104,000	47,000	45,000
11,000	12,000	104,000	47,000	45,000
11,100	12,000	104,000	47,000	45,000
11,110	12,000	104,000	47,000	45,000
11,200	12,000	104,000	47,000	45,000
11,300	12,000	104,000	47,000	45,000
11,400	12,000	104,000	47,000	45,000
11,500	12,000	104,000	47,000	45,000
11,510	12,000	104,000	47,000	45,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
11,700	12,000	104,000	47,000	45,000
11,800	12,000	104,000	47,000	45,000
12,000	12,000	108,000	51,000	45,000
12,300	16,000	111,000	51,000	48,000
12,500	16,000	111,000	51,000	48,000
13,000	16,000	111,000	51,000	48,000
13,490	16,000	114,000	54,000	48,000
13,500	16,000	114,000	54,000	48,000
14,000	16,000	114,000	54,000	48,000
15,000	16,000	116,000	56,000	48,000
16,000	16,000	118,000	58,000	48,000
16,500	20,000	126,000	60,000	50,000
16,670	20,000	126,000	60,000	50,000
17,500	20,000	128,000	62,000	50,000
18,000	20,000	128,000	62,000	50,000
18,500	20,000	130,000	64,000	50,000
19,500	20,000	132,000	66,000	50,000
20,000	20,000	132,000	66,000	50,000

Спиральное сверло с усиленным хвостовиком

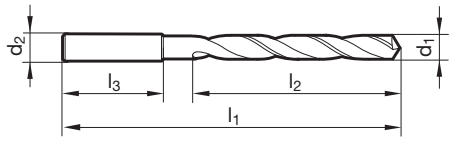
~5xD | WN | GU500 | 118° | h8 | HA

Режущий материал	HSCO
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 2,000 • плоскостная заточка • легированная кобальтом HSS • небольшое усилие подачи • низкий крутящий момент
M	•	• высокая износостойкость • универсальное применение
K	•	
N	•	стали (легированные/нелегированные) прочность до 800 Н/мм² • холодно/горячекатанные стали • нержавеющие стали • цветные металлы • чугуны • пластмассы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **511**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,000	3,000	56,000	24,000	28,000
2,100	3,000	56,000	24,000	28,000
2,300	3,000	59,000	27,000	28,000
2,380	3,000	62,000	30,000	28,000
2,400	3,000	62,000	30,000	28,000
2,500	3,000	62,000	30,000	28,000
2,600	3,000	62,000	30,000	28,000
2,780	3,000	65,000	33,000	28,000
2,800	3,000	65,000	33,000	28,000
2,900	3,000	65,000	33,000	28,000
3,000	3,000	65,000	33,000	28,000
3,100	4,000	68,000	36,000	28,000
3,200	4,000	68,000	36,000	28,000
3,300	4,000	68,000	36,000	28,000
3,400	4,000	71,000	39,000	28,000
3,500	4,000	71,000	39,000	28,000
3,570	4,000	71,000	39,000	28,000
3,900	4,000	75,000	43,000	28,000
3,970	4,000	75,000	43,000	28,000
4,000	4,000	75,000	43,000	28,000
4,200	6,000	87,000	43,000	36,000
4,300	6,000	91,000	47,000	36,000
4,370	6,000	91,000	47,000	36,000
4,400	6,000	91,000	47,000	36,000
4,500	6,000	91,000	47,000	36,000
4,650	6,000	91,000	47,000	36,000
4,700	6,000	91,000	47,000	36,000
4,760	6,000	96,000	52,000	36,000
4,800	6,000	96,000	52,000	36,000
4,900	6,000	96,000	52,000	36,000
5,000	6,000	96,000	52,000	36,000
5,100	6,000	96,000	52,000	36,000
5,160	6,000	96,000	52,000	36,000
5,200	6,000	96,000	52,000	36,000
5,300	6,000	96,000	52,000	36,000
5,400	6,000	101,000	57,000	36,000
5,500	6,000	101,000	57,000	36,000
5,600	6,000	101,000	57,000	36,000
5,800	6,000	101,000	57,000	36,000
5,900	6,000	101,000	57,000	36,000
6,000	6,000	101,000	57,000	36,000
6,100	8,000	107,000	63,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
6,300	8,000	107,000	63,000	36,000
6,350	8,000	107,000	63,000	36,000
6,400	8,000	107,000	63,000	36,000
6,500	8,000	107,000	63,000	36,000
6,600	8,000	107,000	63,000	36,000
6,750	8,000	113,000	69,000	36,000
6,800	8,000	113,000	69,000	36,000
6,900	8,000	113,000	69,000	36,000
7,000	8,000	113,000	69,000	36,000
7,100	8,000	113,000	69,000	36,000
7,140	8,000	113,000	69,000	36,000
7,200	8,000	113,000	69,000	36,000
7,300	8,000	113,000	69,000	36,000
7,400	8,000	113,000	69,000	36,000
7,500	8,000	113,000	69,000	36,000
7,540	8,000	119,000	75,000	36,000
7,550	8,000	119,000	75,000	36,000
7,600	8,000	119,000	75,000	36,000
7,700	8,000	119,000	75,000	36,000
7,800	8,000	119,000	75,000	36,000
7,900	8,000	119,000	75,000	36,000
8,000	8,000	119,000	75,000	36,000
8,100	10,000	125,000	75,000	40,000
8,200	10,000	125,000	75,000	40,000
8,300	10,000	125,000	75,000	40,000
8,330	10,000	125,000	75,000	40,000
8,500	10,000	125,000	75,000	40,000
8,600	10,000	131,000	81,000	40,000
8,730	10,000	131,000	81,000	40,000
8,800	10,000	131,000	81,000	40,000
8,900	10,000	131,000	81,000	40,000
9,000	10,000	131,000	81,000	40,000
9,100	10,000	131,000	81,000	40,000
9,130	10,000	131,000	81,000	40,000
9,400	10,000	131,000	81,000	40,000
9,500	10,000	131,000	81,000	40,000
9,520	10,000	137,000	87,000	40,000
9,550	10,000	137,000	87,000	40,000
9,600	10,000	137,000	87,000	40,000
9,900	10,000	137,000	87,000	40,000
9,920	10,000	137,000	87,000	40,000
10,000	10,000	137,000	87,000	40,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
10,100	12,000	144,000	87,000	45,000
10,200	12,000	144,000	87,000	45,000
10,400	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
10,600	12,000	144,000	87,000	45,000
10,800	12,000	151,000	94,000	45,000
11,000	12,000	151,000	94,000	45,000
11,110	12,000	151,000	94,000	45,000
11,200	12,000	151,000	94,000	45,000
11,300	12,000	151,000	94,000	45,000
11,510	12,000	151,000	94,000	45,000
11,800	12,000	151,000	94,000	45,000
11,910	12,000	158,000	101,000	45,000
12,000	12,000	158,000	101,000	45,000
12,200	16,000	161,000	101,000	48,000
12,500	16,000	161,000	101,000	48,000
12,700	16,000	161,000	101,000	48,000
13,000	16,000	161,000	101,000	48,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
13,500	16,000	166,000	106,000	48,000
13,890	16,000	166,000	106,000	48,000
14,000	16,000	166,000	106,000	48,000
14,500	16,000	169,000	109,000	48,000
15,000	16,000	169,000	109,000	48,000
15,500	16,000	172,000	112,000	48,000
16,000	16,000	172,000	112,000	48,000
16,500	20,000	181,000	115,000	50,000
17,000	20,000	181,000	115,000	50,000
17,460	20,000	184,000	118,000	50,000
17,500	20,000	184,000	118,000	50,000
18,000	20,000	184,000	118,000	50,000
19,000	20,000	188,000	122,000	50,000
19,500	20,000	191,000	125,000	50,000
20,000	20,000	191,000	125,000	50,000

Спиральное сверло с усиленным хвостовиком

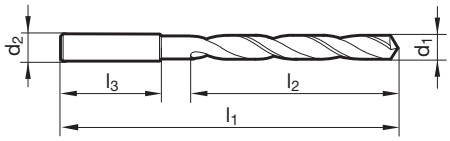
~5xD | WN | GT 500 | 130° | h8 | HA

Режущий материал	HSS-E-PM
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 2,000 • коническая заточка со специальным типом подточки B • легированная кобальтом порошковая HSS • высокая стабильность • высокая износостойкость
M	○	
K	•	специальная геометрия для снижения вероятности появления заусенцев • упрочненные стали • чугуны, латунь, бронза
N	○	
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **513**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,000	3,000	56,000	24,000	28,000
2,100	3,000	56,000	24,000	28,000
2,380	3,000	62,000	30,000	28,000
2,500	3,000	62,000	30,000	28,000
2,780	3,000	65,000	33,000	28,000
3,000	3,000	65,000	33,000	28,000
3,170	4,000	68,000	36,000	28,000
3,300	4,000	68,000	36,000	28,000
3,500	4,000	71,000	39,000	28,000
3,570	4,000	71,000	39,000	28,000
3,970	4,000	75,000	43,000	28,000
4,000	4,000	75,000	43,000	28,000
4,200	6,000	87,000	43,000	36,000
4,370	6,000	91,000	47,000	36,000
4,500	6,000	91,000	47,000	36,000
4,650	6,000	91,000	47,000	36,000
4,760	6,000	96,000	52,000	36,000
4,800	6,000	96,000	52,000	36,000
5,000	6,000	96,000	52,000	36,000
5,100	6,000	96,000	52,000	36,000
5,160	6,000	96,000	52,000	36,000
5,200	6,000	96,000	52,000	36,000
5,300	6,000	96,000	52,000	36,000
5,500	6,000	101,000	57,000	36,000
5,800	6,000	101,000	57,000	36,000
6,000	6,000	101,000	57,000	36,000
6,350	8,000	107,000	63,000	36,000
6,500	8,000	107,000	63,000	36,000
6,600	8,000	107,000	63,000	36,000
6,750	8,000	113,000	69,000	36,000
6,800	8,000	113,000	69,000	36,000
7,000	8,000	113,000	69,000	36,000
7,140	8,000	113,000	69,000	36,000
7,400	8,000	113,000	69,000	36,000
7,500	8,000	113,000	69,000	36,000
7,540	8,000	119,000	75,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
7,800	8,000	119,000	75,000	36,000
7,940	8,000	119,000	75,000	36,000
8,000	8,000	119,000	75,000	36,000
8,330	10,000	125,000	75,000	40,000
8,500	10,000	125,000	75,000	40,000
8,730	10,000	131,000	81,000	40,000
8,800	10,000	131,000	81,000	40,000
9,000	10,000	131,000	81,000	40,000
9,130	10,000	131,000	81,000	40,000
9,300	10,000	131,000	81,000	40,000
9,500	10,000	131,000	81,000	40,000
9,520	10,000	137,000	87,000	40,000
9,600	10,000	137,000	87,000	40,000
9,800	10,000	137,000	87,000	40,000
9,920	10,000	137,000	87,000	40,000
10,000	10,000	137,000	87,000	40,000
10,200	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
10,600	12,000	144,000	87,000	45,000
10,700	12,000	151,000	94,000	45,000
10,900	12,000	151,000	94,000	45,000
11,000	12,000	151,000	94,000	45,000
11,100	12,000	151,000	94,000	45,000
11,300	12,000	151,000	94,000	45,000
11,400	12,000	151,000	94,000	45,000
11,500	12,000	151,000	94,000	45,000
11,900	12,000	158,000	101,000	45,000
12,000	12,000	158,000	101,000	45,000
12,200	14,000	161,000	101,000	45,000
12,300	14,000	161,000	101,000	45,000
12,400	14,000	161,000	101,000	45,000
12,500	14,000	161,000	101,000	45,000
12,600	14,000	161,000	101,000	45,000
12,700	14,000	161,000	101,000	45,000
12,900	14,000	161,000	101,000	45,000

Спиральное сверло с усиленным хвостовиком

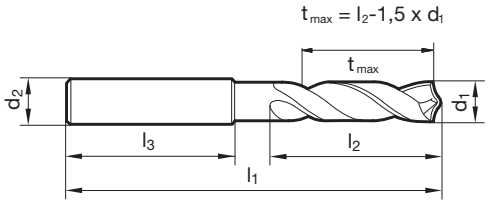
~3xD | DIN 6537 K | H | 120° | m7 | HA

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	○	подточка ≥ Ø 2,600 • плоскостная заточка • режущая кромка прямая (благодаря корректировке)
M		
K	○	
N		закаленная сталь до 62 HRC
S		
H	•	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **1946**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,600	6,000	62,000	20,000	36,000
3,000	6,000	62,000	20,000	36,000
3,400	6,000	62,000	20,000	36,000
4,000	6,000	66,000	24,000	36,000
4,300	6,000	66,000	24,000	36,000
5,000	6,000	66,000	28,000	36,000
5,100	6,000	66,000	28,000	36,000
5,600	6,000	66,000	28,000	36,000
6,000	6,000	66,000	28,000	36,000
6,900	8,000	79,000	34,000	36,000
7,100	8,000	79,000	41,000	36,000
8,000	8,000	79,000	41,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
8,600	10,000	89,000	47,000	40,000
9,100	10,000	89,000	47,000	40,000
10,000	10,000	89,000	47,000	40,000
10,400	12,000	102,000	55,000	45,000
10,600	12,000	102,000	55,000	45,000
11,100	12,000	102,000	55,000	45,000
12,000	12,000	102,000	55,000	45,000
14,100	16,000	115,000	65,000	48,000

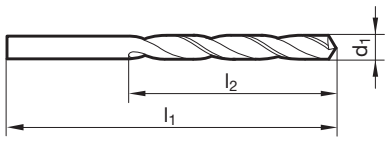
FRIZAR
www.frizar.ru

Свёрла глубокого сверления, длина 6 дюймов

NAS 907 | N | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	• подточка ≥ Ø 1,500 • конусная заточка
M	
K	•
N	• листы из Al сплавов • плиты с покрытием (сэндвич-панели) • сталь и литье
S	
H	



Артикул № **577**

d1 mm	inch	l1 mm	l2 mm
1,500		153,000	23,000
1,590	1/16	153,000	26,000
1,650		153,000	26,000
1,750		153,000	26,000
1,780		153,000	26,000
1,900		153,000	26,000
1,930		153,000	29,000
1,980	5/64	153,000	29,000
1,990		153,000	29,000
2,000		153,000	29,000
2,100		153,000	29,000
2,300		153,000	32,500
2,380	3/32	153,000	37,000
2,400		153,000	37,000
2,490		153,000	37,000
2,500		153,000	37,000
2,530		153,000	37,000
2,580		153,000	37,000
2,870		153,000	42,000
2,950		153,000	42,000
3,000		153,000	42,000
3,170	1/8	153,000	42,000
3,200		153,000	42,000
3,260		153,000	42,000
3,500		154,000	49,000
3,570	9/64	154,000	49,000
3,800		154,000	55,000
3,860		154,000	55,000
3,910		154,000	55,000
3,970	5/32	154,000	55,000
4,000		154,000	55,000
4,040		154,000	55,000
4,090		154,000	55,000
4,220		154,000	55,000
4,390		154,000	60,000
4,500		154,000	60,000

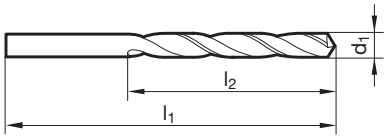
d1 mm	inch	l1 mm	l2 mm
4,570		154,000	60,000
4,700		154,000	60,000
4,760	3/16	154,000	63,500
4,800		154,000	63,500
4,850		154,000	63,500
4,920		154,000	63,500
4,980		154,000	63,500
5,000		154,000	63,500
5,160	13/64	154,000	63,500
5,500		154,000	68,500
5,560	7/32	154,000	68,500
5,800		154,000	68,500
5,940		154,000	68,500
5,950	15/64	154,000	68,500
6,040		154,000	75,000
6,150		154,000	75,000
6,200		154,000	75,000
6,250		154,000	75,000
6,350	1/4	154,000	75,000
6,530		154,000	75,000
6,800		155,000	80,000
7,000		155,000	80,000
7,700		155,000	90,000
7,940	5/16	155,000	90,000
8,000		155,000	90,000

Свёрла глубокого сверления, длина 6 дюймов

NAS 907 | N | 135° | h8

Режущий материал	HSS
Покрытие	≥Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,500 • конусная заточка
M		
K	•	
N	•	листы из Al сплавов • плиты с покрытием (сэндвич-панели) • сталь и литье
S		
H		



Артикул № **579**

d1		l1	l2
mm	inch	mm	mm
1,500		153,000	23,000
1,590	1/16	153,000	26,000
1,780		153,000	26,000
1,980	5/64	153,000	29,000
2,000		153,000	29,000
2,380	3/32	153,000	37,000
2,400		153,000	37,000
2,490		153,000	37,000
2,500		153,000	37,000
2,580		153,000	37,000
2,640		153,000	37,000
2,710		153,000	42,000
2,780	7/64	153,000	42,000
2,790		153,000	42,000
2,820		153,000	42,000
2,870		153,000	42,000
2,950		153,000	42,000
3,000		153,000	42,000
3,050		153,000	42,000
3,170	1/8	153,000	42,000
3,200		153,000	42,000
3,260		153,000	42,000
3,450		154,000	49,000
3,500		154,000	49,000
3,570	9/64	154,000	49,000
3,600		154,000	49,000
3,660		154,000	49,000
3,700		154,000	49,000
3,800		154,000	55,000
3,970	5/32	154,000	55,000

d1		l1	l2
mm	inch	mm	mm
3,990		154,000	55,000
4,000		154,000	55,000
4,040		154,000	55,000
4,090		154,000	55,000
4,370	11/64	154,000	60,000
4,390		154,000	60,000
4,500		154,000	60,000
4,570		154,000	60,000
4,620		154,000	60,000
4,760	3/16	154,000	63,500
4,800		154,000	63,500
4,850		154,000	63,500
4,920		154,000	63,500
4,980		154,000	63,500
5,000		154,000	63,500
5,160	13/64	154,000	63,500
5,560	7/32	154,000	68,500
5,800		154,000	68,500
5,940		154,000	68,500
5,950	15/64	154,000	68,500
6,040		154,000	75,000
6,250		154,000	75,000
6,350	1/4	154,000	75,000
6,450		154,000	75,000
6,530		154,000	75,000
6,750	17/64	155,000	80,000
7,940	5/16	155,000	90,000
8,000		155,000	90,000

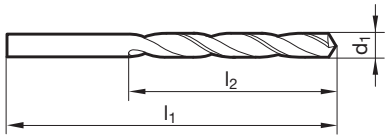
FRIZAR
www.frizar.ru

Свёрла глубокого сверления, длина 12 дюймов

NAS 907 | N | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 1,500 • конусная заточка
M		
K	•	
N	•	листы из Al сплавов • плиты с покрытием (сэндвич-панели) • сталь и литье
S		
H		



Артикул № **578**

d1		l1	l2
mm	inch	mm	mm
1,500		306,000	23,000
1,590	1/16	306,000	26,000
1,780		306,000	26,000
1,850		306,000	26,000
1,930		306,000	29,000
2,000		306,000	29,000
2,180		306,000	32,500
2,260		306,000	32,500
2,380	3/32	306,000	37,000
2,440		306,000	37,000
2,490		306,000	37,000
2,500		306,000	37,000
2,580		306,000	37,000
2,640		306,000	37,000
2,790		306,000	42,000
2,820		306,000	42,000
3,000		306,000	42,000
3,170	1/8	306,000	42,000
3,200		306,000	42,000
3,260		306,000	42,000
3,500		308,000	49,000
3,570	9/64	308,000	49,000
3,660		308,000	49,000
3,800		308,000	55,000
3,970	5/32	308,000	55,000
4,000		308,000	55,000
4,040		308,000	55,000
4,090		308,000	55,000
4,220		308,000	55,000
4,370	11/64	308,000	60,000

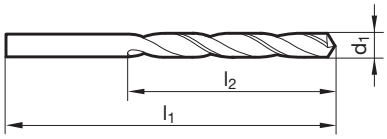
d1		l1	l2
mm	inch	mm	mm
4,390		308,000	60,000
4,500		308,000	60,000
4,570		308,000	60,000
4,620		308,000	60,000
4,700		308,000	60,000
4,760	3/16	308,000	63,500
4,800		308,000	63,500
4,850		308,000	63,500
4,920		308,000	63,500
4,980		308,000	63,500
5,000		308,000	63,500
5,160	13/64	308,000	63,500
5,500		308,000	68,500
5,800		308,000	68,500
5,950	15/64	308,000	68,500
6,000		308,000	68,500
6,040		308,000	75,000
6,350	1/4	308,000	75,000
6,530		308,000	75,000
7,000		310,000	80,000
8,000		310,000	90,000

Свёрла глубокого сверления, длина 12 дюймов

NAS 907 | N | 135° | h8

Режущий материал	HSS
Покрытие	≥Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,500 • конусная заточка
M		
K	•	
N	•	листы из Al сплавов • плиты с покрытием (сэндвич-панели) • сталь и литье
S		
H		



Артикул № 580

d1		l1	l2
mm	inch	mm	mm
1,500		306,000	23,000
1,590	1/16	306,000	26,000
1,780		306,000	26,000
1,980	5/64	306,000	29,000
2,000		306,000	29,000
2,380	3/32	306,000	37,000
2,490		306,000	37,000
2,500		306,000	37,000
2,580		306,000	37,000
2,640		306,000	37,000
2,710		306,000	42,000
2,780	7/64	306,000	42,000
2,790		306,000	42,000
2,820		306,000	42,000
2,870		306,000	42,000
2,950		306,000	42,000
3,000		306,000	42,000
3,170	1/8	306,000	42,000
3,260		306,000	42,000
3,450		308,000	49,000
3,500		308,000	49,000
3,660		308,000	49,000
3,730		308,000	49,000
3,800		308,000	55,000
3,970	5/32	308,000	55,000
3,990		308,000	55,000
4,000		308,000	55,000
4,040		308,000	55,000
4,300		308,000	60,000
4,370	11/64	308,000	60,000

d1		l1	l2
mm	inch	mm	mm
4,390		308,000	60,000
4,500		308,000	60,000
4,570		308,000	60,000
4,620		308,000	60,000
4,700		308,000	60,000
4,760	3/16	308,000	63,500
4,800		308,000	63,500
4,850		308,000	63,500
4,920		308,000	63,500
4,980		308,000	63,500
5,000		308,000	63,500
5,060		308,000	63,500
5,110		308,000	63,500
5,160	13/64	308,000	63,500
5,560	7/32	308,000	68,500
5,790		308,000	68,500
5,940		308,000	68,500
5,950	15/64	308,000	68,500
6,000		308,000	68,500
6,040		308,000	75,000
6,150		308,000	75,000
6,250		308,000	75,000
6,350	1/4	308,000	75,000
6,530		308,000	75,000
7,940	5/16	310,000	90,000
8,000		310,000	90,000

FRIZAR
www.frizar.ru

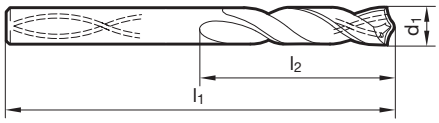
Свёрла с каналами COTC

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка • для сверления через кондукторные втулки • Особенно для глубины более 5xD
M	○	
K	•	
N	•	пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **390**

d1	l1	l2
mm	mm	mm
3,000	100,000	66,000
3,300	106,000	69,000
3,500	112,000	73,000
4,000	119,000	78,000
4,200	119,000	78,000
4,500	126,000	82,000
5,000	132,000	87,000
5,500	139,000	91,000
6,000	139,000	91,000
6,500	148,000	97,000
6,800	156,000	102,000
6,900	156,000	102,000
7,000	156,000	102,000
7,500	156,000	102,000
8,000	165,000	109,000
8,500	165,000	109,000
9,000	175,000	115,000
9,500	175,000	115,000

d1	l1	l2
mm	mm	mm
10,000	184,000	121,000
10,200	184,000	121,000
10,500	184,000	121,000
11,000	195,000	128,000
11,500	195,000	128,000
12,000	205,000	134,000
13,000	205,000	134,000

Свёрла с каналами COTC

Режущий материал	HSCO
Покрытие	◯
Форма хвостовика	HE

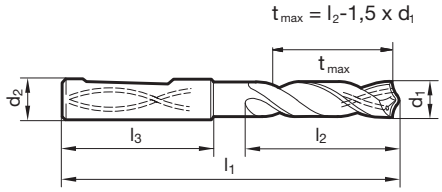
P	•
M	•
K	•
N	•
S	•
H	○

подточка ≥ Ø 5,000 • конусная заточка • легированная кобальтом HSS

длинностружечные материалы до 1000 Н/мм² • нержавеющие стали • чугуны • цветные металлы

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **1131**

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,290	9/16	16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

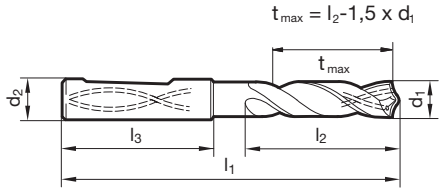
Свёрла с каналами COTC

Режущий материал	HSCO
Покрытие	(S)
Форма хвостовика	HE

P	•	подточка ≥ Ø 5,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	•	длинностружечные материалы до 1000 Н/мм² • нержавеющие стали • чугуны • цветные металлы
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 784



Артикул № **1132**

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,500		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	118,000	71,000	45,000
12,500		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Спиральные микросверла без каналов COTC HSS-E-PM

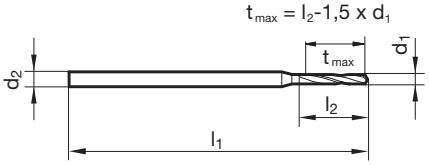
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	◯
Направление резания	R

P	•	плоскостная заточка • с усиленным хвостовиком • доступны < O 0,15 мм легированная кобальтом быстрорежущая сталь HSS
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **301**

d1	d2	l1	l2
mm	mm	mm	mm
0,050	1,000	25,000	0,400
0,060	1,000	25,000	0,400
0,070	1,000	25,000	0,500
0,075	1,000	25,000	0,500
0,080	1,000	25,000	0,500
0,090	1,000	25,000	0,500
0,100	1,000	25,000	0,500
0,105	1,000	25,000	0,500
0,110	1,000	25,000	0,500
0,115	1,000	25,000	0,500
0,120	1,000	25,000	0,500
0,121	1,000	25,000	0,800
0,125	1,000	25,000	0,800
0,128	1,000	25,000	0,800
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,143	1,000	25,000	0,800
0,145	1,000	25,000	0,800
0,147	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,205	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900

d1	d2	l1	l2
mm	mm	mm	mm
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,285	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,335	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,365	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,375	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,385	1,000	25,000	3,000
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,405	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,425	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,432	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,445	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,455	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,475	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400

d1	d2	l1	l2
mm	mm	mm	mm
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,505	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,515	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,530	1,000	25,000	3,400
0,535	1,000	25,000	3,900
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,585	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,595	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,605	1,000	25,000	4,200
0,610	1,000	25,000	4,200
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,625	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,632	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,655	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,665	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,705	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,725	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,795	1,500	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,825	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,845	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,930	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,010	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,055	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,130	1,500	25,000	7,600
1,140	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500
1,200	1,500	25,000	8,500
1,210	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,230	1,500	25,000	8,500
1,240	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,260	1,500	25,000	8,500
1,265	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,320	1,500	25,000	8,500
1,325	1,500	25,000	9,500
1,330	1,500	25,000	9,500
1,340	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,370	1,500	25,000	9,500
1,380	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,410	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,430	1,500	25,000	9,500
1,440	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,470	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,520	2,000	30,000	10,600
1,530	2,000	30,000	10,600
1,540	2,000	30,000	10,600
1,550	2,000	30,000	10,600
1,590	2,000	30,000	10,600
1,600	2,000	30,000	10,600
1,610	2,000	30,000	10,600
1,630	2,000	30,000	10,600
1,640	2,000	30,000	10,600
1,650	2,000	30,000	10,600
1,660	2,000	30,000	10,600
1,690	2,000	30,000	10,600
1,700	2,000	30,000	10,600
1,710	2,000	30,000	11,800
1,715	2,000	30,000	11,800
1,730	2,000	30,000	11,800
1,745	2,000	30,000	11,800
1,750	2,000	30,000	11,800
1,775	2,000	30,000	11,800
1,800	2,000	30,000	11,800

d1	d2	l1	l2
mm	mm	mm	mm
1,830	2,000	30,000	11,800
1,840	2,000	30,000	11,800
1,850	2,000	30,000	11,800
1,860	2,000	30,000	11,800
1,900	2,000	30,000	11,800
1,920	2,000	30,000	13,200

d1	d2	l1	l2
mm	mm	mm	mm

Спиральные микросверла без каналов COTC HSS-E-PM

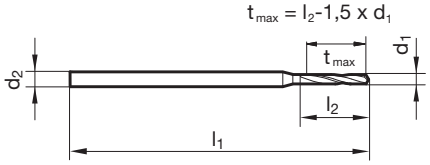
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	(S)
Направление резания	(R)

P	•	плоскостная заточка • с усиленным хвостовиком • высокая износостойкость
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **660**

d1	d2	l1	l2
mm	mm	mm	mm
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,490	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400

d1	d2	l1	l2
mm	mm	mm	mm
0,530	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,610	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500

d1	d2	l1	l2
mm	mm	mm	mm
1,200	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,500	2,000	30,000	9,500
1,800	2,000	30,000	11,800
1,900	2,000	30,000	11,800

Спиральные микросверла без каналов COTC HSS-E-PM

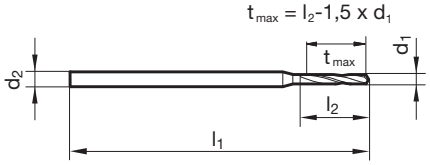
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	◯
Направление резания	L

P	•	плоскостная заточка • с усиленным хвостовиком • < Ø 0,15 мм легированная кобальтом быстрорежущая сталь HSS
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **303**

d1	d2	l1	l2
mm	mm	mm	mm
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,185	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000

d1	d2	l1	l2
mm	mm	mm	mm
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,465	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,555	1,000	25,000	3,900
0,565	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,685	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800

d1	d2	l1	l2
mm	mm	mm	mm
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,805	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,855	1,500	25,000	6,000
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,885	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,915	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,935	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,975	1,500	25,000	6,800
0,980	1,500	25,000	6,800
0,985	1,500	25,000	6,800
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,005	1,500	25,000	6,800
1,020	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,080	1,500	25,000	7,600
1,085	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,125	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,285	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,330	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,360	1,500	25,000	9,500
1,375	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,405	1,500	25,000	9,500
1,425	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,600	2,000	30,000	10,600
1,615	2,000	30,000	10,600
1,800	2,000	30,000	11,800
1,850	2,000	30,000	11,800

Спиральные микросверла без каналов COTC VHM

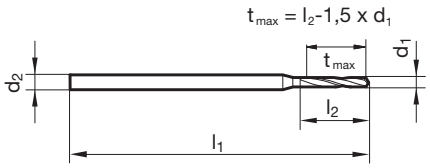
~5xD | WN | N | 130° | 0/-0,004

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 0,800 • плоскостная заточка • форма режущей кромки прямая
M	○	
K	•	
N	○	конструкционные и цементированные стали • чугуны • бронза, латунь • алюминий и алюминиевые сплавы • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **701**

d1	d2	l1	l2
mm	mm	mm	mm
0,200	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,330	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,400	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,500	1,000	25,000	3,400
0,600	1,000	25,000	3,900
0,650	1,000	25,000	4,200
0,700	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,830	1,500	25,000	5,300

d1	d2	l1	l2
mm	mm	mm	mm
0,850	1,500	25,000	5,300
0,900	1,500	25,000	6,000
1,000	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,400	1,500	25,000	9,500

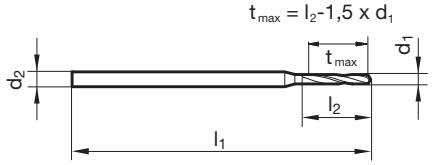
Спиральные микросверла без каналов COTC VHM

Режущий материал	VHM
Покрытие	A
Направление резания	R

P •	подточка ≥ Ø 0,800 • плоскостная заточка
M	
K •	
N	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **3899**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,100	3,000	38,000	1,200
0,150	3,000	38,000	2,000
0,200	3,000	38,000	2,500
0,250	3,000	38,000	3,000
0,260	3,000	38,000	3,000
0,270	3,000	38,000	3,000
0,280	3,000	38,000	3,000
0,300	3,000	38,000	5,000
0,310	3,000	38,000	5,000
0,330	3,000	38,000	5,000
0,350	3,000	38,000	6,000
0,360	3,000	38,000	6,000
0,370	3,000	38,000	6,000
0,380	3,000	38,000	6,000
0,400	3,000	38,000	7,000
0,410	3,000	38,000	7,000
0,430	3,000	38,000	7,000
0,440	3,000	38,000	7,000
0,450	3,000	38,000	7,000
0,480	3,000	38,000	7,000
0,500	3,000	38,000	7,000
0,510	3,000	38,000	7,000
0,530	3,000	38,000	7,000
0,550	3,000	38,000	7,000
0,570	3,000	38,000	7,000
0,600	3,000	38,000	7,000
0,640	3,000	38,000	7,000
0,650	3,000	38,000	7,000
0,660	3,000	38,000	7,000
0,680	3,000	38,000	7,000
0,700	3,000	38,000	8,000
0,710	3,000	38,000	8,000
0,720	3,000	38,000	8,000
0,740	3,000	38,000	8,000
0,750	3,000	38,000	8,000
0,760	3,000	38,000	8,000
0,770	3,000	38,000	8,000
0,780	3,000	38,000	8,000
0,790	3,000	38,000	8,000
0,800	3,000	38,000	10,000
0,810	3,000	38,000	10,000
0,820	3,000	38,000	10,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,830	3,000	38,000	10,000
0,840	3,000	38,000	10,000
0,850	3,000	38,000	10,000
0,860	3,000	38,000	10,000
0,870	3,000	38,000	10,000
0,880	3,000	38,000	10,000
0,890	3,000	38,000	10,000
0,900	3,000	38,000	10,000
0,910	3,000	38,000	10,000
0,920	3,000	38,000	10,000
0,930	3,000	38,000	10,000
0,940	3,000	38,000	10,000
0,950	3,000	38,000	10,000
0,960	3,000	38,000	10,000
0,970	3,000	38,000	10,000
0,980	3,000	38,000	10,000
0,990	3,000	38,000	10,000
1,000	3,000	38,000	10,000
1,010	3,000	38,000	10,000
1,020	3,000	38,000	10,000
1,050	3,000	38,000	10,000
1,060	3,000	38,000	10,000
1,070	3,000	38,000	10,000
1,090	3,000	38,000	10,000
1,100	3,000	38,000	10,000
1,110	3,000	38,000	10,000
1,150	3,000	38,000	10,000
1,170	3,000	38,000	10,000
1,190	3,000	38,000	10,000
1,200	3,000	38,000	10,000
1,210	3,000	38,000	10,000
1,220	3,000	38,000	10,000
1,230	3,000	38,000	10,000
1,240	3,000	38,000	10,000
1,260	3,000	38,000	10,000
1,270	3,000	38,000	10,000
1,280	3,000	38,000	10,000
1,300	3,000	38,000	10,000
1,370	3,000	38,000	10,000
1,400	3,000	38,000	10,000
1,420	3,000	38,000	10,000
1,450	3,000	38,000	10,000

FRIZAR
www.frizar.ru

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,490	3,000	38,000	10,000
1,500	3,000	38,000	10,000
1,510	3,000	38,000	10,000
1,520	3,000	38,000	10,000
1,550	3,000	38,000	10,000
1,560	3,000	38,000	10,000
1,580	3,000	38,000	10,000
1,590	3,000	38,000	10,000
1,600	3,000	38,000	12,000
1,630	3,000	38,000	12,000
1,650	3,000	38,000	12,000
1,700	3,000	38,000	12,000
1,750	3,000	38,000	12,000
1,800	3,000	38,000	12,000
1,810	3,000	38,000	12,000
1,820	3,000	38,000	12,000
1,830	3,000	38,000	12,000
1,840	3,000	38,000	12,000
1,850	3,000	38,000	12,000
1,860	3,000	38,000	12,000
1,900	3,000	38,000	12,000
1,920	3,000	38,000	12,000
1,950	3,000	38,000	12,000
1,980	3,000	38,000	12,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,000	3,000	38,000	12,000
2,050	3,000	38,000	12,000
2,100	3,000	38,000	12,000
2,150	3,000	38,000	12,000
2,200	3,000	38,000	12,000
2,400	3,000	38,000	12,000
2,500	3,000	38,000	12,000
2,550	3,000	38,000	12,000
2,600	3,000	38,000	12,000
2,750	3,000	38,000	12,000
2,800	3,000	38,000	12,000
2,950	3,000	38,000	12,000
3,000	3,000	38,000	12,000

ExclusiveLine микросверла без каналов COTC VHM

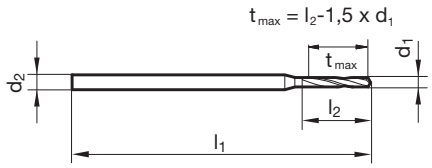
4xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000

ExclusiveLine микросверла без каналов COTC VHM

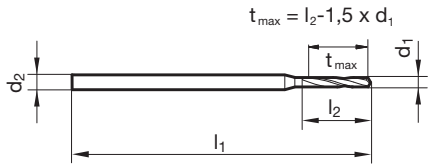
7xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6401**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000

ExclusiveLine микросверла с каналами COTC VHM

5xD | N | WN | 140° | m7

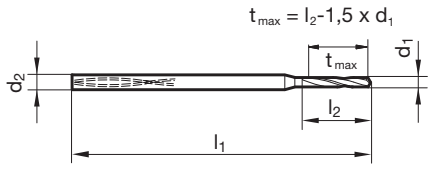
Режущий материал	VHM
Покрытие	A
Направление резания	R

NEW

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000

ExclusiveLine микросверла с каналами COTC VHM

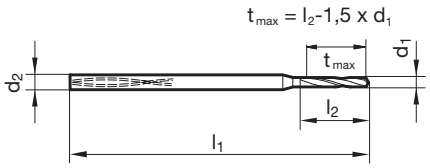
8xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000

ExclusiveLine микросверла с каналами COTC VHM

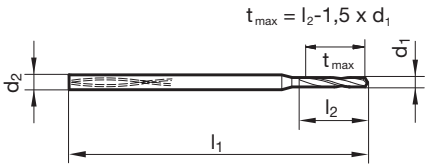
15xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000

FRIZAR
www.frizar.ru

Спиральные сверла короткие, хвостовик Ø 12,7 мм

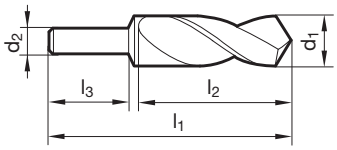
WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 14,290 • конусная заточка • цельный инструмент
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул №	268

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
13,000	12,700	156,000	82,000	57,000
13,490	12,700	156,000	82,000	57,000
13,500	12,700	156,000	82,000	57,000
14,000	12,700	156,000	82,000	57,000
14,290	12,700	157,000	83,000	57,000
14,500	12,700	157,000	83,000	57,000
15,000	12,700	157,000	83,000	57,000
15,500	12,700	157,000	83,000	57,000
15,870	12,700	157,000	83,000	57,000
16,000	12,700	157,000	83,000	57,000
16,500	12,700	158,000	84,000	57,000
16,670	12,700	158,000	84,000	57,000
17,000	12,700	158,000	84,000	57,000
17,460	12,700	158,000	84,000	57,000
17,500	12,700	158,000	84,000	57,000
18,000	12,700	158,000	84,000	57,000
19,000	12,700	158,000	84,000	57,000
19,050	12,700	159,000	85,000	57,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
19,840	12,700	159,000	85,000	57,000
20,000	12,700	159,000	85,000	57,000
21,000	12,700	159,000	85,000	57,000
21,430	12,700	159,000	85,000	57,000
22,000	12,700	159,000	85,000	57,000
22,220	12,700	159,000	85,000	57,000
23,000	12,700	159,000	85,000	57,000
23,020	12,700	159,000	85,000	57,000
23,810	12,700	160,000	86,000	57,000
24,000	12,700	160,000	86,000	57,000
25,000	12,700	160,000	86,000	57,000
25,400	12,700	160,000	86,000	57,000
28,570	12,700	160,000	86,000	57,000

Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 16,0 мм

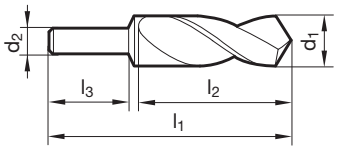
WN | V72 | 120° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	•	без заточки вершины • легированная кобальтом HSS • высокая износостойкость • цельный инструмент • полуфабрикат с центрами • для доработки, например: изменения диаметра, шлифовки ступеней, заточки профиля
M	•	
K	○	
N	○	трудно обрабатываемые материалы • нержав./кислотостойк. сталь • рессорно-пружинные стали • аустенитная сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул №	128

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
16,000	16,000	130,000	88,000	42,000
16,500	16,000	130,000	88,000	40,000
17,000	16,000	130,000	88,000	40,000
17,500	16,000	130,000	88,000	40,000
18,000	16,000	130,000	88,000	40,000
19,000	16,000	130,000	88,000	40,000
20,000	16,000	130,000	88,000	40,000
20,500	16,000	130,000	88,000	40,000
21,000	16,000	130,000	88,000	40,000
21,500	16,000	130,000	88,000	40,000
22,000	16,000	130,000	88,000	40,000
22,500	16,000	130,000	88,000	40,000
23,000	16,000	130,000	88,000	40,000
23,500	16,000	130,000	88,000	40,000
24,000	16,000	130,000	88,000	40,000
24,500	16,000	130,000	88,000	40,000
25,000	16,000	130,000	88,000	40,000
25,500	16,000	140,000	98,000	40,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
26,000	16,000	140,000	98,000	40,000
27,000	16,000	140,000	98,000	40,000
28,000	16,000	140,000	98,000	40,000
28,500	16,000	140,000	98,000	40,000
30,000	16,000	140,000	98,000	40,000
31,000	16,000	140,000	98,000	40,000
32,000	16,000	140,000	98,000	40,000
35,000	16,000	140,000	98,000	40,000
38,000	16,000	140,000	98,000	40,000
40,000	16,000	140,000	98,000	40,000

FRIZAR
www.frizar.ru

Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 25,4 мм

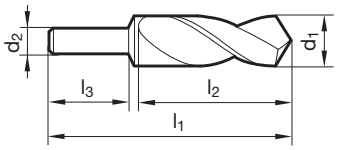
WN | V72 | 120° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	•	без заточки вершины • легированная кобальтом HSS • высокая износостойкость • цельный инструмент • полуфабрикат с центрами • для доработки, например: изменения диаметра, шлифовки ступеней, заточки профиля
M	•	
K	○	
N	○	нержав./кислотостойк. сталь • трудно обрабатываемые материалы • рессорно-пружинные стали • аустенитная сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **129**

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
25,000	25,400	140,000	93,000	45,000
26,000	25,400	140,000	93,000	45,000
28,000	25,400	140,000	93,000	45,000
29,500	25,400	140,000	93,000	45,000
30,000	25,400	140,000	93,000	45,000
32,000	25,400	140,000	93,000	45,000
33,000	25,400	140,000	93,000	45,000
34,000	25,400	140,000	93,000	45,000
35,000	25,400	140,000	93,000	45,000
36,000	25,400	140,000	93,000	45,000
37,000	25,400	140,000	93,000	45,000
38,000	25,400	140,000	93,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
40,000	25,400	140,000	93,000	45,000

Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 25,4 мм

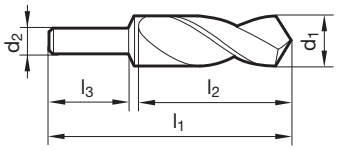
WN | V72 | 120° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	L

P	•	без заточки вершины • легированная кобальтом HSS • увеличенная износостойкость • цельный инструмент • полуфабрикат с центрами •для доработки, например: изменения диаметра, шлифовки ступеней, заточки профиля
M	•	
K	○	
N	○	трудно обрабатываемые материалы • нержавеющие стали • рессорно-пружинные стали • аустенитная сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № 136

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
25,000	25,400	140,000	93,000	45,000
25,500	25,400	140,000	93,000	45,000
26,000	25,400	140,000	93,000	45,000
26,500	25,400	140,000	93,000	45,000
27,500	25,400	140,000	93,000	45,000
29,500	25,400	140,000	93,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
36,000	25,400	140,000	93,000	45,000
38,000	25,400	140,000	93,000	45,000
39,000	25,400	140,000	93,000	45,000

FRIZAR
www.frizar.ru

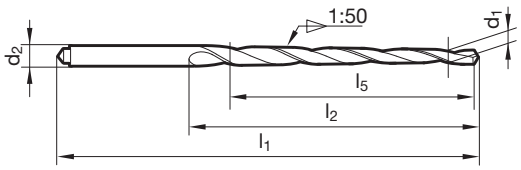
Спиральные сверла для отверстий под штифт

DIN 1898 | N | 118° |

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 1,000 • конусная заточка • с лапкой на хвостовике



Артикул № **531**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
2,000	3,150	86,000	52,000	48,000
2,500	3,150	86,000	52,000	48,000
3,000	4,000	100,000	63,000	58,000
3,500	5,000	112,000	74,000	68,000
4,000	5,000	112,000	74,000	68,000
4,500	6,300	122,000	81,000	73,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000	6,300	122,000	81,000	73,000
5,500	8,000	160,000	114,000	105,000
6,000	8,000	160,000	114,000	105,000
8,000	10,000	207,000	157,000	145,000
10,000	12,500	245,000	190,000	175,000
12,000	16,000	290,000	228,000	210,000

Наборы сверл

~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•
M	
K	•
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **201**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012
1,0-10,0	0,5	19	0,013
1,0-13,0	0,5	25	0,014
1,0-5,9	0,1	50	0,015
6,0-10,0	0,1	41	0,016
1,0-10,5	0,5	24	0,018
1,0-10,5	0,5	32	0,019
1/16 - 1/2	1/64	29	0,021
1,02-5,79	1/64	60	0,026

FRIZAR
www.frizar.ru

Комплекты спиральных свёрл

~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•
M	
K	•
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **200**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012
1,0-10,0	0,5	19	0,013
1,0-13,0	0,5	25	0,014
1,0-5,9	0,1	50	0,015
6,0-10,0	0,1	41	0,016
1,0-10,5	0,5	24	0,018

Наборы сверл

~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•
M	
K	•
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **17**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-10,0	0,5	19	6,013
1,0-13,0	0,5	25	6,014
1,0-5,9	0,1	50	6,015
6,0-10,0	0,1	41	6,016
1/16 - 1/2	1/64	29	6,021

FRIZAR
www.frizar.ru

Наборы сверл

~5xD | DIN 338 | N | 118° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **16**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-10,0	0,5	19	3,013
1,0-13,0	0,5	25	3,014
1,0-5,9	0,1	50	3,015
6,0-10,0	0,1	41	3,016
1/16 - 1/2	1/64	29	3,021

Наборы сверл

~5xD | DIN 338 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	○
M	•
K	
N	
S	•
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **18**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-10,0	0,5	19	8,013
1,0-13,0	0,5	25	8,014
1,0-5,9	0,1	50	8,015
6,0-10,0	0,1	41	8,016
1,0-10,5	0,5	24	8,018

FRIZAR
www.frizar.ru

Наборы сверл

~5xD | DIN 338 | VA | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	○
M	•
K	
N	○
S	○
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **195**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0	0,5	25	8,014
1,0-10,5	0,5	24	8,018

Наборы сверл

~5xD | DIN 338 | P2000 | 118° | h8

P	•
M	○
K	○
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Режущий материал	HSCO
Покрытие	
Направление резания	R

Артикул № **2049**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0	0,5	25	0,014
1,0-10,0	0,5	19	0,013
1,0-10,5	0,5	24	0,018
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012

FRIZAR
www.frizar.ru

Наборы сверл

~3xD | DIN 1897 | P2000 | 118° | h8

Режущий материал	HSCO
Покрытие	M
Направление резания	R

P	•
M	○
K	○
N	○
S	
H	

конусная заточка • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы

Артикул № **2050**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-10,0	0,5	19	0,013
5,1-10,0	0,1	50	0,012

Комплекты спиральных сверл AeroX

~5xD | DIN 338 | AeroX | 135° | h8

Режущий материал	M42
Покрытие	
Направление резания	R

NEW

P	•	оптимизированная крестообразная заточка • быстрорежущая сталь HSCO легированная 8-% кобальта • для монтажных работ и ручной обработки, наиболее употребляемые стандартные сверла мы собрали в специальные наборы
M	•	
K	•	
N	•	нелегированные и легированные стальные материалы • чугуны • цветные металлы • титан и титановые сплавы
S	•	
H	○	

Артикул № **1083**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0	0,5	25	0,014
1,0-10,0	0,5	19	0,013

FRIZAR
www.frizar.ru

Наборы сверл

WN

Кассета пустая

Артикул № **36**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0			0,214
1,0-10,0			0,213
1,0-5,9			0,215
6,0-10,0			0,216
1,0-10,5			0,218

Наборы сверл

WN

Кассета пустая

Артикул № **73**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0			0,614

FRIZAR
www.frizar.ru

Наборы сверл

WN

Бакелитовая стойка

Артикул № **11**

d1	шаг	штук в комплекте	Код-№.
mm	mm		
1,0-13,0			0,114
5,1-10,0			0,112
1,0-5,0			0,111
1,0-5,9			0,115
1,0-10,0			0,113
1/16 - 1/2			0,121
1/16 - 1/2			0,122

Спиральные сверла с впайными твердосплавными пластинами

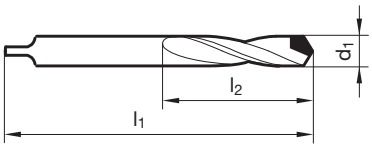
DIN 8037 | N | 118° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 1,700 • плоскостная заточка • твердосплавная впайная пластина
M		
K	○	
N		пружинная сталь • отбеленный чугун более 300 HB • чистый молибден • вязкая бронза
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул №	703

d1	l1	l2
mm	mm	mm
1,700	45,000	18,000
2,600	50,000	20,000
2,700	50,000	20,000
2,900	50,000	20,000
3,000	50,000	20,000
3,100	56,000	25,000
3,200	56,000	25,000
3,250	56,000	25,000
3,300	56,000	25,000
3,500	56,000	25,000
3,700	56,000	25,000
3,800	56,000	25,000
3,900	56,000	25,000
4,000	56,000	25,000
4,100	63,000	28,000
4,200	63,000	28,000
4,300	63,000	28,000
4,500	63,000	28,000
4,800	63,000	28,000
4,900	63,000	28,000
5,000	63,000	28,000
5,100	71,000	32,000
5,200	71,000	32,000
5,300	71,000	32,000
5,400	71,000	32,000
5,500	71,000	32,000
5,800	71,000	32,000
6,000	71,000	32,000
6,200	71,000	32,000
6,300	71,000	32,000
6,350	71,000	32,000
6,400	71,000	32,000
6,500	71,000	32,000
6,700	80,000	40,000
6,800	80,000	40,000
7,000	80,000	40,000

d1	l1	l2
mm	mm	mm
7,200	80,000	40,000
7,500	80,000	40,000
7,800	80,000	40,000
8,000	80,000	40,000
8,200	90,000	50,000
8,400	90,000	50,000
8,500	90,000	50,000
9,000	90,000	50,000
9,500	90,000	50,000
9,800	100,000	56,000
10,000	100,000	56,000
10,200	100,000	56,000
10,400	100,000	56,000
10,500	100,000	56,000
11,000	100,000	56,000
11,500	112,000	63,000
12,000	112,000	63,000
12,500	112,000	63,000
12,700	112,000	63,000
13,000	112,000	63,000
13,500	125,000	71,000
14,000	125,000	71,000
14,500	125,000	71,000
15,000	125,000	71,000
15,500	140,000	80,000
16,000	140,000	80,000
16,500	140,000	80,000
17,000	140,000	80,000
17,500	160,000	90,000
18,000	160,000	90,000
19,000	160,000	90,000
19,500	160,000	90,000
20,000	160,000	90,000
21,000	160,000	90,000
22,000	160,000	90,000
24,000	170,000	100,000

FRIZAR
www.frizar.ru

Спиральные сверла с впайными твердосплавными пластинами

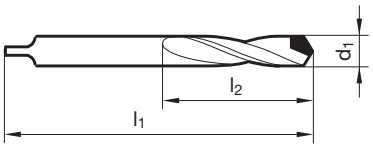
DIN 8038 | N | 85° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

P	подточка ≥ Ø 1,500 • плоскостная заточка • твердосплавная впайная пластина
M	
K	
N	стеклопластики • дуропласты с наждачным эффектом
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **704**

d1	l1	l2
mm	mm	mm
1,900	45,000	18,000
2,200	45,000	18,000
3,100	56,000	25,000
3,200	56,000	25,000
3,500	56,000	25,000
4,200	63,000	28,000

d1	l1	l2
mm	mm	mm
5,000	63,000	28,000
6,000	71,000	32,000
8,000	80,000	40,000
24,000	170,000	100,000

Спиральные свёрла FK

WN | FK | h8

Режущий материал	VHM
Покрытие	◯
Направление резания	R

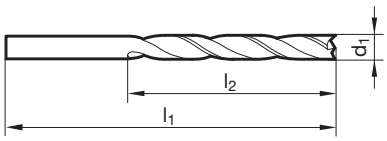
P
M
K
N
S
H

подточка ≥ Ø 2,380 • специальная заточка для подрезки волокон

стеклопластики

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **1149**

d1		l1	l2
mm	inch	mm	mm
2,500		43,000	14,000
3,200		49,000	18,000
3,570	9/64	52,000	20,000
4,000		55,000	22,000
4,760	3/16	62,000	26,000
5,000		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
6,000		66,000	28,000
8,000		79,000	37,000
10,000		89,000	43,000

FRIZAR
www.frizar.ru

Перовые свёрла

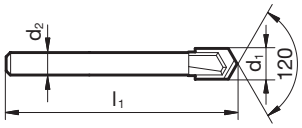
WN | H | 120° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 3,000 • плоскостная заточка • специальные сверла • Применение в сложных условиях
M		
K	○	
N		отбеленный чугун • закаленная сталь
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **707**

d1	l1	l2
mm	mm	mm
3,000	50,000	
5,000	63,000	
5,500	70,000	
6,000	70,000	
8,000	80,000	
9,000	90,000	

d1	l1	l2
mm	mm	mm
12,000	112,000	

Свёрла для камня

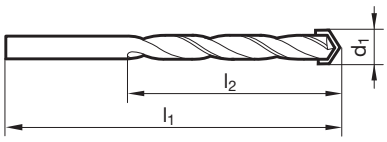
WN | 120° | h8

Режущий материал	**Твер.сплав**
Покрытие	◯
Направление резания	(R)

P **M** **K** **N** **S** **H**

плоскостная заточка • твердосплавная впайная пластина • для сверлильных станков и перфораторов • сверление в плитке без ударной функции!

кирпичная кладка, бетон, плитка



Артикул № **716**

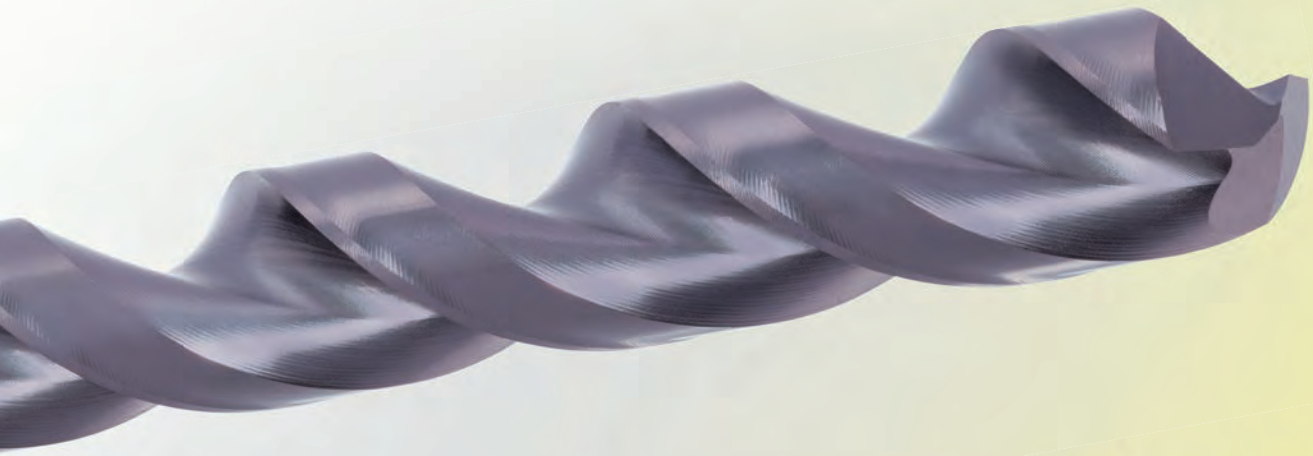
d1	l1	l2
mm	mm	mm
4,000	75,000	40,000
5,000	85,000	50,000
6,000	100,000	60,000
8,000	120,000	80,000
10,000	120,000	80,000
12,000	150,000	90,000

d1	l1	l2
mm	mm	mm

FRIZAR
www.frizar.ru

FRIZAR
www.frizar.ru

СПИРАЛЬНЫЕ СВЕРЛА С КОНУСОМ МОРЗЕ



P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла с конусом Морзе короткие																
●	●	●	○	●	○		~3xD	WN	GV 120	R	HSCO		8,100 - 38,000	363	772	448
●	●	●	○	●	○		~3xD	WN	GV 120	R	HSCO	S	10,500 - 31,000	663	774	449
Спиральные сверла с конусом Морзе средние																
●		●	○				~5xD	DIN 345	N	R	HSS	>Ø 2,36	2,380 - 96,000	245	778	450
●		●	○				~5xD	DIN 345	N	R	HSS	>Ø 16,0	10,000 - 28,000	592	778	454
●		●	○				~5xD	DIN 345	N	R	HSS	S	3,000 - 31,000	654	780	455
●		●	○				~5xD	DIN 345	N	L	HSS		6,000 - 60,000	248	778	457
●		●	○				~5xD	DIN 345	N	R	HSS		8,500 - 59,000	229	778	458
			●				~5xD	DIN 345	H	R	HSS		6,700 - 25,250	246	778	459
			●				~5xD	DIN 345	W	R	HSS		3,200 - 32,000	247	778	460
●		●	●				~5xD	DIN 345	GT 100	R	HSS	>Ø 16,0	7,940 - 31,750	558	778	461
●		●	●				~5xD	DIN 345	GT 100	R	HSS	S	7,940 - 31,500	606	780	462
●	○	●	○				~5xD	DIN 345	N	R	HSCO		4,000 - 50,000	345	780	463
●	○	●	○				~5xD	DIN 345	N	R	HSCO	S	8,000 - 30,000	661	782	465
●	○	●	○				~5xD	DIN 345	GT 100	R	HSCO	>Ø 16,0	10,000 - 39,000	645	780	466
●	○	●	○				~5xD	DIN 345	GT 100	R	HSCO	S	10,000 - 23,810	662	782	467
●		○					~5xD	DIN 345	GT 100	R	HSCO	C	10,000 - 30,160	1222	782	468
○		●	○				~5xD	DIN 345	GT 100	R	HSCO	A	10,400 - 30,160	1224	782	469
○	●		○	○			~5xD	DIN 345	VA	R	HSCO		10,000 - 34,000	1262	780	470
●		●	○				~5xD	DIN 346	N	R	HSS		10,000 - 73,000	251	778	471
●	○	●	●				~5xD	DIN 346	N	R	HSCO		12,000 - 31,500	351	780	472
Спиральные сверла с конусом Морзе длинные																
●		●	○				~10xD	DIN 341	N	R	HSS		2,900 - 50,000	257	786	473
●		●	○				~10xD	DIN 341	N	R	HSS	S	5,500 - 22,000	655	786	475
●		●	●				~10xD	DIN 341	GT 100	R	HSS	>Ø 16,0	5,500 - 32,000	551	786	476

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.

Спиральные сверла с конусом Морзе длинные

•		•	•				~10xD	DIN 341	GT 100	R	HSS	S	7,000 - 23,000	656	786	478
○			•				~10xD	DIN 341	GT 50	R	HSS		5,500 - 29,500	505	786	479
•	○	•	•	○			~10xD	DIN 341	N	R	HSCO		4,750 - 40,000	357	792	480
•	•	•	•		○		~10xD	DIN 341	GT 100	R	HSCO	>Ø 16,0	10,000 - 26,000	623	792	481
•		•	○				~10xD	WN	N	R	HSS		10,000 - 29,000	523	786	482

Спиральные сверла с конусом Морзе сверхдлинные, серия 1

•		•	○				~15xD	DIN 1870	N	R	HSS		8,000 - 50,000	266	788	483
•		•	•				~15xD	DIN 1870	GT 100	R	HSS	>Ø 16,0	8,000 - 30,000	526	790	484
○			•				~15xD	DIN 1870	GT 50	R	HSS		8,500 - 33,000	525	788	485
•	•	•	•	•	○		~15xD	DIN 1870	GT 100	R	HSCO	>Ø 16,0	9,520 - 30,000	620	794	486

Спиральные сверла с конусом Морзе сверхдлинные, серия 2

•		•	○				~20xD	DIN 1870	N	R	HSS		8,000 - 45,000	267	788	487
•		•	•				~20xD	DIN 1870	GT 100	R	HSS	>Ø 16,0	8,000 - 30,000	527	790	488
○			•				~20xD	DIN 1870	GT 50	R	HSS		8,500 - 31,000	542	788	489
•	•	•	•	•	○		~20xD	DIN 1870	GT 100	R	HSCO	>Ø 16,0	9,520 - 23,420	621	794	490

Спиральные сверла с конусом Морзе сверхдлинные

•		•	•				>20xD	WN	GT 100	R	HSS		6,000 - 7,500	563	790	491
•		•	•				>20xD	WN	GT 100	R	HSS		6,000 - 10,000	564	790	492
•		•	•				>20xD	WN	GT 100	R	HSS	>Ø 16,0	6,000 - 17,000	565	790	493
•		•	•				>20xD	WN	GT 100	R	HSS	>Ø 16,0	8,000 - 40,000	566	790	494
•		•	•				>20xD	WN	GT 100	R	HSS	>Ø 16,0	14,000 - 40,000	293	790	495
•		•	•				>20xD	WN	GT 100	R	HSS		14,000 - 18,000	298	790	496
•		•	•				>20xD	WN	GT 100	R	HSS		14,000 - 18,000	299	790	497

Спиральные сверла с конусом Морзе с каналами COTC

•	○	•	•				~7xD	WN	N	R	HSS		9,920 - 23,020	269	788	498

FRIZAR
www.frizar.ru

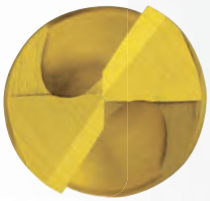
P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные сверла с КМ с каналами под СОТС																
•	○	•	•					WN	N	R	HSS	●	8,000 - 50,000	254	788	499
•	○	•	•					WN	N	R	HSS	●	8,000 - 42,000	255	788	500
Спиральные сверла с КМ с каналами под СОТС																
•	○	•	•				~10xD	WN	N	R	HSS	●	10,000 - 32,000	1101	788	501
•	○	•	•				~10xD	WN	N	R	HSS	●	10,000 - 40,000	270	788	502
•	○	•	•				~10xD	WN	N	R	HSS	●	10,000 - 44,450	271	788	503
•	○	•	•				~10xD	WN	N	R	HSS	●	10,000 - 44,450	272	788	504
•	•	•	•	•	○		~10xD	WN	GT 100	R	HSCO	●	11,000 - 34,920	370	794	505
•	•	•	•	•	○		~10xD	WN	GT 100	R	HSCO	●	11,000 - 34,920	371	794	506
•	•	•	•	•	○		~10xD	WN	GT 100	R	HSCO	●	12,500 - 34,000	372	794	507
Спиральные сверла с КМ с каналами под СОТС																
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO	●	11,000 - 34,000	374	794	508
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO	●	11,000 - 34,000	375	794	509
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO	●	11,000 - 29,000	376	794	510
Спиральные сверла с КМ для отверстий под штифт																
•	○	•	○					DIN 1898	N	R	HSS	●	5,000 - 25,000	532		511
Спиральные сверла с КМ с впайной НМ пластиной																
○		○			○			DIN 8041	N	R	HM	○	8,000 - 40,000	705	776	512

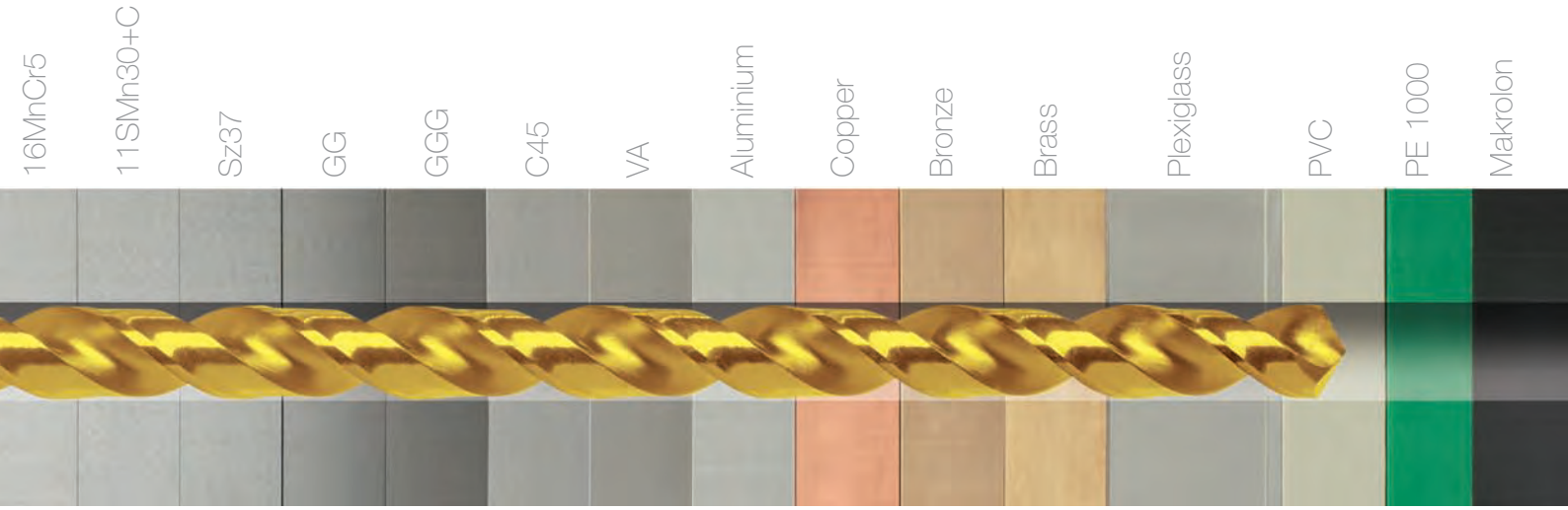
FRIZAR
www.frizar.ru

GU 500

Универсальное сверло HSCO

- Универсальное применение в большинстве материалов
- 4 - фаски для превосходного самоцентрирования и особенно точных отверстий
- низкие силы подачи и значения крутящего момента благодаря специальной геометрии
- оптимальный отвод стружки благодаря специальной геометрии канавки





GU 500 - Универсальное применение в большинстве материалов

Конструкционные стали и углеродистые стали · высоколегированная сталь до 850 Н/мм² · нержавеющие стали · литые материалы - цветные металлы - алюминий - магниевые сплавы - пластмассы

Спиральные сверла с конусом Морзе

без внутреннего охлаждения

P СТАЛИ

~ 3xD СТП	~ 5xD DIN 345	~10xD DIN 341	~15xD DIN 1870 R1
	No 1 Ø 3,00 - 31,00 мм Артикул № 654 со стр. 455	No 1 Ø 5,50 - 22,00 мм Артикул № 655 со стр. 475	Ø 8,00 - 50,00 мм Артикул № 266 со стр. 483
	Ø 8,00 - 30,00 мм Артикул № 661 со стр. 465	Ø 4,75 - 40,00 мм Артикул № 357 со стр. 480	
	Ø 7,94 - 31,50 мм Артикул № 606 со стр. 462	Ø 7,00 - 23,00 мм Артикул № 656 со стр. 478	Ø 8,00 - 30,00 мм Артикул № 526 со стр. 484
	Ø 10,00 - 23,81 мм Артикул № 662 со стр. 467	Ø 10,00 - 26,00 мм Артикул № 623 со стр. 481	No 1 Ø 9,52 - 30,00 мм Артикул № 620 со стр. 486
No 1 Ø 10,50 - 31,00 мм Артикул № 663 со стр. 449			

с внутренним подводом СОТС

~10xD Длина канавки до DIN 341	~15xD Длина канавки до DIN 1870 R1
No 1 Ø 10,00 - 32,00 мм Артикул № 1101 со стр. 501	
Ø 11,00 - 34,92 мм Артикул № 370 со стр. 505	No 1 Ø 11,00 - 34,00 мм Артикул № 374 со стр. 508

QUICKFINDER

~20xD DIN 1870 R2	>20xD СТП очень длинный	No 1 Идеальный инструмент

Ø 8,00 - 45,00 мм
Артикул № 267
со стр. 487

Тип N, HSS

Тип N, HSCO

Ø 8,00 - 30,00 мм
Артикул № 527
со стр. 488

No 1
Ø 8,00 - 40,00 мм
Артикул № 566
со стр. 494

GT100, HSS

No 1
Ø 9,52 - 23,42 мм
Артикул № 621
со стр. 490

GT100, HSCO

GV120, HSCO

Тип N, HSS

GT100, HSCO

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе

без внутреннего охлаждения

M НЕРЖАВЕЮЩИЕ СТАЛИ

S ТИТАН И СПЕЦИАЛЬНЫЕ СПЛАВЫ

~ 3xD СТП	~ 5xD DIN 345	~10xD DIN 341	~15xD DIN 1870 R1
	No 1 No 1 Ø 10,00 - 34,00 мм Артикул № 1262 со стр. 470		
	Ø 10,00 - 23,81 мм Артикул № 662 со стр. 467 S C A	No 1 No 1 Ø 10,00 - 26,00 мм Артикул № 623 со стр. 481 >Ø 16,0	No 1 No 1 Ø 9,52 - 30,00 мм Артикул № 620 со стр. 486 >Ø 16,0
No 1 No 1 Ø 10,50 - 31,00 мм Артикул № 663 со стр.449 S			
	Ø 8,00 - 30,00 мм Артикул № 661 со стр. 465 S	Ø 4,75 - 40,00 мм Артикул № 357 со стр. 480	

с внутренним подводом СОТС

		~10xD Длина канавки до DIN 341	~15xD Длина канавки до DIN 1870 R1
		No 1 No 1 Ø 11,00 - 34,92 мм Артикул № 370 со стр. 505	No 1 No 1 Ø 11,00 - 34,00 мм Артикул № 374 со стр. 508

QUICKFINDER

~20xD
DIN 1870
R2

>20xD
СТП
очень длинный

No 1 Идеальный инструмент для нержавеющей стали

No 1 Идеальный инструмент для специальных и титановых сплавов

Тип VA, HSCO

No 1 No 1
Ø 9,52 - 23,42 мм
Артикул № 621
со стр. 490
>Ø 16,0

GT100, HSCO

GV120, HSCO

Тип N, HSCO

GT100, HSCO

K ЧУГУНЫ

Спиральные сверла с конусом Морзе

без внутреннего охлаждения

~ 3xD СТП	~ 5xD DIN 345	~10xD DIN 341	~15xD DIN 1870 R1
	No 1 Ø 3,00 - 31,00 мм Артикул № 654 со стр. 455 S	No 1 Ø 5,50 - 22,00 мм Артикул № 655 со стр. 475 S	Ø 8,00 - 50,00 мм Артикул № 266 со стр. 483
	Ø 8,00 - 30,00 мм Артикул № 661 со стр. 465 S	Ø 4,75 - 40,00 мм Артикул № 357 со стр. 480	
	Ø 7,94 - 31,50 мм Артикул № 606 со стр. 462 S >Ø 16,0	Ø 7,00 - 23,00 мм Артикул № 656 со стр. 478 S >Ø 16,0	Ø 8,00 - 30,00 мм Артикул № 526 со стр. 484 >Ø 16,0
	Ø 10,00 - 23,81 мм Артикул № 662 со стр. 467 S C A	Ø 10,00 - 26,00 мм Артикул № 623 со стр. 481 >Ø 16,0	No 1 Ø 9,52 - 30,00 мм Артикул № 620 со стр. 486 >Ø 16,0
No 1 Ø 10,50 - 31,00 мм Артикул № 663 со стр. 449 S			

с внутренним подводом СОТС

	~10xD Длина канавки до DIN 341	~15xD Длина канавки до DIN 1870 R1
	No 1 Ø 10,00 - 32,00 мм Артикул № 1101 со стр. 501	
	Ø 11,00 - 34,92 мм Артикул № 370 со стр. 505	No 1 Ø 11,00 - 34,00 мм Артикул № 374 со стр. 508

QUICKFINDER

~20xD DIN 1870 R2	>20xD СТП очень длинный	No 1 Идеальный инструмент

Ø 8,00 - 45,00 мм
Артикул № 267
со стр. 487

Тип N, HSS

Тип N, HSCO

Ø 8,00 - 30,00 мм
Артикул № 527
со стр. 488

No 1
Ø 8,00 - 40,00 мм
Артикул № 566
со стр. 494

GT100, HSS

No 1
Ø 9,52 - 23,42 мм
Артикул № 621
со стр. 490

GT100, HSCO

GV120, HSCO

Тип N, HSS

GT100, HSCO

N АЛЮМИНИЙ, ЦВЕТНЫЕ МЕТАЛЛЫ

без внутренего охлаждения

~ 3xD СТП	~ 5xD DIN 345	~10xD DIN 341	~15xD DIN 1870 R1
	No 1 Ø 3,20 - 32,00 мм Артикул № 247 со стр. 460	Тип W для мягких , вязких материалов с длинной стружкой	
	No 1 Ø 6,70 - 25,25 мм Артикул № 246 со стр. 459	Тип H для твердых, хрупких материалов	
	Тип GT50 для мягких , вязких материалов с длинной стружкой	No 1 Ø 5,50 - 29,50 мм Артикул № 505 со стр. 479	No 1 Ø 8,50 - 33,00 мм Артикул № 525 со стр. 485
	Ø 7,94 - 31,75 мм Артикул № 558 со стр. 461 >Ø 16,0 S	Ø 5,50 - 32,00 мм Артикул № 551 со стр. 476 >Ø 16,0 S	Ø 8,00 - 30,00 мм Артикул № 526 со стр. 484 >Ø 16,0
	Ø 10,00 - 39,00 мм Артикул № 645 со стр. 466 S C A	Ø 10,00 - 26,00 мм Артикул № 623 со стр. 481 >Ø 16,0	Ø 9,52 - 30,00 мм Артикул № 620 со стр. 486 >Ø 16,0

с внутренним подводом СОТС

	~10xD Длина канавки до DIN 341	~15xD Длина канавки до DIN 1870 R1
	No 1 Ø 10,00 - 32,00 мм Артикул № 1101 со стр. 501	
	Ø 11,00 - 34,92 мм Артикул № 370 со стр. 505	No 1 Ø 11,00 - 34,00 мм Артикул № 374 со стр. 508

QUICKFINDER

~20xD DIN 1870 R2	>20xD СТП очень длинный	
		No 1 Идеальный инструмент
		Тип W, HSS
		Тип H, HSS
No 1 Ø 8,50 - 31,00 мм Артикул № 542 со стр. 489 ○		GT50, HSS
Ø 8,00 - 30,00 мм Артикул № 527 со стр. 488 >Ø 16,0	No 1 Ø 8,00 - 40,00 мм Артикул № 566 со стр. 494 ○ >Ø 16,0	GT100, HSS
Ø 9,52 - 23,42 мм Артикул № 621 со стр. 490 >Ø 16,0		GT100, HSCO
		Тип N, HSS
		GT100, HSCO

FRIZAR
www.frizar.ru

Спиральные свёрла, средние

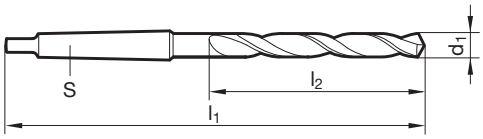
~3xD | WN | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 7,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K	•	
N	○	трудно обрабатываемые материалы • нержав./кислотостойк. сталь • пружинная, аустенит. сталь
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 772



Артикул № **363**

d1		S	l1	l2
mm	inch		mm	mm
8,100		MK-1	130,000	49,000
8,200		MK-1	130,000	49,000
8,300		MK-1	130,000	49,000
8,500		MK-1	130,000	49,000
8,600		MK-1	134,000	53,000
8,730	11/32	MK-1	134,000	53,000
9,000		MK-1	134,000	53,000
9,520	3/8	MK-1	138,000	57,000
9,920	25/64	MK-1	138,000	57,000
10,000		MK-1	138,000	57,000
10,100		MK-1	138,000	57,000
10,200		MK-1	138,000	57,000
10,500		MK-1	138,000	57,000
11,000		MK-1	142,000	61,000
11,750		MK-1	142,000	61,000
12,000		MK-1	147,000	66,000
12,500		MK-1	147,000	66,000
12,700	1/2	MK-1	147,000	66,000
13,000		MK-1	147,000	66,000
13,490	17/32	MK-2	168,000	70,000
13,500		MK-2	168,000	70,000
14,000		MK-2	168,000	70,000
14,500		MK-2	172,000	74,000
15,000		MK-2	172,000	74,000
15,500		MK-2	176,000	78,000
16,000		MK-2	176,000	78,000
16,500		MK-2	179,000	81,000
17,000		MK-2	179,000	81,000
17,500		MK-2	183,000	85,000
18,000		MK-2	183,000	85,000

d1		S	l1	l2
mm	inch		mm	mm
18,500		MK-2	186,000	88,000
19,000		MK-2	186,000	88,000
19,450	49/64	MK-3	212,000	91,000
20,000		MK-3	212,000	91,000
20,500		MK-3	216,000	95,000
20,900		MK-3	216,000	95,000
21,000		MK-3	216,000	95,000
21,500		MK-3	219,000	98,000
22,000		MK-3	219,000	98,000
22,220	7/8	MK-3	219,000	98,000
23,000		MK-3	222,000	101,000
23,020	29/32	MK-3	222,000	101,000
24,000		MK-3	225,000	104,000
24,500		MK-3	225,000	104,000
25,000	63/64	MK-3	225,000	104,000
26,000		MK-4	256,000	107,000
26,500		MK-4	256,000	107,000
27,000		MK-4	259,000	110,000
27,500		MK-4	259,000	110,000
28,000		MK-4	259,000	110,000
29,000		MK-4	263,000	114,000
29,370	1 5/32	MK-4	263,000	114,000
30,000		MK-4	263,000	114,000
32,000		MK-4	269,000	120,000
33,000		MK-4	269,000	120,000
37,000		MK-4	276,000	127,000
38,000		MK-5	317,000	130,000

Спиральные свёрла, средние

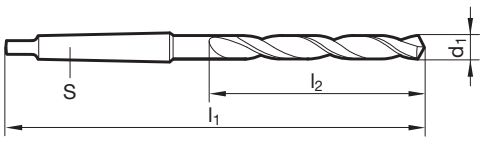
~3xD | WN | GV 120 | 130° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 9,000 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость
M	•	
K	•	
N	○	трудно обрабатываемые материалы • нержавеющие стали • пружинная, аустенит. сталь
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 774



Артикул № **663**

d1 mm	inch	S	l1 mm	l2 mm
10,500		MK-1	138,000	57,000
10,750		MK-1	142,000	61,000
11,500		MK-1	142,000	61,000
12,500		MK-1	147,000	66,000
13,500		MK-2	168,000	70,000
14,000		MK-2	168,000	70,000
14,250		MK-2	172,000	74,000
15,000		MK-2	172,000	74,000
16,000		MK-2	176,000	78,000
16,500		MK-2	179,000	81,000
17,000		MK-2	179,000	81,000
17,500		MK-2	183,000	85,000

d1 mm	inch	S	l1 mm	l2 mm
18,000		MK-2	183,000	85,000
19,000		MK-2	186,000	88,000
20,000		MK-3	212,000	91,000
21,000		MK-3	216,000	95,000
22,000		MK-3	219,000	98,000
23,000		MK-3	222,000	101,000
25,000	63/64	MK-3	225,000	104,000
27,000		MK-4	259,000	110,000
29,000		MK-4	263,000	114,000
30,000		MK-4	263,000	114,000
31,000		MK-4	266,000	117,000

Спиральные свёрла

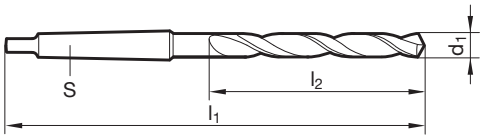
~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 14,050 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **245**

d1 mm	d1 inch	S	l1 mm	l2 mm	d1 mm	d1 inch	S	l1 mm	l2 mm
2,380	3/32	MK-1	111,000	30,000	5,950	15/64	MK-1	138,000	57,000
2,400		MK-1	111,000	30,000	6,000		MK-1	138,000	57,000
2,450		MK-1	111,000	30,000	6,050		MK-1	144,000	63,000
2,500		MK-1	111,000	30,000	6,100		MK-1	144,000	63,000
2,650		MK-1	111,000	30,000	6,200		MK-1	144,000	63,000
2,780	7/64	MK-1	114,000	33,000	6,300		MK-1	144,000	63,000
2,900		MK-1	114,000	33,000	6,350	1/4	MK-1	144,000	63,000
3,000		MK-1	114,000	33,000	6,400		MK-1	144,000	63,000
3,050		MK-1	117,000	36,000	6,500		MK-1	144,000	63,000
3,170	1/8	MK-1	117,000	36,000	6,600		MK-1	144,000	63,000
3,200		MK-1	117,000	36,000	6,700		MK-1	144,000	63,000
3,250		MK-1	117,000	36,000	6,750	17/64	MK-1	150,000	69,000
3,300		MK-1	117,000	36,000	6,800		MK-1	150,000	69,000
3,450		MK-1	120,000	39,000	6,900		MK-1	150,000	69,000
3,500		MK-1	120,000	39,000	7,000		MK-1	150,000	69,000
3,570	9/64	MK-1	120,000	39,000	7,140	9/32	MK-1	150,000	69,000
3,600		MK-1	120,000	39,000	7,200		MK-1	150,000	69,000
3,970	5/32	MK-1	124,000	43,000	7,250		MK-1	150,000	69,000
4,000		MK-1	124,000	43,000	7,300		MK-1	150,000	69,000
4,200		MK-1	124,000	43,000	7,400		MK-1	150,000	69,000
4,250		MK-1	124,000	43,000	7,500		MK-1	150,000	69,000
4,300		MK-1	128,000	47,000	7,540	19/64	MK-1	156,000	75,000
4,370	11/64	MK-1	128,000	47,000	7,600		MK-1	156,000	75,000
4,400		MK-1	128,000	47,000	7,700		MK-1	156,000	75,000
4,500		MK-1	128,000	47,000	7,750		MK-1	156,000	75,000
4,600		MK-1	128,000	47,000	7,800		MK-1	156,000	75,000
4,750		MK-1	128,000	47,000	7,900		MK-1	156,000	75,000
4,760	3/16	MK-1	133,000	52,000	7,940	5/16	MK-1	156,000	75,000
4,800		MK-1	133,000	52,000	8,000		MK-1	156,000	75,000
5,000		MK-1	133,000	52,000	8,050		MK-1	156,000	75,000
5,100		MK-1	133,000	52,000	8,100		MK-1	156,000	75,000
5,160	13/64	MK-1	133,000	52,000	8,200		MK-1	156,000	75,000
5,200		MK-1	133,000	52,000	8,250		MK-1	156,000	75,000
5,250		MK-1	133,000	52,000	8,300		MK-1	156,000	75,000
5,300		MK-1	133,000	52,000	8,330	21/64	MK-1	156,000	75,000
5,500		MK-1	138,000	57,000	8,400		MK-1	156,000	75,000
5,560	7/32	MK-1	138,000	57,000	8,500		MK-1	156,000	75,000
5,600		MK-1	138,000	57,000	8,600		MK-1	162,000	81,000
5,700		MK-1	138,000	57,000	8,700		MK-1	162,000	81,000
5,750		MK-1	138,000	57,000	8,730	11/32	MK-1	162,000	81,000
5,800		MK-1	138,000	57,000	8,750		MK-1	162,000	81,000
5,900		MK-1	138,000	57,000	8,800		MK-1	162,000	81,000

d1		S	l1	l2
mm	inch		mm	mm
8,900		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,050		MK-1	162,000	81,000
9,100		MK-1	162,000	81,000
9,130	23/64	MK-1	162,000	81,000
9,200		MK-1	162,000	81,000
9,250		MK-1	162,000	81,000
9,300		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
9,750		MK-1	168,000	87,000
9,800		MK-1	168,000	87,000
9,900		MK-1	168,000	87,000
9,920	25/64	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
10,100		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
10,300		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
10,400		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,520		MK-1	168,000	87,000
10,600		MK-1	168,000	87,000
10,700		MK-1	175,000	94,000
10,720	27/64	MK-1	175,000	94,000
10,750		MK-1	175,000	94,000
10,800		MK-1	175,000	94,000
10,900		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,100		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,250		MK-1	175,000	94,000
11,300		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,600		MK-1	175,000	94,000
11,700		MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
11,800		MK-1	175,000	94,000
11,900		MK-1	182,000	101,000
11,910	15/32	MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,100		MK-1	182,000	101,000
12,200		MK-1	182,000	101,000
12,250		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,550		MK-1	182,000	101,000
12,600		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
12,800		MK-1	182,000	101,000
12,900		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,100	33/64	MK-1	182,000	101,000
13,200		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,300		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,600		MK-1	189,000	108,000
13,700		MK-1	189,000	108,000
13,750		MK-1	189,000	108,000
13,800		MK-1	189,000	108,000
13,890	35/64	MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,050		MK-2	212,000	114,000
14,100		MK-2	212,000	114,000
14,200		MK-2	212,000	114,000
14,250		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000

d1		S	l1	l2
mm	inch		mm	mm
14,300		MK-2	212,000	114,000
14,400		MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,600		MK-2	212,000	114,000
14,680	37/64	MK-2	212,000	114,000
14,700		MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
14,800		MK-2	212,000	114,000
14,900		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
15,100		MK-2	218,000	120,000
15,200		MK-2	218,000	120,000
15,250		MK-2	218,000	120,000
15,300		MK-2	218,000	120,000
15,400		MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
15,600		MK-2	218,000	120,000
15,700		MK-2	218,000	120,000
15,750		MK-2	218,000	120,000
15,800		MK-2	218,000	120,000
15,870	5/8	MK-2	218,000	120,000
15,900		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,100		MK-2	223,000	125,000
16,200		MK-2	223,000	125,000
16,250		MK-2	223,000	125,000
16,270	41/64	MK-2	223,000	125,000
16,300		MK-2	223,000	125,000
16,400		MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
16,700		MK-2	223,000	125,000
16,750		MK-2	223,000	125,000
16,800		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,070	43/64	MK-2	228,000	130,000
17,100		MK-2	228,000	130,000
17,250		MK-2	228,000	130,000
17,300		MK-2	228,000	130,000
17,400		MK-2	228,000	130,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
17,600		MK-2	228,000	130,000
17,700		MK-2	228,000	130,000
17,750		MK-2	228,000	130,000
17,800		MK-2	228,000	130,000
17,860	45/64	MK-2	228,000	130,000
17,900		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,100		MK-2	233,000	135,000
18,200		MK-2	233,000	135,000
18,250		MK-2	233,000	135,000
18,260	23/32	MK-2	233,000	135,000
18,300		MK-2	233,000	135,000
18,500		MK-2	233,000	135,000
18,650	47/64	MK-2	233,000	135,000
18,750		MK-2	233,000	135,000
18,800		MK-2	233,000	135,000
18,900		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,100		MK-2	238,000	140,000
19,200		MK-2	238,000	140,000
19,250		MK-2	238,000	140,000
19,450	49/64	MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,700		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,800		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000

d1		S	l1	l2
mm	inch		mm	mm
20,100		MK-2	243,000	145,000
20,200		MK-2	243,000	145,000
20,250		MK-2	243,000	145,000
20,300		MK-2	243,000	145,000
20,400		MK-2	243,000	145,000
20,500		MK-2	243,000	145,000
20,640	13/16	MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,030	53/64	MK-2	243,000	145,000
21,100		MK-2	243,000	145,000
21,200		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,430	27/32	MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
21,830	55/64	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,100		MK-2	248,000	150,000
22,200		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
22,400		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
22,620	57/64	MK-2	253,000	155,000
22,750		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,020	29/32	MK-2	253,000	155,000
23,250		MK-3	276,000	155,000
23,420	59/64	MK-3	276,000	155,000
23,500		MK-3	276,000	155,000
23,750		MK-3	281,000	160,000
23,810	15/16	MK-3	281,000	160,000
23,900		MK-3	281,000	160,000
24,000		MK-3	281,000	160,000
24,100		MK-3	281,000	160,000
24,210	61/64	MK-3	281,000	160,000
24,250		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
24,610	31/32	MK-3	281,000	160,000
24,750		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,100		MK-3	286,000	165,000
25,200		MK-3	286,000	165,000
25,250		MK-3	286,000	165,000
25,400	1	MK-3	286,000	165,000
25,500		MK-3	286,000	165,000
25,750		MK-3	286,000	165,000
25,800	1 1/64	MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,190	1 1/32	MK-3	286,000	165,000
26,250		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,590	1 3/64	MK-3	291,000	170,000
26,750		MK-3	291,000	170,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
27,750		MK-3	291,000	170,000
27,780	1 3/32	MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,250		MK-3	296,000	175,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
28,750		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,250		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
29,750		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,100		MK-3	301,000	180,000
30,160	1 3/16	MK-3	301,000	180,000

d1		S	l1	l2
mm	inch		mm	mm
30,250		MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
30,560	1 13/64	MK-3	301,000	180,000
30,750		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,250		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750	1 1/4	MK-3	306,000	185,000
32,000		MK-4	334,000	185,000
32,150	1 17/64	MK-4	334,000	185,000
32,250		MK-4	334,000	185,000
32,500		MK-4	334,000	185,000
32,750		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
33,340	1 5/16	MK-4	334,000	185,000
33,500		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000
34,500		MK-4	339,000	190,000
34,750		MK-4	339,000	190,000
34,920	1 3/8	MK-4	339,000	190,000
35,000		MK-4	339,000	190,000
35,500		MK-4	339,000	190,000
36,000		MK-4	344,000	195,000
36,500		MK-4	344,000	195,000
36,750		MK-4	344,000	195,000
37,000		MK-4	344,000	195,000
37,310	1 15/32	MK-4	344,000	195,000
37,500		MK-4	344,000	195,000
37,700	1 31/64	MK-4	349,000	200,000
38,000		MK-4	349,000	200,000
38,100	1 1/2	MK-4	349,000	200,000
38,500	1 33/64	MK-4	349,000	200,000
39,000		MK-4	349,000	200,000
39,500		MK-4	349,000	200,000
39,690	1 9/16	MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
40,500		MK-4	354,000	205,000
40,750		MK-4	354,000	205,000
40,800		MK-4	354,000	205,000
41,000		MK-4	354,000	205,000
41,270	1 5/8	MK-4	354,000	205,000
41,500		MK-4	354,000	205,000
42,000		MK-4	354,000	205,000
42,500		MK-4	354,000	205,000
43,000		MK-4	359,000	210,000
43,500		MK-4	359,000	210,000
44,000		MK-4	359,000	210,000
44,450	1 3/4	MK-4	359,000	210,000
44,500		MK-4	359,000	210,000
45,000		MK-4	359,000	210,000
45,500		MK-4	364,000	215,000
46,000		MK-4	364,000	215,000
46,430	1 53/64	MK-4	364,000	215,000
46,500		MK-4	364,000	215,000
47,000		MK-4	364,000	215,000
47,230	1 55/64	MK-4	364,000	215,000
47,500		MK-4	364,000	215,000
47,620	1 7/8	MK-4	369,000	220,000
48,000		MK-4	369,000	220,000
48,020	1 57/64	MK-4	369,000	220,000
48,500		MK-4	369,000	220,000
48,820	1 59/64	MK-4	369,000	220,000
49,000		MK-4	369,000	220,000
49,500		MK-4	369,000	220,000
49,610	1 61/64	MK-4	369,000	220,000
50,000		MK-4	369,000	220,000
50,500		MK-4	374,000	225,000
50,800	2	MK-4	374,000	225,000
51,000		MK-5	412,000	225,000
52,000		MK-5	412,000	225,000
53,000		MK-5	412,000	225,000
53,390		MK-5	417,000	230,000

d1		S	l1	l2
mm	inch		mm	mm
53,400		MK-5	417,000	230,000
54,000		MK-5	417,000	230,000
55,000		MK-5	417,000	230,000
56,000		MK-5	417,000	230,000
57,000		MK-5	422,000	235,000
58,000		MK-5	422,000	235,000
59,000		MK-5	422,000	235,000
60,000		MK-5	422,000	235,000
61,000		MK-5	427,000	240,000
62,000		MK-5	427,000	240,000
63,000		MK-5	427,000	240,000
63,500	2 1/2	MK-5	432,000	245,000
65,000		MK-5	432,000	245,000
66,670	2 5/8	MK-5	432,000	245,000
67,500		MK-5	437,000	250,000
68,000		MK-5	437,000	250,000
69,850	2 3/4	MK-5	437,000	250,000
70,000		MK-5	437,000	250,000

d1		S	l1	l2
mm	inch		mm	mm
71,500		MK-5	442,000	255,000
72,000		MK-5	442,000	255,000
75,000		MK-5	442,000	255,000
76,990	3 1/32	MK-6	514,000	260,000
77,000		MK-6	514,000	260,000
77,790	3 1/16	MK-6	514,000	260,000
78,580	3 3/32	MK-6	514,000	260,000
79,500		MK-6	514,000	260,000
87,310	3 7/16	MK-6	524,000	270,000
89,000		MK-6	524,000	270,000
92,500		MK-6	529,000	275,000
93,000		MK-6	529,000	275,000
94,000		MK-6	529,000	275,000
94,500		MK-6	529,000	275,000
95,250	3 3/4	MK-6	534,000	280,000
95,500		MK-6	534,000	280,000
96,000		MK-6	534,000	280,000

FRIZAR
www.frizar.ru

Спиральные свёрла

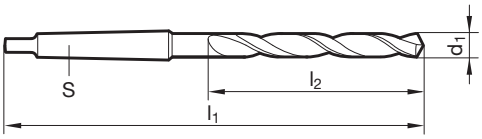
~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • Для черновой работы в металлоконструкциях
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное)
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **592**

d1 mm	inch	S	l1 mm	l2 mm
10,000		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,910	15/32	MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000

d1 mm	inch	S	l1 mm	l2 mm
14,290	9/16	MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
18,000		MK-2	228,000	130,000
19,050	3/4	MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
21,430	27/32	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
28,000		MK-3	291,000	170,000

Спиральные свёрла

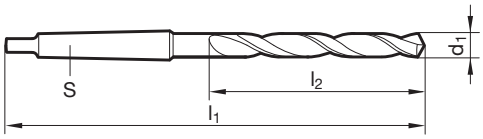
~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **654**

d1 mm	inch	S	l1 mm	l2 mm
3,000		MK-1	114,000	33,000
3,170	1/8	MK-1	117,000	36,000
3,500		MK-1	120,000	39,000
3,970	5/32	MK-1	124,000	43,000
4,000		MK-1	124,000	43,000
4,100		MK-1	124,000	43,000
4,370	11/64	MK-1	128,000	47,000
4,500		MK-1	128,000	47,000
4,760	3/16	MK-1	133,000	52,000
5,000		MK-1	133,000	52,000
5,160	13/64	MK-1	133,000	52,000
5,560	7/32	MK-1	138,000	57,000
6,000		MK-1	138,000	57,000
6,500		MK-1	144,000	63,000
6,750	17/64	MK-1	150,000	69,000
6,800		MK-1	150,000	69,000
7,000		MK-1	150,000	69,000
7,100		MK-1	150,000	69,000
7,140	9/32	MK-1	150,000	69,000
7,400		MK-1	150,000	69,000
7,700		MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
8,730	11/32	MK-1	162,000	81,000
8,800		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,400		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
9,600		MK-1	168,000	87,000
9,750		MK-1	168,000	87,000
9,800		MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
10,300		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
10,400		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,720	27/64	MK-1	175,000	94,000
10,750		MK-1	175,000	94,000
10,800		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000

d1 mm	inch	S	l1 mm	l2 mm
11,110	7/16	MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,250		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,510	29/64	MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
11,910	15/32	MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,200		MK-1	182,000	101,000
12,400		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,890	35/64	MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,200		MK-2	212,000	114,000
14,250		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,680	37/64	MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
14,900		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,250		MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
15,750		MK-2	218,000	120,000
15,870	5/8	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,200		MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,070	43/64	MK-2	228,000	130,000
17,250		MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
17,750		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,250		MK-2	233,000	135,000
18,260	23/32	MK-2	233,000	135,000

FRIZAR
www.frizar.ru

d1		S	l1	l2
mm	inch		mm	mm
18,500		MK-2	233,000	135,000
18,650	47/64	MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,450	49/64	MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,250		MK-2	243,000	145,000
20,500		MK-2	243,000	145,000
20,640	13/16	MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
21,830	55/64	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
23,750		MK-3	281,000	160,000

d1		S	l1	l2
mm	inch		mm	mm
24,000		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
24,750		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
27,380	1 5/64	MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
29,750		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,500		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000

Спиральные свёрла

~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	

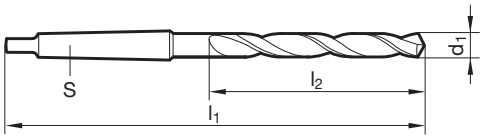
P	•
M	
K	•
N	○
S	
H	

подточка ≥ Ø 14,750 • конусная заточка

сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **248**

d1 mm	inch	S	l1 mm	l2 mm
6,000		MK-1	138,000	57,000
8,000		MK-1	156,000	75,000
8,100		MK-1	156,000	75,000
8,400		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
9,000		MK-1	162,000	81,000
10,500		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
13,000		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
15,000		MK-2	212,000	114,000
17,200		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
25,500		MK-3	286,000	165,000
28,000		MK-3	291,000	170,000

d1 mm	inch	S	l1 mm	l2 mm
29,000		MK-3	296,000	175,000
30,500		MK-3	301,000	180,000
32,500		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000
38,000		MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
60,000		MK-5	422,000	235,000

Спиральные свёрла

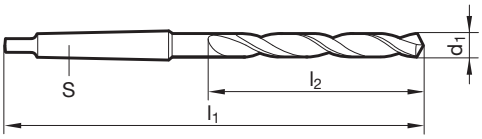
~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 8,500 • конусная заточка • Улучшенный перелом стружки • Особенно пригоден для карусельных тактовых станков
M		
K	•	
N	○	длинностружечные материалы
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **229**

d1 mm	inch	S	l1 mm	l2 mm
8,500		MK-1	156,000	75,000
8,730	11/32	MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,910	15/32	MK-1	182,000	101,000
12,250		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
18,000		MK-2	228,000	130,000
18,250		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,640	13/16	MK-2	243,000	145,000

d1 mm	inch	S	l1 mm	l2 mm
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
23,810	15/16	MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,190	1 1/32	MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
35,000		MK-4	339,000	190,000
39,500		MK-4	349,000	200,000
42,500		MK-4	354,000	205,000
43,500		MK-4	359,000	210,000
46,040	1 13/16	MK-4	364,000	215,000
46,500		MK-4	364,000	215,000
47,500		MK-4	364,000	215,000
56,000		MK-5	417,000	230,000
57,000		MK-5	422,000	235,000
58,000		MK-5	422,000	235,000
59,000		MK-5	422,000	235,000

Спиральные свёрла

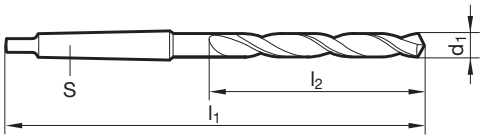
~5xD | DIN 345 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P		подточка ≥ Ø 14,500 • конусная заточка
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **246**

d1 mm	inch	S	l1 mm	l2 mm
6,700		MK-1	144,000	63,000
8,200		MK-1	156,000	75,000
11,000		MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
12,600		MK-1	182,000	101,000
12,800		MK-1	182,000	101,000
13,750		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,500		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,500		MK-2	223,000	125,000

d1 mm	inch	S	l1 mm	l2 mm
17,000		MK-2	223,000	125,000
20,500		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
25,000	63/64	MK-3	281,000	160,000
25,250		MK-3	286,000	165,000

FRIZAR
www.frizar.ru

Спиральные свёрла

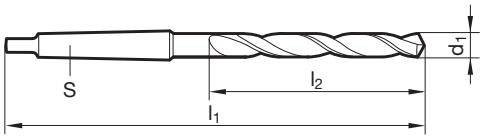
~5xD | DIN 345 | W | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	подточка ≥ Ø 14,100 • конусная заточка
M	
K	
N •	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **247**

d1 mm	inch	S	l1 mm	l2 mm
3,200		MK-1	117,000	36,000
3,300		MK-1	117,000	36,000
3,800		MK-1	124,000	43,000
4,000		MK-1	124,000	43,000
5,000		MK-1	133,000	52,000
5,400		MK-1	138,000	57,000
5,500		MK-1	138,000	57,000
6,000		MK-1	138,000	57,000
6,300		MK-1	144,000	63,000
6,500		MK-1	144,000	63,000
6,600		MK-1	144,000	63,000
6,750	17/64	MK-1	150,000	69,000
6,800		MK-1	150,000	69,000
7,000		MK-1	150,000	69,000
7,500		MK-1	150,000	69,000
7,750		MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
9,200		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,750		MK-1	168,000	87,000
9,800		MK-1	168,000	87,000
12,000		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000

d1 mm	inch	S	l1 mm	l2 mm
13,200		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
16,000		MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
18,000		MK-2	228,000	130,000
18,500		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
20,000		MK-2	238,000	140,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
27,000		MK-3	291,000	170,000
27,200		MK-3	291,000	170,000
27,250		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
30,300		MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
32,000		MK-4	334,000	185,000

Спиральные свёрла

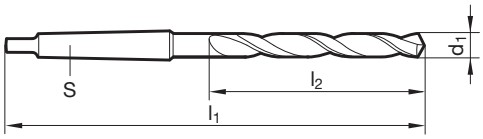
~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P •	подточка ≥ Ø 7,940 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **558**

d1 mm	inch	S	l1 mm	l2 mm
7,940	5/16	MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
8,250		MK-1	156,000	75,000
9,500		MK-1	162,000	81,000
10,000		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
19,500		MK-2	238,000	140,000

d1 mm	inch	S	l1 mm	l2 mm
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
27,500		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750	1 1/4	MK-3	306,000	185,000

Спиральные свёрла

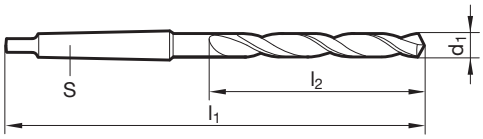
~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	(S)
Направление резания	(R)

P	•	подточка ≥ Ø 7,940 • конусная заточка • широкая стружечная канавка • особенно подходит для глубины более 3xD
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **606**

d1		S	l1	l2
mm	inch		mm	mm
7,940	5/16	MK-1	156,000	75,000
8,750		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
11,110	7/16	MK-1	175,000	94,000
12,250		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,750		MK-2	218,000	120,000

d1		S	l1	l2
mm	inch		mm	mm
15,870	5/8	MK-2	218,000	120,000
17,500		MK-2	228,000	130,000
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
31,500		MK-3	301,000	180,000

Спиральные свёрла

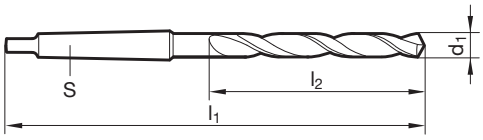
~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	○	
K	•	
N	○	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **345**

d1 mm	inch	S	l1 mm	l2 mm
4,000		MK-1	124,000	43,000
5,000		MK-1	133,000	52,000
5,200		MK-1	133,000	52,000
5,500		MK-1	138,000	57,000
6,000		MK-1	138,000	57,000
6,500		MK-1	144,000	63,000
6,700		MK-1	144,000	63,000
6,750	17/64	MK-1	150,000	69,000
6,800		MK-1	150,000	69,000
7,000		MK-1	150,000	69,000
7,500		MK-1	150,000	69,000
8,000		MK-1	156,000	75,000
8,200		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
8,700		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
10,100		MK-1	168,000	87,000
10,150		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,700		MK-1	175,000	94,000
10,720	27/64	MK-1	175,000	94,000
10,750		MK-1	175,000	94,000
10,800		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,600		MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
11,800		MK-1	175,000	94,000
11,900		MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,100		MK-1	182,000	101,000
12,200		MK-1	182,000	101,000
12,250		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000

d1 mm	inch	S	l1 mm	l2 mm
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,100	33/64	MK-1	182,000	101,000
13,200		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,700		MK-1	189,000	108,000
13,750		MK-1	189,000	108,000
13,800		MK-1	189,000	108,000
13,900		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,100		MK-2	212,000	114,000
14,200		MK-2	212,000	114,000
14,250		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
15,250		MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
15,750		MK-2	218,000	120,000
15,870	5/8	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,100		MK-2	223,000	125,000
16,250		MK-2	223,000	125,000
16,270	41/64	MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
16,750		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
17,750		MK-2	228,000	130,000
17,860	45/64	MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,200		MK-2	233,000	135,000
18,250		MK-2	233,000	135,000
18,260	23/32	MK-2	233,000	135,000
18,500		MK-2	233,000	135,000

FRIZAR
www.frizar.ru

d1		S	l1	l2
mm	inch		mm	mm
18,650	47/64	MK-2	233,000	135,000
18,750		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,250		MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,250		MK-2	243,000	145,000
20,500		MK-2	243,000	145,000
20,640	13/16	MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
22,620	57/64	MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,020	29/32	MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
24,000		MK-3	281,000	160,000
24,210	61/64	MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,250		MK-3	286,000	165,000
25,400	1	MK-3	286,000	165,000

d1		S	l1	l2
mm	inch		mm	mm
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
27,000		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,500		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750	1 1/4	MK-3	306,000	185,000
32,000		MK-4	334,000	185,000
32,500		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000
35,000		MK-4	339,000	190,000
36,000		MK-4	344,000	195,000
37,000		MK-4	344,000	195,000
38,000		MK-4	349,000	200,000
39,000		MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
42,000		MK-4	354,000	205,000
42,070	1 21/32	MK-4	354,000	205,000
43,000		MK-4	359,000	210,000
45,000		MK-4	359,000	210,000
50,000		MK-4	369,000	220,000

Спиральные свёрла

~5xD | DIN 345 | N | 118° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

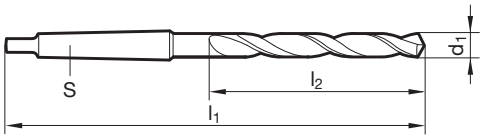
P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 7,940 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость

легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **661**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
9,000		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
12,000		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,500		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
16,000		MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
17,070	43/64	MK-2	228,000	130,000

d1 mm	inch	S	l1 mm	l2 mm
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
19,000		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
29,000		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000

FRIZAR
www.frizar.ru

Спиральные свёрла

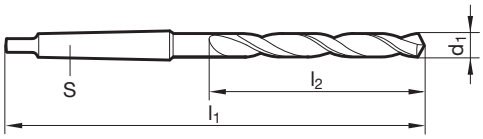
~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	≥Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • особенно подходит для глубины более 3xD
M	○	
K	•	
N	○	легир./нелегир. сталь и виды литья с прочностью более 1000 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **645**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	168,000	87,000
10,100		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,720	27/64	MK-1	175,000	94,000
10,800		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,510	29/64	MK-1	175,000	94,000
12,000		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,300		MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,250		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,250		MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
15,750		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,250		MK-2	228,000	130,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000

d1		S	l1	l2
mm	inch		mm	mm
18,250		MK-2	233,000	135,000
18,500		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,620	57/64	MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
24,000		MK-3	281,000	160,000
24,210	61/64	MK-3	281,000	160,000
24,610	31/32	MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
27,780	1 3/32	MK-3	291,000	170,000
28,570	1 1/8	MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
31,000		MK-3	301,000	180,000
33,000		MK-4	334,000	185,000
35,000		MK-4	339,000	190,000
37,000		MK-4	344,000	195,000
38,000		MK-4	349,000	200,000
39,000		MK-4	349,000	200,000

Спиральные свёрла

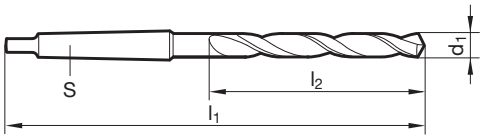
~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • особенно подходит для глубины более 3xD
M	○	
K	•	
N	○	легир./нелегир. сталь и виды литья с прочностью более 1000 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **662**

d1 mm	inch	S	l1 mm	l2 mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,400		MK-1	175,000	94,000
12,200		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
15,000		MK-2	212,000	114,000

d1 mm	inch	S	l1 mm	l2 mm
16,000		MK-2	218,000	120,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000

Спиральные свёрла

~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	C
Направление резания	R

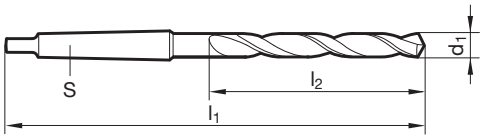
P	•
M	
K	○
N	
S	
H	

подточка ≥ Ø 10,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • особенно подходит для глубины более 3xD

легир./нелегир. сталь и виды литья с прочностью более 1000 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **1222**

d1 mm	inch	S	l1 mm	l2 mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
12,500		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
14,200		MK-2	212,000	114,000
15,870	5/8	MK-2	218,000	120,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
17,460	11/16	MK-2	228,000	130,000
19,500		MK-2	238,000	140,000

d1 mm	inch	S	l1 mm	l2 mm
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000

Спиральные свёрла

~5xD | DIN 345 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	A
Направление резания	R

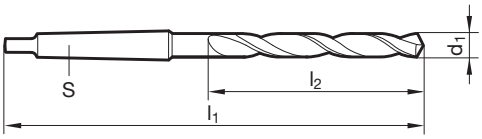
P	○
M	
K	•
N	○
S	
H	

подточка ≥ Ø 10,400 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • особенно подходит для глубины более 3xD

легир./нелегир. сталь и виды литья с прочностью более 1000 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали

GÜHRINGNAVIGATOR

Параметры резания см. стр. 782



Артикул № **1224**

d1		S	l1	l2
mm	inch		mm	mm
10,400		MK-1	168,000	87,000
11,110	7/16	MK-1	175,000	94,000
12,300	31/64	MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
14,200		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000
15,870	5/8	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,500		MK-2	223,000	125,000
19,000		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
23,810	15/16	MK-3	281,000	160,000

d1		S	l1	l2
mm	inch		mm	mm
25,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000

Спиральные свёрла

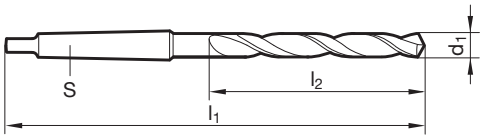
~5xD | DIN 345 | VA | 130° | h8

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	○	конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N	○	нержав./кислотостойкая/жаропрочная аустенит. сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **1262**

d1 mm	inch	S	l1 mm	l2 mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,800		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,800		MK-1	175,000	94,000
12,000		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,800		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,250		MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,250		MK-2	218,000	120,000
15,480	39/64	MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,250		MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,500		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000

d1 mm	inch	S	l1 mm	l2 mm
19,500		MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,420	59/64	MK-3	276,000	155,000
24,000		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
27,000		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
32,000		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000

Спиральные свёрла

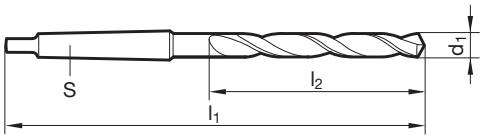
~5xD | DIN 346 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 14,200 • конусная заточка • с увеличенным конусом Морзе
M		
K	•	
N	○	легир./нелегир. сталь и стальное литье • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 778



Артикул № **251**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	185,000	87,000
10,500		MK-2	185,000	87,000
11,000		MK-2	192,000	94,000
11,910	15/32	MK-2	199,000	101,000
12,000		MK-2	199,000	101,000
12,250		MK-2	199,000	101,000
12,500		MK-2	199,000	101,000
13,000		MK-2	199,000	101,000
13,100	33/64	MK-2	199,000	101,000
13,250		MK-2	206,000	108,000
13,490	17/32	MK-2	206,000	108,000
13,500		MK-2	206,000	108,000
13,890	35/64	MK-2	206,000	108,000
14,000		MK-2	206,000	108,000
16,700		MK-3	246,000	125,000
17,000		MK-3	246,000	125,000
17,250		MK-3	251,000	130,000
18,250		MK-3	256,000	135,000
18,260	23/32	MK-3	256,000	135,000
18,650	47/64	MK-3	256,000	135,000
18,750		MK-3	256,000	135,000
19,000		MK-3	256,000	135,000
19,050	3/4	MK-3	261,000	140,000
19,450	49/64	MK-3	261,000	140,000
19,840	25/32	MK-3	261,000	140,000
20,000		MK-3	261,000	140,000
20,250		MK-3	266,000	145,000
20,640	13/16	MK-3	266,000	145,000
21,000		MK-3	266,000	145,000
21,030	53/64	MK-3	266,000	145,000

d1		S	l1	l2
mm	inch		mm	mm
21,430	27/32	MK-3	271,000	150,000
21,500		MK-3	271,000	150,000
22,000		MK-3	271,000	150,000
22,220	7/8	MK-3	271,000	150,000
23,000		MK-3	276,000	155,000
23,020	29/32	MK-3	276,000	155,000
27,500		MK-4	319,000	170,000
27,750		MK-4	319,000	170,000
27,780	1 3/32	MK-4	319,000	170,000
28,000		MK-4	319,000	170,000
28,180	1 7/64	MK-4	324,000	175,000
28,500		MK-4	324,000	175,000
28,570	1 1/8	MK-4	324,000	175,000
28,970	1 9/64	MK-4	324,000	175,000
29,770	1 11/64	MK-4	324,000	175,000
31,500		MK-4	329,000	180,000
32,000		MK-5	372,000	185,000
36,000		MK-5	382,000	195,000
40,080	1 37/64	MK-5	392,000	205,000
41,000		MK-5	392,000	205,000
41,500		MK-5	392,000	205,000
42,070	1 21/32	MK-5	392,000	205,000
44,050	1 47/64	MK-5	397,000	210,000
45,000		MK-5	397,000	210,000
46,040	1 13/16	MK-5	402,000	215,000
47,000		MK-5	402,000	215,000
49,000		MK-5	407,000	220,000
49,500		MK-5	407,000	220,000
73,000		MK-6	509,000	255,000

Спиральные свёрла

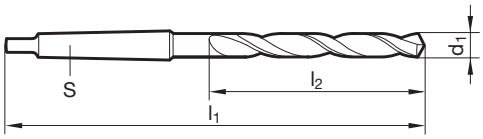
~5xD | DIN 346 | N | 118° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • легированная кобальтом HSS • увеличенная износостойкость • с увеличенным конусом Морзе
M	○	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 780



Артикул № **351**

d1 mm	inch	S	l1 mm	l2 mm
12,000		MK-2	199,000	101,000
13,000		MK-2	199,000	101,000
14,000		MK-2	206,000	108,000
17,500		MK-3	251,000	130,000
18,500		MK-3	256,000	135,000
20,000		MK-3	261,000	140,000
21,000		MK-3	266,000	145,000
21,500		MK-3	271,000	150,000
22,750		MK-3	276,000	155,000
23,000		MK-3	276,000	155,000
29,000		MK-4	324,000	175,000
30,000		MK-4	324,000	175,000

d1 mm	inch	S	l1 mm	l2 mm
31,000		MK-4	329,000	180,000
31,500		MK-4	329,000	180,000

Спиральные сверла с конусом Морзе длинные

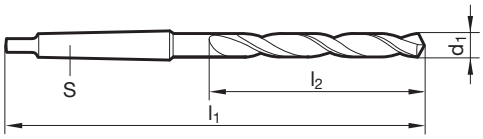
~10xD | DIN 341 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 14,100 • конусная заточка • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **257**

d1 mm	inch	S	l1 mm	l2 mm
2,900		MK-1	132,000	51,000
3,900		MK-1	145,000	64,000
4,000		MK-1	145,000	64,000
4,100		MK-1	145,000	64,000
4,200		MK-1	145,000	64,000
4,500		MK-1	150,000	69,000
4,700		MK-1	150,000	69,000
5,000		MK-1	155,000	74,000
5,100		MK-1	155,000	74,000
5,200		MK-1	155,000	74,000
5,250		MK-1	155,000	74,000
5,500		MK-1	161,000	80,000
5,800		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,500		MK-1	167,000	86,000
6,700		MK-1	167,000	86,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,100		MK-1	174,000	93,000
7,200		MK-1	174,000	93,000
7,300		MK-1	174,000	93,000
7,400		MK-1	174,000	93,000
7,500		MK-1	174,000	93,000
7,600		MK-1	181,000	100,000
7,800		MK-1	181,000	100,000
8,000		MK-1	181,000	100,000
8,050		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,250		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
8,750		MK-1	188,000	107,000
8,800		MK-1	188,000	107,000
8,900		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,100		MK-1	188,000	107,000
9,300		MK-1	188,000	107,000
9,400		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,600		MK-1	197,000	116,000
9,700		MK-1	197,000	116,000
9,800		MK-1	197,000	116,000

d1 mm	inch	S	l1 mm	l2 mm
9,900		MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,050		MK-1	197,000	116,000
10,100		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000
10,300		MK-1	197,000	116,000
10,400		MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
10,600		MK-1	197,000	116,000
10,700		MK-1	206,000	125,000
10,750		MK-1	206,000	125,000
10,800		MK-1	206,000	125,000
10,900		MK-1	206,000	125,000
11,000		MK-1	206,000	125,000
11,250		MK-1	206,000	125,000
11,400		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,750		MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,100		MK-1	215,000	134,000
12,200		MK-1	215,000	134,000
12,250		MK-1	215,000	134,000
12,300	31/64	MK-1	215,000	134,000
12,400		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
12,600		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,100	33/64	MK-1	215,000	134,000
13,200		MK-1	215,000	134,000
13,490	17/32	MK-1	223,000	142,000
13,500		MK-1	223,000	142,000
13,750		MK-1	223,000	142,000
13,900		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,100		MK-2	245,000	147,000
14,250		MK-2	245,000	147,000
14,290	9/16	MK-2	245,000	147,000
14,300		MK-2	245,000	147,000
14,400		MK-2	245,000	147,000
14,500		MK-2	245,000	147,000

d1		S	l1	l2
mm	inch		mm	mm
14,750		MK-2	245,000	147,000
14,900		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,200		MK-2	251,000	153,000
15,250		MK-2	251,000	153,000
15,500		MK-2	251,000	153,000
15,600		MK-2	251,000	153,000
15,750		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,100		MK-2	257,000	159,000
16,200		MK-2	257,000	159,000
16,250		MK-2	257,000	159,000
16,500		MK-2	257,000	159,000
16,670	21/32	MK-2	257,000	159,000
16,750		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,250		MK-2	263,000	165,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
17,750		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,250		MK-2	269,000	171,000
18,500		MK-2	269,000	171,000
18,750		MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
19,750		MK-2	275,000	177,000
19,840	25/32	MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
20,250		MK-2	282,000	184,000
20,500		MK-2	282,000	184,000
20,640	13/16	MK-2	282,000	184,000
21,000		MK-2	282,000	184,000
21,500		MK-2	289,000	191,000
21,750		MK-2	289,000	191,000
21,830	55/64	MK-2	289,000	191,000
22,000		MK-2	289,000	191,000
22,220	7/8	MK-2	289,000	191,000
22,250		MK-2	289,000	191,000
22,500		MK-2	296,000	198,000
23,000		MK-2	296,000	198,000
23,500		MK-3	319,000	198,000
23,750		MK-3	327,000	206,000
23,810	15/16	MK-3	327,000	206,000
24,000		MK-3	327,000	206,000
24,250		MK-3	327,000	206,000
24,500		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000

d1		S	l1	l2
mm	inch		mm	mm
25,250		MK-3	335,000	214,000
25,500		MK-3	335,000	214,000
26,000		MK-3	335,000	214,000
26,500		MK-3	335,000	214,000
26,590	1 3/64	MK-3	343,000	222,000
26,990	1 1/16	MK-3	343,000	222,000
27,000		MK-3	343,000	222,000
27,380	1 5/64	MK-3	343,000	222,000
27,500		MK-3	343,000	222,000
28,000		MK-3	343,000	222,000
28,500		MK-3	351,000	230,000
29,000		MK-3	351,000	230,000
29,500		MK-3	351,000	230,000
30,000		MK-3	351,000	230,000
30,500		MK-3	360,000	239,000
31,000		MK-3	360,000	239,000
32,000		MK-4	397,000	248,000
33,000		MK-4	397,000	248,000
33,500		MK-4	397,000	248,000
34,000		MK-4	406,000	257,000
35,000		MK-4	406,000	257,000
36,000		MK-4	416,000	267,000
36,120	1 27/64	MK-4	416,000	267,000
36,910	1 29/64	MK-4	416,000	267,000
37,000		MK-4	416,000	267,000
37,500		MK-4	416,000	267,000
38,000		MK-4	426,000	277,000
39,000		MK-4	426,000	277,000
39,500		MK-4	426,000	277,000
40,000		MK-4	426,000	277,000
40,080	1 37/64	MK-4	436,000	287,000
40,880	1 39/64	MK-4	436,000	287,000
41,000		MK-4	436,000	287,000
41,670	1 41/64	MK-4	436,000	287,000
42,000		MK-4	436,000	287,000
43,000		MK-4	447,000	298,000
43,660	1 23/32	MK-4	447,000	298,000
44,000		MK-4	447,000	298,000
45,000		MK-4	447,000	298,000
46,830	1 27/32	MK-4	459,000	310,000
48,000		MK-4	470,000	321,000
49,000		MK-4	470,000	321,000
50,000		MK-4	470,000	321,000

Спиральные свёрла с конусом Морзе длинные

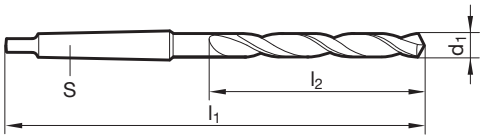
~10xD | DIN 341 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 4,000 • конусная заточка • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № 655

d1 mm	inch	S	l1 mm	l2 mm
5,500		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,300		MK-1	174,000	93,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,400		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
8,700		MK-1	188,000	107,000
8,800		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
10,000		MK-1	197,000	116,000
10,050		MK-1	197,000	116,000
10,100		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,400		MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,400		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,750		MK-1	206,000	125,000

d1 mm	inch	S	l1 mm	l2 mm
12,000		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,500		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,250		MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,250		MK-2	251,000	153,000
15,870	5/8	MK-2	251,000	153,000
17,000		MK-2	257,000	159,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000

Спиральные сверла с конусом Морзе длинные

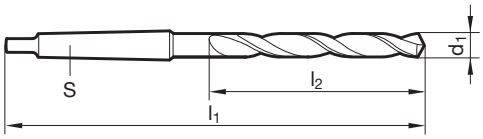
~10xD | DIN 341 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P •	подточка ≥ Ø 5,500 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M	
K •	
N •	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **551**

d1 mm	inch	S	l1 mm	l2 mm
5,500		MK-1	161,000	80,000
5,550		MK-1	161,000	80,000
6,350	1/4	MK-1	167,000	86,000
6,500		MK-1	167,000	86,000
6,750	17/64	MK-1	174,000	93,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,500		MK-1	174,000	93,000
7,940	5/16	MK-1	181,000	100,000
8,000		MK-1	181,000	100,000
8,100		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,300		MK-1	181,000	100,000
8,330	21/64	MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
8,700		MK-1	188,000	107,000
8,750		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,520	3/8	MK-1	197,000	116,000
9,800		MK-1	197,000	116,000
9,900		MK-1	197,000	116,000
9,920	25/64	MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
10,750		MK-1	206,000	125,000
11,000		MK-1	206,000	125,000
11,110	7/16	MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,510	29/64	MK-1	206,000	125,000
11,750		MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,300	31/64	MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
12,700	1/2	MK-1	215,000	134,000
12,800		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000

d1 mm	inch	S	l1 mm	l2 mm
13,100	33/64	MK-1	215,000	134,000
13,490	17/32	MK-1	223,000	142,000
13,500		MK-1	223,000	142,000
13,800		MK-1	223,000	142,000
13,890	35/64	MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,250		MK-2	245,000	147,000
14,290	9/16	MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,250		MK-2	251,000	153,000
15,480	39/64	MK-2	251,000	153,000
15,750		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
16,670	21/32	MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,260	23/32	MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
19,840	25/32	MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000
23,020	29/32	MK-2	296,000	198,000
23,500		MK-3	319,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000
26,590	1 3/64	MK-3	343,000	222,000
28,570	1 1/8	MK-3	351,000	230,000
28,900		MK-3	351,000	230,000
28,970	1 9/64	MK-3	351,000	230,000
29,000		MK-3	351,000	230,000
30,000		MK-3	351,000	230,000
30,500		MK-3	360,000	239,000

d1		S	l1	l2
mm	inch		mm	mm
30,560	1 13/64	MK-3	360,000	239,000
30,960	1 7/32	MK-3	360,000	239,000
31,000		MK-3	360,000	239,000
31,500		MK-3	360,000	239,000
32,000		MK-4	397,000	248,000

d1		S	l1	l2
mm	inch		mm	mm

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе длинные

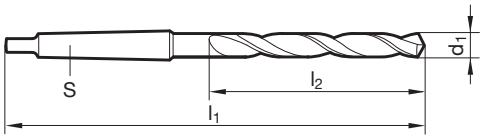
~10xD | DIN 341 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 5,600 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **656**

d1 mm	inch	S	l1 mm	l2 mm
7,000		MK-1	174,000	93,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,920	25/64	MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,110	7/16	MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,800		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,500		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000

d1 mm	inch	S	l1 mm	l2 mm
16,000		MK-2	251,000	153,000
16,670	21/32	MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
19,050	3/4	MK-2	275,000	177,000
20,500		MK-2	282,000	184,000
20,640	13/16	MK-2	282,000	184,000
21,500		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000

Спиральные сверла с конусом Морзе длинные

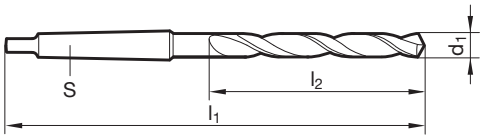
~10xD | DIN 341 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 4,200 • конусная заточка • Очень большая стружечная канавка
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **505**

d1		S	l1	l2
mm	inch		mm	mm
5,500		MK-1	161,000	80,000
5,600		MK-1	161,000	80,000
5,800		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,100		MK-1	167,000	86,000
6,300		MK-1	167,000	86,000
6,500		MK-1	167,000	86,000
6,700		MK-1	167,000	86,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,200		MK-1	174,000	93,000
7,300		MK-1	174,000	93,000
7,500		MK-1	174,000	93,000
7,700		MK-1	181,000	100,000
7,950		MK-1	181,000	100,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,300		MK-1	181,000	100,000
8,400		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
9,050		MK-1	188,000	107,000
9,300		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,600		MK-1	197,000	116,000
9,700		MK-1	197,000	116,000
9,800		MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000

d1		S	l1	l2
mm	inch		mm	mm
10,700		MK-1	206,000	125,000
10,750		MK-1	206,000	125,000
10,800		MK-1	206,000	125,000
11,200		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,200		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
12,700	1/2	MK-1	215,000	134,000
12,800		MK-1	215,000	134,000
13,250		MK-1	223,000	142,000
13,750		MK-1	223,000	142,000
13,800		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,250		MK-2	245,000	147,000
14,300		MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
16,800		MK-2	257,000	159,000
18,500		MK-2	269,000	171,000
19,250		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
23,500		MK-3	319,000	198,000
24,000		MK-3	327,000	206,000
29,000		MK-3	351,000	230,000
29,500		MK-3	351,000	230,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе длинные

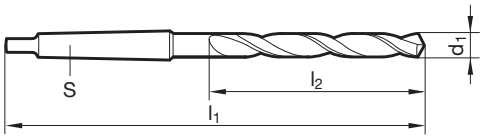
~10xD | DIN 341 | N | 118° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 4,750 • конусная заточка • легированная кобальтом HSS • высокая износостойкость • для сверления через кондукторные втулки
M	○	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **357**

d1		S	l1	l2
mm	inch		mm	mm
4,750		MK-1	150,000	69,000
5,000		MK-1	155,000	74,000
5,400		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,750	17/64	MK-1	174,000	93,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,800		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,800		MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,250		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000

d1		S	l1	l2
mm	inch		mm	mm
13,500		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,500		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,750		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
20,000		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000
26,500		MK-3	335,000	214,000
27,000		MK-3	343,000	222,000
28,000		MK-3	343,000	222,000
30,000		MK-3	351,000	230,000
33,000		MK-4	397,000	248,000
40,000		MK-4	426,000	277,000

Спиральные сверла с конусом Морзе длинные

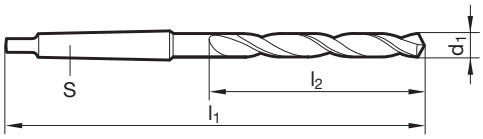
~10xD | DIN 341 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 16,0
Направление резания	R

P	●	подточка ≥ Ø 10,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • использовать при плохом отводе стружки
M	●	
K	●	
N	●	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № 623

d1 mm	inch	S	l1 mm	l2 mm
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
10,800		MK-1	206,000	125,000
11,000		MK-1	206,000	125,000
11,200		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,510	29/64	MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,200		MK-1	215,000	134,000
12,400		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,490	17/32	MK-1	223,000	142,000
13,500		MK-1	223,000	142,000
13,890	35/64	MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,290	9/16	MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,680	37/64	MK-2	245,000	147,000
15,000		MK-2	245,000	147,000

d1 mm	inch	S	l1 mm	l2 mm
15,500		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,500		MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
20,500		MK-2	282,000	184,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
22,500		MK-2	296,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе длинные

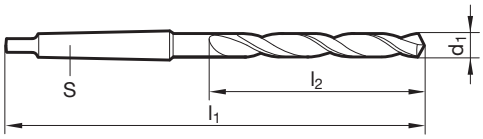
~10xD | WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 16,500 • конусная заточка • с увеличенным конусом Морзе • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **523**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	214,000	116,000
11,000		MK-2	223,000	125,000
12,300	31/64	MK-2	232,000	134,000
12,500		MK-2	232,000	134,000
14,000		MK-2	240,000	142,000
21,000		MK-3	305,000	184,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-3	319,000	198,000
29,000		MK-4	379,000	230,000

Спиральные свёрла с конусом Морзе сверхдлинные, серия 1

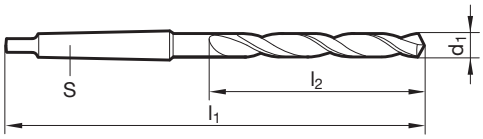
~15xD | DIN 1870 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 7,800 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **266**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	265,000	165,000
8,500		MK-1	265,000	165,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,250		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
11,400		MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,750		MK-1	300,000	195,000
11,800		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,200		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
13,750		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,250		MK-2	355,000	230,000
15,500		MK-2	355,000	230,000
15,750		MK-2	355,000	230,000
15,800		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,250		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
16,670	21/32	MK-2	355,000	230,000
17,000		MK-2	355,000	230,000
17,500		MK-2	370,000	245,000
17,750		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
18,650	47/64	MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
19,750		MK-2	385,000	260,000
20,000		MK-2	385,000	260,000

d1 mm	inch	S	l1 mm	l2 mm
20,500		MK-2	385,000	260,000
20,640	13/16	MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,430	27/32	MK-2	405,000	270,000
21,500		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
22,500		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
23,020	29/32	MK-2	405,000	270,000
23,500		MK-3	425,000	270,000
24,000		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,000	63/64	MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,000		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
30,000		MK-3	460,000	305,000
30,500		MK-3	480,000	320,000
31,000		MK-3	480,000	320,000
32,000		MK-4	505,000	320,000
33,000		MK-4	505,000	320,000
34,000		MK-4	530,000	340,000
35,000		MK-4	530,000	340,000
36,000		MK-4	530,000	340,000
38,000		MK-4	555,000	360,000
39,000		MK-4	555,000	360,000
40,000		MK-4	555,000	360,000
42,000		MK-4	555,000	360,000
45,000		MK-4	585,000	385,000
45,240	1 25/32	MK-4	585,000	385,000
48,000		MK-4	605,000	405,000
50,000		MK-4	605,000	405,000

FRIZAR
www.frizar.ru

Спиральные свёрла с конусом Морзе сверхдлинные, серия 1

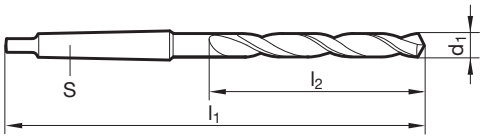
~15xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 5,800 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **526**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	265,000	165,000
8,500		MK-1	265,000	165,000
8,600		MK-1	275,000	175,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
9,520	3/8	MK-1	285,000	185,000
9,800		MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
10,720	27/64	MK-1	300,000	195,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
11,750		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
12,800		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,490	17/32	MK-1	325,000	220,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,200		MK-2	340,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000

d1 mm	inch	S	l1 mm	l2 mm
15,870	5/8	MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000
17,460	11/16	MK-2	370,000	245,000
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
20,000		MK-2	385,000	260,000
20,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,500		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
25,000	63/64	MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
28,000		MK-3	460,000	305,000
28,500		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
30,000		MK-3	460,000	305,000

Спиральные свёрла с конусом Морзе сверхдлинные, серия 1

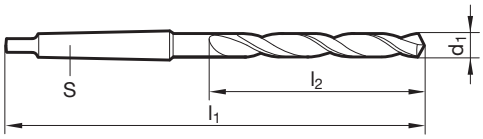
~15xD | DIN 1870 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 7,900 • конусная заточка • для очень глубоких отверстий • Для мягких и длинностружечных материалов
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **525**

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	265,000	165,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
18,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
24,300		MK-3	440,000	290,000
24,380		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,500		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,500		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
31,000		MK-3	480,000	320,000
33,000		MK-4	505,000	320,000

Спиральные свёрла с конусом Морзе сверхдлинные, серия 1

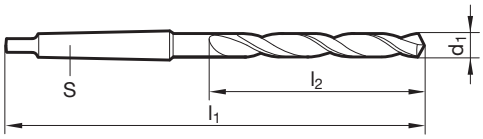
~15xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • использовать при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **620**

d1		S	l1	l2
mm	inch		mm	mm
9,520	3/8	MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,320	13/32	MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,300	31/64	MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,080	19/32	MK-2	355,000	230,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000

d1		S	l1	l2
mm	inch		mm	mm
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
20,000		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,830		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
22,620		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
25,500		MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
27,180		MK-3	460,000	305,000
29,370	1 5/32	MK-3	460,000	305,000
30,000		MK-3	460,000	305,000

Спиральные сверла с конусом Морзе сверхдлинные, серия 2

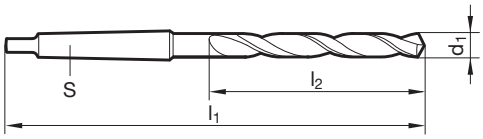
~20xD | DIN 1870 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 7,700 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **267**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,200		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,750		MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,490	17/32	MK-1	410,000	275,000
13,500		MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,480	39/64	MK-2	445,000	295,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000
17,500		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,050	3/4	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000

d1 mm	inch	S	l1 mm	l2 mm
20,640	13/16	MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
21,500		MK-2	515,000	345,000
21,830	55/64	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
22,800		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,750		MK-3	555,000	365,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
28,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000
32,000		MK-4	635,000	410,000
34,000		MK-4	665,000	430,000
40,000		MK-4	695,000	460,000
45,000		MK-4	735,000	490,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе сверхдлинные, серия 2

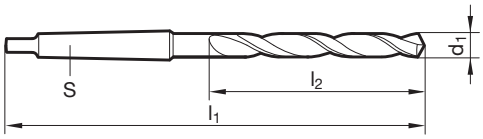
~20xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 7,800 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **527**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	330,000	210,000
8,400		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,110	7/16	MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
11,910	15/32	MK-1	395,000	260,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
13,700		MK-1	410,000	275,000
13,800		MK-1	410,000	275,000
13,890	35/64	MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,290	9/16	MK-2	425,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000

d1 mm	inch	S	l1 mm	l2 mm
17,500		MK-2	465,000	310,000
17,800		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,450	49/64	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000
20,500		MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,030	53/64	MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,210	61/64	MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,190	1 1/32	MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,000		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
28,750		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000

Спиральные сверла с конусом Морзе сверхдлинные, серия 2

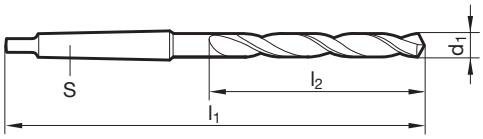
~20xD | DIN 1870 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 8,000 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **542**

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	330,000	210,000
8,600		MK-1	345,000	220,000
8,800		MK-1	345,000	220,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,500		MK-1	360,000	235,000
10,700		MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
17,000		MK-2	445,000	295,000
17,500		MK-2	465,000	310,000
20,500		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	490,000	325,000
21,500		MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,500		MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,500		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе сверхдлинные, серия 2

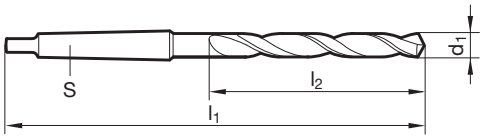
~20xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • использовать при плохом отводе стружки • для очень глубоких отверстий
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **621**

d1		S	l1	l2
mm	inch		mm	mm
9,520	3/8	MK-1	360,000	235,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
10,720	27/64	MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000

d1		S	l1	l2
mm	inch		mm	mm
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
16,000		MK-2	445,000	295,000
16,270		MK-2	445,000	295,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
20,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
23,420	59/64	MK-3	535,000	345,000

Спиральные свёрла с конусом Морзе сверхдлинные

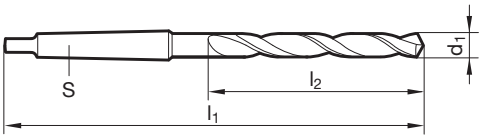
>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 6,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **563**

d1		S	l1	l2
mm	inch		mm	mm
6,000		MK-1	200,000	120,000
6,500		MK-1	200,000	120,000
7,000		MK-1	200,000	120,000
7,500		MK-1	200,000	120,000

d1		S	l1	l2
mm	inch		mm	mm

FRIZAR
www.frizar.ru

Спиральные свёрла с конусом Морзе сверхдлинные

>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

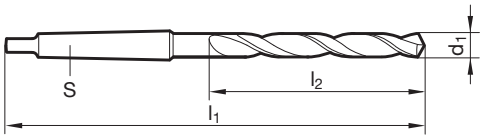
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 6,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **564**

d1		S	l1	l2
mm	inch		mm	mm
6,000		MK-1	300,000	220,000
6,500		MK-1	300,000	220,000
7,000		MK-1	300,000	220,000
8,000		MK-1	350,000	270,000
8,500		MK-1	350,000	270,000
9,000		MK-1	350,000	270,000

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	350,000	270,000

Спиральные свёрла с конусом Морзе сверхдлинные

>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

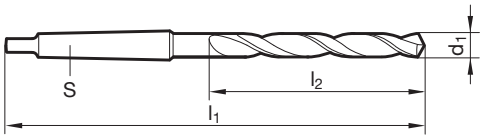
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 6,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **565**

d1		S	l1	l2
mm	inch		mm	mm
6,000		MK-1	425,000	345,000
6,500		MK-1	425,000	345,000
7,000		MK-1	425,000	345,000
7,500		MK-1	425,000	345,000
8,000		MK-1	425,000	345,000
8,500		MK-1	425,000	345,000
9,000		MK-1	425,000	345,000
10,000		MK-1	425,000	345,000
11,000		MK-1	425,000	345,000
12,000		MK-1	425,000	345,000
13,000		MK-1	425,000	345,000
14,000		MK-1	425,000	345,000

d1		S	l1	l2
mm	inch		mm	mm
15,000		MK-2	425,000	325,000
16,000		MK-2	425,000	325,000
17,000		MK-2	425,000	325,000

FRIZAR
www.frizar.ru

Спиральные свёрла с конусом Морзе сверхдлинные

>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

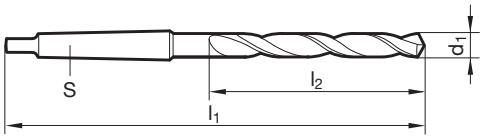
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 8,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **566**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	500,000	420,000
8,500		MK-1	500,000	420,000
9,000		MK-1	500,000	420,000
9,500		MK-1	500,000	420,000
10,000		MK-1	500,000	420,000
11,000		MK-1	500,000	420,000
12,000		MK-1	500,000	420,000
13,000		MK-1	500,000	420,000
14,000		MK-1	500,000	420,000
15,000		MK-2	500,000	400,000
16,000		MK-2	500,000	400,000
17,000		MK-2	500,000	400,000

d1 mm	inch	S	l1 mm	l2 mm
18,000		MK-2	500,000	400,000
19,000		MK-2	500,000	400,000
20,000		MK-2	500,000	400,000
21,000		MK-2	500,000	400,000
22,000		MK-2	500,000	400,000
35,000		MK-4	500,000	350,000
40,000		MK-4	500,000	350,000

Спиральные свёрла с конусом Морзе сверхдлинные

>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

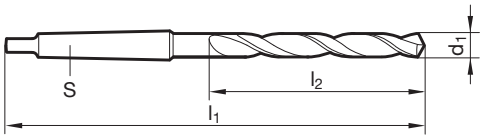
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 14,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **293**

d1 mm	inch	S	l1 mm	l2 mm
14,000		MK-1	600,000	500,000
15,000		MK-2	600,000	500,000
16,000		MK-2	600,000	500,000
17,000		MK-2	600,000	500,000
18,000		MK-2	600,000	500,000
19,000		MK-2	600,000	500,000
20,000		MK-2	600,000	500,000
21,000		MK-2	600,000	500,000
22,000		MK-2	600,000	500,000
23,000		MK-2	600,000	500,000
24,000		MK-3	600,000	475,000
25,000	63/64	MK-3	600,000	475,000

d1 mm	inch	S	l1 mm	l2 mm
26,000		MK-3	600,000	475,000
28,000		MK-3	600,000	475,000
30,000		MK-3	600,000	475,000
32,000		MK-4	600,000	450,000
35,000		MK-4	600,000	450,000
38,000		MK-4	600,000	450,000
40,000		MK-4	600,000	450,000

FRIZAR
www.frizar.ru

Спиральные свёрла с конусом Морзе сверхдлинные

>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

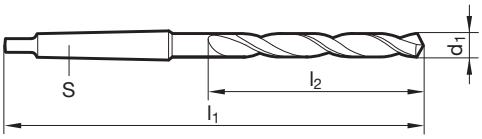
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 14,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий

чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **298**

d1		S	l1	l2
mm	inch		mm	mm
14,000		MK-1	750,000	650,000
15,000		MK-2	750,000	650,000
16,000		MK-2	750,000	650,000
18,000		MK-2	750,000	650,000

d1		S	l1	l2
mm	inch		mm	mm

Спиральные свёрла с конусом Морзе сверхдлинные

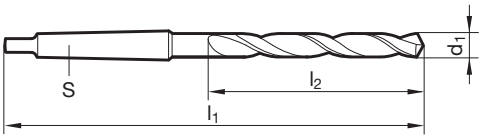
>20xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 14,000 • конусная заточка • широкая стружечная канавка • использовать при плохом отводе стружки • для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **299**

d1		S	l1	l2
mm	inch		mm	mm
14,000		MK-1	1000,000	850,000
15,000		MK-2	1000,000	850,000
16,000		MK-2	1000,000	850,000
18,000		MK-2	1000,000	850,000

d1		S	l1	l2
mm	inch		mm	mm

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под СОТС

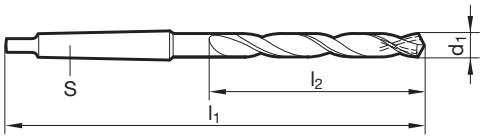
~7xD | WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • для сверления через кондукторные втулки • Подвод СОТС радиально через кольца
M	○	
K	•	
N	•	пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **269**

d1		S	l1	l2
mm	inch		mm	mm
9,920	25/64	MK-1	197,000	101,000
10,320	13/32	MK-1	197,000	101,000
10,500		MK-1	197,000	101,000
11,000		MK-1	206,000	110,000
11,110	7/16	MK-1	206,000	110,000
11,500		MK-1	206,000	110,000
12,500		MK-1	215,000	119,000
12,700	1/2	MK-1	215,000	119,000
12,800		MK-1	215,000	119,000
13,000		MK-1	215,000	119,000
13,200		MK-1	215,000	119,000
13,490	17/32	MK-1	223,000	127,000
13,500		MK-1	223,000	127,000
13,800		MK-1	223,000	127,000
14,000		MK-1	223,000	127,000
14,250		MK-2	245,000	133,000
14,290	9/16	MK-2	245,000	133,000
14,500		MK-2	245,000	133,000
15,000		MK-2	245,000	133,000
15,080	19/32	MK-2	251,000	139,000
15,150		MK-2	251,000	139,000
15,180		MK-2	251,000	139,000
15,250		MK-2	251,000	139,000
15,870	5/8	MK-2	251,000	139,000
16,000		MK-2	251,000	139,000
16,500		MK-2	257,000	145,000
16,670	21/32	MK-2	257,000	145,000
16,750		MK-2	257,000	145,000
17,000		MK-2	257,000	145,000
17,100		MK-2	263,000	151,000

d1		S	l1	l2
mm	inch		mm	mm
17,460	11/16	MK-2	263,000	151,000
17,500		MK-2	263,000	151,000
17,750		MK-2	263,000	151,000
18,000		MK-2	263,000	151,000
18,260	23/32	MK-2	269,000	157,000
18,500		MK-2	269,000	157,000
19,000		MK-2	269,000	157,000
19,050	3/4	MK-2	275,000	163,000
19,200		MK-2	275,000	163,000
19,250		MK-2	275,000	163,000
19,500		MK-2	275,000	163,000
19,750		MK-2	275,000	163,000
19,840	25/32	MK-2	275,000	163,000
20,250		MK-2	282,000	170,000
20,640	13/16	MK-2	282,000	170,000
20,750		MK-2	282,000	170,000
21,000		MK-2	282,000	170,000
21,430	27/32	MK-2	289,000	177,000
21,500		MK-2	289,000	177,000
22,220	7/8	MK-2	289,000	177,000
23,020	29/32	MK-2	296,000	184,000

Спиральные сверла с конусом Морзе с каналами под СОТС, длина канавки по заводскому стандарту

WN | N | 118° | h8

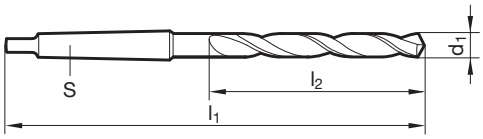
Режущий материал	HSS
Покрытие	
Направление резания	R

NEW

P	•	подточка ≥ Ø 8,000 • конусная заточка • осевая и радиальная подача СОТС через хвостовик конус Морзе (аналог DIN 228 форма BK) • подача охлаждающей жидкости выполняется посредством винта
M	○	
K	•	
N	•	оптимизированы для обработки стальных балок на оборудовании предназначенном для обрезки и сверления • пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **254**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-2	268,000	116,000
9,000		MK-2	268,000	116,000
10,000		MK-3	268,000	116,000
10,500		MK-3	268,000	116,000
11,000		MK-3	278,000	125,000
12,000		MK-3	287,000	134,000
13,000		MK-3	287,000	134,000
13,500		MK-3	285,000	142,000
14,000		MK-3	285,000	142,000
15,000		MK-3	300,000	147,000
16,000		MK-3	306,000	153,000
17,000		MK-3	311,000	159,000
17,500		MK-3	318,000	165,000
18,000		MK-3	318,000	165,000
19,000		MK-3	324,000	171,000
20,000		MK-3	330,000	177,000
21,000		MK-3	343,000	184,000
22,000		MK-3	350,000	191,000
23,000		MK-3	357,000	198,000
24,000		MK-3	365,000	206,000
25,000	63/64	MK-3	365,000	206,000
26,000		MK-3	373,000	214,000
27,000		MK-4	407,000	222,000
28,000		MK-4	407,000	222,000

d1 mm	inch	S	l1 mm	l2 mm
29,000		MK-4	410,000	225,000
30,000		MK-4	410,000	225,000
31,000		MK-4	410,000	225,000
32,000		MK-4	410,000	225,000
33,000		MK-4	410,000	225,000
34,000		MK-4	410,000	225,000
35,000		MK-4	410,000	225,000
36,000		MK-4	410,000	225,000
37,000		MK-4	410,000	225,000
38,000		MK-4	410,000	225,000
39,000		MK-4	410,000	225,000
40,000		MK-4	410,000	225,000
41,000		MK-4	410,000	225,000
42,000		MK-4	410,000	225,000
43,000		MK-4	410,000	225,000
44,000		MK-4	410,000	225,000
45,000		MK-4	410,000	225,000
46,000		MK-4	410,000	225,000
47,000		MK-4	410,000	225,000
48,000		MK-4	410,000	225,000
49,000		MK-4	410,000	225,000
50,000		MK-4	410,000	225,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки по заводскому стандарту

WN | N | 170° | h8

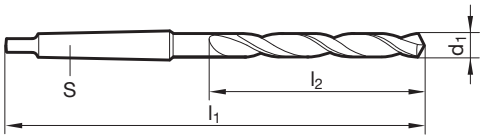
Режущий материал	HSS
Покрытие	
Направление резания	R

NEW

P	•	подточка ≥ Ø 8,000 • конусная заточка • специальная геометрия вершины с двойным углом в плане 170° и 90° • точное центрирование • осевая и радиальная подача COTC через хвостовик конус Морзе (аналог DIN 228 форма BK) • подача охлаждающей жидкости выполняется посредством винта
M	○	
K	•	
N	•	оптимизированы для обработки стальных балок на оборудовании предназначенном для обрезки и сверления • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **255**

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-2	268,000	116,000
9,000		MK-2	268,000	116,000
10,000		MK-3	268,000	116,000
10,500		MK-3	268,000	116,000
11,000		MK-3	278,000	125,000
12,000		MK-3	287,000	134,000
13,000		MK-3	287,000	134,000
13,500		MK-3	285,000	142,000
14,000		MK-3	285,000	142,000
15,000		MK-3	300,000	147,000
16,000		MK-3	306,000	153,000
17,000		MK-3	311,000	159,000
17,500		MK-3	318,000	165,000
18,000		MK-3	318,000	165,000
19,000		MK-3	324,000	171,000
20,000		MK-3	330,000	177,000
21,000		MK-3	343,000	184,000
22,000		MK-3	350,000	191,000
23,000		MK-3	357,000	198,000
24,000		MK-3	365,000	206,000
25,000	63/64	MK-3	365,000	206,000
26,000		MK-3	373,000	214,000
27,000		MK-4	375,000	193,000
28,000		MK-4	375,000	193,000

d1		S	l1	l2
mm	inch		mm	mm
29,000		MK-4	375,000	193,000
30,000		MK-4	375,000	193,000
31,000		MK-4	375,000	193,000
32,000		MK-4	375,000	193,000
33,000		MK-4	375,000	193,000
34,000		MK-4	375,000	193,000
35,000		MK-4	375,000	193,000
36,000		MK-4	375,000	193,000
37,000		MK-4	375,000	193,000
38,000		MK-4	375,000	193,000
39,000		MK-4	375,000	193,000
40,000		MK-4	375,000	193,000
41,000		MK-4	375,000	193,000
42,000		MK-4	375,000	193,000

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

~10xD | WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

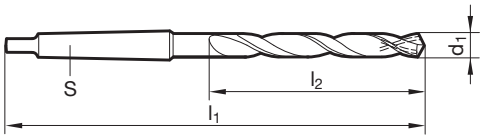
P	•
M	○
K	•
N	•
S	
H	

подточка ≥ Ø 10,000 • конусная заточка • для сверления через направляющие втулки. подача COTC по DIN 228 BK.

пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **1101**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	223,000	116,000
10,500		MK-2	223,000	116,000
11,000		MK-2	232,000	125,000
11,500		MK-2	232,000	125,000
12,000		MK-2	241,000	134,000
12,500		MK-2	241,000	134,000
13,000		MK-2	241,000	134,000
13,500		MK-2	249,000	142,000
14,000		MK-2	249,000	142,000
14,750		MK-2	254,000	147,000
15,000		MK-2	254,000	147,000
16,000		MK-2	260,000	153,000
16,250		MK-2	266,000	159,000
17,000		MK-2	266,000	159,000
17,500		MK-2	272,000	165,000
18,000		MK-2	272,000	165,000
19,000		MK-2	278,000	171,000
20,000		MK-2	284,000	177,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	291,000	184,000
22,000		MK-2	298,000	191,000
24,000		MK-3	332,000	206,000
25,000	63/64	MK-3	332,000	206,000
26,000		MK-3	340,000	214,000
28,000		MK-3	348,000	222,000
29,000		MK-3	356,000	230,000
30,000		MK-3	356,000	230,000
32,000		MK-4	409,000	248,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

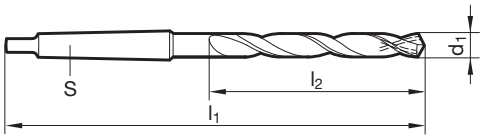
~10xD | WN | N | 118° | h8 |

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • для сверления через кондукторные втулки • подвод COTC аксиально через конус Морзе
M	○	
K	•	
N	•	пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **270**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	233,000	116,000
11,000		MK-2	242,000	125,000
12,000		MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,200		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
14,290	9/16	MK-2	264,000	147,000
15,000		MK-2	264,000	147,000
15,500		MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
17,460	11/16	MK-2	282,000	165,000
17,500		MK-2	282,000	165,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000
19,000		MK-3	307,000	171,000
19,500		MK-3	313,000	177,000
20,000		MK-3	313,000	177,000
20,500		MK-3	320,000	184,000
21,000		MK-3	320,000	184,000
22,000		MK-3	327,000	191,000
23,000		MK-3	334,000	198,000

d1		S	l1	l2
mm	inch		mm	mm
23,020	29/32	MK-3	334,000	198,000
24,000		MK-3	342,000	206,000
25,000	63/64	MK-3	342,000	206,000
26,000		MK-3	350,000	214,000
26,500		MK-3	350,000	214,000
27,000		MK-4	385,000	222,000
28,000		MK-4	385,000	222,000
29,000		MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
32,000		MK-4	421,000	248,000
33,000		MK-4	421,000	248,000
34,000		MK-4	430,000	257,000
35,000		MK-4	430,000	257,000
40,000		MK-4	450,000	277,000

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

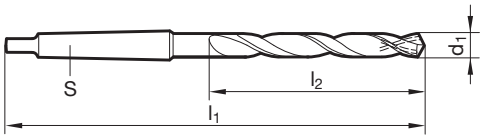
~10xD | WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • для сверления через кондукторные втулки • подвод COTC радиально через кольца COTC
M	○	Гюринг
K	•	
N	•	пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **271**

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	233,000	116,000
10,500		MK-2	233,000	116,000
10,720	27/64	MK-2	242,000	125,000
11,000		MK-2	242,000	125,000
11,510	29/64	MK-2	242,000	125,000
11,910	15/32	MK-2	251,000	134,000
12,300	31/64	MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,800		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
14,250		MK-2	264,000	147,000
14,290	9/16	MK-2	264,000	147,000
14,500		MK-2	264,000	147,000
15,000		MK-2	264,000	147,000
15,080	19/32	MK-2	270,000	153,000
15,500		MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
17,250		MK-2	282,000	165,000
17,500		MK-2	282,000	165,000
18,250		MK-3	307,000	171,000
18,500		MK-3	307,000	171,000
19,050	3/4	MK-3	313,000	177,000

d1		S	l1	l2
mm	inch		mm	mm
19,500		MK-3	313,000	177,000
19,840	25/32	MK-3	313,000	177,000
20,000		MK-3	313,000	177,000
20,250		MK-3	320,000	184,000
22,500		MK-3	334,000	198,000
23,000		MK-3	334,000	198,000
23,750		MK-3	342,000	206,000
24,250		MK-3	342,000	206,000
24,610	31/32	MK-3	342,000	206,000
25,400	1	MK-3	350,000	214,000
26,000		MK-3	350,000	214,000
26,990	1 1/16	MK-4	385,000	222,000
27,780	1 3/32	MK-4	385,000	222,000
28,570	1 1/8	MK-4	393,000	230,000
28,750		MK-4	393,000	230,000
29,000		MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
30,500		MK-4	402,000	239,000
34,000		MK-4	430,000	257,000
44,450		MK-4	471,000	298,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

~10xD | WN | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

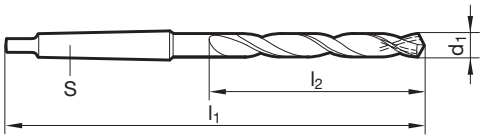
P	•
M	○
K	•
N	•
S	
H	

подточка ≥ Ø 10,000 • конусная заточка • для сверления через кондукторные втулки • Подвид COTC радиально через конус Морзе

пакеты сердечников • сталь и стальное литье, чугун • аустенитная сталь до 800 Н/мм²

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **272**

d1 mm	d1 inch	S	l1 mm	l2 mm
10,000		MK-2	233,000	116,000
12,500		MK-2	251,000	134,000
13,200		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,750		MK-2	264,000	147,000
15,500		MK-2	270,000	153,000
15,870	5/8	MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
16,670	21/32	MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000

d1 mm	d1 inch	S	l1 mm	l2 mm
20,000		MK-3	313,000	177,000
22,000		MK-3	327,000	191,000
22,500		MK-3	334,000	198,000
24,000		MK-3	342,000	206,000
26,000		MK-3	350,000	214,000
26,990	1 1/16	MK-4	385,000	222,000
29,500		MK-4	393,000	230,000
32,000		MK-4	421,000	248,000
44,450	1 3/4	MK-4	471,000	298,000

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

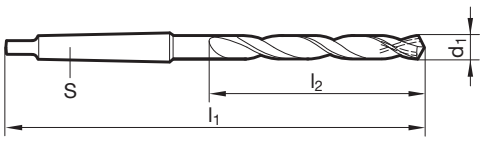
~10xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	●
Направление резания	R

P	●	подточка ≥ Ø 11,000 • конусная заточка • подвод COTC аксиально через конус Морзе • легированная кобальтом HSS • высокая износостойкость • для сверления через кондукторные втулки
M	●	
K	●	
N	●	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул №	370

d1 mm	inch	S	l1 mm	l2 mm
11,000		MK-2	242,000	125,000
12,000		MK-2	251,000	134,000
12,500		MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
15,000		MK-2	264,000	147,000
15,080	19/32	MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
17,000		MK-2	276,000	159,000
17,500		MK-2	282,000	165,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000
19,000		MK-3	307,000	171,000
20,000		MK-3	313,000	177,000
21,000		MK-3	320,000	184,000
21,500		MK-3	327,000	191,000
22,000		MK-3	327,000	191,000

d1 mm	inch	S	l1 mm	l2 mm
24,000		MK-3	342,000	206,000
24,610	31/32	MK-3	342,000	206,000
29,370	1 5/32	MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
30,960	1 7/32	MK-4	402,000	239,000
31,000		MK-4	402,000	239,000
32,000		MK-4	421,000	248,000
32,250		MK-4	421,000	248,000
32,500		MK-4	421,000	248,000
32,540	1 9/32	MK-4	421,000	248,000
33,000		MK-4	421,000	248,000
34,130	1 11/32	MK-4	430,000	257,000
34,920	1 3/8	MK-4	430,000	257,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

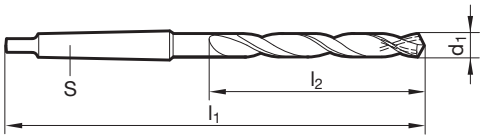
~10xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • подвод COTC радиально через кольца COTC Гюринг • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **371**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	242,000	125,000
11,110	7/16	MK-2	242,000	125,000
11,500		MK-2	242,000	125,000
12,300	31/64	MK-2	251,000	134,000
12,500		MK-2	251,000	134,000
12,800		MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,490	17/32	MK-2	259,000	142,000
13,500		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
14,290	9/16	MK-2	264,000	147,000
14,500		MK-2	264,000	147,000
15,000		MK-2	264,000	147,000
16,000		MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
16,670	21/32	MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
17,460	11/16	MK-2	282,000	165,000
18,260	23/32	MK-3	307,000	171,000
19,500		MK-3	313,000	177,000
19,840	25/32	MK-3	313,000	177,000
20,500		MK-3	320,000	184,000
20,640	13/16	MK-3	320,000	184,000
21,000		MK-3	320,000	184,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	327,000	191,000
22,220	7/8	MK-3	327,000	191,000
22,500		MK-3	334,000	198,000
23,020	29/32	MK-3	334,000	198,000
23,810	15/16	MK-3	342,000	206,000
28,570	1 1/8	MK-4	393,000	230,000
29,000		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
30,960	1 7/32	MK-4	402,000	239,000
31,750	1 1/4	MK-4	411,000	248,000
32,000		MK-4	421,000	248,000
32,540	1 9/32	MK-4	421,000	248,000
33,340	1 5/16	MK-4	421,000	248,000
34,000		MK-4	430,000	257,000
34,920	1 3/8	MK-4	430,000	257,000

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 341

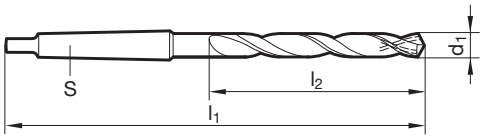
~10xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	●
Направление резания	R

P	●	подточка ≥ Ø 11,500 • конусная заточка • подвод COTC радиально через конус Морзе • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	●	
K	●	
N	●	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²
S	●	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **372**

d1		S	l1	l2
mm	inch		mm	mm
12,500		MK-2	251,000	134,000
12,700	1/2	MK-2	251,000	134,000
14,000		MK-2	259,000	142,000
16,000		MK-2	270,000	153,000
17,000		MK-2	276,000	159,000
18,500		MK-3	307,000	171,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	327,000	191,000
23,810	15/16	MK-3	342,000	206,000
27,000		MK-4	385,000	222,000
30,000		MK-4	393,000	230,000
34,000		MK-4	430,000	257,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 1870

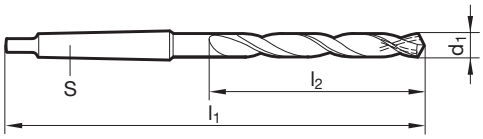
~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • подвод COTC аксиально через конус Морзе • легированная кобальтом HSS • высокая износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **374**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
12,000		MK-2	322,000	205,000
12,300	31/64	MK-2	322,000	205,000
12,500		MK-2	322,000	205,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
15,000		MK-2	337,000	220,000
16,000		MK-2	347,000	230,000
16,500		MK-2	347,000	230,000
17,500		MK-2	362,000	245,000
18,000		MK-2	362,000	245,000
18,500		MK-3	381,000	245,000
19,840	25/32	MK-3	396,000	260,000
20,000		MK-3	396,000	260,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
21,500		MK-3	406,000	270,000
24,610	31/32	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch		mm	mm
28,570	1 1/8	MK-4	468,000	305,000
28,750		MK-4	468,000	305,000
29,370	1 5/32	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,250		MK-4	493,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 1870

~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

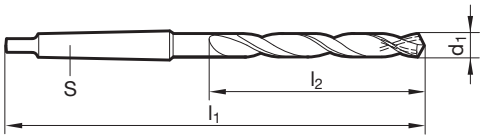
P	•
M	•
K	•
N	•
S	•
H	○

подточка ≥ Ø 11,000 • конусная заточка • подвод COTC радиально через кольца COTC Гюринг • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки

прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **375**

d1 mm	d1 inch	S	l1 mm	l2 mm
11,000		MK-2	312,000	195,000
11,110	7/16	MK-2	312,000	195,000
11,510	29/64	MK-2	312,000	195,000
12,800		MK-2	322,000	205,000
13,500		MK-2	337,000	220,000
18,260	23/32	MK-3	381,000	245,000
19,000		MK-3	381,000	245,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
24,500		MK-3	426,000	290,000
25,000	63/64	MK-3	426,000	290,000
25,400	1	MK-3	426,000	290,000

d1 mm	d1 inch	S	l1 mm	l2 mm
26,500		MK-3	426,000	290,000
28,570	1 1/8	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
33,340	1 5/16	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с каналами под COTC, длина канавки DIN 1870

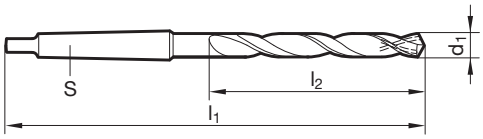
~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • Подвид COTC радиально через конус Морзе • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочность до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **376**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
16,500		MK-2	347,000	230,000
18,000		MK-2	362,000	245,000
19,840	25/32	MK-3	396,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	406,000	270,000
27,780	1 3/32	MK-4	468,000	305,000
29,000		MK-4	468,000	305,000

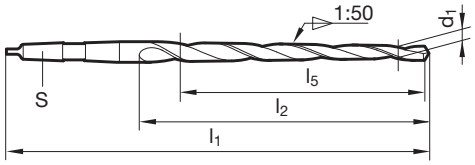
Спиральные сверла с конусом Морзе для отверстий под штифт

DIN 1898 | N | 118° |

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

Подточка ≥ Ø 5,000 • заточка боковой пов-ти конуса • для конических отверстий для посадки конических штифтов по DIN 1 (новый: DIN EN 22339), DIN 7978 (новый: DIN EN 28736), DIN 7977 (новый: DIN EN 28737) и DIN 258



Артикул № **532**

d1	S	l1	l2	l5
mm		mm	mm	mm
5,000	MK-1	155,000	81,000	73,000
6,000	MK-1	187,000	108,000	105,000
8,000	MK-1	227,000	149,000	145,000
10,000	MK-1	257,000	180,000	175,000
12,000	MK-2	315,000	219,000	210,000
13,000	MK-2	325,000	229,000	220,000

d1	S	l1	l2	l5
mm		mm	mm	mm
14,000	MK-2	325,000	229,000	220,000
16,000	MK-2	335,000	239,000	230,000
20,000	MK-3	377,000	263,000	250,000
25,000	MK-3	427,000	311,000	300,000

FRIZAR
www.frizar.ru

Спиральные сверла с конусом Морзе с впайной твердосплавной пластиной

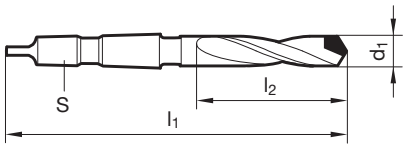
DIN 8041 | N | 118° | h8

Режущий материал	Твер.сплав
Покрытие	◯
Направление резания	R

P	○	Подточка ≥ Ø 8,000 • плоскостная заточка • твердосплавная впайная пластина
M		
K	○	
N		пружинная сталь • отбеленный чугун более 300 HB • чистый молибден • вязкая бронза
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 776



Артикул № **705**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	130,000	40,000
8,500		MK-1	135,000	45,000
10,000		MK-1	140,000	50,000
10,200		MK-1	140,000	50,000
10,500		MK-1	140,000	50,000
11,000		MK-1	140,000	50,000
11,500		MK-1	146,000	56,000
12,000		MK-1	146,000	56,000
13,000		MK-1	146,000	56,000
13,500		MK-2	168,000	63,000
14,000		MK-2	168,000	63,000
14,500		MK-2	168,000	63,000
15,000		MK-2	168,000	63,000
15,500		MK-2	175,000	70,000
16,000		MK-2	175,000	70,000
16,500		MK-2	175,000	70,000
17,000		MK-2	175,000	70,000
17,500		MK-2	185,000	80,000
18,000		MK-2	185,000	80,000
19,000		MK-2	185,000	80,000
19,500		MK-3	215,000	90,000
20,000		MK-3	215,000	90,000
21,000		MK-3	215,000	90,000
21,500		MK-3	215,000	90,000

d1 mm	inch	S	l1 mm	l2 mm
22,000		MK-3	215,000	90,000
23,000		MK-3	225,000	100,000
24,000		MK-3	225,000	100,000
24,500		MK-3	225,000	100,000
25,000	63/64	MK-3	225,000	100,000
26,000		MK-4	260,000	110,000
26,500		MK-4	260,000	110,000
27,000		MK-4	260,000	110,000
28,000		MK-4	260,000	110,000
30,000		MK-4	275,000	125,000
32,000		MK-4	275,000	125,000
33,000		MK-4	290,000	140,000
38,000		MK-4	310,000	160,000
40,000		MK-4	310,000	160,000

FRIZAR
www.frizar.ru

Оправка HSK-A под конус Морзе

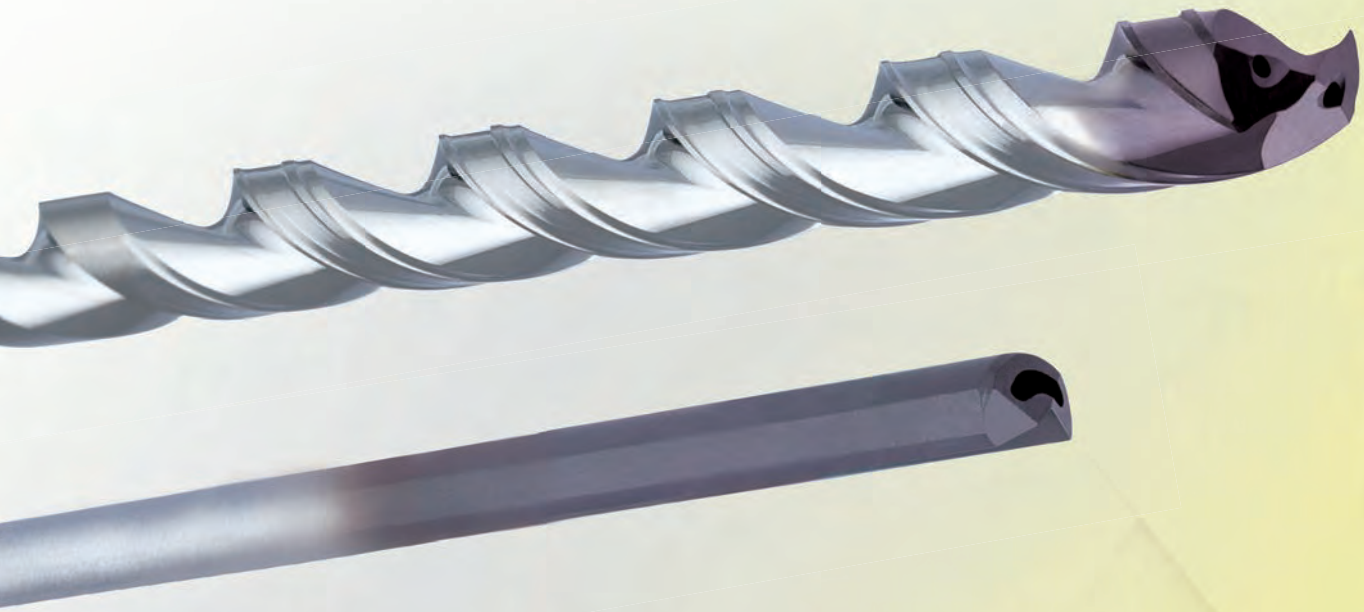
Для зажима инструмента с хвостовиком под конус Морзе.

Дополнительную информацию можно найти на страницах каталога GM 300.

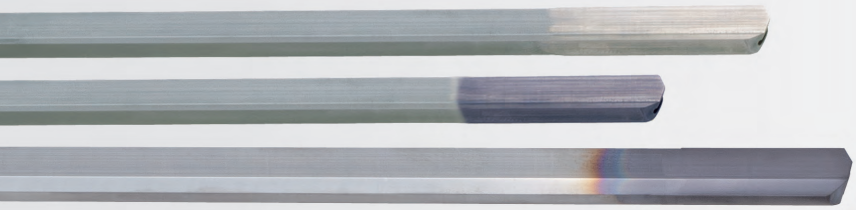
FRIZAR
www.frizar.ru

FRIZAR
www.frizar.ru

СВЕРЛА ДЛЯ ГЛУБОКОГО СВЕРЛЕНИЯ

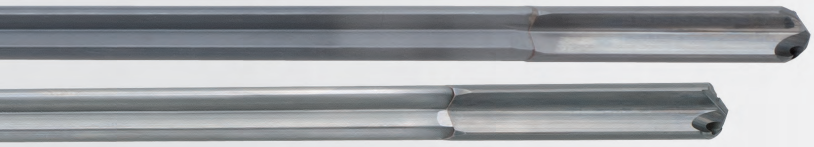


ТВЕРДОСПЛАВНЫЕ СПИРАЛЬНЫЕ СВЕРЛА ДЛЯ ГЛУБОКОГО СВЕРЛЕНИЯ

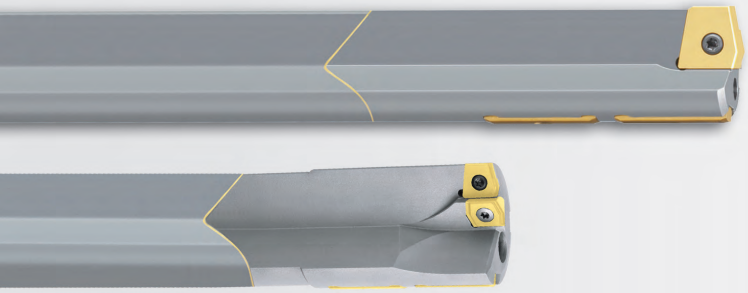


ОДНОЛЕЗВИЙНЫЕ ТВЕРДОСПЛАВНЫЕ СВЕРЛА ДЛЯ ГЛУБОКОГО СВЕРЛЕНИЯ
EB 100

ОДНОЛЕЗВИЙНЫЕ СВЕРЛА С НАПАЕННОЙ ТВЕРДОСПЛАВНОЙ ГОЛОВКОЙ
EB 80



ДВУХЛЕЗВИЙНЫЕ СВЕРЛА С НАПАЕННОЙ ТВЕРДОСПЛАВНОЙ ГОЛОВКОЙ
ZB 80



ОДНОЛЕЗВИЙНЫЕ СВЕРЛА ДЛЯ ГЛУБОКОГО СВЕРЛЕНИЯ СБОРНЫЕ
EB 800

БЫСТРОРЕЖУЩИЕ СВЕРЛА ДЛЯ ГЛУБОКОГО СВЕРЛЕНИЯ

- твердосплавные спиральные сверла для обработки глубоких отверстий на высоких скоростях резания и подачах
- глубина сверления от 15xD
- номинальный диаметр 3,00-14,00 мм
- оптимальная стабильность инструмента
- долгий срок службы инструмента с сокращением времени обработки
- подходит для большинства материалов

со страницы 523

- однолезвийные ружейные сверла для сверления отверстий с жесткими допусками
- возможность производства номинальных диаметров от 0,9 мм
- номинальный диаметр до 16,00 мм
- длина канавки до 500 мм, однако макс. 100xD
- до 80xD только с одним инструментом
- подходит для большинства материалов

со страницы 529

- однолезвийные сверла с впайной твердосплавной головкой
- общая длина до 3000 мм
- номинальный диаметр от 2 до 40 мм
- широкий диапазон вариантов , т.е. с радиусами при вершине или ступенчатое исполнение
- подходит для большинства материалов

со страницы 540

- двухлезвийные сверла с впаенной твердосплавной головкой
- номинальный диаметр от 6 до 30 мм
- идеально подходит для GG25, GGG40, GGV
- очень большие каналы охлаждения
- оптимизированная геометрия

со страницы 551

- однолезвийные ружейные сверла со сменными режущей пластиной и направляющими
- номинальный диаметр от 12 до 52 мм
- использование в одном корпусе пластин с диапазоном в 0,5 мм
- возможно применение всех сортов твердого сплава и покрытий
- подходит практически для всех материалов

со страницы 553

- HSS/HSCO сверла глубокого сверления для стабильного процесса обработки
- диапазон диаметров 0,40-50 мм
- длина канавки до 850 мм
- доступны с цилиндрическим хвостовиком или конусом Морзе
- подходит для многих материалов

со страницы 580

FRIZAR
www.frizar.ru

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Свёрла Ratio с каналами под СОТС																
●	●	●	○	○	○		15xD	WN	RT 100 T	R	VHM	A	3,000 - 14,000	6509	760	523
●	●	●	○	○	○		20xD	WN	RT 100 T	R	VHM	A	3,000 - 14,000	6511	760	524
●	●	●	○	○	○		25xD	WN	RT 100 T	R	VHM	A	3,000 - 12,000	6512	760	525
●	●	●	○	○	○		30xD	WN	RT 100 T	R	VHM	A	3,000 - 10,000	6513	760	526
●	●	●	○	○	○		40xD	WN	RT 100 T	R	VHM	A	3,000 - 8,000	6514	760	527
Отднолезвийное сверло EB 100																
●	●	○		○	○		25xD	WN	EB 100	R	VHM	a	2,380 - 12,000	5646	808	529
●	●	○		○	○		50xD	WN	EB 100	R	VHM	a	2,380 - 8,000	5647	808	530
●	●	○		○	○		75xD	WN	EB 100	R	VHM	a	2,380 - 6,000	5648	808	531
○	○	○	●	●	○		45,00	WN	EB 100	R	VHM	○	1,200 - 3,200	5024	808	532
●	○	●	○	○	○		45,00	WN	EB 100	R	VHM	A	1,200 - 3,200	5632	808	533
○	○	○	●	●	○		80,00	WN	EB 100	R	VHM	○	1,200 - 5,000	5020	808	534
●	○	●	○	○	○		80,00	WN	EB 100	R	VHM	A	1,200 - 5,000	5633	808	535
○	○	○	●	●	○		120,00	WN	EB 100	R	VHM	○	1,500 - 5,000	5026	808	536
●	○	●	○	○	○		120,00	WN	EB 100	R	VHM	A	1,500 - 5,000	5637	808	537
○	○	○	●	●	○		160,00	WN	EB 100	R	VHM	○	1,500 - 8,000	5021	808	538
●	○	●	○	○	○		160,00	WN	EB 100	R	VHM	A	1,500 - 8,000	5638	808	539
Отднолезвийное сверло EB 80																
●	○	●	○	○	○		20xD	WN	EB 80	R	HM	S	4,000 - 12,000	5018	808	540
○	●	○		●	○		20xD	WN	EB 80	R	HM	C	3,970 - 12,700	5639	808	541
●	○	●	○	○	○		30xD	WN	EB 80	R	HM	S	4,000 - 12,000	5460	808	542
○	●	○		●	○		30xD	WN	EB 80	R	HM	C	3,970 - 12,700	5640	808	543
●	○	●	○	○	○		40xD	WN	EB 80	R	HM	○	4,000 - 12,000	5689	808	544
●	○	●	○	○	○		40xD	WN	EB 80	R	HM	S	4,000 - 12,000	5022	808	545
○	●	○		●	○		40xD	WN	EB 80	R	HM	C	3,970 - 12,700	5641	808	546

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Отднолезвийное сверло EB 80																
●	○	●	○	○	○		80xD	WN	EB 80	R	HM	○	3,970 - 11,950	5690	808	547
●	○	●	○	○	○		80xD	WN	EB 80	R	HM	S	4,950 - 11,950	5023	808	548
○	●	○		●	○		80xD	WN	EB 80	R	HM	C	4,950 - 12,650	5642	808	549
●	○	●	●	○	○		1100,00	WN	EB 80	R	HM	S	6,000 - 22,000	5164	808	550
Двухлезвийное сверло ZB 80																
			●				30xD	WN	ZB 80	R	HM	○	8,000 - 12,000	5019	808	551
		●					30xD	WN	ZB 80	R	HM	○	8,000 - 12,000	5643	808	552
Отднолезвийное сверло EB 800 со сменными пластинами																
●	○	○	●	○			30xD	WN	EB 800	R	HM	S	12,000 - 24,000	5644	808	555
Отвертки Torx																
								WN						1612		558
Динамометрический ключ																
								WN						4915		559
Вставки Torx-Bit																
								WN						4917		560
Зажимные винты																
								WN						4071		561
Кондукторная втулка																
								WN			VHM			5748		565
								WN			HSS			5747		566
Уплотнительные шайбы для однолезвийного сверла																
								WN						5752		569
Фасонные люнетные втулки для однолезвийного сверла																
								WN						5750		571
Люнетные втулки для одно- и двухлезвийного сверла																
								WN						5749		573

FRIZAR
www.frizar.ru

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Уплотнительные шайбы для двухлезвийного сверла																
								WN						5753		575
Фасонные люнетные втулки для двухлезвийного сверла																
								WN						5751		576
Регулировочные винты																
								WN						5754		577
								WN						5755		578
Спиральные свёрла, длинные																
●		●	○				~10xD	DIN 340	N	R	HSS	>Ø 2,36	0,400 - 36,510	217	786	580
●		●	○				~10xD	DIN 340	N	R	HSS	S	0,500 - 22,220	667	786	583
●		●	○				~10xD	DIN 340	N	L	HSS	>Ø 6,00	0,450 - 29,000	220	786	585
●		●	○				~10xD	DIN 340	N	R	HSS		2,950 - 25,250	204	786	587
			●				~10xD	DIN 340	H	R	HSS		0,500 - 16,000	218	786	588
			●				~10xD	DIN 340	H	L	HSS		0,450 - 15,000	221	786	590
			●				~10xD	DIN 340	W	R	HSS		0,500 - 20,640	219	786	591
●		●	●				~10xD	DIN 340	GT 100	R	HSS	>Ø 2,36	1,000 - 14,000	535	786	593
●		●	●				~10xD	DIN 340	GT 100	R	HSS	S	1,000 - 14,000	668	786	596
●		●	●				~10xD	DIN 340	GT 100	R	HSS	F	1,000 - 10,000	2462	786	598
●		●	●				~10xD	DIN 340	GT 100	L	HSS	>Ø 2,36	1,400 - 13,000	506	786	599
○			●				~10xD	DIN 340	GT 50	R	HSS		1,000 - 32,600	501	786	600
●	○	●	●	○			~10xD	DIN 340	N	R	HSCO	>Ø 2,36	0,500 - 22,000	317	792	602
●	●	●	●		○		~10xD	DIN 340	GT 100	R	HSCO	>Ø 2,36	1,000 - 16,000	336	792	604
●	●	●	●		○		~10xD	DIN 340	GT 100	R	HSCO	F	1,000 - 12,000	396	792	606
○	●			●			~10xD	DIN 340	Ti	R	HSCO		1,000 - 15,000	617	792	607
○	●			●			~10xD	DIN 340	Ti	R	HSCO	S	1,000 - 10,200	669	792	609
							~10xD	WN	N	R	VHM		0,500 - 1,450	706	792	611

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Спиральные свёрла сверхдлинные, серия 1																
•		•	○				~15xD	DIN 1869	N	R	HSS	>Ø 2,36	1,600 - 13,000	235	788	612
•		•	•				~15xD	DIN 1869	GT 100	R	HSS	>Ø 2,36	1,950 - 13,000	502	790	614
•		•	•	○			~15xD	DIN 1869	GT 100	R	HSS	S	2,000 - 12,700	670	790	616
○			•				~15xD	DIN 1869	GT 50	R	HSS		2,000 - 12,700	524	788	617
•	•	•	•	•	○		~15xD	DIN 1869	GT 100	R	HSCO		2,700 - 10,000	618	794	619
Спиральные сверла сверхдлинные, серия 2																
•		•	○				~20xD	DIN 1869	N	R	HSS		2,700 - 13,000	236	788	620
•		•	•				~20xD	DIN 1869	GT 100	R	HSS	>Ø 2,36	2,000 - 13,000	503	790	621
•		•	•	○			~20xD	DIN 1869	GT 100	R	HSS	S	2,700 - 8,500	671	790	623
○			•				~20xD	DIN 1869	GT 50	R	HSS		3,000 - 13,000	528	788	624
•	•	•	•	•	○		~20xD	DIN 1869	GT 100	R	HSCO		3,000 - 10,000	619	794	625
Спиральные сверла сверхдлинные, серия 3																
•		•	○				~25xD	DIN 1869	N	R	HSS		3,500 - 13,000	237	788	626
•		•	•				~25xD	DIN 1869	GT 100	R	HSS		2,500 - 13,000	504	790	627
○			•				~25xD	DIN 1869	GT 50	R	HSS		2,500 - 10,000	529	788	628
•	•	•	•	•	○		~25xD	DIN 1869	GT 100	R	HSCO		2,500 - 13,000	571	794	629
Спиральные свёрла сверхдлинные																
•		•	•				>25xD	WN	GT 100	R	HSS		6,000 - 12,000	242	790	630
•		•	•				>25xD	WN	GT 100	R	HSS		8,000 - 12,000	243	790	631
•		•	•				>25xD	WN	GT 100	R	HSS		10,000 - 12,000	244	790	632
Спиральные свёрла сверхдлинные, серия 1																
•		•	○				~15xD	DIN 1870	N	R	HSS		8,000 - 50,000	266	788	633
•		•	•				~15xD	DIN 1870	GT 100	R	HSS	>Ø 16,0	8,000 - 30,000	526	790	634
○			•				~15xD	DIN 1870	GT 50	R	HSS		8,500 - 33,000	525	788	635
•	•	•	•	•	○		~15xD	DIN 1870	GT 100	R	HSCO	>Ø 16,0	9,520 - 30,000	620	794	636

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 2

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
•		•	○				~20xD	DIN 1870	N	R	HSS		8,000 - 45,000	267	788	637
•		•	•				~20xD	DIN 1870	GT 100	R	HSS	>Ø 16,0	8,000 - 30,000	527	790	638
○			•				~20xD	DIN 1870	GT 50	R	HSS		8,500 - 31,000	542	788	639
•	•	•	•	•	○		~20xD	DIN 1870	GT 100	R	HSCO	>Ø 16,0	9,520 - 23,420	621	794	640

Свёрла с каналами COTC, длина канавки DIN 1870

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO		11,000 - 34,000	374	794	641
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO		11,000 - 34,000	375	794	642
•	•	•	•	•	○		~15xD	WN	GT 100	R	HSCO		11,000 - 29,000	376	794	643

Свёрла Ratio с каналами под COTC

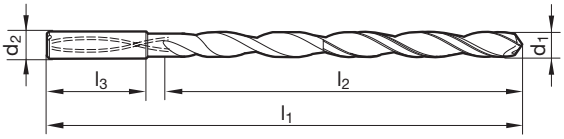
15xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под COTC • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6509**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	95,000	55,000	36,000
3,170	1/8	6,000	106,000	67,000	36,000
3,500		6,000	116,000	76,000	36,000
3,570	9/64	6,000	116,000	76,000	36,000
3,970	5/32	6,000	116,000	76,000	36,000
4,000		6,000	116,000	76,000	36,000
4,370	11/64	6,000	133,000	93,000	36,000
4,500		6,000	133,000	93,000	36,000
4,760	3/16	6,000	133,000	93,000	36,000
5,000		6,000	133,000	93,000	36,000
5,100		6,000	150,000	110,000	36,000
5,160	13/64	6,000	150,000	110,000	36,000
5,410		6,000	150,000	110,000	36,000
5,500		6,000	150,000	110,000	36,000
5,560	7/32	6,000	150,000	110,000	36,000
5,950	15/64	6,000	150,000	110,000	36,000
6,000		6,000	150,000	110,000	36,000
6,350	1/4	8,000	167,000	127,000	36,000
6,500		8,000	167,000	127,000	36,000
6,750	17/64	8,000	167,000	127,000	36,000
7,000		8,000	167,000	127,000	36,000
7,140	9/32	8,000	183,000	143,000	36,000
7,500		8,000	183,000	143,000	36,000
7,540	19/64	8,000	183,000	143,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,940	5/16	8,000	183,000	143,000	36,000
8,000		8,000	183,000	143,000	36,000
8,330	21/64	10,000	204,000	160,000	40,000
8,500		10,000	204,000	160,000	40,000
8,730	11/32	10,000	204,000	160,000	40,000
9,000		10,000	204,000	160,000	40,000
9,130	23/64	10,000	221,000	177,000	40,000
9,520	3/8	10,000	221,000	177,000	40,000
9,920	25/64	10,000	221,000	177,000	40,000
10,000		10,000	221,000	177,000	40,000
10,320	13/32	12,000	247,000	198,000	45,000
10,720	27/64	12,000	247,000	198,000	45,000
11,000		12,000	247,000	198,000	45,000
11,110	7/16	12,000	263,000	214,000	45,000
11,510	29/64	12,000	263,000	214,000	45,000
11,910	15/32	12,000	263,000	214,000	45,000
12,000		12,000	263,000	214,000	45,000
12,300	31/64	14,000	297,000	248,000	45,000
12,700	1/2	14,000	297,000	248,000	45,000
13,100	33/64	14,000	297,000	248,000	45,000
13,490	17/32	14,000	297,000	248,000	45,000
13,890	35/64	14,000	297,000	248,000	45,000
14,000		14,000	297,000	248,000	45,000

Свёрла Ratio с каналами под COTC

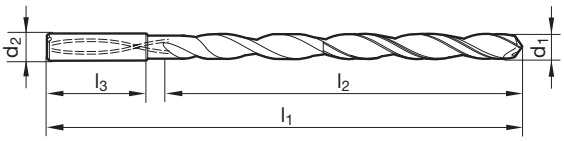
20xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под COTC • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6511**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	110,000	70,000	36,000
3,100		6,000	123,000	83,000	36,000
3,170	1/8	6,000	123,000	83,000	36,000
3,500		6,000	136,000	96,000	36,000
3,570	9/64	6,000	136,000	96,000	36,000
3,970	5/32	6,000	136,000	96,000	36,000
4,000		6,000	136,000	96,000	36,000
4,200		6,000	158,000	118,000	36,000
4,370	11/64	6,000	158,000	118,000	36,000
4,500		6,000	158,000	118,000	36,000
4,760	3/16	6,000	158,000	118,000	36,000
5,000		6,000	158,000	118,000	36,000
5,100		6,000	180,000	140,000	36,000
5,160	13/64	6,000	180,000	140,000	36,000
5,410		6,000	180,000	140,000	36,000
5,500		6,000	180,000	140,000	36,000
5,560	7/32	6,000	180,000	140,000	36,000
5,950	15/64	6,000	180,000	140,000	36,000
6,000		6,000	180,000	140,000	36,000
6,350	1/4	8,000	202,000	162,000	36,000
6,500		8,000	202,000	162,000	36,000
6,750	17/64	8,000	202,000	162,000	36,000
7,000		8,000	202,000	162,000	36,000
7,140	9/32	8,000	223,000	183,000	36,000
7,500		8,000	223,000	183,000	36,000
7,540	19/64	8,000	223,000	183,000	36,000
7,940	5/16	8,000	223,000	183,000	36,000
8,000		8,000	223,000	183,000	36,000
8,330	21/64	10,000	249,000	205,000	40,000
8,500		10,000	249,000	205,000	40,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
8,730	11/32	10,000	249,000	205,000	40,000
9,000		10,000	249,000	205,000	40,000
9,130	23/64	10,000	271,000	227,000	40,000
9,520	3/8	10,000	271,000	227,000	40,000
9,920	25/64	10,000	271,000	227,000	40,000
10,000		10,000	271,000	227,000	40,000
10,320	13/32	12,000	302,000	253,000	45,000
10,720	27/64	12,000	302,000	253,000	45,000
11,000		12,000	302,000	253,000	45,000
11,110	7/16	12,000	323,000	274,000	45,000
11,510	29/64	12,000	323,000	274,000	45,000
11,910	15/32	12,000	323,000	274,000	45,000
12,000		12,000	323,000	274,000	45,000
12,300	31/64	14,000	367,000	318,000	45,000
12,700	1/2	14,000	367,000	318,000	45,000
13,100	33/64	14,000	367,000	318,000	45,000
13,490	17/32	14,000	367,000	318,000	45,000
13,890	35/64	14,000	367,000	318,000	45,000
14,000		14,000	367,000	318,000	45,000

Свёрла Ratio с каналами под COTC

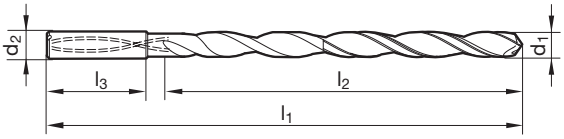
25xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под COTC • обращать внимание на давление COTC
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6512**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	125,000	85,000	36,000
3,100		6,000	141,000	101,000	36,000
3,170	1/8	6,000	141,000	101,000	36,000
3,500		6,000	156,000	116,000	36,000
3,570	9/64	6,000	156,000	116,000	36,000
3,800		6,000	156,000	116,000	36,000
3,970	5/32	6,000	156,000	116,000	36,000
4,000		6,000	156,000	116,000	36,000
4,200		6,000	183,000	143,000	36,000
4,370	11/64	6,000	183,000	143,000	36,000
4,500		6,000	183,000	143,000	36,000
4,760	3/16	6,000	183,000	143,000	36,000
5,000		6,000	183,000	143,000	36,000
5,100		6,000	210,000	170,000	36,000
5,160	13/64	6,000	210,000	170,000	36,000
5,410		6,000	210,000	170,000	36,000
5,500		6,000	210,000	170,000	36,000
5,560	7/32	6,000	210,000	170,000	36,000
5,950	15/64	6,000	210,000	170,000	36,000
6,000		6,000	210,000	170,000	36,000
6,300		8,000	237,000	197,000	36,000
6,350	1/4	8,000	237,000	197,000	36,000
6,500		8,000	237,000	197,000	36,000
6,750	17/64	8,000	237,000	197,000	36,000

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,000		8,000	237,000	197,000	36,000
7,140	9/32	8,000	263,000	223,000	36,000
7,500		8,000	263,000	223,000	36,000
7,540	19/64	8,000	263,000	223,000	36,000
7,940	5/16	8,000	263,000	223,000	36,000
8,000		8,000	263,000	223,000	36,000
8,330	21/64	10,000	294,000	250,000	40,000
8,500		10,000	294,000	250,000	40,000
8,730	11/32	10,000	294,000	250,000	40,000
8,800		10,000	294,000	250,000	40,000
9,000		10,000	294,000	250,000	40,000
9,130	23/64	10,000	321,000	277,000	40,000
9,520	3/8	10,000	321,000	277,000	40,000
9,920	25/64	10,000	321,000	277,000	40,000
10,000		10,000	321,000	277,000	40,000
10,320	13/32	12,000	359,000	310,000	45,000
10,720	27/64	12,000	359,000	310,000	45,000
11,000		12,000	359,000	310,000	45,000
11,110	7/16	12,000	386,000	337,000	45,000
11,510	29/64	12,000	386,000	337,000	45,000
11,910	15/32	12,000	386,000	337,000	45,000
12,000		12,000	386,000	337,000	45,000

Свёрла Ratio с каналами под COTC

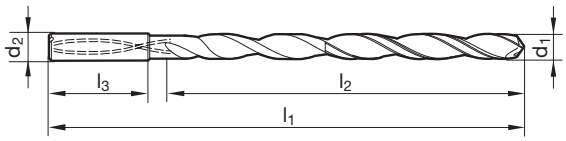
30xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под COTC • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6513**

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	140,000	100,000	36,000
3,100		6,000	158,000	118,000	36,000
3,170	1/8	6,000	158,000	118,000	36,000
3,500		6,000	176,000	136,000	36,000
3,570	9/64	6,000	176,000	136,000	36,000
3,800		6,000	176,000	136,000	36,000
3,970	5/32	6,000	176,000	136,000	36,000
4,000		6,000	176,000	136,000	36,000
4,200		6,000	208,000	168,000	36,000
4,370	11/64	6,000	208,000	168,000	36,000
4,500		6,000	208,000	168,000	36,000
4,760	3/16	6,000	208,000	168,000	36,000
5,000		6,000	208,000	168,000	36,000
5,100		6,000	240,000	200,000	36,000
5,160	13/64	6,000	240,000	200,000	36,000
5,410		6,000	240,000	200,000	36,000
5,500		6,000	240,000	200,000	36,000
5,560	7/32	6,000	240,000	200,000	36,000
5,950	15/64	6,000	240,000	200,000	36,000
6,000		6,000	240,000	200,000	36,000
6,300		8,000	272,000	232,000	36,000
6,350	1/4	8,000	272,000	232,000	36,000
6,500		8,000	272,000	232,000	36,000
6,750	17/64	8,000	272,000	232,000	36,000

d1 mm	d1 inch	d2 h6 mm	l1 mm	l2 mm	l3 mm
7,000		8,000	272,000	232,000	36,000
7,140	9/32	8,000	303,000	263,000	36,000
7,500		8,000	303,000	263,000	36,000
7,540	19/64	8,000	303,000	263,000	36,000
7,940	5/16	8,000	303,000	263,000	36,000
8,000		8,000	303,000	263,000	36,000
8,330	21/64	10,000	339,000	295,000	40,000
8,500		10,000	339,000	295,000	40,000
8,730	11/32	10,000	339,000	295,000	40,000
8,800		10,000	339,000	295,000	40,000
9,000		10,000	339,000	295,000	40,000
9,130	23/64	10,000	371,000	327,000	40,000
9,520	3/8	10,000	371,000	327,000	40,000
9,920	25/64	10,000	371,000	327,000	40,000
10,000		10,000	371,000	327,000	40,000

Свёрла Ratio с каналами под COTC

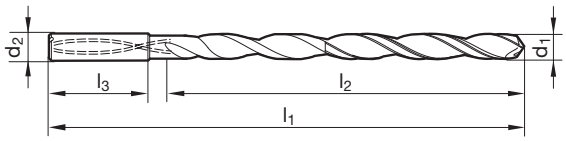
40xD | RT 100 T | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	●	подточка ≥ Ø 3,000 • конусная заточка • вогнутая режущая кромка • оптимальный профиль канавки • макс. сечение канала под COTC • обращать внимание на давление COTC
M	●	
K	●	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 760



Артикул № **6514**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000
3,100		6,000	193,000	153,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000
3,500		6,000	193,000	153,000	36,000
3,570	9/64	6,000	216,000	176,000	36,000
3,800		6,000	216,000	176,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000
4,000		6,000	216,000	176,000	36,000
4,200		6,000	238,000	198,000	36,000
4,370	11/64	6,000	238,000	198,000	36,000
4,500		6,000	238,000	198,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000
5,000		6,000	258,000	218,000	36,000
5,100		6,000	280,000	240,000	36,000
5,160	13/64	6,000	280,000	240,000	36,000
5,410		6,000	280,000	240,000	36,000
5,500		6,000	280,000	240,000	36,000
5,560	7/32	6,000	300,000	260,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,950	15/64	6,000	300,000	260,000	36,000
6,000		6,000	300,000	260,000	36,000
6,300		8,000	322,000	282,000	36,000
6,350	1/4	8,000	322,000	282,000	36,000
6,500		8,000	322,000	282,000	36,000
6,750	17/64	8,000	342,000	302,000	36,000
7,000		8,000	342,000	302,000	36,000
7,140	9/32	8,000	363,000	323,000	36,000
7,500		8,000	363,000	323,000	36,000
7,540	19/64	8,000	383,000	343,000	36,000
7,940	5/16	8,000	383,000	343,000	36,000
8,000		8,000	383,000	343,000	36,000

Супер быстрое предложение пушечных сверел

Ваши индивидуальные ружейные сверла в течение нескольких рабочих дней : супер быстрое предложение на ружейные сверла Guhring делает это возможным.

EB 100

Варианты исполнения:

- Длина канавки:
  45 мм Ø 1,2 / 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2
  80 мм Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0
  120 мм Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0
  160 мм Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0 /6,0 / 8,0

специальные решения: номинальный диаметр 0,9 - 16,0 мм, макс. длина канавки 500 мм

- сорт сплава: K30 / K40
- форма направляющих: G
- с полировкой или покрытием
- в комбинации со стандартным хвостовиком

Специальные инструменты в течение 15 рабочих дней!

EB 80

Варианты исполнения:

диаметры 2,0 - 13,9 мм с шагом 0,1 мм

- диаметры 14,0 - 22,0 мм с шагом 0,5 мм
- общая длина до 1,200 мм, мин. длина канавки 20xD
- форма направляющих G
- стандартный хвостовик
- сорт сплава K15
- без покрытия со стандартной формой заточки для алюминия и литых материалов
- S-покрытие (TiN) со стружколомом для длинностружечных сталей
- со стандартным хвостовиком

Специальный инструмент за 10 рабочих дней!

Отднолезвийное сверло EB 100

25xD | EB 100 | WN | R | h5

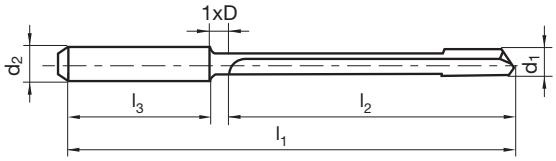
Режущий материал	VHM
Покрытие	a
Форма хвостовика	HA

P	•
M	•
K	○
N	
S	○
H	○

форма заточки G • Цельный твердый сплав от диаметра хвостовика d2 = 6 с исполнением под MMS

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5646**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
2,380	3/32	4,000	100,000	70,000	28,000	2,380
2,500		4,000	115,000	85,000	28,000	2,500
2,780	7/64	4,000	115,000	85,000	28,000	2,780
3,000		6,000	145,000	105,000	36,000	3,000
3,170	1/8	6,000	145,000	105,000	36,000	3,170
3,500		6,000	145,000	105,000	36,000	3,500
3,570	9/64	6,000	160,000	120,000	36,000	3,570
3,970	5/32	6,000	160,000	120,000	36,000	3,970
4,000		6,000	160,000	120,000	36,000	4,000
4,370	11/64	6,000	220,000	180,000	36,000	4,370
4,760	3/16	6,000	220,000	180,000	36,000	4,760
5,000		6,000	220,000	180,000	36,000	5,000
5,160	13/64	6,000	220,000	180,000	36,000	5,160
5,560	7/32	6,000	220,000	180,000	36,000	5,560
5,950	15/64	6,000	220,000	180,000	36,000	5,950
6,000		6,000	220,000	180,000	36,000	6,000
6,350	1/4	8,000	260,000	210,000	36,000	6,350
6,750	17/64	8,000	260,000	210,000	36,000	6,750
7,000		8,000	260,000	210,000	36,000	7,000
7,140	9/32	8,000	285,000	240,000	36,000	7,140
7,540	19/64	8,000	285,000	240,000	36,000	7,540
7,940	5/16	8,000	285,000	240,000	36,000	7,940
8,000		8,000	285,000	240,000	36,000	8,000
9,000		10,000	350,000	300,000	40,000	9,000
10,000		10,000	350,000	300,000	40,000	10,000
11,000		12,000	420,000	360,000	45,000	11,000
12,000		12,000	420,000	360,000	45,000	12,000

Отднолезвийное сверло EB 100

50xD | EB 100 | WN | R | h5

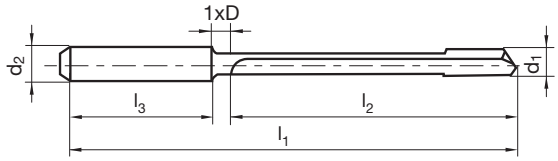
Режущий материал	VHM
Покрытие	a
Форма хвостовика	HA

P	•
M	•
K	○
N	
S	○
H	○

форма заточки G • Цельный твердый сплав от диаметра хвостовика d2 = 6 с исполнением под MMS

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5647**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
2,380	3/32	4,000	160,000	130,000	28,000	2,380
2,500		4,000	185,000	155,000	28,000	2,500
2,780	7/64	4,000	185,000	155,000	28,000	2,780
3,000		6,000	230,000	190,000	36,000	3,000
3,170	1/8	6,000	230,000	190,000	36,000	3,170
3,500		6,000	230,000	190,000	36,000	3,500
3,570	9/64	6,000	260,000	220,000	36,000	3,570
3,970	5/32	6,000	260,000	220,000	36,000	3,970
4,000		6,000	260,000	220,000	36,000	4,000
4,370	11/64	6,000	370,000	330,000	36,000	4,370
4,760	3/16	6,000	370,000	330,000	36,000	4,760
5,000		6,000	370,000	330,000	36,000	5,000
5,160	13/64	6,000	370,000	330,000	36,000	5,160
5,560	7/32	6,000	370,000	330,000	36,000	5,560
5,950	15/64	6,000	370,000	330,000	36,000	5,950
6,000		6,000	370,000	330,000	36,000	6,000
6,350	1/4	8,000	430,000	385,000	36,000	6,350
6,750	17/64	8,000	430,000	385,000	36,000	6,750
7,000		8,000	430,000	385,000	36,000	7,000
7,140	9/32	8,000	485,000	440,000	36,000	7,140
7,540	19/64	8,000	485,000	440,000	36,000	7,540
7,940	5/16	8,000	485,000	440,000	36,000	7,940
8,000		8,000	485,000	440,000	36,000	8,000

Отднолезвийное сверло EB 100

75xD | EB 100 | WN | R | h5

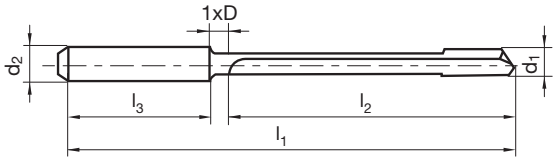
Режущий материал	VHM
Покрытие	a
Форма хвостовика	HA

P	•
M	•
K	○
N	
S	○
H	○

форма заточки G • Цельный твердый сплав от диаметра хвостовика d2 = 6 с исполнением под MMS

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5648**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
2,380	3/32	4,000	220,000	190,000	28,000	2,380
2,500		4,000	255,000	220,000	28,000	2,500
2,780	7/64	4,000	255,000	220,000	28,000	2,780
3,000		6,000	320,000	280,000	36,000	3,000
3,170	1/8	6,000	320,000	280,000	36,000	3,170
3,500		6,000	320,000	280,000	36,000	3,500
3,570	9/64	6,000	360,000	320,000	36,000	3,570
3,970	5/32	6,000	360,000	320,000	36,000	3,970
4,000		6,000	360,000	320,000	36,000	4,000
4,370	11/64	6,000	525,000	485,000	36,000	4,370
4,760	3/16	6,000	525,000	485,000	36,000	4,760
5,000		6,000	525,000	485,000	36,000	5,000
5,160	13/64	6,000	525,000	485,000	36,000	5,160
5,560	7/32	6,000	525,000	485,000	36,000	5,560
5,950	15/64	6,000	525,000	485,000	36,000	5,950
6,000		6,000	525,000	485,000	36,000	6,000

Отнолезвийное сверло EB 100

45,00 | EB 100 | WN | R | h5

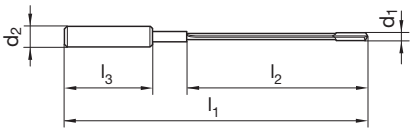
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P	○
M	○
K	○
N	●
S	●
H	○

длина стружечной канавки 45 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5024**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,200		4,000	90,000	45,000	28,000	1,200
1,500		4,000	90,000	45,000	28,000	1,500
1,590	1/16	4,000	90,000	45,000	28,000	1,590
1,600		4,000	90,000	45,000	28,000	1,600
1,980	5/64	4,000	90,000	45,000	28,000	1,980
2,000		4,000	90,000	45,000	28,000	2,000
2,500		10,000	100,000	45,000	40,000	2,500
2,700		10,000	100,000	45,000	40,000	2,700
3,000		10,000	100,000	45,000	40,000	3,000
3,200		10,000	100,000	45,000	40,000	3,200

Отднолезвийное сверло EB 100

45,00 | EB 100 | WN | R | h5

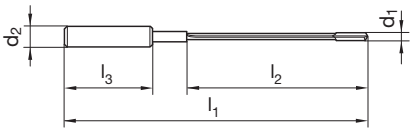
Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

длина стружечной канавки 45 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5632**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,200		4,000	90,000	45,000	28,000	1,200
1,500		4,000	90,000	45,000	28,000	1,500
1,590	1/16	4,000	90,000	45,000	28,000	1,590
1,600		4,000	90,000	45,000	28,000	1,600
1,980	5/64	4,000	90,000	45,000	28,000	1,980
2,000		4,000	90,000	45,000	28,000	2,000
2,500		10,000	100,000	45,000	40,000	2,500
2,700		10,000	100,000	45,000	40,000	2,700
3,000		10,000	100,000	45,000	40,000	3,000
3,200		10,000	100,000	45,000	40,000	3,200

Отнолезвийное сверло EB 100

80,00 | EB 100 | WN | R | h5

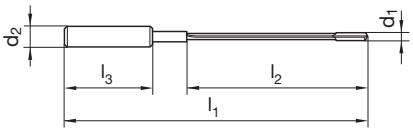
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P	○
M	○
K	○
N	•
S	•
H	○

длина стружечной канавки 80 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5020**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,200		4,000	125,000	80,000	28,000	1,200
1,500		4,000	125,000	80,000	28,000	1,500
1,590	1/16	4,000	125,000	80,000	28,000	1,590
1,600		4,000	125,000	80,000	28,000	1,600
1,980	5/64	4,000	125,000	80,000	28,000	1,980
2,000		4,000	125,000	80,000	28,000	2,000
2,500		10,000	135,000	80,000	40,000	2,500
2,700		10,000	135,000	80,000	40,000	2,700
3,000		10,000	135,000	80,000	40,000	3,000
3,200		10,000	135,000	80,000	40,000	3,200
3,500		10,000	135,000	80,000	40,000	3,500
4,000		10,000	135,000	80,000	40,000	4,000
4,200		10,000	135,000	80,000	40,000	4,200
4,500		10,000	135,000	80,000	40,000	4,500
5,000		10,000	135,000	80,000	40,000	5,000

Отднолезвийное сверло EB 100

80,00 | EB 100 | WN | R | h5

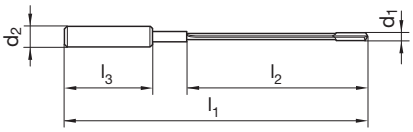
Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

длина стружечной канавки 80 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5633**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,200		4,000	125,000	80,000	28,000	1,200
1,500		4,000	125,000	80,000	28,000	1,500
1,590	1/16	4,000	125,000	80,000	28,000	1,590
1,600		4,000	125,000	80,000	28,000	1,600
1,980	5/64	4,000	125,000	80,000	28,000	1,980
2,000		4,000	125,000	80,000	28,000	2,000
2,500		10,000	135,000	80,000	40,000	2,500
2,700		10,000	135,000	80,000	40,000	2,700
3,000		10,000	135,000	80,000	40,000	3,000
3,200		10,000	135,000	80,000	40,000	3,200
3,500		10,000	135,000	80,000	40,000	3,500
4,000		10,000	135,000	80,000	40,000	4,000
4,200		10,000	135,000	80,000	40,000	4,200
4,500		10,000	135,000	80,000	40,000	4,500
5,000		10,000	135,000	80,000	40,000	5,000

Отнолезвийное сверло EB 100

120,00 | EB 100 | WN | R | h5

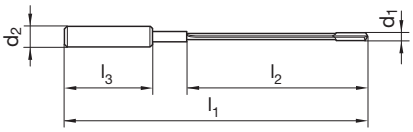
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P	○
M	○
K	○
N	●
S	●
H	○

длина стружечной канавки 120 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5026**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,500		4,000	165,000	120,000	28,000	1,500
1,590	1/16	4,000	165,000	120,000	28,000	1,590
1,600		4,000	165,000	120,000	28,000	1,600
1,980	5/64	4,000	165,000	120,000	28,000	1,980
2,000		4,000	165,000	120,000	28,000	2,000
2,500		10,000	175,000	120,000	40,000	2,500
2,700		10,000	175,000	120,000	40,000	2,700
3,000		10,000	175,000	120,000	40,000	3,000
3,200		10,000	175,000	120,000	40,000	3,200
3,500		10,000	175,000	120,000	40,000	3,500
4,000		10,000	175,000	120,000	40,000	4,000
4,200		10,000	175,000	120,000	40,000	4,200
4,500		10,000	175,000	120,000	40,000	4,500
5,000		10,000	175,000	120,000	40,000	5,000

Отднолезвийное сверло EB 100

120,00 | EB 100 | WN | R | h5

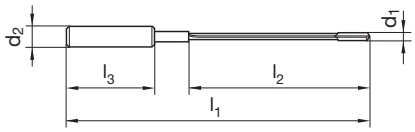
Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

длина стружечной канавки 120 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5637**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,500		4,000	165,000	120,000	28,000	1,500
1,590	1/16	4,000	165,000	120,000	28,000	1,590
1,600		4,000	165,000	120,000	28,000	1,600
1,980	5/64	4,000	165,000	120,000	28,000	1,980
2,000		4,000	165,000	120,000	28,000	2,000
2,500		10,000	175,000	120,000	40,000	2,500
2,700		10,000	175,000	120,000	40,000	2,700
3,000		10,000	175,000	120,000	40,000	3,000
3,200		10,000	175,000	120,000	40,000	3,200
3,500		10,000	175,000	120,000	40,000	3,500
4,000		10,000	175,000	120,000	40,000	4,000
4,200		10,000	175,000	120,000	40,000	4,200
4,500		10,000	175,000	120,000	40,000	4,500
5,000		10,000	175,000	120,000	40,000	5,000

Отнолезвийное сверло EB 100

160,00 | EB 100 | WN | R | h5

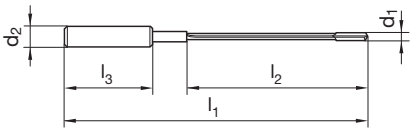
Режущий материал	VHM
Покрытие	◯
Форма хвостовика	HA

P	○
M	○
K	○
N	●
S	●
H	○

длина стружечной канавки 160 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5021**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,500		4,000	205,000	160,000	28,000	1,500
1,590	1/16	4,000	205,000	160,000	28,000	1,590
1,600		4,000	205,000	160,000	28,000	1,600
1,980	5/64	4,000	205,000	160,000	28,000	1,980
2,000		4,000	205,000	160,000	28,000	2,000
2,500		10,000	215,000	160,000	40,000	2,500
2,700		10,000	215,000	160,000	40,000	2,700
3,000		10,000	215,000	160,000	40,000	3,000
3,200		10,000	215,000	160,000	40,000	3,200
3,500		10,000	215,000	160,000	40,000	3,500
4,000		10,000	215,000	160,000	40,000	4,000
4,200		10,000	215,000	160,000	40,000	4,200
4,500		10,000	215,000	160,000	40,000	4,500
5,000		10,000	215,000	160,000	40,000	5,000
6,000		16,000	225,000	160,000	48,000	6,000
8,000		16,000	225,000	160,000	48,000	8,000

Отднолезвийное сверло EB 100

160,00 | EB 100 | WN | R | h5

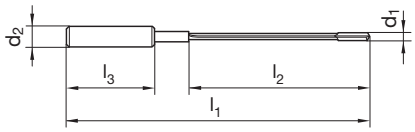
Режущий материал	VHM
Покрытие	A
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

длина стружечной канавки 160 мм • форма заточки G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № 5638

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
1,500		4,000	205,000	160,000	28,000	1,500
1,590	1/16	4,000	205,000	160,000	28,000	1,590
1,600		4,000	205,000	160,000	28,000	1,600
1,980	5/64	4,000	205,000	160,000	28,000	1,980
2,000		4,000	205,000	160,000	28,000	2,000
2,500		10,000	215,000	160,000	40,000	2,500
2,700		10,000	215,000	160,000	40,000	2,700
3,000		10,000	215,000	160,000	40,000	3,000
3,200		10,000	215,000	160,000	40,000	3,200
3,500		10,000	215,000	160,000	40,000	3,500
4,000		10,000	215,000	160,000	40,000	4,000
4,200		10,000	215,000	160,000	40,000	4,200
4,500		10,000	215,000	160,000	40,000	4,500
5,000		10,000	215,000	160,000	40,000	5,000
6,000		16,000	225,000	160,000	48,000	6,000
8,000		16,000	225,000	160,000	48,000	8,000

Отднолезвийное сверло EB 80

20xD | EB 80 | WN | R | h5

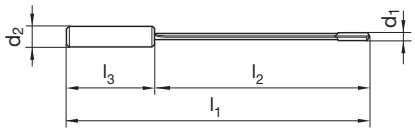
Режущий материал	HM
Покрытие	S
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под СОТС • форма направляющих G • со стружколомом

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5018**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,000		12,000	150,000	100,000	45,000	4,000
4,200		12,000	160,000	110,000	45,000	4,200
4,500		12,000	170,000	120,000	45,000	4,500
5,000		16,000	180,000	130,000	48,000	5,000
5,500		16,000	190,000	140,000	48,000	5,500
6,000		16,000	210,000	160,000	48,000	6,000
6,500		16,000	220,000	170,000	48,000	6,500
7,000		16,000	235,000	185,000	48,000	7,000
8,000		16,000	260,000	210,000	48,000	8,000
9,000		16,000	280,000	230,000	48,000	9,000
10,000		20,000	320,000	260,000	50,000	10,000
12,000		20,000	370,000	310,000	50,000	12,000

Отднолезвийное сверло EB 80

20xD | EB 80 | WN | R | h5

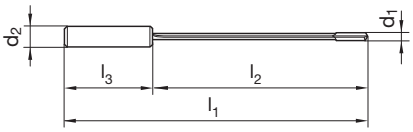
Режущий материал	HM
Покрытие	C
Форма хвостовика	HA

P	○
M	•
K	○
N	
S	•
H	○

форма направляющих G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5639**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
3,970	5/32	10,000	150,000	100,000	40,000	3,970
4,000		12,000	150,000	100,000	45,000	4,000
5,000		16,000	180,000	130,000	48,000	5,000
5,156	13/64	16,000	180,000	130,000	48,000	5,156
6,000		16,000	210,000	160,000	48,000	6,000
6,350	1/4	16,000	220,000	170,000	48,000	6,350
7,000		16,000	235,000	185,000	48,000	7,000
7,938	5/16	16,000	260,000	210,000	48,000	7,938
8,000		16,000	260,000	210,000	48,000	8,000
9,000		16,000	280,000	230,000	48,000	9,000
9,525	3/8	16,000	290,000	240,000	48,000	9,525
10,000		20,000	320,000	260,000	50,000	10,000
11,000		20,000	340,000	290,000	50,000	11,000
11,113	7/16	20,000	340,000	290,000	50,000	11,113
12,000		20,000	370,000	310,000	50,000	12,000
12,700	1/2	20,000	385,000	330,000	50,000	12,700

Отднолезвийное сверло EB 80

30xD | EB 80 | WN | R | h5

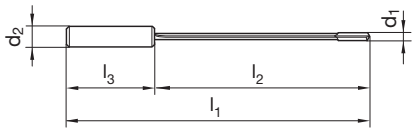
Режущий материал	HM
Покрытие	S
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под СОТС • форма направляющих G • со стружколомом

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5460**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,000		12,000	200,000	155,000	45,000	4,000
4,200		12,000	210,000	165,000	45,000	4,200
4,500		12,000	220,000	175,000	45,000	4,500
5,000		16,000	230,000	182,000	48,000	5,000
5,500		16,000	245,000	197,000	48,000	5,500
6,000		16,000	260,000	212,000	48,000	6,000
6,500		16,000	275,000	227,000	48,000	6,500
7,000		16,000	290,000	242,000	48,000	7,000
8,000		16,000	320,000	272,000	48,000	8,000
9,000		16,000	350,000	302,000	48,000	9,000
10,000		20,000	400,000	350,000	50,000	10,000
12,000		20,000	450,000	400,000	50,000	12,000

Отднолезвийное сверло EB 80

30xD | EB 80 | WN | R | h5

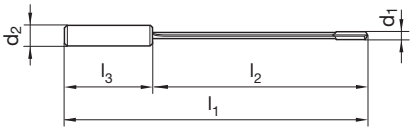
Режущий материал	HM
Покрытие	C
Форма хвостовика	HA

P	○
M	•
K	○
N	
S	•
H	○

форма направляющих G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5640**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
3,970	5/32	10,000	200,000	155,000	40,000	3,970
4,000		12,000	200,000	155,000	45,000	4,000
5,000		16,000	230,000	182,000	48,000	5,000
5,156	13/64	16,000	230,000	182,000	48,000	5,156
6,000		16,000	260,000	212,000	48,000	6,000
6,350	1/4	16,000	275,000	227,000	48,000	6,350
7,000		16,000	290,000	242,000	48,000	7,000
7,938	5/16	16,000	320,000	272,000	48,000	7,938
8,000		16,000	320,000	272,000	48,000	8,000
9,000		16,000	350,000	302,000	48,000	9,000
9,525	3/8	16,000	380,000	330,000	48,000	9,525
10,000		20,000	400,000	350,000	50,000	10,000
11,000		20,000	430,000	380,000	50,000	11,000
11,113	7/16	20,000	430,000	380,000	50,000	11,113
12,000		20,000	450,000	400,000	50,000	12,000
12,700	1/2	20,000	500,000	450,000	50,000	12,700

Отнолезвийное сверло EB 80

40xD | EB 80 | WN | R | h5

Режущий материал	HM
Покрытие	◯
Форма хвостовика	HB

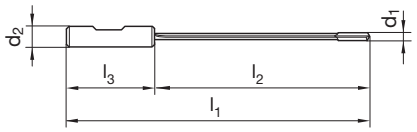
P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под СОТС • форма направляющих G • со стружколомом

NEW

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5689**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,000		12,000	230,000	185,000	45,000	4,000
5,000		16,000	280,000	232,000	48,000	5,000
6,000		16,000	320,000	272,000	48,000	6,000
8,000		16,000	420,000	372,000	48,000	8,000
10,000		20,000	510,000	460,000	50,000	10,000
12,000		20,000	600,000	550,000	50,000	12,000

Отднолезвийное сверло EB 80

40xD | EB 80 | WN | R | h5

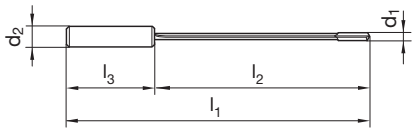
Режущий материал	HM
Покрытие	S
Форма хвостовика	HA

P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под COTC • форма направляющих G • со стружколомом

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5022**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,000		12,000	230,000	185,000	45,000	4,000
4,200		12,000	240,000	195,000	45,000	4,200
4,500		12,000	250,000	205,000	45,000	4,500
5,000		16,000	280,000	232,000	48,000	5,000
5,500		16,000	300,000	252,000	48,000	5,500
6,000		16,000	320,000	272,000	48,000	6,000
6,500		16,000	340,000	292,000	48,000	6,500
7,000		16,000	370,000	322,000	48,000	7,000
8,000		16,000	420,000	372,000	48,000	8,000
9,000		16,000	450,000	402,000	48,000	9,000
10,000		20,000	510,000	460,000	50,000	10,000
12,000		20,000	600,000	550,000	50,000	12,000

Отднолезвийное сверло EB 80

40xD | EB 80 | WN | R | h5

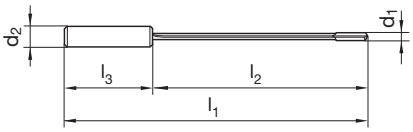
Режущий материал	HM
Покрытие	C
Форма хвостовика	HA

P	○
M	●
K	○
N	
S	●
H	○

форма направляющих G

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5641**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
3,970	5/32	10,000	230,000	185,000	40,000	3,970
4,000		12,000	230,000	185,000	45,000	4,000
5,000		16,000	280,000	232,000	48,000	5,000
5,156	13/64	16,000	280,000	232,000	48,000	5,156
6,000		16,000	320,000	272,000	48,000	6,000
6,350	1/4	16,000	340,000	292,000	48,000	6,350
7,000		16,000	370,000	322,000	48,000	7,000
7,938	5/16	16,000	420,000	372,000	48,000	7,938
8,000		16,000	420,000	372,000	48,000	8,000
9,000		16,000	450,000	402,000	48,000	9,000
9,525	3/8	16,000	480,000	432,000	48,000	9,525
10,000		20,000	510,000	460,000	50,000	10,000
11,000		20,000	550,000	500,000	50,000	11,000
11,113	7/16	20,000	550,000	500,000	50,000	11,113
12,000		20,000	600,000	550,000	50,000	12,000
12,700	1/2	20,000	635,000	585,000	50,000	12,700

Отднолезвийное сверло EB 80

80xD | EB 80 | WN | R | h5

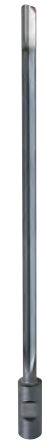
P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под СОТС • форма направляющих G • со стружколомом

максимальная длина канавки инструмента 40 x D, для больших глубин сверления применяют арт.№ 5689, как первый инструмент

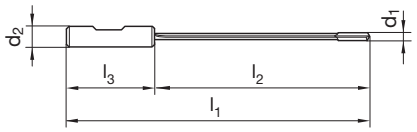
Режущий материал	HM
Покрытие	◯
Форма хвостовика	HB

NEW



GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5690**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
3,970	5/32	10,000	390,000	350,000	40,000	3,970
4,950		16,000	480,000	432,000	48,000	4,950
5,950	15/64	16,000	560,000	512,000	48,000	5,950
7,950		16,000	740,000	692,000	48,000	7,950
9,950		20,000	910,000	860,000	50,000	9,950
11,950		20,000	1080,000	1030,000	50,000	11,950

Отнолезвийное сверло EB 80

80xD | EB 80 | WN | R | h5

Режущий материал	HM
Покрытие	S
Форма хвостовика	HA

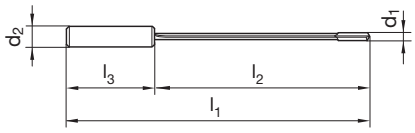
P	•
M	○
K	•
N	○
S	○
H	○

с увеличенным каналом под СОТС • форма направляющих G • со стружколомом

разбить операцию сверления на два этапа - отверстие глубиной 40xD сделать сверлом арт. 5022

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5023**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,950		16,000	480,000	432,000	48,000	4,950
5,950	15/64	16,000	560,000	512,000	48,000	5,950
7,950		16,000	740,000	692,000	48,000	7,950
9,950		20,000	910,000	860,000	50,000	9,950
11,950		20,000	1080,000	1030,000	50,000	11,950

Отднолезвийное сверло EB 80

80xD | EB 80 | WN | R | h5

Режущий материал	HM
Покрытие	C
Форма хвостовика	HA

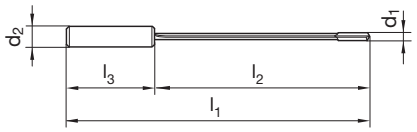
P	○
M	•
K	○
N	
S	•
H	○

форма направляющих G

максимальная длина канавки инструмента 40 x D, для больших глубин сверления применяют арт. № 5641

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5642**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
4,950		16,000	480,000	432,000	48,000	4,950
5,106		16,000	480,000	432,000	48,000	5,106
5,950	15/64	16,000	560,000	512,000	48,000	5,950
6,300		16,000	590,000	542,000	48,000	6,300
6,950		16,000	650,000	602,000	48,000	6,950
7,888		16,000	740,000	692,000	48,000	7,888
7,950		16,000	740,000	692,000	48,000	7,950
8,950		16,000	820,000	772,000	48,000	8,950
9,475		16,000	870,000	822,000	48,000	9,475
9,950		20,000	910,000	860,000	50,000	9,950
10,950		20,000	995,000	945,000	50,000	10,950
11,063		20,000	995,000	945,000	50,000	11,063
11,950		20,000	1080,000	1030,000	50,000	11,950
12,650		20,000	1140,000	1090,000	50,000	12,650

Отднолезвийное сверло EB 80

1100,00 | EB 80 | WN | R | h5

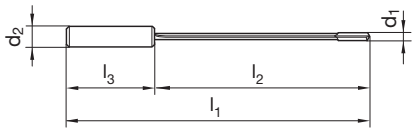
Режущий материал	HM
Покрытие	S
Форма хвостовика	Цил.

P	•
M	○
K	•
N	•
S	○
H	○

общая длина = 1100,00 мм • форма направляющих G • хвостовик для станков глубокого сверления (T3.1)

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5164**

d1 h5		d2 h6	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
6,000		25,000	1100,000	1010,000	70,000	6,000
7,000		25,000	1100,000	1010,000	70,000	7,000
8,000		25,000	1100,000	1010,000	70,000	8,000
10,000		25,000	1100,000	1010,000	70,000	10,000
12,000		25,000	1100,000	1010,000	70,000	12,000
16,000		25,000	1100,000	1010,000	70,000	16,000
20,000		25,000	1100,000	1010,000	70,000	20,000
22,000		25,000	1100,000	1000,000	70,000	22,000

Двухлезвийное сверло ZB 80

30xD | ZB 80 | WN | R | h5

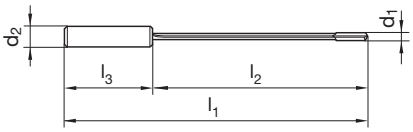
Режущий материал	HM
Покрытие	◯
Форма хвостовика	HA

P	
M	
K	
N	•
S	
H	

две режущие кромки • для алюминия

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5019**

d1 h5	d2	l1	l2	l3	Код-№.
mm	mm	mm	mm	mm	
8,000	16,000	330,000	280,000	48,000	8,000
10,000	20,000	390,000	340,000	50,000	10,000
12,000	20,000	450,000	400,000	50,000	12,000

Двухлезвийное сверло ZB 80

30xD | ZB 80 | WN | R | h5

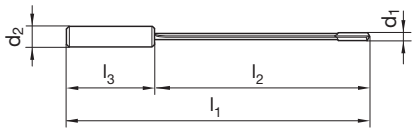
Режущий материал	HM
Покрытие	◯
Форма хвостовика	HA

P	
M	
K	•
N	
S	
H	

две режущие кромки • для литых материалов

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808

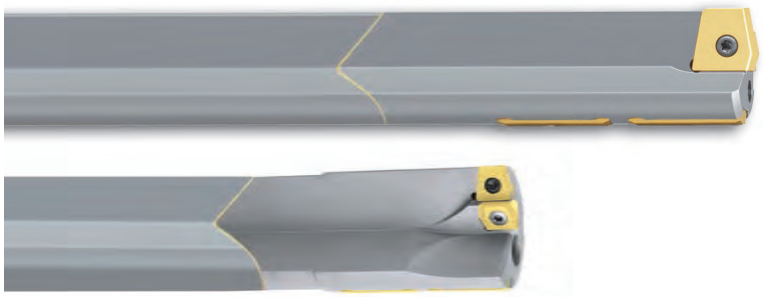


Артикул № **5643**

d1 h5	d2	l1	l2	l3	Код-№.
mm	mm	mm	mm	mm	
8,000	16,000	330,000	280,000	48,000	8,000
10,000	20,000	390,000	340,000	50,000	10,000
12,000	20,000	450,000	400,000	50,000	12,000

EB 800

- специальное решение - диаметр до 52мм
- режущие и направляющие пластинки с шагом в 1/10 диаметра как стандарт, в 1/100 диаметра как специальное решение



Однолезвийные сверла для глубокого сверления Gühring со сменными режущими и опорными пластинами изготавливаются в основном как специнструмент под заказ. Они позволяют обрабатывать практически все материалы и изготавливаются в диапазоне диаметров от 12,0 до 40,0 мм с макс.общей длиной 3000 мм.

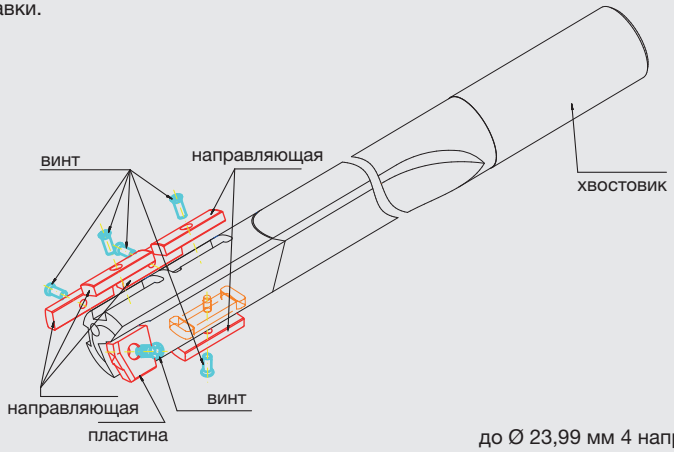
Преимущества сборной конструкции:

- Возможность применения сменных режущих и опорных пластин из разных твердых сплавов и с различными покрытиями.
- Благодаря применению прецизионных сменных режущих и опорных пластин не требуется сложной настройки.
- Прецизионные опорные пластины изготавливаются по Вашему индивидуальному заказу из специального твердого сплава. Они являются двусторонними и имеют два полных периода стойкости. Возможно исполнение с покрытием Gühring.
- Наличие прецизионных гнезд для сменных пластин обуславливает уменьшение количества сменных деталей. Поэтому конструкция чрезвычайно стабильна.
- Исключается дорогое время простоя, так как замена пластин может производиться на станке.
- Благодаря применению сменных пластин исключается переточка инструмента.
- Правильный выбор наиболее подходящей сменной пластины обеспечивает оптимальное применение инструмента, в том числе и для труднообрабатываемых материалов.
- Также по Вашему запросу возможна разработка специальных сменных пластин для глубокого сверления из специальных твердых сплавов с дополнительным нанесением покрытий Gühring.
- В пределах диапазона диаметров сверла можно изменить номинальный диаметр, заменив только сменные пластины.
- Хвостовик изготавливается из твердого сплава или улучшенной стали согласно
  - DIN 6535 HA
  - DIN 6535 HB
  - DIN 6535 HE
  - DIN 1835 E

  Допускается также использование других типов хвостовиков для станков глубокого сверления.

Внимание: - наименьшая длина стружечной канавки 15xD
- точность получаемого отверстия IT9/IT10

Каждое предложение включает чертежи, цены и условия поставки.



до Ø 23,99 мм 4 направляющие пластины
от Ø 24,00 мм 5 направляющих пластин

Момент затяжки - Ориентировочные значения

Наружная пластина

размер	диаметр в мм	ISO метрическая резьба в мм	Torx размер	момент затяжки в Нм
0.	12,00 – 15,99	M2,5 x 5,2	T8	1,00
1.	16,00 – 19,99	M3,0 x 6,4	T9	1,40
2.	20,00 – 25,99	M4,0 x 7,7	T15	2,50
3.	26,00 – 29,99	M4,0 x 10,6	T15	2,50
4.	30,00 – 33,99	M4,0 x 10,6	T15	2,50
5.	34,00 – 37,99	M5,0 x 14,2	T20	5,00
6.	38,00 – 40,00	M5,0 x 14,2	T20	5,00
7.	40,01 – 43,99	M3,0 x 6,4	T9	1,40
8.	44,00 – 47,99	M4,0 x 7,7	T15	2,50
9.	48,00 – 52,00	M4,0 x 10,6	T15	2,50

Внутренняя пластина

размер	диаметр в мм	ISO метрическая резьба в мм	Torx размер	момент затяжки в Нм
7. – 9.	40,01 – 52,00	M4,5 x 11,8	T15	3,00

Направляющие пластины

размер	диаметр в мм	ISO метрическая резьба в мм	Torx размер	момент затяжки в Нм
0.	12,00 – 15,99	M1,6 x 4,4	T5	0,40
1.	16,00 – 17,99	M2,2 x 4,6	T7	0,60
1.	18,00 – 19,99	M2,2 x 5,6	T7	0,60
2.	20,00 – 22,49	M2,5 x 5,2	T8	1,00
2.	22,50 – 25,99	M2,5 x 6,4	T8	1,00
3.	26,00 – 29,99	M2,5 x 6,4	T8	1,00
4. – 9.	30,00 – 52,00	M3,0 x 8,0	T9	1,40

Отднолезвийное сверло EB 800 со сменными пластинами

30xD | EB 800 | WN | R | h8

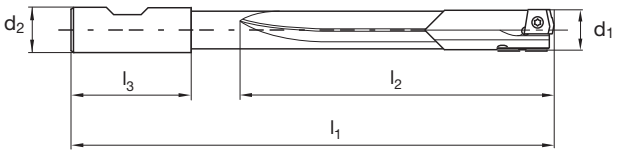
Режущий материал	HM
Покрытие	S
Форма хвостовика	HB

P	•
M	○
K	○
N	•
S	○
H	

со сменными режущими пластинами • со сменными направляющими пластинами • с отверткой • с винтами • универсальное применение • заказать отдельно динамометрический ключ арт. № 4915

GÜHRINGNAVIGATOR

Параметры резания см. стр. 808



Артикул № **5644**

d1 h8		d2	l1	l2	l3	Код-№.
mm	inch	mm	mm	mm	mm	
12,000		20,000	446,000	384,000	50,000	12,000
12,700	1/2	20,000	468,000	406,000	50,000	12,700
14,000		20,000	510,000	448,000	50,000	14,000
15,000		25,000	548,000	480,000	56,000	15,000
16,000		25,000	580,000	512,000	56,000	16,000
18,000		25,000	644,000	576,000	56,000	18,000
20,000		32,000	712,000	640,000	60,000	20,000
24,000		32,000	840,000	768,000	60,000	24,000

FRIZAR
www.frizar.ru

Специальные решения от Ø 12,0 до 52,0 мм , общая длина макс. 3000 мм

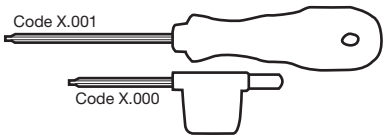
Размер державки	диапазон диаметров патрона	корпус/ державка	пластина					
			пластины наружная				винтики	отвертка
			TiN-покрытие	FIRE-покрытие	Signum-покрытие	TiAlN nanoA-покрытие		
0.	Ø12,00 - Ø12,49 Ø12,50 - Ø12,99 Ø13,00 - Ø13,49 Ø13,50 - Ø13,99 Ø14,00 - Ø14,49 Ø14,50 - Ø14,99 Ø15,00 - Ø15,49 Ø15,50 - Ø15,99	Корпус сверла по особым требованиям заказчика. Общая длина до 3000 мм. Длина канавки ит 10xD Альтернатива: Стандартная позиция арт. № 5644 диаметрами от 12.00 мм до 24.00 мм в комплекте с покрытыми TiN режущими и направляющими пластинами	P ● M ○ K ○ N ● S ○ H	P ● M ○ K ● N ○ S ○ H	P ● M ● K ● N S ● H ○	P ○ M ● K ○ N ○ S ● H ○	Арт. № 4071 2,502 T8 M2,5x 5,2	Арт. № 1612 8,001
1.	Ø16,00 - Ø16,49 Ø16,50 - Ø16,99 Ø17,00 - Ø17,49 Ø17,50 - Ø17,99 Ø18,00 - Ø18,49 Ø18,50 - Ø18,99 Ø19,00 - Ø19,49 Ø19,50 - Ø19,99						Арт. № 4071 3,002 T9 M3x6,4	Арт. № 1612 9,001
2.	Ø20,00 - Ø20,49 Ø20,50 - Ø20,99 Ø21,00 - Ø21,49 Ø21,50 - Ø21,99 Ø22,00 - Ø22,49 Ø22,50 - Ø22,99 Ø23,00 - Ø23,49 Ø23,50 - Ø23,99 Ø24,00 - Ø24,49 Ø24,50 - Ø24,99 Ø25,00 - Ø25,49 Ø25,50 - Ø25,99		арт. № 5029 + №-Ø = заказ №.	Арт. № 5704 + №-Ø = заказ №.	Арт. № 5702 + №-Ø = заказ №.	Арт. № 5706 + №-Ø = заказ №.	Арт. № 4071 4,001 T15 M4x7,7	Арт. № 1612 15,001
3.	Ø26,00 - Ø26,49 Ø26,50 - Ø26,99 Ø27,00 - Ø27,49 Ø27,50 - Ø27,99 Ø28,00 - Ø28,49 Ø28,50 - Ø28,99 Ø29,00 - Ø29,49 Ø29,50 - Ø29,99						Арт. № 4071 4,002 T15 M4x10,6	
4.	Ø30,00 - Ø30,49 Ø30,50 - Ø30,99 Ø31,00 - Ø31,49 Ø31,50 - Ø31,99 Ø32,00 - Ø32,49 Ø32,50 - Ø32,99 Ø33,00 - Ø33,49 Ø33,50 - Ø33,99							
5.	Ø34,00 - Ø34,49 Ø34,50 - Ø34,99 Ø35,00 - Ø35,49 Ø35,50 - Ø35,99 Ø36,00 - Ø36,49 Ø36,50 - Ø36,99 Ø37,00 - Ø37,49 Ø37,50 - Ø37,99						Арт. № 4071 5,002 T20 M5x14,2	Арт. № 1612 20,001
6.	Ø38,00 - Ø38,49 Ø38,50 - Ø38,99 Ø39,00 - Ø39,49 Ø39,50 - Ø40,00							
7.	Ø40,01 - Ø40,49 Ø40,50 - Ø40,99 Ø41,00 - Ø41,49 Ø41,50 - Ø41,99 Ø42,00 - Ø42,49 Ø42,50 - Ø42,99 Ø43,00 - Ø43,49 Ø43,50 - Ø43,99		Специальное сверло	Специальное сверло	Специальное сверло	Специальное сверло	Арт. № 4071 3,002 TX9 M3x6,4	Арт. № 1612 9,001
8.	Ø44,00 - Ø44,49 Ø44,50 - Ø44,99 Ø45,00 - Ø45,49 Ø45,50 - Ø45,99 Ø46,00 - Ø46,49 Ø46,50 - Ø46,99 Ø47,00 - Ø47,49 Ø47,50 - Ø47,99						Арт. № 4071 4,001 TX15 M4x7,7	Арт. № 1612 15,001
9.	Ø48,00 - Ø48,49 Ø48,50 - Ø48,99 Ø49,00 - Ø49,49 Ø49,50 - Ø49,99 Ø50,00 - Ø50,49 Ø50,50 - Ø50,99 Ø51,00 - Ø51,49 Ø51,50 - Ø52,00						Арт. № 4071 4,002 TX15 M4x10,6	

			направляющие пластины					
пластина внут.	винтики	отвертка	направляющие пластины				винтики	отвертка
			TiN-покрытие	FIRE-покрытие	Signum-покрытие	TiAlN nanoA-покрытие		
			P ● M ○ K ○ N ● S ○ H	P ● M ○ K ● N ○ S ○ H	P ● M ● K ● N S ● H ○	P ○ M ● K ○ N ○ S ● H ○	Арт. № 4071 1,601 T5 M1,6x4,4	Арт. № 1612 5,001
							Арт. № 4071 2,203 T7 / M2,2x 4,6	Арт. № 1612 7,001
							Арт. № 4071 2,202 T7 / M2,2x5,6	
							Арт. № 4071 2,502 T8 M2,5x 5,2	Арт. № 1612 8,001
			Арт. № 5030 + №-Ø = заказ №.	Арт. № 5705 + №-Ø = заказ №.	Арт. № 5703 + №-Ø = заказ №.	Арт. № 5707 + №-Ø = заказ №.	Арт. № 4071 2,501 T8 M2,5x6,4	
без покр. Специальное сверло	Арт. № 4071 4,501 T15 M4,5x11,8	Арт. № 1612 15,001	Специальное сверло	Специальное сверло	Специальное сверло	Специальное сверло	Арт. № 4071 3,003 T9 M3x8	Арт. № 1612 9,001
TiN Специальное сверло								
FIRE Специальное сверло								

FRIZAR
www.frizar.ru

Отвертки Torx

WN



Артикул № **1612**

Размер	Код-№.
T5	5,001
T7	7,001
T8	8,001
T9	9,001
T15	15,001
T20	20,001

Динамометрический ключ

WN

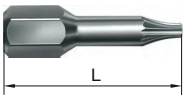
Артикул № **4915**

Привод			Тип	Код-№.
		Nm		
1/4»	шестигранник	0,4-1	A	1,001
1/4»	шестигранник	1-5	A	5,001

FRIZAR
www.frizar.ru

Вставки Torx-Bit

WN

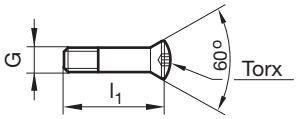


Артикул № **4917**

Привод		Torx	L	Код-№.
			mm	
1/4	шестигранник	T5	25,000	5,000
1/4	шестигранник	T7	25,000	7,000
1/4	шестигранник	T8	25,000	8,000
1/4	шестигранник	T9	25,000	9,000
1/4	шестигранник	T15	25,000	15,000
1/4	шестигранник	T20	25,000	20,000

Зажимные винты

WN



Артикул № **4071**

G	l1	Torx	Код-№.
	mm		
M1,6	4,400	T5	1,601
M2,2	5,600	T7	2,202
M2,2	4,600	T7	2,203
M2,5	6,400	T8	2,501
M2,5	5,200	T8	2,502
M3	6,400	T9	3,002
M3	8,000	T9	3,003
M4	7,700	T15	4,001
M4	10,600	T15	4,002
M5	14,200	T20	5,002

Принадлежности для свёрл глубокого сверления

Станок для заточки однолезвийных сверл ТВМ 116

ТВМ 116 - универсальный шлифовальный станок для заточки инструмента вручную. Компактная конструкция станка вместе с устройством для заточки однолезвийных сверл, а также двойные шлифовальные круги фирмы Gühring представляют собой отличный унифицированный узел для заточки. Устройство используется для заточки малых и средних объемов партий инструмента с различными диаметрами и длинами. Кроме того, устройство позволяет затачивать поперечный стружколом на однолезвийном сверле для глубокого сверления.

Объем поставки:
Заточной шлифовальный станок с двумя станочными светильниками и двумя внешними розетками 220В (заточное приспособление и шлифовальные круги необходимо заказывать отдельно).
Характеристики станка:
Рабочее напряжение 380В / 50 Гц, частота вращения шлифовального круга 2850 об/мин, максимальный диаметр шлифовального круга 150 мм.
Артикул №: 600 127 170

Станок для заточки однолезвийных сверл TBV 116 от Ø3 до 30 мм

Приспособление предназначено для переточки однолезвийных сверл глубокого сверления в диапазоне диаметров от 3 мм до 30 мм. При этом оно выполняет стандартную и специальную заточку. Благодаря короткой пиноли минимальная длина стружечной канавки не имеет значения. Для поддержания длинного инструмента в комплект поставки входит специальная опорная штанга. TBV 116 - это универсальное приспособление, оно может использоваться на любом обычном ручном шлифовальном станке.
Для TBV 116 мы рекомендуем использовать двойной шлифовальный круг DSS 125.

Внимание:
Однолезвийные сверла для глубокого сверления имеют угол стружечной канавки 120 градусов и, в связи с этим, не могут зажиматься на приспособлении при помощи зажимной цанги. Возможна поломка инструмента.
Артикул №: 600 127 171

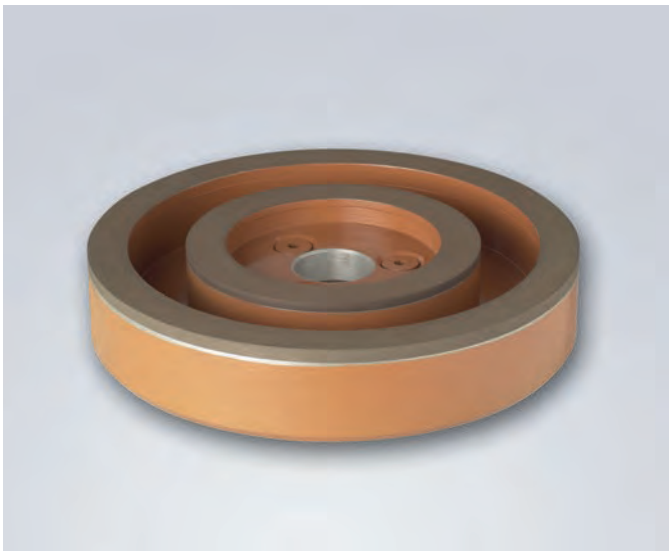
Станок для заточки однолезвийных сверл TBV 216 от Ø1 до 16 мм

Новое универсальное заточное приспособление TBV 216 специально для однолезвийных сверл глубокого сверления с малыми диаметрами в диапазоне от 1,0 до 6,0 мм и с макс. длиной 350 мм позволяет перетачивать сверла за четыре рабочих операции. Процесс происходит в 3-х координатном поворотном устройстве, которое обеспечивает различные углы заточки. Все углы могут быть в любой момент индивидуально настроены и скорректированы.
Для этого мы рекомендуем наш одинарный шлифовальный круг ESS 125.

Состав поставки:
- комплект направляющих втулок с диаметрами 1,0 / 1,5 / 2,0 / 2,5 / 3,0 / 3,5 мм,
- различные промежуточные вставки,
- центрирующий микроскоп,
- точечный светильник и измерительная лупа

Артикул №: 600 132 346

Двойной шлифовальный круг DSS 125



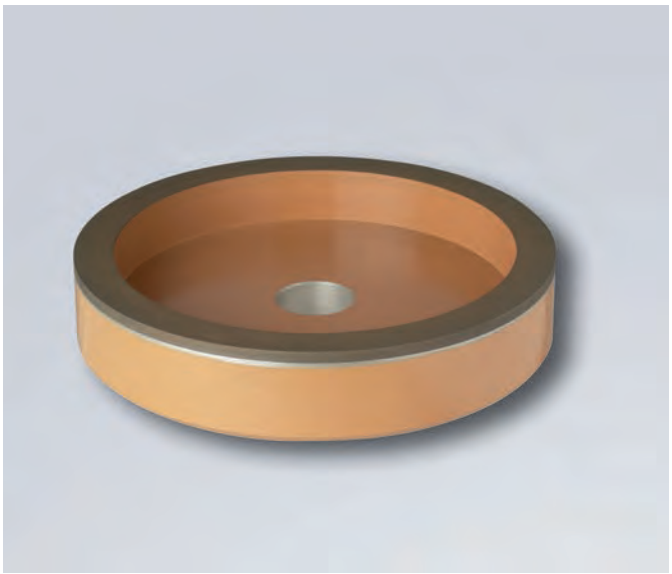
Двойной шлифовальный круг DSS 125 - это комплект, состоящий из двух алмазных шлифкругов, прочно соединенных друг с другом и совместно заправленных. Речь идет о наружном черновом алмазном круге, который производит основную обработку, и внутреннем доводочном алмазном круге, который осуществляет финишную обработку режущих кромок сверла. Рекомендуется время от времени с помощью правящего камня удалять засаленный слой с алмазных шлифкругов, чтобы возникающие в процессе работы засаленным кругом избыток тепла не приводил к разрушению твердосплавных режущих лезвий сверла.

Двойной шлифовальный круг DSS 125 состоит из:

- наружного круга диам. 125 мм, ширина алмазного слоя 10 мм, толщина алмазного слоя 3 мм, посадочное отверстие диам. 20 мм; зернистость D126
- внутреннего круга диам. 70 мм, ширина алмазного слоя 10 мм, толщина алмазного слоя 2 мм, посадочное отверстие диам. 20 мм; зернистость D46.

Артикул №: 400 110 098

Одинарный шлифовальный круг ESS 125



Шлифовальный круг ESS 125 представляет собой мелкозернистый алмазный круг, обеспечивающий качественную окончательную обработку режущих кромок. Рекомендуется периодически чистить круг специальным бруском от шлифовальной пыли, в противном случае возможно образование избыточного тепла и разрушение режущей кромки из твёрдого сплава.

Круг ESS 125 состоит из:

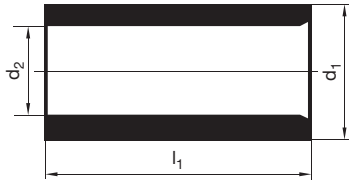
- круга Ø 125 мм, накладки шириной 10 мм и толщиной 3 мм, отверстие Ø 20 мм, зернистость круга D 25

Артикул №: 400 119 203

Кондукторная втулка

WN

Режущий материал **VHM**



Артикул № **5748**

d2	d1	l1	Код-№.
mm	mm	mm	
0,900	3,000	9,000	0,900
1,590	4,000	9,000	1,590
1,600	4,000	9,000	1,600
1,605	4,000	9,000	1,605
2,000	5,000	9,000	2,000
2,030	5,000	9,000	2,030
2,040	5,000	9,000	2,040
2,500	5,000	9,000	2,500
3,000	6,000	12,000	3,000
3,500	7,000	12,000	3,500
3,750	7,000	12,000	3,750
4,000	7,000	12,000	4,000
4,500	8,000	12,000	4,500
5,000	8,000	12,000	5,000
5,200	10,000	16,000	5,200
5,500	10,000	16,000	5,500
5,515	10,000	16,000	5,515
5,525	10,000	16,000	5,525
6,000	10,000	16,000	6,000
6,100	12,000	16,000	6,100
6,900	12,000	16,000	6,900
7,100	12,000	16,000	7,100
8,000	12,000	16,000	8,000
8,015	12,000	16,000	8,015
8,510	15,000	20,000	8,510
10,000	15,000	20,000	10,000
10,920	18,000	20,000	10,920
11,000	18,000	20,000	11,000
12,000	18,000	20,000	12,000
12,030	18,000	20,000	12,030

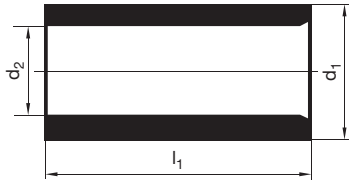
d2	d1	l1	Код-№.
mm	mm	mm	
12,600	22,000	28,000	12,600
14,000	22,000	28,000	14,000
14,030	22,000	28,000	14,030
14,400	22,000	28,000	14,400
16,000	26,000	28,000	16,000
16,030	26,000	28,000	16,030
16,200	26,000	28,000	16,200
18,000	26,000	28,000	18,000
18,030	26,000	28,000	18,030
18,050	26,000	28,000	18,050
20,000	30,000	36,000	20,000
20,030	30,000	36,000	20,030
22,000	30,000	36,000	22,000
22,030	30,000	36,000	22,030
22,120	35,000	36,000	22,120
23,500	35,000	36,000	23,500
24,000	35,000	36,000	24,000
24,030	35,000	36,000	24,030
25,000	35,000	36,000	25,000
26,000	35,000	36,000	26,000
30,000	42,000	45,000	30,000
34,000	48,000	45,000	34,000
40,000	55,000	55,000	40,000

FRIZAR
www.frizar.ru

Кондукторная втулка

WN

Режущий материал **HSS**



Артикул № **5747**

d2	d1	l1	Код-№.
mm	mm	mm	
0,900	3,000	9,000	0,900
1,600	4,000	9,000	1,600
2,000	5,000	9,000	2,000
2,200	5,000	9,000	2,200
2,340	5,000	9,000	2,340
2,700	6,000	12,000	2,700
3,000	6,000	12,000	3,000
3,100	6,000	12,000	3,100
3,255	6,000	12,000	3,255
3,300	6,000	12,000	3,300
3,400	7,000	12,000	3,400
3,500	7,000	12,000	3,500
3,650	7,000	12,000	3,650
3,700	7,000	12,000	3,700
3,800	7,000	12,000	3,800
4,000	7,000	12,000	4,000
4,100	8,000	12,000	4,100
4,300	8,000	12,000	4,300
4,500	8,000	12,000	4,500
4,600	8,000	12,000	4,600
4,760	8,000	12,000	4,760
4,763	8,000	12,000	4,763
4,800	8,000	12,000	4,800
5,000	8,000	12,000	5,000
5,020	8,000	12,000	5,020
5,100	10,000	16,000	5,100
5,200	10,000	16,000	5,200
5,300	10,000	16,000	5,300
5,500	10,000	16,000	5,500
5,600	10,000	16,000	5,600
5,800	10,000	16,000	5,800
6,000	10,000	16,000	6,000
6,050	10,000	16,000	6,050
6,100	12,000	16,000	6,100
6,300	12,000	16,000	6,300
6,350	12,000	16,000	6,350
6,370	12,000	16,000	6,370
6,502	12,000	16,000	6,502
6,600	12,000	16,000	6,600
6,730	12,000	16,000	6,730
6,731	12,000	16,000	6,731
6,750	12,000	16,000	6,750

d2	d1	l1	Код-№.
mm	mm	mm	
6,800	12,000	16,000	6,800
7,000	12,000	16,000	7,000
7,100	12,000	16,000	7,100
7,400	12,000	16,000	7,400
7,500	12,000	16,000	7,500
7,600	12,000	16,000	7,600
7,800	12,000	16,000	7,800
7,830	12,000	16,000	7,830
7,938	12,000	16,000	7,938
8,000	12,000	16,000	8,000
8,020	12,000	16,000	8,020
8,050	12,000	16,000	8,050
8,100	15,000	20,000	8,100
8,500	15,000	20,000	8,500
8,530	15,000	20,000	8,530
8,800	15,000	20,000	8,800
9,000	15,000	20,000	9,000
9,100	15,000	20,000	9,100
9,200	15,000	20,000	9,200
9,300	15,000	20,000	9,300
9,500	15,000	20,000	9,500
9,525	15,000	20,000	9,525
9,530	15,000	20,000	9,530
9,570	15,000	20,000	9,570
9,652	15,000	20,000	9,652
9,800	15,000	20,000	9,800
10,000	15,000	20,000	10,000
10,100	18,000	20,000	10,100
10,600	18,000	20,000	10,600
11,080	18,000	20,000	11,080
11,100	18,000	20,000	11,100
11,113	18,000	20,000	11,113
11,500	18,000	20,000	11,500
11,600	18,000	20,000	11,600
12,000	18,000	20,000	12,000
12,020	18,000	20,000	12,020
12,100	22,000	28,000	12,100
12,530	22,000	28,000	12,530
12,600	22,000	28,000	12,600
12,700	22,000	28,000	12,700
12,800	22,000	28,000	12,800
12,954	22,000	28,000	12,954

d2	d1	l1	Код-№.
mm	mm	mm	
13,000	22,000	28,000	13,000
13,400	22,000	28,000	13,400
13,500	22,000	28,000	13,500
13,700	22,000	28,000	13,700
13,800	22,000	28,000	13,800
14,000	22,000	28,000	14,000
14,310	22,000	28,000	14,310
14,620	22,000	28,000	14,620
14,770	22,000	28,000	14,770
15,000	22,000	28,000	15,000
15,875	26,000	28,000	15,875
16,000	26,000	28,000	16,000
16,330	26,000	28,000	16,330
17,040	26,000	28,000	17,040
17,080	26,000	28,000	17,080
18,000	26,000	28,000	18,000
18,255	30,000	36,000	18,255
18,450	30,000	36,000	18,450
19,000	30,000	36,000	19,000
19,050	30,000	36,000	19,050
19,300	30,000	36,000	19,300
19,700	30,000	36,000	19,700
20,000	30,000	36,000	20,000
21,050	30,000	36,000	21,050

d2	d1	l1	Код-№.
mm	mm	mm	
22,000	30,000	36,000	22,000
22,100	35,000	36,000	22,100
22,120	35,000	36,000	22,120
22,225	35,000	36,000	22,225
23,500	35,000	36,000	23,500
24,000	35,000	36,000	24,000
24,500	35,000	36,000	24,500
25,000	35,000	36,000	25,000
25,250	35,000	36,000	25,250
25,400	35,000	36,000	25,400
26,000	35,000	36,000	26,000
28,000	42,000	45,000	28,000
28,169	42,000	45,000	28,169
30,000	42,000	45,000	30,000
30,100	48,000	45,000	30,100
34,000	48,000	45,000	34,000
38,100	55,000	55,000	38,100
40,000	55,000	55,000	40,000

Принадлежности для станков глубокого сверления

В отличие от традиционных станков, на станках для глубокого сверления должны быть определенные пренадлежности: уплотнительные диски, направляющие втулки, люнеты и т.п. Выбор этих изделий смотри на следующих страницах.

Иллюстрация может отличаться от оригинала

Принадлежности

Люнетные втулки уплотнительные шайбы, арт. 5749, 5750, 5751, 5752 и 5753 всегда применяются к одному диапазону номинальных диаметров ружейного сверла. При заказе , пожалуйста, всегда указывайте арт.№. + Код № из следующей таблицы!

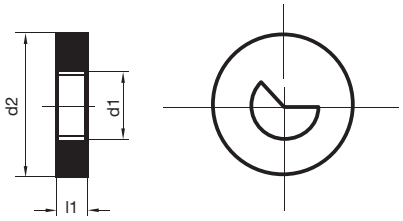
Таблица соответствия номер кода/диаметр ружейного сверла

Код - №	Для ружейного сверла с номинальным диаметром d1	
	От (мм)	до (мм)
1,900	2,000	2,099
2,000	2,100	2,199
2,100	2,200	2,299
2,200	2,300	2,399
2,300	2,400	2,499
2,400	2,500	2,599
2,500	2,600	2,699
2,600	2,700	2,799
2,700	2,800	2,899
2,800	2,900	3,099
3,000	3,100	3,359
3,200	3,360	3,459
3,300	3,460	3,559
3,400	3,560	3,799
3,600	3,800	3,959
3,700	3,960	4,259
4,000	4,260	4,499
4,200	4,500	4,749
4,500	4,750	4,999
4,700	5,000	5,249
5,000	5,250	5,499
5,200	5,500	5,749
5,500	5,750	5,999
5,700	6,000	6,249
6,000	6,250	6,449
6,200	6,450	6,749
6,500	6,750	6,999
6,700	7,000	7,299
7,000	7,300	7,599
7,300	7,600	7,799
7,500	7,800	7,999
7,700	8,000	8,299
8,000	8,300	8,699
8,400	8,700	8,999
8,700	9,000	9,299
9,000	9,300	9,699

Код - №	Для ружейного сверла с номинальным диаметром d1	
	От (мм)	до (мм)
9,400	9,700	9,999
9,700	10,000	10,299
10,000	10,300	10,799
10,500	10,800	11,299
11,000	11,300	11,799
11,500	11,800	12,399
12,000	12,400	12,899
12,500	12,900	13,399
13,000	13,400	13,899
13,500	13,900	14,399
14,000	14,400	14,899
14,500	14,900	15,399
15,000	15,400	15,899
15,500	15,900	16,399
16,000	16,400	16,899
16,500	16,900	17,399
17,000	17,400	17,899
17,500	17,900	18,399
18,000	18,400	19,509
19,000	19,510	20,509
20,000	20,510	21,509
21,000	21,510	22,609
22,000	22,610	23,609
23,000	23,610	24,609
24,000	24,610	25,609
25,000	25,610	26,609
26,000	26,610	27,609
27,000	27,610	28,609
28,000	28,610	29,609
29,000	29,610	30,609
30,000	30,610	32,609
32,000	32,610	34,699
34,000	34,700	36,699
36,000	36,700	38,699
38,000	38,700	40,000

Уплотнительные шайбы для однолезвийного сверла

WN



Артикул № **5752**

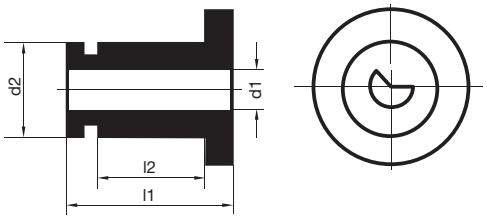
d1	Диапазон Ø	d2	l1	Код-№.
mm		mm	mm	
2,100	2,200-2,299	20,000	4,000	2,100
2,200	2,300-2,399	20,000	4,000	2,200
2,600	2,700-2,799	20,000	4,000	2,600
2,800	2,900-3,099	20,000	4,000	2,800
3,000	3,100-3,359	20,000	4,000	3,000
3,300	3,460-3,559	20,000	4,000	3,300
3,400	3,560-3,799	20,000	4,000	3,400
3,600	3,800-3,959	20,000	4,000	3,600
3,700	3,960-4,259	20,000	4,000	3,700
4,000	4,260-4,499	20,000	4,000	4,000
4,200	4,500-4,749	20,000	4,000	4,200
4,500	4,750-4,999	20,000	4,000	4,500
4,700	5,000-5,249	20,000	4,000	4,700
5,000	5,250-5,499	32,000	4,000	5,000
5,200	5,500-5,749	32,000	4,000	5,200
5,500	5,750-5,999	32,000	4,000	5,500
5,700	6,000-6,249	32,000	4,000	5,700
6,000	6,250-6,449	32,000	4,000	6,000
6,200	6,450-6,749	32,000	4,000	6,200
6,500	6,750-6,999	32,000	4,000	6,500
6,700	7,000-7,299	32,000	4,000	6,700
7,000	7,300-7,599	32,000	4,000	7,000
7,300	7,600-7,799	32,000	4,000	7,300
7,500	7,800-7,999	32,000	4,000	7,500
7,700	8,000-8,299	32,000	4,000	7,700
8,000	8,300-8,699	32,000	4,000	8,000
8,400	8,700-8,999	32,000	4,000	8,400
8,700	9,000-9,299	32,000	4,000	8,700
9,000	9,300-9,699	32,000	4,000	9,000
9,400	9,700-9,999	32,000	4,000	9,400
9,700	10,000-10,299	32,000	4,000	9,700
10,000	11,300-11,799	32,000	4,000	10,000
10,500	10,800-11,299	32,000	4,000	10,500
11,000	11,300-11,799	32,000	4,000	11,000
11,500	11,800-12,399	32,000	4,000	11,500
12,000	12,400-12,899	32,000	4,000	12,000
12,500	12,900-13,399	32,000	4,000	12,500
13,500	13,900-14,399	32,000	4,000	13,500
14,000	14,400-14,899	32,000	4,000	14,000
14,500	14,900-15,399	32,000	4,000	14,500
15,000	15,400-15,899	32,000	4,000	15,000
15,500	15,900-16,399	40,000	4,000	15,500
16,500	16,900-17,399	40,000	4,000	16,500
17,000	17,400-17,899	40,000	4,000	17,000
17,500	17,900-18,399	40,000	4,000	17,500
18,000	18,400-19,509	40,000	4,000	18,000
19,000	19,510-20,509	40,000	4,000	19,000
20,000	20,510-21,509	40,000	4,000	20,000

FRIZAR
www.frizar.ru

d1	Диапазон Ø	d2	l1	Код-№.
mm		mm	mm	
21,000	21,510-22,609	40,000	4,000	21,000
22,000	22,610-23,609	40,000	4,000	22,000
23,000	23,610-24,609	40,000	4,000	23,000
24,000	24,610-25,609	40,000	4,000	24,000
25,000	25,610-26,609	40,000	4,000	25,000
27,000	27,610-28,609	90,000	4,000	27,000
29,000	29,610-30,609	90,000	4,000	29,000
30,000	30,610-32,609	90,000	4,000	30,000
32,000	32,610-34,699	90,000	4,000	32,000
36,000	36,700-38,699	90,000	4,000	36,000
38,000	38,700-40,000	90,000	4,000	38,000

Фасонные люнетные втулки для однолезвийного сверла

WN



Артикул № **5750**

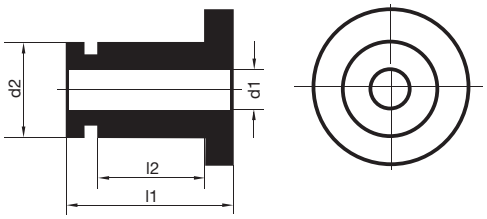
d1	Диапазон Ø	d2	l1	l2	Код-№.
mm		mm	mm	mm	
2,100	2,200-2,299	20,000	20,000	12,000	202,100
2,600	2,700-2,799	20,000	20,000	12,000	202,600
2,800	2,900-3,099	20,000	20,000	12,000	202,800
3,000	3,100-3,359	20,000	20,000	12,000	203,000
3,300	3,460-3,559	20,000	20,000	12,000	203,300
3,700	3,960-4,259	20,000	20,000	12,000	203,700
4,700	5,000-5,249	20,000	20,000	12,000	204,700
5,700	6,000-6,249	20,000	20,000	12,000	205,700
6,700	7,000-7,299	20,000	20,000	12,000	206,700
7,700	8,000-8,299	20,000	20,000	12,000	207,700
8,000	8,300-8,699	20,000	20,000	12,000	208,000
8,700	9,000-9,299	20,000	20,000	12,000	208,700
9,700	10,000-10,299	20,000	20,000	12,000	209,700
11,500	11,800-12,399	20,000	20,000	12,000	211,500
3,700	3,960-4,259	30,000	26,000	13,000	303,700
4,000	4,260-4,499	30,000	26,000	13,000	304,000
4,200	4,500-4,749	30,000	26,000	13,000	304,200
4,500	4,750-4,999	30,000	26,000	13,000	304,500
4,700	5,000-5,249	30,000	26,000	13,000	304,700
5,000	5,250-5,499	30,000	26,000	13,000	305,000
5,200	5,500-5,749	30,000	26,000	13,000	305,200
5,500	5,750-5,999	30,000	26,000	13,000	305,500
5,700	6,000-6,249	30,000	26,000	13,000	305,700
6,000	6,250-6,449	30,000	26,000	13,000	306,000
6,200	6,450-6,749	30,000	26,000	13,000	306,200
6,500	6,750-6,999	30,000	26,000	13,000	306,500
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,000	7,300-7,599	30,000	26,000	13,000	307,000
7,300	7,600-7,799	30,000	26,000	13,000	307,300
7,500	7,800-7,999	30,000	26,000	13,000	307,500
7,700	8,000-8,299	30,000	26,000	13,000	307,700
8,000	8,300-8,699	30,000	26,000	13,000	308,000
8,400	8,700-8,999	30,000	26,000	13,000	308,400
8,700	9,000-9,299	30,000	26,000	13,000	308,700
9,000	9,300-9,699	30,000	26,000	13,000	309,000
9,400	9,700-9,999	30,000	26,000	13,000	309,400
9,700	10,000-10,299	30,000	26,000	13,000	309,700
10,000	10,300-10,799	30,000	26,000	13,000	310,000
10,500	10,800-11,299	30,000	26,000	13,000	310,500
11,000	11,300-11,799	30,000	26,000	13,000	311,000
11,500	11,800-12,399	30,000	26,000	13,000	311,500
12,000	12,400-12,899	30,000	26,000	13,000	312,000
12,500	12,900-13,399	30,000	26,000	13,000	312,500
13,500	13,900-14,399	30,000	26,000	13,000	313,500
14,000	14,400-14,899	30,000	26,000	13,000	314,000
14,500	14,900-15,399	30,000	26,000	13,000	314,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500

FRIZAR
www.frizar.ru

d1	Диапазон Ø	d2	l1	l2	Код-№.
mm		mm	mm	mm	
16,500	16,900-17,399	30,000	26,000	13,000	316,500
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
18,000	18,400-19,509	30,000	26,000	13,000	318,000
19,000	19,510-20,509	30,000	26,000	13,000	319,000
21,000	21,510-22,609	30,000	26,000	13,000	321,000
20,000	20,510-21,509	45,000	26,000	16,000	420,000
21,000	21,510-22,609	45,000	26,000	16,000	421,000
22,000	22,610-23,609	45,000	26,000	16,000	422,000
23,000	23,610-24,609	45,000	26,000	16,000	423,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000
28,000	28,610-29,609	45,000	26,000	16,000	428,000
29,000	29,610-30,609	45,000	26,000	16,000	429,000
30,000	30,610-32,609	45,000	26,000	16,000	430,000
32,000	32,610-34,699	45,000	26,000	16,000	432,000
34,000	34,700-36,699	45,000	26,000	16,000	434,000

Люнетные втулки для одно- и двухлезвийного сверла

WN



Артикул № **5749**

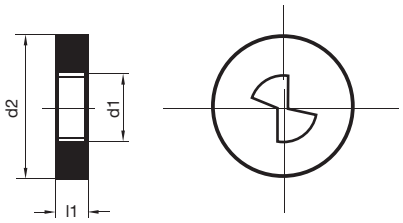
d1	Диапазон Ø	d2	l1	l2	Код-№.
mm		mm	mm	mm	
3,000	3,100-3,359	20,000	22,000	12,000	203,000
3,700	3,960-4,259	20,000	22,000	12,000	203,700
4,500	4,750-4,999	20,000	22,000	12,000	204,500
4,700	5,000-5,249	20,000	22,000	12,000	204,700
5,700	6,000-6,249	20,000	22,000	12,000	205,700
8,000	8,300-8,699	20,000	22,000	12,000	208,000
9,700	10,000-10,299	20,000	22,000	12,000	209,700
2,200	2,300-2,399	30,000	26,000	13,000	302,200
3,000	3,100-3,359	30,000	26,000	13,000	303,000
3,300	3,460-3,559	30,000	26,000	13,000	303,300
3,400	3,560-3,799	30,000	26,000	13,000	303,400
3,600	3,800-3,959	30,000	26,000	13,000	303,600
3,700	3,960-4,259	30,000	26,000	13,000	303,700
4,000	4,260-4,499	30,000	26,000	13,000	304,000
4,200	4,500-4,749	30,000	26,000	13,000	304,200
4,500	4,750-4,999	30,000	26,000	13,000	304,500
4,700	5,000-5,249	30,000	26,000	13,000	304,700
5,000	5,250-5,499	30,000	26,000	13,000	305,000
5,200	5,500-5,749	30,000	26,000	13,000	305,200
5,500	5,750-5,999	30,000	26,000	13,000	305,500
5,700	6,000-6,249	30,000	26,000	13,000	305,700
6,000	6,250-6,449	30,000	26,000	13,000	306,000
6,200	6,450-6,749	30,000	26,000	13,000	306,200
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,500	7,800-7,999	30,000	26,000	13,000	307,500
7,700	8,000-8,299	30,000	26,000	13,000	307,700
8,700	9,000-9,299	30,000	26,000	13,000	308,700
9,000	9,300-9,699	30,000	26,000	13,000	309,000
9,700	10,000-10,299	30,000	26,000	13,000	309,700
10,000	10,300-10,799	30,000	26,000	13,000	310,000
10,500	10,800-11,299	30,000	26,000	13,000	310,500
11,000	11,300-11,799	30,000	26,000	13,000	311,000
11,500	11,800-12,399	30,000	26,000	13,000	311,500
12,000	12,400-12,899	30,000	26,000	13,000	312,000
12,500	12,900-13,399	30,000	26,000	13,000	312,500
13,500	13,900-14,399	30,000	26,000	13,000	313,500
14,000	14,400-14,899	30,000	26,000	13,000	314,000
14,500	14,900-15,399	30,000	26,000	13,000	314,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500
16,600	17,900-18,399	30,000	26,000	13,000	316,600
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
18,000	18,400-19,509	30,000	26,000	13,000	318,000
19,000	19,510-20,509	30,000	26,000	13,000	319,000
20,000	20,510-21,509	30,000	26,000	13,000	320,000
21,000	21,510-22,609	30,000	26,000	13,000	321,000
22,000	22,610-23,609	30,000	26,000	13,000	322,000

FRIZAR
www.frizar.ru

d1	Диапазон Ø	d2	l1	l2	Код-№.
mm		mm	mm	mm	
23,000	23,610-24,609	30,000	26,000	13,000	323,000
24,000	24,610-25,609	30,000	26,000	13,000	324,000
4,700	5,000-5,249	45,000	26,000	16,000	404,700
6,200	6,450-6,749	45,000	26,000	16,000	406,200
7,500	7,800-7,999	45,000	26,000	16,000	407,500
7,700	8,000-8,299	45,000	26,000	16,000	407,700
9,000	9,300-9,699	45,000	26,000	16,000	409,000
9,400	9,700-9,999	45,000	26,000	16,000	409,400
9,700	10,000-10,299	45,000	26,000	16,000	409,700
11,500	11,800-12,399	45,000	26,000	16,000	411,500
14,000	14,400-14,899	45,000	26,000	16,000	414,000
15,000	15,400-15,899	45,000	26,000	16,000	415,000
15,500	15,900-16,399	45,000	26,000	16,000	415,500
17,500	17,900-18,399	45,000	26,000	16,000	417,500
18,000	18,400-19,509	45,000	26,000	16,000	418,000
19,000	19,510-20,509	45,000	26,000	16,000	419,000
21,000	21,510-22,609	45,000	26,000	16,000	421,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
26,000	26,610-27,609	45,000	26,000	16,000	426,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000
29,000	29,610-30,609	45,000	26,000	16,000	429,000
32,000	32,610-34,699	45,000	26,000	16,000	432,000

Уплотнительные шайбы для двухлезвийного сверла

WN



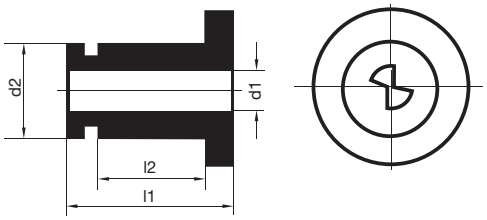
Артикул № **5753**

d1	Диапазон Ø	d2	l1	Код-№.
mm		mm	mm	
5,700	6,000-6,249	32,000	4,000	5,700
7,700	8,000-8,299	32,000	4,000	7,700
8,700	9,000-9,299	32,000	4,000	8,700
9,000	9,300-9,699	32,000	4,000	9,000
9,700	10,000-10,299	32,000	4,000	9,700
11,500	11,800-12,399	32,000	4,000	11,500
13,500	13,900-14,399	32,000	4,000	13,500
15,500	15,900-16,399	40,000	4,000	15,500
19,000	19,510-20,509	40,000	4,000	19,000
23,000	23,610-24,609	40,000	4,000	23,000
25,000	25,610-26,609	40,000	4,000	25,000

FRIZAR
www.frizar.ru

Фасонные люнетные втулки для двухлезвийного сверла

WN



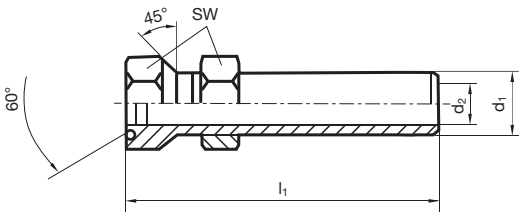
Артикул № **5751**

d1	Диапазон Ø	d2	l1	l2	Код-№.
mm		mm	mm	mm	
5,700	6,000-6,249	20,000	20,000	12,000	205,700
9,700	10,000-10,299	20,000	20,000	12,000	209,700
6,500	6,750-6,999	30,000	26,000	13,000	306,500
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,700	8,000-8,299	30,000	26,000	13,000	307,700
9,400	9,700-9,999	30,000	26,000	13,000	309,400
9,700	10,000-10,299	30,000	26,000	13,000	309,700
11,500	11,800-12,399	30,000	26,000	13,000	311,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500
16,600	17,900-18,399	30,000	26,000	13,000	316,600
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
8,700	9,000-9,299	45,000	26,000	16,000	408,700
13,500	13,900-14,399	45,000	26,000	16,000	413,500
19,000	19,510-20,509	45,000	26,000	16,000	419,000
23,000	23,610-24,609	45,000	26,000	16,000	423,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
26,000	26,610-27,609	45,000	26,000	16,000	426,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000

Регулировочные винты

WN

Регулировочные винты без уплотнителя



Артикул № **5754**

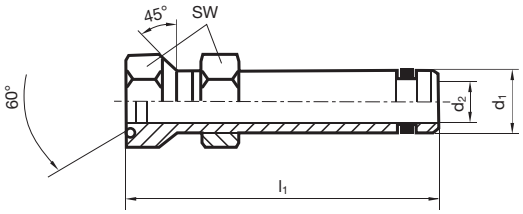
d1	d2	l1	SW	Код-№.
	mm	mm	mm	
M6 x 0,5	3,500	26,000	9,000	6,000
M10 x 1	6,000	38,000	13,000	10,000
M16 x 1,5	10,000	57,000	22,000	16,000

FRIZAR
www.frizar.ru

Регулировочные винты

WN

Регулировочные винты с уплотнителем



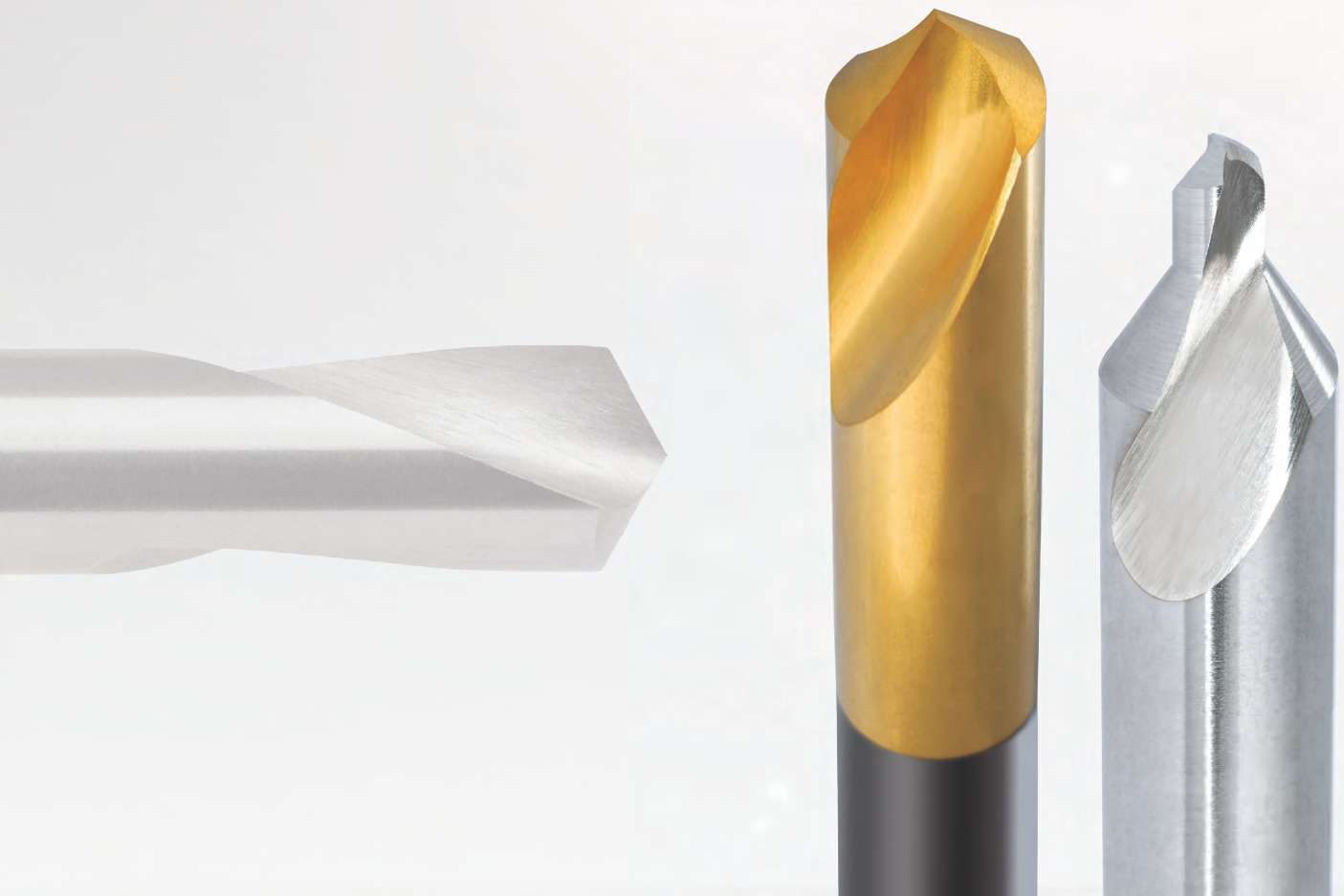
Артикул № **5755**

d1	d2	l1	SW	Код-№.
	mm	mm	mm	
M6 x 0,5	3,500	45,000	9,000	6,000
M10 x 1	6,000	50,000	13,000	10,000
M16 x 1,5	10,000	65,000	22,000	16,000
M24X1,5	16,000	90,000	30,000	24,000

FRIZAR
www.frizar.ru

Центровочные сверла для станков с ЧПУ и центровочные сверла

При применении длинных сверл,
мы рекомендуем производить центровку.
Наши центровочные сверла для станков с
ЧПУ идеально для этого подходят.
Для формирования отверстий мы рекомендуем
наши центровочные сверла.



FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

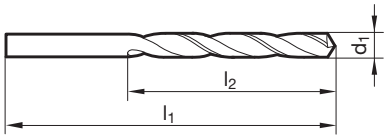
P	•
M	
K	•
N	○
S	
H	

подточка ≥ Ø 1,000 • конусная заточка • для глубоких отверстий

сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **217**

d1 mm	inch	l1 mm	l2 mm
0,400	1/64	30,000	10,000
0,440		30,000	10,000
0,450		30,000	10,000
0,470		30,000	10,000
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,570		35,000	15,000
0,600		35,000	15,000
0,620		38,000	18,000
0,650		38,000	18,000
0,700		42,000	21,000
0,730		42,000	21,000
0,750		42,000	21,000
0,760		46,000	25,000
0,790	1/32	46,000	25,000
0,800		46,000	25,000
0,820		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,910		51,000	29,000
0,920		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,080		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,120		60,000	37,000
1,130		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,490		70,000	45,000

d1 mm	inch	l1 mm	l2 mm
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,030		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,420		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,620		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000

d1		l1	l2
mm	inch	mm	mm
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,030		106,000	69,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,950		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,450		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,650		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,950		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,030		132,000	87,000
5,050		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,150		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,350		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,550		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,060		148,000	97,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,250		184,000	121,000
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,600		195,000	128,000
11,700		195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,100		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
12,800		205,000	134,000
13,000		205,000	134,000
13,200		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,200		220,000	144,000
14,250		220,000	144,000
14,290	9/16	220,000	144,000
14,490		220,000	144,000
14,500		220,000	144,000
14,900		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,200		227,000	149,000
15,250		227,000	149,000
15,400		227,000	149,000
15,480	39/64	227,000	149,000
15,500		227,000	149,000
15,600		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
16,270	41/64	235,000	154,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
17,000		235,000	154,000
17,070	43/64	241,000	158,000
17,460	11/16	241,000	158,000
17,500		241,000	158,000
18,000		241,000	158,000
18,500		247,000	162,000
18,650	47/64	247,000	162,000
19,000		247,000	162,000
19,050	3/4	254,000	166,000
19,500		254,000	166,000
20,000		254,000	166,000
20,500		261,000	171,000
20,640	13/16	261,000	171,000
21,000		261,000	171,000
21,500		268,000	176,000
22,000		268,000	176,000
23,300		275,000	180,000
23,810	15/16	282,000	185,000
24,000		282,000	185,000
25,000	63/64	282,000	185,000
26,190	1 1/32	290,000	190,000
26,500		290,000	190,000
26,990	1 1/16	298,000	195,000
28,570	1 1/8	307,000	201,000
29,000		307,000	201,000
29,370	1 5/32	307,000	201,000
29,500		307,000	201,000
30,160	1 3/16	316,000	207,000
30,960	1 7/32	316,000	207,000
31,000		316,000	207,000
36,510	1 7/16	345,000	225,000

Спиральные свёрла, длинные

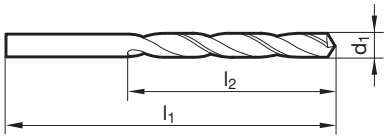
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • для глубоких отверстий • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **667**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
1,000		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000

d1		l1	l2
mm	inch	mm	mm
2,800		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,030		106,000	69,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,900		119,000	78,000
3,950		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,650		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,050		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,100		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,750		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,500		220,000	144,000
14,750		220,000	144,000
14,800		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
16,000		227,000	149,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
16,750		235,000	154,000
17,000		235,000	154,000
17,460	11/16	241,000	158,000
18,000		241,000	158,000
18,250		247,000	162,000
22,220	7/8	268,000	176,000

Спиральные свёрла, длинные

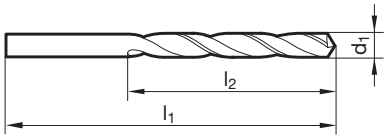
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 6,00
Направление резания	R

P	•	подточка ≥ Ø 14,750 • конусная заточка • для глубоких отверстий • для сверления через кондукторные втулки
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **220**

d1		l1	l2
mm	inch	mm	mm
0,450		30,000	10,000
0,470		30,000	10,000
0,900		51,000	29,000
0,950		51,000	29,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,630		76,000	50,000
1,660		76,000	50,000
1,730		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,300		90,000	59,000
2,500		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,070		106,000	69,000
3,100		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,500		126,000	82,000
4,600		126,000	82,000
4,780		132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,600		139,000	91,000
5,700		139,000	91,000
6,000		139,000	91,000
6,050		148,000	97,000
6,100		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,800		175,000	115,000
9,000		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,900		205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,750		220,000	144,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
19,000		247,000	162,000
20,000		254,000	166,000
22,000		268,000	176,000
25,000	63/64	282,000	185,000
25,500		290,000	190,000
29,000		307,000	201,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла, длинные

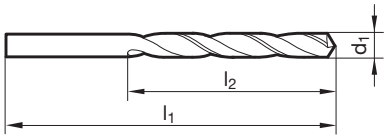
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,950 • конусная заточка • с поводком
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № 204

d1 mm	inch	l1 mm	l2 mm
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,080		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,800		139,000	91,000
5,850		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000

d1 mm	inch	l1 mm	l2 mm
7,000		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,450		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000
25,250		290,000	190,000

Спиральные свёрла, длинные

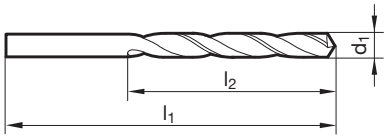
~10xD | DIN 340 | H | 118° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 15,000 • конусная заточка • для глубоких отверстий
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза, фосфор.бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **218**

d1 mm	inch	l1 mm	l2 mm
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,820		46,000	25,000
0,840		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,560		76,000	50,000
1,570		76,000	50,000
1,580		76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,820		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000

d1 mm	inch	l1 mm	l2 mm
2,300		90,000	59,000
2,350		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,830		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
3,000		100,000	66,000
3,020		106,000	69,000
3,050		106,000	69,000
3,060		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,420		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,350		156,000	102,000
7,500		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,700		175,000	115,000
9,000		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
11,250		195,000	128,000
12,100		205,000	134,000
14,000		214,000	140,000
15,000		220,000	144,000
16,000		227,000	149,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

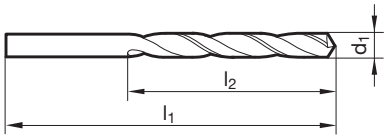
~10xD | DIN 340 | H | 118° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P		подточка ≥ Ø 15,000 • конусная заточка • для глубоких отверстий
M		
K		
N	•	твердые и хрупкие материалы • латунь, магниевые сплавы • бронза, фосфор.бронза • шифер, глиммер, пертинакс
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **221**

d1 mm	inch	l1 mm	l2 mm
0,450		30,000	10,000
0,600		35,000	15,000
0,650		38,000	18,000
0,900		51,000	29,000
1,100		60,000	37,000
1,240		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,370		70,000	45,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,160		90,000	59,000
2,180		90,000	59,000
2,200		90,000	59,000
2,270		90,000	59,000
2,350		90,000	59,000
2,850		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,510		112,000	73,000
3,700		112,000	73,000
4,100		119,000	78,000
4,200		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000
4,900		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,100		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,800		156,000	102,000
8,000		165,000	109,000
9,000		175,000	115,000
12,800		205,000	134,000
15,000		220,000	144,000

Спиральные свёрла, длинные

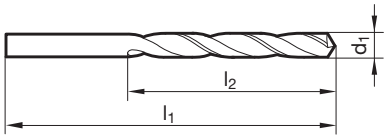
~10xD | DIN 340 | W | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P		подточка ≥ Ø 14,500 • конусная заточка • для глубоких отверстий
M		
K		
N	•	мягкие/длинностружечные материалы • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **219**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,740		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
0,980		56,000	33,000
1,000		56,000	33,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,220		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,370		70,000	45,000
1,400		70,000	45,000
1,440		70,000	45,000
1,500		70,000	45,000
1,520		76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,760		80,000	53,000
1,770		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,970		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,070		85,000	56,000

d1		l1	l2
mm	inch	mm	mm
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,430		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,800		100,000	66,000
2,850		100,000	66,000
2,880		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,830		119,000	78,000
3,900		119,000	78,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
3,920		119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,830		132,000	87,000
4,870		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,430		139,000	91,000
5,500		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,980		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,450		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,550		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,850		165,000	109,000
7,900		165,000	109,000
7,950		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,550		175,000	115,000
8,600		175,000	115,000
8,700		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,300		184,000	121,000
10,700		195,000	128,000
10,750		195,000	128,000
11,000		195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
12,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,750		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000
15,000		220,000	144,000
15,500		227,000	149,000
17,000		235,000	154,000
18,000		241,000	158,000
18,250		247,000	162,000
19,000		247,000	162,000
19,840	25/32	254,000	166,000
20,000		254,000	166,000
20,640	13/16	261,000	171,000

Спиральные свёрла, длинные

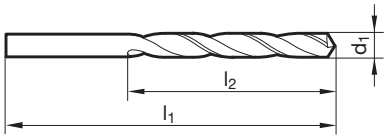
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № 535

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,520		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,670		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,180		90,000	59,000

d1 mm	inch	l1 mm	l2 mm
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,480		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,830		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,130		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,050		148,000	97,000
6,100		148,000	97,000

d1		l1	l2
mm	inch	mm	mm
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
6,910		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,040		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,850		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000

d1		l1	l2
mm	inch	mm	mm
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,490		184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,100		195,000	128,000
11,110	7/16	195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,000		205,000	134,000
12,150		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,600		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000

Спиральные свёрла, длинные

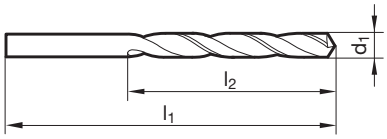
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **668**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,780	7/64	100,000	66,000

d1 mm	inch	l1 mm	l2 mm
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,870		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
4,850		132,000	87,000
4,900		132,000	87,000
4,910		132,000	87,000
4,920		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,760		156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,340		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
14,000		214,000	140,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

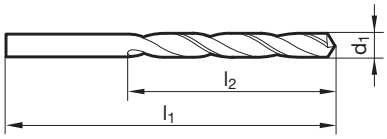
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **2462**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000

d1 mm	inch	l1 mm	l2 mm
3,800		119,000	78,000
4,000		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,600		165,000	109,000
8,000		165,000	109,000
9,000		175,000	115,000
10,000		184,000	121,000

Спиральные свёрла, длинные

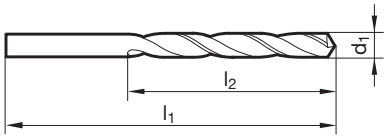
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	L

P	•	подточка ≥ Ø 1,400 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **506**

d1		l1	l2
mm	inch	mm	mm
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,680		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,500		95,000	62,000
2,800		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,800		119,000	78,000
3,950		119,000	78,000
4,000		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,600		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
7,400		156,000	102,000
7,800		165,000	109,000
8,500		165,000	109,000
9,000		175,000	115,000
9,900		184,000	121,000
10,320	13/32	184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

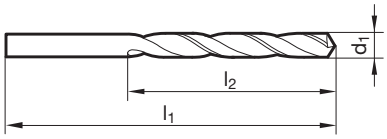
~10xD | DIN 340 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,370 • конусная заточка • очень большая стружечная канавка
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 786



Артикул № **501**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,020		56,000	33,000
1,030		56,000	33,000
1,040		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,480		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,520		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,660		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,700		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,030		148,000	97,000
6,040		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,040		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,025		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,580		184,000	121,000
9,600		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,200		184,000	121,000
10,260		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
14,000		214,000	140,000
32,600		325,000	213,000

Спиральные свёрла, длинные

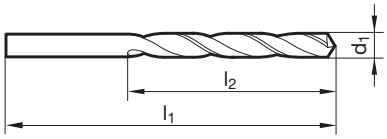
~10xD | DIN 340 | N | 118° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	○	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **317**

d1 mm	inch	l1 mm	l2 mm
0,500		32,000	12,000
0,600		35,000	15,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,960		56,000	33,000
1,000		56,000	33,000
1,020		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000

d1 mm	inch	l1 mm	l2 mm
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000

d1		l1	l2
mm	inch	mm	mm
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,400		220,000	144,000
14,600		220,000	144,000
14,680	37/64	220,000	144,000
14,700		220,000	144,000
14,750		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,480	39/64	227,000	149,000
15,800		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
22,000		268,000	176,000

Спиральные свёрла, длинные

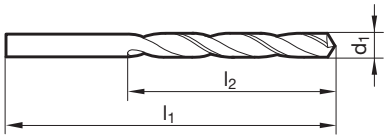
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • при плохом отводе стружки
M	•	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **336**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000

d1 mm	inch	l1 mm	l2 mm
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,440		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000

d1		l1	l2
mm	inch	mm	mm
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
6,900		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
10,750		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,500		227,000	149,000
16,000		227,000	149,000

FRIZAR
www.frizar.ru

Спиральные свёрла, длинные

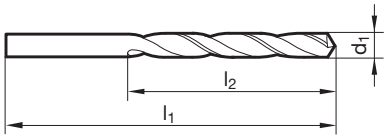
~10xD | DIN 340 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	F
Направление резания	R

P	•	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • при плохом отводе стружки
M	•	
K	•	
N	•	легир./нелегир. сталь и виды литья с прочностью более 800 Н/мм² • теплостойкая и нетеплостойкая сталь • стали для подшипников качения • высоколегированные стали • упрочненные стали
S		
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **396**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,200		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000

Спиральные свёрла, длинные

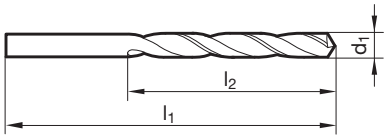
~10xD | DIN 340 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • стали для подшипников качения • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **617**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,800		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,510	29/64	195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,000		220,000	144,000

Спиральные свёрла, длинные

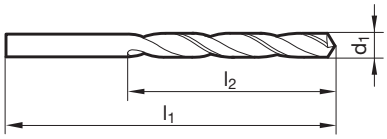
~10xD | DIN 340 | Ti | 130° | h8

Режущий материал	HSCO
Покрытие	(S)
Направление резания	(R)

P	○	подточка ≥ Ø 1,000 • конусная заточка • легированная кобальтом HSS • высокая износостойкость
M	•	
K		
N		титан и титановые сплавы • нержав./кислотостойкая/жаропрочная аустенит. сталь • высокопрочная/короткостружечная сталь от 900 Н/мм² • стали для подшипников качения • Хастеллой, Инконель, Нимоник
S	•	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **669**

d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000

d1 mm	inch	l1 mm	l2 mm
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,500		165,000	109,000
8,730	11/32	175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
9,300		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла, длинные

~10xD | WN | N | 130° | h7

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P плоскостная заточка • форма режущей кромки прямая

M

K

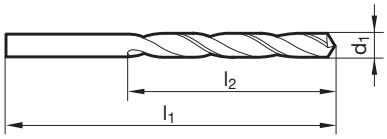
N стеклопластики • дуропласты с наждачным эффектом на резцах и фасках

S

H

GÜHRINGNAVIGATOR

Параметры резания см. стр. 792



Артикул № **706**

d1		l1	l2
mm	inch	mm	mm
0,500		38,000	8,500
0,600		38,000	9,500
0,650		38,000	10,500
0,700		38,000	10,500
0,750		38,000	12,500
0,800		38,000	12,500
0,850		38,000	14,500
0,900		38,000	14,500
1,000		38,000	17,000
1,050		38,000	17,000
1,100		38,000	17,000
1,400		38,000	17,000

d1		l1	l2
mm	inch	mm	mm
1,450		38,000	17,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные, серия 1

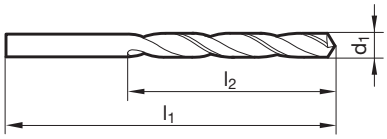
~15xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 2,380 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **235**

d1		l1	l2
mm	inch	mm	mm
1,600		115,000	75,000
1,700		115,000	75,000
1,800		120,000	80,000
1,900		120,000	80,000
1,930		125,000	85,000
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,650		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000

d1		l1	l2
mm	inch	mm	mm
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,340		205,000	140,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,200		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,700		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000

d1		l1	l2
mm	inch	mm	mm
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,250		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,100		295,000	205,000
12,250		295,000	205,000
12,300	31/64	295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000

Спиральные свёрла сверхдлинные, серия 1

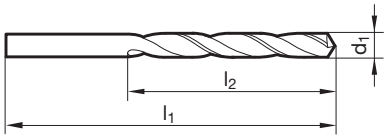
~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,950 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: сталь CrNi, VA и т.п.
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **502**

d1 mm	inch	l1 mm	l2 mm
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,370		140,000	95,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,550		140,000	95,000
2,580		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,850		150,000	100,000
2,870		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,030		155,000	105,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,860		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000

d1 mm	inch	l1 mm	l2 mm
4,400		185,000	125,000
4,500		185,000	125,000
4,570		185,000	125,000
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,110		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,750		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
6,900		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,200		225,000	155,000
7,300		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000

d1		l1	l2
mm	inch	mm	mm
7,700		240,000	165,000
7,750		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000
8,430		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,200		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,200		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
10,720	27/64	280,000	195,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000
11,200		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,750		280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные, серия 1

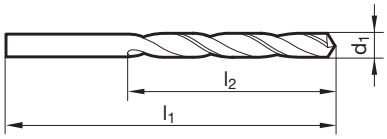
~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 1,980 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **670**

d1 mm	d1 inch	l1 mm	l2 mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,200		175,000	120,000
4,370	11/64	185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000

d1 mm	d1 inch	l1 mm	l2 mm
6,350	1/4	215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,500		240,000	165,000
8,730	11/32	250,000	175,000
9,000		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,900		280,000	195,000
11,000		280,000	195,000
11,900		295,000	205,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000

Спиральные свёрла сверхдлинные, серия 1

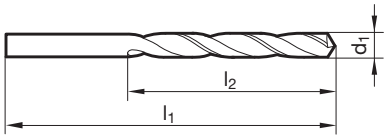
~15xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,380 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **524**

d1		l1	l2
mm	inch	mm	mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,450		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,350		155,000	105,000
3,400		165,000	115,000
3,450		165,000	115,000
3,500		165,000	115,000
3,530		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,250		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,760	3/16	195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000

d1		l1	l2
mm	inch	mm	mm
5,200		195,000	135,000
5,400		205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,140	9/32	225,000	155,000
7,300		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,330	21/64	240,000	165,000
8,600		250,000	175,000
8,730	11/32	250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,200		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
11,500		280,000	195,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,700	1/2	295,000	205,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла сверхдлинные, серия 1

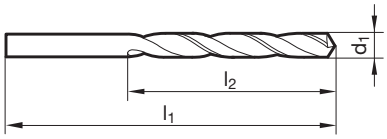
~15xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,700 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **618**

d1		l1	l2
mm	inch	mm	mm
2,700		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,850		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000

d1		l1	l2
mm	inch	mm	mm
5,800		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,700		265,000	185,000
10,000		265,000	185,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 2

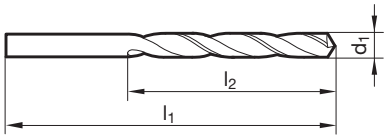
~20xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,700 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **236**

d1 mm	inch	l1 mm	l2 mm
2,700		190,000	130,000
2,800		190,000	130,000
2,900		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,800		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1 mm	inch	l1 mm	l2 mm
6,500		275,000	190,000
6,700		275,000	190,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,100		305,000	210,000
8,500		305,000	210,000
8,700		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
8,900		320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,800		340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
12,000		375,000	260,000
13,000		375,000	260,000

Спиральные сверла сверхдлинные, серия 2

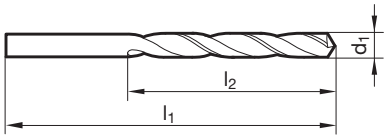
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 2,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № 503

d1 mm	inch	l1 mm	l2 mm
2,000		160,000	110,000
2,200		170,000	115,000
2,300		170,000	115,000
2,500		180,000	120,000
2,800		190,000	130,000
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,400		210,000	145,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,700		210,000	145,000
3,800		220,000	150,000
3,900		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,300		235,000	160,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,100		245,000	170,000
5,160	13/64	245,000	170,000
5,200		245,000	170,000
5,300		245,000	170,000
5,400		260,000	180,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,700		260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000

d1 mm	inch	l1 mm	l2 mm
6,100		275,000	190,000
6,150		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000
6,400		275,000	190,000
6,500		275,000	190,000
6,600		275,000	190,000
6,700		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
6,900		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,330	21/64	305,000	210,000
8,500		305,000	210,000
8,600		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
9,000		320,000	220,000
9,100		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,700		340,000	235,000
9,800		340,000	235,000
9,920	25/64	340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
10,720	27/64	365,000	250,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
11,910	15/32	375,000	260,000

FRIZAR
www.frizar.ru

d1		l1	l2
mm	inch	mm	mm
12,000		375,000	260,000
12,300	31/64	375,000	260,000
12,500		375,000	260,000
12,700	1/2	375,000	260,000
13,000		375,000	260,000

d1		l1	l2
mm	inch	mm	mm

Спиральные сверла сверхдлинные, серия 2

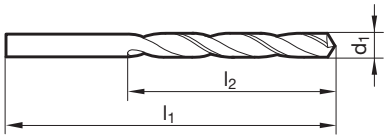
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•	подточка ≥ Ø 2,300 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **671**

d1		l1	l2
mm	inch	mm	mm
2,700		190,000	130,000
2,800		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,090		220,000	150,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,600		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000

d1		l1	l2
mm	inch	mm	mm
5,300		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
6,000		260,000	180,000
6,350	1/4	275,000	190,000
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,500		305,000	210,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 2

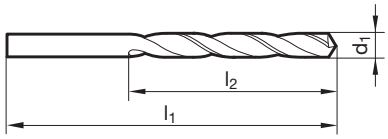
~20xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,800 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **528**

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,500		210,000	145,000
3,650		210,000	145,000
3,800		220,000	150,000
4,000		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000
5,110		245,000	170,000
5,500		260,000	180,000
5,800		260,000	180,000
6,000		260,000	180,000
7,000		290,000	200,000

d1		l1	l2
mm	inch	mm	mm
7,500		290,000	200,000
8,000		305,000	210,000
8,500		305,000	210,000
9,000		320,000	220,000
10,000		340,000	235,000
10,500		340,000	235,000
11,500		365,000	250,000
13,000		375,000	260,000

Спиральные сверла сверхдлинные, серия 2

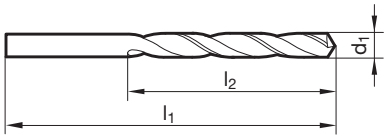
~20xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,000 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **619**

d1 mm	inch	l1 mm	l2 mm
3,000		190,000	130,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,370	11/64	235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,100		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1 mm	inch	l1 mm	l2 mm
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,400		290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,600		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,500		305,000	210,000
8,730	11/32	320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,600		340,000	235,000
9,900		340,000	235,000
10,000		340,000	235,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 3

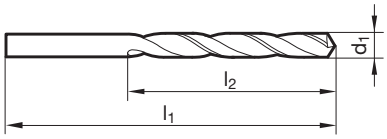
~25xD | DIN 1869 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 3,500 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **237**

d1		l1	l2
mm	inch	mm	mm
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,800		330,000	225,000
5,900		330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,000		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,500		370,000	250,000
7,800		390,000	265,000
8,000		390,000	265,000
8,500		390,000	265,000
9,000		410,000	280,000
9,500		410,000	280,000
9,800		430,000	295,000
10,000		430,000	295,000
10,300		430,000	295,000
10,500		430,000	295,000
11,000		455,000	310,000
11,500		455,000	310,000
11,750		455,000	310,000
12,000		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

Спиральные сверла сверхдлинные, серия 3

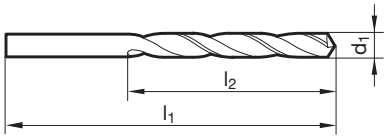
~25xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,500 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки • для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **504**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,570	9/64	265,000	180,000
3,600		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,370	11/64	295,000	200,000
4,400		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,750	17/64	370,000	250,000
6,800		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,540	19/64	390,000	265,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,330	21/64	390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
8,900		410,000	280,000
9,000		410,000	280,000
9,200		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
9,530		430,000	295,000
9,920	25/64	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 3

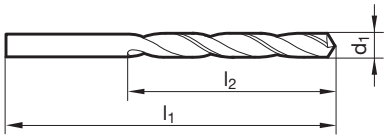
~25xD | DIN 1869 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 2,500 • конусная заточка • для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **529**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
6,000		330,000	225,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,500		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
8,000		390,000	265,000
9,500		410,000	280,000
10,000		430,000	295,000

Спиральные сверла сверхдлинные, серия 3

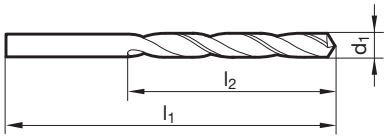
~25xD | DIN 1869 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 2,500 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • для очень глубоких отверстий • при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **571**

d1 mm	inch	l1 mm	l2 mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000

d1 mm	inch	l1 mm	l2 mm
6,750	17/64	370,000	250,000
6,800		370,000	250,000
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
9,000		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные

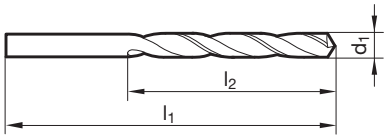
>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 6,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **242**

d1		l1	l2
mm	inch	mm	mm
6,000		500,000	400,000
8,000		500,000	400,000
10,000		600,000	500,000
11,000		600,000	500,000
12,000		600,000	500,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла сверхдлинные

>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

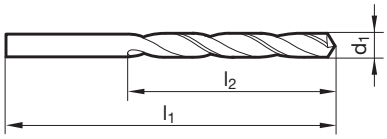
P	•
M	
K	•
N	•
S	
H	

подточка ≥ Ø 8,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки

чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **243**

d1		l1	l2
mm	inch	mm	mm
8,000		750,000	650,000
10,000		750,000	650,000
11,000		750,000	650,000
12,000		750,000	650,000

d1		l1	l2
mm	inch	mm	mm

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные

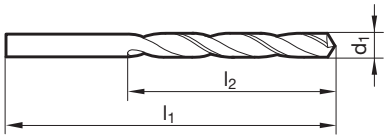
>25xD | WN | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 10,000 • конусная заточка • широкая стружечная канавка • для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **244**

d1		l1	l2
mm	inch	mm	mm
10,000		1000,000	850,000
11,000		1000,000	850,000
12,000		1000,000	850,000

d1		l1	l2
mm	inch	mm	mm

Спиральные свёрла сверхдлинные, серия 1

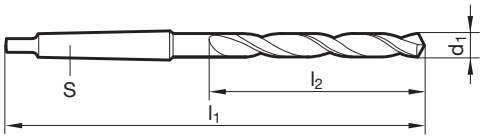
~15xD | DIN 1870 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 7,800 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **266**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	265,000	165,000
8,500		MK-1	265,000	165,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,250		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
11,400		MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,750		MK-1	300,000	195,000
11,800		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,200		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
13,750		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,250		MK-2	355,000	230,000
15,500		MK-2	355,000	230,000
15,750		MK-2	355,000	230,000
15,800		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,250		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
16,670	21/32	MK-2	355,000	230,000
17,000		MK-2	355,000	230,000
17,500		MK-2	370,000	245,000
17,750		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
18,650	47/64	MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
19,750		MK-2	385,000	260,000
20,000		MK-2	385,000	260,000

d1 mm	inch	S	l1 mm	l2 mm
20,500		MK-2	385,000	260,000
20,640	13/16	MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,430	27/32	MK-2	405,000	270,000
21,500		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
22,500		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
23,020	29/32	MK-2	405,000	270,000
23,500		MK-3	425,000	270,000
24,000		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,000	63/64	MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,000		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
30,000		MK-3	460,000	305,000
30,500		MK-3	480,000	320,000
31,000		MK-3	480,000	320,000
32,000		MK-4	505,000	320,000
33,000		MK-4	505,000	320,000
34,000		MK-4	530,000	340,000
35,000		MK-4	530,000	340,000
36,000		MK-4	530,000	340,000
38,000		MK-4	555,000	360,000
39,000		MK-4	555,000	360,000
40,000		MK-4	555,000	360,000
42,000		MK-4	555,000	360,000
45,000		MK-4	585,000	385,000
45,240	1 25/32	MK-4	585,000	385,000
48,000		MK-4	605,000	405,000
50,000		MK-4	605,000	405,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные, серия 1

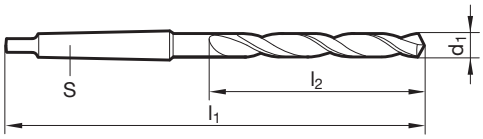
~15xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 5,800 • конусная заточка • широкая стружечная канавка • Для очень глубоких отверстий • при плохом отводе стружки
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **526**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	265,000	165,000
8,500		MK-1	265,000	165,000
8,600		MK-1	275,000	175,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
9,520	3/8	MK-1	285,000	185,000
9,800		MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
10,720	27/64	MK-1	300,000	195,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
11,750		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
12,800		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,490	17/32	MK-1	325,000	220,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,200		MK-2	340,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000

d1 mm	inch	S	l1 mm	l2 mm
15,870	5/8	MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000
17,460	11/16	MK-2	370,000	245,000
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
20,000		MK-2	385,000	260,000
20,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,500		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
25,000	63/64	MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
28,000		MK-3	460,000	305,000
28,500		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
30,000		MK-3	460,000	305,000

Спиральные свёрла сверхдлинные, серия 1

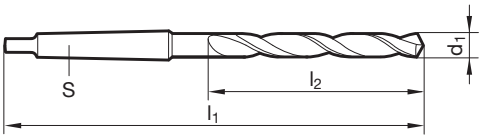
~15xD | DIN 1870 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 7,900 • конусная заточка • для очень глубоких отверстий • для мягких и длинностружечных материалов
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **525**

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	265,000	165,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
18,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
24,300		MK-3	440,000	290,000
24,380		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,500		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,500		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
31,000		MK-3	480,000	320,000
33,000		MK-4	505,000	320,000

FRIZAR
www.frizar.ru

Спиральные свёрла сверхдлинные, серия 1

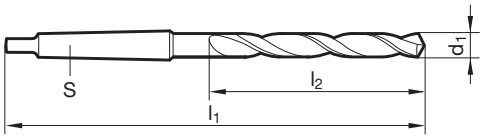
~15xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • высокая износостойкость • для очень глубоких отверстий • при плохом отводе стружки
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **620**

d1 mm	inch	S	l1 mm	l2 mm
9,520	3/8	MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,320	13/32	MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,300	31/64	MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,080	19/32	MK-2	355,000	230,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000

d1 mm	inch	S	l1 mm	l2 mm
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
20,000		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,830		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
22,620		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
25,500		MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
27,180		MK-3	460,000	305,000
29,370	1 5/32	MK-3	460,000	305,000
30,000		MK-3	460,000	305,000

Спиральные сверла сверхдлинные, серия 2

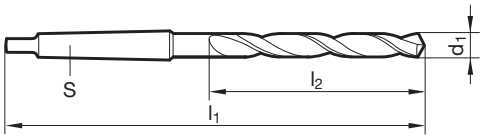
~20xD | DIN 1870 | N | 118° | h8

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 7,700 • конусная заточка • для очень глубоких отверстий
M		
K	•	
N	○	сталь и стальное литье (легированное и нелегированное) • серый чугун, ковкий чугун, высокопрочный чугун • металлокерамический сплав на основе железа, мельхиор и графит
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **267**

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,200		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,750		MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,490	17/32	MK-1	410,000	275,000
13,500		MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,480	39/64	MK-2	445,000	295,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000
17,500		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,050	3/4	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
20,640	13/16	MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
21,500		MK-2	515,000	345,000
21,830	55/64	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
22,800		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,750		MK-3	555,000	365,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
28,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000
32,000		MK-4	635,000	410,000
34,000		MK-4	665,000	430,000
40,000		MK-4	695,000	460,000
45,000		MK-4	735,000	490,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 2

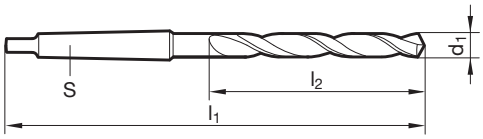
~20xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSS
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 7,800 • конусная заточка • широкая стружечная канавка • при плохом отводе стружки • Для очень глубоких отверстий
M		
K	•	
N	•	чугун и сталь до 1000 Н/мм² • Исключения: хромоникелевая и нержавеющая стали
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 790



Артикул № **527**

d1 mm	inch	S	l1 mm	l2 mm
8,000		MK-1	330,000	210,000
8,400		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,110	7/16	MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
11,910	15/32	MK-1	395,000	260,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
13,700		MK-1	410,000	275,000
13,800		MK-1	410,000	275,000
13,890	35/64	MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,290	9/16	MK-2	425,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000

d1 mm	inch	S	l1 mm	l2 mm
17,500		MK-2	465,000	310,000
17,800		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,450	49/64	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000
20,500		MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,030	53/64	MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,210	61/64	MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,190	1 1/32	MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,000		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
28,750		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000

Спиральные сверла сверхдлинные, серия 2

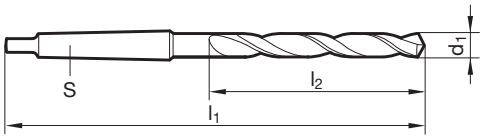
~20xD | DIN 1870 | GT 50 | 130° | h8

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 8,000 • конусная заточка • Для очень глубоких отверстий
M		
K		
N	•	мягкие и длинностружечные материалы до 500 Н/мм² • автоматная мягкая сталь • алюминий, алюминиевые сплавы (длинностружечные) • цинк, первич.анод. медь, силумин, электроды • замак, аргалиум, мягкие пластмассы, дерево
S		
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 788



Артикул № **542**

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	330,000	210,000
8,600		MK-1	345,000	220,000
8,800		MK-1	345,000	220,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,500		MK-1	360,000	235,000
10,700		MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
17,000		MK-2	445,000	295,000
17,500		MK-2	465,000	310,000
20,500		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	490,000	325,000
21,500		MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,500		MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,500		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000

FRIZAR
www.frizar.ru

Спиральные сверла сверхдлинные, серия 2

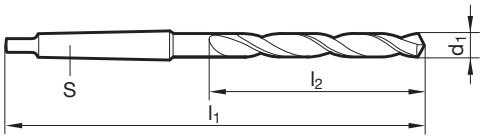
~20xD | DIN 1870 | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	>Ø 16,0
Направление резания	R

P	•	подточка ≥ Ø 9,520 • конусная заточка • легированная кобальтом HSS • широкая стружечная канавка • увеличенная износостойкость • при плохом отводе стружки • Для очень глубоких отверстий
M	•	
K	•	
N	•	сталь и стальное литье высокой прочности • серый чугун, ковкий чугун, высокопрочный чугун
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **621**

d1 mm	inch	S	l1 mm	l2 mm
9,520	3/8	MK-1	360,000	235,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
10,720	27/64	MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
16,000		MK-2	445,000	295,000
16,270		MK-2	445,000	295,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
20,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
23,420	59/64	MK-3	535,000	345,000

Свёрла с каналами COTC, длина канавки DIN 1870

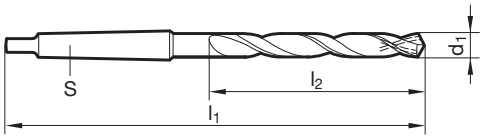
~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • подвод COTC аксиально через конус Морзе • легированная кобальтом HSS • высокая износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочностью до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **374**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
12,000		MK-2	322,000	205,000
12,300	31/64	MK-2	322,000	205,000
12,500		MK-2	322,000	205,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
15,000		MK-2	337,000	220,000
16,000		MK-2	347,000	230,000
16,500		MK-2	347,000	230,000
17,500		MK-2	362,000	245,000
18,000		MK-2	362,000	245,000
18,500		MK-3	381,000	245,000
19,840	25/32	MK-3	396,000	260,000
20,000		MK-3	396,000	260,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
21,500		MK-3	406,000	270,000
24,610	31/32	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch		mm	mm
28,570	1 1/8	MK-4	468,000	305,000
28,750		MK-4	468,000	305,000
29,370	1 5/32	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,250		MK-4	493,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000

FRIZAR
www.frizar.ru

Свёрла с каналами COTC, длина канавки DIN 1870

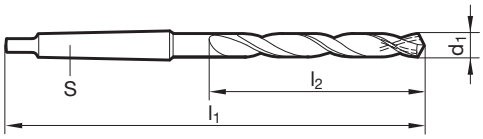
~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • подвод COTC радиально через кольцо • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочностью до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № 375

d1 mm	inch	S	l1 mm	l2 mm
11,000		MK-2	312,000	195,000
11,110	7/16	MK-2	312,000	195,000
11,510	29/64	MK-2	312,000	195,000
12,800		MK-2	322,000	205,000
13,500		MK-2	337,000	220,000
18,260	23/32	MK-3	381,000	245,000
19,000		MK-3	381,000	245,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
24,500		MK-3	426,000	290,000
25,000	63/64	MK-3	426,000	290,000
25,400	1	MK-3	426,000	290,000

d1 mm	inch	S	l1 mm	l2 mm
26,500		MK-3	426,000	290,000
28,570	1 1/8	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
33,340	1 5/16	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000

Свёрла с каналами COTC, длина канавки DIN 1870

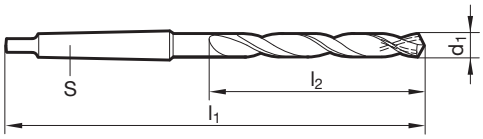
~15xD | WN | GT 100 | 130° | h8

Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•	подточка ≥ Ø 11,000 • конусная заточка • подвид COTC радиально через конус Морзе • легированная кобальтом HSS • увеличенная износостойкость • для сверления через кондукторные втулки
M	•	
K	•	
N	•	прочная и высокопроч. сталь • стальное литье, чугун • нержавеющие/кислотостойкие/жаропрочные стали • прочностью до 1300 Н/мм²
S	•	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 794



Артикул № **376**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
16,500		MK-2	347,000	230,000
18,000		MK-2	362,000	245,000
19,840	25/32	MK-3	396,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	406,000	270,000
27,780	1 3/32	MK-4	468,000	305,000
29,000		MK-4	468,000	305,000

FRIZAR
www.frizar.ru

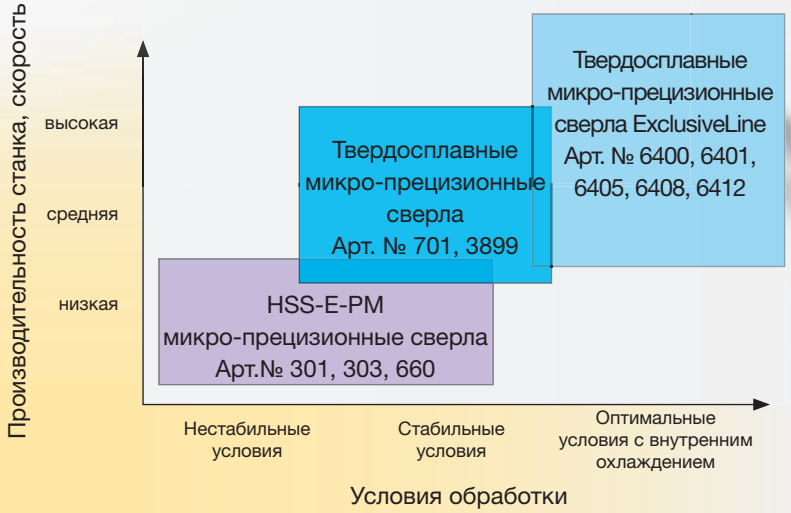
FRIZAR
www.frizar.ru

МИКРОСВЕРЛА

Типы микро-прецизионных сверл

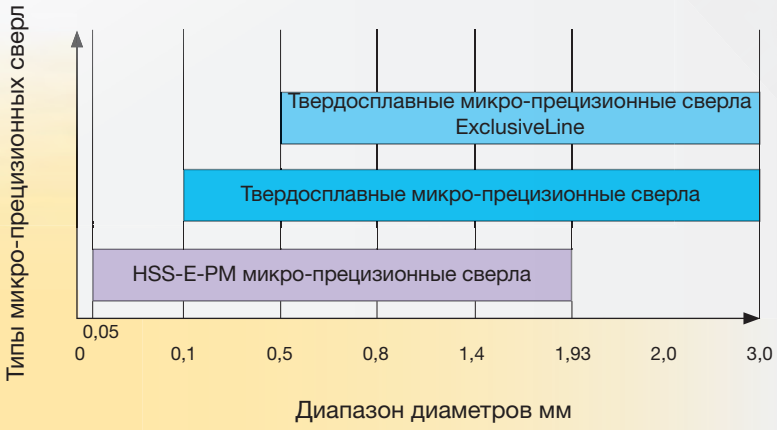
ПРЕИМУЩЕСТВА И ОБЛАСТЬ ПРИМЕНЕНИЯ

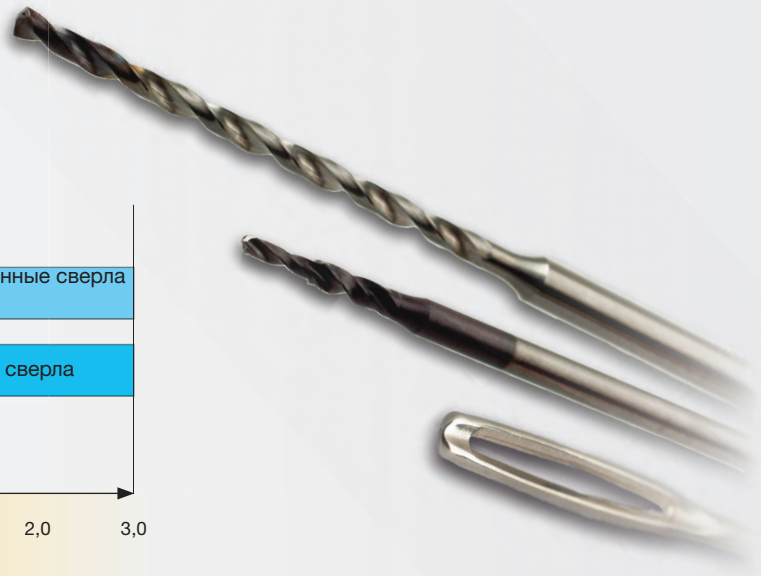
Как для массового производства больших партий на высокопроизводительном оборудовании с охлаждением через внутренние каналы, так и для обработки более мелких партий или на оборудовании с ограниченной мощностью и более тяжелыми условиями обработки фирма Gühring предлагает оптимальные решения.



ДИАПАЗОН ПРОГРАММЫ

Широкая программа твердосплавных и HSS-E-PM микро-прецизионных сверл включает в себя диаметры от 0,05 до 3 мм:





Программа микро-прецизионных сверл Gühring, включающая в себя твердосплавные сверла и сверла из порошковой быстрорежущей стали (HSS-E-PM), оптимально подходит для производства мелкоразмерных отверстий во всех областях применения. Производство очень точных отверстий малого диаметра, требует максимального качества инструмента и является одной из самых сложных операций сверления. Для выполнения этих задач, обширный ассортимент Gühring включает оптимальные микро-прецизионные сверла.

HSS-E-PM МИКРО-ПРЕЦИЗИОННЫЕ СВЕРЛА

Микро-прецизионные сверла Gühring из высококачественной порошковой стали HSS-E показывают высокую износостойкость, прочность и стабильность режущей кромки, что особенно важно при сложных условиях обработки. Порошковые стали HSS-E имеют очень однородную структуру, что оказывает положительное влияние на стабильно высокий потенциал производительности микро-прецизионных сверл.

HSS-E-PM микро-прецизионные сверла пригодны, например, для работы на многошпиндельных станках, на низкооборотистых станках или для производства малых и средних объемов партий.
Для увеличения стойкости и параметров резания в стандартном диапазоне сверл Gühring из HSS-E-PM представлены сверла с TiN покрытием. Даже для специальных условий , где требуется леворежущий инструмент фирма Gühring может предложить стандартное решение.

ТВЕРДОСПЛАВНЫЕ МИКРО-ПРЕЦИЗИОННЫЕ СВЕРЛА

Твердосплавные мелкоразмерные сверла Gühring без каналов под COTC, диапазон диаметров от 0,1 до 3,0 мм. Твердосплавное сверло, по сравнению со сверлом из быстрорежущей стали, показывает более высокие параметры резания и стойкость. Это является результатом применения мелкозернистого твердого сплава, что обеспечивает высокую твердость, износостойкость, а также позволяет достичь высоких рабочих характеристик сверл.

ТВЕРДОСПЛАВНЫЕ МИКРО-ПРЕЦИЗИОННЫЕ СВЕРЛА

Программа твердосплавные микро-прецизионных сверл серии ExclusiveLine доступны как с каналами под COTC так и без них. Сверла обеспечивают высокопроизводительную обработку широкого диапазона материалов. При обработке в серийном производстве больших партий в стабильных условиях и на высокопроизводительном оборудовании и высокими оборотами шпинделя микросвёрла показывают все свои возможности. При этом 2-х плоскостная заточка каждого зуба со шлифованным притуплением позволяет достигать высоких параметров резания, а также оптимального излома стружки. Пространство под стружку со специальным профилем канавки надёжно выводит её из отверстия. Для глубины отверстия 4d и 7d имеются твёрдосплавные микросвёрла без каналов COTC в диапазоне от 0,5 до 3,0 мм.

Прежде всего, при обработке нержавеющих сталей и специальных сплавов, а также глубоких отверстий твёрдосплавные микросвёрла 5xD, 8xD и 15xD с каналами под COTC подтверждают свою способность к высокой производительности. Благодаря оптимизированной геометрии инструмента твёрдосплавные микросвёрла Гюринг при сверлении отверстий глубиной до 15xD не обязательно выводить из отверстия для эвакуации стружки. Инструмент выполнен таким образом, что твёрдосплавные микросвёрла до 4xD без каналов COTC и до 5xD с каналами COTC оптимально подходят в качестве пилотных для микросвёрл 15xD с каналами под COTC.

ИНДИВИДУАЛЬНЫЙ ПОДХОД К ТРЕБОВАНИЯМ ЗАКАЗЧИКА

Наряду с упомянутыми стандартными микросверлами фирма Гюринг по пожеланию заказчика предлагает как микросвёрла из HSS-E-PM, так и твердосплавные микросвёрла в качестве специнструмента. К ним относятся:

- промежуточные размеры к стандартной программе
- ступенчатый инструмент для ступенчатых отверстий или отверстий с фаской
- специальные длины для отверстий до 30xD
- различные варианты с хвостовиком
- альтернативные покрытия

FRIZAR
www.frizar.ru

P	M	K	N	S	H	Изображение инструмента	Глубина сверления	Стандарты	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
HSS-E-PM Микросверла без каналов COTC																
•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM	○	0,050 - 1,920	301	796	649
•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM	S	0,160 - 1,900	660	796	652
•	•	•	•	○			~5xD	DIN 1899	N	L	HSS-E-PM	○	0,130 - 1,850	303	796	654
Микросверла без каналов COTC																
•	○	•	○	○	○		~5xD	WN	N	R	VHM	○	0,200 - 1,400	701	796	656
•		•						WN	N	R	VHM	A	0,100 - 3,000	3899	796	657
ExclusiveLine Микросверла без каналов COTC																
•	•	•	○	○			4xD	WN	N	R	VHM	A	0,500 - 3,000	6400	796	659
•	•	•	○	○			7xD	WN	N	R	VHM	A	0,500 - 3,000	6401	796	660
ExclusiveLine Микросверла с каналами COTC																
•	•	•	○	○			5xD	WN	N	R	VHM	A	1,400 - 3,000	6405	796	661
•	•	•	○	○			8xD	WN	N	R	VHM	A	1,400 - 3,000	6408	796	662
•	•	•	○	○			15xD	WN	N	R	VHM	A	1,400 - 3,000	6412	796	663

HSS-E-PM Микросверла без каналов COTC

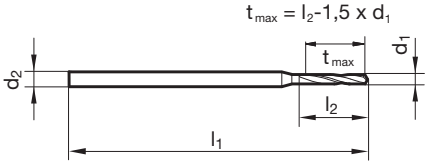
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	◯
Направление резания	R

P	•	плоскостная заточка • с усиленным хвостовиком • < Ø 0,15 мм Легированная кобальтом быстрорежущая сталь HSS
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **301**

d1	d2	l1	l2	d1	d2	l1	l2
mm	mm	mm	mm	mm	mm	mm	mm
0,050	1,000	25,000	0,400	0,275	1,000	25,000	1,900
0,060	1,000	25,000	0,400	0,280	1,000	25,000	1,900
0,070	1,000	25,000	0,500	0,285	1,000	25,000	1,900
0,075	1,000	25,000	0,500	0,290	1,000	25,000	1,900
0,080	1,000	25,000	0,500	0,295	1,000	25,000	1,900
0,090	1,000	25,000	0,500	0,300	1,000	25,000	1,900
0,100	1,000	25,000	0,500	0,305	1,000	25,000	2,400
0,105	1,000	25,000	0,500	0,310	1,000	25,000	2,400
0,110	1,000	25,000	0,500	0,315	1,000	25,000	2,400
0,115	1,000	25,000	0,500	0,320	1,000	25,000	2,400
0,120	1,000	25,000	0,500	0,325	1,000	25,000	2,400
0,121	1,000	25,000	0,800	0,330	1,000	25,000	2,400
0,125	1,000	25,000	0,800	0,335	1,000	25,000	2,400
0,128	1,000	25,000	0,800	0,340	1,000	25,000	2,400
0,130	1,000	25,000	0,800	0,345	1,000	25,000	2,400
0,140	1,000	25,000	0,800	0,350	1,000	25,000	2,400
0,143	1,000	25,000	0,800	0,355	1,000	25,000	2,400
0,145	1,000	25,000	0,800	0,360	1,000	25,000	2,400
0,147	1,000	25,000	0,800	0,365	1,000	25,000	2,400
0,150	1,000	25,000	0,800	0,370	1,000	25,000	2,400
0,155	1,000	25,000	1,100	0,375	1,000	25,000	2,400
0,160	1,000	25,000	1,100	0,380	1,000	25,000	2,400
0,170	1,000	25,000	1,100	0,385	1,000	25,000	3,000
0,175	1,000	25,000	1,100	0,390	1,000	25,000	3,000
0,180	1,000	25,000	1,100	0,400	1,000	25,000	3,000
0,190	1,000	25,000	1,100	0,405	1,000	25,000	3,000
0,195	1,000	25,000	1,500	0,410	1,000	25,000	3,000
0,200	1,000	25,000	1,500	0,415	1,000	25,000	3,000
0,205	1,000	25,000	1,500	0,420	1,000	25,000	3,000
0,210	1,000	25,000	1,500	0,425	1,000	25,000	3,000
0,215	1,000	25,000	1,500	0,430	1,000	25,000	3,000
0,220	1,000	25,000	1,500	0,432	1,000	25,000	3,000
0,225	1,000	25,000	1,500	0,435	1,000	25,000	3,000
0,230	1,000	25,000	1,500	0,440	1,000	25,000	3,000
0,235	1,000	25,000	1,500	0,445	1,000	25,000	3,000
0,240	1,000	25,000	1,500	0,450	1,000	25,000	3,000
0,245	1,000	25,000	1,900	0,455	1,000	25,000	3,000
0,250	1,000	25,000	1,900	0,460	1,000	25,000	3,000
0,255	1,000	25,000	1,900	0,470	1,000	25,000	3,000
0,260	1,000	25,000	1,900	0,475	1,000	25,000	3,000
0,265	1,000	25,000	1,900	0,480	1,000	25,000	3,000
0,270	1,000	25,000	1,900	0,485	1,000	25,000	3,400

d1	d2	l1	l2
mm	mm	mm	mm
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,505	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,515	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,530	1,000	25,000	3,400
0,535	1,000	25,000	3,900
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,585	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,595	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,605	1,000	25,000	4,200
0,610	1,000	25,000	4,200
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,625	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,632	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,655	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,665	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,705	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,725	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,795	1,500	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,825	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,845	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,930	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,010	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,055	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,130	1,500	25,000	7,600
1,140	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500
1,200	1,500	25,000	8,500
1,210	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,230	1,500	25,000	8,500
1,240	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,260	1,500	25,000	8,500
1,265	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,320	1,500	25,000	8,500
1,325	1,500	25,000	9,500
1,330	1,500	25,000	9,500
1,340	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,370	1,500	25,000	9,500
1,380	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,410	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,430	1,500	25,000	9,500
1,440	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,470	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,520	2,000	30,000	10,600
1,530	2,000	30,000	10,600
1,540	2,000	30,000	10,600
1,550	2,000	30,000	10,600
1,590	2,000	30,000	10,600
1,600	2,000	30,000	10,600
1,610	2,000	30,000	10,600
1,630	2,000	30,000	10,600
1,640	2,000	30,000	10,600
1,650	2,000	30,000	10,600
1,660	2,000	30,000	10,600
1,690	2,000	30,000	10,600
1,700	2,000	30,000	10,600
1,710	2,000	30,000	11,800
1,715	2,000	30,000	11,800
1,730	2,000	30,000	11,800
1,745	2,000	30,000	11,800
1,750	2,000	30,000	11,800
1,775	2,000	30,000	11,800
1,800	2,000	30,000	11,800

d1	d2	l1	l2
mm	mm	mm	mm
1,830	2,000	30,000	11,800
1,840	2,000	30,000	11,800
1,850	2,000	30,000	11,800
1,860	2,000	30,000	11,800
1,900	2,000	30,000	11,800
1,920	2,000	30,000	13,200

d1	d2	l1	l2
mm	mm	mm	mm

FRIZAR
www.frizar.ru

HSS-E-PM Микросверла без каналов COTC

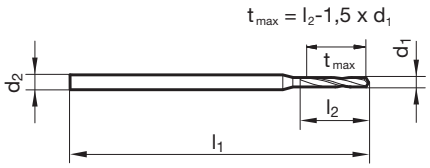
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	(S)
Направление резания	(R)

P	•	плоскостная заточка • с усиленным хвостовиком • высокая износостойкость
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **660**

d1	d2	l1	l2
mm	mm	mm	mm
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,490	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400

d1	d2	l1	l2
mm	mm	mm	mm
0,530	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,610	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500

d1	d2	l1	l2
mm	mm	mm	mm
1,200	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,500	2,000	30,000	9,500
1,800	2,000	30,000	11,800
1,900	2,000	30,000	11,800

FRIZAR
www.frizar.ru

HSS-E-PM Микросверла без каналов COTC

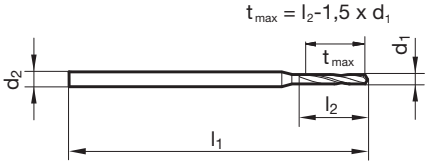
~5xD | DIN 1899 | N | 118° | 0/-0,004

Режущий материал	HSS-E-PM
Покрытие	◯
Направление резания	L

P	•	плоскостная заточка • с усиленным хвостовиком • < Ø 0,15 мм Легированная кобальтом быстрорежущая сталь HSS
M	•	
K	•	
N	•	высоколегированные стали
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **303**

d1	d2	l1	l2
mm	mm	mm	mm
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,185	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000

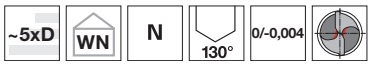
d1	d2	l1	l2
mm	mm	mm	mm
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,465	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,555	1,000	25,000	3,900
0,565	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,685	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800

d1	d2	l1	l2
mm	mm	mm	mm
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,805	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,855	1,500	25,000	6,000
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,885	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,915	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,935	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,975	1,500	25,000	6,800
0,980	1,500	25,000	6,800
0,985	1,500	25,000	6,800
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,005	1,500	25,000	6,800
1,020	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,080	1,500	25,000	7,600
1,085	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,125	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,285	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,330	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,360	1,500	25,000	9,500
1,375	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,405	1,500	25,000	9,500
1,425	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,600	2,000	30,000	10,600
1,615	2,000	30,000	10,600
1,800	2,000	30,000	11,800
1,850	2,000	30,000	11,800

FRIZAR
www.frizar.ru

Микросверла без каналов COTC

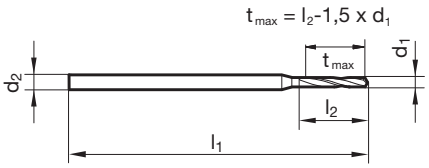


Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 0,800 • плоскостная заточка • основная форма режущей кромки прямая
M	○	
K	•	
N	○	конструкционные и цементированные стали • чугуны • бронза, латунь • алюминий и алюминиевые сплавы • магний и магниевые сплавы • пластмассы и стекловолокно
S	○	
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **701**

d1	d2	l1	l2
mm	mm	mm	mm
0,200	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,330	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,400	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,500	1,000	25,000	3,400
0,600	1,000	25,000	3,900
0,650	1,000	25,000	4,200
0,700	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,830	1,500	25,000	5,300

d1	d2	l1	l2
mm	mm	mm	mm
0,850	1,500	25,000	5,300
0,900	1,500	25,000	6,000
1,000	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,400	1,500	25,000	9,500

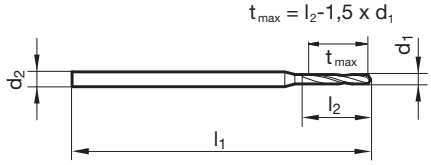
Микросверла без каналов COTC

Режущий материал	VHM
Покрытие	A
Направление резания	R

P •	подточка ≥ Ø 0,800 • плоскостная заточка
M	
K •	
N	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • чугуны
S	
H	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **3899**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,100	3,000	38,000	1,200
0,150	3,000	38,000	2,000
0,200	3,000	38,000	2,500
0,250	3,000	38,000	3,000
0,260	3,000	38,000	3,000
0,270	3,000	38,000	3,000
0,280	3,000	38,000	3,000
0,300	3,000	38,000	5,000
0,310	3,000	38,000	5,000
0,330	3,000	38,000	5,000
0,350	3,000	38,000	6,000
0,360	3,000	38,000	6,000
0,370	3,000	38,000	6,000
0,380	3,000	38,000	6,000
0,400	3,000	38,000	7,000
0,410	3,000	38,000	7,000
0,430	3,000	38,000	7,000
0,440	3,000	38,000	7,000
0,450	3,000	38,000	7,000
0,480	3,000	38,000	7,000
0,500	3,000	38,000	7,000
0,510	3,000	38,000	7,000
0,530	3,000	38,000	7,000
0,550	3,000	38,000	7,000
0,570	3,000	38,000	7,000
0,600	3,000	38,000	7,000
0,640	3,000	38,000	7,000
0,650	3,000	38,000	7,000
0,660	3,000	38,000	7,000
0,680	3,000	38,000	7,000
0,700	3,000	38,000	8,000
0,710	3,000	38,000	8,000
0,720	3,000	38,000	8,000
0,740	3,000	38,000	8,000
0,750	3,000	38,000	8,000
0,760	3,000	38,000	8,000
0,770	3,000	38,000	8,000
0,780	3,000	38,000	8,000
0,790	3,000	38,000	8,000
0,800	3,000	38,000	10,000
0,810	3,000	38,000	10,000
0,820	3,000	38,000	10,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,830	3,000	38,000	10,000
0,840	3,000	38,000	10,000
0,850	3,000	38,000	10,000
0,860	3,000	38,000	10,000
0,870	3,000	38,000	10,000
0,880	3,000	38,000	10,000
0,890	3,000	38,000	10,000
0,900	3,000	38,000	10,000
0,910	3,000	38,000	10,000
0,920	3,000	38,000	10,000
0,930	3,000	38,000	10,000
0,940	3,000	38,000	10,000
0,950	3,000	38,000	10,000
0,960	3,000	38,000	10,000
0,970	3,000	38,000	10,000
0,980	3,000	38,000	10,000
0,990	3,000	38,000	10,000
1,000	3,000	38,000	10,000
1,010	3,000	38,000	10,000
1,020	3,000	38,000	10,000
1,050	3,000	38,000	10,000
1,060	3,000	38,000	10,000
1,070	3,000	38,000	10,000
1,090	3,000	38,000	10,000
1,100	3,000	38,000	10,000
1,110	3,000	38,000	10,000
1,150	3,000	38,000	10,000
1,170	3,000	38,000	10,000
1,190	3,000	38,000	10,000
1,200	3,000	38,000	10,000
1,210	3,000	38,000	10,000
1,220	3,000	38,000	10,000
1,230	3,000	38,000	10,000
1,240	3,000	38,000	10,000
1,260	3,000	38,000	10,000
1,270	3,000	38,000	10,000
1,280	3,000	38,000	10,000
1,300	3,000	38,000	10,000
1,370	3,000	38,000	10,000
1,400	3,000	38,000	10,000
1,420	3,000	38,000	10,000
1,450	3,000	38,000	10,000

FRIZAR
www.frizar.ru

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,490	3,000	38,000	10,000
1,500	3,000	38,000	10,000
1,510	3,000	38,000	10,000
1,520	3,000	38,000	10,000
1,550	3,000	38,000	10,000
1,560	3,000	38,000	10,000
1,580	3,000	38,000	10,000
1,590	3,000	38,000	10,000
1,600	3,000	38,000	12,000
1,630	3,000	38,000	12,000
1,650	3,000	38,000	12,000
1,700	3,000	38,000	12,000
1,750	3,000	38,000	12,000
1,800	3,000	38,000	12,000
1,810	3,000	38,000	12,000
1,820	3,000	38,000	12,000
1,830	3,000	38,000	12,000
1,840	3,000	38,000	12,000
1,850	3,000	38,000	12,000
1,860	3,000	38,000	12,000
1,900	3,000	38,000	12,000
1,920	3,000	38,000	12,000
1,950	3,000	38,000	12,000
1,980	3,000	38,000	12,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,000	3,000	38,000	12,000
2,050	3,000	38,000	12,000
2,100	3,000	38,000	12,000
2,150	3,000	38,000	12,000
2,200	3,000	38,000	12,000
2,400	3,000	38,000	12,000
2,500	3,000	38,000	12,000
2,550	3,000	38,000	12,000
2,600	3,000	38,000	12,000
2,750	3,000	38,000	12,000
2,800	3,000	38,000	12,000
2,950	3,000	38,000	12,000
3,000	3,000	38,000	12,000

ExclusiveLine Микросверла без каналов COTC

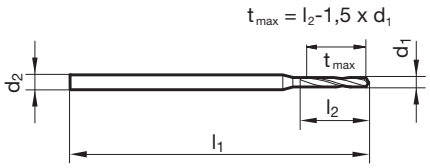
4xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая • шлифов. выход лезвия
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000

FRIZAR
www.frizar.ru

ExclusiveLine Микросверла без каналов COTC

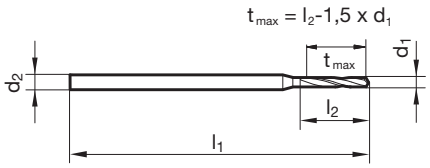
7xD | N | WN | 140° | m7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 0,500 • плоскостная заточка • форма режущей кромки прямая • шлифов. выход лезвия
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6401**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000

ExclusiveLine Микросверла с каналами COTC

5xD | N | WN | 140° | m7

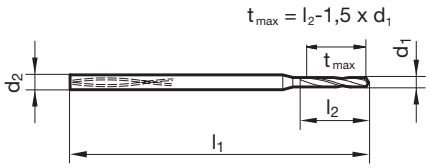
Режущий материал	VHM
Покрытие	A
Направление резания	R

NEW

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая • шлифов. выход лезвия
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000

FRIZAR
www.frizar.ru

ExclusiveLine Микросверла с каналами COTC

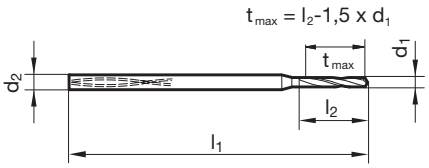
8xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая • шлифов. выход лезвия
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



Артикул № **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000

ExclusiveLine Микросверла с каналами COTC

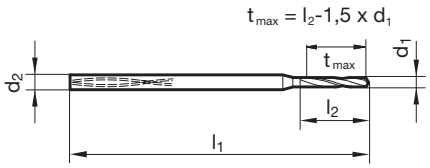
15xD | N | WN | 135° | h7

Режущий материал	VHM
Покрытие	A
Направление резания	R

P	•	подточка ≥ Ø 1,400 • плоскостная заточка • форма режущей кромки прямая • шлифов. выход лезвия
M	•	
K	•	
N	○	конструкционные и цементированные стали • автоматные стали, улучшенные стали • легированные стали прочностью до 1200 Н/мм² • нержавеющие стали • чугуны
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 796



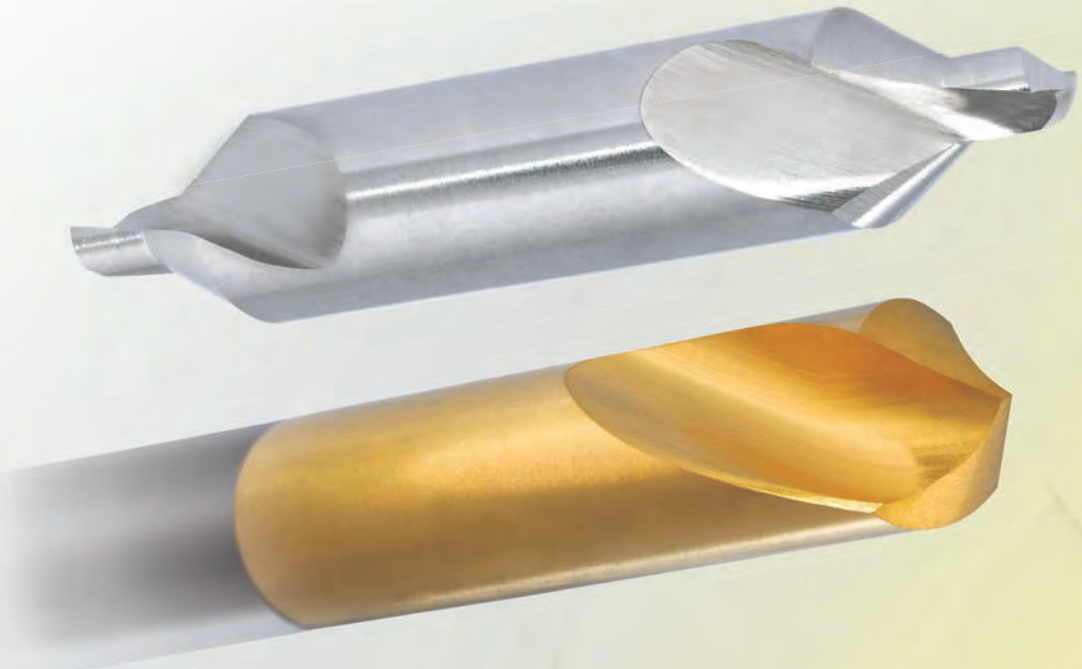
Артикул № **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000

FRIZAR
www.frizar.ru

ЦЕНТРОВОЧНЫЕ СВЁРЛА / ЦЕНТРОВОЧНЫЕ СВЁРЛА ДЛЯ СТАНКОВ С ЧПУ



P	M	K	N	S	H	Изображение инструмента	Форма хвостовика	Стандарты	Форма	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Центровочные сверла без лыски																
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	0,500 - 12,500	581	802	668
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	S	0,500 - 8,000	613	802	669
●	○	●	●	○			Cyl	DIN 333	A	L	HSS	○	0,500 - 12,500	582		670
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	1,000 - 12,500	590		671
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	○	0,500 - 12,500	583	802	672
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	S	0,800 - 8,000	614	802	673
●	○	●	●	○			Cyl	DIN 333	R	L	HSS	○	0,800 - 5,000	584		674
●	○	●	●	○			Cyl	DIN 333	B	R	HSS	○	1,000 - 10,000	585	802	675
●	○	●	●	○			Cyl	DIN 333	B	L	HSS	○	1,000 - 10,000	586		676
●	○	●	●	○			Cyl	DIN 333	B	R	HSS	○	1,000 - 6,300	591		677
●	○	●	●	○			Cyl	ASME B94.11 M	A	R	HSS	○	1,190 - 7,940	594		678
●	○	●	●	○			Cyl	ASME B94.11 M	B	R	HSS	○	1,190 - 6,350	595		679
●	○	●	●	○			Cyl	BS 328	A	R	HSS	○	1,190 - 7,940	292	802	680
●	○	●	●	○			Cyl	BS 328	A	L	HSS	○	1,190 - 7,940	294		681
●	●	●	●	○			Cyl	DIN 333	A	R	HSCO	○	1,000 - 4,000	381	802	682
○	○	○	○	○	○		Cyl	WN	A	R	VHM	○	0,500 - 6,300	736		683
●	○	●	●	○			Cyl	WN	A	R	HSS	○	0,500 - 10,000	281		684
●	○	●	●	○			Cyl	WN	A	L	HSS	○	0,800 - 5,000	282		685
●	○	●	●	○			Cyl	WN	R	R	HSS	○	0,500 - 10,000	283		686
●	○	●	●	○			Cyl	WN	R	L	HSS	○	1,600 - 4,000	284		687
●	○	●	●	○			Cyl	WN	B	R	HSS	○	1,000 - 6,300	285		688
●	○	●	●	○			Cyl	WN	A	R	HSS	○	1,000 - 3,150	280	802	689
Центровочные сверла с лыской																
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	1,600 - 10,000	587	802	690

P	M	K	N	S	H	Изображение инструмента	Форма хвостовика	Стандарты	Форма	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Центровочные сверла с лыской																
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	○	1,000 - 10,000	588	802	691
●	○	●	●	○			Cyl	DIN 333	B	R	HSS	○	1,600 - 8,000	589		692
●	○	●	●	○			Cyl	DIN 333	A	R	HSS	○	1,600 - 10,000	287		693
●	○	●	●	○			Cyl	DIN 333	R	R	HSS	○	2,000 - 8,000	288		694
●	○	●	●	○			Cyl	WN	B	R	HSS	○	1,600 - 5,000	289		695
Центровочное сверло ЧПУ 90°																
●	○	●	●	○			Cyl	WN		R	HSS	○	3,000 - 25,400	557	798	696
●	○	●	●	○			Cyl	WN		R	HSS	S	3,000 - 25,400	568	798	697
●	●	●	●	○			B	WN		R	HSCO	○	3,000 - 20,000	1136	798	698
●	●	●	●	○			B	WN		R	HSCO	F	3,000 - 20,000	1133	798	699
●	○	●	●	○			Cyl	WN		R	HSS	○	6,350 - 25,400	559	798	700
○	○	○	○	○	○		Cyl	WN		R	VHM	○	4,000 - 20,000	723		701
Центровочное сверло ЧПУ 120°																
●	○	●	●	○			Cyl	WN		R	HSS	○	3,000 - 25,400	556	798	702
●	○	●	●	○			Cyl	WN		R	HSS	S	3,000 - 25,000	567	798	703
●	●	●	●	○			B	WN		R	HSCO	○	3,000 - 20,000	1134	798	704
●	●	●	●	○			B	WN		R	HSCO	F	3,000 - 20,000	1135	798	705
○	○	○	○	○	○		HA	WN		R	VHM	○	5,000 - 20,000	724		706
Центровочные свёрла для станков с ЧПУ 142°																
○	○	○	○	○	○		HB	WN		R	VHM	○	4,000 - 20,000	546		707
«Кузовное» сверло																
●	○	●	●	○			Cyl	WN		R	HSS	>Ø 2,36	1,500 - 10,000	554		708

Центровочные сверла без лыски

DIN 333 | A | N | 118° |

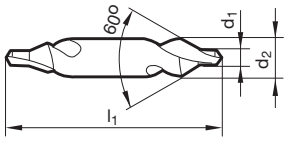
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул №	581

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

Центровочные сверла без лыски

DIN 333 | A | N | 118°

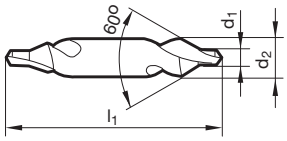
Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные • высокая износостойкость

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **613**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000

d1	d2	l1
mm	mm	mm
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

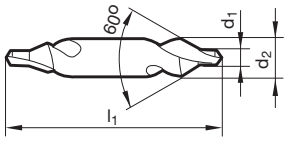
Центровочные сверла без лыски

DIN 333 | A | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные



Артикул № **582**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

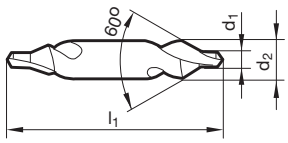
Центровочные сверла без лыски

DIN 333 | A | N | 118°

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • с утолщением для особо высокого предохранения от поломки • без защитного конуса • углубление на переходе зенковка/отверстие для дополнительного пространства для СОТС • для центровочных отверстий по DIN332, исп. 1, форма A



Артикул № **590**

d1	d2	l1
mm	mm	mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

d1	d2	l1
mm	mm	mm
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000
10,000	25,000	100,000
12,500	31,500	125,000

Центровочные сверла без лыски

DIN 333 | R | N | 118° |

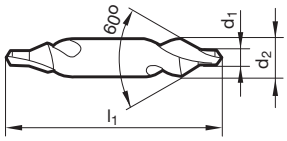
Режущий материал	HSS
Покрытие	○
Направление резания	(R)

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R • d ≤ 0,8 мм - однолезвийные

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **583**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

Центровочные сверла без лыски

DIN 333 | R | N | 118°

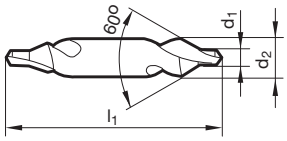
Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • высокая износостойкость • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R • d ≤ 0,8 мм - однолезвийные

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **614**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000

d1	d2	l1
mm	mm	mm
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

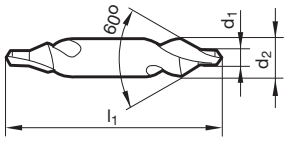
Центровочные сверла без лыски

DIN 333 | R | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R • d ≤ 0,8 мм - однолезвийные



Артикул № **584**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000

d1	d2	l1
mm	mm	mm
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000

Центровочные сверла без лыски

DIN 333 | B | N | 118°

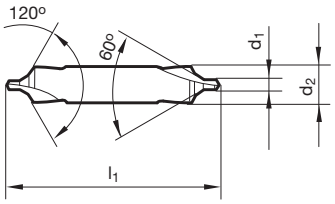
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **585**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,250	5,000	40,000
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000

d1	d2	l1
mm	mm	mm
4,000	14,000	67,000
5,000	18,000	75,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000

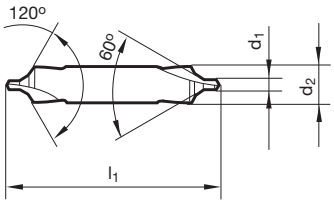
Центровочные сверла без лыски

DIN 333 | B | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°



Артикул № **586**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,250	5,000	40,000
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000

d1	d2	l1
mm	mm	mm
4,000	14,000	67,000
5,000	18,000	75,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000

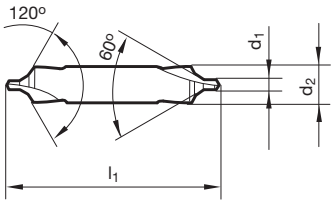
Центровочные сверла без лыски

DIN 333 | B | N | 118°

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • с утолщением для особо высокого предохранения от поломки • углубление на переходе зенковка/отверстие для дополнительного пространства для СОТС • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°



Артикул № **591**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000
4,000	14,000	67,000

d1	d2	l1
mm	mm	mm
5,000	18,000	75,000
6,300	20,000	80,000

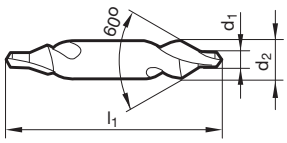
Центровочные сверла без лыски

ASME B94.11 M | A | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 1,980 • конусная заточка • Форма A по американскому стандарту



Артикул № **594**

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
1	1,190	3/64	3,170	32,000	1,190
2	1,980	5/64	4,760	48,000	1,980
3	2,780	7/64	6,350	51,000	2,780
4	3,170	1/8	7,940	54,000	3,170
5	4,760	3/16	11,110	70,000	4,760
6	5,560	7/32	12,700	76,000	5,560

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
7	6,350	1/4	15,870	83,000	6,350
8	7,940	5/16	19,050	89,000	7,940

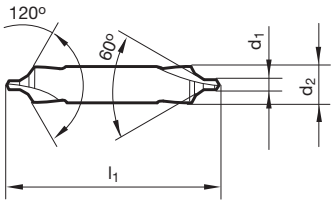
Центровочные сверла без лыски

ASME B94.11 M | B | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,380 • конусная заточка • Форма B по американскому стандарту



Артикул № **595**

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
11	1,190	3/64	3,170	32,000	1,190
12	1,590	1/16	4,760	48,000	1,590
13	2,380	3/32	6,350	51,000	2,380
14	2,780	7/64	7,940	54,000	2,780
15	3,970	5/32	11,110	70,000	3,970
16	4,760	3/16	12,700	76,000	4,760

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
17	5,560	7/32	15,870	83,000	5,560
18	6,350	1/4	19,050	89,000	6,350

Центровочные сверла без лыски

BS 328 | A | N | 118° |

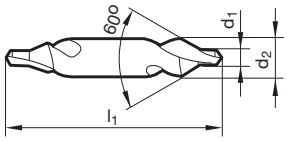
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 1,190 • конусная заточка • Форма A по британскому стандарту

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **292**

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
1	1,190	3/64	3,170	38,000	1,190
2	1,590	1/16	4,760	44,000	1,590
3	2,380	3/32	6,350	51,000	2,380
4	3,170	1/8	7,940	57,000	3,170
5	4,760	3/16	11,110	63,000	4,760
6	6,350	1/4	15,870	76,000	6,350

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
7	7,940	5/16	19,050	89,000	7,940

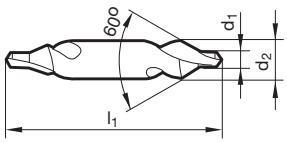
Центровочные сверла без лыски

BS 328 | A | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 1,190 • конусная заточка • Форма A по британскому стандарту



Артикул № **294**

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
1	1,190	3/64	3,170	38,000	1,190
2	1,590	1/16	4,760	44,000	1,590
3	2,380	3/32	6,350	51,000	2,380
4	3,170	1/8	7,940	57,000	3,170
5	4,760	3/16	11,110	63,000	4,760
6	6,350	1/4	15,870	76,000	6,350

Размер	d1		d2	l1	Код-№.
	mm	inch	mm	mm	
7	7,940	5/16	19,050	89,000	7,940

Центровочные сверла без лыски

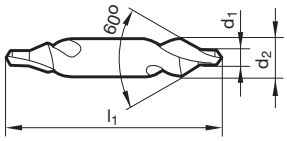
DIN 333 | A | N | 118° |

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

P	•	подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • высокая износостойкость • для центровочных отверстий по DIN332, исп. 1, форма A
M	•	
K	•	
N	•	материалы прочностью более 800 Н/мм² • нержав./кислотостойкая/ жаропрочая хромоникелевая сталь
S	○	
H		

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул №	381

d1	d2	l1
mm	mm	mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

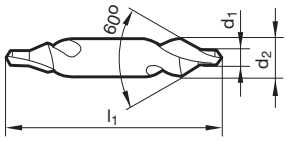
d1	d2	l1
mm	mm	mm
4,000	10,000	56,000

Центровочные сверла без лыски

WN | A | N | 118° |

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **736**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000

d1	d2	l1
mm	mm	mm
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000

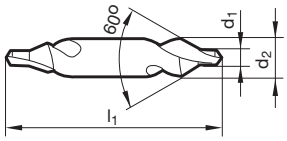
Центровочные сверла без лыски

WN | A | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные

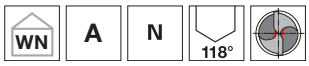


Артикул № **281**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
1,000	3,150	31,500
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000

d1	d2	l1
mm	mm	mm
3,150	10,000	56,000
4,000	12,500	63,000
5,000	16,000	71,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000

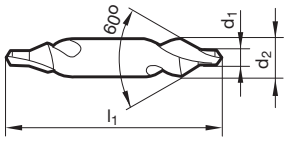
Центровочные сверла без лыски



Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • d ≤ 0,8 мм - однолезвийные



Артикул № **282**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000

d1	d2	l1
mm	mm	mm
4,000	12,500	63,000
5,000	16,000	71,000

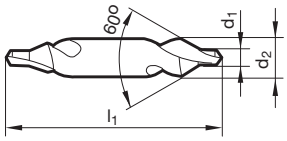
Центровочные сверла без лыски

WN | R | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	(R)

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R • d ≤ 0,8 мм - однолезвийные



Артикул № **283**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000
4,000	12,500	63,000
5,000	16,000	71,000
6,300	20,000	80,000
8,000	25,000	100,000

d1	d2	l1
mm	mm	mm
10,000	31,500	125,000

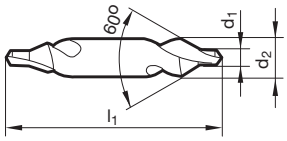
Центровочные сверла без лыски

WN | R | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	L

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R



Артикул № **284**

d1	d2	l1
mm	mm	mm
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000
4,000	12,500	63,000

d1	d2	l1
mm	mm	mm

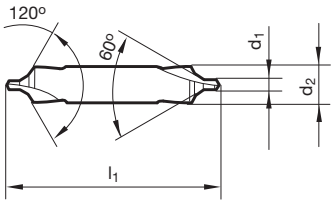
Центровочные сверла без лыски

WN | B | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°



Артикул № **285**

d1	d2	l1
mm	mm	mm
1,000	6,300	40,000
1,600	8,000	50,000
2,000	10,000	56,000
2,500	11,200	63,000
3,150	14,000	71,000
4,000	16,000	80,000

d1	d2	l1
mm	mm	mm
5,000	20,000	90,000
6,300	25,000	100,000

Центровочные сверла без лыски

WN | A | N | 118° |

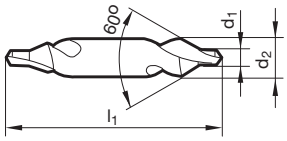
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • удлинённое центровочное сверло • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A • для заглубленных центров

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул №	280

d1	d2	l1
mm	mm	mm
1,000	4,000	120,000
1,600	5,000	120,000
2,000	6,000	120,000
2,500	8,000	120,000
3,150	10,000	120,000

d1	d2	l1
mm	mm	mm

Центровочные сверла с лыской

DIN 333 | A | N | 118° |

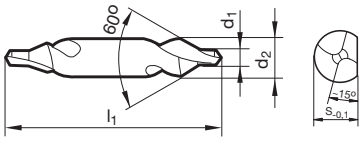
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма A • без защитного конуса

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **587**

d1	d2	l1	S
mm	mm	mm	mm
1,600	4,000	35,500	3,250
2,000	5,000	40,000	4,200
2,500	6,300	45,000	5,350
3,150	8,000	50,000	6,950
4,000	10,000	56,000	8,400
5,000	12,500	63,000	10,950

d1	d2	l1	S
mm	mm	mm	mm
6,300	16,000	71,000	14,000
8,000	20,000	80,000	17,900
10,000	25,000	100,000	22,500

Центровочные сверла с лыской

DIN 333 | R | N | 118° |

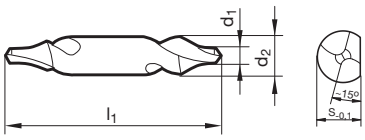
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R

GÜHRINGNAVIGATOR

Параметры резания см. стр. 802



Артикул № **588**

d1	d2	l1	S
mm	mm	mm	mm
1,000	3,150	31,500	2,350
2,000	5,000	40,000	4,200
2,500	6,300	45,000	5,350
3,150	8,000	50,000	6,950
4,000	10,000	56,000	8,400
5,000	12,500	63,000	10,950

d1	d2	l1	S
mm	mm	mm	mm
6,300	16,000	71,000	14,000
8,000	20,000	80,000	17,900
10,000	25,000	100,000	22,500

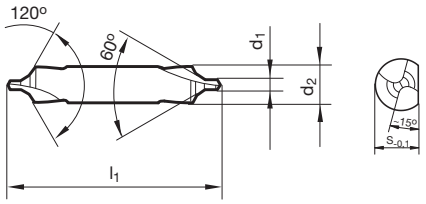
Центровочные сверла с лыской

DIN 333 | B | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°



Артикул № **589**

d1	d2	l1	S
mm	mm	mm	mm
1,600	6,300	45,000	5,350
2,000	8,000	50,000	6,950
2,500	10,000	56,000	8,400
3,150	11,200	60,000	10,000
4,000	14,000	67,000	12,650
5,000	18,000	75,000	16,400

d1	d2	l1	S
mm	mm	mm	mm
6,300	20,000	80,000	17,900
8,000	25,000	100,000	22,500

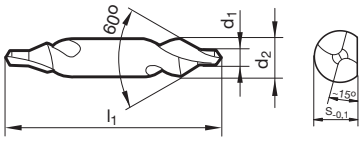
Центровочные сверла с лыской

DIN 333 | A | N | 118°

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • без защитного конуса • для центровочных отверстий по DIN332, исп. 1, форма A



Артикул № **287**

d1	d2	l1	S
mm	mm	mm	mm
1,600	5,000	40,000	4,200
2,000	6,300	45,000	5,350
2,500	8,000	50,000	6,850
3,150	10,000	56,000	8,400
4,000	12,500	63,000	10,650
5,000	16,000	71,000	13,650

d1	d2	l1	S
mm	mm	mm	mm
6,300	20,000	80,000	17,400
8,000	25,000	100,000	21,900
10,000	31,500	125,000	27,100

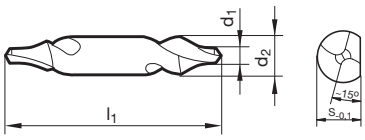
Центровочные сверла с лыской

DIN 333 | R | N | 118° |

Режущий материал	HSS
Покрытие	○
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • оптимальное центрирование между упорными центрами • для центровочных отверстий по DIN332, исп. 1, форма R



Артикул № **288**

d1	d2	l1	S
mm	mm	mm	mm
2,000	6,300	45,000	5,350
2,500	8,000	50,000	6,850
3,150	10,000	56,000	8,400
4,000	12,500	63,000	10,650
5,000	16,000	71,000	13,650
6,300	20,000	80,000	17,400

d1	d2	l1	S
mm	mm	mm	mm
8,000	25,000	100,000	21,900

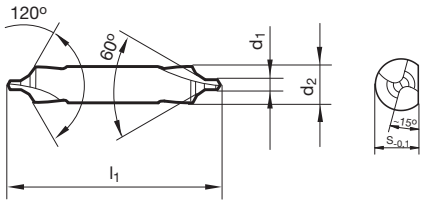
Центровочные сверла с лыской

WN | B | N | 118° |

Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 2,000 • конусная заточка • для центровочных отверстий по DIN332, исп. 1, форма B • с предохранительным конусом 120°



Артикул № **289**

d1	d2	l1	S
mm	mm	mm	mm
1,600	8,000	50,000	6,500
2,000	10,000	56,000	7,950
2,500	11,200	63,000	9,500
3,150	14,000	71,000	12,000
4,000	16,000	80,000	14,400
5,000	20,000	90,000	18,400

d1	d2	l1	S
mm	mm	mm	mm

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

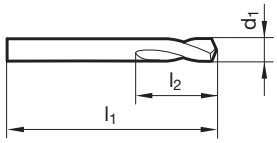
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **557**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,000		84,000	22,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
13,000		102,000	30,000

d1		l1	l2
mm	inch	mm	mm
14,000		107,000	33,500
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

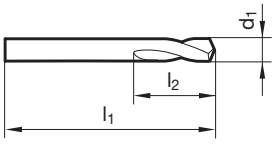
Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **568**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

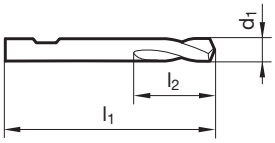
NEW

P	•
M	•
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания • ≥ Ø 6,0 мм с лыской на хвостовике по DIN 1835-B • легированная кобальтом HSS • высокая износостойкость

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **1136**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

Режущий материал	HSCO
Покрытие	F
Направление резания	R

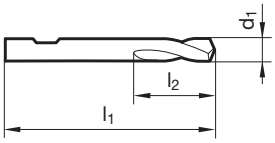
NEW

P	•
M	•
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания • ≥ Ø 6,0 мм с лыской на хвостовике по DIN 1835-B • легированная кобальтом HSS • высокая износостойкость

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **1133**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

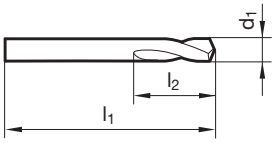
Режущий материал	HSS
Покрытие	○
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **559**

d1		l1	l2
mm	inch	mm	mm
6,350	1/4	105,000	17,000
8,000		118,000	21,000
9,520	3/8	132,000	25,000
12,700	1/2	159,000	30,000
15,870	5/8	186,000	37,500
19,050	3/4	213,000	45,000

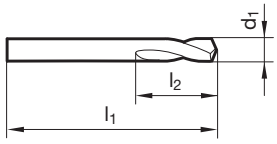
d1		l1	l2
mm	inch	mm	mm
25,400	1	216,000	53,000

Центровочные сверла 90° для станков с ЧПУ

WN | N | 90° | h6

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 6,000 • плоскостная заточка • подходит только для засверливания
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **723**

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000

d1		l1	l2
mm	inch	mm	mm
20,000		131,000	45,000

Центровочные сверла 120° для станков с ЧПУ

WN | N | 120° | h6

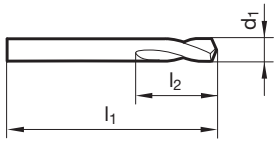
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **556**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
5,600		66,000	16,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
6,500		70,000	17,000
7,000		74,000	19,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
11,550		95,000	28,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
12,700	1/2	102,000	30,000
14,000		107,000	33,500
15,000		111,000	33,500
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,000		127,000	40,000
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000

Центровочные сверла 120° для станков с ЧПУ

WN | N | 120° | h6

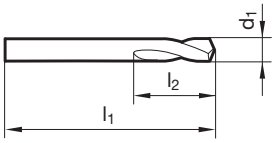
Режущий материал	HSS
Покрытие	S
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **567**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000

Центровочные сверла 120° для станков с ЧПУ

WN | N | 120° | h6

Режущий материал	HSCO
Покрытие	◯
Направление резания	R

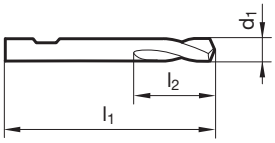
NEW

P	•
M	•
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания • ≥ Ø 6,0 мм с лыской на хвостовике по DIN 1835-B • легированная кобальтом HSS • высокая износостойкость

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **1134**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000

Центровочные сверла 120° для станков с ЧПУ

WN | N | 120° | h6

Режущий материал	HSCO
Покрытие	F
Направление резания	R

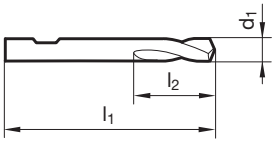
NEW

P	•
M	•
K	•
N	•
S	○
H	

конусная заточка • подходит только для засверливания • ≥ Ø 6,0 мм с лыской на хвостовике по DIN 1835-B • легированная кобальтом HSS • высокая износостойкость

GÜHRINGNAVIGATOR

Параметры резания см. стр. 798



Артикул № **1135**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

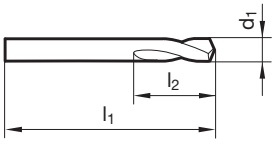
d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000

Центровочные сверла 120° для станков с ЧПУ

WN | N | 120° | h6

Режущий материал	VHM
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 13,500 • плоскостная заточка • подходит только для засверливания
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **724**

d1		l1	l2
mm	inch	mm	mm
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000

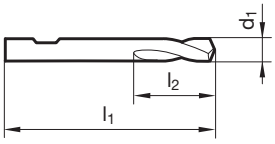
d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000
20,000		131,000	45,000

Центровочные сверла 142° для станков с ЧПУ

WN | N | 142° | h6

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	○	плоскостная заточка • подходит только для засверливания • ≥ Ø 6,0 мм с лыской, форма хвостовика HB
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **546**

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000
12,000		102,000	30,000

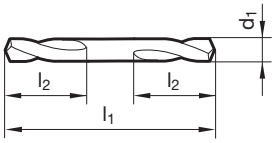
d1		l1	l2
mm	inch	mm	mm
16,000		115,000	37,500
20,000		131,000	45,000

«Кузовное» сверло

WN | DK 77 | 118° | h8

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•	подточка ≥ Ø 1,450 • конусная заточка • для двустороннего применения • для ручных дрелей кузовном производстве
M	○	
K	•	
N	•	тонкостенные материалы
S	○	
H		



Артикул № **554**

d1	l1	l2
mm	mm	mm
1,500	32,000	6,000
1,900	36,000	7,100
2,000	38,000	7,500
2,100	38,000	7,500
2,200	40,000	8,500
2,300	40,000	8,500
2,400	43,000	9,500
2,450	43,000	9,500
2,500	43,000	9,500
2,600	43,000	9,500
2,700	46,000	10,600
2,780	46,000	10,600
2,800	46,000	10,600
2,900	46,000	10,600
3,000	46,000	10,600
3,050	49,000	11,200
3,100	49,000	11,200
3,170	49,000	11,200
3,200	49,000	11,200
3,260	49,000	11,200
3,300	49,000	11,200
3,500	52,000	12,500
3,570	52,000	12,500
3,600	52,000	12,500
3,650	52,000	12,500
3,700	52,000	12,500
3,800	55,000	14,000
3,970	55,000	14,000
4,000	55,000	14,000
4,100	55,000	14,000
4,200	55,000	14,000
4,300	58,000	15,500
4,500	58,000	15,500
4,600	58,000	15,500
4,760	62,000	17,000
4,800	62,000	17,000

d1	l1	l2
mm	mm	mm
4,900	62,000	17,000
5,000	62,000	17,000
5,100	62,000	17,000
5,200	62,000	17,000
5,300	62,000	17,000
5,400	66,000	19,000
5,500	66,000	19,000
5,560	66,000	19,000
5,600	66,000	19,000
5,800	66,000	19,000
5,900	66,000	19,000
5,950	66,000	19,000
6,000	66,000	19,000
6,100	70,000	21,200
6,350	70,000	21,200
6,500	70,000	21,200
6,800	74,000	23,600
7,000	74,000	23,600
7,100	74,000	23,600
7,500	74,000	23,600
7,940	79,000	25,000
8,000	79,000	25,000
8,500	79,000	25,000
8,600	84,000	25,000
9,000	84,000	25,000
9,500	84,000	25,000
9,520	89,000	25,000
10,000	89,000	25,000

FRIZAR
www.frizar.ru

GE 100

Мультифункциональная инструментальная система для финишной обработки. Сочетание до 5 инструментальных переходов в одном инструменте.

Регулируемые в радиальном направлении резцовые вставки, в количестве от двух до четырех, в сочетании с центровочным или ступенчатым сверлом сократит полную обработку до нескольких секунд.

Дополнительную информацию можно найти на страницах каталога GE100.

FRIZAR
www.frizar.ru

FRIZAR
www.frizar.ru

СТУПЕНЧАТЫЕ СВЕРЛА / ЗЕНКЕРА

FRIZAR
www.frizar.ru

P	M	K	N	S	H	Изображение инструмента	Стандарты	Форма	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Ступенчатые свёрла для центровочных отверстий по DIN 332																
●	○	●	●	○			WN	D	N	R	HSS	●	8,000 - 40,000	274	804	714
●	○	●	●	○			WN	DR	N	R	HSS	●	8,000 - 40,000	574	804	715
●	○	●	●	○			WN	D	N	R	HSS	●	8,000 - 20,000	575	804	716
●	○	●	●	○			WN	D	N	R	HSS	●	14,000 - 40,000	576	804	717
Короткие ступенчатые сверла с цилиндрическим хвостовиком																
●	○	●	●	○			WN		N	R	HSS	○	6,000 - 19,000	378	804	718
●	○	●	●	○			WN		N	R	HSS	○	6,600 - 21,500	1147	804	719
●	○	●	●	○			WN		N	R	HSS	○	6,000 - 18,000	379	804	720
●	○	●	●	○			WN		N	R	HSS	○	3,400 - 13,500	380	804	721
Ступенчатые свёрла с цилиндрическим хвостовиком																
●	○	●	○				DIN 8374	A	N	R	HSS	●	6,000 - 15,000	536	806	722
●	○	●	○				DIN 8374	B	N	R	HSS	●	7,500 - 19,000	569	806	723
●	○	●	○				WN		N	R	HSS	●	6,600 - 17,200	636	806	724
●	○	●	○				WN		N	R	HSS	●	6,000 - 8,000	638	806	725
●	○	●	○				DIN 8376		N	R	HSS	●	6,000 - 18,000	538	806	726
○	○	○	○	○	○		WN		N	R	VHM	○	6,000 - 15,000	738		727
●	○	●	○				WN		N	R	HSS	●	5,900 - 17,500	514	806	728
●	○	●	○				DIN 8378		N	R	HSS	●	3,400 - 13,500	540	806	729
○	○	○	○	○	○		WN		N	R	VHM	○	4,500 - 11,000	739		730
Ступенчатые свёрла с конусом Морзе																
●	○	●	○				WN		N	R	HSS	●	11,500 - 23,000	637	806	731
●	○	●	○				WN		N	R	HSS	●	11,000 - 29,000	537	806	732
●	○	●	○				WN		N	R	HSS	●	18,000 - 26,000	639	806	733
●	○	●	○				DIN 8377		N	R	HSS	●	10,000 - 33,000	539	806	734
●	○	●	○				WN		N	R	HSS	●	9,400 - 33,000	520	806	735

P	M	K	N	S	H	Изображение инструмента	Стандарты	Форма	Тип	Направление резания	Режущий материал	Покрытие	d1/mm	Артикул №	Параметры резания см. стр.	Стр.
Ступенчатые свёрла с конусом Морзе																
●	○	●	○				DIN 8379		N	R	HSS	●	9,000 - 22,000	541	806	736
Зенкера с цилиндрическим хвостовиком																
●	○	●	○				DIN 344		N	R	HSS	●	3,800 - 20,000	533	800	737
○	○	○	○	○	○		WN		N	R	HM	○	3,800 - 15,000	750		739
Зенкера с конусом Морзе																
●	○	●	○				DIN 343		N	R	HSS	●	7,800 - 50,000	534	800	740
●	○	●	●	○			DIN 343		N	R	HSCO	●	8,500 - 26,000	634	800	742
●	○	●	○				DIN 1864		N	R	HSS	●	5,000 - 30,000	555	800	743
●	○	●	●	○			DIN 1864		N	R	HSCO	●	8,000 - 15,000	635	800	744
○	○	○	○	○	○		WN		N	R	HM	○	28,700 - 39,600	729		745
Штифтовые сверла																
●	○	●	○				DIN 1898		N	R	HSS	● >Ø 2,36	2,000 - 12,000	531		746
●	○	●	○				DIN 1898		N	R	HSS	●	5,000 - 25,000	532		747

FRIZAR
www.frizar.ru

Ступенчатые свёрла для центровочных отверстий по DIN 332

WN | D | N | 118° | h7

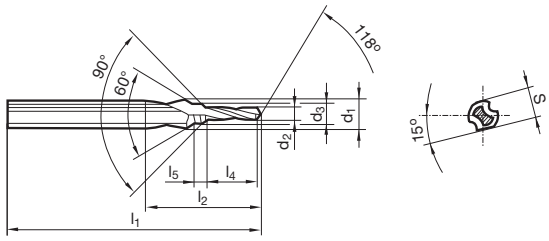
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 8,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • с лыской на хвостовике • угол зенковки 60° • для центровочных отверстий, по DIN332, исп. 2, форма D • применение на фрезерно-центровочных станках

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **274**

d1 h7	d2 h8	d3	l1	l2	l4	l5	S	для резьбы
mm	mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	6,750	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	8,450	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	10,450	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	12,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	14,850	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	18,450	M12
25,000	14,000	17,000	132,000	67,000	33,000	8,300	23,400	M16
31,500	17,500	21,000	145,000	76,500	38,000	10,350	29,350	M20
40,000	21,000	25,000	160,000	90,000	45,000	12,000	36,500	M24

Ступенчатые свёрла для центровочных отверстий по DIN 332

WN | DR | N | 118° | h7

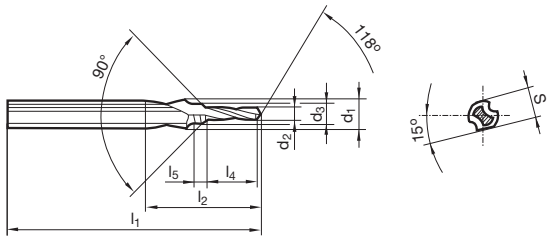
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 8,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • с лыской на хвостовике • угол зенковки 60° • для центровочных отверстий, по DIN332, исп. 2, форма DR • применение на фрезерно-центровочных станках

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **574**

d1 h7	d2 h8	d3	l1	l2	l4	l5	S	для резьбы
mm	mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	6,750	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	8,450	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	10,450	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	12,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	14,850	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	18,450	M12
25,000	14,000	17,000	132,000	67,000	33,000	8,300	23,400	M16
31,500	17,500	21,000	145,000	76,500	38,000	10,350	29,350	M20
40,000	21,000	25,000	160,000	90,000	45,000	12,000	36,500	M24

FRIZAR
www.frizar.ru

Ступенчатые свёрла для центровочных отверстий по DIN 332

WN | D | N | 118° | h7

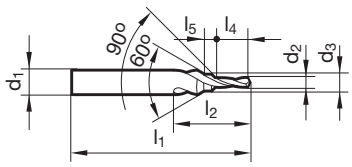
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 8,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • угол зенковки 60° • для центровочных отверстий, по DIN332, исп. 2, форма D

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **575**

d1 h7	d2 h8	d3	l1	l2	l4	l5	для резьбы
mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	M12

Ступенчатые свёрла для центровочных отверстий по DIN 332

WN | D | N | 118° | h7

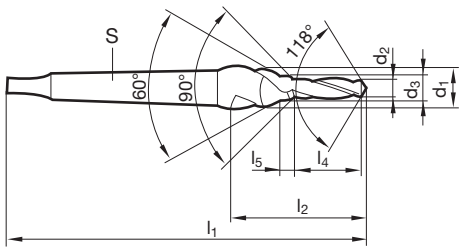
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 14,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • угол зенковки 60° • для центровочных отверстий, по DIN332, исп. 2, форма D

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **576**

d1 h7	d2 h8	d3	l1	l2	l4	l5	для резьбы
mm	mm	mm	mm	mm	mm	mm	
14,000	6,800	8,400	110,000	41,000	19,500	3,500	M 8
16,000	8,500	10,500	131,000	47,000	23,000	4,700	M10
20,000	10,200	13,000	145,000	59,000	28,000	6,500	M12
25,000	14,000	17,000	172,000	67,000	33,000	8,300	M16
31,500	17,500	21,000	184,000	76,500	38,000	10,350	M20
40,000	21,000	25,000	222,000	90,000	45,000	12,000	M24

FRIZAR
www.frizar.ru

Короткие ступенчатые сверла с цилиндрическим хвостовиком

WN | N | 118° | h6

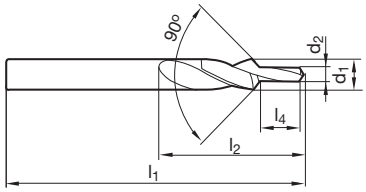
Режущий материал	HSS
Покрытие	○
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 6,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • высокое сопротивление к скручиванию • для станков с ЧПУ • для сквозных отверстий по DIN EN 20273, ряд средний • для зенкования под винты 90° по DIN 74, форма A • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **378**

d1	d2 h6	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,200	66,000	28,000	9,000	M 3
8,000	4,300	79,000	37,000	11,000	M 4
10,000	5,300	89,000	43,000	13,000	M 5
11,500	6,400	95,000	47,000	15,000	M 6
15,000	8,400	111,000	56,000	19,000	M 8
19,000	10,500	127,000	64,000	23,000	M 10

Короткие ступенчатые сверла с цилиндрическим хвостовиком

WN | N | 118° | h6

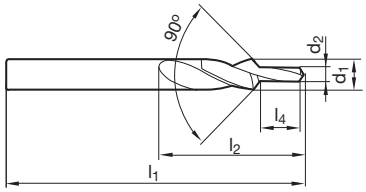
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 6,600 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • высокое сопротивление к скручиванию • для станков с ЧПУ • для сквозных отверстий по DIN EN 20273, ряд средний • для зенкования под винты 90° по DIN 74, форма A • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **1147**

d1	d2 h6	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,600	3,400	70,000	31,000	9,000	M 3
9,000	4,500	84,000	40,000	11,000	M 4
11,000	5,500	95,000	47,000	13,000	M 5
13,000	6,600	102,000	51,000	15,000	M 6
17,200	9,000	123,000	62,000	19,000	M 8
21,500	11,000	141,000	70,000	23,000	M 10

FRIZAR
www.frizar.ru

Короткие ступенчатые сверла с цилиндрическим хвостовиком

WN | N | 118° | h6

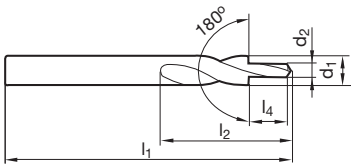
Режущий материал	HSS
Покрытие	○
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 6,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • высокое сопротивление к скручиванию • для станков с ЧПУ • для сквозных отверстий по DIN EN 20273, ряд средний • для винтовой раззенковки под головку 180 град. • согласно DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **379**

d1	d2 h6	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,400	66,000	28,000	9,000	M 3
8,000	4,500	79,000	37,000	11,000	M 4
10,000	5,500	89,000	43,000	13,000	M 5
11,000	6,600	95,000	47,000	15,000	M 6
15,000	9,000	111,000	56,000	19,000	M 8
18,000	11,000	123,000	62,000	23,000	M 10

Короткие ступенчатые сверла с цилиндрическим хвостовиком

WN | N | 118° | h6

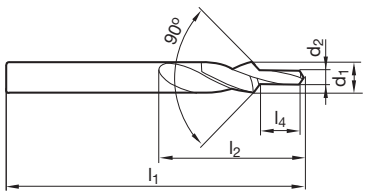
Режущий материал	HSS
Покрытие	◯
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

подточка ≥ Ø 3,400 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • высокое сопротивление к скручиванию • для станков с ЧПУ • для зенковки под головку винтов по DIN 336 • для раззенкованных отверстий 90° • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 804



Артикул № **380**

d1	d2 h6	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
3,400	2,500	52,000	20,000	8,800	M 3
4,500	3,300	58,000	24,000	11,400	M 4
5,500	4,200	66,000	28,000	13,600	M 5
6,600	5,000	70,000	31,000	16,500	M 6
9,000	6,800	84,000	40,000	21,000	M 8
11,000	8,500	95,000	47,000	25,500	M 10
13,500	10,200	107,000	54,000	30,000	M 12

FRIZAR
www.frizar.ru

Ступенчатые свёрла с цилиндрическим хвостовиком

DIN 8374 | A | N | 118° | h8 |

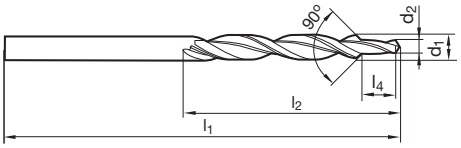
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 6,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенковки под головку 90 град. • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **536**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,200	93,000	57,000	9,000	M 3
8,000	4,300	117,000	75,000	11,000	M 4
10,000	5,300	133,000	87,000	13,000	M 5
11,500	6,400	142,000	94,000	15,000	M 6
15,000	8,400	169,000	114,000	19,000	M 8

Ступенчатые свёрла с цилиндрическим хвостовиком

DIN 8374 | B | N | 118° | h8

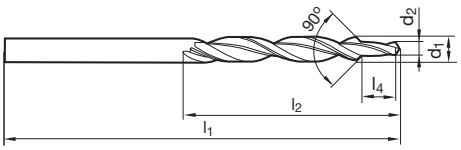
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 7,500 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенковки под головку винтов 90° по DIN 74, форма A и F • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **569**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
7,500	3,400	109,000	69,000	9,000	M 3
9,700	4,500	133,000	87,000	11,000	M 4
12,000	5,500	151,000	101,000	13,000	M 5
14,500	6,600	169,000	114,000	15,000	M 6
19,000	9,000	198,000	135,000	19,000	M 8

FRIZAR
www.frizar.ru

Ступенчатые свёрла с цилиндрическим хвостовиком

WN | N | 118° | h8

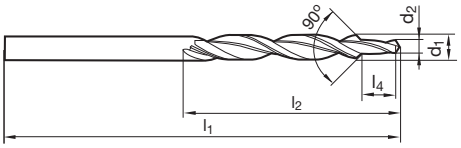
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 6,600 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенковки под головку винтов 90° по DIN 74, часть 1 (Редакция 12.1980 отозвана), форма A и B, исполнение среднее • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **636**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,600	3,400	101,000	63,000	9,000	M 3
9,000	4,500	125,000	81,000	11,000	M 4
11,000	5,500	142,000	94,000	13,000	M 5
13,000	6,600	151,000	101,000	15,000	M 6
17,200	9,000	191,000	130,000	19,000	M 8

Ступенчатые свёрла с цилиндрическим хвостовиком

WN | N | 118° | h8

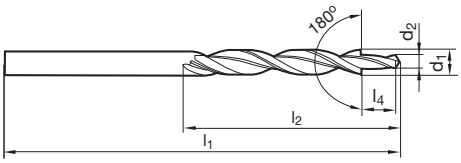
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 6,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенковки под головку 180 град. • для винтов по DIN 6912, 7513, 7984 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **638**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,200	93,000	57,000	9,000	M 3
8,000	4,300	117,000	75,000	11,000	M 4

FRIZAR
www.frizar.ru

Ступенчатые свёрла с цилиндрическим хвостовиком

DIN 8376 | N | 118° | h8

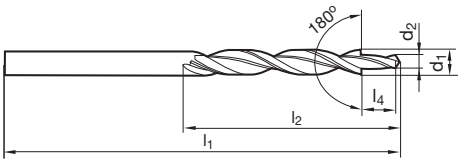
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 6,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для винтовой раззенковки под головку 180 град. • по DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 и DIN 7513, 7516, 7500-1 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **538**

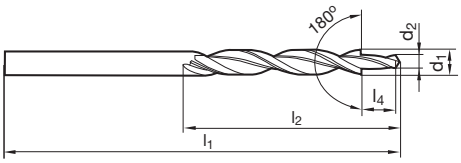
d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,400	93,000	57,000	9,000	M 3
8,000	4,500	117,000	75,000	11,000	M 4
10,000	5,500	133,000	87,000	13,000	M 5
11,000	6,600	142,000	94,000	15,000	M 6
15,000	9,000	169,000	114,000	19,000	M 8
18,000	11,000	191,000	130,000	23,000	M 10

Ступенчатые свёрла с цилиндрическим хвостовиком

WN | N | 118° | h8

Режущий материал	VHM
Покрытие	◯
Направление резания	R

P	○	подточка ≥ Ø 6,000 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенковки под головку 180 град. • для винтов по DIN 6912, 7513, 7984 • f зависит от меньшего диаметра • vc зависит от большего диаметра
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **738**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
6,000	3,400	93,000	57,000	9,000	M 3
8,000	4,500	117,000	75,000	11,000	M 4
10,000	5,500	133,000	87,000	13,000	M 5
11,000	6,600	142,000	94,000	15,000	M 6
15,000	9,000	169,000	114,000	19,000	M 8

FRIZAR
www.frizar.ru

Ступенчатые свёрла с цилиндрическим хвостовиком

WN | N | 118° | h8

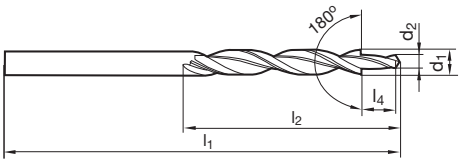
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 5,900 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий со старой зенковкой форм H, J, K по DIN 75, часть 2 (редакция 04.1968 отозвана), исполнение среднее и точное • для винтов согласно DIN 84, 912, 6712 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **514**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
5,900	3,200	93,000	57,000	11,000	M 3
7,400	4,300	109,000	69,000	13,000	M 4
8,000	4,800	117,000	75,000	13,000	M 4
9,400	5,300	125,000	81,000	16,000	M 5
10,000	5,800	133,000	87,000	16,000	M 5
10,400	6,400	133,000	87,000	19,000	M 6
11,000	7,000	142,000	94,000	19,000	M 6
13,500	8,400	160,000	108,000	22,000	M 8
16,500	10,500	184,000	125,000	25,000	M 10
17,500	11,500	191,000	130,000	25,000	M 10

Ступенчатые свёрла с цилиндрическим хвостовиком

DIN 8378 | N | 118° | h8

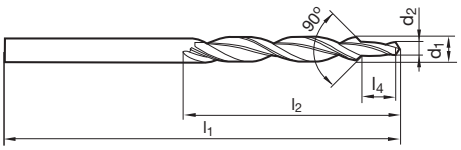
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 3,400 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для зенковки под головку винтов по DIN 336 • для раззенкованных отверстий 90° • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **540**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
3,400	2,500	70,000	39,000	8,800	M 3
4,500	3,300	80,000	47,000	11,400	M 4
5,500	4,200	93,000	57,000	13,600	M 5
6,600	5,000	101,000	63,000	16,500	M 6
9,000	6,800	125,000	81,000	21,000	M 8
11,000	8,500	142,000	94,000	25,500	M 10
13,500	10,200	160,000	108,000	30,000	M 12

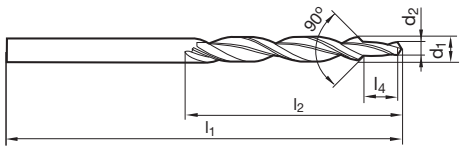
FRIZAR
www.frizar.ru

Ступенчатые свёрла с цилиндрическим хвостовиком

WN | N | 118° | h8

Режущий материал	VHM
Покрытие	○
Направление резания	R

P	○	подточка ≥ Ø 4,500 • конусная заточка • для зенковки под головку винтов по DIN 336 • для раззенкованных отверстий 90° • f зависит от меньшего диаметра • vc зависит от большего диаметра
M	○	
K	○	
N	○	
S	○	универсальное применение
H	○	



Артикул № **739**

d1 h8	d2 h9	l1	l2	l4	для резьбы
mm	mm	mm	mm	mm	
4,500	3,300	80,000	47,000	11,400	M 4
5,500	4,200	93,000	57,000	13,600	M 5
6,600	5,000	101,000	63,000	16,500	M 6
9,000	6,800	125,000	81,000	21,000	M 8
11,000	8,500	142,000	94,000	25,500	M 10

Ступенчатые свёрла с конусом Морзе

WN | N | 118° | h8

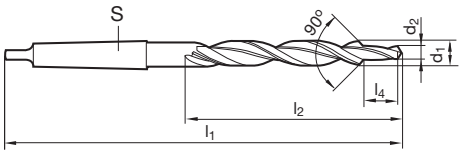
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 11,500 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для зенкования под винты 90° по DIN 74 часть 1 (редакциая 12.1980 отозвана), форма A, исполнение точное • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **637**

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
11,500	6,400	MK-1	175,000	94,000	15,000	M 6
15,000	8,400	MK-2	212,000	114,000	19,000	M 8
19,000	10,500	MK-2	233,000	135,000	23,000	M 10
23,000	13,000	MK-2	253,000	155,000	27,000	M 12

FRIZAR
www.frizar.ru

Ступенчатые свёрла с конусом Морзе

WN | N | 118° | h8

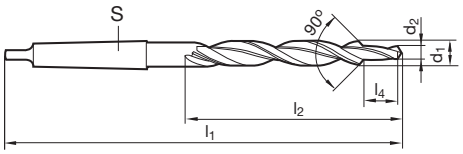
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 11,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • Для зенковки под головку винтов 90° по DIN 74, часть 1 (Редакция 12.1980 отозвана), форма A и B, исполнение среднее • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **537**

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
11,000	5,500	MK-1	175,000	94,000	13,000	M 5
17,200	9,000	MK-2	228,000	130,000	19,000	M 8
21,500	11,000	MK-2	248,000	150,000	23,000	M 10
26,000	14,000	MK-3	286,000	165,000	27,000	M 12
29,000	16,000	MK-3	296,000	175,000	31,000	M 14

Ступенчатые свёрла с конусом Морзе

WN | N | 118° | h8

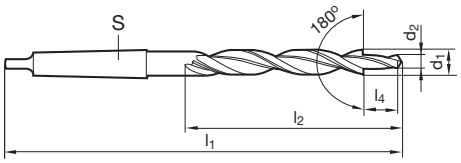
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 10,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для винтовой раззенковки под головку 180 град. • согласно DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **639**

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
18,000	10,500	MK-2	228,000	130,000	23,000	M 10
20,000	13,000	MK-2	238,000	140,000	27,000	M 12
26,000	17,000	MK-3	286,000	165,000	35,000	M 16

FRIZAR
www.frizar.ru

Ступенчатые свёрла с конусом Морзе

DIN 8377 | N | 118° | h8

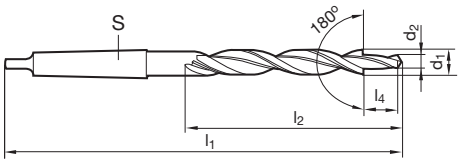
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 10,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для сквозных отверстий по DIN EN 20273, ряд средний • для винтовой раззенковки под головку 180 град. • по DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 и DIN 7513, 7516, 7500-1 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **539**

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
10,000	5,500	MK-1	168,000	87,000	13,000	M 5
11,000	6,600	MK-1	175,000	94,000	15,000	M 6
15,000	9,000	MK-2	212,000	114,000	19,000	M 8
18,000	11,000	MK-2	228,000	130,000	23,000	M 10
20,000	13,500	MK-2	238,000	140,000	27,000	M 12
26,000	17,500	MK-3	286,000	165,000	35,000	M 16
30,000	20,000	MK-3	296,000	175,000	39,000	M 18
33,000	22,000	MK-4	334,000	185,000	43,000	M 20

Ступенчатые свёрла с конусом Морзе

WN | N | 118° | h8

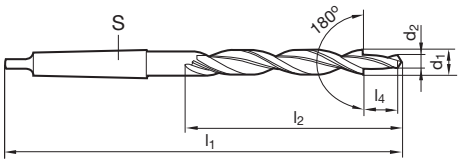
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 9,400 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • со старыми формами раззенковки H, J, k • для винтов согласно DIN 84, 912, 6712 • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № 520

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
9,400	5,300	MK-1	162,000	81,000	16,000	M 5
10,000	5,800	MK-1	168,000	87,000	16,000	M 5
11,000	7,000	MK-1	175,000	94,000	19,000	M 6
13,500	8,400	MK-1	189,000	108,000	22,000	M 8
16,500	10,500	MK-2	223,000	125,000	25,000	M 10
17,500	11,500	MK-2	228,000	130,000	25,000	M 10
19,000	13,000	MK-2	233,000	135,000	28,000	M 12
20,000	14,000	MK-2	238,000	140,000	28,000	M 12
23,000	15,000	MK-2	253,000	155,000	30,000	M 14
24,000	16,000	MK-3	281,000	160,000	30,000	M 14
25,000	17,000	MK-3	281,000	160,000	33,000	M 16
26,000	18,000	MK-3	286,000	165,000	33,000	M 16
28,000	19,000	MK-3	291,000	170,000	36,000	M 18
29,000	20,000	MK-3	296,000	175,000	36,000	M 18
31,000	21,000	MK-3	301,000	180,000	39,000	M 20
33,000	23,000	MK-4	334,000	185,000	39,000	M 20

FRIZAR
www.frizar.ru

Ступенчатые свёрла с конусом Морзе

DIN 8379 | N | 118° | h8

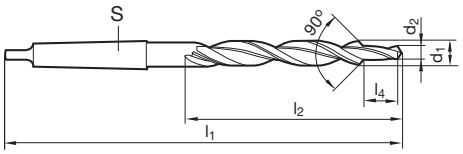
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 9,000 • данные по подточке ориентированы на номинальный диаметр - Ø d1 • конусная заточка • для зенковки под головку винтов по DIN 336 • для раззенкованных отверстий 90° • f зависит от меньшего диаметра • vc зависит от большего диаметра

GÜHRINGNAVIGATOR

Параметры резания см. стр. 806



Артикул № **541**

d1 h8	d2 h9	S	l1	l2	l4	для резьбы
mm	mm		mm	mm	mm	
9,000	6,800	MK-1	162,000	81,000	21,000	M 8
11,000	8,500	MK-1	175,000	94,000	25,500	M 10
13,500	10,200	MK-1	189,000	108,000	30,000	M 12
15,500	12,000	MK-2	218,000	120,000	34,500	M 14
17,500	14,000	MK-2	228,000	130,000	38,500	M 16
20,000	15,500	MK-2	238,000	140,000	43,500	M 18
22,000	17,500	MK-2	248,000	150,000	47,500	M 20

Зенкера с цилиндрическим хвостовиком

DIN 344 | N | 120° | h8

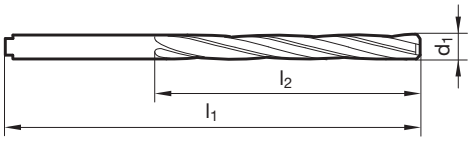
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

конусная заточка • высокая стабильность • очень высокая прочность для просверленных/литых/штампованных отверстий • с поводком согласно DIN 1809 • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия • простое окончательное развёртывание после расточки

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **533**

d1	l1	l2	d0 ≥
mm	mm	mm	mm
3,800	96,000	64,000	2,80
4,000	96,000	64,000	2,80
4,100	96,000	64,000	2,80
4,400	102,000	69,000	3,20
4,500	102,000	69,000	3,20
4,600	102,000	69,000	3,20
4,750	102,000	69,000	3,20
4,800	108,000	74,000	3,50
4,900	108,000	74,000	3,50
5,000	108,000	74,000	3,50
5,050	108,000	74,000	3,50
5,100	108,000	74,000	3,50
5,300	108,000	74,000	3,50
5,400	116,000	80,000	4,20
5,500	116,000	80,000	4,20
5,550	116,000	80,000	4,20
5,750	116,000	80,000	4,20
5,800	116,000	80,000	4,20
5,850	116,000	80,000	4,20
5,900	116,000	80,000	4,20
6,000	116,000	80,000	4,20
6,100	124,000	86,000	4,20
6,200	124,000	86,000	4,20
6,250	124,000	86,000	4,20
6,300	124,000	86,000	4,20
6,400	124,000	86,000	4,20
6,500	124,000	86,000	4,20
6,700	124,000	86,000	4,20
6,800	133,000	93,000	4,90
7,000	133,000	93,000	4,90
7,150	133,000	93,000	4,90
7,200	133,000	93,000	4,90
7,250	133,000	93,000	4,90
7,500	133,000	93,000	4,90
7,600	142,000	100,000	5,60
7,700	142,000	100,000	5,60
7,750	142,000	100,000	5,60
7,800	142,000	100,000	5,60
7,950	142,000	100,000	5,60
8,000	142,000	100,000	5,60
8,050	142,000	100,000	5,60
8,100	142,000	100,000	5,60

d1	l1	l2	d0 ≥
mm	mm	mm	mm
8,200	142,000	100,000	5,60
8,250	142,000	100,000	5,60
8,300	142,000	100,000	5,60
8,400	142,000	100,000	5,60
8,500	142,000	100,000	5,60
8,600	151,000	107,000	6,30
8,700	151,000	107,000	6,30
8,800	151,000	107,000	6,30
8,850	151,000	107,000	6,30
9,000	151,000	107,000	6,30
9,100	151,000	107,000	6,30
9,200	151,000	107,000	6,30
9,300	151,000	107,000	6,30
9,400	151,000	107,000	6,30
9,500	151,000	107,000	6,30
9,650	162,000	116,000	7,00
9,800	162,000	116,000	7,00
10,000	162,000	116,000	7,00
10,100	162,000	116,000	7,00
10,200	162,000	116,000	7,00
10,300	162,000	116,000	7,00
10,500	162,000	116,000	7,00
10,600	162,000	116,000	7,00
10,700	173,000	125,000	7,70
10,750	173,000	125,000	7,70
11,000	173,000	125,000	7,70
11,250	173,000	125,000	7,70
11,300	173,000	125,000	7,70
11,750	184,000	134,000	8,40
11,800	184,000	134,000	8,40
12,000	184,000	134,000	8,40
12,200	184,000	134,000	8,40
12,500	184,000	134,000	8,40
12,750	184,000	134,000	9,10
13,000	184,000	134,000	9,10
13,500	194,000	142,000	9,80
13,750	194,000	142,000	9,80
14,000	194,000	142,000	9,80
15,000	202,000	147,000	10,50
15,750	211,000	153,000	11,20
16,000	211,000	153,000	11,20
17,000	218,000	159,000	11,90

FRIZAR
www.frizar.ru

d1	l1	l2	d0 ≥
mm	mm	mm	mm
18,000	226,000	165,000	12,60
20,000	242,000	177,000	14,00

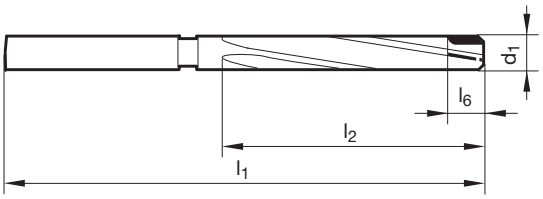
d1	l1	l2	d0 ≥
mm	mm	mm	mm

Зенкера с цилиндрическим хвостовиком

WN | N | 120° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

P	○	конусная заточка • твердосплав.покрытие • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия
M	○	
K	○	
N	○	универсальное применение
S	○	
H	○	



Артикул № **750**

d1	l1	l2	l6	d0 ≥
mm	mm	mm	mm	mm
3,800	96,000	64,000		2,800
4,800	108,000	74,000		3,500
5,000	108,000	74,000		3,500
5,800	116,000	80,000		4,200
6,000	116,000	80,000		4,200
7,000	133,000	93,000		4,900

d1	l1	l2	l6	d0 ≥
mm	mm	mm	mm	mm
7,800	142,000	100,000		5,600
8,000	142,000	100,000		5,600
14,000	194,000	142,000	19,000	9,800
15,000	202,000	147,000	19,000	10,500

FRIZAR
www.frizar.ru

Зенкера с конусом Морзе

DIN 343 | N | 120° | h8

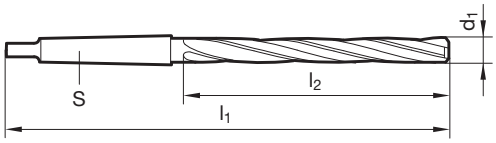
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

конусная заточка • высокая стабильность • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия • простое окончательное развёртывание после расточки

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **534**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
7,800	MK-1	156,000	75,000	5,60
8,000	MK-1	156,000	75,000	5,60
8,100	MK-1	156,000	75,000	5,60
8,800	MK-1	162,000	81,000	6,30
9,000	MK-1	162,000	81,000	6,30
9,200	MK-1	162,000	81,000	6,30
9,700	MK-1	168,000	87,000	7,00
9,800	MK-1	168,000	87,000	7,00
9,900	MK-1	168,000	87,000	7,00
10,000	MK-1	168,000	87,000	7,00
10,100	MK-1	168,000	87,000	7,00
10,200	MK-1	168,000	87,000	7,00
10,750	MK-1	175,000	94,000	7,70
11,000	MK-1	175,000	94,000	7,70
11,100	MK-1	175,000	94,000	7,70
11,250	MK-1	175,000	94,000	7,70
11,500	MK-1	175,000	94,000	7,70
11,750	MK-1	182,000	101,000	8,40
11,800	MK-1	182,000	101,000	8,40
12,000	MK-1	182,000	101,000	8,40
12,200	MK-1	182,000	101,000	8,40
12,300	MK-1	182,000	101,000	8,40
12,500	MK-1	182,000	101,000	8,40
12,700	MK-1	182,000	101,000	9,10
12,750	MK-1	182,000	101,000	9,10
13,000	MK-1	182,000	101,000	9,10
13,250	MK-1	189,000	108,000	9,80
13,500	MK-1	189,000	108,000	9,80
13,750	MK-1	189,000	108,000	9,80
13,800	MK-1	189,000	108,000	9,80
14,000	MK-1	189,000	108,000	9,80
14,100	MK-2	212,000	114,000	10,50
14,200	MK-2	212,000	114,000	10,50
14,450	MK-2	212,000	114,000	10,50
14,500	MK-2	212,000	114,000	10,50
14,750	MK-2	212,000	114,000	10,50
15,000	MK-2	212,000	114,000	10,50
15,250	MK-2	218,000	120,000	11,20
15,500	MK-2	218,000	120,000	11,20
15,750	MK-2	218,000	120,000	11,20
16,000	MK-2	218,000	120,000	11,20
16,150	MK-2	223,000	125,000	11,90

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
16,200	MK-2	223,000	125,000	11,90
16,250	MK-2	223,000	125,000	11,90
16,500	MK-2	223,000	125,000	11,90
16,750	MK-2	223,000	125,000	11,90
17,000	MK-2	223,000	125,000	11,90
17,500	MK-2	228,000	130,000	12,60
17,750	MK-2	228,000	130,000	12,60
18,000	MK-2	228,000	130,000	12,60
18,100	MK-2	233,000	135,000	13,30
18,250	MK-2	233,000	135,000	13,30
18,500	MK-2	233,000	135,000	13,30
18,700	MK-2	233,000	135,000	13,30
18,750	MK-2	233,000	135,000	13,30
18,800	MK-2	233,000	135,000	13,30
19,000	MK-2	233,000	135,000	13,30
19,250	MK-2	238,000	140,000	14,00
19,500	MK-2	238,000	140,000	14,00
19,700	MK-2	238,000	140,000	14,00
19,750	MK-2	238,000	140,000	14,00
20,000	MK-2	238,000	140,000	14,00
20,200	MK-2	243,000	145,000	14,60
20,250	MK-2	243,000	145,000	14,60
20,500	MK-2	243,000	145,000	14,60
20,700	MK-2	243,000	145,000	14,60
21,000	MK-2	243,000	145,000	14,60
21,500	MK-2	248,000	150,000	15,30
21,700	MK-2	248,000	150,000	15,30
21,750	MK-2	248,000	150,000	15,30
22,000	MK-2	248,000	150,000	15,30
22,250	MK-2	248,000	150,000	15,30
22,400	MK-2	248,000	150,000	15,30
22,500	MK-2	253,000	155,000	16,00
22,700	MK-2	253,000	155,000	16,00
23,000	MK-2	253,000	155,000	16,00
23,500	MK-2	253,000	155,000	16,00
23,700	MK-3	281,000	160,000	16,60
24,000	MK-3	281,000	160,000	16,60
24,200	MK-3	281,000	160,000	16,60
24,500	MK-3	281,000	160,000	17,30
24,700	MK-3	281,000	160,000	17,30
24,750	MK-3	281,000	160,000	17,30
25,000	MK-3	281,000	160,000	17,30

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
25,250	MK-3	286,000	165,000	18,00
25,500	MK-3	286,000	165,000	18,00
25,600	MK-3	286,000	165,000	18,00
25,700	MK-3	286,000	165,000	18,00
26,000	MK-3	286,000	165,000	18,00
26,500	MK-3	286,000	165,000	18,00
26,700	MK-3	291,000	170,000	18,60
27,000	MK-3	291,000	170,000	18,60
27,500	MK-3	291,000	170,000	18,60
27,700	MK-3	291,000	170,000	19,30
28,000	MK-3	291,000	170,000	19,30
28,700	MK-3	296,000	175,000	20,00
29,000	MK-3	296,000	175,000	20,00
29,500	MK-3	296,000	175,000	20,50
29,700	MK-3	296,000	175,000	20,50
29,750	MK-3	296,000	175,000	20,50
30,000	MK-3	296,000	175,000	20,50
30,500	MK-3	301,000	180,000	21,00
30,600	MK-3	301,000	180,000	21,00
31,000	MK-3	301,000	180,000	21,00
31,600	MK-4	334,000	185,000	22,00
32,000	MK-4	334,000	185,000	22,00
32,600	MK-4	334,000	185,000	23,00
33,000	MK-4	334,000	185,000	23,00

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
33,600	MK-4	339,000	190,000	24,00
34,000	MK-4	339,000	190,000	24,00
34,600	MK-4	339,000	190,000	25,00
35,000	MK-4	339,000	190,000	25,00
35,600	MK-4	344,000	195,000	25,50
36,000	MK-4	344,000	195,000	25,50
36,600	MK-4	344,000	195,000	26,00
37,600	MK-4	349,000	200,000	26,50
38,000	MK-4	349,000	200,000	26,50
39,000	MK-4	349,000	200,000	27,00
39,600	MK-4	349,000	200,000	28,00
40,000	MK-4	349,000	200,000	28,00
44,000	MK-4	359,000	210,000	30,50
44,600	MK-4	359,000	210,000	31,00
45,000	MK-4	359,000	210,000	31,00
50,000	MK-4	369,000	220,000	34,50

FRIZAR
www.frizar.ru

Зенкера с конусом Морзе

DIN 343 | N | 120° | h8

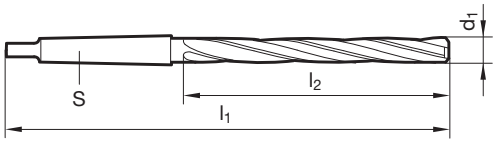
Режущий материал	HSCO
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	•
S	○
H	

конусная заточка • высокая стабильность • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия • простое окончательное развёртывание после расточки

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **634**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
8,500	MK-1	156,000	75,000	5,60
9,000	MK-1	162,000	81,000	6,30
9,800	MK-1	168,000	87,000	7,00
10,750	MK-1	175,000	94,000	7,70
11,750	MK-1	182,000	101,000	8,40
12,000	MK-1	182,000	101,000	8,40
12,500	MK-1	182,000	101,000	8,40
12,750	MK-1	182,000	101,000	9,10
13,000	MK-1	182,000	101,000	9,10
14,000	MK-1	189,000	108,000	9,80
14,750	MK-2	212,000	114,000	10,50
15,750	MK-2	218,000	120,000	11,20

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
16,000	MK-2	218,000	120,000	11,20
16,500	MK-2	223,000	125,000	11,90
17,000	MK-2	223,000	125,000	11,90
18,000	MK-2	228,000	130,000	12,60
19,700	MK-2	238,000	140,000	14,00
20,000	MK-2	238,000	140,000	14,00
21,000	MK-2	243,000	145,000	14,60
22,000	MK-2	248,000	150,000	15,30
23,000	MK-2	253,000	155,000	16,00
24,000	MK-3	281,000	160,000	16,60
25,000	MK-3	281,000	160,000	17,30
26,000	MK-3	286,000	165,000	18,00

Зенкера с конусом Морзе

DIN 1864 | N | 120° | h8

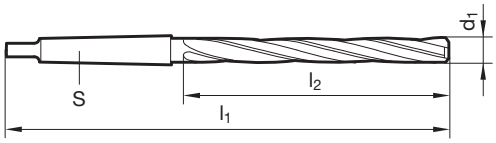
Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

заточка боковой пов-ти конуса • твердосплавные впайные пластины • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия • простое окончательное развёртывание после расточки

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **555**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
5,000	MK-1	155,000	74,000	3,50
8,000	MK-1	181,000	100,000	5,60
8,800	MK-1	188,000	107,000	6,30
9,000	MK-1	188,000	107,000	6,30
9,700	MK-1	197,000	116,000	7,00
9,800	MK-1	197,000	116,000	7,00
10,000	MK-1	197,000	116,000	7,00
10,100	MK-1	197,000	116,000	7,00
10,500	MK-1	197,000	116,000	7,00
11,100	MK-1	206,000	125,000	7,70
11,750	MK-1	215,000	134,000	8,40
12,000	MK-1	215,000	134,000	8,40
12,750	MK-1	215,000	134,000	9,10
13,000	MK-1	215,000	134,000	9,10
13,750	MK-1	223,000	142,000	9,80
14,000	MK-1	223,000	142,000	9,80
15,000	MK-2	245,000	147,000	10,50
15,750	MK-2	251,000	153,000	11,20

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
16,000	MK-2	251,000	153,000	11,20
17,750	MK-2	263,000	165,000	12,60
19,000	MK-2	269,000	171,000	13,30
19,700	MK-2	275,000	177,000	14,00
20,000	MK-2	275,000	177,000	14,00
20,700	MK-2	282,000	184,000	14,60
21,000	MK-2	282,000	184,000	14,60
21,700	MK-2	289,000	191,000	15,30
22,000	MK-2	289,000	191,000	15,30
22,700	MK-2	296,000	198,000	16,00
23,000	MK-2	296,000	198,000	16,00
24,000	MK-3	327,000	206,000	16,60
25,000	MK-3	327,000	206,000	17,30
25,700	MK-3	335,000	214,000	18,00
30,000	MK-3	351,000	230,000	20,50

FRIZAR
www.frizar.ru

Зенкера с конусом Морзе

DIN 1864 | N | 120° | h8

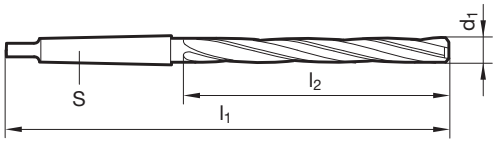
Режущий материал	HSCO
Покрытие	●
Направление резания	R

P	●
M	○
K	●
N	●
S	○
H	

конусная заточка • высокая стабильность • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • Улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия • простое окончательное развёртывание после расточки

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **635**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
8,000	MK-1	181,000	100,000	5,60
10,000	MK-1	197,000	116,000	7,00
14,000	MK-1	223,000	142,000	9,80
15,000	MK-2	245,000	147,000	10,50

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm

Зенкера с конусом Морзе

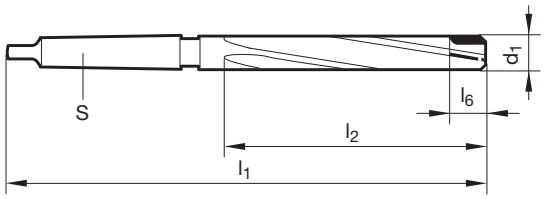
WN | N | 120° | h8

Режущий материал	HM
Покрытие	◯
Направление резания	R

P	○	конусная заточка • твердосплав.покрытие • очень высокая прочность для просверленных/литых/штампованных отверстий • корректирует точность по соосности • корректирует некруглость • улучшена поверхность отверстия • Ø заборной части ≤ Ø рассверливаемого отверстия, поэтому необходимо учесть наименьший Ø предварительного отверстия
M	○	
K	○	
N	○	
S	○	универсальное применение
H	○	

GÜHRINGNAVIGATOR

Параметры резания см. стр. 800



Артикул № **729**

d1	S	l1	l2	l6	d0 ≥
mm		mm	mm	mm	mm
28,700	MK-3	296,000	175,000	25,000	21,0
29,700	MK-3	296,000	175,000	25,000	22,0
30,600	MK-3	301,000	180,000	25,000	23,0
31,600	MK-4	334,000	185,000	25,000	24,0
33,000	MK-4	334,000	185,000	25,000	25,0
33,600	MK-4	339,000	190,000	25,000	26,0

d1	S	l1	l2	l6	d0 ≥
mm		mm	mm	mm	mm
34,000	MK-4	339,000	190,000	25,000	26,0
36,000	MK-4	344,000	195,000	25,000	28,0
37,600	MK-4	349,000	200,000	25,000	30,0
38,600	MK-4	349,000	200,000	25,000	31,0
39,000	MK-4	349,000	200,000	25,000	31,0
39,600	MK-4	349,000	200,000	25,000	32,0

FRIZAR
www.frizar.ru

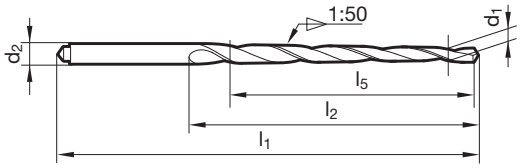
Штифтовые сверла

DIN 1898 | N | 118° |

Режущий материал	HSS
Покрытие	>Ø 2,36
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 1,000 • конусная заточка • для формирования фаски • с поводком



Артикул № **531**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
2,000	3,150	86,000	52,000	48,000
2,500	3,150	86,000	52,000	48,000
3,000	4,000	100,000	63,000	58,000
3,500	5,000	112,000	74,000	68,000
4,000	5,000	112,000	74,000	68,000
4,500	6,300	122,000	81,000	73,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000	6,300	122,000	81,000	73,000
5,500	8,000	160,000	114,000	105,000
6,000	8,000	160,000	114,000	105,000
8,000	10,000	207,000	157,000	145,000
10,000	12,500	245,000	190,000	175,000
12,000	16,000	290,000	228,000	210,000

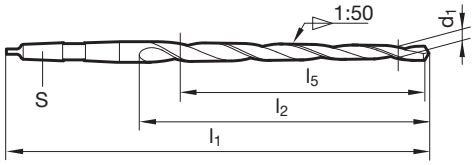
Штифтовые сверла

DIN 1898 | N | 118° |

Режущий материал	HSS
Покрытие	
Направление резания	R

P	•
M	○
K	•
N	○
S	
H	

подточка ≥ Ø 5,000 • конусная заточка • для конических отверстий для посадки конических штифтов по DIN 1 (новый: DIN EN 22339), DIN 7978 (новый: DIN EN 28736), DIN 7977 (новый: DIN EN 28737) и DIN 258



Артикул № **532**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000		155,000	81,000	73,000
6,000		187,000	108,000	105,000
8,000		227,000	149,000	145,000
10,000		257,000	180,000	175,000
12,000		315,000	219,000	210,000
13,000		325,000	229,000	220,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
14,000		325,000	229,000	220,000
16,000		335,000	239,000	230,000
20,000		377,000	263,000	250,000
25,000		427,000	311,000	300,000

FRIZAR
www.frizar.ru

FRIZAR
www.frizar.ru

GÜHRING NAVIGATOR

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤3xD Глубина сверления

1171	1660	1180	1181	2468	2477	2469	8510	8610	8520	8620
6538K	6537K	6537K	6537K	6537K	6537K	6537K	6537K	6537K	6537K	6537K
HM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P
RT 80 U	RT 100 F	RT 100 F	RT 100 U	RT 100 F	RT 100 U	RT 100 U	RT 100 VA		RT 100 HF	
S	S	S	S	F	F	F	a	a	Y	Y
осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой
55	53	54	43	52	39	41	48	50	44	46

Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)			Vc m/min	Подача (№ в табл.)			Vc m/min	Подача (№ в табл.)		Vc m/min	Подача (№ в табл.)	
95	6	110	6	6	6	145	7	7	7				145	7	7
80	5	90	5	5	5	120	6	6	6				120	6	6
95	7	130	7	7	7	170	8	8	8				170	8	8
75	6	110	7	7	7	145	8	8	8				145	8	8
80	6	100	7	7	7	130	8	8	8				130	8	8
75	6	95	6	6	6	125	7	7	7				125	7	7
70	6	90	6	6	6	120	7	7	7				120	7	7
75	6	90	6	6	6	120	7	7	7				120	7	7
60	5	80	6	6	6	105	7	7	7				105	7	7
90	7	110	7	7	7	145	8	8	8				145	8	8
75	6	90	6	6	6	120	7	7	7				120	7	7
60	5	65	4	4	4	85	5	5	5				85	5	5
75	6	85	6	6	6	110	7	7	7				110	7	7
60	5	80	4	4	5	105	5	5	5				105	5	5
45	5	60	5	5	5	80	6	6	6				80	6	6
35	5	50	4	4	4	65	5	5	5				65	5	5
40	4	45	3	3	3	60	4	4	4				60	4	4
		45	2	2	2	60	3	3	3				60	3	3
		40	2	2	2	55	3	3	3				55	3	3
		20	1	1	1	35	2	2	2				35	2	2
40	2	45	4	4	4	60	5	5	5	80	5	5			
35	2	40	2	2	2	55	2	2	2	60	2-3	2-3			
35	2	35	4	4	4	45	5	5	5	80	5	5			
150	7	160	8	8	8	210	9	9	9						
110	7	120	8	8	8	160	9	9	9						
110	7	100	8	8	8	140	9	9	9						
90	6	95	7	7	7	130	8	8	8						
		30	2	2	2	40	3	3	3						
		25	3	3	3	35	4	4	4	30	4	4	35	4	4
		35	3	3	3	45	4	4	4	45	4	4	45	4	4
		30	2	2	2	40	3	3	3	40	3	3	40	3	3
200	8	240	8	8	8	310	9	9	9						
200	8	240	8	8	8	310	9	9	9						
170	8	200	8	8	8	260	9	9	9						
140	7	170	8	8	8	220	9	9	9						
		230	7	7	7	280	8	8	8						
		95	6	6	6	125	7	7	7						
		250	7	7	7	325	8	8	8						
		170	6	6	6	220	7	7	7						
		95	6	6	6	125	7	7	7						
		80	5	5	5	105	6	6	6						
		70	5	5	5	90	6	6	6						
		60	5	5	5	80	6	6	6						

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Al
преимущественно для обработки алюминия

G
преимущественно для обработки чугуна

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤3xD Глубина сверления

1702	1184	1242
6539	6537K	6539
VHM	VHM	VHM
K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U
S	S	S
28	21	23

2475	2480	2472	2473
6537K	6537K	6537K	6539
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U	RT 100 U
F	F	F	F
27	16	18	20

8524
6537K
VHM
K/P
RT 100 HF
Y
25

≤4xD

768	6068
WN	WN
VHM	VHM
K	K
RT 150 GG	RT 150 GG
○	○
осевой	осевой
56	58
Al	G

Vc m/min	Подача (№ в табл.)		
100	6	**6**	**6**
85	5	**5**	**5**
110	7	**7**	**7**
85	6	**6**	**6**
90	6	**6**	**6**
85	6	**6**	**6**
80	6	**6**	**6**
80	6	**6**	**6**
75	5	**5**	**5**
100	7	**7**	**7**
90	6	**6**	**6**
65	4	**4**	**4**
75	**5**	5	5
70	**4**	4	4
50	**5**	5	5
40	**4**	4	4
40	**3**		
35	**2**	2	2
35	1	1	1
20	1	1	1
40	**2**	2	2
15	**2**	1	1
35	**2**	2	2
160	7	**7**	**7**
120	7	**7**	**7**
120	7	**6**	**6**
95	7	**6**	**6**
25	**2**	**2**	**2**
20	**3**	3	3
15	1	1	1
15	1	1	1
200	**8**	**8**	**8**
200	**8**	**8**	**8**
170	**8**	**8**	**8**
140	**7**	**7**	**7**
200	7	**7**	**7**
80	**6**	6	6
210	**7**	7	7
140	6	**6**	**6**
80	5	**5**	**5**
65	5	**5**	**5**
60	4	**4**	**4**
45	4	**4**	**4**

Vc m/min	Подача (№ в табл.)		
130	7	**7**	**7**	**7**
110	6	**6**	**6**	**6**
145	8	**8**	**8**	**8**
110	7	**7**	**7**	**7**
120	7	**7**	**7**	**7**
110	7	**7**	**7**	**7**
105	7	**7**	**7**	**7**
105	7	**7**	**7**	**7**
100	6	**6**	**6**	**6**
130	8	**8**	**8**	**8**
120	7	**7**	**7**	**7**
85	5	**5**	**5**	**5**
100	**6**	6	6	6
90	**5**	5	5	5
65	**6**	6	6	6
55	**5**	5	5	5
55	**4**			
45	**3**	3	3	3
40	1	1	1	1
20	1	1	1	1
40	**2**	2	2	2
15	**1**	1	1	1
35	**2**	2	2	2
210	8	**8**	**8**	**8**
155	8	**8**	**8**	**8**
155	8	**7**	**7**	**7**
125	8	**7**	**7**	**7**
35	**3**	**3**	**3**	**3**
25	**4**	4	4	4
15	**1**	1	1	1
15	**1**	1	1	1
260	**9**	**9**	**9**	**9**
260	**9**	**9**	**9**	**9**
220	**9**	**8**	**8**	**8**
180	**8**	**8**	**8**	**8**
260	8	**8**	**8**	**8**
105	**7**	7	7	7
270	**8**	8	8	8
180	7	**7**	**7**	**7**
105	6	**6**	**6**	**6**
85	6	**6**	**6**	**6**
80	5	**5**	**5**	**5**
60	5	**5**	**5**	**5**

Vc m/min	Подача (№ в табл.)
130	**7**
110	**6**
145	**8**
110	**7**
120	**7**
110	**7**
105	**7**
105	**7**
100	**6**
130	**8**
120	**7**
85	**5**
100	**6**
90	**5**
65	**6**
55	**5**
55	**4**
45	**3**
40	1
20	1
40	**2**
15	**1**
35	**2**
25	**4**
15	**1**
15	**1**

Vc m/min	Подача (№ в табл.)	

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤5xD Глубина сверления

1172	6501	1662	1182	1663	1183	2478	2470	2479	2471	5759
6538M	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L
HM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P
RT 80 U	RT 100 R	RT 100 F	RT 100 F	RT 100 U	RT 100 U	RT 100 F	RT 100 F	RT 100 U	RT 100 U	RT 100 S
S	F	S	S	S	S	F	F	F	F	F
осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой
84	82	78	80	65	66	76	77	61	63	59

v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)				v_c m/min	Подача (№ в табл.)				v_c m/min	Подача (№ в табл.)
95	5			110	6	6	**6**	**6**	145	7	7	**7**	**7**	145-230	**8**
80	4			90	5	5	**5**	**5**	120	6	6	**6**	**6**	120-220	**7**
95	6			130	7	7	**7**	**7**	170	8	8	**8**	**8**	170-260	**8**
75	5			110	7	7	**7**	**7**	145	8	8	**8**	**8**	145-230	**8**
80	5			100	7	7	**7**	**7**	130	8	8	**8**	**8**	130-220	**8**
75	5			95	6	6	**6**	**6**	125	7	7	**7**	**7**	125-210	**7**
75	5			90	6	6	**6**	**6**	120	7	7	**7**	**7**	120-200	**7**
75	5			90	6	6	**6**	**6**	120	7	7	**7**	**7**	120-210	**7**
55	4			80	6	6	**6**	**6**	105	7	7	**7**	**7**	105-200	**7**
90	6			110	7	7	**7**	**7**	145	8	8	**8**	**8**	145-230	**8**
75	5			90	6	6	**6**	**6**	120	7	7	**7**	**7**	120-210	**7**
55	4			65	4	4	**4**	**4**	85	5	5	**5**	**5**	105-200	**6**
70	5			85	**6**	**6**	6	6	105	**7**	**7**	7	7	110-150	**7**
55	4			80	**4**	**4**	**5**	**5**	100	**5**	**5**	5	5	100-150	**5**
40	4			60	**5**	**5**	5	5	70	**6**	**6**	6	6	70-120	**6**
35	4			50	**4**	**4**	4	4	55	**5**	**5**	5	5	55-100	**5**
40	3			45	**3**	**3**	4	4	60	**4**	**4**	5	5	60-100	**5**
				45	**2**	**2**	2	2	60	**3**	**3**	3	3	60-100	**5**
				40	2	2	2	2	55	3	3	3	3		
				25	1	1	1	1	35	2	2	2	2		
40	2			45	4	4	4	4	60	5	5	5	5		
35	2			40	2	2	2	2	55	2	2	2	2		
35	2			35	4	4	4	4	50	5	5	5	5		
150	6	210	**9**	160	8	8	**8**	**8**	195	9	9	**9**	**9**		
110	6	160	**9**	120	8	8	**8**	**8**	160	9	9	**9**	**9**		
110	6	160	**9**	100	8	8	**8**	**8**	140	9	9	**9**	**9**		
90	5	130	**8**	95	7	7	**7**	**7**	130	8	8	**8**	**8**		
				30	2	2	**2**	**2**	40	3	3	3	3		
		130	**8**												
		100	**8**												
		80	**8**												
		60	**8**												
				25	3	3	3	3	35	4	4	4	4		
				35	3	3	3	3	45	4	4	4	4		
				30	2	2	2	2	40	3	3	3	3		
200	7			240	8	8	**8**	**8**	310	9	9	**9**	**9**		
200	7			240	8	8	**8**	**8**	310	9	9	**9**	**9**		
170	7			200	8	8	**8**	**8**	260	9	9	**9**	**9**		
140	6			170	8	8	**8**	**8**	220	9	9	**9**	**9**		
				230	7	7	**7**	**7**	280	8	8	**8**	**8**		
				95	**6**	**6**	6	6	125	**7**	**7**	7	7		
				250	**7**	**7**	7	7	325	**8**	**8**	8	8		
				170	6	6	**6**	**6**	220	7	7	**7**	**7**		
				95	6	6	**6**	**6**	125	7	7	**7**	**7**		
				80	5	5	**5**	**5**	105	6	6	**6**	**6**		
				70	5	5	**5**	**5**	90	6	6	**6**	**6**		
				60	5	5	**5**	**5**	80	6	6	**6**	**6**		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤5xD Глубина сверления

8511	8611
6537L	6537L
VHM	VHM
K/P	K/P
RT 100 VA	RT 100 VA
a	a
осевой	осевой
72	74

8521	8621
6537L	6537L
VHM	VHM
K/P	K/P
RT 100 HF	RT 100 HF
Y	Y
осевой	осевой
68	70

1243	2717
WN	6537L
VHM	VHM
K/P	K/P
RT 100 U	RT 100 U
S	S
36	35

2712	2474	2996	2719
6537L	WN	6537L	6537L
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U	RT 100 U
F	F	F	F
38	34	30	32

vc m/min	Подача (№ в табл.)		vc m/min	Подача (№ в табл.)		vc m/min	Подача (№ в табл.)		vc m/min	Подача (№ в табл.)			
			145	7	**7**	100	**6**	**6**	130	7	**7**	7	**7**
			120	**6**	**6**	85	**5**	**5**	110	6	**6**	6	**6**
			170	8	**8**	110	**7**	**7**	145	8	**8**	8	**8**
			145	**8**	**8**	85	**6**	**6**	110	7	**7**	7	**7**
			130	8	**8**	90	**6**	**6**	120	7	**7**	7	**7**
			125	7	**7**	85	**6**	**6**	110	7	**7**	7	**7**
			120	**7**	**7**	80	**6**	**6**	105	7	**7**	7	**7**
			120	**7**	**7**	80	**6**	**6**	105	7	**7**	7	**7**
			105	**7**	**7**	75	**5**	**5**	100	6	**6**	6	**6**
			145	8	**8**	100	**7**	**7**	130	8	**8**	8	**8**
			120	**7**	**7**	90	**6**	**6**	120	7	**7**	7	**7**
			85	**5**	**5**	65	**4**	**4**	85	5	**5**	5	**5**
			110	**7**	**7**	75	5	5	100	**6**	6	6	6
			105	**5**	**5**	70	4	4	90	**5**	5	5	5
			80	**6**	**6**	50	5	5	65	**6**	6	6	6
			65	**5**	**5**	40	4	4	55	**5**	5	5	5
			60	**4**	**4**				55	**4**			
			60	**3**	**3**	35	2	2	45	**3**	3	3	3
			55	**3**	**3**	35	1	1	35	1	1	1	1
			35	2	2	20	1	1	20	1	1	1	1
80	**5**	**5**				40	2	2	45	**2**	2	2	2
60	**2-3**	**2-3**				15	1	1	15	**1**	1	1	1
80	**5**	**5**				35	2	2	35	**2**	1	2	2
						160	**7**	**7**	210	8	**8**	8	**8**
						120	**7**	**7**	155	8	**8**	8	**8**
						120	**6**	**6**	145	8	**7**	7	**7**
						95	**6**	**6**	125	8	**7**	7	**7**
						25	**2**	**2**	35	3	**3**	3	**3**
30	4	4	35	**4**	**4**	20	3	3	25	**4**	4	4	4
45	**4**	**4**	45	4	4	15	1	1	15	1	1	1	1
40	**3**	**3**	40	3	3	15	1	1	15	1	1	1	1
						200	**8**	**8**	260	9	**9**	9	**9**
						200	**8**	**8**	260	9	**9**	9	**9**
						170	**8**	**8**	235	9	**9**	9	**9**
						140	**7**	**7**	170	8	**8**	8	**8**
						200	**7**	**7**	260	8	**8**	8	**8**
						80	6	6	105	**7**	7	7	7
						210	7	7	270	**8**	8	8	**8**
						140	**6**	**6**	180	7	**7**	7	**7**
						80	**5**	**5**	105	6	**6**	6	**6**
						65	**5**	**5**	85	6	**6**	6	**6**
						60	**4**	**4**	80	5	**5**	5	**5**
						45	**4**	**4**	60	5	**5**	5	**5**

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Для глубины обработки более 7 x D принципиально необходимо предварительное пилотное отверстие:
1. Пилотное отверстие может быть изготовлено коротким, прочным сверлом, диаметр которого на 0,01-0,02 mm больше, чем диаметр сверла Ratio. Глубина пилотного отверстия ≥ 1 x D.
2. Альтернативно сверло Ratio может само изготовить пилотное отверстие. Для этого необходимо при врезании уменьшить скорость резания и подачи на 30-40 %
3. Рекомендуемое минимальное давление СОЖ составляет 40 бар.

Для обеспечения безопасности важно, чтобы сверло не вращалось без опоры с частотой вращения более n = 6000 об/мин. В противном случае, центробежные силы могут сломать длинный инструмент еще до достижения поверхности заготовки!

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Al
преимущественно для обработки алюминия

G
преимущественно для обработки чугуна

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤7xD Глубина сверления

1173	769	6069	2711	4044	4045	6502	8522	5760	770	6070	5525
6538L	WN	WN	WN	WN	WN	WN	WN	6537L	WN	WN	WN
HM	VHM		VHM	VHM		VHM	VHM	VHM	VHM		VHM
P	K	K	K/P	K/P	K/P	K/P	K/P	K/P	K	K	K/P
RT80U	RT 150 GG		RT100U	RT 100 U		RT100R	RT100HF	RT100S	RT 150 GG		RT100U
S	○	○	S	F	F	F	Y	F	○	○	F
осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой	осевой
95	93	94	89	85	87	91	90	96	98	99	100
	Al	G							Al	G	

v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)		v_c m/min	Подача (№ в табл.)		v_c m/min	Подача (№ в табл.)		v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)		v_c m/min	Подача (№ в табл.)
95	4				110	5	145	6	6			145	6	145-230	7			110	6
75	3				90	4	120	5	5			120	5	120-220	6			110	5
90	5				130	6	170	7	7			170	7	170-260	7			110	7
75	4				110	6	145	7	7			145	7	145-230	7			100	7
80	4				100	6	130	7	7			130	7	130-220	7			110	7
75	4				95	5	125	6	6			125	6	125-210	6			110	6
60	4				90	5	120	6	6			120	6	120-200	6			100	6
75	4				90	5	120	6	6			120	6	120-210	6			110	6
60	3				80	5	105	6	6			105	6	105-200	6			105	6
90	5				110	6	145	7	7			145	7	145-230	7			110	7
75	4				90	5	120	6	6			120	6	120-210	6			110	6
55	3				65	3	85	4	4			85	4	105-200	5			85	4
75	4				80	5	110	6	6			110	6	110-150	6			100	6
55	3				75	4	105	4	4			105	4	100-150	4			80	4
40	3				55	4	80	5	5			80	5	70-120	5			80	5
35	3				40	3	65	4	4			65	4	65-100	4			65	4
40	2				45	2	60	4	4			60	3	60-100	4			50	4
					45	1	60	2	2			60	2	60-100	4			50	2
					40	1	55	2	2			55	2						
					25	1	35	1	1			35	1						
35	1				45	3	60	4	4									60	4
33	1				40	2	55	2	2									55	2
25	1				35	3	45	4	4									45	4
150	5	120	6	7	150	7	195	8	8	210	8					120	6 6	120	8
110	5	100	6	7	120	7	160	8	8	160	8					100	6 6	120	8
110	5	90	6	7	100	7	140	8	8	160	8					90	6 6	100	8
90	4	80	6	7	95	6	130	7	7	130	7					80	6 6	90	7
		40	2	2	30	1	40	2	2							40	1 2		
										130	7								
										100	7								
										80	7								
										60	7								
					25	2	35	3	3			35	3						
					35	1	40	3	3			45	3						
					30	1	40	2	2			40	4						
180	6	410	8	7	240	7	310	8	8							410	8 6	150	8
180	6	410	8	7	240	7	310	8	8							410	8 6	150	8
160	6	380	8	8	200	7	260	8	8							380	8 6	150	8
130	5	330	8	8	170	7	220	8	8							330	8 6	120	8
					230	6	280	7	7									150	7
					95	6	125	6	6									80	6
		280	7	7	250	7	325	7	7							280	7 7	120	7
					170	6	220	6	6									120	6
		110	6	6	95	6	125	6	6							110	6 6	40	6
		80	5	5	80	5	105	5	5							80	5 5		
					70	5	90	5	5										
					60	5	80	5	5									40	5

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤15xD	≤15xD	≤20xD	≤25xD	≤30xD	≤40xD
773	6509	6511	6512	6513	6514
WN	WN	WN	WN	WN	WN
VHM	VHM	VHM	VHM	VHM	VHM
K	K/P	K/P	K/P	K/P	K/P
RT 150 GN	RT 100 T	RT 100 T	RT 100 T	RT 100 T	RT 100 T
○	A	A	A	A	A
осевой	40 bar MQL	40 bar MQL	40 bar MQL	40 bar MQL	40 bar
103	102	104	105	106	107

Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)
		110	8			110	8			100	8			80	7			80	7
		110	8			110	8			100	8			80	7			80	7
		120	8			120	8			120	8			100	8			100	8
		120	8			120	8			100	8			100	8			100	8
		110	6			110	6			110	6			110	6			110	6
		110	8			110	8			100	8			80	7			80	7
		100	7			100	7			100	7			80	7			80	7
		110	7	80	7	110	7	80	7	100	7	70	7	80	7	60	7	80	6-7
		110	6	80	7	110	6	80	7	100	6	70	7	80	6	60	7	80	6
		110	8			110	8			100	8			80	7			80	7
		110	7	80	6-7	110	7	80	6-7	100	7	70	6-7	80	6	60	6-7	80	6
		110	6	80	6-7	110	6	80	6-7	100	6	70	6-7	80	6	60	6-7	80	6
		100	5			100	5			80	5			80	5			80	5
		80	5			80	5			60	5			60	5			60	5
		100	6-7			100	6			90	6			80	6			80	6-7
		80	5			80	5			70	4			70	4			70	4
		50	5			50	5			50	4			50	4			50	4
		50	5			50	5			50	4			50	4			50	4
		50	4			50	4			50	4			50	4			50	4
		100	5			100	5			100	5			80	5			80	5
		70	2-3			60	3			60	3			60	3			70	2-3
		100	5			100	5			100	5			80	5			80	5
120	5	140	8			140	8			130	8			120	8			120	8
100	5	100	8			100	8			90	8			80	8			80	8
90	5	140	8			140	8			130	8			120	8			120	8
80	5	100	8			100	8			90	8			80	8	65	8	80	8
40	1																		
		100	6			100	6			90	6			80	6			80	6
		100	6			100	6			90	6			80	6			80	6
		90	8	90	8	90	8	90	8	80	8	80	8	70	8	70	8	70	8
		30	2			30	2			30	2			30	2			30	2
410	6																		
410	6																		
380	7																		
330	7																		
		120	1			120	1			120	1			120	1			120	1
280	6	120	8			120	8			110	8			100	8			100	8
110	5																		
80	4																		

Навигатор

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Тип
Покрытие
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤3xD

745
6539
VHM
K10/K20
GS 200 G
○
116

≤5xD Глубина сверления

1025	2713	731
6539	6537L	6539
VHM	VHM	VHM
K	K	K
GS 200 G	FT 200 G	GS 200 U
○	○	○
117	113	115

1027	611
6539	6539
VHM	VHM
K10/K20	K/P
GS 200 F	GS 200 U
Ⓢ	Ⓢ
119	114

vc m/min	Подача (№ в табл.)				vc m/min	Подача (№ в табл.)				vc m/min	Подача (№ в табл.)	
										100	5	5
										85	4	4
					90				6	110	6	6
					75				5	95	5	5
										90	5	5
										85	5	5
										80	5	5
										80	5	5
										70	4	4
										100	6	6
										80	5	5
										70	4	4
										75	4	4
										70	4	4
										50	4	4
										40	4	4
										35	3	3
100	6				100	6	**6**	6		140	6	6
80	6				80	6	**6**	6		100	6	6
80	6				80	6	**6**	6		100	6	6
70	6				70	6	**6**	6		90	6	6
180	7				180	7	**7**	7		200	7	7
160	7				160	7	**7**	7		180	7	7
150	7				150	7	**7**	7		170	7	7
120	6				120	6	**6**	6		140	6	6
180	6				180	6	**6**	6		200	6	6
180	6				180	6	**6**	6		210	6	6

Навигатор

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR

Все значения стандартные. Фактические достижимые скорости резания и подачи будут зависеть от условий обработки.
Мы рекомендуем проводить соответствующие испытания.

На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Глубина сверления
Покрытие
Применение
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
◉ Эмульсия

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		◉ ◉
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		◉ ◉
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		◉ ◉ ◉
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		◉ ◉
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◉
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		◉ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		◉ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ◉ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	◉ ◉
Отбеленный чугун	–		≤350 HB	◉
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ◉ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		◉ ○ ◉ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◉
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		◉
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		◉ ◉
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◉
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		◉ ◉
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		◉ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ◉ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

HT 800 WP ≤1,5×D

4112	4115	4113	4114
WN	WN	WN	WN
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
1,5xD	1,5xD	1,5xD	1,5xD
F	a	F	○
стали	Нерж. стали	чугуны	Al и сплавы
139	145	142	148

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
130	6						
110	5						
130	7						
110	6						
130	6						
125	6						
110	5						
110	6						
90	5						
130	7						
110	6						
70	4						
105	5						
70	4						
60	5						
55	4						
55	3						
50	2						
		25	2				
		55	3				
		40	3				
		35	3				
				100	6		
				90	6		
				120	7		
				100	6		
		90	6				
				80	5		
				80	5		
				80	5		
				80	5		
		25	2				
		40	3				
		35	2				
						200	7
						180	7
						150	7
						120	7
						180	7
						70	6
						180	7
						120	6
						70	6
						50	6
						45	6
						35	5

≤3×D

4112	4115	4113	4114
WN	WN	WN	WN
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
3xD	3xD	3xD	3xD
F	a	F	○
стали	Нерж. стали	чугуны	Al и сплавы
139	145	142	148

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
130	6						
110	5						
130	7						
110	6						
130	6						
125	6						
110	5						
110	6						
90	5						
130	7						
110	6						
70	4						
105	5						
70	4						
60	5						
55	4						
55	3						
50	2						
		25	2				
		55	3				
		40	3				
		35	3				
				100	6		
				90	6		
				120	7		
				100	6		
		90	6				
				80	5		
				80	5		
				80	5		
				80	5		
		25	2				
		40	3				
		35	2				
						200	7
						180	7
						150	7
						120	7
						180	7
						70	6
						180	7
						120	6
						70	6
						50	6
						45	6
						35	5

Навигатор

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR

Все значения стандартные. Фактические достижимые скорости резания и подачи будут зависеть от условий обработки.
Мы рекомендуем проводить соответствующие испытания.

На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Глубина сверления
Покрытие
Применение
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
◉ Эмульсия

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		◉ ◉
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		◉ ◉
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		◉ ◉ ◉
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		◉ ◉
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◉
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		◉ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		◉ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ◉ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	◉ ◉
Отбеленный чугун	–		≤350 HB	◉
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ◉ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		◉ ○ ◉ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◉
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		◉
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		◉ ◉
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◉
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		◉ ◉
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		◉ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ◉ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

HT 800 WP ≤5×D

4112	4115	4113	4114
WN	WN	WN	WN
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
5xD	5xD	5xD	5xD
F	a	F	○
стали	Нерж. стали	чугуны	Al и сплавы
139	145	142	148

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
125	6						
105	5						
125	7						
105	6						
125	6						
120	6						
105	5						
105	6						
85	5						
125	7						
105	6						
70	4						
105	5						
70	4						
55	5						
50	4						
55	3						
50	2						
		25	2				
		55	3				
		40	3				
		35	3				
				100	6		
				90	6		
				120	7		
				100	6		
		90	6				
				80	5		
				80	5		
				80	5		
				80	5		
		25	2				
		40	3				
		35	2				
						180	7
						180	7
						140	7
						110	7
						180	7
						70	6
						180	7
						120	6
						70	6
						50	6
						45	6
						35	5

≤7×D

4112	4115	4113	4114
WN	WN	WN	WN
VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P
7xD	7xD	7xD	7xD
F	a	F	○
стали	Нерж. стали	чугуны	Al и сплавы
139	145	142	148

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
120	5						
105	4						
120	6						
105	5						
120	5						
110	5						
100	4						
100	5						
85	4						
120	6						
100	5						
70	4						
105	4						
70	3						
55	4						
50	3						
55	2						
50	2						
		25	1				
		55	2				
		40	2				
		35	2				
				80	6		
				70	6		
				100	7		
				80	6		
		70	6				
				60	5		
				60	5		
				60	5		
				60	5		
		25	1				
		40	2				
		35	1				
						180	6
						180	6
						140	6
						110	6
						180	6
						70	5
						180	6
						120	5
						70	5
						50	5
						45	5
						35	4

Навигатор

GÜHRINGNAVIGATOR

Все значения стандартные. Фактические достижимые скорости резания и подачи будут зависеть от условий обработки.
Мы рекомендуем проводить соответствующие испытания.

На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Глубина сверления
Покрытие
Применение
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
◉ Эмульсия

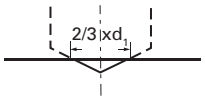
Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		◉ ◉
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		◉ ◉
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		◉ ◉ ◉
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		◉ ◉
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◉
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		◉ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		◉ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ◉ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	◉ ◉
Отбеленный чугун	–		≤350 HB	◉
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ◉ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		◉ ○ ◉ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◉
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		◉
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		◉ ◉
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◉
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		◉ ◉
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		◉ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ◉ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

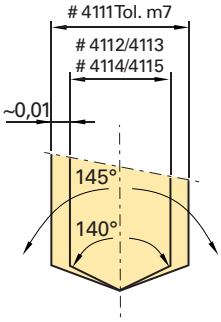
Навигатор

HT 800 WP ≤10×D

4112	4115	4113	4114	4111
WN	WN	WN	WN	WN
VHM	VHM	VHM	VHM	VHM
K/P	K/P	K/P	K/P	K/P
10xD	10xD	10xD	10xD	1xD
F	a	F	○	a
стали	Нерж. стали	чугуны	Al и сплавы	пилот/зенк.
139	145	142	148	151

≤1×D пилот/зенк.





- У сквозных отверстий следует обратить внимание на то, чтобы направляющие ленточки пластины, в конце сверления, оставались в контакте с отверстием . Кроме того, мы рекомендуем в конце сверления занизить подачу.
- При глубине сверления от 5xD мы всегда рекомендуем выполнять центрирование и/ или пилотное отверстие при помощи сверла Арт.-№ 4105 и пилотных пластин Арт.-№ 4111. В качестве альтернативы, в зависимости от обрабатываемого материала, можно применять сверло Ratio тип RT 100 U или RT 100 VA.
- При сверлении без центрирования мы рекомендуем при засверливании снизить подачу.
- Не применять свёрла без пробных попыток при прерывистом резании (пазы, поперечные отверстия). При прерывистых резаниях (макс. 0,2xD) мы рекомендуем по возможности снижать подачу.
- HT 800 по сравнению с классическими свёрлами с пластинами пригодно и для сверления пакетов листового металла.
- У сверлильных станков (неподвижный инструмент) необходимо следить за тем, чтобы инструмент располагался точно по центру.
- Условием оптимальной обработки является достаточная подача СОЖ (эмульсия или масло).
- Инструмент лишь условно пригоден к обработке без СОЖ или с MMS. При применении MMS мы рекомендуем применять конический конец хвостовика MMS, а также разработки Гюринг для системы MMS. Наша сервисная служба охотно окажет Вам консультационную поддержку.

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
100	5							130	6
95	4							110	5
100	6							130	7
95	5							110	6
100	5							130	6
95	5							125	6
90	4							110	5
90	5							110	6
85	4							90	5
100	6							130	7
90	5							110	6
70	4							70	4
95	4							105	5
70	3							70	4
55	4							60	5
50	3							55	4
55	2							55	3
50	2							50	2
		25	1					25	2
		55	2					55	3
		40	2					40	3
		35	2					35	3
				80	6			100	6
				70	6			90	6
				100	7			120	7
				80	6			100	6
		70	6					90	6
				60	5			80	5
				60	5			80	5
				60	5			80	5
				60	5			80	5
		25	1					25	2
		40	2					40	3
		35	1					35	2
						150	6	200	7
						150	6	180	7
						130	6	150	7
						105	6	120	7
						150	6	180	7
						70	5	70	6
						150	6	180	7
						110	5	120	6
						70	5	70	6
						50	5	50	6
						45	5	45	6
						35	4	35	5

Навигатор

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR

Все значения стандартные. Фактические достижимые скорости резания и подачи будут зависеть от условий обработки.
Мы рекомендуем проводить соответствующие испытания.

На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Глубина сверления
Покрытие
Применение
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
◉ Эмульсия

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		◉ ◉
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		◉ ◉
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		◉ ◉ ◉
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		◉ ◉
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◉
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		◉ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		◉ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ◉ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	◉ ◉
Отбеленный чугун	–		≤350 HB	◉
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ◉ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		◉ ○ ◉ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◉
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		◉
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		◉ ◉
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◉
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		◉ ◉
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		◉ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ◉ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

RT 800 WP

≤3×D			≤5×D			≤7×D		
2747	1047	2485	2747	1047	2485	2747	1047	2485
WN	WN	WN	WN	WN	WN	WN	WN	WN
VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
K	K/P	K/P	K	K/P	K/P	K	K/P	K/P
3xD	3xD	3xD	5xD	5xD	5xD	7xD	7xD	7xD
○	S	F	○	S	F	○	S	F
чугуны	стали	стали	чугуны	стали	стали	чугуны	стали	стали
166	162	164	166	162	164	166	162	164

v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)	v_c m/min	Подача (№ табл.)
		100	6	130	6			95	6	125	6			90	5	120	5
		85	5	110	5			80	5	105	5			80	4	105	4
		100	7	130	7			95	7	125	7			90	6	120	6
		85	6	110	6			80	6	105	6			80	5	105	5
		100	6	130	6			95	6	125	6			90	5	120	5
		95	6	125	6			90	6	120	6			85	5	110	5
		85	5	110	5			80	5	105	5			75	4	100	4
		85	6	110	6			80	6	105	6			75	5	100	5
		70	5	90	5			65	5	85	5			65	4	85	4
		100	7	130	7			95	7	125	7			90	6	120	6
		85	6	110	6			80	6	105	6			75	5	100	5
		55	4	70	4			55	4	70	4			55	4	70	4
		80	5	105	5			80	5	105	5			80	4	105	4
		55	4	70	4			55	4	70	4			55	3	70	3
		40	5	55	5			40	5	55	5			40	4	55	4
		35	4	50	4			35	4	50	4			35	3	50	3
		40	3	55	3			40	3	55	3			40	2	55	2
		35	2	50	2			35	2	50	2			35	2	50	2
		20	2	25	2			20	2	25	2			20	1	25	1
		40	3	55	3			40	3	55	3			40	2	55	2
		30	3	40	3			30	3	40	3			30	2	40	2
		25	3	35	3			25	3	35	3			25	2	35	2
100	7	160	7	210	7	90	7	150	7	195	7	90	6	150	6	195	6
80	7	80	7	155	7	70	7	110	7	145	7	70	6	110	6	145	6
80	7	120	7	155	7	70	7	110	7	145	7	70	6	110	6	145	6
70	6	100	6	130	6	60	6	90	6	120	6	60	5	90	5	120	5
10	2	25	2	35	2	10	2	25	2	35	2	10	2	25	2	35	2
		20	2	25	2			20	2	25	2			20	1	25	1
		30	3	40	3			30	3	40	3			30	2	40	2
		25	2	35	2			25	2	35	2			25	1	35	1
200	7	220	7	290	7	180	7	200	7	260	7	180	6	200	6	260	6
180	7	200	7	260	7	180	7	200	7	260	7	180	6	200	6	260	6
150	7	180	7	235	7	140	7	170	7	220	7	140	6	170	6	220	6
120	7	150	7	195	7	110	7	140	7	180	7	110	6	140	6	180	6
180	7	200	7	260	7	180	7	200	7	260	7	180	6	200	6	260	6
70	6	80	6	105	6	70	6	80	6	105	6	70	5	80	5	105	5
180	7	210	7	270	7	180	7	210	7	270	7	180	6	210	6	270	6
120	6	140	6	180	6	120	6	140	6	180	6	120	5	140	5	180	5
70	6	80	6	105	6	70	6	80	6	105	6	70	5	80	5	105	5
50	6	65	6	85	6	50	6	65	6	85	6	50	5	65	5	85	5
45	6	50	6	65	6	45	6	50	6	65	6	45	5	50	5	65	5
35	5	40	5	55	5	35	5	40	5	55	5	35	4	40	4	55	4
50	5	80	5	105	5	50	5	80	5	105	5	50	4	80	4	105	4
50	5	80	5	105	5	50	5	80	5	105	5	50	4	80	4	105	4
50	5	80	5	105	5	50	5	80	5	105	5	50	4	80	4	105	4

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № ®
Артикул № Ⓛ
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
® правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤3xD Глубина сверления

223	224	225	552	653	2460	329	363	1261	129	1259	128
226	227	228	553	672		330			136		
1897	1897	1897	1897	1897	1897	1897	WN	1897	WN	1897	WN
HSS	HSS	HSS	HSS	HSS	HSS	HSCO	HSCO	HSCO	HSCO	M42	HSCO
>Ø 2,36			<Ø 2,36 >Ø 16,0	S	F	>Ø 2,36					
N	H	W	GT 80	N	N	GV 120	GV 120	VA	N	N	N
192/200	204/206	208/210	212/215	196/203	199	218/225	448	230	414/415	235	413

v_c m/min	Подача (№ в табл.)				v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)					v_c m/min	Подача (№ в табл.)
27	**6**			6	30	**6**	32	**7**	35	5	5	5		5		
22	**5**			5	24	**5**	26	**6**	30	5	5	5		5		
30	**6**			**6**	33	**6**	36	**7**	40	5	5	5		5		
30	5			5	33	5	36	6	40	**5**	**5**	5	5	5	50	**5**
25	**5**			**5**	28	**5**	31	**6**	40	5	5	5		5		
25	**5**			**5**	28	**5**	31	**6**	40	5	5			5		
					25	4	28	5	35	**4**	**4**		**4**	4	35	**4**
					22	4	24	5	20	**4**	**4**		4	4	20	4
									16	**3**	**3**		3	3	15	3
30	**6**			6	33	**6**	36	**7**	36	6	6	6		6		
					20	4	22	5	20	**4**	**4**		4	3	20	4
									15	**3**	**3**		3	3	16	3
					14	4	16	5	16	4	**4**		4		16	4
									12	3	**3**		3	3	12	3
16	4			4	18	4	20	5	15	**4**	**4**		4	3	15	4
									12	**3**	**3**		3	3	12	3
									15	3	**3**		3	3	15	3
									8	**2**	**2**		2	**2**	8	2
									4	1	1			1		
									18	1	1	**4**	4	3	18	4
									14	3	3	**3**	3	3	14	3
									16	3	**3**	3	3	3	16	3
30	**6**			6	33	**6**	36	7	35	**6**	6			5		
30	6			6	33	6	36	**7**	30	**6**	**6**			5		
25	**6**			6	28	**6**	31	7	30	6	6			5		
20	6			6	22	6	24	**7**	25	**6**	**6**			5		
									10	3	3			3		
									8	1	1		1	1	8	1
									10	2	2	2		**2**		
									6	2	2	2		**2**		
70			**7**	7			85	8	90			7		7		
70			**7**	7			85	8	90			7		7		
50	7		7	**7**			60	**8**	80			7		7		
50	6			**6**			60	**7**	70			6		6		
70	6	**6**		6	80	6	90	6	70			6		6		
60	5		5	**5**	65	**5**	70	**6**	40			5		5		
70		6			75	5	80	6	60			5		5		
40	5		5	**5**	45	**5**	50	**6**	40			5		5		
30	4	4		**4**	33	**4**	36	**5**	35	4	4	4		4		
25	4			4	27	4	30	5	30	**4**	**4**	4		4		
15	4			4	16	**4**	18	**5**	20	4	4	**4**		4		
					15	4	18	5	15	4	4	**4**		4		
18	4	4		**4**	22	**4**	29	**5**	20	4	4		4		20	4
28	5	**5**	5	5	36	**5**	47	6	30			4		4		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤3xD Глубина сверления

572	2048	1228	2498	659	663	2461	512	515
1897	1897	1897	1897	1897	WN	1897	WN	1897
HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSS-E-PM
S	M	S	F	S	S	F	S	F
VA	P2000	GT 80	GT 80	GV 120	GV 120	GV 120	GU 500	GT 500
231	233	227	229	222	449	224	384	237

Vc m/min	Подача (№ в табл.)		Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)		Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)
38	6	35	**6**	38	6	42	6	38	5	5	42	6	45	**6**	42	6
33	5	30	**5**	33	5	36	5	33	4	4	36	5	35	**5**	37	5
44	6	40	**6**	44	**6**	48	**7**	44	5	5	48	6	50	**6**	47	**7**
42	5	40	**5**	38	**5**	42	**6**	38	5	5	42	6	40	**6**	44	6
44	5	40	**5**	44	6	48	6	44	5	5	48	6	44	**6**	47	6
44	5	40	**5**	44	5	48	6	44	5	5	48	6	44	**6**	47	6
		35	**4**	38	4	42	5	38	**4**	**4**	42	**5**	40	**5**	44	**5**
		25	**4**	27	4	30	5	27	**4**	**4**	30	**5**	27	4	30	4
		20	3	22	3	24	4	22	**3**	**3**	24	**4**	22	3	25	**3**
40	6	40	**6**	44	4	48	4	44	4	4	48	5	44	**6**	47	4
		20	4	22	4	24	5	22	**4**	**4**	24	**5**	22	4	25	**5**
		15	3	18	3	20	4	18	**3**	**3**	20	**4**	18	3	20	**4**
		20	4	22	4	24	5	22	**4**	**4**	24	**5**	22	4	25	**5**
		15	3	18	3	20	4	18	**3**	**3**	20	**4**	16	3	18	**4**
		18	4	19	4	21	5	19	**4**	**4**	21	**5**	20	4	22	**5**
		12	3	14	3	16	4	14	**3**	**3**	16	**4**	15	3	17	**4**
		12	3	14	3	17	4	14	**3**	**3**	17	**4**	13	3	17	**4**
		8	2	9	2	11	3	9	**2**	**2**	11	**3**	9	2	12	**2**
								4	1	1	5	2				
20	**4**	14	4	15	**4**	17	**4**	20	4	4	22	5	20	**4**	22	**4**
15	**3**	10	3	10	3	12	3	15	**3**	**3**	17	**4**	16	**4**	18	3
18	**3**	12	3	12	3	14	3	18	**3**	**3**	20	**4**	18	**4**	20	3
30	6	38	6	45	6	50	7	40	6	6	45	7	45	**6**	50	**7**
30	6	30	6	40	6	45	7	35	**6**	**6**	40	**7**	40	**6**	44	**7**
		30	6	33	6	36	7	33	6	6	36	7	40	**6**	45	**7**
		25	6	27	6	29	7	27	6	6	29	7	30	**6**	33	**7**
		10	3	8	3	10	4	12	3	3	14	4			16	4
8	1	5	2					6	2	2	7	2			6	2
12	**2**							11	2	2	12	3				
8	**2**							7	2	2	8	3				
90	7	90	7										70	7		
90	7	90	7										70	7		
80	7	80	7										85	7		
70	6	70	6										70	6		
70	6	85	6										80	6		
70	5	80	5	88	5	96	6						80	**5**	80	5
60	5	70	5	77	5	84	6						77	**5**		
40	5	40	5	44	5	48	6						44	**5**	60	5
35	4	40	4	45	5	50	5	45	5	5	50	6	50	**4**	50	5
33	4	30	4	40	4	45	5	40	**4**	**4**	45	**5**	40	**4**	44	5
20	**4**	25	4	22	4	25	5	23	4	4	26	5	32	**4**	33	5
15	**4**	15	4	17	4	20	5	17	4	**4**	20	**5**	28	**4**	28	5
		20	4	22	4	24	5						25	**4**	25	5
30	4	25	5	27	5	30	5						27	**4**		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		● ●
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		● ●
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		● ● ●
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		● ●
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		●
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		● ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		● ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤3xD Глубина сверления

730	702	1149	710	703	705	704	707	2463	1946
6539	WN	WN	WN	8037	8041	8038	WN	6539	6537K
VHM	VHM	VHM	HM	HM	HM	HM	HM	VHM	VHM
			K10/K20					K/P	K/P
○	○	○	○	○	○	○	○	F	A
N	N	N	Duro 150	N	N	N	H	N	H
239	243	431	323	429	512	430	432	241	389

v_c m/min	Подача (№ в табл.)							v_c m/min	Подача (№ в табл.)	v_c m/min	Подача (№ в табл.)
80	4							104	5		
70	4							91	5		
80	**5**			4	4	4		104	**6**		
70	**4**			3	3	3		91	**5**		
80	4							104	5		
70	4							91	5		
60	4							78	5		
60	4							78	5	80	6
80	5							104	6		
60	4							78	5	65	4
50	4							65	5	80	4
50	3							65	4		
25	2			**2**	**2**	**2**	2	32	3		
20	2			3	3	3		26	4	40	**2**
10				2	2	2				30	**1**
25	2							32	**2**		
15	1							20	**1**		
25	2							32	**2**		
90	**4**			4	4	4		117	**5**	90	8
80	**4**			4	4	4		104	**5**	80	8
80	**4**			4	4	4		91	**5**	80	8
70	**4**			4	4	4		104	**5**	70	7
10				**1**	**1**	**1**	1			30	2
15	2							20	2		
15	1							15	1		
15	1							15	1		
200	**7**							260	**8**		
200	**7**							260	**8**		
150	**6**							195	**7**		
120	**6**							156	**7**		
180	**6**							234	**6**		
80	**5**							104	**6**		
180	**5**			5	5	5		234	**6**		
180	**5**			5	5	5		234	**6**		
120	**5**							156	**6**		
120	**5**							156	**6**		
70	4							91	5		
50	3							65	4		
50	4	**4**						65	5		
40	3	**3**					3	52	4		
150			**1**								
80	3	**3**					2	104	4		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № (R)
Артикул № (L)
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
(R) правое
(L) левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

≤5xD Глубина сверления

560	205 208	240	268	229 248	245	592	251	206 209	246	207 210	247	549 550	558
338	338	338	WN	345	345	345	346	338	345	338	345	338	345
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
○	◔ >Ø 2,36	◔	◔	◔	◔ >Ø 2,36	◔ >Ø 16,0	◔	○	○	○	○	◔ >Ø 2,36	◔ >Ø 16,0
N	N	N	N	N	N	N	N	H	H	W	W	GT 100	GT 100
256	244/258	257	412	458/457	450	454	471	263/266	459	269/272	460	274/281	461

v_c m/min	Подача (№ в табл.)													
27	6	**6**	**6**	**6**	**6**	**6**	**6**	**6**					6	6
22	**5**	**5**	**5**	**5**	**5**	**5**	5	**5**					5	5
30	6	**6**	**6**	**6**	**6**	**6**	**6**	**6**					**6**	**6**
30	5	5	5	5	5	5	5	5					5	5
25	5	**5**	**5**	**5**	**5**	**5**	**5**	5					5	5
25	**5**	**5**	**5**	**5**	**5**	**5**	5	5					5	5
30	6	6	6	6	6	6	6	6					6	6
16		4	4	4	4	4	4	4					4	4
30	6	**6**	**6**	**6**	**6**	**6**	**6**	**6**					6	6
30	6	6	6	6	6	6	6	6					6	6
25	6	6	6	6	6	6	6	6					6	6
25	6	6	6	6	6	6	6	6					6	6
80											**7**	**7**		
80											**7**	**7**		
70	**7**	7	7	7	7	7	7	7			7	7	**7**	**7**
70	**6**	6	6	6	6	6	6	6					**6**	**6**
50	6	6	6	6	6	6	6	6	6	6			6	6
50	5	5	5	5	5	5	5	5			**5**	**5**	**5**	**5**
70									**6**	**6**				
40	5	5	5	5	5	5	5	5					**5**	**5**
30	4	4	4	4	4	4	4	4	4	4				
25	4	4	4	4	4	4	4	4						
15	4	4	4	4	4	4	4	4					4	4
18	4	4	4	4	4	4	4	4	4	4			**4**	**4**
28	5	5	5	5	5	5	5	5	**5**	**5**	5	5		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № (R)
Артикул № (L)
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
(R) правое
(L) левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		● ●
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		● ●
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		● ● ●
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		● ●
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		●
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		● ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		● ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		●
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		●
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		● ●
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		●
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		● ●
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		● ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤5xD Глубина сверления

651	654	652	606
664		665	
338	345	338	345
HSS	HSS	HSS	HSS
S	S	S	S
N	N	GT 100	GT 100
250/261	455	277/283	462

2456	2457
338	338
HSS	HSS
F	F
N	GT 100
254	280

305	345	351	622	645	605	1260	1262	1146
308					608			
338	345	346	338	345	338	338	345	338
HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	M42
>Ø 2,36			>Ø 2,36	>Ø 16,0				
N	N	N	GT 100	GT 100	Ti	VA	VA	N
284/289	463	472	291	466	301/308	309	470	315

Vc m/min	Подача (№ в табл.)			
30	**6**	**6**	6	6
24	**5**	**5**	5	5
33	**6**	**6**	**6**	**6**
33	5	5	5	5
28	**5**	**5**	5	5
28	**5**	**5**	5	5
25	4	4	4	4
22	4	4	4	4
33	**6**	**6**	6	6
20	4	4	4	4
14	4	4	4	4
18	4	4	4	4
33	6	6	6	6
33	6	6	6	6
28	**6**	**6**	6	6
22	6	6	6	6
80	6	6		
65	5	5	**5**	**5**
75	5	5	5	5
45	5	5	**5**	**5**
33	**4**	**4**		
27	**4**	**4**		
16	**4**	**4**	4	4
15	**4**	**4**	4	4
22	4	4	**4**	**4**
36	5	5		

Vc m/min	Подача (№ в табл.)		
32	**7**	7	
26	**6**	6	
36	**7**	**7**	
36	6	6	
31	**6**	6	
31	**6**	6	
28	5	5	
24	5	5	
36	**7**	7	
22	5	5	
16	5	5	
20	5	5	
36	7	7	
36	7	7	
31	7	7	
24	7	7	
85	8	8	
85	8	8	
60	**8**	8	
60	**8**	7	
90	7	7	
70	6	6	
80	6	6	
50	6	**6**	
36	**5**		
33	**5**		
18	**5**	5	
18	**5**	5	
29	5	5	

Vc m/min	Подача (№ в табл.)								
35	5	5	5	5	5		5	5	5
30	5	5	5	5	5		5	5	5
40	5	5	5	5	5		5	5	5
40	5	5	5	**5**	**5**		5	5	5
40	5	5	5	5	5		5	5	5
40	5	5	5	5	5				5
35	**4**	**4**	**4**	4	4				5
20	**4**	**4**	**4**	**4**	**4**				4
16	3	3	3	**3**	**3**	3			3
36	6	6	6	6	6	6	6	6	6
20	**4**	**4**	**4**	4	4				3
15	3	3	3	**3**	**3**	3			3
16	**4**	**4**	**4**	4	4				3
12	3	3	3	**3**	**3**	3			3
15	**4**	**4**	**4**	4	4				3
12	**3**	3	3	**3**	**3**	3			3
15	3	3	3	**3**	**3**	3			3
8	**2**	2	2			**2**			**2**
4									**1**
18	4	4	4	**4**	**4**	4	**4**	**4**	3
14	3	3	3	2	2	**3**	3	3	
16	3	3	3	3	3	**3**	3	3	3
35	6	6	6	6	6				5
30	**6**	**6**	**6**	6	6				5
30	6	6	6	6	6				5
28	**6**	**6**	**6**	6	6				5
10	3	3	3	3	3	3			**3**
8						1			**1**
10						**2**	2	2	2
6						**2**	2	2	2
90							**7**	**7**	7
90							**7**	**7**	7
80				7	7		7	7	7
70				6	6		6	6	6
70							6	6	6
40	**5**	5	5	5	5		5	5	5
60							5	5	5
40	5	5	5	4	4		5	5	5
35	**4**	4	4				4	4	4
33	**4**	4	4				4	4	4
20	4	4	4	4	4		**4**	**4**	4
15	4	4	4	**4**	**4**		**1**	**1**	4
20	4	4	4	4	4				

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		● ●
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		● ●
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		● ● ●
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		● ●
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		●
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		● ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		● ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	● ●
Отбеленный чугун	–		≤350 HB	●
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		●
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		●
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		● ●
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		●
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		● ●
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		● ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤5xD Глубина сверления

2997	661	658	662	657
338	345	338	345	338
HSCO	HSCO	HSCO	HSCO	HSCO
S	S	S	S	S
N	N	GT 100	GT 100	Ti
288	465	294	467	304

2459	2458
338	338
HSCO	HSCO
F	F
GT 100	Ti
296	306

1223	1224	1221	1222
338	345	338	345
HSCO	HSCO	HSCO	HSCO
A	A	C	C
GT 100	GT 100	GT 100	GT 100
299	469	298	468

vc m/min	Подача (№ в табл.)				
38	6	6	6	6	
33	5	5	5	5	
44	5	5	5	5	
38	5	5	**5**	**5**	
44	5	5	5	5	
38	**4**	**4**	4	4	
27	**4**	**4**	4	4	
22	3	3	**3**	**3**	3
44	4	4	4	4	
22	**4**	**4**	4	4	
18	3	3	**3**	**3**	
22	**4**	**4**	4	4	
18	3	3	**3**	**3**	
19	**4**	**4**	**4**	4	
14	3	3	**3**	3	
14	3	3	**3**	**3**	3
9	2	2			**2**
20	4	4	**4**	**4**	4
15	3	3			**3**
18			3	3	**3**
40	6	6	6	6	
35	**6**	**6**	6	6	
33	6	6	6	6	
27	**6**	**6**	6	6	
12					**3**
6					2
11					**2**
7					**2**
88	5	5	5	5	
40	4	**4**			
22	4	**4**	4	4	
17	4	4	**4**	**4**	4
22	4	4	4	4	

vc m/min	Подача (№ в табл.)	
42	6	
36	5	
48	6	
42	**6**	
48	6	
42	5	
30	**5**	
34	**4**	4
48	6	
24	5	
20	**4**	
24	5	
20	**4**	
21	5	
16	**4**	
17	**4**	4
11	3	**2**
6	1	
22	**5**	5
17	4	**3**
20	4	**4**
45	7	
40	7	
36	7	
29	7	
14	4	**3**
7		2
12		**2**
8		**2**
85	8	
72	7	
96	6	
40		
25	5	
20	**5**	4
24	5	

vc m/min	Подача (№ в табл.)			
42			6	6
36			6	6
48			6	6
42	5	5	**6**	**6**
42			**5**	**5**
30			**5**	**5**
34			**4**	**4**
48			**7**	**7**
24			**5**	**5**
20			**4**	**4**
20			**5**	**5**
15			**4**	**4**
21			**5**	**5**
16			**4**	**4**
17			**4**	**4**
11			**3**	**3**
22			**5**	**5**
18			4	4
45	**7**	**7**		
40	**7**	**7**		
36	**7**	**7**		
29	**7**	**7**		
85	7	7		
96	6	6		
25	5	5		
20	5	5		
24	5	5		

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤5xD Глубина сверления

1199	1018	2047	511	513	1131	1132	732	2464
338	338	338	WN	WN	WN	WN	WN	WN
M42	M42	HSCO	HSCO	HSS-E-PM	HSCO	HSCO	VHM	VHM
F nano			S	F		S		F
N	AeroX	P2000	GU 500	GT 500	GT 80 IK	GT 80 IK	N	N
без	без	без	без	без	с	с	без	без
317	313	311	386	388	395	396	319	321

vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)	vc m/min	Подача (№ в табл.)
42	6	35	6	35	**6**	45	**6**	42	6	48	7	60	7	80	4	100	5
36	**5**	30	**5**	30	**5**	35	**5**	37	5	38	6	48	6	70	4	90	5
48	6	40	6	40	6	50	**6**	47	6	48	7	60	7	80	**5**	100	**6**
42	**5**	40	**5**	40	5	40	**6**	44	6	38	6	48	6	70	**4**	90	**4**
44	6	40	5	40	**5**	44	**6**	47	6	48	6	60	6	80	4	100	5
44	**5**	40	**5**	40	**5**	44	**6**	47	6	48	6	60	6	70	4	90	5
42	**5**	35	**4**	35	**4**	40	**5**	44	**5**	38	**5**	50	**5**	60	4	80	5
30	**4**	20	**4**	25	**4**	27	4	30	4	28	**5**	33	**5**	60	4	80	5
25	**3**	16	**3**	20	3	22	3	25	**3**	26	**4**	31	**4**				
40	6	36	6	40	6	44	**6**	47	3	43	7	55	7	80	5	100	6
25	**3**	20	**3**	20	4	22	4	25	**4**	25	**5**	31	**5**	60	4	80	5
20	**3**	15	**3**	15	3	18	3	20	**3**	24	**4**	31	**4**				
20	**3**	16	4	20	**4**	22	4	25	**4**	25	**5**	30	**5**	50	4	65	5
18	**3**	12	3	15	3	16	3	18	**4**	20	**4**	24	**4**				
21	**4**	15	3	18	4	20	4	22	**5**	24	5	30	5	50	3	65	3
16	**3**	12	3	12	3	15	3	17	**4**	16	**4**	20	**4**				
17	3	15	3	12	3	13	3	14	**4**	14	**4**	18	**4**				
11	**2**	8	2	8	2	9	2	12	**2**	12	**3**	15	**3**	25	2	30	3
6	1	4	1							4	**3**	5	**3**	20	2	20	2
20	**4**	18	3	14	4	20	**4**	22	4	20	**5**	25	**5**	25	**2**	30	**2**
15	**3**	14	**3**	10	3	16	**4**	18	3	14	**4**	18	**4**	15	1	20	**1**
18	**3**	16	**3**	12	3	18	**4**	20	3	16	**4**	20	**4**	25	2	30	**2**
45	**6**	35	6	38	6	45	**6**	50	**7**	48	7	60	7	90	**4**	115	**5**
40	**6**	30	**6**	30	6	40	**6**	40	**7**	38	**7**	48	**7**	80	**4**	100	**5**
36	6	30	6	30	6	40	**6**	44	**7**	42	7	52	7	70	**4**	90	5
29	6	28	**6**	25	6	30	**6**	33	**7**	32	**7**	40	**7**	80	**4**	80	**5**
14	**3**	10	3	10	3			16	4	12	**4**	15	**4**				
9	**1**	8	**1**	5	2			6	2	10	**2**	12	**2**	15	2	20	3
12	2	10	**2**							14	3	18	3	15	**1**	15	**1**
8	2	6	**2**							10	**3**	12	**3**	15	**1**	15	**1**
		90	7	90	7	70	7							200	**7**	260	**8**
		90	**7**	90	7	70	7							200	**7**	260	**8**
80	7	80	7	80	7	85	7			95	7	120	7	150	**6**	195	**7**
70	6	70	6	70	6	70	6			75	8	95	8	120	**6**	155	**7**
80	6	70	6	85	6	80	6							180	**5**	235	**6**
70	5	70	5	80	5	80	**5**	50	5	90	6	100	6	80	**5**	100	**6**
60	5	60	5	70	5	77	**5**							180	5	235	6
40	5	40	5	40	5	44	**5**	60	5	45	6	55	6	180	5	235	6
35	4	35	4	40	4	50	**4**	50	5					120	5	155	6
33	4	33	4	30	4	40	**4**	44	5	48	5	60	5	120	5	155	6
20	4	20	4	25	4	32	**4**	33	5	45	5	55	5	70	4	90	5
15	4	15	4	15	4	28	**4**	28	5	38	**5**	45	**5**	50	3	65	4
		20	4	20	4	25	**4**	25	**4**					50	4	50	5
		30	5	25	5	27	**4**			38	6	48	6	40	3	65	4
														80	3	100	4

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № (R)
Артикул № (L)
Стандарт
Режущий материал
Покрытие
Тип
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
(R) правое
(L) левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤10xD Глубина сверления

561	211	204	217 220	257	523
339	339	340	340	341	WN
HSS	HSS	HSS	HSS	HSS	HSS
○	○ ● >Ø 2,36	●	○ ● >Ø 2,36	●	●
N	N	N	N	N	N
без	без	без	без	без	без
327	325	338	331/336	473	482

218 221	219	501	505	535 506	551
340	340	340	341	340	341
HSS	HSS	HSS	HSS	HSS	HSS
○	○	○	○	○ ● >Ø 2,36	● ○ >Ø 16,0
H	W	GT50	GT50	GT100	GT100
без	без	без	без	без	без
339/341	342	351	479	344/350	476

666	667	655	668	656
339	340	341	340	341
HSS	HSS	HSS	HSS	HSS
S	S	S	S	S
N	N	N	GT100	GT100
без	без	без	без	без
328	334	475	347	478

2462
340
HSS
F
GT100
без
349

v_c m/min	Подача (№ в табл.)					
24	**6**	**6**	**6**	**6**	**6**	**6**
20	**5**	**5**	**5**	**5**	**5**	**5**
27	**6**	**6**	**6**	**6**	**6**	**6**
27	5	5	5	5	5	5
22	5	5	5	5	5	5
22	5	5	5	5	5	5
27		6	6	6	6	6
14		4	4	4	4	4
27	**6**	**6**	**6**	**6**	**6**	**6**
27	6	6	6	6	6	6
22	6	6	6	6	6	6
18	6	6	6	6	6	6
45	7	7	7	7	7	7
45	6	6	6	6	6	6
63	6	6	6	6	6	6
54	5	5	5	5	5	5
36	5	5	5	5	5	5
28	4	4	4	4	4	4
22	4	4	4	4	4	4
22	4	4	4	4	4	4
14	4	4	4	4	4	4
22	5	5	5	5	5	5

v_c m/min	Подача (№ в табл.)					
24					**6**	**6**
20					**5**	**5**
27					**6**	**6**
27					5	5
22					**5**	**5**
22					**5**	**5**
27					**6**	**6**
14					4	4
27					**6**	**6**
27					6	6
22					**6**	**6**
18					6	6
65		**7**	**7**	**7**		
65		**7**	**7**	**7**		
45		7			**7**	**7**
45					**6**	**6**
63	6		**6**	6		
54		5			**5**	**5**
63	**6**					
36					**5**	**5**
28	**4**					
22					**4**	**4**
14	4				**4**	**4**
22	**5**	5	5	5		

v_c m/min	Подача (№ в табл.)					
28	6	6	6	**6**	**6**	
22	5	5	5	**5**	**5**	
30	6	6	6	**6**	**6**	
30	5	5	5	5	5	
25	5	5	5	**5**	**5**	
25	5	5	5	**5**	**5**	
22	4	4	4	4	4	
18	4	4	4	4	4	
30	6	6	6	**6**	**6**	
14	4	4	4	4	4	
12	4	4	4	4	4	
16	4	4	4	4	4	
10	3	3	3	3	3	
30	6	6	6	**6**	**6**	
30	6	6	6	6	6	
24	6	6	6	**6**	**6**	
20	6	6	6	6	6	
50	7	7	7	**7**	**7**	
50	6	6	6	**6**	**6**	
70	6	6	6			
60	5	5	5	**5**	**5**	
40	5	5	5	**5**	**5**	
30	**4**	**4**	**4**			
25	**4**	**4**	**4**			
14	4	4	4	**4**	**4**	
12	4	4	4	4	4	
18	4	4	4	**4**	**4**	
32	5	5	5			

v_c m/min	VR-Подача
30	**7**
24	**6**
33	**7**
33	6
28	**6**
28	**6**
24	5
23	5
33	**7**
18	5
15	5
19	5
13	4
33	**7**
33	7
26	**7**
22	7
55	**8**
55	**7**
70	
65	**6**
44	**6**
30	
25	
16	**5**
14	5
23	**5**
32	

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤10xD Глубина сверления

390	254	255	269	270	271	272	1101
WN	WN	WN	WN	WN	WN	WN	WN
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
○	●	●	●	●	●	●	●
N	N	N	N	N	N	N	N
c	c	c	c	c	c	c	c
394	499	500	498	502	503	504	501

>10xD Глубина сверления

235	236	237	266	267	524	528	529	525	542
1869 R1	1869 R2	1869 R3	1870 R1	1870 R2	1869 R1	1869 R2	1869 R3	1870 R1	1870 R2
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
○ ● >Ø 2,36	●	●	●	●	○	○	○	○	○
N	N	N	N	N	GT 50	GT 50	GT 50	GT 50	GT 50
без	без	без	без	без	без	без	без	без	без
363	371	377	483	487	368	375	379	485	489

v_c m/min	Подача (№ в табл.)							
26	6	6	6	6	6	6	6	6
22	5	5	5	5	5	5	5	5
30	6	6	6	6	6	6	6	6
30	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
24	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
24	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
22	4	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4	4
14	3	3	3	3	3	3	3	3
30	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
17	4	4	4	4	4	4	4	4
12	3	3	3	3	3	3	3	3
14	4	4	4	4	4	4	4	4
10	3	3	3	3	3	3	3	3
15	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
10	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3
7	2	2	2	2	2	2	2	2
30	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
30	6	6	6	6	6	6	6	6
24	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
20	6	6	6	6	6	6	6	6
7	3	3	3	3	3	3	3	3
80	**6**							
50	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
50	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
60	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
40	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
24	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
24	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
22	4	4	4	4	4	4	4	4
24	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**

	Подача (№ в табл.)									
22	**5**	**5**	**5**	**5**	**5**					
18	**4**	**4**	**4**	**4**	**4**					
20	**5**	**5**	**5**	**5**	**5**					
20	4	4	4	4	4					
25	4	4	4	4	4					
25	4	4	4	4	4					
12	3	3	3	3	3					
22	5	5	5	5	5					
10	3	3	3	3	3					
8	3	3	3	3	3					
12	3	3	3	3	3					
6	2	2	2	2	2					
6	2	2	2	2	2					
22	**5**	**5**	**5**	**5**	**5**					
18	5	5	5	5	5					
20	5	5	5	5	5					
14	5	5	5	5	5					
55						**6**	**6**	**6**	**6**	**6**
55						**6**	**6**	**6**	**6**	**6**
45	6	6	6	6	6					
36	5	5	5	5	5					
55	5	5	5	5	5	5	5	5	5	5
22	4	4	4	4	4					
45	4	4	4	4	4					
28	4	4	4	4	4					
22	3	3	3	3	3					
20	3	3	3	3	3					
18	3	3	3	3	3					
12	3	3	3	3	3					
18	4	4	4	4	4	**4**	**4**	**4**	**4**	**4**

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

>10xD Глубина сверления

502	503	504	242	243	244	526	527	563	564	565	566	293	298	299	670	671
1869 R1	1869 R2	1869 R3	WN	WN	WN	1870 R1	1870 R2	WN	WN	WN	WN	WN	WN	WN	1869 R1	1869 R2
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
>Ø 2,36	>Ø 2,36					>Ø 16,0	>Ø 16,0			>Ø 16,0	>Ø 16,0	>Ø 16,0			S	S
GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100
365	372	378	381	382	383	484	488	491	492	493	494	495	496	497	367	374

v_c m/min	Подача (№ в табл.)															v_c m/min	Подача (№ в табл.)	
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	28	5	5
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	22	4	4
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	28	5	5
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	22	4	4
22	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	28	4	4
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	22	4	4
																16	3	3
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	28	5	5
12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	12	3	3
6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	8	2	2
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	28	5	5
18	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	22	5	5
20	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	25	5	5
14	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	18	5	5
																6	1	1
																70	6	6
																70	6	6
45	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	55	6	6
36	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	45	5	5
55	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	70	5	5
22	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	28	4	4
28	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	36	4	4
22	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	28	3	3
20	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	25	3	3
18	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	22	3	3
																18	3	3
12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	15	3	3
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	22	4	4

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		● ●
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		● ●
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		● ● ●
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		● ●
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		●
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		● ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		● ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

≤10xD Глубина сверления

311	317	357	336	623	617	669	396	706
339	340	341	340	341	340	340	340	WN
HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	VHM
								K10/K20
>Ø 2,36	>Ø 2,36		>Ø 2,36	>Ø 16,0		S	F	
N	N	N	GT 100	GT 100	Ti	Ti	GT 100	N
330	353	480	355	481	358	360	357	362

Vc m/min	Подача (№ в табл.)						Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)
33	**5**	**5**	**5**	5	5				36	**5**		
27	**5**	**5**	**5**	5	5				30	**4**		
36	**5**	**5**	**5**	5	5				40	**5**		
32	5	5	5	**5**	**5**				36	5		
36	5	5	5	5	5				40	**5**		
36	5	5	5	5	5				40	**5**		
22	4	4	4	**4**	**4**				26	4		
18	4	4	4	**4**	**4**				18	4		
14	3	3	3	**3**	**3**	3	15	3	15	3		
32	5	5	5	5	5				32	**5**		
18	4	4	4	**4**	**4**				20	4		
13	3	3	3	**3**	**3**		13	3	18	3		
14	4	4	4	**4**	**4**				18	4		
10	3	3	3	**3**	**3**		10	3	12	3		
13	4	4	4	**4**	**4**				15	4		
10	3	3	3	**3**	**3**		10	3	12	3		
12	3	3	3	**3**	**3**		10	3	14	**3**		
6	2	2	2	2	2		8	**2**	9	**3**		
4				1	1				5	1		
12	4	4	4	**4**	**4**	4	15	4	14	4		
8	3	3	3	2	2	**3**	10	**3**	10	**3**		
10	3	3	3	**3**	**3**	**3**	13	**3**	12	**3**		
32	**6**	**6**	**6**	6	6				35	**6**		
27	6	6	6	**6**	**6**				30	6		
26	6	6	6	6	6				30	**6**		
24	6	6	6	**6**	**6**				26	6		
6	3	3	3	3	3	3	6	**3**	12	3		
5	1	1	1			1	6	1				
8						**2**	10	**2**				
5						**2**	6	**2**				
70				7	7				77	**7**		
60				6	6				66	**6**		
60						5						
36	5	5	5	5	5				40	**6**		
54				5	5							
36	5	5	5	5	5				40	**6**		
30	4	4	4	5	5							
24	4	4	4	5	5							
18	4	4	4	4	4				21	**5**		
13	4	4	4	**4**	**4**	4	25	4	15	**5**		
16	4	4	4	4	4				30	**5**	50	**4**
26						4					40	**3**
											80	**3**

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

>10xD Глубина сверления

618	619	620	621
1869 R1	1869 R2	1870 R1	1870 R2
HSCO	HSCO	HSCO	HSCO
		>Ø 16,0	>Ø 16,0
GT 100	GT 100	GT 100	GT 100
без	без	без	без
370	376	486	490

571
1869 R3
HSCO
GT 100
без
380

370	371	372
WN	WN	WN
HSCO	HSCO	HSCO
GT 100	GT 100	GT 100
с	с	с
505	506	507

374	375	376
WN	WN	WN
HSCO	HSCO	HSCO
GT 100	GT 100	GT 100
с	с	с
508	509	510

Vc m/min	Подача (№ в табл.)			
30	4	4	4	4
25	4	4	4	4
33	4	4	4	4
30	**4**	**4**	**4**	**4**
33	4	4	4	4
33	4	4	4	4
20	**3**	**3**	**3**	**3**
14	**3**	**3**	**3**	**3**
10	**2**	**2**	**2**	**2**
29	4	4	4	4
14	**3**	**3**	**3**	**3**
10	**2**	**2**	**2**	**2**
10	**3**	**3**	**3**	**3**
8	**2**	**2**	**2**	**2**
11	**3**	**3**	**3**	**3**
8	**2**	**2**	**2**	**2**
8	**2**	**2**	**2**	**2**
5	**1**	**1**	**1**	**1**
3	1	1	1	1
10	**3**	**3**	**3**	**3**
8	**2**	**2**	**2**	**2**
10	**2**	**2**	**2**	**2**
20	**5**	**5**	**5**	**5**
16	**5**	**5**	**5**	**5**
5	2	2	2	2
5	**1**	**1**	**1**	**1**
6	**1**	**1**	**1**	**1**
5	**1**	**1**	**1**	**1**
50	6	6	6	6
40	5	5	5	5
30	4	4	4	4
45	4	4	4	4
30	4	4	4	4
25	4	4	4	4
20	4	4	4	4
16	3	3	3	3
10	**3**	**3**	**3**	**3**
14	3	3	3	3
20	3	3	3	3

Vc m/min	Подача (№ в табл.)
30	4
25	4
33	4
30	**4**
33	4
33	4
20	**3**
14	**3**
10	**2**
29	4
14	**3**
10	**2**
10	**3**
8	**2**
11	**3**
8	**2**
8	**2**
5	**1**
3	1
10	**3**
8	**2**
10	**2**
20	**5**
16	**5**
5	2
5	**1**
6	**1**
5	**1**
50	6
40	5
30	4
45	4
30	4
25	4
20	4
16	3
10	**3**
14	3
20	3

Vc m/min	Подача (№ в табл.)		
35	6	6	6
30	5	5	5
30	6	6	6
30	5	5	5
35	5	5	5
29	5	5	5
22	**4**	**4**	**4**
18	**4**	**4**	**4**
14	**3**	**3**	**3**
35	6	6	6
18	**4**	**4**	**4**
14	**3**	**3**	**3**
14	**4**	**4**	**4**
12	**3**	**3**	**3**
15	4	4	4
11	**3**	**3**	**3**
11	**3**	**3**	**3**
8	**2**	**2**	**2**
4	2	2	2
14	**4**	**4**	**4**
10	3	3	3
12	**3**	**3**	**3**
30	6	6	6
24	**6**	**6**	**6**
24	6	6	6
20	**6**	**6**	**6**
8	3	3	3
8	**1**	**1**	**1**
10	**2**	**2**	**2**
8	**2**	**2**	**2**
60	7	7	7
50	6	6	6
38	5	5	5
55	5	5	5
36	5	5	5
24	4	4	4
20	**4**	**4**	**4**
14	**4**	**4**	**4**
25	5	5	5

Vc m/min	Подача (№ в табл.)		
30	**5**	**5**	**5**
25	**4**	**4**	**4**
30	**5**	**5**	**5**
25	**4**	**4**	**4**
30	**4**	**4**	**4**
25	**4**	**4**	**4**
18	**3**	**3**	**3**
16	**3**	**3**	**3**
12	**2**	**2**	**2**
30	**5**	**5**	**5**
16	**3**	**3**	**3**
12	**2**	**2**	**2**
12	**3**	**3**	**3**
10	**2**	**2**	**2**
13	**3**	**3**	**3**
9	**2**	**2**	**2**
9	**2**	**2**	**2**
6	**2**	**2**	**2**
4	**1**	**1**	**1**
12	**3**	**3**	**3**
8	**2**	**2**	**2**
12	**2**	**2**	**2**
28	**5**	**5**	**5**
22	**5**	**5**	**5**
22	**5**	**5**	**5**
18	**5**	**5**	**5**
6	**2**	**2**	**2**
6	**1**	**1**	**1**
8	**2**	**2**	**2**
6	**2**	**2**	**2**
55	**6**	**6**	**6**
44	**5**	**5**	**5**
35	**4**	**4**	**4**
50	4	4	4
33	**4**	**4**	**4**
22	**4**	**4**	**4**
18	**4**	**4**	**4**
12	**4**	**4**	**4**
25	**4**	**4**	**4**

Навигатор

GÜHRINGNAVIGATOR

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Артикул №
Стандарт
Режущий материал
Группа применения тв.сплава
Покрытие
Тип
Внутр. подвод СОТС
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (мм/об.)								
0,10	0,002	0,003	0,003	0,004	0,006	0,007	0,010	0,013	0,016
0,16	0,002	0,003	0,004	0,005	0,007	0,009	0,012	0,016	0,022
0,25	0,003	0,004	0,005	0,007	0,009	0,011	0,014	0,019	0,024
0,30	0,004	0,005	0,007	0,009	0,011	0,015	0,019	0,025	0,033
0,50	0,005	0,007	0,008	0,011	0,014	0,019	0,024	0,031	0,041
0,63	0,007	0,009	0,012	0,015	0,020	0,026	0,034	0,044	0,057
0,80	0,010	0,013	0,016	0,020	0,024	0,031	0,038	0,048	0,060
1,00	0,020	0,024	0,029	0,035	0,041	0,050	0,060	0,072	0,086
1,50	0,030	0,035	0,040	0,046	0,052	0,060	0,069	0,080	0,092
2,00	0,040	0,046	0,053	0,061	0,070	0,080	0,093	0,106	0,122

Ø сверла mm	Подача (№ в табл.) VR-Код Артикул № 6400/6401/6408/6412												
	56	57	58	59	60	61	62	63	64	65	66	67	68
	f (мм/об.)												
0,50	0,006	0,012	0,018	0,022	0,030	0,035	0,040	0,045	0,050	0,050	0,055	0,060	0,060
0,80	0,008	0,016	0,024	0,032	0,040	0,050	0,060	0,070	0,080	0,080	0,080	0,090	0,090
1,00	0,012	0,022	0,032	0,042	0,060	0,070	0,080	0,090	0,100	0,100	0,110	0,110	0,120
1,50	0,021	0,036	0,051	0,066	0,090	0,100	0,120	0,130	0,150	0,150	0,160	0,170	0,180
2,00	0,032	0,052	0,072	0,092	0,120	0,140	0,160	0,180	0,200	0,210	0,220	0,230	0,240
2,50	0,045	0,070	0,095	0,120	0,150	0,170	0,200	0,220	0,250	0,260	0,270	0,280	0,300
3,00	0,060	0,090	0,120	0,150	0,180	0,210	0,240	0,270	0,300	0,310	0,330	0,340	0,360

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
правое
левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Нимоник, Инконель, Монель, Хастеллой	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7164** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Бакелит, Резопал, Пертинакс, Мольтопрен Плексиглас, Хостален, Новодур, Макралон	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

				≤4xD	≤7xD	≤5xD	≤8xD	≤15xD
301 303	660	701	3899	6400	6401	6405	6408	6412
1899	1899	WN	WN	WN	WN	WN	WN	WN
HSS-E-PM	HSS-E-PM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
		K10/K20	K/P	K/P	K/P	K/P	K/P	K/P
○	S	○	A	A	A	A	A	A
N	N	N	N	N	N	N	N	N
без	без	без	без	без	без	с	с	с
649/654	652	656	657	108/659	109/660	110/661	111/662	112/663

Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)	Vc m/min	Подача (№ в табл.)		Vc m/min	Подача (№ в табл.)		
21	106	27	106	50	105	100	**62**	100	**64**	**62**	105	**62**	**58**	**58**
18	105	23	105	35	104	100	**62**	100	**64**	**62**	100	**62**	**58**	**58**
18	106	23	106	50	**105**	100	**62**	100	**64**	**62**	105	**62**	**59**	**59**
16	105	21	105	45	**104**	90	**61**	90	**63**	**61**	90	**61**	**59**	**59**
20	105	26	105	45	104	90	**62**	90	**64**	**62**	95	**62**	**58**	**58**
18	105	23	105	35	104	90	**62**	90	**64**	**62**	95	**62**	**58**	**58**
14	**104**	18	**104**	30	103	90	**61**	90	**63**	**61**	90	**61**	**58**	**58**
14	**104**	18	**104**	30	103	90	**61**	90	**63**	**61**	90	**61**	**58**	**58**
12	103	16	103			70	**60**	70	**62**	**60**	70	**60**	**58**	**58**
18	106	23	106	50	103	100	**61**	100	**63**	**61**	100	**61**	**57**	**57**
14	**104**	18	**104**	40	103	85	**61**	85	**63**	**61**	85	**61**	**58**	**58**
12	103	16	103			70	**60**	70	**62**	**60**	70	**60**	**58**	**58**
14	**104**	18	**104**	25	103	70	**60**	70	**62**	**60**	70	**60**	**57**	**57**
12	103	16	103			60	**60**	60	**62**	**60**	60	**60**	**57**	**57**
16	**104**	20	**104**	25	103	50	**60**	50	**62**	**60**	50	**60**	**58**	**58**
14	103	18	103			60	**60**	60	**62**	**60**	50	**60**	**58**	**58**
14	103	18	103					60	**57**	**57**	50	**57**	**57**	**57**
8	102	10	102	20	102			60	**57**	**57**	50	57	57	57
				15	104									
18	104	20	104	25	**103**			30	57	57	70	**57**	**57**	**57**
14	103	16	103	25	**102**			15	56	56	60	**56**	**56**	**56**
16	103	18	103	25	**102**			30	57	57	70	**57**	**57**	**57**
26	106	33	106	80	**105**	130	**66**	130	**68**	**66**	150	**60**	**60**	**60**
22	**106**	28	**106**	60	**105**	130	**66**	130	**68**	**66**	140	**60**	**60**	**60**
18	106	23	106	60	105	130	**66**	130	**68**	**66**	140	**60**	**60**	**60**
22	**106**	28	**106**	50	**105**	120	**65**	120	**67**	**65**	130	**60**	**60**	**60**
				15	**103**			10	56	56	25	56	56	56
				45	**104**			15	56	56	35	56	56	56
				25	**104**			15	56	56	35	56	56	56
				160	**107**			70	68	68	70	68	68	68
				150	**106**			70	68	68	70	68	68	68
26	107			100	**106**			135	59	59	135	59	59	59
18	106			60	**106**			135	59	59	135	59	59	59
75	106	80	106	150	**105**									
42	105	53	105	50	**105**									
				67	106									
22	105	28	105	44	104									
22	104	28	104	68	103									
18	104	23	104	49	103									
13	104	16	104	53	103									
		14	104	36	103									
16	104	20	104	50	103									
18	104	23	104	36	103									
				60	104									

Навигатор

GUHRINGNAVIGATOR центровочные сверла для станков с ЧПУ

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул №
Стандарт
Режущий материал
Покрытие
Тип
Угол при вершине °
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

557	556	559
WN		
HSS		
○	○	○
N	N	N
90	120	90
696	702	700

568	567
WN	
HSS	
S	S
N	N
90	120
697	703

1136	1134
WN	
HSCO	
○	○
N	N
90	120
698	704

1133	1135
WN	
HSCO	
F	F
N	N
90	120
699	705

vc m/min	Подача (№ в табл.)		
30	6	6	6
25	5	5	5
32	6	6	6
30	5	5	5
25	5	5	5
25	5	5	5
20	4	4	4
15	4	4	4
12	3	3	3
30	6	6	6
15	4	4	4
8	3	3	3
16	4	4	4
10	3	3	3
6	3	3	3
8	3	3	3
30	6	6	6
30	6	6	6
25	6	6	6
20	6	6	6
70	7	7	7
70	7	7	7
50	7	7	7
50	6	6	6
70	6	6	6
60	5	5	5
60	5	5	5
40	5	5	5
30	4	4	4
25	4	4	4
15	4	4	4
12	4	4	4
18	4	4	4
28	5	5	5

vc m/min	Подача (№ в табл.)	
32	6	6
26	5	5
35	6	6
33	5	5
28	5	5
28	5	5
25	4	4
22	4	4
17	3	3
33	6	6
20	4	4
12	3	3
14	4	4
18	4	4
12	3	3
8	3	3
10	3	3
33	6	6
33	6	6
28	6	6
22	6	6
60	6	6
80	6	6
65	5	5
70	5	5
45	5	5
33	4	4
27	4	4
16	4	4
15	4	4
22	4	4
36	5	5

vc m/min	Подача (№ в табл.)	
35	6	6
30	5	5
40	5	5
40	5	5
35	5	5
35	5	5
30	4	4
22	4	4
17	3	3
33	6	6
20	4	4
15	3	3
14	4	4
12	3	3
18	4	4
12	3	3
8	3	3
8	2	2
12	3	3
10	3	3
10	3	3
33	6	6
33	6	6
30	6	6
25	6	6
6	1	1
8	2	2
6	2	2
80	7	7
80	7	7
60	7	7
60	6	6
70	6	6
65	5	5
70	5	5
45	5	5
35	4	4
33	4	4
20	4	4
15	4	4
22	4	4
36	5	5

vc m/min	Подача (№ в табл.)	
42	6	6
36	5	5
48	6	6
42	6	6
44	6	6
44	6	6
40	5	5
27	4	4
22	3	3
37	6	6
22	4	4
18	3	3
19	4	4
15	3	3
21	4	4
16	3	3
12	3	3
10	2	2
18	3	3
15	3	3
12	3	3
38	6	6
35	6	6
33	6	6
28	6	6
7	1	1
10	2	2
8	2	2
85	7	7
65	7	7
65	6	6
80	6	6
70	5	5
75	5	5
50	5	5
45	5	5
40	4	4
25	4	4
20	4	4
25	4	4
40	4	4

Навигатор

FRIZAR
www.frizar.ru

GÜHRINGNAVIGATOR Зенкера

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № (R)
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
(R) правое
(L) левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	СОТС
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

533	534	555
DIN 344	DIN 343	DIN 1864
HSS		
N	N	N
737	740	743

634	635
DIN 343	DIN 1864
HSCO	
N	N
742	744

v_c m/min	Подача (№ в табл.)		
27	**4**	**4**	**4**
20	**4**	**4**	**4**
28	**4**	**4**	**4**
25	4	4	4
22	**4**	**4**	**4**
20	**4**	**4**	**4**
18	3	3	3
15	4	4	4
8	3	3	3
23	**5**	**5**	**5**
15	4	4	4
8	3	3	3
10	4	4	4
8	3	3	3
10	3	3	3
6	3	3	3
6	3	3	3
5	2	2	2
8	2	2	2
6	2	2	2
5	2	2	2
20	**6**	**6**	**6**
20	5	5	5
18	**6**	**6**	**6**
16	5	5	5
3	1	1	1
5	2	2	2
4	2	2	2
60	**7**	**7**	**7**
60	**7**	**7**	**7**
36	6	6	6
36	6	6	6
40	6	6	6
50	5	5	5
50	5	5	5
30	5	5	5
30	4	4	4
25	4	4	4
15	4	4	4
15	4	4	4
15	4	4	4
25	5	5	5

v_c m/min	Подача (№ в табл.)	
30	**4**	**4**
25	**4**	**4**
32	**4**	**4**
30	4	4
25	**4**	**4**
22	**4**	**4**
20	3	3
17	4	4
10	3	3
25	**5**	**5**
17	4	4
10	3	3
13	4	4
10	3	3
13	3	3
8	3	3
8	3	3
6	2	2
10	2	2
8	2	2
6	2	2
25	**6**	**6**
25	5	5
20	**6**	**6**
18	5	5
4	1	1
6	2	2
5	2	2
70	**7**	**7**
70	**7**	**7**
40	6	6
40	6	6
50	6	6
55	5	5
55	5	5
35	5	5
35	4	4
30	4	4
20	4	4
18	4	4
20	4	4
30	5	5

Навигатор

FRIZAR
www.frizar.ru

GUHRINGNAVIGATOR Центровочные сверла

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № ®
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
® правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

581	583	585	280	292	587	588
	DIN 333		WN	BS 328	DIN 333	
HSS						
○	○	○	○	○	○	○
A	R	B	B	A	A	R
668	672	675	689	680	690	691

613	614
DIN 333	
HSS	
Ⓢ	Ⓢ
A	R
669	673

381
DIN 333
HSCO
○
A
682

v_c m/min	Подача (№ в табл.)						
30	**4**	**4**	**4**	**4**	**4**	**4**	**4**
25	**4**	**4**	**4**	**4**	**4**	**4**	**4**
30	**4**	**4**	**4**	**4**	**4**	**4**	**4**
30	4	4	4	4	4	4	4
25	**4**	**4**	**4**	**4**	**4**	**4**	**4**
20	**4**	**4**	**4**	**4**	**4**	**4**	**4**
20	3	3	3	3	3	3	3
15	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
25	**5**	**5**	**5**	**5**	**5**	**5**	**5**
15	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
10	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
5	2	2	2	2	2	2	2
10	3	3	3	3	3	3	3
8	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
20	**6**	**6**	**6**	**6**	**6**	**6**	**6**
20	5	5	5	5	5	5	5
25	**6**	**6**	**6**	**6**	**6**	**6**	**6**
20	5	5	5	5	5	5	5
3	1	1	1	1	1	1	1
5	2	2	2	2	2	2	2
4	2	2	2	2	2	2	2
70	**7**	**7**	**7**	**7**	**7**	**7**	**7**
70	**7**	**7**	**7**	**7**	**7**	**7**	**7**
40	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6
60	6	6	6	6	6	6	6
50	5	5	5	5	5	5	5
60	5	5	5	5	5	5	5
40	5	5	5	5	5	5	5
30	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
25	5	5	5	5	5	5	5

v_c m/min	Подача (№ в табл.)	
35	**4**	**4**
30	**4**	**4**
35	**4**	**4**
35	4	4
30	**4**	**4**
25	**4**	**4**
22	3	3
17	4	4
10	3	3
30	**5**	**5**
18	4	4
10	3	3
13	4	4
10	3	3
13	3	3
8	3	3
8	3	3
8	2	2
15	3	3
10	3	3
8	3	3
25	**6**	**6**
25	5	5
30	**6**	**6**
25	5	5
6	1	1
6	2	2
5	2	2
50	6	6
70	6	6
60	**5**	**5**
70	5	5
45	**5**	**5**
35	**4**	**4**
30	4	4
20	**4**	**4**
18	4	4
20	**4**	**4**
30	5	5

v_c m/min	Подача (№ в табл.)
35	4
30	4
35	4
35	**4**
30	4
25	4
22	**3**
17	**4**
10	**3**
30	5
18	**4**
10	**3**
13	4
10	3
13	**3**
8	3
8	3
8	2
15	**3**
10	**3**
8	**3**
25	**6**
25	**5**
30	6
25	**5**
6	1
6	2
5	2
80	**7**
80	**7**
50	6
50	6
70	6
60	5
70	5
45	5
35	**4**
30	4
20	**4**
18	4
20	4
30	5

Навигатор

FRIZAR
www.frizar.ru

GUHRINGNAVIGATOR Ступенчатые сверла/Сверла с короткими ступенями

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № Ⓡ
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
Ⓡ правое
Ⓛ левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		○ ○
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		○ ○
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		○ ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		○ ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Отбеленный чугун	–		≤350 HB	○
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		○
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		○
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		○
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		○ ○
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

274	574	575	576
WN			
HSS			
●	●	●	●
N	N	N	N
714	715	716	717

378	1147	379	380
WN			
HSS			
○	○	○	○
N	N	N	N
718	719	720	721

v_c m/min	Подача (№ в табл.)			
30	**4**	**4**	**4**	**4**
25	**4**	**4**	**4**	**4**
30	**4**	**4**	**4**	**4**
30	4	4	4	4
25	**4**	**4**	**4**	**4**
20	**4**	**4**	**4**	**4**
20	3	3	3	3
15	4	4	4	4
8	3	3	3	3
25	**5**	**5**	**5**	**5**
15	4	4	4	4
8	3	3	3	3
10	4	4	4	4
8	3	3	3	3
10	3	3	3	3
6	3	3	3	3
6	3	3	3	3
5	2	2	2	2
8	2	2	2	2
6	2	2	2	2
5	2	2	2	2
20	**6**	**6**	**6**	**6**
20	5	5	5	5
25	**6**	**6**	**6**	**6**
20	5	5	5	5
3	1	1	1	1
5	2	2	2	2
4	2	2	2	2
60	**7**	**7**	**7**	**7**
60	**7**	**7**	**7**	**7**
40	6	6	6	6
40	6	6	6	6
40	6	6	6	6
50	5	5	5	5
60	5	5	5	5
40	5	5	5	5
30	4	4	4	4
25	4	4	4	4
15	4	4	4	4
15	4	4	4	4
15	4	4	4	4
25	5	5	5	5

v_c m/min	Подача (№ в табл.)			
30	**4**	**4**	**4**	**4**
25	**4**	**4**	**4**	**4**
30	**4**	**4**	**4**	**4**
30	4	4	4	4
25	**4**	**4**	**4**	**4**
20	**4**	**4**	**4**	**4**
20	3	3	3	3
15	4	4	4	4
8	3	3	3	3
25	**5**	**5**	**5**	**5**
15	4	4	4	4
8	3	3	3	3
10	4	4	4	4
8	3	3	3	3
10	3	3	3	3
6	3	3	3	3
6	3	3	3	3
5	2	2	2	2
8	2	2	2	2
6	2	2	2	2
5	2	2	2	2
20	**6**	**6**	**6**	**6**
20	5	5	5	5
25	**6**	**6**	**6**	**6**
20	5	5	5	5
3	1	1	1	1
5	2	2	2	2
4	2	2	2	2
60	**7**	**7**	**7**	**7**
60	**7**	**7**	**7**	**7**
40	6	6	6	6
40	6	6	6	6
40	6	6	6	6
50	5	5	5	5
60	5	5	5	5
40	5	5	5	5
30	4	4	4	4
25	4	4	4	4
15	4	4	4	4
15	4	4	4	4
15	4	4	4	4
25	5	5	5	5

Навигатор

GÜHRINGNAVIGATOR Ступенчатые сверла

Предпочтительно выбирать инструмент, условное обозначение подачи которого выделенно жирным шрифтом.
На сайте фирмы Guhring www.guehring.de Вы также найдете электронную версию Guhring-навигатора для выбора оптимального инструмента и рекомендуемых параметров резания.

Артикул № (R)
Стандарт
Режущий материал
Покрытие
Тип
Программа на стр.

Ø сверла mm	Подача (№ в табл.) VR-Код								
	1	2	3	4	5	6	7	8	9
	f (mm/U)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Охлаждение:
○ Воздух
● масло
● Эмульсия

Направление резания:
(R) правое
(L) левое

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Предел прочности Н/мм²	Твердость	COTC
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2) **1.0050** E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤500 ≤1000		● ●
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36) **1.0727** 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤850 ≤1000		● ●
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30) **1.0503** C45, **1.1191** C45E (Ck45) **1.0601** C60, **1.1221** C60E (Ck60)	≤700 ≤850 ≤1000		● ● ●
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4 **1.5710** 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1000 ≤1400		● ●
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		●
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6 **1.5752** 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1000 ≤1400		● ●
Азотированные стали	**1.8504** 34CrAl6 **1.8519** 31CrMoV9, **1.8550** 34CrAlNi7	≤1000 ≤1400		● ●
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9 **1.2080** X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤850 ≤1400		● ●
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Закаленные стали	–		≤48 HRC ≤66 HRC	● ●
Нерж. стали, с содерж. серы аустенитные мартенситные	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9 **1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A) **1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20) **0.6025** EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○ ○ ○
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35) **0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	● ●
Отбеленный чугун	–		≤350 HB	●
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35) **EN-GJV400** (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○ ○ ○
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000) **EN-GJS-1200-2** (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1000 ≤1400		○ ○ ○ ○
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2 **3.7154** TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		●
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		●
Лит. алюмин. сплавы ≤ 10% Si > 24 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9 **3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		● ●
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		○
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		●
Латунь с короткой стружкой с длинной стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2 **2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600 ≤600		● ●
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn **2.0790** CuNi18Zn19Pb	≤600 ≤850		○ ● ●
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10 **2.0980** CuAl11Ni, **2.1247** CuBe2	≤850 ≤1000		● ●
Пластмассы, термореактивные термопластичные	Bakelit, Resopal, Pertinax, Moltopren Plexiglas, Hostalen, Novodur, Makralon	≤150 ≤100		○ ○ ○
армированные	Kevlar	≤1000		○
стекло- и углепластики	GFK/CFK	≤1000		○

Навигатор

536	569	636	638	538	514	540	637	537	639	539	520	541
DIN 8374			WN	DIN 8376	WN	DIN 8378		WN		DIN 8377	WN	DIN 8379
HSS												
○	○	○	○	○	○	○	○	○	○	○	○	○
N	N	N	N	N	N	N	N	N	N	N	N	N
722	723	724	725	726	728	729	731	732	733	734	735	736

v_c m/min	Подача (№ в табл.)												
30	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
25	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
30	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
30	4	4	4	4	4	4	4	4	4	4	4	4	4
25	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
20	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
20	3	3	3	3	3	3	3	3	3	3	3	3	3
15	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
25	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
15	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
10	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3	3	3	3	3	3
5	2	2	2	2	2	2	2	2	2	2	2	2	2
8	2	2	2	2	2	2	2	2	2	2	2	2	2
6	2	2	2	2	2	2	2	2	2	2	2	2	2
5	2	2	2	2	2	2	2	2	2	2	2	2	2
20	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
20	5	5	5	5	5	5	5	5	5	5	5	5	5
25	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
20	5	5	5	5	5	5	5	5	5	5	5	5	5
3	1	1	1	1	1	1	1	1	1	1	1	1	1
5	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	2	2	2	2	2	2	2	2	2	2	2	2
60	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
60	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
40	6	6	6	6	6	6	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6	6	6	6	6	6	6
50	5	5	5	5	5	5	5	5	5	5	5	5	5
60	5	5	5	5	5	5	5	5	5	5	5	5	5
40	5	5	5	5	5	5	5	5	5	5	5	5	5
30	4	4	4	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4	4
25	5	5	5	5	5	5	5	5	5	5	5	5	5

Навигатор

Диам. сверла, мм	Подача (№ в табл.)							
	11	12	13	14	15	16	17	18
	f (мм/об)							
1,50	0,002	0,004	0,006	0,008	0,012	0,020	0,032	0,045
2,00	0,003	0,005	0,007	0,010	0,016	0,028	0,046	0,055
2,50	0,004	0,006	0,008	0,012	0,018	0,030	0,054	0,070
4,00	0,005	0,007	0,010	0,016	0,025	0,043	0,065	0,085
6,00	0,007	0,009	0,013	0,024	0,035	0,061	0,085	0,120
8,00	0,010	0,014	0,022	0,032	0,045	0,068	0,100	0,150
10,00	0,012	0,016	0,028	0,040	0,055	0,075	0,120	0,160
14,00	0,020	0,025	0,035	0,050	0,065	0,085	0,130	0,180
18,00	0,025	0,030	0,040	0,055	0,070	0,095	0,145	0,200
20,00	0,026	0,035	0,045	0,060	0,080	0,110	0,180	0,250
24,00	0,027	0,036	0,047	0,065	0,085	0,130	0,185	0,300
28,00	0,028	0,038	0,049	0,068	0,090	0,140	0,195	0,350
30,00	0,030	0,040	0,050	0,070	0,100	0,150	0,200	0,400
35,00	0,035	0,045	0,055	0,075	0,120	0,180	0,250	0,450
40,00	0,040	0,050	0,060	0,080	0,150	0,200	0,300	0,500

*Параметры подачи всегда соответствуют инструменту с рекомендуемым покрытием. В некоторых случаях работоспособность инструмента без покрытия не может быть гарантирована.

STOP Требуется направление.
Свободное вращение сверл на полных оборотах вне детали не допускается.

Рекомендуемая последовательность операций при глубоком сверлении:
- Предварительное пилотное отверстие (L = 1,5 x D, допуск G9).
- Подвод инструмента с частотой вращения ок. 200 об/мин и подачей ок. 500 мм/мин.
- Включение подачи СОЖ и рекомендуемой частоты вращения.
- Непрерывное сверление на полную глубину без цикла вывода сверла. При использовании сверл с большим отношением диаметра к длине рекомендуется работать до 25 мм глубины сверления с заниженными режимами резания (примерно 75% оптимальной скорости резания).
- Отключение подачи СОЖ после достижения глубины сверления.
- Ускоренный отвод с остановленным шпинделем.

Охлаждение:
○ эмульсия
● масло
◍ воздух

Рекомендации по применению
- При глубине отверстий более 40 x D мы рекомендуем применять два или более сверл для глубокого сверления, напр., Ø 10 x 400 мм и Ø 9,95 x 800 мм.
- Сверла для глубокого сверления для глубины более 40 x D необходимо вводить в пилотное отверстие левым вращением.
- При смене инструмента от 40 x D инструмент можно «успокоить» включением на 1 секунду высокого давления СОЖ для внутреннего охлаждения.
- Для обработки длинностружечного материала мы рекомендуем заказать свёрла для глубокого сверления с полированными стружечными канавками.
- Рекомендуем всегда устанавливать содержание смазки в эмульсии на уровне минимум 10%.
- Однолезвийные сверла для глубокого сверления для длинностружечного алюминия необходимо заказывать с заточкой 180° и подточкой под масляную полость.
- При начале сверления в алюминии с содержанием Si менее 1%, то есть, при рекомендуемой скорости резания Vc > 160 м/мин, мы рекомендуем выходить на полные обороты за несколько этапов. Кроме того, следует выполнять более глубокое пилотное отверстие около 3 x D.

EB100

Однолезвийное
Цельный тв. сплав
0,9 ... 12,0

Группа материалов	Примеры материалов жирным шрифтом выделено обозначение по DIN EN	Пред. прочн. Тверд. Н/мм²	СОЖ	рекоменд. покрытие*	≤35xD Vc m/min	≤35xD Подача (№ в табл.)	>35xD Vc m/min	>35xD Подача (№ в табл.)
Углеродистые стали общего назначения	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345**	≤500	◍		100	15	100	15
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937**	≤1000	◍		85	15	85	15
Автоматные стали (повышенной обрабатываемости резанием)	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37	≤850	◍		90	15	90	15
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb2	≤1000	◍		80	15	80	15
Углеродистые улучшенные стали	**1.0402** C22, **1.1178** C30E (Ck30)	≤700	◍		80	14	80	14
	1.0503 C45, **1.1191** C45E (Ck45)	≤850	◍		75	14	75	14
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000	◍		75	14	75	14
Легированные улучшенные стали	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000	◍		75	14	75	14
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400	◍	A	65	14	65	14
Углеродистые цементиров. стали	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850	◍	A	80	15	80	15
Легированные цементированные стали	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000	●		75	14	75	14
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400	●		65	14	65	14
Азотированные стали	**1.8504** 34CrAl6	≤1000	◍		75	14	75	14
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400	●	A	65	14	65	14
Инструментальные стали	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850	◍		75	13	75	13
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6	≤1400	●	A	65	13	65	13
Быстрорежущие стали	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400	●	A	55	12	55	12
Рессорно-пружинные стали	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)	≤350 HB	●	A	65	13	65	13
Закаленные стали	–	≤48 HRC	●		30	13	30	13
		≤66 HRC	●		25	10	25	14
Нерж. стали, с содерж. серы	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105**	≤900	●		40	14	40	14
аустенитные	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10	≤1100	●	A	35	14	35	14
мартенситные	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122**	≤1500	●		35	14	35	14
Серый чугун	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)	≤240 HB	◍ ○		85	16	85	16
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)	≤350 HB	◍ ○		80	16	85	16
Высокопрочный и ковкий чугун	**0.7050** EN-GJS-500-7 (GGG50), **0.8035**	≤240 HB	◍		80	15	80	15
	0.7070 EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2	≤350 HB	◍		70	15	70	15
Отбеленный чугун	–	≤350 HB	◍		55	14	55	14
Новые чугуны GKV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)	≤220 HB	◍ ○					
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6	≤300 HB	◍ ○					
Новые чугуны ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000	◍ ○					
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400	◍ ○					
Специальные сплавы	Nimonic, Inconel, Monel, Hastelloy	≤2000	●	A	20	12	20	12
Титан и титановые сплавы	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850	●		35	12	35	12
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5	≤1400	●		30	12	30	12
Алюминий и алюминиевые сплавы	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400	◍		150	17	150	17
Деформируемые алюмин. сплавы	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si	≤650	◍		120	19	120	19
Лит. алюмин. сплавы ≤ 10% Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600	◍		120	20	120	20
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600	◍		130	18	130	18
Магниевые сплавы	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05**	≤400	○		110	17	110	17
Медь, низколегированная	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500	◍	A	75	15	75	15
Латунь с короткой стружкой	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410**	≤600	◍		120	18	120	18
с длинной стружкой	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600	◍		90	18	90	18
Бронза, с короткой стружкой	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176**	≤600	◍ ●		95	17	95	17
	2.0790 CuNi18Zn19Pb	≤850	●		75	17	75	17
Бронза, с длинной стружкой	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850	●		70	17	70	17
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000	●		60	17	60	17
Пластмассы, термореактивные	Bakelit, Resopal, Pertinax, Moltopren	≤150	○		75	15	75	15
термопластичные	Plexiglas, Hostalen, Novodur, Makralon	≤100	◍ ○		70	15	70	15
армированные	Kevlar	≤1000	○		60	14	60	14
стекло- и углепластики	GFK/CFK	≤1000	○		50	14	50	14

Порядок работы

Для получения оптимальных результатов обработки при выполнения глубоких отверстий, особенно при начале сверления на неровных и не подготовленных поверхностях, мы рекомендуем следующие этапы обработки:

1. Зафрезеровать поверхность, напр., фрезой Ratio фирмы «Гюринг» RF 100 U с центральным резом. Поверхность должна быть перпендикулярной к оси сверла.
2. Выполнение цилиндрического пилотного отверстия (допуск G9) с глубиной минимум 1 x D. Для этого мы рекомендуем наше сверло Ratio RT 100U или RT 100 F. Благодаря своему углу в 140° и допуску m7 на Ø эти сверла Ratio наилучшим образом пригодны для данного этапа обработки.
3. Заход в пилотное отверстие с оборотами около 300 об/мин при подаче около 500 мм/мин.
4. Регулировка давления СОЖ и оборотов.
5. Непрерывное сверление на всю глубину без цикла удаления стружки.
6. При сквозных отверстиях с прямым выходом, т.е., 90°, скорость подачи, примерно, за 1 мм до выхода снизить на 50%.
7. При сквозных отверстиях с косым выходом скорость подачи Vf за 1 мм до выхода снизить до 40%.
8. При достижении глубины отверстия отключить обороты и СОЖ, выход осуществлять на ускоренном ходу.

Фреза Ratio RF 100 U, арт. 3736

Фреза Ratio фирмы «Guhring» RF 100 U с покрытием Fire благодаря своему неравномерному углу спирали обеспечивает наибольшую подачу и стойкость при чистовой и черновой обработке сталей и чугуна, а также титановых и никелевых сплавов.

Сверло Ratio RT 100 U, арт. 2477
Сверло Ratio RT 100 F, арт. 1660

Сверло Ratio благодаря специальной геометрии режущих кромок отличаются очень хорошим центрированием. Тип U подходит для обработки сталей общего назначения и высоколегированных сплавов AlSi, тип F для высоколегированных, нержавеющих, кислотостойких и жаропрочных сталей, алюминия и алюминиевых сплавов, а также титана и титановых сплавов.

EB80

Однолезвийное

Головка из цельного твердого сплава

2,0 ... 40,0

реком. покрытие*	≤35xD v_c m/min	≤35xD Подача (№ в табл.)	>35xD v_c m/min	>35xD Подача (№ в табл.)
T	100	14	95	13
	85	14	80	13
T	90	14	85	13
	80	14	75	13
T	90	13	85	12
	80	13	75	12
	75	13	70	12
T	75	13	70	12
	65	13	60	12
T	80	14	75	13
T	75	13	70	12
	65	13	60	12
C	75	13	70	12
	65	13	60	12
C	75	12	70	11
	65	12	60	11
C	55	11	50	11
C	65	12	60	12
C	30	12	25	11
	25	11	20	11
	55	13	50	12
C	45	13	40	12
	35	13	35	12
	85	15	80	14
	80	15	75	14
	80	14	75	13
	70	14	65	13
	55	13	50	12
C	20	11	20	11
	35	11	30	11
	30	11	25	11
C	150	16	140	15
	120	15	115	14
	150	16	140	15
	130	16	120	15
	110	16	100	15
C	75	14	70	13
	120	17	115	16
	90	17	85	16
	95	16	90	15
	75	16	70	15
	70	16	65	15
	60	16	55	15
	75	14	70	13
	70	14	65	13
	60	13	55	12
	50	13	45	12

ZB80

Двухлезвийное

Головка из цельного твердого сплава

6,0 ... 27,0

реком. покрытие*	≤35xD v_c m/min	≤35xD Подача (№ в табл.)	>35xD v_c m/min	>35xD Подача (№ в табл.)

FRIZAR
www.frizar.ru

ТЕХНИЧЕСКАЯ ЧАСТЬ

FRIZAR
www.frizar.ru

Инновационные технологии	Стр.
RT 100 TRIGON®	813
RT 100 C	814
RT 100 AL	815
Армированные волокном комбинированные пластмассы (FVK)	816
Структурированные лазером задние поверхности	819
Обработка с наложением дополнительного движения	821
Технология MMS	825
Обработка поверхности и покрытие для свёрл	830
Рекомендации по применению покрытий Гюринг	834
Основы сверления	
Центрирование и пилотные отверстия	835
Стратегия центрирования	836
Давление и объём СОТС	838
Качество отверстий	839
Краткое введение в технологию глубокого сверления	840
Указания по применению / устранение проблем	845
Таблицы	
Режущие материалы для инструмента Гюринг	848
Термины, размеры и углы	851
Формы подточки	852
Монтажные размеры	853
Варианты хвостовиков	862
Допуски	865
Диаметр отверстия под резьбу	866
Таблица перевода дюймов в мм	869
Сокращённые названия материалов	870

RT 100 TRIGON®

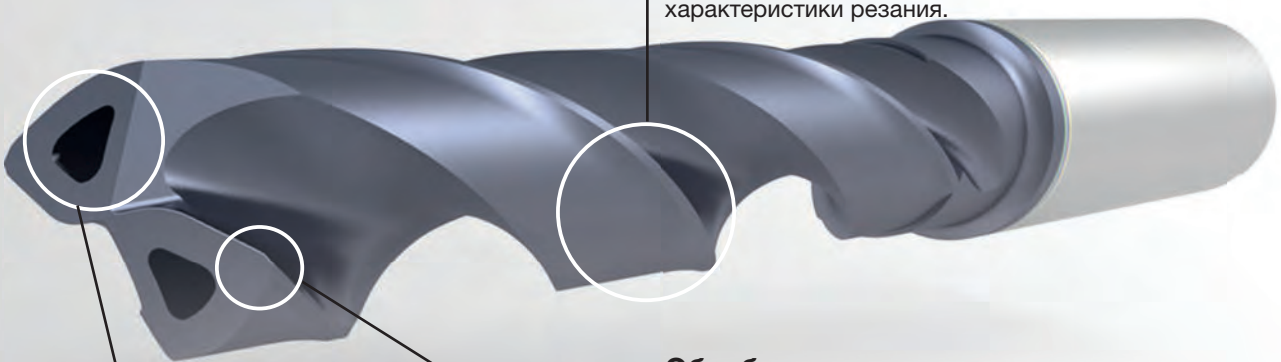
Инновационная конструкция канала COTC для эффективного охлаждения

Высокое содержание хрома и никеля в нержавеющих сталях обеспечивают высокую коррозионную стойкость и прочность. Но тем самым так же ухудшается обрабатываемость материала, растут температуры в процессе обработки.

Однако сверло RT 100 TRIGON® обеспечивает высокие скорости резания и подачи. Это становится возможным благодаря его инновационной геометрии каналов COTC.

Форма канавки

Специально разработанная форма канавки с высочайшим качеством поверхности и 4-х плоскостной подточкой обеспечивает оптимальное образование стружки и характеристики резания.

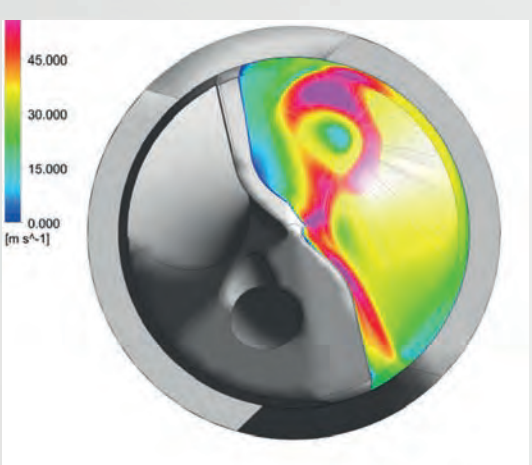


Обработка режущих кромок

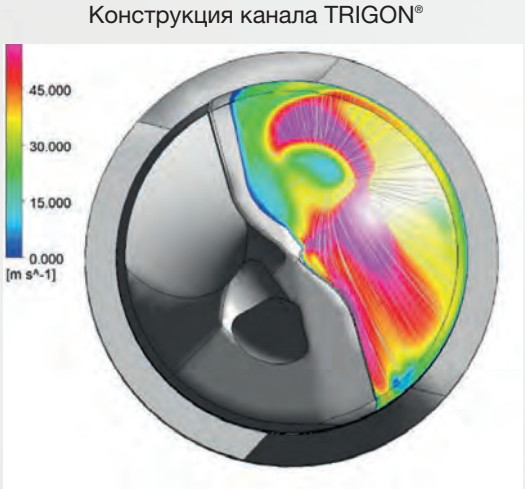
Покрытие на основе TiAlN и специальная подготовка обеспечивают высокую износостойкость сильно нагруженных во время обработки режущих кромок.

Благодаря новой форме каналов COTC оптимизированы объёмы COTC, скорость и направление потока, оптимально отводится наружное тепло в процессе обработки. По сравнению с классическими круглыми каналами COTC средства охлаждения целенаправленно направляются в наиболее нагруженные зоны основной режущей кромки и её углов.

Классический канал COTC



Конструкция канала TRIGON®



Распределение потоков в сравнении

FRIZAR
www.frizar.ru

RT 100 C

Сверло Ratio для обработки длинностружечных сталей

- Специальный инструмент
- Ø 3-20 мм
- до глубины сверления 7xD
- от Ø 6,0 мм с новой конструкцией каналов COTC TRIGON®

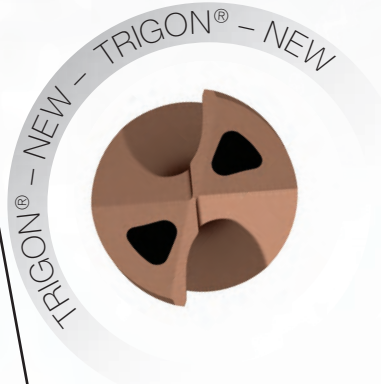
Геометрия режущих кромок

Вогнутая форма главных режущих кромок обеспечивает отличные характеристики резания при обработке длинностружечных материалов. Существенно снижаются усилия и температуры во время процесса обработки.

Форма канавки

Специальная форма канавок для длинностружечных материалов с узким профилем обеспечивает оптимальное образование стружки даже при более низких скоростях резания.

Высокое качество поверхности и новый тип покрытия обеспечивают оптимальный отвод стружки. Надёжно отводится тепло из зоны резания.



Новая конструкция каналов COTC

Благодаря новой форме каналов COTC оптимизированы объёмы COTC, скорости и направления потоков, оптимально отводится тепло. По сравнению с классическим круглыми каналами COTC средство охлаждения целенаправленно поступает в наиболее нагруженные зоны основных режущих кромок и углов.

Обработка режущих кромок

Благодаря особой подготовке режущих кромок, которая дополняется специальной геометрией и отличным качеством поверхности, можно существенно увеличить стойкость инструмента. В дополнение к этому возникает обратное влияние на образование микросколов и наросту материала на режущих кромках.

RT 100 AL

Новое сверло VHM фирмы Гюринг для обработки алюминия

У свёрл для обработки алюминия решающим является формирование и отвод стружки. При помощи RT 100 AL во всём диапазоне материалов, начиная от мягких, вязких деформируемых алюминиевых сплавов и до алюминиевых сплавов с высоким содержанием кремния достигается оптимальное формирование стружки на режущих кромках инструмента.

Очень высокое качество поверхности в зоне подточки, передней и задней поверхностях

- Снижение температуры в зоне резания
- Предотвращение нароста материала на режущих кромках

Открытая геометрия вершины и формы режущих кромок

- Оптимальное стружкообразование

Острые, микрообработанные режущие кромки

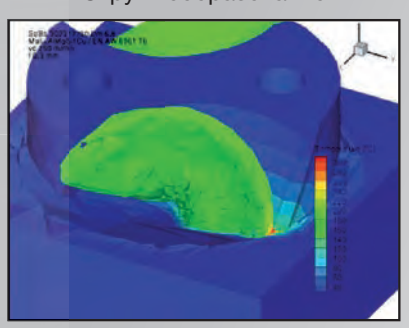
- Отличные характеристики резания и в термообработанных сплавах AlSi
- Короткая стружка и в алюминиевых деформируемых сплавах

Профиль канавки

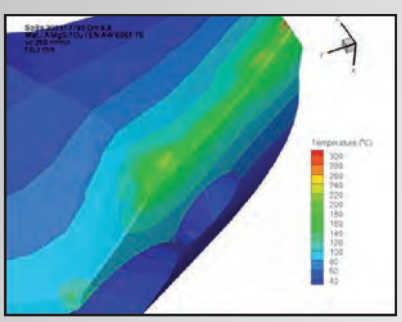
- Полированная стружечная канавка для оптимального отвода стружки
- Минимизация трения
- Предотвращение налипания материала

RT 100 AL отличается открытой подточкой с высоким качеством поверхности в зонах подточки, передней и задней поверхностях. Микрообработка режущих кромок и углов дополняет геометрию вершины и обеспечивает отличные характеристики резания, низкие рабочие температуры предотвращают образование наростов на режущих кромках при обработке алюминия.

Стружкообразование



Распределение температуры на режущих кромках



Инструмент выполняется без покрытия. Для высокоабразивного алюминия возможно покрытие головной части для увеличения стойкости. По запросу также возможны специальные размеры, а также одно- или многоступенчатый инструмент.

FRIZAR
www.frizar.ru

Армированные волокном комбинированные пластмассы (FVK)

Современные армированные комбинированные пластмассы (FVK) благодаря эффективности, малому весу, прочности или динамике находят широкое применение в промышленности. Благодаря своим специфическим свойствам они расширяют группу классических лёгкосплавных металлов типа алюминиевых и титановых сплавов. FVK, а также мультиматериальные системы, комбинации из FVK и металлических материалов поэтому недолго останутся в качестве эксклюзивных в авиационной и космической промышленности, в мотоспорте и прочих высокотехнологичных отраслях.

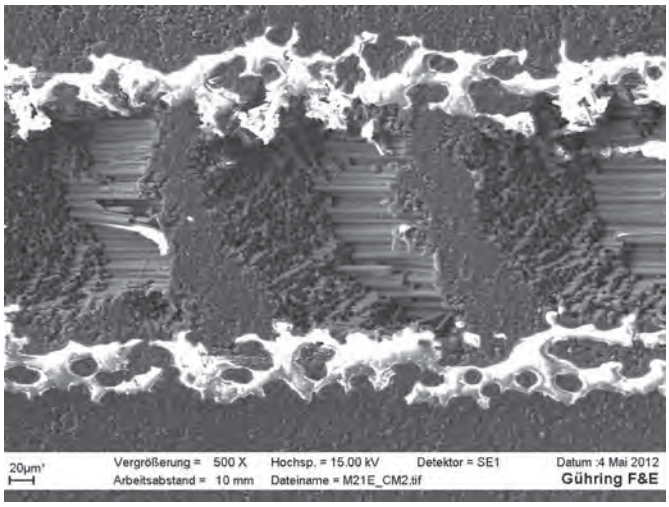
Особо следует выделить большой прирост в автомобильной промышленности, секторе ветровой энергии, а также в общем машиностроении. FVK всегда применяются там, где требуется высокая удельная прочность при малом весе, высоко динамичные или энергосберегающие процессы.

С середины 80-х годов Гюринг предлагает на рынке решения в стандартном и специальном исполнении по инструменту для обработки FVK. Этот многолетний опыт дал толчок к развитию различного специализированного инструмента, адаптированного к различным условиям и областям применения, таким как сверление вручную, сверление с направляющими, работа на роботах или на традиционных обрабатывающих центрах.

Инструмент Гюринг для обработки FVK отвечает основным требованиям к обработке современных облегчённых материалов.

- Детали без выступающих волокон
- Неделаминированные поверхности детали
- Отсутствие повреждения детали из-за расслоения или вытеснения
- Предотвращение вырывания волокон при отводе
- Минимизация образования заусенцев
- Предотвращение термических повреждений

Для обработки материалов FVK без повреждения детали решающее значение имеет качество режущих кромок и износостойкость режущего материала. Условием надёжного резания волокон, имеющих сильное абразивное действие, особенно у материалов с большим содержанием волокон более 55%, является острая режущая кромка.



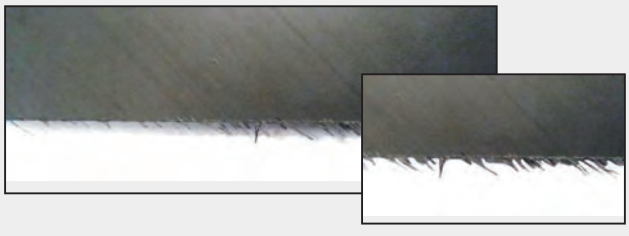
Поверхность реза CFK при 500-кратном увеличении
При помощи растрового электронного микроскопа после обработки материала инструментом Гюринг можно видеть, что структура и направление волокон остались неизменными. Волокна не вдавлены в матрицу и не вырваны из композита.

GFK / CFK

Армированные стекловолокном пластмассы (GFK) в больших промышленных объёмах применяются в ветровой энергетике, а также в транспортной и строительной отраслях. В основном GFK используются в средне нагруженных деталях, часто в оболочках с большой поверхностью. Не сильно нагружаемые детали GFK при этом во многих случаях являются предпочтительнее даже более лёгких армированных волокном деталей (CFK), так как они существенно дешевле в изготовлении и проще в обработке.

Армированные углеволокном пластмассы (CFK), часто в виде детали называемые карбоном, отличаются от GFK заметно высокой прочностью. Само углеволокно в зависимости от процесса изготовления и диаметра волокон многократно превышает прочность на разрыв материалов из стали при одновременно более малой массе. Поэтому для высоко нагруженных структурных компонентов почти исключительно применяется CFK.

Для формования деталей, распределения усилий и для защиты волокон CFK и GFK помещаются в матрицу. Соотношение волокон и матрицы определяет так называемая объёмная доля волокон и в высоко нагруженных деталях CFK доходит до 65%. Для окончательной механической обработки этих деталей необходимо учитывать не только тип волокон, но и их направление. У материалов CFK направление волокон является решающим фактором в склонности материала к деламинации и вырыванию волокон. Таким образом, не ненаправленное положение особенно у выхода отверстия имеет склонность к ярко выраженной деламинации. Этой склонности к деламинации необходимо противодействовать при помощи геометрии инструмента.



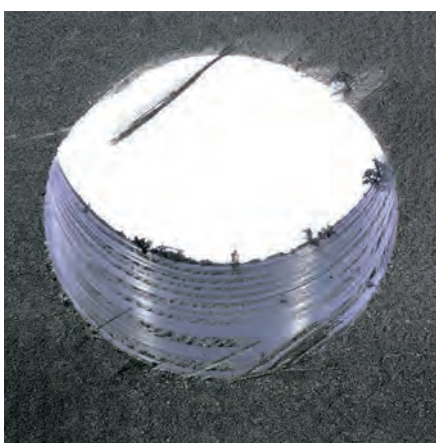
Типичная деламинация

Отсутствие деламинации

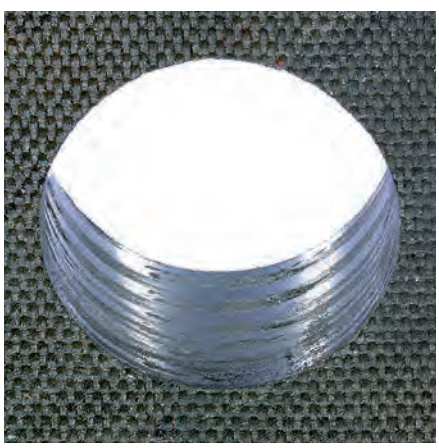
Обработка материалов CFK и GFK, особенно имеющих сильно абразивные волокна, требует решений по адаптации инструмента. Для исключения типичных для FVK повреждений деталей фирма Гюринг предлагает специфичный для своих областей применения высокопроизводительный инструмент, который благодаря целевому направлению усилий резания, предотвращает деламинацию материала при обработке.

Выполнение отверстий в FVK

При сверлении отверстий применяются специфичные по области применения и материалу свёрла с различной геометрией вершин. При помощи адаптированного инструмента можно надёжно разрезать волокна как в не нена правленном положении волокон, так и в структуре ткани и исключать деламинации поверхности деталей и самой детали при заходе и выходе инструмента (Peel up / Push out), а также в самой детали.



Отверстие D = 6,35 мм с выступанием волокон верхнего слоя и деламинацией



Отверстие D = 6,35 мм с верхним тканным слоем CFK, оптимальное качество обработки

Отверстие D = 6,35 мм не ненаправленное CFK с оптимальным качеством обработки

Пакетированные материалы

Пакетированными материалами или пакетами называют комбинацию минимум двух различных материалов с различными свойствами. Часто применяемыми парами материалов являются CFK/титан и CFK/алюминий. Также возможны комбинации материалов CFK, титана, нержавеющей стали и алюминия в различном сочетании. Для установки крепёжных элементов эти различные материалы должны обрабатываться совместно за один процесс. Задача для металлообрабатывающего инструмента складывается из различных свойств материалов и стратегии обработки. При обработке пакета CFK/титан CFK оказывает сильное абразивное воздействие и быстро приводит к скруглению режущих кромок. Титан же, наоборот, очень вязок и из-за слабой теплопроводности является причиной образования высоких температур. Таким образом, при обработке очень быстро возникает повреждение CFK из-за высоких усилий и температур. Несмотря на различные характеристики материалов необходимо обеспечить точные размеры при долговременной стойкости инструмента..

Фирма Гюринг и для этой группы материалов предлагает решения по инструменту из цельного твёрдого сплава (VHM), твёрдому сплаву с покрытием и PKD-инструменту. Они специально адаптированы к соответствующей структуре материала и обеспечивают надёжный отвод стружки, а также равномерный диаметр отверстия во всех материалах.

Структурированные лазером задние поверхности

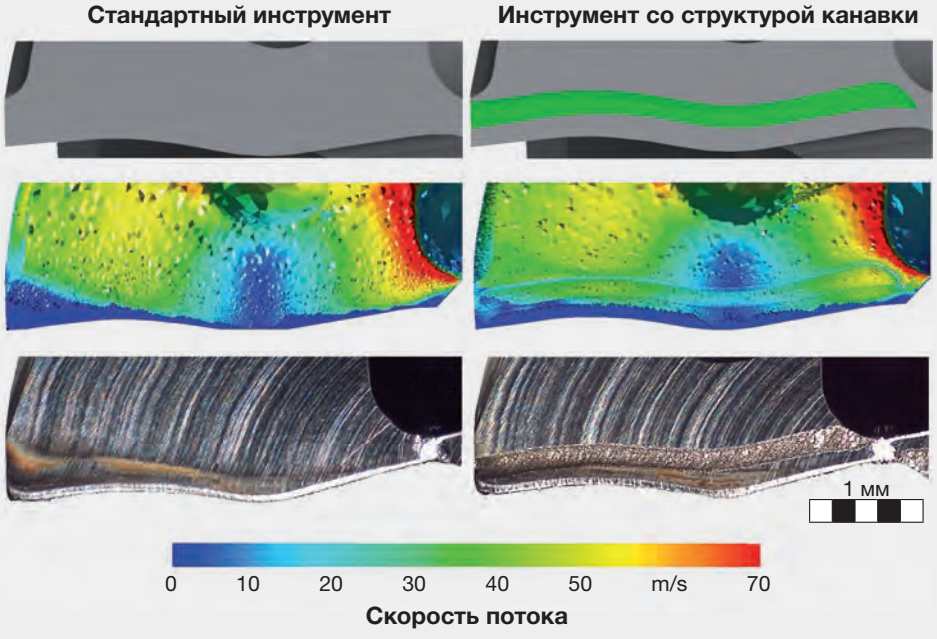
Оптимизация стойкости за счёт целенаправленного потока СОТС

При обработке отверстий большое количество СОТС не всегда приводит к желаемому результату, так как её следует подводить целенаправленно. Обработка лазером свёрл для этих целей даёт возможность создавать геометрию нового типа. Необходимые регулировочные винты для воздействия СОТС при сверлении формируют сечение каналов СОТС и их положение на задней поверхности. Кроме того, структура задней поверхности и прилегающие поверхности влияют на характеристику потока СОТС. Эти структуры выполняются лазерной обработкой. Цель - направить СОТС в высоко нагруженные зоны инструмента, особенно подверженными высокой термической нагрузке. К ним, например, относятся направляющие или режущие кромки. Уменьшение нагрузки должно замедлить износ и увеличить стойкость. В область применения вводят все операции по сверлению, при которых инструмент подвергается высокой термической нагрузке. Благодаря лучшей смазке и охлаждению, и соответственно более низким температурам улучшается качество отверстий.

Имитация при помощи программы расчётной гидродинамики (CFD)

Благодаря программе CFD можно детально проанализировать влияние диаметра каналов СОТС, а также применённой структуры на потоки СОТС. Первые исследования проводились на простой структуре канавки, которая находится на расстоянии около 150 мкм от режущей кромки. Эта канавка имела глубину 50 мкм. Выполненные имитации CFD подтверждают благоприятное влияние потока СОТС и улучшенное охлаждение термически нагруженных зон. Более обширные зоны вблизи углов режущей кромки, которые до этого из-за небольших пространственных размеров между задней поверхностью и основанием сверла почти не получали СОТС, благодаря направлению потока, а также увеличению пространства получают усиленное охлаждение и смазку.

Коричневатые отложения на задних поверхностях инструмента для обработки никелевого сплава Inconel 718 подтверждают увеличившуюся мощность охлаждения в этих зонах. Как объёмное расширение, так и интенсивность отложений, возникающих от сгорания СОТС, ограничивают выполненную канавку до зоны между режущей кромкой и лазерной структурой. Таким образом сниженная термическая нагрузка увеличивает планируемую стойкость и улучшает требуемое качество отверстия при обработке Inconel 718.

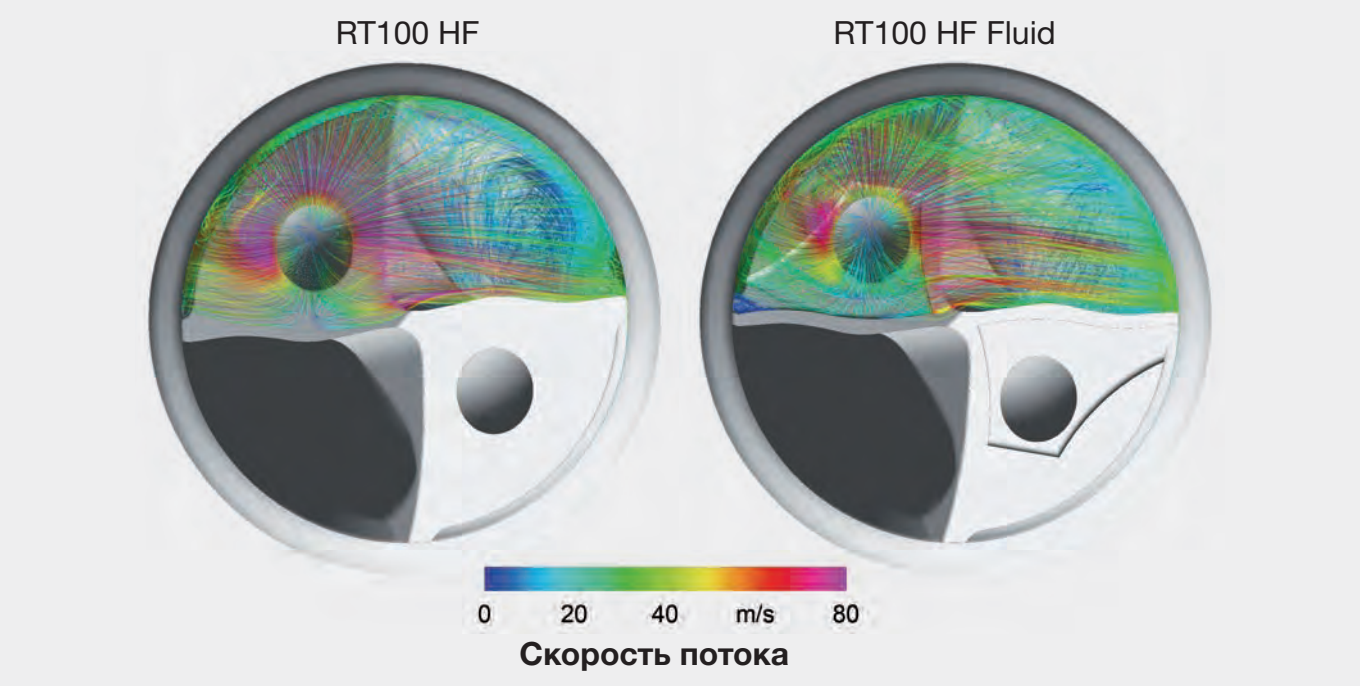


Тип инстр.:	варьирует
Тв. сплав:	K40UF
Покрытие:	нет
Скорость резан.:	v_c = 35 м/мин
Подача:	f = 0,10 мм
Глубина:	l_f = 0,34 м
Давл. СОТС:	P_{KSS} = 40 бар
СОТС:	Эмульсия

Комплексные структуры

Основываясь на результатах по простым структурам, разработки продолжились вплоть до комплексных форм для дальнейшего совершенствования направления потоков COTC. Так как лазерная обработка инструмента предоставляет большую свободу выбора, были воплощены более сложные формы, которые невозможно создать при помощи других технологий. Адаптация лазерных структур включает в себя как форму, так и положение и глубину съёма для обеспечения оптимальной смазки и охлаждения. Для этого также применялась программа имитации CFD с целью детально проанализировать влияние различных форм на характеристики потоков COTC, таких как завихрения в зоне углов режущих кромок, которые дополнительно повышают охлаждающее действие COTC.

Благодаря усовершенствованной структуре точного направления потока COTC - названной FLUID - стали возможны более существенные улучшения в износостойкости свёрл по сравнению с простыми структурами. Параллельно с разработкой структур проводились исследования собственно лазерной обработки во избежание повреждения пограничных зон, а также слишком высокой шероховатости поверхности, которые могут неблагоприятно повлиять на потоки. Актуальная лазерная обработка, независимо от твёрдого сплава, обеспечивает качество поверхности, не вызывая ограничивающих производительность повреждений пограничных зон. Структура задних поверхностей также не оказывает существенного влияния на адгезию покрытия.



Области применения

Такой модифицированный инструмент, в частности, следует применять для материалов, при обработке которых возникает высокая тепловая нагрузка. Среди прочего, к ним относятся нержавеющие стали, титановые сплавы, а также сплавы на никелевой основе. Поэтому актуальные разработки на основе результатов обработки Inconel 718 продолжаются..

Его свойства обуславливают экстремальные термомеханические нагрузки и тем самым существенно ограничивают срок службы инструмента и производительность. Целенаправленное воздействие на поток COTC открывает большой потенциал для оптимизации этого вида обработки.

Оптимизация процесса благодаря обработке с наложением дополнительного движения

Обработка новых материалов, начиная от армированных волокном, включая очень вязкие материалы типа титана или медных сплавов, вплоть до очень хрупких керамических материалов из-за очень сильного износа и характера образуемой стружки представляет собой сложную задачу при обработке традиционным способом. Новый подход к оптимизации процесса посредством наложения дополнительных движений в направлении подачи открывает для этого новые возможности по совершенствованию процесса стружкообразования, уменьшения усилий и повышения качества обрабатываемых поверхностей, а также достижения максимальной стойкости.

Принципиальный взгляд

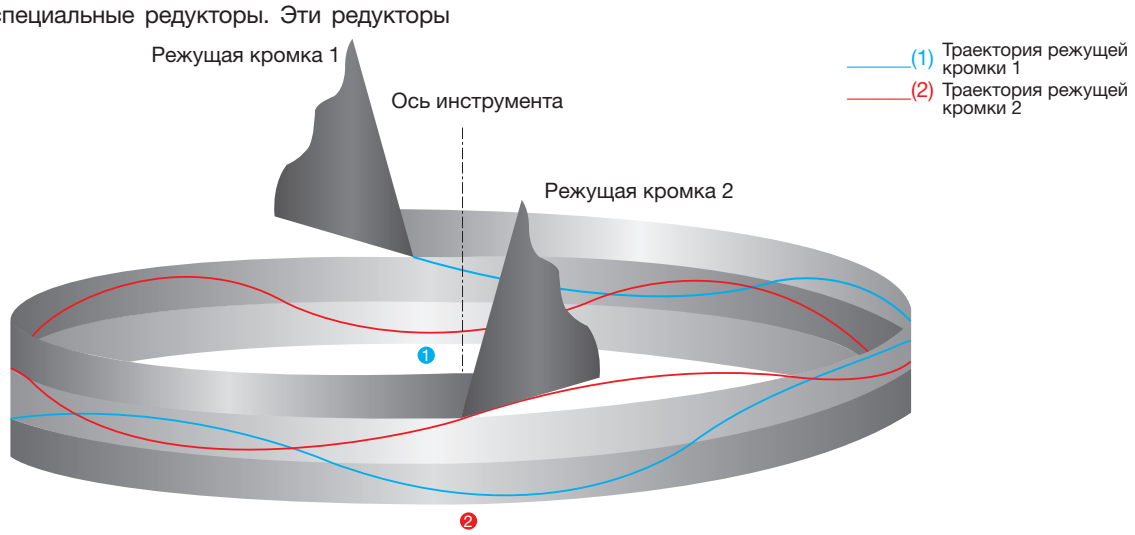
При наложении дополнительных аксиальных движений при непрерывном движении подачи в зависимости от вида применения используются различные диапазоны частот от небольшого количества до нескольких тысяч Герц. В дополнение к этому происходят определённые изменения в направлении эффективного угла резания и увеличения скорости режущей кромки относительно инструмента. В зависимости от случая применения и типа инструмента благодаря обработке с дополнительной вибрацией достигаются различные эффекты..

- Более благоприятное стружкообразование/ улучшенный излом стружки
- Улучшенный отвод стружки
- Образование заданных мест излома стружки
- Уменьшение нароста материала на режущих кромках
- Увеличение стойкости инструмента
- Более низкие усилия обработки
- Более низкие температуры

Обработка с наложением дополнительных движений в настоящее время используется при обработке трудно обрабатываемых материалов, таких как суперсплавы, армированные волокном пластмассы и пакетированные материалы, а также длинностружечные сплавы типа медных сплавов без содержания свинца. В вопросе наложения колебаний различают между низкочастотными и высокочастотными колебаниями.

1.) Возбуждение низких частот

При низкочастотном возбуждении используются частоты до 1 кГц и амплитудой до 0,5 мм. К этой категории относят и программируемую разгрузку путём приподнимания инструмента или через время задержки прерывания движения подачи. Но на традиционных обрабатывающих центрах прерванное движение подачи по-причине ограниченной динамики движения осей нельзя наращивать произвольно. поэтому для достижения наложения движения с вибрацией, соответствующее многократным оборотам шпинделя, применяются специальные редукторы. Эти редукторы могут быть непосредственно установлены в станок или быть выполнены в виде редукторной головки, установленной на шпиндель. Ход формируется механически за счёт передач редуктора на оси подачи или посредством обката фигурного диска. В отличие от спиралеобразной траектории режущих кромок с постоянным сечением стружечных канавок при сверлении с постоянной подачей в случае с наложением дополнительного аксиального движения создаётся варьирующее сечение канавки.



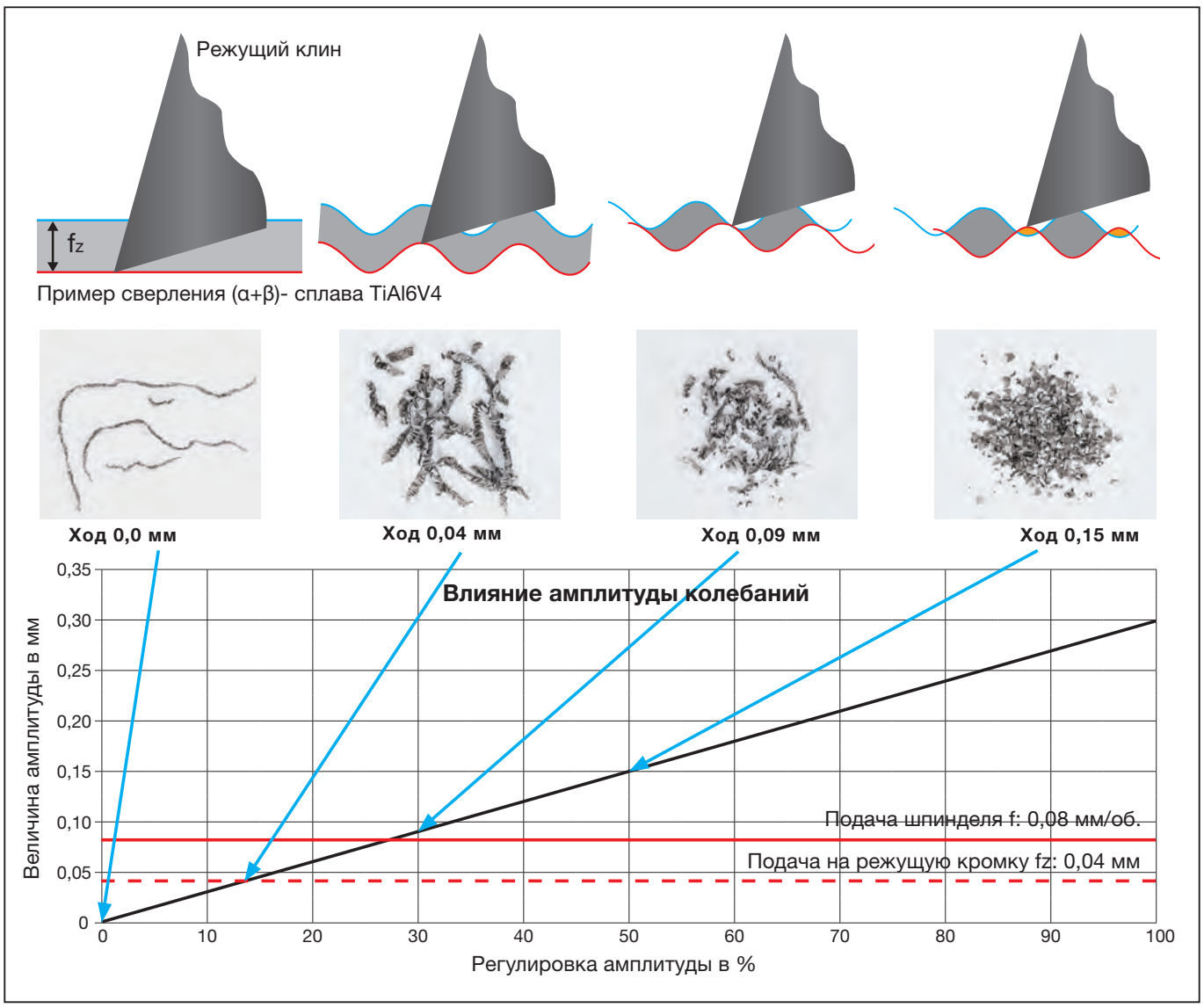
Наложение низких частот на аксиальное движение даже в очень вязких материалах позволяет образовать стружку заданной длины и сечения. Амплитуда наложенного аксиального движения при этом управляет максимальной толщиной стружки. Регулировкой амплитуды можно варьировать, начиная от относительного сужения до заданного отвода режущей кромки от поверхности инструмента и тем самым до приостановки образования стружки. Это решается зачастую через механическую частоту связанную с оборотами за счёт расстояния между относительными сужениями или количеством отводов инструмента на один оборот инструмента.

Влияние наложения колебаний на образование стружки

В одном из опытов выполнялись отверстия в широко известном сплаве титана (TiAl6V4), причём амплитуда колебаний варьировалась. Все опыты проводились идентичным инструментом диаметром d = 6,35 мм без подачи СОТС. Значения резания составляли vc = 30 м/мин и f = 0,08 мм/оборот.

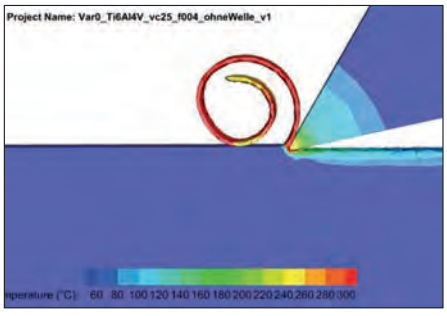
Осмотр полученной стружки однозначно указывает на влияние амплитуды в стружкообразовании. Уже при амплитуде высотой в толщину стружки это явно укорачивает её длину. Чтобы, как исключение, получить очень короткую стружку, для вязких материалов амплитуда должна быть существенно больше, чем подача режущих кромок. При этом режущая кромка полностью приподнимается от поверхности обработки и процесс образования стружки целенаправленно прерывается.

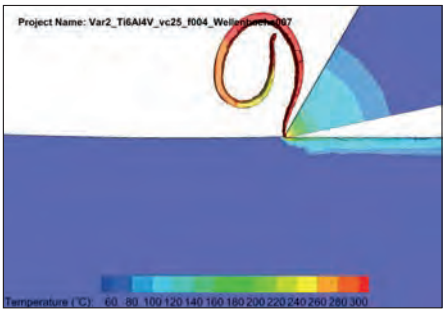
При обработке гибридных комбинаций материалов, так называемых, „сендвич“-материалов или пакетированных материалов обработка с наложением колебаний себя уже оправдала. В данном случае, особенно благодаря обеспечению излома стружки, можно избежать вымываний в армированных слоях композитных материалов и снизить общую температуру обработки.

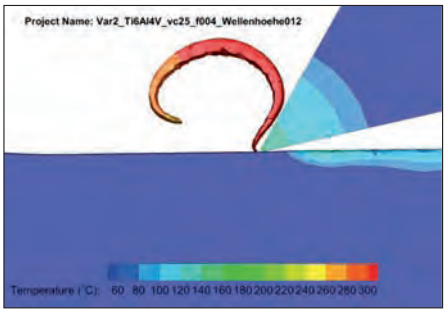


Влияние наложенной вибрации на температуру процесса

При помощи методики расчёта методом конечных элементов (FEM) выполняется имитация образования стружки на режущей кромке для различных условий применения. На рисунках ниже показано образование стружки на имитации FEM. Результаты имитации указывают на увеличение толщины и уменьшение длины стружки в зависимости от амплитуды колебаний. Причём оказывается, что при непрерывном резе без подъёма на режущей кромке возникает более высокая температура.



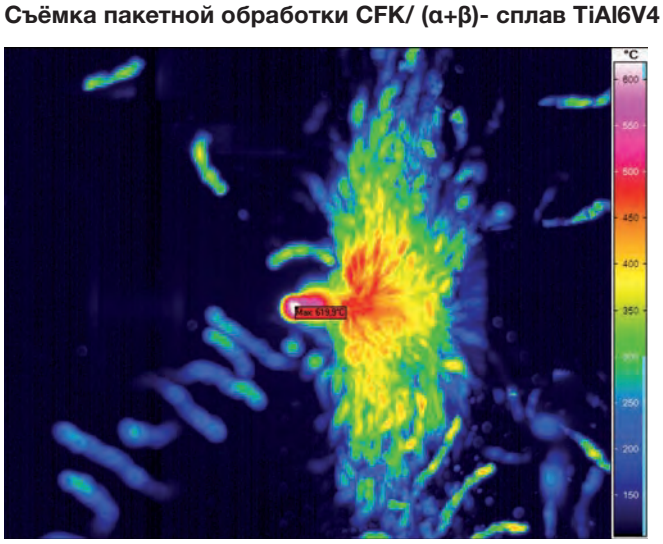




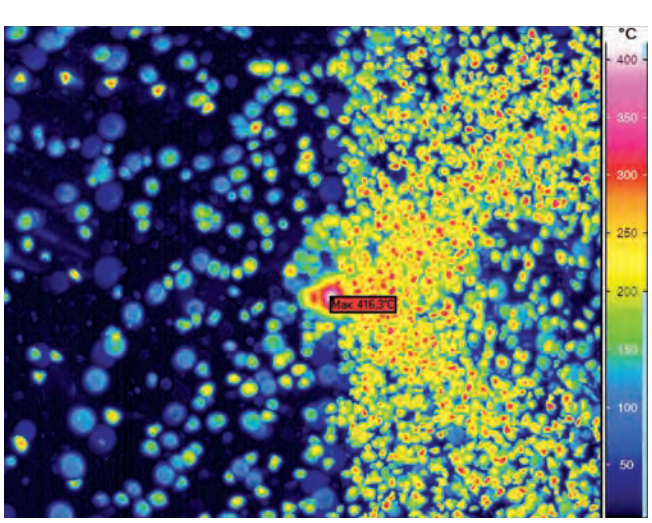
Это особенно чётко видно при сравнении температур обработки комбинаций материалов CFK/титан. В опыте использовались идентичные свёрла диаметром d = 6,35 мм без СОТС. Параметры резания составляли vc = 30 м/мин и f = 0,08 мм/об..

При помощи термографической камеры было в реальном времени зафиксировано тепло, выделяемое при обработке пакетного материала CFK/титан. Пластина для испытаний имела общую толщину 20 мм: 6 мм CFK и 14 мм титан (TiAl6V4). Сверление выполнялось таким образом, чтобы остаточная стенка составляла 1,5 мм к боковой поверхности пластины. Сравнение температуры режущих кромок непосредственно на выходе с нижней стороны материала, а также температуры стружки при помощи сборного отображения показывает разницу между традиционной обработкой и обработкой с наложенной вибрацией. Без наложения колебаний при опыте была зафиксирована максимальная температура на режущей кромке свыше 600 градусов по Цельсию. При обработке с наложенными колебаниями максимальная температура при идентичных условиях снизилась, примерно, на треть до 450 градусов по Цельсию. Кроме того, благодаря лучшему излому стружки было достигнуто существенно лучшее качество поверхности и повышение стойкости.

Съёмка пакетной обработки CFK/ (α+β)- сплав TiAl6V4



Традиционная без СОТС
ϑmax: 619 °C



С наложением колебаний без СОТС
ϑmax: 416 °C

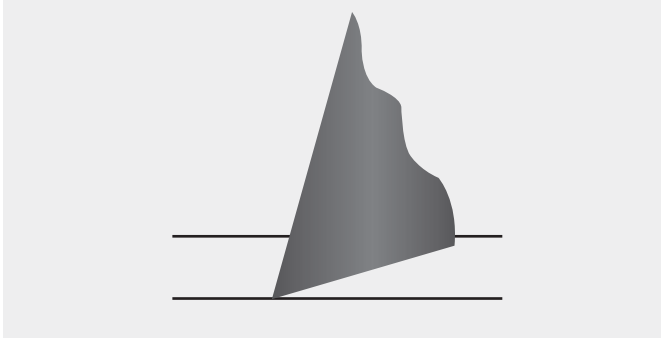
2.) Возбуждение высокой частоты (с применением ультразвука)

В технологии высокочастотной обработки резанием - называемой также с ультразвуковой поддержкой - имеет место наложение традиционной кинематики процесса с осциллирующим движением инструмента в осевом направлении, которая по сравнению с возбуждением низких частот > 16...55 кГц имеет существенно большую частоту. Максимально достигаемая амплитуда на вершине инструмента, которая зачастую находится в пределах 2-30 мкм, сильно зависит от комбинации из инструмента, возбуждаемой системы и прикладываемой мощности, так как осцилляция состоит из возбуждения инструмента с собственной резонансной частотой.

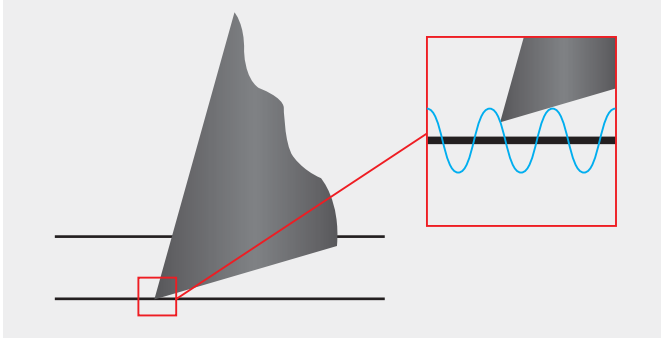
Возбуждение осуществляется при помощи устройства, состоящего из генератора, конвертера, усилителя и комбинации инструмента с оправкой, так называемого «сонотрода». Генератор преобразует электроэнергию в высокочастотное синусоидальное колебание, передаваемое на конвертер. Усилитель трансформирует поступающую от конвертера амплитуду колебаний и, усиливая, передаёт её на «сонотрод», в котором посредством «пьезоустройства» электрическая энергия преобразуется в механическую.

Комбинация из движения подачи и осциллирующего линейного движения позволяет, среди прочего, выполнять экономичную обработку высокопрочных материалов, таких как керамические композитные материалы. До настоящего времени мехобработка с ультразвуковой поддержкой в основном находила применение в обработке, так называемых, прогрессивных материалов, таких как стекло, керамика и твёрдые сплавы при помощи инструмента с неопределённой геометрией режущих кромок. Благодаря обработке композитных материалов, таких как армированные волокном пластмассы, сендвич-структуры и вспененные материалы, путём сверления и фрезерования всё более завоёвывает место обработка с высокочастотным возбуждением при заданной геометрии режущей кромки. При обработке с заданной геометрией режущей кромки микродробление влияет на обработку материала, что заметно сказывается на качестве поверхности и ведёт к уменьшению усилий.

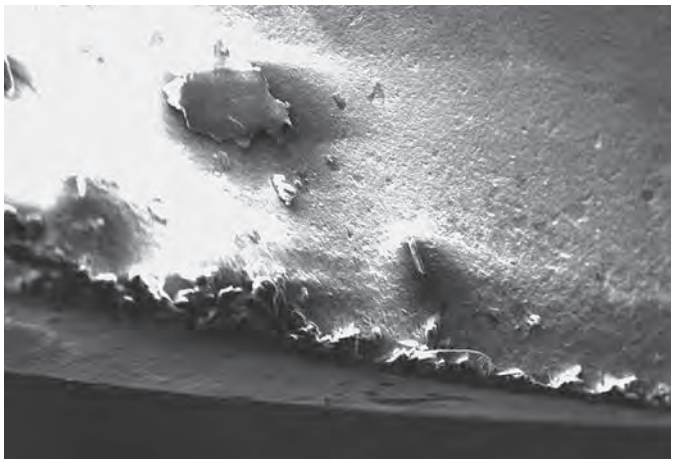
Наряду с положительным влиянием на износ при обработке стальных материалов можно также констатировать уменьшение образования наростов на режущей кромке при обработке сплавов на никелевой основе.

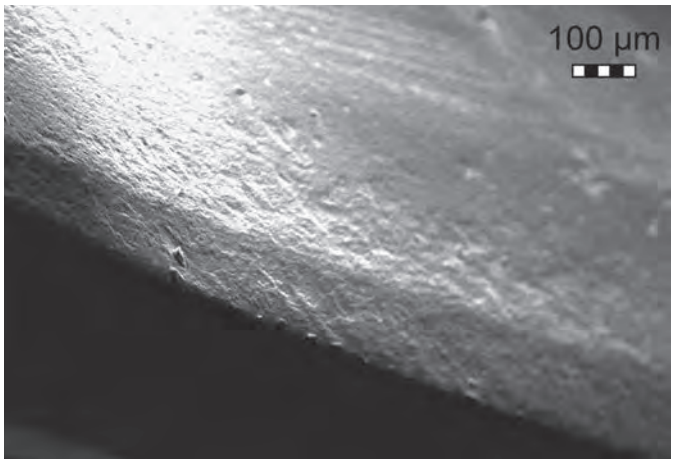


Без ультразвуковой поддержки



С ультразвуковой поддержкой



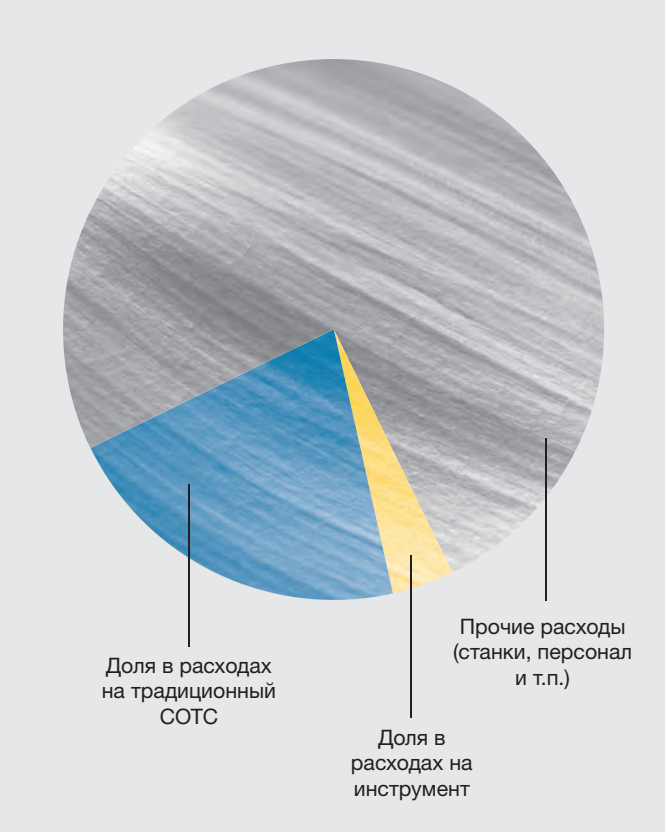


Технология MMS

Основы

Расходы на СОТС наряду с расходами на оборудование и инструмент составляют существенную часть расходов на процесс обработки. Поэтому снижение потребности в СОТС представляет собой большой потенциал для экономии.

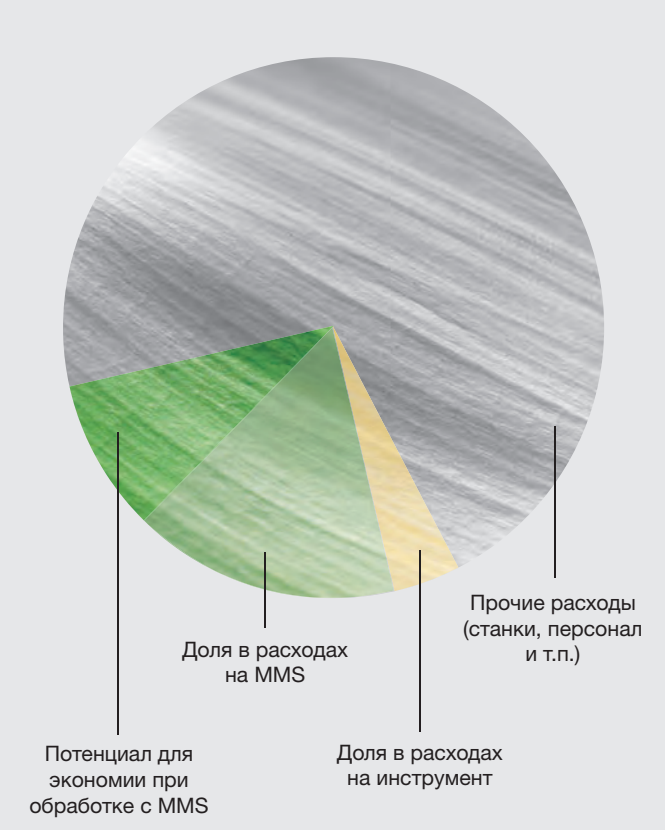
Экономия СОТС даёт не только преимущество в расходах, но и способствует защите окружающей среды и здоровья. В середине 90-х годов были начаты исследования и разработка в области MMS, одним из первопроходцев была компания Гюринг.



Цели при обработке с MMS

Новая система смазки MMS существенно дешевле, чем традиционная система смазки!

- Снижение температурной нагрузки на вершине инструмента
- Уменьшение износа инструмента
- Эффективный отвод стружки из глубоких отверстий
- Уменьшение потребности в СОТС
- Высокая эффективность охлаждения в глубоких отверстиях
- Снижение дополнительных расходов:
  - Расходы на очистку деталей
  - Расходы на утилизацию СОТС
  - Расходы на утилизацию стружки с СОТС
- Защита окружающей среды и здоровья



FRIZAR
www.frizar.ru

Разработка современных систем MMS

Благодаря своим фундаментальным исследованиям обработки с MMS Гюринг создал предпосылки близкой к практике технологии MMS. В разработку были включены все компоненты от системы зажима до вершины инструмента - результатом стала первая система передачи MMS.

Характеристики:
- Модульная и стандартизованная система
- Благодаря идентичному контуру шпинделя система MMS и традиционная система зажима являются полностью взаимозаменяемыми.
- Гидропластовый патрон, термопатрон и патрон Synchro выполнены под зажимной комплект MMS

Актуальная система MMS фирмы Гюринг

Благодаря интеграции в первую систему передачи MMS Гюринг винта продольной регулировки надёжно исключаются застои масла. Тем самым заказчик получает систему передачи MMS, оптимально соответствующую требованиям современных процессов.

Характеристики первой системы передачи MMS фирмы Гюринг:
- Отсутствие застоя при передаче СОТС
- Специальный узел передачи MMS
- Предназначенный для MMS хвостовик инструмента
- Конический винт продольной регулировки

Заказчик будет получать выгоду от стандартизованной системы и существенного снижения складских запасов благодаря совместимости деталей.

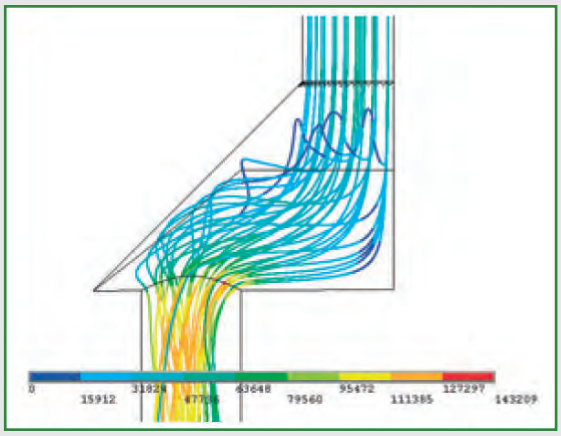
Завершённая форма торца хвостовика! Для надёжной передачи MMS

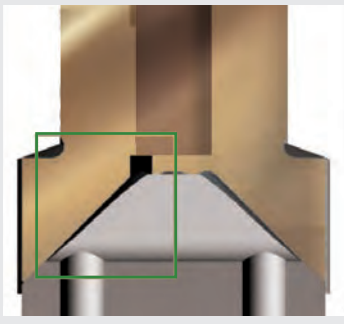
Важным является подвод очень малого количества СОТС в рабочую зону! Колоссальную роль при этом играет геометрия торца хвостовика. Конусный торец инструмента Гюринг создаёт оптимальные условия для применения MMS..

Преимущества конического торца хвостовика:

- Отсутствие застоя масла
- Минимальные мёртвые зоны
- Простота обслуживания
- Недорогое производство

Профиль потока с низким образованием завихрений



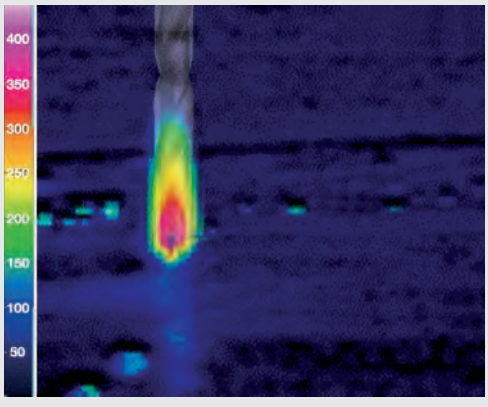


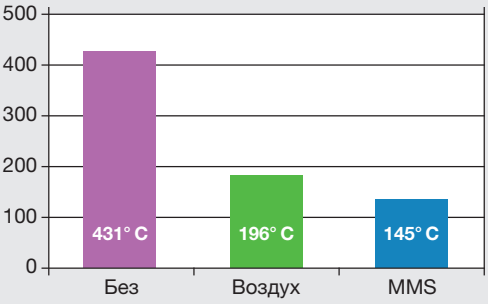
Распределение потоков на соединительном шлице каналов СОТС у конического перехода

Всегда холодная вершина

Благодаря MMS можно существенно снизить температуру по сравнению с сухой обработкой. В результате этого увеличивается стойкость и надёжность процесса.

Термографические исследования в фирме Гюринг: Сравнение температур инструмента





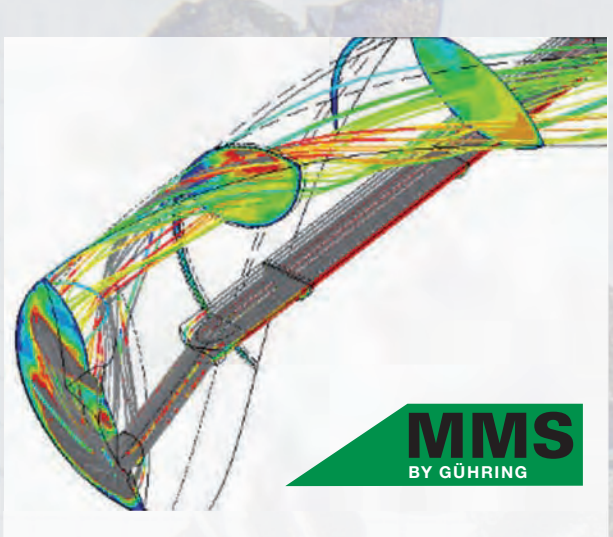
Наилучшая форма для MMS!

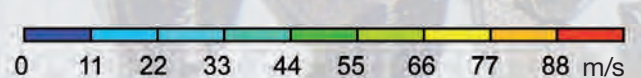
Наилучшие результаты благодаря оптимизированной геометрии инструмента для обработки с MMS на примере RT 100 T!

1. Сечение канавки:
Геометрия канавки инструмента MMS фирмы Гюринг обеспечивает короткую стружку, которая оптимально отводится из глубоких отверстий.

2. Максимальное сечение каналов COTC:
Как подача COTC, так и отвод стружки усовершенствованы благодаря максимальному сечению внутренних каналов COTC в инструменте.

Сравнение скоростей потока

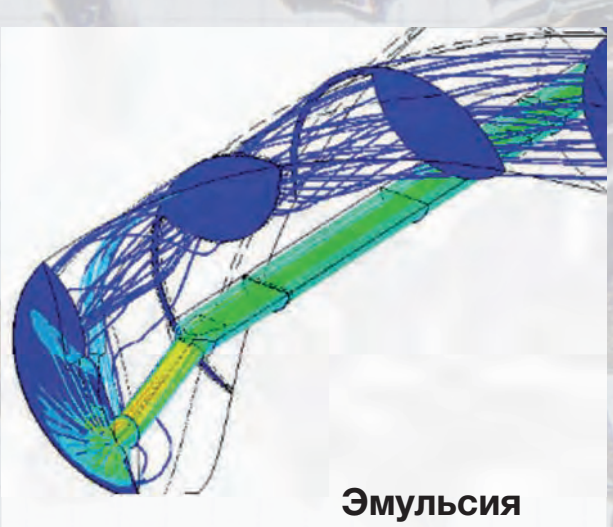




Скорость потока
в канавке с MMS 30,4 м/сек.

Объём с MMS
6.960 л/ч
(нормированный литр воздух/ч)

Инструмент Ø = 11,7 мм
Давление в насосе = 6 бар
Давление в инструменте = 4 бар



Эмульсия

Скорость потока
в канавке с эмульсией 3,5 м/сек.

Объём с эмульсией
600 л/ч
(нормированный литр воздух/ч)

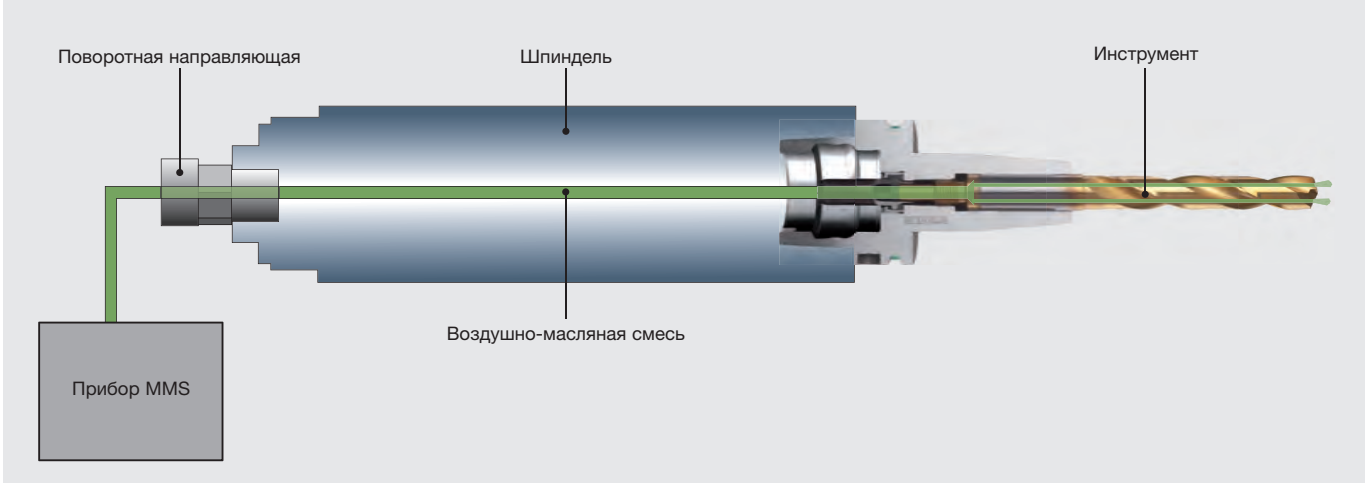
Инструмент Ø = 11,7 мм
Давление в насосе = 60 бар
Давление в инструменте = 31 бар

Варианты системы MMS

Подвод средств MMS к инструменту может осуществляться двумя различными способами: аэрозольная смесь может готовиться вне станка и подаваться в зону обработки (1-канальная система) или сжатый воздух и средство MMS могут подаваться в камеру смешения раздельно и смешиваться непосредственно в ней (2-канальная система). Подвод аэрозоли к зоне обработки осуществляется через специальную поворотную направляющую (предпочтительно с аксиальным направлением), шпиндель, систему зажима и собственно инструмент. Неизбежные изменения сечений необходимо выполнять с благоприятной для потока геометрией.

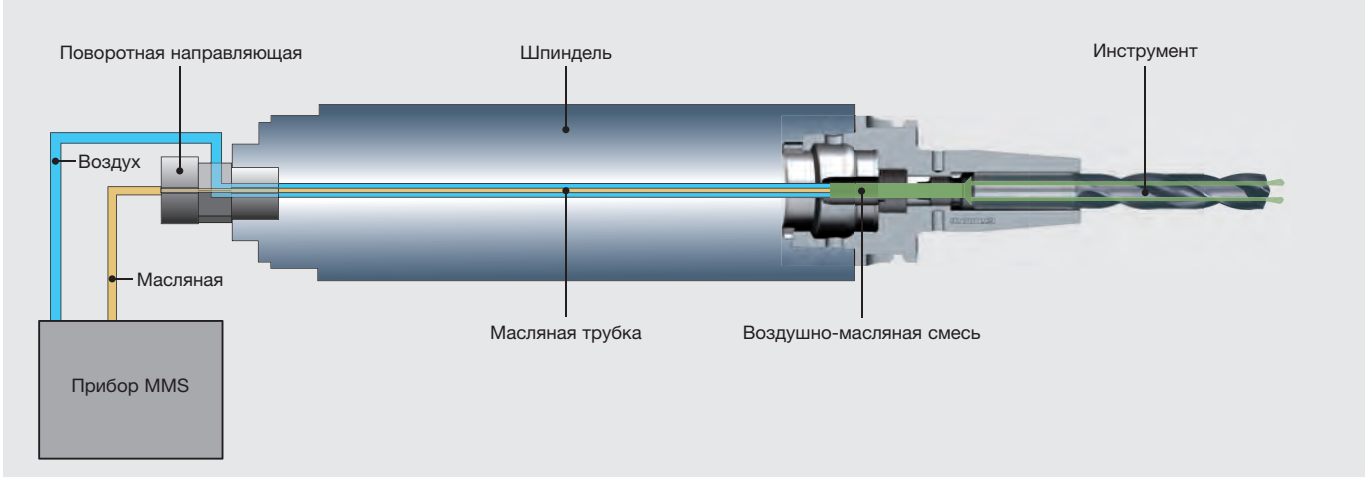
1-кнальная система MMS

У 1-канальной системы MMS подготовка смазочной аэрозоли производится в отдельном, установленном на станке устройстве для MMS. Специальная система форсунок внутри находящейся под давлением ёмкости при помощи дозированного сжатого воздуха создаёт смазывающую аэрозоль, содержание масла в которой можно регулировать, а затем через систему управления MMS поддерживать в заданных физических пределах.



2-канальная система MMS

У 2-канальной системы масло из агрегата через кольцевой трубопровод и по возможности короткий соединитель с поворотной направляющей. В него вставлен быстродействующий клапан, дозирующий минимальные объёмы масла. Через вмонтированную в шпиндель трубку масло подаётся в державку инструмента. Второй канал поворотного отверстия служит для подачи воздуха в державку. И только в ней масло смешивается с воздухом. У державки для этого имеется запрессованная трубка-форсунка, в которой находится смесительная камера. Масло и воздух в этой системе могут смешиваться почти в любом количестве. Путь от смесительной камеры до рабочей зоны минимален, что обеспечивает короткое время реакции и позволяет быстро менять количество масла.



Поверхность без покрытия

Специально для обработки алюминиевого литья, а также алюминиевых деформируемых сплавов со средним содержанием кремния свёрла без покрытия показывают очень хорошую производительность. Чтобы при этом избежать повышенного адгезионного износа (нароста на режущей кромке), этот инструмент благодаря специальной геометрии в сочетании с высоким качеством поверхности в зонах подточки, канавки и затыловки наилучшим образом адаптирован к этим задачам.

Оксидированная/азотированная поверхность

Обработанные паром поверхности, благодаря целенаправленной оксидации пограничной зоны (около 3 - 10 мкм), проявляют улучшенную коррозийную стойкость стальной поверхности, а также улучшенные трибологические свойства инструмента. Для применения с абразивными материалами рекомендуется азотирование, благодаря чему повышается поверхностная закалка, что улучшает износостойкость инструмента.

Покрытие TiN

Макс. температура применения: < 600°C
Цвет: золотисто-жёлтый
Структура: однослойная
Твёрдость: 2300 HV0,05

Внедрённое фирмой Гюринг ещё в начале 80-х годов покрытие TiN находит применение в процессах сверления как недорогое, покрывающее широкий спектр инструмента из быстрорежущей стали и твёрдого сплава.

Покрытие FIRE/nanoFIRE

Макс. температура применения: < 800°C
Цвет: фиолетовый
Структура: многослойная
Твёрдость: 3300 HV0,05

Покрытия FIRE и nanoFIRE наряду с титаном и азотом содержат также алюминий. Эти покрытия были внедрены уже в конце 90-х годов и представляют собой дальнейшую разработку покрытий TiN. Они отличаются более высокой твёрдостью, а также хорошей термохимической стойкостью и пригодны как для быстрорежущей стали, так и для твёрдого сплава.

Покрытие Raptor

Макс. температура применения: < 800°C
Цвет: бледно-золотистый
Структура: многослойная
Твёрдость: 3300 HV0,05

Многослойная структура TiN/TiAlN покрытия Raptor обеспечивает хорошие свойства при обработке сталей. Благодаря дополнительному снижающему трение верхнему слою на основе циркона удалось повысить эффективность и для обработки сталей с адгезивным действием (напр., ферритные, аустенитные и дуплексные стали).

Покрытие TiAlN

Макс. температура применения: < 800°C
Цвет: фиолетовый
Структура: однослойная
Твёрдость: 3300 HV0,05

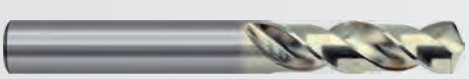
Покрытие TiAlN имеет аналогичные свойства как у FIRE и nanoFIRE и благодаря своей однослойной структуре часто находит применение в диапазоне мелких свёрл.

Покрытие nanoA

Макс. температура применения: < 900°C
Цвет: фиолетово-синий
Структура: многослойная наноструктура
Твёрдость: 3300 HV0,05

Также базирующееся на основе TiAlN покрытие nanoA особенно хорошо зарекомендовало себя при обработке нержавеющих сталей, но частично находит применение и при сверлении литья, титана, сплавов на основе никеля и кобальта-хрома. Благодаря наноструктуре замедляется образование трещин. Кроме того, благодаря подобранному составу оно имеет повышенную термохимическую стойкость как ,напр., TiAlN в сплавах с содержанием кремния.

Покрытие Sirius



Макс. температура применения: < 900°C
Цвет: бледно-золотистый
Структура: многослойная наноструктура
Твёрдость: 3400 HV0,05

Покрытие Sirius, базирующееся большей частью на ALTiN, предназначено в основном для обработки нержавеющих сталей. Благодаря наноструктуре обладает хорошей твёрдостью и вязкостью. Цирконосодержащий верхний слой должен активно препятствовать химической реакции с материалом и тем самым способствовать отводу стружки.

FRIZAR
www.frizar.ru

Покрытие Signum

Макс. температура применения: < 800°C
Цвет: бронзовый
Aufbau: mehrlagiges Nanokomposit
Härte: 5500 HV0,05

Signum относят к группе, так называемых, нанокомпозитов. Микроструктура отличается очень мелкими нанокристаллами TiAlN, которые включены в стекловидную, устойчивую к высоким температурам матрицу нитрида кремния. Благодаря этому возникает высокая твёрдость, которая выводит Signum на первое место, особенно по обработке закалённых сталей и литейных материалов.

Покрытие Endurum

Макс. температура применения: < 800°C
Цвет: медный
Структура: многослойный нанокомпозит
Твёрдость: 4000 HV0,05

Endurum, также покрытие из семейства нанокомпозитов, оно было целенаправленно разработано для обработки углеродистых, автоматных и легированных магнием сталей.

Покрытие Zenit

Макс. температура применения: < 700°C
Цвет: бледно-золотистый
Структура: многослойная наноструктура
Твёрдость: 2500 HV0,05

Наноструктурированное покрытие Zenit было целенаправленно оптимизировано под обработку титановых сплавов. Поэтому специальная структура, как и состав делают его настоящим „специалистом“. Кроме того, оно показывает и хорошие результаты при сверлении в алюминиевых литейных сплавах со средним содержанием кремния.

Покрытие Ice

Макс. температура применения: < 1000°C
Цвет: металлический серый
Структура: многослойная
Твёрдость: 3500 HV0,05

Основанное на титане, алюминии и хроме покрытие Ice специализировано под обработку цветных металлов типа медных сплавов, а также бронзы и латуни.

Покрытие Carbo

Макс. температура применения: < 500°C
Цвет: чёрно-серый
Структура: однослойная
Твёрдость: 5000 HV0,05

Покрытие Carbo относят к группе покрытий DLC (DLC - diamond like carbon). Эти углеродные покрытия обладают аналогичными алмазу свойствами. Покрытие Carbo, благодаря своему составу, а именно 100% углерода и структуре (ta C) имеет очень высокую твёрдость. Этим объясняется великолепная производительность при сверлении цветных металлов, напр., алюминиевые деформируемые и литейные сплавы (<12% Si), медь, латунь и бронза. В дополнение к этому оно является надёжным „партнёром“ при обработке неармированной пластмассы и древесины.

Покрытие Critall

Макс. температура применения: < 600°C
Цвет: чёрно-серый
Структура: однослойная
Твёрдость: 8000 HV0,05

Cristall, как чисто кристаллическое алмазное покрытие, ни в чём не уступает натуральным алмазам. Наряду со многими интересными физическими свойствами оно подкупает своей чрезвычайной твёрдостью. Благодаря этому микрокристаллический Cristall отлично подходит для обработки высокообразивных материалов, как напр., армированные волокном пластмассы, керамика, графит и алюминиевые литейные сплавы с высоким содержанием кремния (>12%). Данное покрытие по технологическим причинам применимо только на специальных твёрдых сплавах.

	Сверление		
	Твёрдый сплав		HSS
	COTC	MQL	
Углеродистые стали,	Endurum	Endurum	Fire
Автоматные стали,	Raptor	Raptor	-
Улучшенные стали	Fire	Fire	-
Сталь низколегированная	Fire	Fire	Fire
	Endurum	Endurum	TiN
	Raptor	Raptor	
Сталь легированная	Fire	Fire	Fire
	Signum	Signum	TiN
	nanoA	nanoA	
Сталь закалённая <55 HRC	Signum	Signum	-
	Fire	Fire	-
	TiAlN	TiAlN	-
Сталь закалённая 55-65 HRC	Signum	Signum	-
	Fire	Fire	-
	TiAlN	TiAlN	-
Сталь нержавеющая и кислотостойкая	nanoA	nanoA	Sirius
	Sirius	Sirius	Fire
	Endurum	Endurum	TiN
Чугуны	Signum	Signum	Fire
	Fire	Fire	-
	nanoA	nanoA	-
Алюминий деформируемый	без покр.	без покр.	без покр.
	Carbo	Carbo	Carbo
	Cristall	Cristall	-
Алюминиевый сплав (< 12% кремния)	без покр.	без покр.	без покр.
	Zenit	Zenit	Zenit
	Carbo	Carbo	Carbo
Алюминиевый сплав (≥ 12% кремния)	Cristall	Cristall	-
	-	-	-
	-	-	-
Славы на основе никеля (например Inconel)	nanoA	nanoA	Fire
	Signum	Signum	-
	Fire	Fire	-
Титан/титановые сплавы	Zenit	Zenit	Fire
	nanoA	nanoA	-
Медь/бронза/латунь	ICE	ICE	TiN
	Carbo	Carbo	-
Кобальт-хромовые сплавы	nanoA	nanoA	-
	Signum	Signum	-
	Fire	Fire	-
Драгоценные металлы	nanoA	nanoA	-
Керамика	Cristall	Cristall	-
Пластмассы, не усиленные волокном	Carbo	-	-
Пластмассы, усиленные волокном	Cristall	Cristall	-
	Signum	Signum	-

Указание:

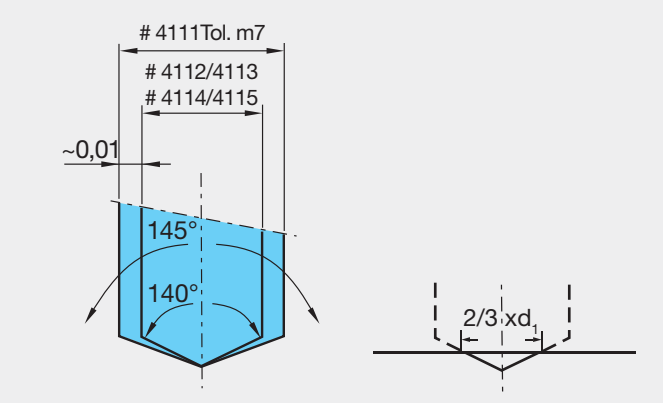
Данный обзор отображает общие рекомендации по применению покрытий „Гюринг“.
Приоритеты расставлены соответственно сверху вниз.

Центрирование и пилотные отверстия

Центрирование и пилотные отверстия системами сверления HT 800

Для сверления отверстий системами HT800 на глубину более 5xD мы рекомендуем выполнять центрирование или пилотные отверстия.

При центрировании диаметр засверливания должен составлять около 2/3 требуемого отверстия. При выполнении пилотных отверстий мы рекомендуем глубину сверления 1xD. Кроме того, угол при вершине и диаметр пилотного инструмента должен быть больше угла при вершине и диаметра последующего сверла.
Для обеспечения этого мы рекомендуем применение оптимально подобранных для этого пилотных пластин: арт.-№ 4111 с углами при вершине 145 град. и допуском на диаметр m7 в очень короткой жёсткой державке, арт.-№ 4105.

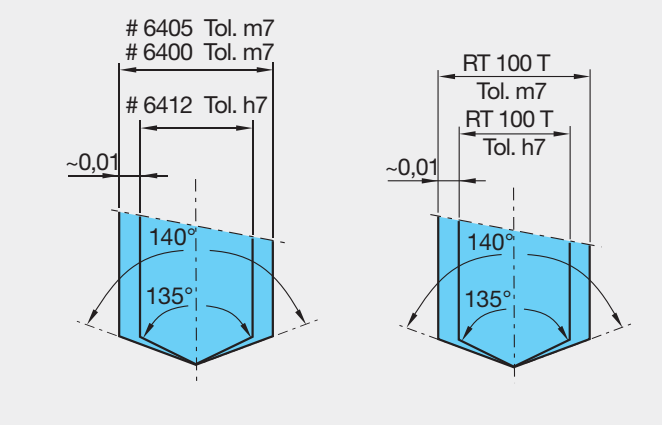


Центрирование и пилотные отверстия свёрлами VHM

При применении свёрл VHM для глубины от 7xD до 12xD мы рекомендуем центрирование или выполнение пилотных отверстий глубиной 1-2xD.
При глубине более 12xD пилотное отверстие глубиной от 1xD до 2xD обязательно.

Для выполнения пилотных отверстий под мелкие свёрла серии ExclusiveLine 15xD (арт.-№ 6412) мы рекомендуем применять мелкие свёрла ExclusiveLine 4xD без каналов COTC (арт.-№ 6400) или 5xD с каналами COTC (арт.-№ 6405), так как они выполнены оптимально для таких задач в отношении угла при вершине и допуска на диаметр.

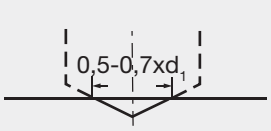
Для выполнения пилотных отверстий под специальное сверло глубокого сверления RT 100 T можно, напр., применять сверло Ratio RT 100 U с каналами COTC, 3xD (арт.-№ 2477), так как оно выполнено оптимально для этих задач в отношении угла при вершине и допуска на диаметр.



Центрирование и пилотные отверстия инструментом HSS

Центрирование свёрлами с длинами по DIN 340

При применении свёрл HSS/HSCO по DIN 340 мы рекомендуем выполнять центрирование диаметром 0,5-0,7 от диаметра сверла. Для такого центровочного отверстия оптимально подходят центровочные свёрла NC HSS/HSCO. Более подробную информацию по центровочным свёрлам NC см. в разделе «Центровочные свёрла NC».



Выполнение пилотных отверстий свёрлами с длинами по DIN 1869

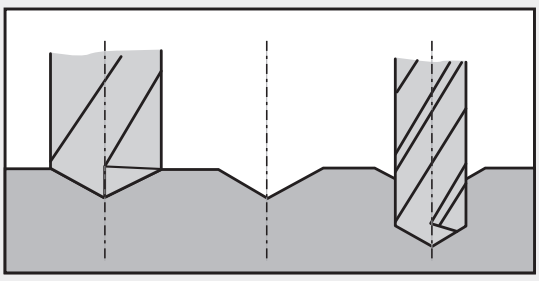
При применении длинных и сверхдлинных свёрл HSS/HSCO мы рекомендуем выполнять пилотные отверстия глубиной от 1xD до 2xD.
Для этого оптимально подходят сверхкороткие свёрла типа GV 120 по DIN 1897.

FRIZAR
www.frizar.ru

Центровочные свёрла NC

Центровочные свёрла NC

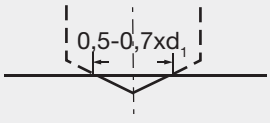
Для изготовления особо точных по позиционированию отверстий, отверстий с жесткими допусками на диаметр, глубоких отверстий или всех не технологичных форм заготовки (круглые, неровные) рекомендуется до собственно процесса сверления выполнить центрирование центровочным сверлом NC. Это обеспечивает то, что последующее сверло будет работать точно по позиции, исключается возможный увод.
При изготовлении фасок или раззенковок и центрирования за одну операцию также можно применять центровочные свёрла, если выбирается больший диаметр центрирования, чем диаметр самого отверстия.



Центровочные свёрла NC выполняются с очень короткой стружечной канавкой и без направляющих ленточек, для обеспечения очень стабильного и соответственно точного позиционирования. Благодаря такому исполнению центровочные свёрла NC подходят исключительно для засверливания, а не для изготовления отверстий глубже, чем высота вершины.

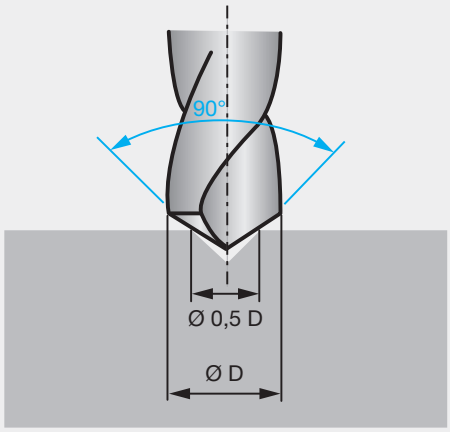
Выбор центровочного сверла NC

В идеальном случае диаметр центровочного сверла выбирается в соотношении 0,5-0,7 к диаметру сверла.



Центровочное сверло NC 90 градусов

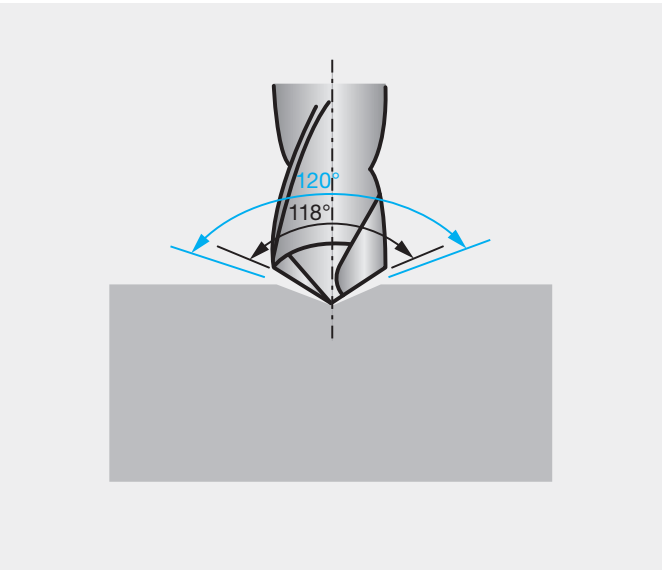
Центровочные свёрла NC с углом при вершине 90 градусов предназначены специально для засверливания, если после этого отверстие будет выполняться свёрлами HSS/HSCO, имеющими относительно большую перемычку. Благодаря этому обеспечивается то, что последующее сверло HSS/HSCO сначала работает основной режущей кромкой, а на стабильных участках направляется режущими кромками.
Кроме того, центровочные свёрла NC с углом при вершите 90 градусов пригодны для центрирования и раззенковки 90 градусов за одну операцию, если выбирается диаметр центровочного сверла больше диаметра отверстия.



Центровочные свёрла NC

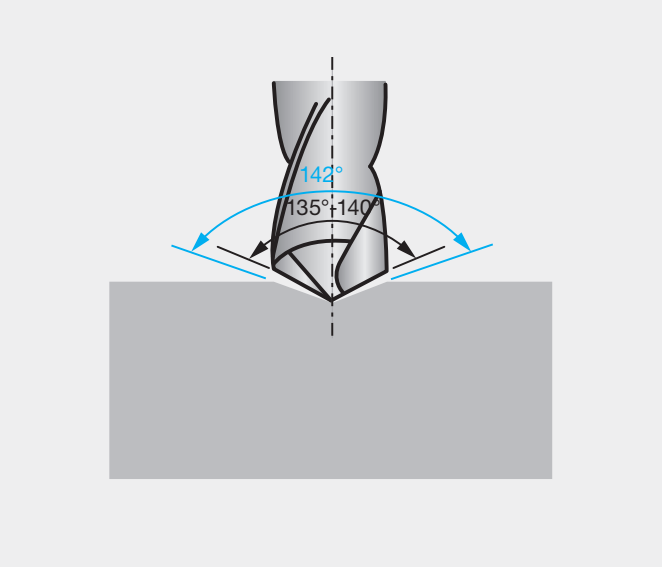
Центровочные свёрла NC 120 градусов

Центровочные свёрла NC с углом при вершине 120 градусов предназначены специально для засверливания, если само отверстие затем будет выполняться свёрлами HSS/HSCO с углом при вершине 118 градусов. Благодаря этому обеспечивается то, что последующее сверло HSS/HSCO засверливается сначала вершиной и затем плотно направляется.



Центровочные свёрла NC 142 градуса

Центровочное сверло NC с углом при вершине 142 градуса предназначено специально для засверливания, если после этого само отверстие будет выполняться твёрдосплавными свёрлами с углом при вершине 135-140 градусов. Благодаря этому обеспечивается, то что последующее твёрдосплавное сверло сначала засверливается вершиной, центрируется и направляется. Если периферия режущей кромки твёрдосплавного сверла раньше вершины попадает на обрабатываемый материал, то возникает опасность скола.



Центровочные свёрла NC

90°	120°	142°

FRIZAR
www.frizar.ru

Давление и расход СОТС, сверла Ratio

Представленный в диаграмме оптимальный, удовлетворительный и минимальный необходимый расход предназначен только для спиральных сверл Ratio тип RT 100 и не зависит от типа станка. Давление, наоборот, зависит от типа станка, т.к. каждый станок имеет собственные системы охлаждения и соответственно иные условия подачи СОТС (Рис.1). Поэтому приведенные параметры давления даны в качестве информации для определения порядка величин.
Для сверл Ratio тип RT 80 с центральным каналом под СОТС применяются другие критерии (Рис. 2).
Диаграммы предназначены для важнейшей области применения сверл Ratio - обработки стали. Они являются ориентировочными, но также применяются при обработке других материалов, в первую очередь именно потому, что для обработки стали всегда применяется самое высокое давление охлаждающей жидкости. Насколько выбор типа охлаждения зависит от обрабатываемого материала, показывают чувствительные к охлаждению сверла Ratio тип RT 150 с прямыми канавками. В частности, потеря стойкости из-за низкого давления СОТС при обработки чугуна значительно больше, чем при сверлении AlSi-сплавов. Это, однако, относится только к обработке AlSi-сплавов с короткой стружкой! Соответственно необходимое минимальное или удовлетворительное давление для обработки чугуна при подборе должно быть немного выше, чем при обработке AlSi (Рис. 3 и 4).

Рекомендуемые величины следует использовать для глубины отверстия до 5 x D. Для более глубоких отверстий должны применяться инструменты с внутренным охлаждением, а именно RT150 GN, поскольку иначе обработка становится экономически неэффективной.

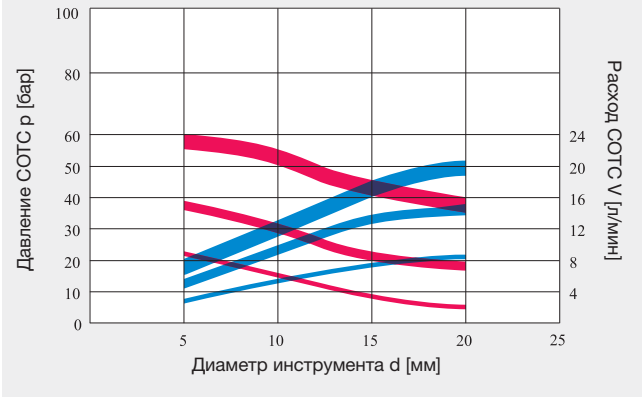


Рис. 1 :
Необходимые давление и расход СОТС для сверл Ratio типа RT 100 с винтовыми каналами СОТС.

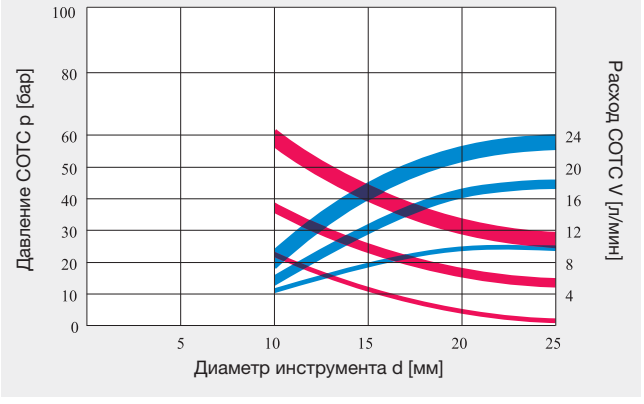


Рис. 2 :
Необходимые давление и расход СОТС для сверл Ratio тип RT 80 с центральным каналом СОТС

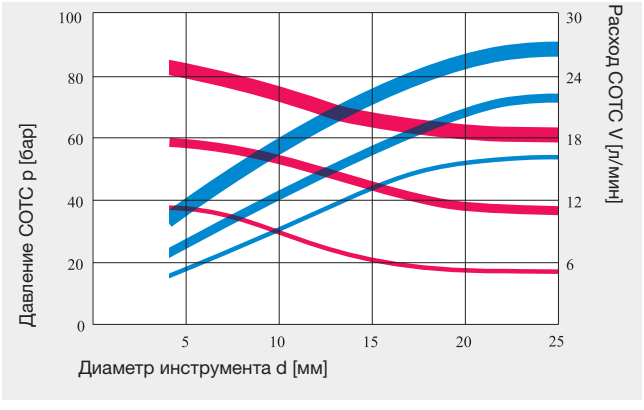


Рис.3 :
Необходимые давление и расход СОТС для обработки GG25 сверлами Ratio с прямыми канавками типа RT 150 GG.

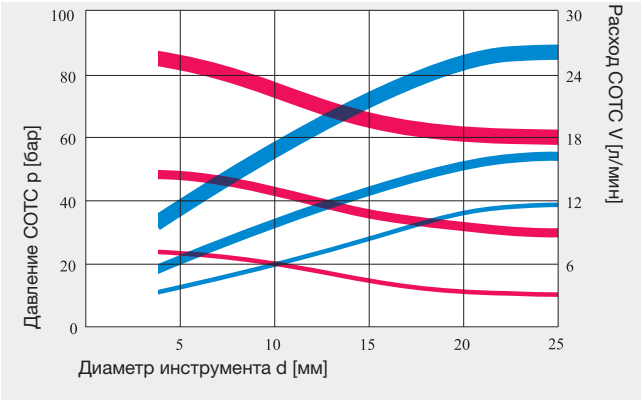
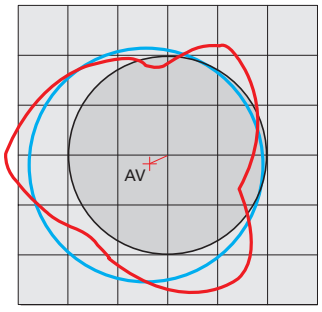


Рис. 4:
Необходимые давление и расход СОТС для обработки AlSi7 сверлами Ratio с прямыми канавками, тип RT 150 GG.

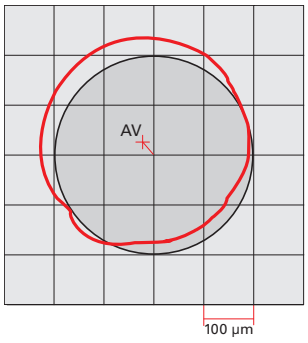
Примеры обработки, точность обработанного отверстия

1. В 40ХН2МА, Ø 14,5 мм

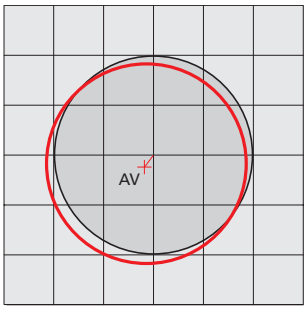
Сверло HSS, тип N
Арт. № 651 Ⓢ
vc = 25 м/мин
f = 0.25 мм/об
+Rмакс = 131.8 мкм
-Rмакс = - 49.1 мкм
Факт. D = 14.566 мм
dRмакс = 103.5 мкм
AV = 49.2 мкм
Ra = 2.6 мкм, Rz = 6.8 мкм **IT 12**



Сверло Ratio, тип RT 80
Арт. № 1171 Ⓢ
vc = 70 м/мин
f = 0.25 мм/об
+Rмакс = 42.7 мкм
-Rмакс = - 29.6 мкм
Факт. D = 14.515 мм
dRмакс = 12.9 мкм
AV = 35.3 мкм
Ra = 1.4 мкм, Rz = 4.31 мкм **IT 9**



Сверло Ratio, тип RT 100
Арт. № 1181 Ⓢ
vc = 70 м/мин
f = 0.25 мм/об
+Rмакс = 26.7 мкм
-Rмакс = - 17.2 мкм
Факт. D = 14.509 мм
dRмакс = 5.2 мкм
AV = 22.8 мкм
Ra = 1.04 мкм, Rz = 3.2 мкм **IT 8**

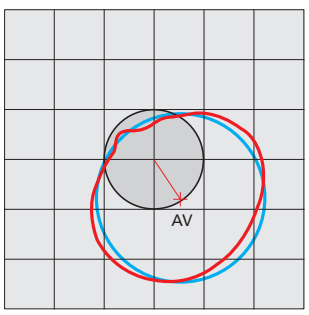


Максимальное отклонение круглости (dRмакс) образуется как абсолютная сумма наибольших положительных и отрицательных отклонений фактического контура к средней окружности. Смещение оси показывает на сколько мкм сверло отходит в сторону. Параметр с наибольшим отклонением определяет точность отверстия IT в зависимости от диаметра инструмента.

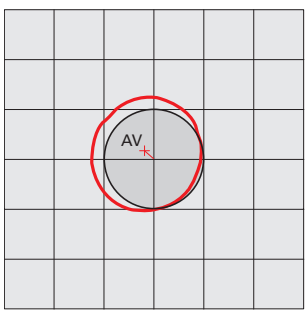
Черная окружность изображает заданное отверстие, которое инструмент должен сделать в идеальном случае. Красная окружность показывает фактический контур, т.е. фактическую форму отверстия, которую мы получаем соответсвующими типами сверл. Огибающая окружность (голубая) представляет усреднение фактической окружности, т.е. средний диаметр (у сверл Ratio огибающая окружность практически равна фактическому ∅).

2 . В Вч42-12, Ø 10 мм

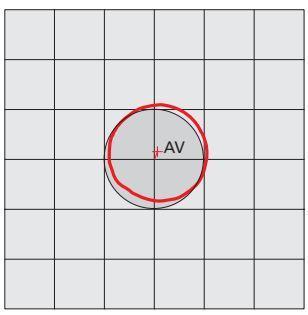
Сверло HSS, тип N
Арт. № 651 Ⓢ
vc = 30 м/мин
f = 0.2 мм/об
Факт. D = 10.77 мм
+Rмакс = 106 мкм
-Rмакс = 28 мкм
dRмакс = 42 мкм
AV= 68.5 мкм
Ra = 3,7 мкм, Rz = 17,2 мкм



Сверло Ratio, тип RT 100
Арт. № 1181 Ⓢ
vc = 90 м/мин
f = 0.3 мм/об
Факт. D = 10.027 мм
+Rмакс = 34 мкм
-Rмакс = 9.2 мкм
dRмакс = 6.5 мкм
AV = 22.5 мкм
Ra = 2.2 мкм, Rz = 11.5 мкм



Сверло Ratio, тип RT 150 GG
Арт. № 768 ◯
vc = 130 м/мин
f = 0.2 мм/об
Факт. D = 9.994 мм
+Rмакс = 11.5 мкм
-Rмакс = - 18 мкм
dRмакс = 5 мкм
AV = 14 мкм
Ra = 1.99 мкм, Rz = 11.2 мкм



Краткое введение по теме глубокое сверление

При обработке резанием, начиная с отверстий глубиной 15 x D и более, обычно используется, так называемый метод глубокого сверления. Хотя, конечно, сверла для глубокого сверления применяются и для обработки более коротких отверстий. Положительными моментами этого вида обработки являются высокая точность и оптимальная прямолинейность отверстия, хорошее качество поверхности.

Охлаждение под высоким давлением - это обязательное условие обработки сверлами для глубокого сверления.
В последние годы внутренний подвод СОТС в осевом инструменте хорошо себя зарекомендовал и получил признание - СОТС подается через внутренние каналы в зону резания, где она особенно необходима. Благодаря этому, у спиральных сверл, разверток и метчиков значительно увеличился период стойкости, и уменьшилось количество поломок инструмента. Современные многоцелевые станки оснащаются внутренней подачей СОТС под высоким давлением и благодаря этому на них можно применять инструмент для глубокого сверления. Использование сверл для глубокого сверления на обрабатывающих центрах и токарных станках с ЧПУ приобретает все большую популярность.

Все ружейные сверла должны иметь направление. Ружейные сверла нельзя использовать с максимальным числом оборотов без направления.

Внимание!
Ружейные сверла нельзя использовать в термоусадочны патронах. (Кроме T16 см. след. стр.)

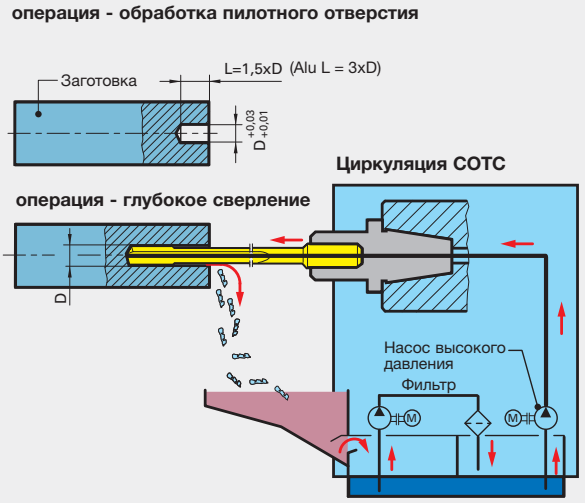
Последовательность операций глубокого сверления на обычном инструментальном станке

- Изготовление пилотного отверстия (допуск H8).
- Подвод инструмента в заданное положение на небольших режимах - с частотой вращения около 200 об/мин. и подачей около 500 мм/мин. Инструмент с соотношением длины 40xD ввод производить при левом вращении.
- Включение подачи СОТС и рекомендуемой частоты вращения.
- Непрерывное сверление на полную глубину отверстия без цикла отвода инструмента. При использовании сверл с очень большим соотношением длины к диаметру (например, EB 100 начиная с длины стружечной канавки 160 мм) рекомендуем работать до глубины 25 мм с уменьшенными режимами резания (около 75 % от оптимальной скорости резания).
- Отключение подачи СОТС после достижения требуемой глубины сверления.
- Ускоренный отвод с остановленным шпинделем.

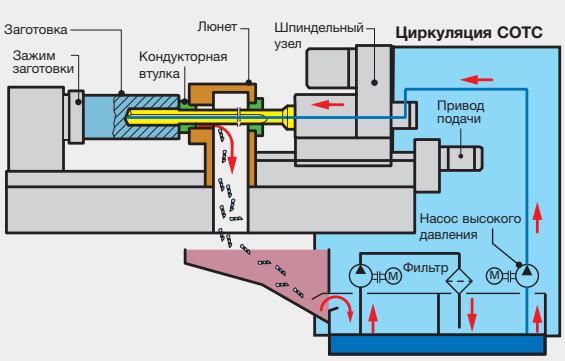
Рекомендации по применению

- Для обработки отверстия длиной более 40xD мы рекомендуем применение двух или нескольких сверл для глубокого сверления, например, диам. 10 x 400 мм и диам. 9,95 x 800 мм.
- При смене инструмента от 40xD инструмент можно успокоить включением, примерно, на 1 секунду высокого давления внутреннего СОТС.
- Для обработки материалов с длинной стружкой мы рекомендуем заказывать сверла для глубокого сверления с полированными стружечными канавками.
- Однолезвийные сверла глубокого сверления для обработки алюминиевых сплавов с длинной стружкой необходимо заказывать с заточкой угла при вершине 180 град. и заниженной ступенью под СОТС.
- При засверливании в алюминий с содержанием Si менее 1%, то есть, при рекомендуемых скоростях резания Vc> 160 м/мин, мы рекомендуем выходить на полные обороты за несколько этапов. Кроме того, необходимо выполнить более глубокое пилотное отверстие около 3xD.

Глубокое сверление на универсальных станках



Глубокое сверление на станках для глубокого сверления

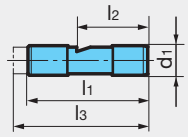


Представленные в программе хвостовики имеются в наличии на складе. Ниже приведены их конструкции и обозначения. Возможно изготовление по индивидуальным чертежам заказчика хвостовиков с высокой точностью.

Внимание! Для сверла EB 100 требуются хвостовики с направляющим фланцем (дополнительная информация - по запросу).

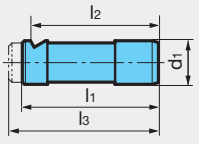
Хвостовики к станкам для глубокого сверления

1



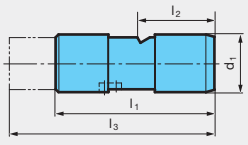
Обозначение	d_1	l_1	l_2	l_3
1.1	10	40	24	-
1.2	10	40	24	45
1.3	10	40	24	55
1.4	16	45	31,2	-
1.5	25	70	34	-
1.6	25	70	34	78

2



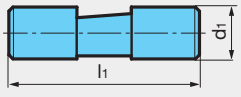
Обозначение	d_1	l_1	l_2	l_3
2.1	16	50	47	-
2.2	16	50	47	55
2.3	16	50	47	70

3



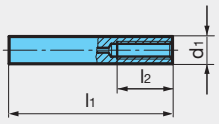
Обозначение	d_1	l_1	l_2	l_3
3.1	25	70	34	100

4



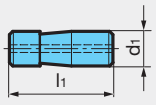
Обозначение	d_1	l_1
4.1	19,05	70
4.2	12,70	70
4.3	25,40	70
4.4	31,75	
4.5	36,10	70

5



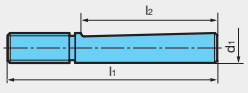
Обозначение	d_1	l_1	l_2
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50
5.4	10	100	
5.5	10	110	

6



Обозначение	d_1	l_1
6.1	12,7	38
6.2	19,05	70
6.3	38,1	70

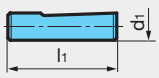
7



Обозначение	d_1	l_1	l_2
7.1	16	112	73
7.2	20	126	82

Хвостовики по DIN 1835

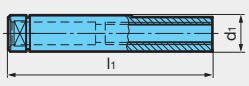
9 Форма E



Обозначение	d_1	l_1
9.1	8	36
9.2	10	40
9.3	12	45
9.4	16	48
9.5	20	50
9.6	25	56
9.7	32	60
9.8	31,75	70
9.9	38,1	70
9.10	40	70

Хвостовики по VDI

12

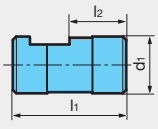


Обозначение	d_1	l_1
12.1	10	68
12.2	16	90
12.3	25	112

также могут быть использованы в станках для глубокого сверления

Хвостовики по Speed-Bit-System

13

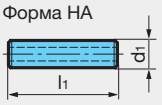


Обозначение	d_1	l_1	l_2
13.1	16	40	16
13.2	25	50	25
13.2	35,6	60	

также могут быть использованы в станках для глубокого сверления

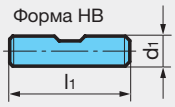
Хвостовики по DIN 6535

10 Форма HA

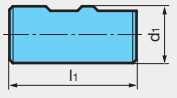


Обозначение	d_1	l_1
10.1	8	36
10.2	10	40
10.3	12	45
10.4	16	48
10.5	20	50
10.6	25	56
10.7	32	60
10.8	25	70
10.9	40	70

8 Форма HB

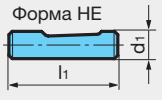


для обозначений 8.6, 8.7, 8.8



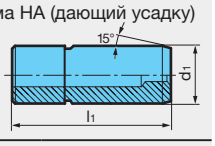
Обозначение	d_1	l_1
8.1	8	36
8.2	10	40
8.3	12	45
8.4	16	48
8.5	20	50
8.6	25	56
8.7	32	60
8.8	40	70

11 Форма HE



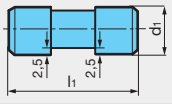
Обозначение	d_1	l_1
11.1	8	36
11.2	10	40
11.3	12	45
11.4	16	48
11.5	20	50
11.6	25,4	70
11.7	25	56
11.8	32	60
11.9	40	70

16 Форма HA (дающий усадку)



Обозначение	d_1	l_1
16.1	10	50
16.2	16	64
16.3	20	70
16.4	25	81
16.5	32	92

17 Форма HE



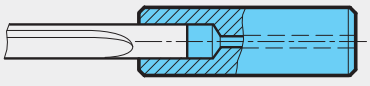
Обозначение	d_1	l_1
17.1	19,05	70
17.2	25,40	70
17.3	31,75	70
17.4	38,1	70

также могут быть использованы в станках для глубокого сверления

Варианты изготовления хвостовиков в зависимости от номинального диаметра сверла:

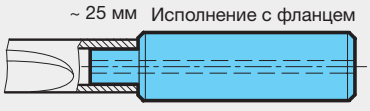
Принцип крепления для номин. Ø < Ø хвостовика (разница диаметров должна быть не менее 6 мм): стебель крепится внутри хвостовика.

Стандартное исполнение



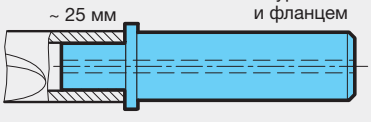
Принцип крепления для номин. Ø ≠ Ø хвостовика (макс. до равного размера): фланец хвостовика крепится внутри стебля.

~ 25 мм Исполнение с фланцем



Принцип крепления для номин. Ø > Ø хвостовика: фланец хвостовика крепится внутри стебля, внутр. Ø которого > Ø хвостовика и упирается торцем в буртик..

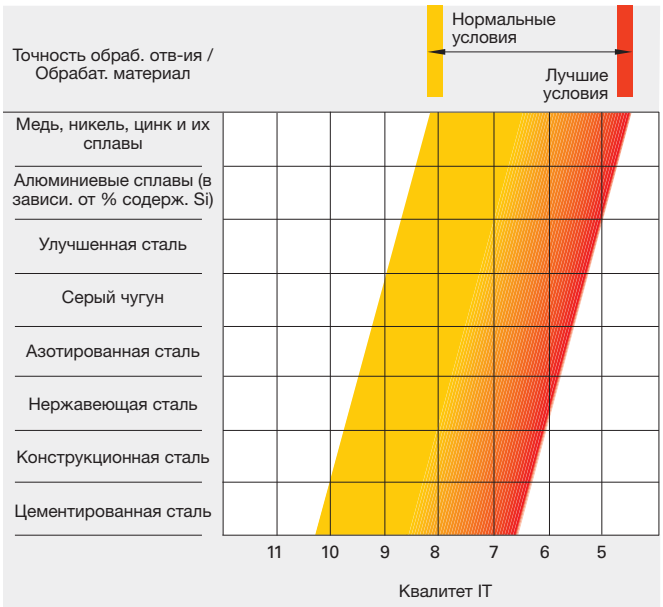
Исполнение с буртиком и фланцем ~ 25 мм



Точная обработка отверстий однолезвийными сверлами глубокого сверления

Основные допуски отверстий*

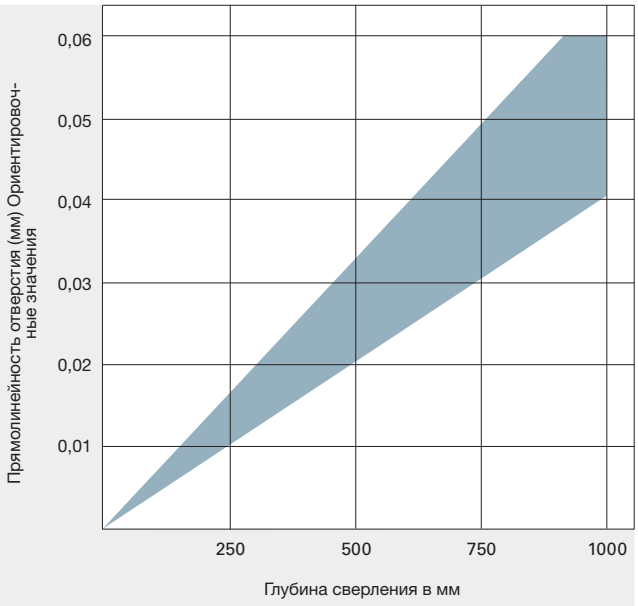
При сверлении однолезвийным сверлом получают отверстие с точностью IT7-IT9, так как силы резания, возникающие на лезвии сверла, перераспределяются на боковую поверхность твердосплавной головки, а не как у спирального сверла - на ленточки.



Прямолинейность обработанного отверстия*

Так как прецизионная твердосплавная головка у однолезвийного сверла для глубокого сверления напаивается на гибкий стебель в форме трубы, инструмент, независимо от возможного радиального биения, изготавливает очень прямое отверстие.

Однако неоднородность обрабатываемого материала и некоторые другие факторы могут отрицательно влиять на прямолинейность отверстия.



Шероховатость поверхности*

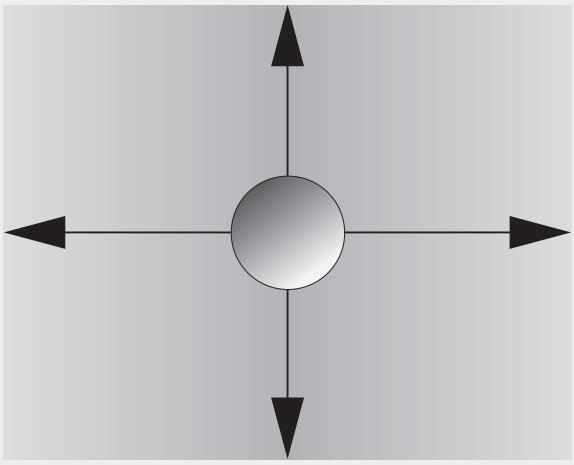
Силы резания, возникающие на лезвии сверла, передаются на боковую поверхность и боковое лезвие, которые сглаживают и полируют поверхность. Поэтому важную роль играет смазывающая пленка между боковой поверхностью головки сверла и поверхностью отверстия. Чем лучше СОТС, тем лучше качество поверхности.

Отклонение от круглости*

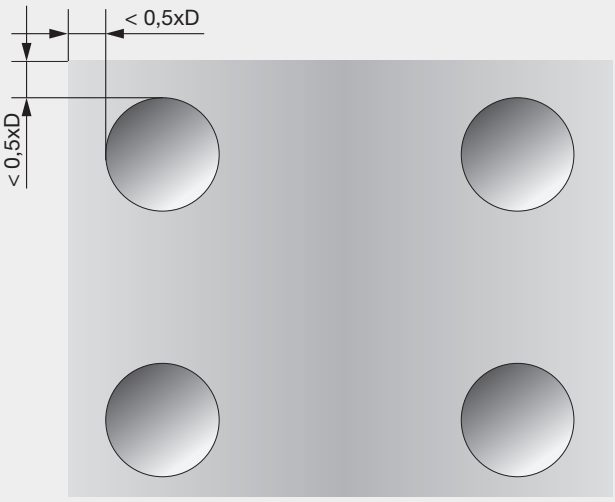
При обработке отверстия обычным спиральным сверлом на отклонение формы отверстия оказывает влияние, среди прочего, и заточка режущих кромок. На них возникает дисбаланс сил резания. У однолезвийного сверла сила резания передается на боковую поверхность твердосплавной головки и в результате получается хорошее формообразование отверстия.

* Ружейное сверло с двумя режущими кромками - как с прямыми, так и со спиральными канавками - достигает значений приблизительно в два раза больше указанных.

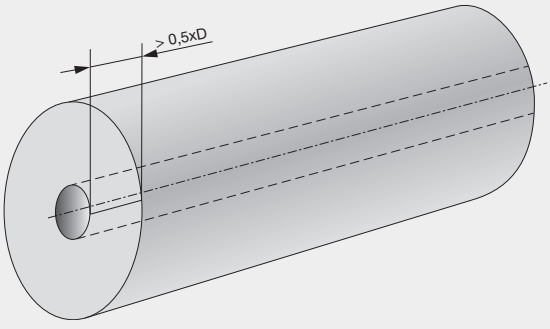
Прямолинейность отверстий/ отклонение от центра



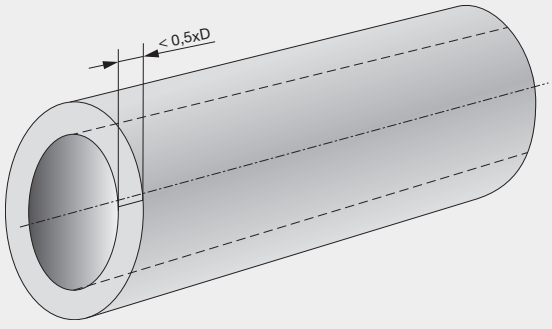
Расстояние от отверстия до кромки > 0,5xD



Расстояние от отверстия до кромки < 0,5xD



Достаточное расстояние до стенок (> 0,5xD) → оптимально



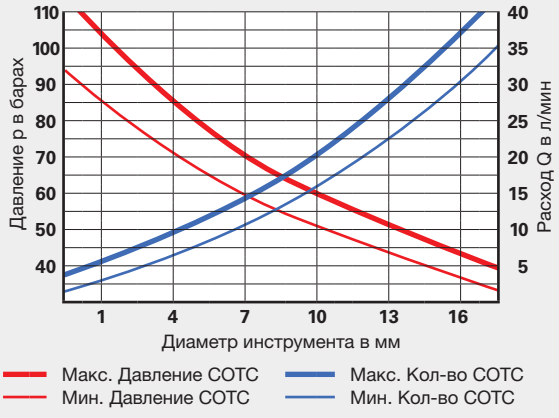
Минимальное расстояние (0,5xD) превышено → может привести к потере прямолинейности

СОТС параметры

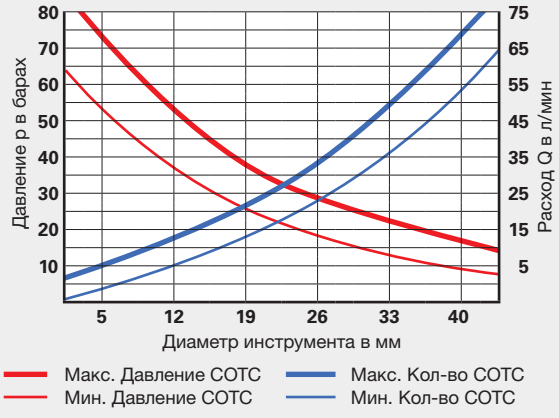
Обратите внимание:

- Все сверла для глубокого сверления можно применять только с внутренним охлаждением будь то воздух, вода или масло. Без внутреннего охлаждения невозможен отвод стружки.
- Все сверла для глубокого сверления можно применять с маслом в качестве среды для внутреннего охлаждения. Но при этом требуется давление выше на 30% для обеспечения одинакового расхода.
- Если свёрла для глубокого сверления применяются с MMS, то при более малых номинальных диаметрах требуется увеличение давления в зависимости от системного давления установки MMS.
- При недостаточных параметрах СОТС можно работать с пониженными параметрами резания. Возможно применение систем повышения давления.
- По мере увеличения длины сверла, следует увеличивать давление СОТС.

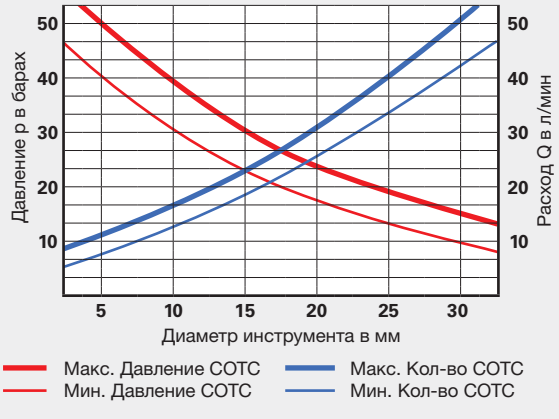
Параметры СОТС для EB 100
(Рекомендуемые значения для эмульсии)



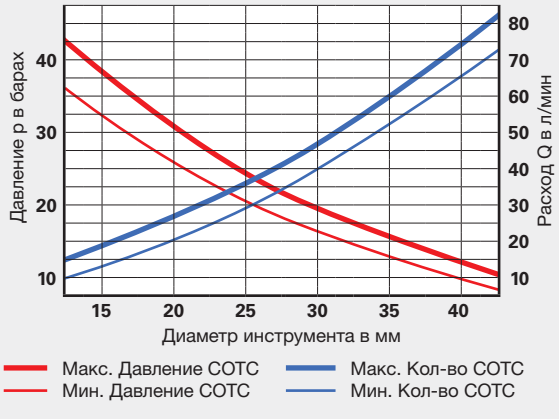
Параметры СОТС для EB 80
(Рекомендуемые значения для эмульсии)



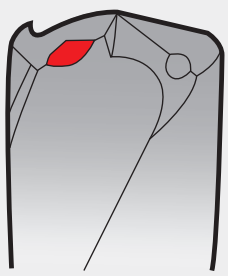
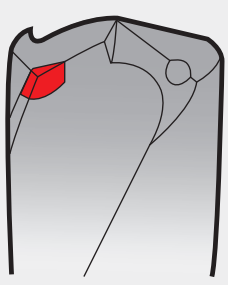
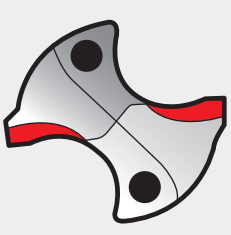
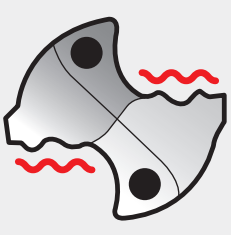
Параметры СОТС для ZB 80
(Рекомендуемые значения для эмульсии)



Параметры СОТС для EB 800
(Рекомендуемые значения для эмульсии)

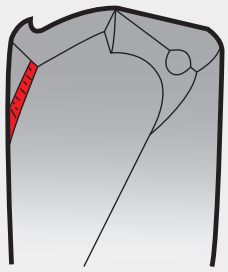
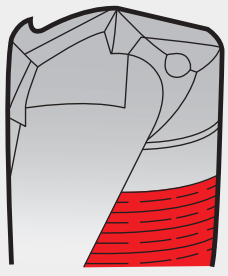
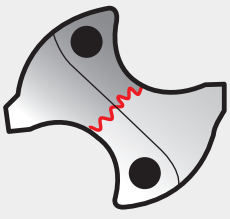
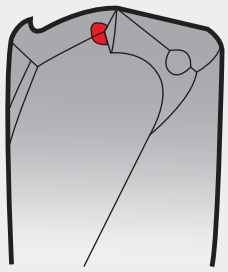


Указания по применению/ устранение проблем

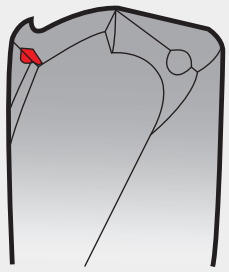
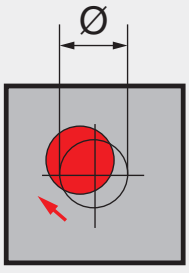
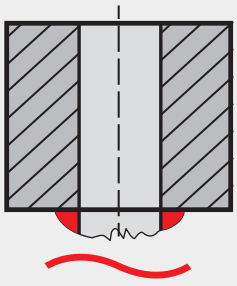
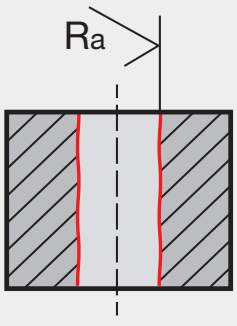
Дефект	Причина	Устранение
1. Нарост на режущей кромке 	Слишком низкая скорость резания	Увеличить скорость резания
	Слишком большое притупление режущей кромки	Уменьшить притупление режущей кромки
	Режущая кромка без покрытия	Нанести покрытие
2. Сколы уголков режущей кромки 	Нестабильные условия, недостаточный зажим детали	Стабильнее зажать деталь
	Слишком большое радиальное биение	Проверить, по возможности скорректировать биение
	Прерванный рез	Снизить подачу
3. Сильный износ задней поверхности 	Слишком большая скорость резания	Снизить скорость резания
	Слишком малая подача	Увеличить подачу
	Задний угол слишком мал	Увеличить задний угол
4. Сколы на главной режущей кромке 	Нестабильные условия, недостаточный зажим детали	Стабильнее зажать деталь
	Прерванный рез	Снизить подачу
	Превышена метка максимального износа	Сократить интервалы для смены инструмента
	Неверный тип инструмента	Использовать соответствующий инструмент (см. помощь в выборе)

FRIZAR
www.frizar.ru

Указания по применению/ устранение проблем

Дефект	Причина	Устранение
5. Износ направляющей ленточки 	Нестабильные условия, недостаточный зажим детали	Стабильнее зажать деталь
	Слишком большое радиальное биение	Проверить и по возможности скорректировать биение
	Обратный конус слишком мал	Увеличить обратный конус
	Несоответствующая СОТС, слишком бедная эмульсия	Обогатить эмульсию или использовать масло
6. Риски на задней части державки 	Нестабильные условия, недостаточный зажим детали	Стабильнее зажать деталь
	Слишком большое радиальное биение	Проверить и по возможности скорректировать биение
	Прерванный рез	Снизить подачу
	Абразивный материал	Обогатить эмульсию или применять масло
7. Сильный износ перемычки 	Слишком малая скорость резания	Увеличить скорость резания
	Слишком большая подача	Снизить подачу
	Слишком большое притупление главной режущей кромки	Уменьшить притупление главной режущей кромки
8. Сколы на переходе, подточке, главной режущей кромки 	Задний угол слишком мал	Увеличить задний угол
	Слишком большое притупление главной режущей кромки	Уменьшить притупление главной режущей кромки
	Неверный тип инструмента	Использовать соответствующий инструмент (см. помощь в выборе)

Указания по применению/ устранение проблем

Дефект	Причина	Устранение
9. Пластическая деформация углов режущих кромок 	Слишком высокая скорость резания	Снизить скорость резания
	Недостаточное количество СОТС	Увеличить количество СОТС (объём, давление)
	Неверное или отсутствие притупления защитных фасок	Скорректировать притупление
10. Смещение центра 	Нестабильные условия, недостаточный зажим детали	Стабильнее закрепить деталь
	Слишком большое радиальное биение	Проверить и по возможности скорректировать биение
	Засверливание на наклонной поверхности	Выполнить отверстие фрезой (2-зубая)
	Слишком большая остаточная перемычка	Уменьшить остаточную перемычку
11. Большие заусенцы на выходе отверстия 	Слишком большая подача	Уменьшить подачу
	Превышена максимальная метка износа	Сократить интервал замены инструмента
	Слишком большое притупление главной режущей кромки	Уменьшить притупление главной режущей кромки
12. Плохое качество поверхности 	Нестабильные условия, недостаточный зажим детали	Стабильнее зажать деталь
	Слишком большое радиальное биение	Проверить и по возможности скорректировать биение
	Недостаточное количество СОТС	Увеличить количество СОТС (объём, давление)

FRIZAR
www.frizar.ru

Быстрорежущие стали

Мы изготавливаем инструмент только из высококачественных, тщательно отобранных марок быстрорежущей стали. В зависимости от состава сплава инструмент получает специфические качества,

подобранные для каждого случая применения:
Вольфрам, Молибден: повышает термостойкость и износостойкость.
Ванадий: повышает износостойкость.
Кобальт: повышает износостойкость, увеличивает твердость, сохраняемую при повышенной температуре.

Обозначение Gühring	тип	Область применения, свойства
HSS	Быстрорежущая сталь	Стандартный режущий материал для универсального применения
HSCO / HSS-E	Кобальтосодержащая быстрорежущая сталь	Режущий материал с высокой твёрдостью при повышенных температурах для увеличенных нагрузок, особенно подходит для высоких температур резания или неблагоприятного охлаждения
M42	8% кобальтосодержащая быстрорежущая сталь	Режущий материал с повышенной термостойкостью и твердостью, подходит для обработки труднообрабатываемых материалов
HSS-E		
HSS-E-PM	Порошковая содержащая кобальт быстрорежущая сталь.	Режущий материал с очень плотным и равномерным составом. Высокая твердость и термостойкость, высокая износостойкость и стабильность режущей кромки.

Основные сорта твердого сплава для инструмента Гюринг

В следующей таблице перечислены наиболее важные твердые сплавы, которые доступны со склада Gühring для общего применения. Другие сорта предоставляются по запросу. Подробную информацию можно найти на сайте www.guehring-carbide.de

В более чем 80% всехслучаев применения, известных нам, результаты инструмента из сплава DK460UF не могут быть презойдены никаким другим сплавом, даже в сочетании нанесенным износостойкого покрытия. Это и высокая доступность данного материала значительно упрощает выбор инструмента. Для дополнительной информации касательно применения других сплавов, пожалуйста, обращайтесь к нишим техническим специалистам.

Марки	Содержание кобальта Co [M-%]	Величина зерна [мкм]	Твердость [HV]	Классификация ISO [ISO 513]	Описание
DK460UF K40UF	10	0,6	1620	K20-K40	Очень широко используемая марка, в основном применяется с покрытием, обрабатывает стали, некоторые алюминиевые сплавы, чугуны, а также специальные сплавы, например, инконель. Этот сплав является основой нашей продукции.
DK500UF K44UF	12	0,5	1690	K20-K30	Эта марка специально разработана для твердой обработки. Она отличается от DK 460 UF повышенной твердостью и сопротивлением к деформациям, и соответ. высокой точностью формы. По причине высокого содержания Co рекомендуется обязательное использование с покрытием.
DK255F	8	0,7	1720	K20	Эта марка рекомендуется для твердой обработки, обработки высокопрочных сплавов чугуна и твердых AlSi-сплавов. Возможна сухая обработка. Предпочтительно применять с покрытием.
DK120	6	1,3	1620	K15-K20	Прежде всего эта марка предназначена для использования с алмазным покрытием.
DK120UF	7	0,7	1850	K05-K10	Особо мелкозернистая марка с высокой износостойкостью, предназначена для абсолютно жестких станков, предпочтительна для разверток.
K55SF	9	0,2-0,4	1920	K05-K10	Применяется для обработки высокоизносостойких материалов, нержавеющей стали, композиционных материалов таких, как кевлар и стеклопластики, для высокоскоростной и сухой обработки.
DK400N	10	0,7	1580	K20-K40	Высокопрочная марка для обработки жаропрочных материалов
DK256EH	10	0,6	1750	K20	Этот сорт особенно подходит для обработки сплавов на основе никеля.
K6UF	6	0,6	1870	K05-K10	Мелкое зерно с максимальной износостойкостью. Особенно хорошо подходит для обработки материалов с высокой износостойкостью, композиционных материалов, углеродного волокна и кевлара.
K5UF	5	0,5	2010	K05-K10	Недавно разработанный сорт высокой твердости для сверления и рассверливания. Особенно хорошо подходит для обработки композитных материалов и углеродного волокна.

FRIZAR
www.frizar.ru

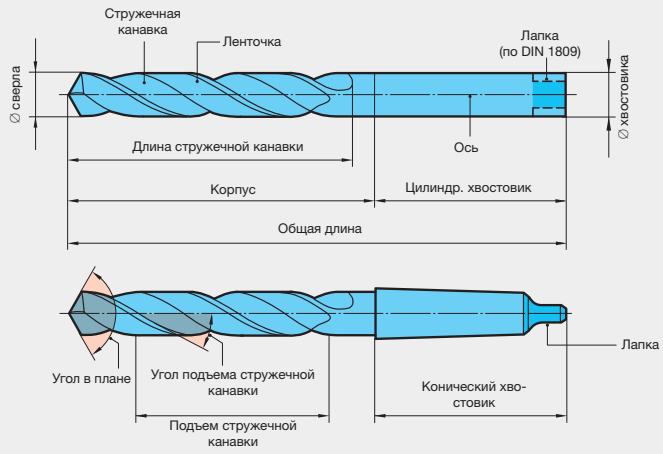
Сверхтвердые режущие материалы

Высочайшая твердость и высокая теплостойкость, обеспечивают высокие скорости резания и повышение производительности. PCD (поликристаллический алмаз) показывает максимальную износостойкость. Основное поле применения PCD является обработка алюминиевых и волоконных композитов. PcBN (поликристаллический кубический нитрид бора) находит применение в закаленных материалах. Для того, чтобы раскрыть весь потенциал этих инструментальных материалов, рекомендуется применение на самых жестких станках.

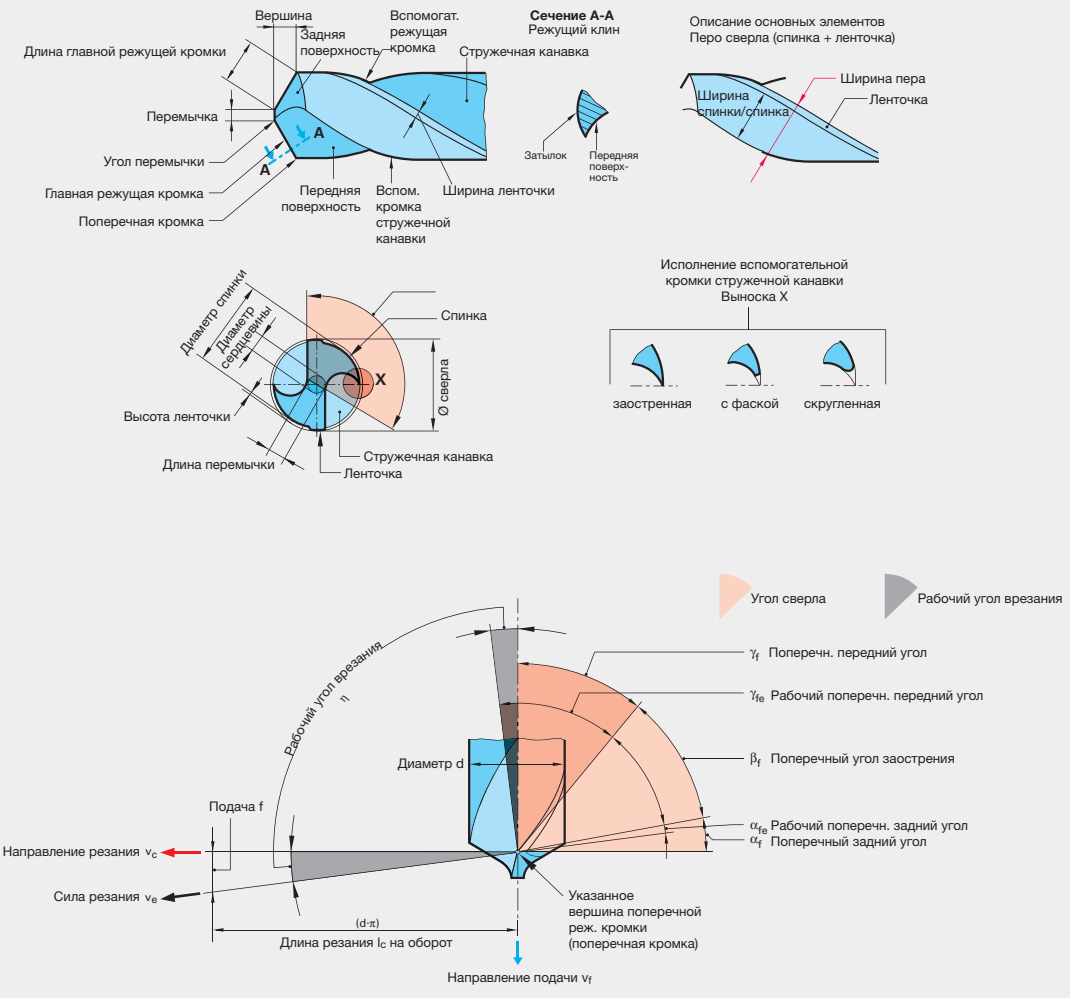
Обозначение Gühring	Классификация	Область применения, свойства	Средний Размер зерна	Содержание алмаза
PCD	Мелкое зерно	Алюминиевые и Al-Si сплавы <10% кремния, магниевые сплавы, латунь, медь, бронза, превосходное качество режущей кромки, высокая стойкость к износу, отличное качество поверхности	2-4 мкм	> 90% PCD
	Среднее зерно	Универсальный класс (общее применение) AlSi-сплавы <14% кремния, сплавы меди, графита и графито-композитных материалов, волокна композитных пластмасс, неспеченная керамика и карбиды (<15% содержание связывающего металла) превосходное сопротивление, хорошее качество поверхности.	5-10 мкм	Ок. 92% PCD
	Крупное зерно	Черновое применение AlSi-сплавов> 14% кремния и другие абразивные применения механической обработки, MMC, спеченная керамика и твердый сплав (<15% содержание связующего металла, крайняя стойкость к износу, высокая ударная стойкость, длительный срок службы инструмента с приемлемым качеством поверхности.	>25 мкм	Ок. 94% PCD
	Смешанное зерно	Абразивная обработка (напр.:> 14% AlSi-сплавов, MMC, волоконно-композитных пластмассы) высокая износостойкость, отличная ударопрочность, долгий срок службы инструмента с хорошим качеством поверхности.	4 мкм+ 25 мкм	Ок. 95% PCD
PcBN 10..	Низкое содержание CBN с твердосплавной подложкой	Для чистовой обработки закаленных, термически улучшенных и инструментальных сталей, пригодны для непрерывного резания, а также для прерывистого резания со средней скоростью и с ap меньше 0,3 мм. Высокая износостойкость, устойчивость к ударам, термостойкость, ударная вязкость.	<1-4 мкм	40-65% CBN
PcBN 20..	Высокое содержание CBN с твердосплавной подложкой	Для обработки серого чугуна (> 45 HRC), PM-сталей, отбеленного чугуна. Применение в непрерывном и прерывистом резании с ap 0,5-1,5 мм. Высокая износостойкость, устойчивость к ударам.	2-3 мкм	70-90% CBN
PcBN 30..	Высокое содержание CBN без твердосплавной подложки	Массивный инструмент PCBN подходит для черновых операций. Обработка перлитного серого чугуна, твердого литья, закаленных сталей. Для применения в зажимных держателях, сверлильных и расточных инструментах, фрезерные головки с клещевым зажимом. Высокая износостойкость, устойчивость к ударам.	2-20 мкм	70-87% CBN

Основные геометрические параметры сверл

Спиральные сверла с цилиндрическим и коническим хвостовиком



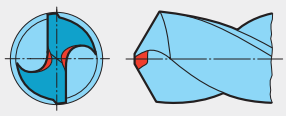
Геометрия режущей части



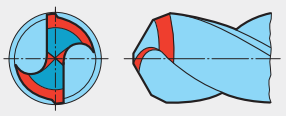
FRIZAR
www.frizar.ru

Формы заточки и производственные допуски

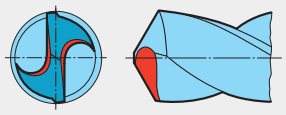
Формы заточки по DIN 1412 (фрагмет; издание 03 / 01)



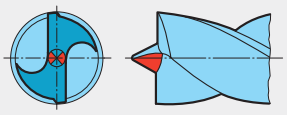
Форма A
Подточка перемычки



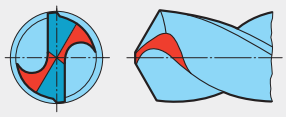
Форма D
Подточка поперечной кромки для обработки серого чугуна



Форма B
Подточка перемычки и подточка главной режущей кромки



Форма E
С зацентровочной вершиной



Форма C
Затыловка

Производственный допуск спиральных сверл согласно DIN286, часть 2

Диаметр (Номин. размер) до вкл. мм	Размеры мкм h 8	h 7
0,38 … 0,60	10	7
0,95	12	8
3,00	14	10
6,00	18	12
10,00	22	15
18,00	27	18
30,00	33	21
50,00	39	25
80,00	46	30
120,00	54	35

* Если Вам нужны допуски, отличные от ISO h8, просим сообщить нам об этом. Размеры дополнительной стоимости повышенной точности диаметров Вы найдете в таблице "дополнительная стоимость услуг" в конце главы "Сверла".

Ссылка на другие стандарты

DIN 228 лист инструментальный конус; конус Морзе и метрический конус, конич. хвостовики.

DIN 1414-1 Технические условия поставки для спиральных сверл из быстрорежущей стали.

DIN 6580 Термины технологии обработки резанием; движения и геометрия операции обработки резанием.

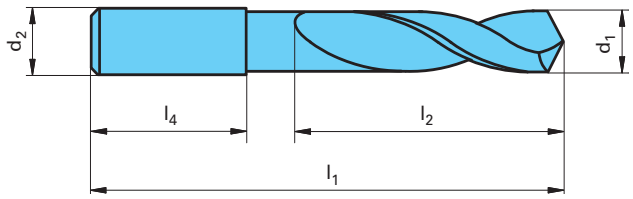
DIN 6581 Термины технологии обработки резанием; системы координат и углы на реж. части инструмента.

Стандарты выдаются с разрешения немецкого института стандартов. Нормативным является соотв. новейшее издание стандарта в формате A4, которое выпускается издательством Beuth GmbH, 10787 Берлин.

Твердосплавные спиральные сверла (сверла Ratio)

Твердосплавные спиральные сверла (сверла Ratio) DIN 6537

Относится к цельным твердосплавным спиральным сверл с 2 или 3 режущими кромками и цилиндрическим хвостовиком по DIN 6535

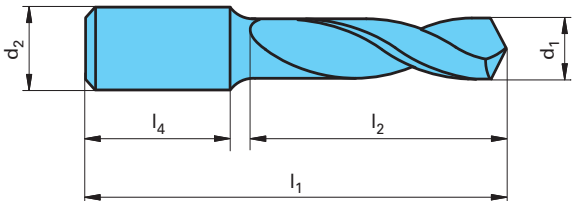


Размеры в мм

Диапазон номин. ∅ до d1m7	∅ хвостовика d 2 h 6	Сверла Ratio для 3 x D		Сверла Ratio для 5 x D		Длина хвостовика l4
		Общая длина l1	Длина стружечной канавки макс. l2	Общая длина l1	Длина стружечной канавки макс. l2	
2,9...3,75	6	62	20	66	28	36
4,75	6	66	24	74	36	36
6,00	6	66	28	82	44	36
7,00	8	79	34	91	53	36
8,00	8	79	41	91	53	36
10,00	10	89	47	103	61	40
12,00	12	102	55	118	71	45
14,00	14	107	60	124	77	45
16,00	16	115	65	133	83	48
18,00	18	123	73	143	93	48
20,00	20	131	79	153	101	50

Твердосплавные спиральные сверла (сверла Ratio) DIN 6538

Относится к спиральным сверлам с впаянной режущей пластиной или головкой из твердого сплава с усиленным хвостовиком из стали по DIN 6535. Припаянная головка может быть целой режущей частью либо ее составляющей.



Размеры в мм

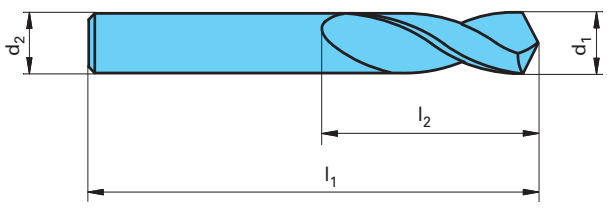
Диапазон номин. ∅ до d 1 h 7	∅ хвостовика d 2 h 6	Сверла Ratio для 3 x D		Сверла Ratio для 5 x D		Сверла Ratio для 7 x D		Длина хвостовика l4
		Общая длина l1	Длина струж. канавки макс. l2	Общая длина l1	Длина струж. канавки макс. l2	Общая длина l1	Длина струж. канавки макс. l2	
9,5...12,0	16	103	51	127	75	151	99	48
14,0	16	111	59	139	87	167	115	48
16,0	20	122	68	154	100	186	132	50
18,0	20	130	76	166	112	202	148	50
20,0	25	144	84	184	124	224	164	56
22,0	25	153	93	197	137	241	181	56
24,0	25	161	101	209	149	257	197	56
26,0	32	174	110	226	162	278	214	60
28,0	32	182	118	238	174	294	230	60
30,0	32	190	126	250	186	310	246	60

FRIZAR
www.frizar.ru

Твердосплавные спиральные сверла (сверла Ratio)

Твердосплавные спиральные сверла (сверла Ratio) DIN 6539

Относится к цельным твердосплавным спиральным сверлам с цилиндрическим хвостовиком (диаметр хвостовика равен диаметру режущей части).



Размеры в мм

Диапазон номин. ∅ до (= ∅ хвостовика d2) d	Общая длина l1	Длина стружечной канавки l2
1,90...2,12	38	12
2,36	40	13
2,65	43	14
3,00	46	16
3,35	49	18
3,75	52	20
4,25	55	22
4,75	58	24
5,30	62	26
6,00	66	28
6,70	70	31
7,50	74	34
8,00	79	37
8,50	79	37
9,50	84	40

Диапазон номин. ∅ до (= ∅ хвостовика d2) d	Общая длина l1	Длина стружечной канавки l2
10,00	89	43
10,60	89	43
11,80	95	47
12,00	102	51
13,20	102	51
14,00	107	54
15,00	111	56
16,00	115	58
17,00	119	60
18,00	123	62
19,00	127	64
20,00	131	66

Спиральные сверла с цилиндрическим хвостовиком

Диаметр до (вкл.) мм	DIN 338		DIN 339		DIN 340		DIN 1897		DIN 1869 Сверхдлинные спиральные сверла					
									Ряд 1		Ряд 2		Ряд 3	
	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки	Общая длина	Длина стружечной канавки
	мм		мм		мм		мм		мм		мм		мм	
≤ 0,24	19	2,5					19	1,5						
0,30	19	3					19	1,5						
0,38	19	4					19	2						
0,48	20	5			30*	10*	19	2,5						
0,53	22	6			32*	12*	20	3						
0,60	24	7	32*	15*	35*	15*	21	3,5						
0,67	26	8	36*	18*	38*	18*	22	4						
0,75	28	9	39*	20*	42*	21*	23	4,5						
0,85	30	10	42*	22*	46*	25*	24	5						
0,95	32	11	45*	24*	51*	29*	25	5,5						
1,06	34	12	48	26	56	33	26	6						
1,18	36	14	50	28	60	37	28	7						
1,32	38	16	52	30	65	41	30	8						
1,50	40	18	55	33	70	45	32	9						
1,70	43	20	58	35	76	50	34	10	115*	75*				
1,90	46	22	62	38	80	53	36	11	120*	80*				
2,12	49	24	66	41	85	56	38	12	125	85	160*	110*	205*	135*
2,36	53	27	70	44	90	59	40	13	135	90	170*	115*	215*	145*
2,65	57	30	74	47	95	62	43	14	140	95	180*	120*	225*	150*
3,00	61	33	79	51	100	66	46	16	150	100	190	130	240*	160*
3,35	65	36	84	55	106	69	49	18	155	105	200	135	250*	170*
3,75	70	39	91	60	112	73	52	20	165	115	210	145	265	180
4,25	75	43	96	64	119	78	55	22	175	120	220	150	280	190
4,75	80	47	102	69	126	82	58	24	185	125	235	160	295	200
5,30	86	52	108	74	132	87	62	26	195	135	245	170	315	210
6,00	93	57	116	80	139	91	66	28	205	140	260	180	330	225
6,70	101	63	124	86	148	97	70	31	215	150	275	190	350	235
7,50	109	69	133	93	156	102	74	34	225	155	290	200	370	250
8,50	117	75	142	100	165	109	79	37	240	165	305	210	390	265
9,50	125	81	151	107	175	115	84	40	250	175	320	220	410	280
10,60	133	87	162	116	184	121	89	43	265	185	340	235	430	295
11,80	142	94	173	125	195	128	95	47	280*	195*	365*	250*	455*	310*
13,20	151	101	184	134	205	134	102	51	295*	205*	375*	260*	480*	330*
14,00	160	108	194	142	214	140	107	54						
15,00	169	114	202	147	220	144	111	56						
16,00	178	120	211	153	227	149	115	58						
17,00	184	125	218	159	235	154	119	60						
18,00	191	130	226	165	241	158	123	62						
19,00	198	135	234	171	247	162	127	64						
20,00	205	140	242	177	254	166	131	66						
21,20					261	171	136	68						
22,40					268	176	141	70						
23,60					275	180	146	72						
25,00					282	185	151	75						
26,50					290	190	156	78						
28,00					298	195	162	81						
30,00					307	201	168	84						
31,50					316	207	174	87						
33,50							180	90						
35,50							186	93						
37,50							193	96						
40,00							200	100						
42,50							207	104						
45,00							214	108						
47,50							221	112						
50,00							228	116						

Сверла Guhring с заводским стандартом поставляются с длиной до 1000 мм. Art. 242, 243, 244.

*Заводской стандарт

FRIZAR
www.frizar.ru

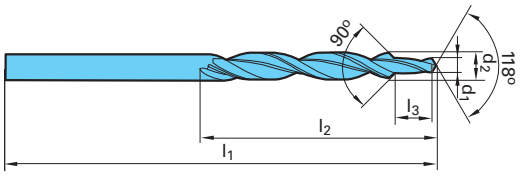
Спиральные сверла с конусом Морзе

Диаметр до (вкл.) мм	DIN 345			DIN 346			DIN 341			Сверла для обработки с кондукторной втулкой с большим конусом Морзе*			Сверла GV/VA* Для трудно-обрабатываемых материалов			DIN 1870 Сверхдлинные спиральные сверла					
																Ряд 1			Ряд 2		
	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе	Общая длина	Длина стружечной канавки	Конус Морзе
	мм			мм			мм			мм			мм			мм			мм		
2,65	111*	30*	1*																		
3,00	114	33	1																		
3,35	117	36	1																		
3,75	120	39	1																		
4,25	124	43	1				145*	64*	1*												
4,75	128	47	1				150*	69*	1*												
5,30	133	52	1				155	74	1												
6,00	138	57	1				161	80	1												
6,70	144	63	1				167	86	1												
7,50	150	69	1				174	93	1												
8,50	156	75	1				181	100	1				130	49	1	265	165	1	330	210	1
9,50	162	81	1				188	107	1				134	53	1	275	175	1	345	220	1
10,60	168	87	1	185*	87*	2*	197	116	1	214	116	2	138	57	1	285	185	1	360	235	1
11,80	175	94	1	192*	94*	2*	206	125	1	223	125	2	142	61	1	300	195	1	375	250	1
13,20	182	101	1	199	101	2	215	134	1	232	134	2	147	66	1	310	205	1	395	260	1
14,00	189	108	1	206	108	2	223	142	1	240	142	2	168	70	2	325	220	1	410	275	1
15,00	212	114	2	235*	114*	3*	245	147	2	268	147	3	172	74	2	340	220	2	425	275	2
16,00	218	120	2	241*	120*	3*	251	153	2	274	153	3	176	78	2	355	230	2	445	295	2
17,00	223	125	2	246*	125*	3*	257	159	2	280	159	3	179	81	2	355	230	2	445	295	2
18,00	228	130	2	251*	130*	3*	263	165	2	286	165	3	183	85	2	370	245	2	465	310	2
19,00	233	135	2	256	135	3	269	171	2	292	171	3	186	88	2	370	245	2	465	310	2
20,00	238	140	2	261	140	3	275	177	2	298	177	3	212	91	3	385	260	2	490	325	2
21,20	243	145	2	266	145	3	282	184	2	305	184	3	216	95	3	385	260	3	490	325	3
22,40	248	150	2	271	150	3	289	191	2	312	191	3	219	98	3	405	270	3	515	345	3
23,02	253	155	2	276	155	3	296	198	2	319	198	3	222	101	3	405	270	3	515	345	3
23,60	276	155	3	304*	155*	4*	319	198	3	347	198	4	222	101	3	425	270	3	535	345	3
25,00	281	160	3	309*	160*	4*	327	206	3	355	206	4	225	104	3	440	290	3	555	365	3
26,50	286	165	3	314*	165*	4*	335	214	3	363	214	4	256	107	4	440	290	3	555	365	3
28,00	291	170	3	319	170	4	343	222	3	371	222	4	259	110	4	460	305	3	580	385	3
30,00	296	175	3	324	175	4	351	230	3	379	230	4	263	114	4	460	305	3	580	385	3
31,50	301	180	3	329	180	4	360	239	3	388	239	4	266	117	4	480	320	3	610	410	3
31,75	306	185	3	334	185	4	369	248	3	397	248	4	269	120	4	480	320	3	610	410	3
33,50	334	185	4	372*	185*	5*	397	248	4	435	248	5	269	120	4	505	320	4	635	410	4
35,50	339	190	4	377*	190*	5*	406	257	4				272	123	4	530	340	4	665	430	4
37,50	344	195	4	382*	195*	5*	416	267	4				276	127	4	530	340	4	665	430	4
40,00	349	200	4	387*	200*	5*	426	277	4				317	130	5	555	360	4	695	460	4
42,50	354	205	4	392	205	5	436	287	4				320	133	5	555	360	4	695	460	4
45,00	359	210	4	397	210	5	447	298	4				323	136	5	585	385	4	735	490	4
47,50	364	215	4	402	215	5	459	310	4							585	385	4	735	490	4
50,00	369	220	4	407	220	5	470	321	4							605	405	4	765	510	4
50,80	374	225	4	412	225	5	475*	326*	4*												
53,00	412	225	5	479*	225*	6*	513*	326*	5*												
56,00	417	230	5	484*	230*	6*	518*	331*	5*												
60,00	422	235	5	489*	235*	6*	523*	336*	5*												
63,00	427	240	5	494*	240*	6*															
67,00	432	245	5	499	245	6															
71,00	437	250	5	504	250	6															
75,00	442	255	5	509	255	6															
76,50	447	260	5	514	206	6															
80,00	514	260	6																		
85,00	519	265	6																		
90,00	524	270	6																		
95,00	529	275	6																		
100,00	534	280	6																		
106,00	539*	285*	6*																		

Сверла Guhring с заводским стандартом поставляются с длиной до 1000 мм. Art. 293, 298, 563, 564,565, 566.

*Заводской стандарт

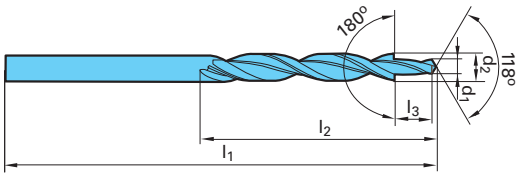
Ступенчатые сверла с цилиндрическим хвостовиком, угол ступени 90°



Ø зенковки d2 h8 мм	Ø ступени d1 h9 мм	Общая длина l1 мм	Длина стружечной канавки l2 мм	Длина ступени l3 мм	Для резьбы	Область применения
			HSS DIN 8378/	HM СТП		
3,4	2,5	70	39	8,8	M 3	Для внутреннего диаметра резьбы по DIN 336 и сквозного зенкованного отверстия по DIN ISO 273 (старый) и DIN EN 20273. Средней серии.
4,5	3,3	80	47	11,4	M 4	
5,5	4,2	93	57	13,6	M 5	
6,6	5,0	101	63	16,5	M 6	
9,0	6,8	125	81	21,0	M 8	
11,0	8,5	142	94	25,5	M10	
13,5	10,2	160	108	30,0	M12	
DIN 8374 для зенковок точной серии						
6,0	3,2	93	57	9,0	M 3	Для сквозных отверстий по DIN-ISO 273 (старый), DIN EN 20273. Точной серии и углублений головки винта формы A и B по DIN 74 часть 1(старый). Точной серии и углублений головки винта по DIN 74 форма F. Для винтов по DIN 963 (старый) и DIN 964 (старый).
8,0	4,3	117	75	11,0	M 4	
10,0	5,3	133	87	13,0	M 5	
11,5	6,4	142	94	15,0	M 6	
15,0	8,4	169	114	19,0	M 8	
19,0	10,5	198	135	23,0	M10	
СТП для зенковок средней серии						
6,6	3,4	101	63	9,0	M 3	Для сквозных отверстий по DIN-ISO 273 (старый) и углубления головки винта формы A и B по DIN 74 часть 1(старый). Средней серии. Для винтов по DIN 963 (старый) и DIN 964 (старый).
9,0	4,5	125	81	11,0	M 4	
11,0	5,5	142	94	13,0	M 5	
13,0	6,6	151	101	15,0	M 6	
17,2	9,0	191	130	19,0	M 8	
DIN 8374 для зенковок средней серии						
7,5	3,4	109	69	9,0	M 3	Для сквозных отверстий по DIN-ISO 273 (старый) и углубления головки винта формы A и B по DIN 74 часть 1(старый). Средней серии. Для винтов по DIN 963 (старый) и DIN 964 (старый).
9,7	4,5	133	87	11,0	M 4	
12,0	5,5	151	101	13,0	M 5	
14,5	6,6	169	114	15,0	M 6	
19,9	9,0	198	135	19,0	M 8	

FRIZAR
www.frizar.ru

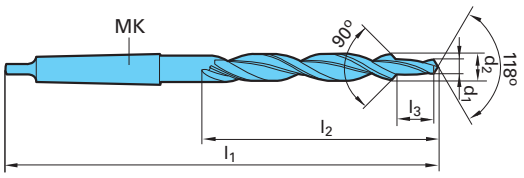
Ступенчатые сверла с цилиндрическим хвостовиком, угол ступени 180°



Ø зенковки d2 h8 мм	Ø ступени d1 h9 мм	Общая длина l1 мм	Длина стружечной канавки l2 мм	Длина ступени l3 мм	Для резьбы	Область применения
			HSS DIN 8376/	**HM** СТП		
6,0**	3,4	93**	57**	9,0	M 3	Для сквозных отверстий по DIN-ISO 273 (старый) DIN EN 20 273. Средней серии. Углубления головки болта по DIN 974 -1 и углубления головки болта формы H, J и K по DIN 74 часть 2 (старый). Средней серии. Для болтов по DIN 84 (старый), 912 (старый), 6912, 7513 и DIN7984.
6,5	3,4	101	63	9,0	M 3	
8,0	4,5	117	75	11,0	M 4	
10,0	5,5	133	87	13,0	M 5	
11,0	6,6	142	94	15,0	M 6	
15,0	9,0	169	114	19,0	M 8	
18,0	11,0	191	130	23,0	M10	
			СТП			
6,0	3,2	93	57	9,0	M 3	Для сквозных отверстий по DIN-ISO 273 (старый) и углубления головки болта формы H, J и K по DIN 74 часть 2 (старый). Точной серии. Для болтов по DIN 84 (старый), 912 (старый), 6912, 7513 и DIN7984.
8,0	4,3	117	75	11,0	M 4	
			СТП для зенковок точной серии (старый*)			
5,9	3,2	93	57	11,0	M 3	Для болтов DIN 84 (старый), DIN 912 (старый), и DIN6912. Для старых форм углублений H, J и K по DIN 75 часть 2. Точной серии.
7,4	4,3	109	69	13,0	M 4	
9,4	5,3	125	81	16,0	M 5	
10,4	6,4	133	87	19,0	M 6	
13,5	8,4	160	108	22,0	M 8	
16,5	10,5	184	125	25,0	M10	
			СТП для зенковок средней серии (старый*)			
8,0	4,8	117	75	13,0	M 3	Для болтов по DIN 84 (старый), DIN 912 (старый), и DIN 6912. Для старых форм углубления H, J и K по DIN 75 часть 2. Средней серии.
10,0	5,8	133	87	16,0	M 4	
11,0	7,0	142	94	19,0	M 5	
14,5	9,5	169	114	22,0	M 6	
17,5	11,5	191	130	25,0	M 8	

* DIN 75 , часть 2 ; ** СТП

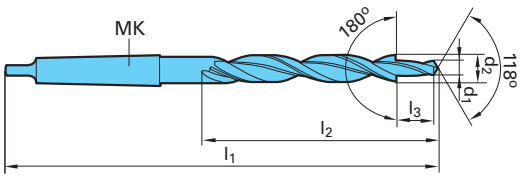
Ступенчатые сверла с конусом Морзе, угол ступени 90°



∅ зенковки d2 h8 мм	∅ ступени d1 h9 мм	Общая длина l1 мм	Длина струж. канавки l2 мм	Конус Морзе MK	Длина ступени l3 мм	Для резьбы	Область применения
			СТП				
11,0	5,5	175	94	1	13,0	M 5	Для сквозных отверстий по DIN-ISO 273 (старый), DIN EN 20273. Средней серии. Углубления головки винта по DIN 74 формы F и углубления головки винта формы A и B по DIN 74 часть 1 (старый). Средней серии. Для винтов по DIN 963 (старый) и DIN 964 (старый).
13,0	6,6	182	101	1	15,0	M 6	
17,2	9,0	228	130	2	19,0	M 8	
21,5	11,0	248	150	2	23,0	M 10	
26,0	14,0	286	165	3	27,0	M 12	
29,0	16,0	296	175	3	31,0	M 14	
			DIN 8375				
12,0	5,5	182	101	1	13,0	M 5	Для сквозных отверстий по DIN-ISO 273 (старый), DIN EN 20273. Средней серии. Углубления головки винта по DIN 74 формы F и углубления головки винта формы A и B по DIN 74 часть 1 (старый). Средней серии. Для винтов по DIN 963 (старый) и DIN 964 (старый).
14,5	6,6	---	108	1	15,0	M 6	
19,0	9,0	253	135	2	19,0	M 8	
23,0	11,0	248	155	2	23,0	M 10	
			СТП				
11,5	6,4	175	94	1	15,0	M 6	Для сквозных отверстий по DIN-ISO 273 (старый), и углубления головки винта формы A и B по DIN 74 часть 1 (старый). Точной серии. Для винтов по DIN 963 (старый) и DIN 964 (старый).
15,0	8,4	212	114	2	19,0	M 8	
19,0	10,5	233	135	2	23,0	M 10	
23,0	13,0	253	155	2	27,0	M 12	
26,0	15,0	286	165	3	31,0	M 14	
30,0	17,0	296	175	3	35,0	M 16	
			DIN 8379				
9,0	6,8	162	81	1	21,0	M 8	Для внутреннего диаметра резьбы по DIN 336, DIN EN 20273. Средней серии. Зенкованного сквозного отверстия по DIN ISO 273 (старый).
11,0	8,5	175	94	1	25,5	M 10	
13,5	10,2	189	108	1	30,0	M 12	
15,5	12,0	218	120	2	34,5	M 14	
17,5	14,0	228	130	2	38,5	M 16	
20,0	15,5	238	140	2	43,5	M 18	
22,0	17,5	248	150	2	47,5	M 20	

FRIZAR
www.frizar.ru

Ступенчатые сверла с конусом Морзе, угол ступени 180°



∅ зенковки d2 h8 мм	∅ ступени d1 h9 мм	Общая длина l1 мм	Длина стружечной канавки l2 мм	Конус Морзе MK	Длина ступени l3 мм	Для резьбы	Область применения
			HSS DIN 8377/ HM СТП				
10,0	5,5	168	87	1	13,0	M 5	Для сквозных отверстий по DIN-ISO 273 (старый), DIN EN 20273. Средней серии. Углубления головки болта по DIN 974- 1 и углубления головки болта формы H, J и K по DIN 74 часть 2 (старый). Средней серии. Для болтов по DIN 84 (старый), 912 (старый), 6912, 7513 и DIN 7984.
11,0	6,6	175	94	1	15,0	M 6	
15,0	9,0	212	114	2	19,0	M 8	
18,0	11,0	228	130	2	23,0	M10	
20,0	13,5	238	140	2	27,0	M12	
24,0	15,5	281	160	3	31,0	M14	
26,0	17,5	286	165	3	35,0	M16	
30,0	20,0	296	175	3	39,0	M18	
33,0	22,0	334	185	4	43,0	M20	
			СТП				
10,0	5,3	168	87	1	13,0	M 5	Для сквозных отверстий по DIN-ISO 273 (старый) и углубления головки болта формы H, J и K по DIN 74 часть 2 (старый). Точной серии. Для болтов по DIN 84 (старый), 912 (старый), 6912, 7513 и DIN 7984.
11,0	6,4	175	94	1	15,0	M 6	
15,0	8,4	212	114	2	19,0	M 8	
18,0	10,5	228	130	2	23,0	M10	
20,0	13,0	238	140	2	27,0	M12	
24,0	15,0	281	160	3	31,0	M14	
26,0	17,0	286	165	3	35,0	M16	
			СТП для зенковок точной серии (старый*)				
9,4	5,3	162	81	1	16,0	M 5	Для болтов по DIN 84 (старый), DIN 912 (старый), и DIN 6912. Для старых форм углублений H, J и K по DIN 75 часть 2. Точной серии.
10,4	6,4	168	87	1	19,0	M 6	
13,5	8,4	189	108	1	22,0	M 8	
16,5	10,5	223	125	2	25,0	M10	
19,0	13,0	233	135	2	28,0	M12	
23,0	15,0	253	155	2	30,0	M14	
25,0	17,0	281	160	3	33,0	M16	
28,0	19,0	291	170	3	36,0	M18	
31,0	21,0	301	180	3	39,0	M 20	
			СТП для зенковок точной серии (старый*)				
10,0	5,8	168	87	1	16,0	M 5	Для болтов по DIN 84 (старый) и DIN 6912. Для старых форм углублений H, J и K по DIN 75 часть 2. Средней серии.
11,0	7,0	175	94	1	19,0	M 6	
14,5	9,5	212	114	2	22,0	M 8	
17,5	11,5	228	130	2	25,0	M10	
20,0	14,0	238	140	2	28,0	M12	
24,0	16,0	281	160	3	30,0	M14	
26,0	18,0	286	165	3	33,0	M16	
29,0	20,0	296	175	3	36,0	M18	
33,0	23,0	334	185	4	39,0	M20	

дюйм	мм	дюйм	мм	дюймы	мм	дюймы	мм	MK	дюймы	мм	Для резьбы	Область применения
Британский стандарт												
19/32	15,08	25/64	9,92	8 5/8	219	4 3/4	121	2	3/4	19,05	3/8 дюйма	Для болтов с плоской головкой по британскому стандарту.
21/32	16,67	29/64	11,51	8 3/4	222	4 7/8	124	2	7/8	22,22	7/16 дюйма	
25/32	19,84	33/64	13,10	9 3/8	238	5 1/2	140	2	1	25,40	1/2 дюйма	

* DIN 75 , часть 2

Зенкеры с цилиндрическим хвостовиком

Диаметр до вкл. мм	DIN 344				
	Общая длина мм	Длина струж. канавки мм	Диаметр до вкл. мм	Общая длина мм	Длина струж. канавки мм
4,25	96*	64*	11,70	173	125
4,75	102*	69*	13,20	184	134
5,30	108	74	14,00	194	142
6,00	116	80	15,00	202	147
6,70	124	86	16,00	211	153
7,50	133	93	17,00	218	159
8,50	142	100	18,00	226	165
9,50	151	107	19,00	234	171
10,60	162	116	20,00	242	177

Насадные зенкеры

DIN 222		
Ном.Ø до вкл. мм	Общая длина мм	Номин. Ø отверстия мм
35,5	45	13
45,0	50	16
53,0	56	19
63,0	63	22
75,0	71	27
90,0	80	32
101,6	90	40

Зенкеры с конусом Морзе

Диаметр до вкл. мм	DIN 343			DIN 1864		
	Общая длина мм	Длина струж. канавки мм	Конус Морзе	Общая длина мм	Длина струж. канавки мм	Конус Морзе
7,50	150*	69*	1*	174*	93*	1*
8,50	156*	75*	1*	181*	100*	1*
9,50	162	81	1	188	107	1
10,60	168	87	1	197	116	1
11,70	175	94	1	206	125	1
13,20	182	101	1	215	134	1
14,00	189	108	1	223	142	1
15,00	212	114	2	245	147	2
16,00	218	120	2	251	153	2
17,00	223	125	2	257	159	2
18,00	228	130	2	263	165	2
19,00	233	135	2	269	171	2
20,00	238	140	2	275	177	2
21,20	243	145	2	282	184	2
22,40	248	150	2	289	191	2
23,60	253	155	2	296	198	2
25,00	281	160	3	327	206	3
26,50	286	165	3	335	214	3
28,00	291	170	3	343	222	3
30,00	296	175	3	351	230	3
31,50	301	180	3	360	239	3
33,50	334	185	4			
35,50	339	190	4			
37,50	344	195	4			
40,00	349	200	4			
42,50	354	205	4			
45,00	359	210	4			
47,50	364	215	4			
50,00	369	220	4			

*СТП

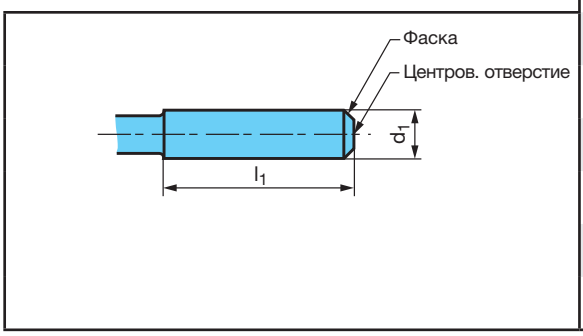
Малоразмерные сверла (общая длина 25 мм)

DIN 1899					
Диаметр до вкл. мм	Ø хвостовика мм	Длина струж. канавки мм	Диаметр до вкл. мм	Ø хвостовика мм	Длина струж. канавки мм
от 0,1 . . . 0,12	1,0	0,5	0,67	1,0	4,2
0,15	1,0	0,8	0,75	1,0	4,8
0,19	1,0	1,1	0,79	1,0	5,3
0,24	1,0	1,5	0,85	1,5	5,3
0,30	1,0	1,9	0,95	1,5	6,0
0,38	1,0	2,4	1,06	1,5	6,8
0,48	1,0	3,0	1,18	1,5	7,6
0,53	1,0	3,4	1,32	1,5	8,5
0,60	1,0	3,9	1,45	1,5	9,5

FRIZAR
www.frizar.ru

Цилиндрические хвостовики для инструмента из быстрорежущей стали, DIN 1835-1 (фрагмент)

Форма A, гладкая

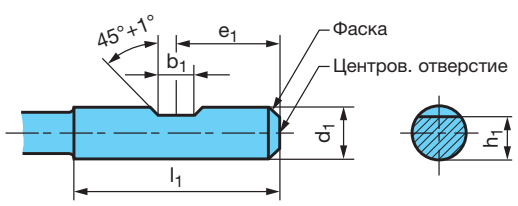


Размеры в мм

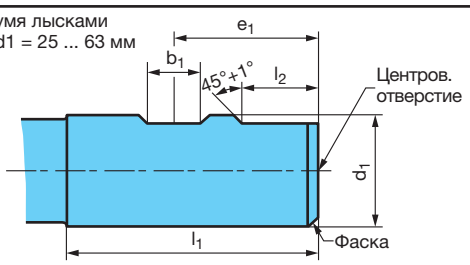
d_1 h8	l_1 +2 0	d_1 h8	l_1 +2 0	d_1 h8	l_1 +2 0
3	28	12	45	50	80
4	28	16	48	63	90
5	28	20	50		
6	36	25	56		
8	36	32	60		
10	40	40	70		

Форма B, с лыской

с одной лыской
для d1 = 6 ... 20 мм



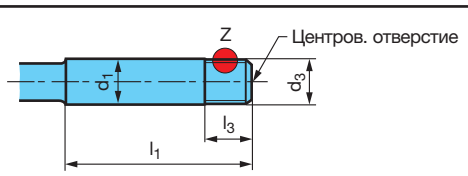
с двумя лысками
для d1 = 25 ... 63 мм



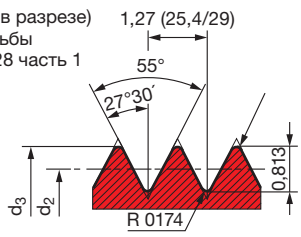
Размеры в мм

d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h13	l_1 +2 0	l_2 +1 0	центров. отверстия Форма R DIN 332 часть 1
6	4,2	18	4,8	36	-	1,6x2,5
8	5,5	18	6,6	36	-	1,6x3,35
10	7	20	8,4	40	-	1,6x3,35
12	8	22,5	10,4	45	-	1,6x3,35
16	10	24	14,2	48	-	2,0x4,25
20	11	25	18,2	50	-	2,5x5,3
25	12	32	23	56	17	2,5x5,3
32	14	36	30	60	19	3,15x6,7
40	14	40	38	70	19	3,15x6,7
50	18	45	47,8	80	23	3,15x6,7
63	18	50	60,8	90	23	3,15x6,7

Форма D, с резьбовым хвостовиком



Вид Z
(изображено в разрезе)
Профиль резьбы
по DIN ISO 228 часть 1



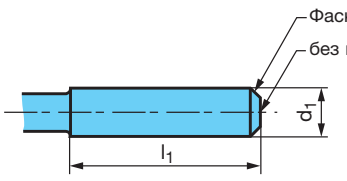
Размеры в мм

d_1 h8	d_3	Предельн. отклонения	d_2	Предельн. отклонения	l_1 +2 0	l_3 +2 0	центров. отверстия Форма R DIN 332 часть 1
6	5,9	0 -0,1	5,087	0 -0,1	36	10	1,6 x 2,5
10	9,9	0 -0,1	9,087	0 -0,1	40	10	1,6 x 3,35
12	11,9	0 -0,1	11,087	0 -0,1	45	10	1,6 x 3,35
16	15,9	0 -0,1	15,087	0 -0,1	48	10	2,0 x 4,25
20	19,9	0 -0,15	19,087	0 -0,15	50	15	2,5 x 5,3
25	24,9	0 -0,15	24,087	0 -0,15	56	15	2,5 x 5,3
32	31,9	0 -0,15	31,087	0 -0,15	60	15	3,15 x 6,7

Цилиндрические хвостовики для сверл и концевых фрез из твердого сплава DIN6535

Форма HA, гладкая

Размеры в мм

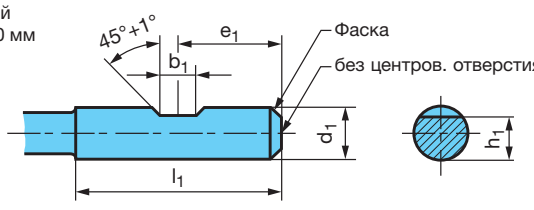


d_1 h6	l_1 +2 0	d_1 h6	l_1 +2 0
2	28	14	45
3	28	16	48
4	28	18	48
5	28	20	50
6	36	25	56
8	36	32	60
10	40		
12	45		

Форма HB, с лыской

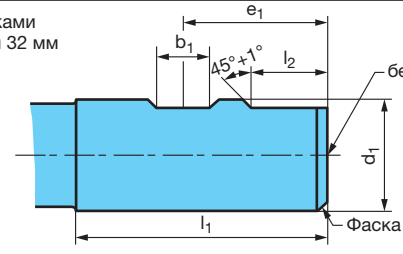
Размеры в мм

с одной лыской для d1 = 6 и 20 мм



d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h11	l_1 +2 0	l_2 +1 0
6	4,2	18	5,1	36	–
8	5,5	18	6,9	36	–
10	7	20	8,5	40	–
12	8	22,5	10,4	45	–
14	8	22,5	12,7	45	–
16	10	24	14,2	48	–
18	10	24	16,2	48	–
20	11	25	18,2	50	–

с двумя лысками для d1 = 25 и 32 мм



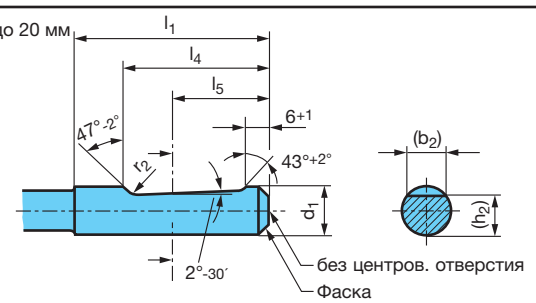
d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h11	l_1 +2 0	l_2 +1 0
25	12	32	23	56	17
32	14	36	30	60	19

Форма HE, с наклонной лыской, без каналов под COTC*

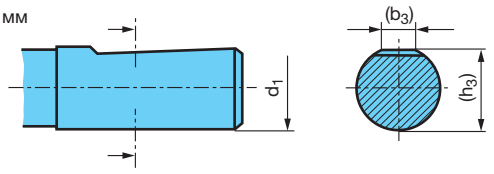
* Исполнение: цилиндрические хвостовики согласно DIN6535 выполняются без или с каналами под COTC. Исполнения для различного инструмента, а также габаритные размеры и обозначения по положению каналов под COTC содержатся в соответствующих стандартах.

Размеры в мм

для d1 = от 6 до 20 мм



для d1 = 25 и 32 мм

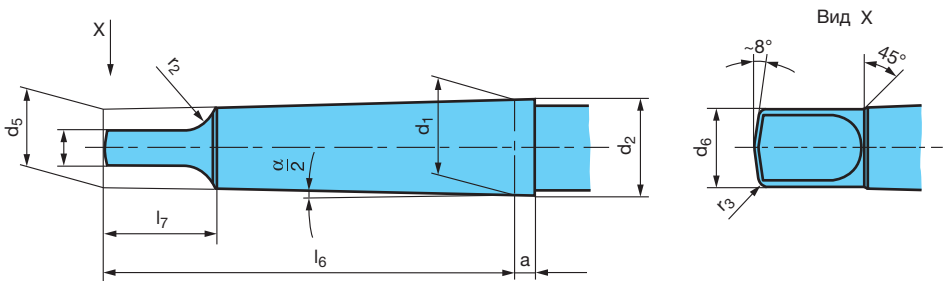


d_1 h6	(b_2) ≈	(b_3)	h_2 h11	(h_3)	l_1 +2 0	l_4 0 -1	l_5 Номин. размер	r_2 мин.
6	4,3	–	5,1	–	36	25	18	1,2
8	5,5	–	6,9	–	36	25	18	1,2
10	7,1	–	8,5	–	40	28	20	1,2
12	8,2	–	10,4	–	45	33	22,5	1,2
14	8,1	–	12,7	–	45	33	22,5	1,2
16	10,1	–	14,2	–	48	36	24	1,6
18	10,8	–	16,2	–	48	36	24	1,6
20	11,4	–	18,2	–	50	38	25	1,6
25	13,6	9,3	23,0	24,1	56	44	32	1,6
32	15,5	9,9	30,0	31,2	60	48	35	1,6

FRIZAR
www.frizar.ru

Конус Морзе DIN 228 часть 1 (фрагмент)

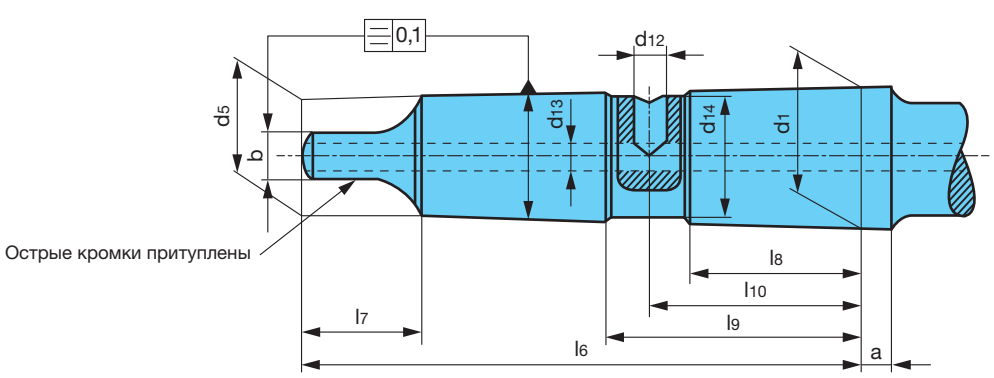
Форма B, конус Морзе с лапкой



Размеры в мм

Хвостовик по DIN228 Форма B Размер	a	Предельные отклонения	b	d_1	d_2 ≈	d_5 ≈	d_6 макс.	l_6 0 -1	l_7 макс.	r_2 макс.	r_3 ≈	$\frac{\alpha}{2}$
MK 1	3,5	+1,4 0	5,2	12,065	12,2	9,0	8,7	62	13,5	5	1,2	1°25′43″
MK 2	5,0	+1,4 0	6,3	17,780	18,0	14,0	13,5	75	16	6	1,6	1°25′50″
MK 3	5,0	+1,7 0	7,9	23,825	24,1	19,1	18,5	94	20	7	2	1°26′16″
MK 4	6,5	+1,9 0	11,9	31,267	31,6	25,2	24,5	117,5	24	8	2,5	1°29′15″
MK 5	6,5	+1,9 0	15,9	44,399	44,7	36,5	35,7	149,5	29	10	3	1°30′26″

Форма BK, хвостовик конус Морзе с лапкой и подачей СОТС



Размеры в мм

Хвостовик по DIN228 Форма BK Размер	a ±0,1	Предельные отклонения	b h13	d_1	d_5 ≈	d_{12}	d_{13}	d_{14} 0 -0,01	l_6 0 -1	l_7 макс.	l_8	l_9	l_{10}
MK 1	3,5	+1,4 0	5,2	12,065	9,0	-	-	-	62	13,5	-	-	-
MK 2	5	+1,4 0	6,3	17,780	14,0	4,2	4,2	15,0	75	16	20	34	27
MK 3	5	+1,7 0	7,9	23,825	19,1	5,0	5,0	21,0	94	20	29	43	36
MK 4	6,5	+1,9 0	11,9	31,267	25,2	6,8	6,8	28,0	117,5	24	39	55	47
MK 5	6,5	+1,9 0	15,9	44,399	36,5	8,5	8,5	40,0	149,5	29	51	69	60

Допуски на центровочные сверла

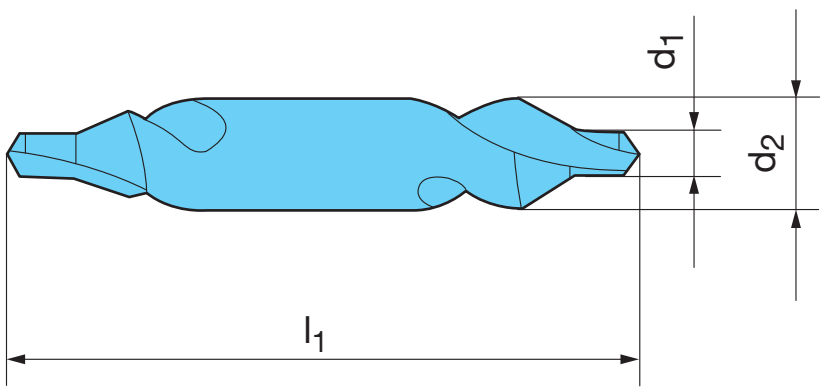
DIN 333	
Диапазон ∅ d1 мм	Предельные отклонения d1 мм
0,50 – 2,50	0 +0,14
3,15 – 5,00	0 +0,18
6,30 – 10,00	0 +0,22
12,50	0 +0,27

для Арт. № 285/ 286	
Диапазон ∅ d1 мм	Предельные отклонения d1 мм
1,00 –1,25	0 +0,10
1,60 – 3,15	0 +0,15
3,15 – 10,00	0 +0,20

по B.S. 328	
Диапазон ∅ d1 мм	Предельные отклонения d1 мм
1,19 – 1,59	0 ±0,05
2,38 – 3,17	0 ±0,07
4,76	0 ±0,07
6,35 – 7,94	0 ±0,12

по B.S. 328	
Диапазон ∅ хвостовиков d1 мм	Предельные отклонения d1 мм
3,17 – 4,76	-0,020
6,35	-0,025
7,94 – 11,11	-0,050
15,87 – 19,05	-0,050

согласно ASA	
Диапазон ∅ d1 мм	Предельные отклонения d1 мм
все	0 + 0,07 mm



Внутренний диаметр отверстия для нарезания резьбы

Метрическая резьба с основным шагом DIN 13

номин. Ø	шаг P	внутр. диам. (Сверл-) Ø DIN 336	Внутр.-Ø гайка 6H*	
			мин.	макс.
	ММ	ММ	ММ	ММ
M 1	0,25	**0,75**	0,729	0,785
M 1,1	0,25	**0,85**	0,829	0,885
M 1,2	0,25	**0,95**	0,929	0,985
M 1,4	0,30	**1,10**	1,075	1,142
M 1,6	0,35	**1,25**	1,221	1,321
M 1,8	0,35	**1,45**	1,421	1,521
M 2	0,40	**1,60**	1,567	1,679
M 2,2	0,45	**1,75**	1,713	1,838
M 2,5	0,45	**2,05**	2,013	2,138
M 3	0,50	**2,50**	2,459	2,599
M 3,5	0,60	**2,90**	2,850	3,010
M 4	0,70	**3,30**	3,242	3,422
M 4,5	0,75	**3,70**	3,688	3,878
M 5	0,80	**4,20**	4,134	4,334
M 6	1,00	**5,00**	4,917	5,153
M 7	1,00	**6,00**	5,917	6,153
M 8	1,25	**6,80**	6,647	6,912
M 9	1,25	**7,80**	7,647	7,912
M 10	1,50	**8,50**	8,376	8,676
M 11	1,50	**9,50**	9,376	9,676
M 12	1,75	**10,20**	10,106	10,441
M 14	2,00	**12,00**	11,835	12,210
M 16	2,00	**14,00**	13,835	14,210
M 18	2,50	**15,50**	15,294	15,744
M 20	2,50	**17,50**	17,294	17,744
M 22	2,50	**19,50**	19,294	19,744
M 24	3,00	**21,00**	20,752	21,252
M 27	3,00	**24,00**	23,752	24,252
M 30	3,50	**26,50**	26,211	26,771
M 33	3,50	**29,50**	29,211	29,771
M 36	4,00	**32,00**	31,670	32,270
M 39	4,00	**35,00**	34,670	35,270
M 42	4,50	**37,50**	37,129	37,799
M 45	4,50	**40,50**	40,129	40,799
M 48	5,00	**43,00**	42,587	43,297
M 52	5,00	**47,00**	46,587	47,297
M 56	5,50	**50,50**	50,046	50,796

* M 1,1 до M 1,4диаметр внутренней резьбы 5H

Метрическая резьба с мелким шагом DIN 13

номин. Ø	шаг P	внутр. диам. (Сверл-)Ø DIN 336	Внутр.-Ø гайка 6H	
			мин.	макс.
	ММ	ММ	ММ	ММ
M 2,5 x	0,35	**2,15**	2,121	2,221
M 3,0 x	0,35	**2,65**	2,621	2,721
M 3,5 x	0,35	**3,15**	3,121	3,221
M 4,0 x	0,50	**3,50**	3,459	3,599
M 4,5 x	0,50	**4,00**	3,959	4,099
M 5,0 x	0,50	**4,50**	4,459	4,599
M 5,5 x	0,50	**5,00**	4,959	5,099
M 6,0 x	0,75	**5,20**	5,188	5,378
M 7,0 x	0,75	**6,20**	6,188	6,378
M 8,0 x	0,50	**7,50**	7,459	7,599
M 8,0 x	0,75	**7,20**	7,188	7,378
M 8,0 x	1,00	**7,00**	6,917	7,153
M 9,0 x	0,75	**8,20**	8,188	8,378
M 9,0 x	1,00	**8,00**	7,917	8,153
M 10 x	0,75	**9,20**	9,188	9,378
M 10 x	1,00	**9,00**	8,917	9,153
M 10 x	1,25	**8,80**	8,647	8,912
M 11 x	0,75	**10,20**	10,188	10,378
M 11 x	1,00	**10,00**	9,917	10,153
M 12 x	1,00	**11,00**	10,917	11,153
M 12 x	1,25	**10,80**	10,647	10,912
M 12 x	1,50	**10,50**	10,376	10,676
M 14 x	1,00	**13,00**	12,917	13,153
M 14 x	1,25	**12,80**	12,647	12,912
M 14 x	1,50	**12,50**	12,376	12,676
M 15 x	1,00	**14,00**	13,917	14,153
M 15 x	1,50	**13,50**	13,376	13,676
M 16 x	1,00	**15,00**	14,917	15,153
M 16 x	1,25	**14,80**	14,647	14,912
M 16 x	1,50	**14,50**	14,376	14,676
M 17 x	1,00	**16,00**	15,917	16,153
M 17 x	1,50	**15,50**	15,376	15,676
M 18 x	1,00	**17,00**	16,917	17,153
M 18 x	1,50	**16,50**	16,376	16,676
M 20 x	1,00	**19,00**	18,917	19,153
M 20 x	1,50	**18,50**	18,376	18,676
M 20 x	2,00	**18,00**	17,835	18,210

номин. Ø	шаг P	внутр. диам. (Сверл-)Ø DIN 336	Внутр.-Ø гайка 6H	
			мин.	макс.
	ММ	ММ	ММ	ММ
M 22 x	1,00	**21,00**	20,917	21,153
M 22 x	1,50	**20,50**	20,376	20,676
M 22 x	2,00	**20,00**	19,835	20,210
M 24 x	1,00	**23,00**	22,917	23,153
M 24 x	1,50	**22,50**	22,376	22,676
M 24 x	2,00	**22,00**	21,835	22,210
M 25 x	1,00	**24,00**	23,917	24,153
M 25 x	1,50	**23,50**	23,376	23,676
M 25 x	2,00	**23,00**	22,835	23,210
M 27 x	1,00	**26,00**	25,917	26,153
M 27 x	1,50	**25,50**	25,376	25,676
M 27 x	2,00	**25,00**	24,835	25,210
M 28 x	1,00	**27,00**	26,917	27,153
M 28 x	1,50	**26,50**	26,376	26,676
M 28 x	2,00	**26,00**	25,835	26,210
M 30 x	1,00	**29,00**	28,917	29,153
M 30 x	1,50	**28,50**	28,376	28,676
M 30 x	2,00	**28,00**	27,835	28,210
M 30 x	3,00	**27,00**	26,752	27,252
M 32 x	1,50	**30,50**	30,376	30,676
M 32 x	2,00	**30,00**	29,835	30,210
M 33 x	1,50	**31,50**	31,376	31,676
M 33 x	2,00	**31,00**	30,835	31,210
M 33 x	3,00	**30,00**	29,752	30,252
M 35 x	1,50	**33,50**	33,376	33,676
M 36 x	1,50	**34,50**	34,376	34,676

UNC-резьба ASME B1.1

номин. Ø		ниток на дюйм	внутр. диам. (Сверл-) Ø DIN 336	Внутр.-Ø гайка 2B	
				мин.	макс.
			ММ	ММ	ММ
Nr. 1	-	64	**1,55**	1,425	1,580
Nr. 2	-	56	**1,85**	1,694	1,872
Nr. 3	-	48	**2,10**	1,941	2,146
Nr. 4	-	40	**2,35**	2,157	2,385
Nr. 5	-	40	**2,65**	2,487	2,698
Nr. 6	-	32	**2,85**	2,642	2,896
Nr. 8	-	32	**3,50**	3,302	3,531
Nr. 10	-	24	**3,90**	3,683	3,937
Nr. 12	-	24	**4,50**	4,343	4,597
1/4	-	20	**5,10**	4,978	5,258
5/16	-	18	**6,60**	6,401	6,731
3/8	-	16	**8,00**	7,798	8,153
7/16	-	14	**9,40**	9,144	9,550
1/2	-	13	**10,80**	10,592	11,024
9/16	-	12	**12,20**	11,989	12,446
5/8	-	11	**13,50**	13,386	13,868
3/4	-	10	**16,50**	16,307	16,840
7/8	-	9	**19,50**	19,177	19,761
1	-	8	**22,25**	21,971	22,606
1 1/8	-	7	**25,00**	24,638	25,349
1 1/4	-	7	**28,00**	27,813	28,524
1 3/8	-	6	**30,75**	30,353	31,115
1 1/2	-	6	**34,00**	33,528	34,290
1 3/4	-	5	**39,50**	38,938	39,802
2	-	4,5	**45,00**	44,679	45,593

MJ-резьба DIN ISO 5855

номин. Ø		шаг P	внутр. диам. (Сверл-) Ø DIN 336	Внутр.-Ø гайка 5H*	
				мин.	макс.
		ММ	ММ	ММ	ММ
MJ 3	x	0,50	**2,60**	2,513	2,653
MJ 4	x	0,70	**3,40**	3,318	3,498
MJ 5	x	0,80	**4,30**	4,221	4,421
MJ 6	x	0,50	**5,55**	5,513	5,625
MJ 6	x	0,75	**5,35**	5,269	5,419
MJ 6	x	1,00	**5,10**	5,026	5,216
MJ 8	x	0,50	**7,55**	7,513	7,625
MJ 8	x	0,75	**7,35**	7,269	7,419
MJ 8	x	1,00	**7,10**	7,026	7,216
MJ 8	x	1,25	**6,90**	6,782	6,994
MJ 10	x	1,00	**9,10**	9,026	9,216
MJ 10	x	1,25	**8,90**	8,782	8,994
MJ 10	x	1,50	**8,60**	8,539	8,775
MJ 12	x	1,75	**10,40**	10,295	10,560
MJ 16	x	2,00	**14,20**	14,051	14,351

* MJ 3 x 0,50l до MJ 5 x 0,80 диаметр внутренней резьбы 6H

UNJC-резьба ISO 3161

номин. Ø		ниток на дюйм	внутр. диам. (Сверл-) Ø DIN 336	Внутр.-Ø гайка 3B	
				мин.	макс.
			ММ	ММ	ММ
Nr. 6	-	32	**2,85**	2,733	2,939
Nr. 8	-	32	**3,55**	3,393	3,599
Nr. 10	-	24	**4,00**	3,795	4,064
Nr. 12	-	24	**4,60**	4,455	4,704
1/4	-	20	**5,30**	5,113	5,387
5/16	-	18	**6,75**	6,563	6,833
3/8	-	16	**8,20**	7,978	8,255
7/16	-	14	**9,60**	9,346	9,639
1/2	-	13	**11,00**	10,798	11,095
9/16	-	12	**12,40**	12,228	12,482
5/8	-	11	**13,80**	13,627	13,904

UNJF-резьба ISO 3161

номин. Ø		ниток на дюйм	внутр. диам. (Сверл-) Ø DIN 336	Внутр.-Ø гайка 3B	
				мин.	макс.
			ММ	ММ	ММ
Nr. 6	-	40	**3,00**	2,888	3,053
Nr. 8	-	36	**3,60**	3,480	3,663
Nr. 10	-	32	**4,20**	4,054	4,255
Nr. 12	-	28	**4,75**	4,602	4,816
1/4	-	28	**5,60**	5,466	5,662
5/16	-	24	**7,00**	6,906	7,109
3/8	-	24	**8,60**	8,494	8,679
7/16	-	20	**10,00**	9,876	10,084
1/2	-	20	**11,60**	11,463	11,661
9/16	-	18	**13,00**	12,913	13,122
5/8	-	18	**14,60**	14,501	14,702

UNF-резьба ASME B1.1

номин. Ø	ниток на дюйм	внутр. диам. (Сверл-)Ø DIN 336 MM	Внутр.-Ø гайка 2B мин. MM	макс. MM
Nr. 1	72	**1,55**	1,473	1,610
Nr. 2	64	**1,85**	1,755	1,910
Nr. 3	56	**2,15**	2,024	2,197
Nr. 4	48	**2,40**	2,271	2,459
Nr. 5	44	**2,70**	2,550	2,741
Nr. 6	40	**2,95**	2,819	3,023
Nr. 8	36	**3,50**	3,404	3,607
Nr. 10	32	**4,10**	3,962	4,166
Nr. 12	28	**4,60**	4,496	4,724
1/4	28	**5,50**	5,359	5,588
5/16	24	**6,90**	6,782	7,036
3/8	24	**8,50**	8,382	8,636
7/16	20	**9,90**	9,728	10,033
1/2	20	**11,50**	11,328	11,608
9/16	18	**12,90**	12,751	13,081
5/8	18	**14,50**	14,351	14,681
3/4	16	**17,50**	17,323	17,678
7/8	14	**20,40**	20,269	20,650
1	12	**23,25**	23,114	23,571
1 1/8	12	**26,50**	26,289	26,746
1 1/4	12	**29,50**	29,464	29,921
1 3/8	12	**32,75**	32,639	33,096
1 1/2	12	**36,00**	35,814	36,271

BSW-(Whitworth)-резьба BS84

номин. Ø	ниток на дюйм	внутр. диам. (Сверл-) Ø DIN 336 MM	Внутр.-Ø гайка 2B мин. MM	макс. MM
W 1/16	60	**1,20**	1,045	1,230
W 3/32	48	**1,80**	1,704	1,912
W 1/8	40	**2,50**	2,362	2,591
W 5/32	32	**3,20**	2,952	3,214
W 3/16	24	**3,60**	3,407	3,745
W 7/32	24	**4,50**	4,201	4,539
W 1/4	20	**5,10**	4,724	5,156
W 5/16	18	**6,50**	6,130	6,590
W 3/8	16	**7,90**	7,492	7,987
W 7/16	14	**9,20**	8,789	9,330
W 1/2	12	**10,50**	9,989	10,591
W 9/16	12	**12,00**	11,577	12,179
W 5/8	11	**13,50**	12,918	13,558
W 3/4	10	**16,25**	15,797	16,483
W 7/8	9	**19,25**	18,611	19,353
W 1	8	**22,00**	21,334	22,147
W 1 1/8	7	**24,50**	23,928	24,832
W 1 1/4	7	**27,75**	27,103	28,007
W 1 3/8	6	**30,50**	29,504	30,528
W 1 1/2	6	**33,50**	32,679	33,703
W 1 5/8	5	**35,50**	34,769	35,963
W 1 3/4	5	**39,00**	37,944	39,138
W 2	4,5	**44,50**	43,571	44,877

(Whitworth-) Трубная резьба (согласно DIN-ISO 228-1)

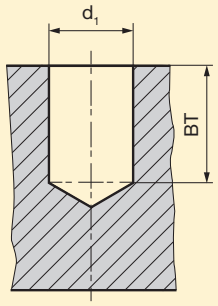
номин. Ø	ниток на дюйм	внутр. диам. (Сверл-) Ø DIN 336 MM	Внутр.-Ø гайка мин. MM	макс. MM
G 1/16	28	**6,80**	6,561	6,843
G 1/8	28	**8,80**	8,566	8,848
G 1/4	19	**11,80**	11,445	11,890
G 3/8	19	**15,25**	14,950	15,395
G 1/2	14	**19,00**	18,631	19,172
G 5/8	14	**21,00**	20,587	21,128
G 3/4	14	**24,50**	24,117	24,658
G 7/8	14	**28,25**	27,877	28,418
G 1	11	**30,75**	30,291	30,931
G 1 1/8	11	**35,50**	34,939	35,579
G 1 1/4	11	**39,50**	38,952	39,592
G 1 1/2	11	**45,25**	44,845	45,485
G 1 3/4	11	**51,00**	50,788	51,428
G 2	11	**57,00**	56,656	57,296

Резьба для стальной арматуры по DIN 40430

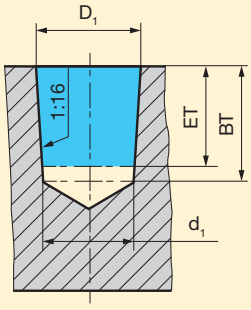
номин. Ø	ниток на дюйм	внутр. диам. (Сверл-) Ø MM	Внутр.-Ø гайка мин. MM	макс. MM
Pg 7	20	**11,40**	11,280	11,430
Pg 9	18	**14,00**	13,860	14,010
Pg 11	18	**17,30**	17,260	17,410
Pg 13,5	18	**19,00**	19,060	19,210
Pg 16	18	**21,30**	21,160	21,310
Pg 21	16	**26,90**	26,780	27,030
Pg 29	16	**35,50**	35,480	35,730
Pg 36	16	**45,50**	45,480	45,730
Pg 42	16	**52,50**	52,480	52,730
Pg 48	16	**57,80**	57,780	58,030

NPT ANSI B 2.1
Американская коническая трубная резьба, конус 1:16

Форма A
(по возможности не применять)



Форма B



номин. Ø	ниток на дюйм	Диам. отв. цилиндр. (A) d_1	Диам. отв. конич. (B) D_1	Глубина резьбы ET MM	Глубина сверл. BT (min) MM
1/16	27	**6,15**	6,39	9,29	10,7
1/8	27	**8,40**	8,74	9,32	10,8
1/4	18	**11,10**	**11,36**	13,52	15,6
3/8	18	**14,30**	**14,80**	13,83	16,0
1/2	14	**17,90**	**18,32**	18,07	20,8
3/4	14	**23,30**	**23,67**	18,55	21,3
1	11,5	**29,00**	**29,69**	22,29	25,6
1 1/4	11,5	**37,70**	**38,45**	22,80	26,1
1 1/2	11,5	**43,70**	**44,52**	22,80	26,1
2	11,5	**55,60**	**56,56**	23,20	26,5
2 1/2	8	**66,30**	**67,62**	31,75	36,3
3	8	**82,30**	**83,52**	33,74	38,5

EG-Метрич. резьба с основн. и мелк. шагом (EG M 14 x 1,25) для резьбовставок DIN 8140

номин. Ø	x	шаг P MM	внутр. диам. (Сверл-) Ø DIN 336 MM	Внутр.-Ø гайка мин. MM	макс. MM
EG M 4	x	0,70	**4,20**	4,152	4,292
EG M 5	x	0,80	**5,25**	5,174	5,334
EG M 6	x	1,00	**6,30**	6,217	6,407
EG M 8	x	1,25	**8,40**	8,271	8,483
EG M10	x	1,50	**10,50**	10,324	10,560
EG M12	x	1,75	**12,50**	12,379	12,644
EG M14	x	1,25	**14,40**	14,271	14,483
EG M16	x	2,00	**16,50**	16,433	16,733

EG UNC (UNC-STI) резьба для резьбовставок ASME B18.29.1

номин. Ø	ниток на дюйм	внутр. диам. (Сверл-) Ø MM	Внутр.-Ø гайка мин. MM	макс. MM
EG Nr. 6	32	**3,80**	3,678	3,879
EG Nr. 8	32	**4,40**	4,338	4,524
EG Nr. 10	24	**5,20**	5,055	5,283
EG Nr. 12	24	**5,80**	5,715	5,944
EG 1/4	20	**6,70**	6,624	6,868
EG 5/16	18	**8,40**	8,242	8,489
EG 3/8	16	**10,00**	9,868	10,127
EG 7/16	14	**11,60**	11,506	11,783
EG 1/2	13	**13,30**	13,122	13,393
EG 9/16	12	**14,90**	14,747	15,032
EG 5/8	11	**16,50**	16,375	16,673

EG UNF (UNF-STI)резьба для резьбавставок ASME B18.29.1

номин. Ø	ниток на дюйм	внутр. диам. (Сверл-) Ø MM	Внутр.-Ø гайка мин. MM	макс. MM
EG Nr. 6	40	**3,70**	3,644	3,818
EG Nr. 8	36	**4,40**	4,321	4,498
EG Nr. 10	32	**5,10**	4,999	5,184
EG Nr. 12	28	**5,70**	5,682	5,809
EG 1/4	28	**6,60**	6,546	6,721
EG 5/16	24	**8,25**	8,166	8,352
EG 3/8	24	**9,80**	9,754	9,931
EG 7/16	20	**11,50**	11,389	11,585
EG 1/2	20	**13,10**	12,974	13,172
EG 9/16	18	**14,70**	14,592	14,798
EG 5/8	18	**16,25**	16,180	16,386

Внутренние диаметры отверстий при формировании резьбы бесстружечными метчиками

Метрическая резьба DIN 13

номин. Ø	шаг P	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 7H*	
			мин.	макс.	мин.	макс.
ММ		ММ	ММ	ММ	ММ	ММ
M 2	0,40	**1,85**	1,84	1,88	1,567	1,679
M 2,2	0,45	**2,00**	2,01	2,05	1,713	1,838
M 2,5	0,45	**2,30**	2,28	2,32	2,013	2,138
M 3	0,50	**2,80**	2,78	2,85	2,459	2,639
M 3,5	0,60	**3,25**	3,23	3,30	2,850	3,050
M 4	0,70	**3,70**	3,68	3,76	3,242	3,466
M 4,5	0,75	**4,20**				
M 5	0,80	**4,65**	4,62	4,71	4,134	4,384
M 6	1,00	**5,55**	5,52	5,62	4,917	5,217
M 7	1,00	**6,55**	6,52	6,62	5,917	6,217
M 8	1,25	**7,40**	7,36	7,47	6,647	6,982
M 9	1,25	**8,40**	8,36	8,47	7,647	7,982
M 10	1,50	**9,30**	9,26	9,38	8,376	8,751
M 11	1,50	**10,30**	10,26	10,38	9,376	9,751
M 12	1,75	**11,20**	11,15	11,29	10,106	10,531
M 14	2,00	**13,10**	13,05	13,20	11,835	12,310
M 16	2,00	**15,10**	15,05	15,20	13,835	14,310
M 18	2,50	**16,90**	16,83	17,02	15,294	15,854
M 20	2,50	**18,90**	18,83	19,02	17,294	17,854
M 22	2,50	**20,90**	20,83	21,02	19,294	19,854
M 24	3,00	**22,70**	22,62	22,80	20,752	21,382
M 27	3,00	**25,70**	25,62	25,80	23,752	24,382
M 30	3,50	**28,50**	28,40	28,60	26,211	26,921
M 33	3,50	**31,50**	31,40	31,60	29,211	29,921
M 36	4,00	**34,30**	34,17	34,40	31,670	32,420
M 39	4,00	**37,30**	37,17	37,40	34,670	35,420
M 42	4,50	**40,10**	39,95	40,20	37,129	37,979

* M 2 до M 2,5 диаметр внутренней резьбы 6H

Метрическая резьба с мелким шагом DIN 13

номин. Ø	x	шаг P	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 7H*	
				мин.	макс.	мин.	макс.
ММ			ММ	ММ	ММ	ММ	ММ
M 2,5	x	0,35	**2,35**	2,35	2,38	2,121	2,221
M 3	x	0,35	**2,85**	2,85	2,88	2,621	2,721
M 4	x	0,35	**3,85**	3,85	3,88	3,621	3,721
M 4	x	0,50	**3,80**	3,78	3,83	3,459	3,639
M 5	x	0,50	**4,80**	4,78	4,83	4,459	4,639
M 5,5	x	0,50	**5,30**	5,28	5,33	4,959	5,139
M 6	x	0,75	**5,65**	5,62	5,70	5,188	5,424
M 7	x	0,75	**6,65**	6,62	6,70	6,188	6,424
M 8	x	0,75	**7,65**	7,62	7,70	7,188	7,424
M 8	x	1,00	**7,55**	7,52	7,62	6,917	7,217
M 9	x	0,75	**8,65**	8,62	8,70	8,188	8,424
M 9	x	1,00	**8,55**	8,52	8,62	7,917	8,217
M 10	x	0,75	**9,65**	9,62	9,70	9,188	9,424
M 10	x	1,00	**9,55**	9,52	9,62	8,917	9,217
M 10	x	1,25	**9,40**	9,36	9,47	8,647	8,982
M 11	x	0,75	**10,65**	10,62	10,70	10,188	10,424
M 11	x	1,00	**10,55**	10,52	10,62	9,917	10,217
M 12	x	1,00	**11,55**	11,52	11,62	10,917	11,217
M 12	x	1,25	**11,40**	11,36	11,47	10,647	10,982
M 12	x	1,50	**11,30**	11,26	11,38	10,376	10,751
M 14	x	1,00	**13,55**	13,52	13,62	12,917	13,217
M 14	x	1,25	**13,40**	13,36	13,47	12,647	12,982
M 14	x	1,50	**13,30**	13,26	13,38	12,376	12,751
M 15	x	1,00	**14,55**	14,52	14,62	13,917	14,217
M 15	x	1,50	**14,30**	14,26	14,38	13,376	13,751
M 16	x	1,00	**15,55**	15,52	15,62	14,917	15,217
M 16	x	1,50	**15,30**	15,26	15,38	14,376	14,751
M 17	x	1,00	**16,55**	16,52	16,62	15,917	16,217

* M 2,5 x 0,35 до M 4 x 0,35 диаметр внутренней резьбы 6H

номин. Ø	x	шаг P	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 7H*	
				мин.	макс.	мин.	макс.
ММ			ММ	ММ	ММ	ММ	ММ
M 17	x	1,50	**16,30**	16,26	16,38	15,376	15,751
M 18	x	1,00	**17,55**	17,52	17,62	16,917	17,217
M 18	x	1,50	**17,30**	17,26	17,38	16,376	16,751
M 18	x	2,00	**17,10**	17,05	17,20	15,835	16,310
M 20	x	1,00	**19,55**	19,52	19,62	18,917	19,217
M 20	x	1,50	**19,30**	19,26	19,38	18,376	19,751
M 24	x	1,00	**23,55**	23,52	23,62	22,917	23,217
M 24	x	1,50	**23,30**	23,26	23,38	22,376	22,751
M 24	x	2,00	**23,10**	23,05	23,20	21,835	22,310
M 27	x	1,50	**26,30**	26,26	26,38	25,376	25,751
M 30	x	1,50	**29,30**	29,26	29,38	28,376	28,751
M 33	x	1,50	**32,30**	32,26	32,38	31,376	31,751
M 36	x	1,50	**35,30**	35,26	35,38	34,376	34,751
M 39	x	1,50	**38,30**	38,26	38,38	37,376	37,751
M 42	x	1,50	**41,30**	41,26	41,38	42,376	42,751

Точность внутреннего диаметра резьбыдля обработки бесстружечными метчиками (по DIN 13, Часть 50)

Для обеспечения прочности резьбы не стоит стремиться к достижению допуска на внутренний диаметр резьбы 6H; точность 7H достаточна для того, чтобы перекрытие боковых поверхностей резьбы болта и гайки не превышало 0,32 x P. Кроме того, благодаря сохранению структуры волокон и наклепу, накатанные резьбы, как правило, имеют более высокую прочность, чем нарезанные резьбы.

UNC-Резьба ASME B1.1

номин. Ø		ниток на дюйм	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 2B	
				мин.	макс.	мин.	макс.
			ММ	ММ	ММ	ММ	ММ
Nr. 1	-	64	**1,68**	1,67	1,70	1,425	1,580
Nr. 2	-	56	**1,98**	1,97	2,01	1,694	1,872
Nr. 3	-	48	**2,28**	2,27	2,32	1,941	2,146
Nr. 4	-	40	**2,55**	2,54	2,59	2,157	2,385
Nr. 5	-	40	**2,90**	2,89	2,94	2,487	2,698
Nr. 6	-	32	**3,15**	3,14	3,19	2,642	2,896
Nr. 8	-	32	**3,80**	3,78	3,82	3,302	3,531
Nr. 10	-	24	**4,35**	4,33	4,39	3,683	3,937
Nr. 12	-	24	**5,00**	4,97	5,03	4,343	4,597
1/4	-	20	**5,75**	5,72	5,80	4,978	5,258
5/16	-	18	**7,30**	7,26	7,37	6,401	6,731
3/8	-	16	**8,80**	8,77	8,88	7,798	8,153
7/16	-	14	**10,30**	10,27	10,37	9,144	9,550
1/2	-	13	**11,80**	11,77	11,88	10,592	11,024
9/16	-	12	**13,30**	13,28	13,39	11,989	12,446
5/8	-	11	**14,80**	14,78	14,90	13,386	13,868
3/4	-	10	**17,90**	17,85	17,97	16,307	16,840
7/8	-	9	**21,00**	20,95	21,10	19,177	19,761
1	-	8	**24,00**	23,95	24,12	21,971	22,606

UNF-Резьба ASME B1.1

номин. Ø		ниток на дюйм	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 2B	
				мин.	макс.	мин.	макс.
			ММ	ММ	ММ	ММ	ММ
Nr. 1	-	72	**1,70**	1,69	1,72	1,473	1,610
Nr. 2	-	64	**2,00**	1,99	2,03	1,755	1,910
Nr. 3	-	56	**2,30**	2,29	2,34	2,024	2,197
Nr. 4	-	48	**2,60**	2,59	2,63	2,271	2,459
Nr. 5	-	44	**2,90**	2,89	2,93	2,550	2,741
Nr. 6	-	40	**3,20**	3,19	3,24	2,819	3,023
Nr. 8	-	36	**3,85**	3,83	3,88	3,404	3,607
Nr. 10	-	32	**4,45**	3,43	4,49	3,962	4,166
Nr. 12	-	28	**5,10**	5,07	5,13	4,496	4,724
1/4	-	28	**5,95**	5,92	5,99	5,359	5,588
5/16	-	24	**7,45**	7,42	7,50	6,782	7,036
3/8	-	24	**9,05**	9,02	9,10	8,838	8,636
7/16	-	20	**10,55**	10,48	10,58	9,728	10,033
1/2	-	20	**12,10**	12,08	12,18	11,328	11,608
9/16	-	18	**13,65**	13,61	13,72	12,751	13,081
5/8	-	18	**15,25**	15,21	15,32	14,351	14,681
3/4	-	16	**18,35**	15,30	18,41	17,323	17,678
7/8	-	14	**21,40**	21,35	21,49	20,269	20,650
1	-	12	**24,45**	24,40	24,54	23,114	23,571

(Whitworth-) Трубная резьба G DIN EN ISO 228-1

номин. Ø	ниток на дюйм	Свер.-Ø	Сверло-Ø		внутр.-Ø гайка 2B	
			мин.	макс.	мин.	макс.
дюйм	дюйм	ММ	ММ	ММ	ММ	ММ
G 1/16	28	**7,30**	7,28	7,35	6,561	6,843
G 1/8	28	**9,30**	9,28	9,35	8,566	8,848
G 1/4	19	**12,50**	12,48	12,55	11,445	11,890
G 3/8	19	**16,00**	15,98	16,05	14,950	15,395
G 1/2	14	**20,00**	19,98	20,12	18,631	19,172
G 5/8	14	**22,00**	21,98	22,12	20,587	21,128
G 3/4	14	**25,50**	25,48	25,62	24,117	24,658
G 7/8	14	**29,25**	29,23	29,37	27,877	28,418
G 1	11	**32,00**	31,98	32,15	30,291	30,931
G 1 1/4	11	**40,75**	40,70	40,85	38,952	39,592

От 1/64 до 11 63/64

размер (дюйм)	мм	Доли дюйма (Десятичный
-	0,10	0,0039
97	0,15	0,0059
96	0,16	0,0063
95	0,17	0,0067
94	0,18	0,0071
93	0,19	0,0075
92	0,20	0,0079
91	0,21	0,0083
90	0,22	0,0087
89	0,23	0,0091
88	0,24	0,0095
-	0,25	0,0098
87	0,25	0,0100
	0,26	0,0102
86	0,27	0,0105
	0,27	0,0106
85	0,28	0,0110
	0,29	0,0114
84	0,29	0,0115
-	0,30	0,0118
83	0,30	0,0120
82	0,32	0,0125
	0,32	0,0126
81	0,33	0,0130
80	0,34	0,0135
79	0,37	0,0145
1/64	0,40	0,0156
78	0,41	0,0160
77	0,46	0,0180
-	0,50	0,0197
76	0,51	0,0200
75	0,53	0,0210
74	0,57	0,0225
-	0,60	0,0236
73	0,61	0,0240
72	0,64	0,0250
71	0,66	0,0260
-	0,70	0,0276
70	0,71	0,0280
69	0,74	0,0292
-	0,75	0,0295
68	0,79	0,0310
1/32	0,79	0,0313
-	0,80	0,0315
67	0,81	0,0320
66	0,84	0,0330
65	0,89	0,0350
-	0,90	0,0354
64	0,91	0,0360
63	0,94	0,0370
62	0,97	0,0380
61	0,99	0,0390
-	1,00	0,0394
60	1,02	0,0400
59	1,04	0,0410
58	1,07	0,0420
57	1,09	0,0430
56	1,18	0,0465
3/64	1,19	0,0469
	1,20	0,0472
	1,25	0,0492
	1,30	0,0512
55	1,32	0,0520
54	1,40	0,0550
	1,45	0,0571
	1,50	0,0591
53	1,51	0,0595
	1,55	0,0610
1/16	1,59	0,0625
	1,60	0,0630
52	1,61	0,0635
	1,65	0,0650

размер (дюйм)	мм	Доли дюйма (Десятичный
51	1,70	0,0670
	1,75	0,0689
50	1,78	0,0700
	1,80	0,0709
49	1,85	0,0730
	1,90	0,0748
48	1,93	0,0760
	1,95	0,0768
5/64	1,98	0,0781
47	1,99	0,0785
-	2,00	0,0787
	2,05	0,0807
46	2,06	0,0810
45	2,08	0,0820
	2,15	0,0846
44	2,18	0,0860
43	2,26	0,0890
42	2,37	0,0935
3/32	2,38	0,0938
41	2,44	0,0960
40	2,50	0,0980
39	2,53	0,0995
38	2,58	0,1015
37	2,64	0,1040
36	2,71	0,1065
7/64	2,78	0,1094
35	2,79	0,11
34	2,82	0,111
33	2,87	0,113
	2,90	0,1142
32	2,95	0,116
-	3,00	0,1181
31	3,05	0,12
1/8	3,18	0,125
30	3,26	0,1285
	3,30	0,1299
29	3,45	0,136
	3,50	0,1378
28	3,57	0,1405
9/64	3,57	0,1406
27	3,66	0,144
26	3,73	0,147
	3,75	0,1476
25	3,80	0,1495
24	3,86	0,152
23	3,91	0,154
5/32	3,97	0,1562
22	3,99	0,157
-	4,00	0,1575
21	4,04	0,159
20	4,09	0,161
	4,20	0,1654
19	4,22	0,166
18	4,31	0,1695
11/64	4,37	0,1719
17	4,39	0,173
16	4,50	0,177
15	4,57	0,18
14	4,62	0,182
13	4,70	0,185
3/16	4,76	0,1875
12	4,80	0,189
11	4,85	0,191
10	4,91	0,1935
9	4,98	0,196
-	5,00	0,1968
8	5,05	0,199
7	5,11	0,2010
13/64	5,16	0,2031
6	5,18	0,2040
5	5,22	0,2055
	5,25	0,2067

размер (дюйм)	мм	Доли дюйма (Десятичный
4	5,31	0,2090
3	5,41	0,213
	5,50	0,2165
7/32	5,56	0,2188
2	5,61	0,221
1	5,79	0,228
A	5,94	0,234
15/64	5,95	0,2344
-	6,00	0,2362
B	6,05	0,238
C	6,15	0,242
D	6,25	0,246
1/4	6,35	0,25
E	6,35	0,25
	6,50	0,2559
F	6,53	0,257
G	6,63	0,261
17/64	6,75	0,2656
	6,75	0,2657
H	6,76	0,266
I	6,91	0,272
-	7,00	0,2756
J	7,04	0,2772
K	7,14	0,281
9/32	7,14	0,2812
L	7,37	0,29
M	7,49	0,2949
	7,50	0,2953
19/64	7,54	0,2969
N	7,67	0,3020
	7,75	0,3051
5/16	7,94	0,3125
-	8,00	0,315
O	8,03	0,316
P	8,20	0,323
21/64	8,33	0,3281
Q	8,43	0,332
	8,50	0,3346
R	8,61	0,339
11/32	8,73	0,3438
	8,75	0,3445
S	8,84	0,348
-	9,00	0,3543
T	9,09	0,358
23/64	9,13	0,3594
U	9,35	0,368
	9,50	0,374
3/8	9,53	0,375
V	9,56	0,377
W	9,80	0,386
25/64	9,92	0,3906
-	10,00	0,3937
X	10,08	0,397
Y	10,26	0,4040
13/32	10,32	0,4062
Z	10,49	0,413
	10,50	0,4134
27/64	10,72	0,4219
-	11,00	0,4331
7/16	11,11	0,4375
	11,50	0,4528
29/64	11,51	0,4531
15/32	11,91	0,4688
-	12,00	0,4724
31/64	12,30	0,4844
	12,50	0,4921
1/2	12,70	0,50
-	13,00	0,5118
33/64	13,10	0,5156
17/32	13,49	0,5312
	13,50	0,5315
35/64	13,89	0,5469

размер (дюйм)	мм	Доли дюйма (Десятичный
-	14,00	0,5512
9/16	14,29	0,5625
	14,50	0,5709
37/64	14,68	0,5781
-	15,00	0,5906
19/32	15,08	0,5938
39/64	15,48	0,6094
	15,50	0,6102
5/8	15,88	0,625
-	16,00	0,6299
41/64	16,27	0,6406
	16,50	0,6496
21/32	16,67	0,6562
-	17,00	0,6693
43/64	17,07	0,6719
11/16	17,46	0,6875
	17,50	0,689
45/64	17,86	0,7031
-	18,00	0,7087
23/32	18,26	0,7188
	18,50	0,7283
47/64	18,65	0,7344
-	19,00	0,748
3/4	19,05	0,75
49/64	19,45	0,7656
	19,50	0,7677
25/32	19,84	0,7812
-	20,00	0,7874
51/64	20,24	0,7969
	20,50	0,8071
13/16	20,64	0,8125
-	21,00	0,8268
53/64	21,03	0,8281
27/32	21,43	0,8438
	21,50	0,8465
55/64	21,84	0,8594
-	22,00	0,8661
7/8	22,23	0,875
	22,50	0,8858
57/64	22,62	0,8906
-	23,00	0,9055
29/32	23,02	0,9062
59/64	23,42	0,9219
	23,50	0,9252
15/16	23,81	0,9375
-	24,00	0,9449
61/64	24,21	0,9531
	24,50	0,9646
31/32	24,61	0,9688
-	25,00	0,9843
63/64	25,00	0,9844
1	25,40	1,00

1 дюйм = 25,4 мм, см. DIN 4890 (издание 2/75)

FRIZAR
www.frizar.ru

Новые обозначения материалов (выборочные марки)

Мат. №	Обозначение старое	Обозначение новое
0.6010	GG10	EN-GJL-100
0.6020	GG20	EN-GJL-200
0.6025	GG25	EN-GJL-250
0.6035	GG35	EN-GJL-350
0.7050	GGG50	EN-GJS-500-7
0.7070	GGG70	EN-GJS-700-2
0.8035	GTW35	EN-GJMW-350-4
0.8155	GTS55	EN-GJMB-550-4
0.8170	GTS70	EN-GJMB-700-2
1.0022	St 01Z	–
1.0035	St 33	S185
1.0039	St 37 -2	S235JRH
1.0044	St 44 -2	S275JR
1.0050	St 50 -2	E295
1.0060	St 60 -2	E335
1.0070	St 70 –2	E360
1.0114	St 37 –3U	S235J0
1.0226	St 02Z	DX51D
1.0242	StE 250 -2Z	S250GD
1.0244	StE 280 -2Z	S280GD
1.0250	StE 320 -3Z	S320GD
1.0301	C 10	–
1.0302	C 10 Pb	–
1.0306	St 06 Z	DX54D
1.0312	St 15	DC05 [Fe P05]
1.0319	RRStE 210.7	L210GA
1.0322	–	DX56D
1.0330	St 12 [St 2]	DC01 [Fe P01]
1.0333	USt 13	–
1.0338	St 14 [St 4]	DC04 [Fe P04]
1.0345	H I	P235GH
1.0347	RRSt 13 [RRSt 3]	DC03 [Fe P03]
1.0348	UH I	P195GH
1.0350	St 03Z	DX52D
1.0355	St 05Z	DX53D
1.0356	TTSt 35 N	P215NL
1.0358	St 05 Z	–
1.0401	C 15	–
1.0402	C 22	C22
1.0403	C 15 Pb	–
1.0406	C 25	C25
1.0419	St 52.0	L355
1.0424	St 45.8 (ersetzt)	P265
1.0424	St 42.8 (ersetzt)	P265
1.0425	H2	P265GH
1.0429	StE 290.7 TM	L290MB
1.0457	StE 240.7	L245NB
1.0459	RRStE 240.7	L245GA
1.0461	StE 255	S255N
1.0473	19 Mn 6	P355GH
1.0481	17 Mn 4	P295GH
1.0484	StE 290.7	L290NB
1.0486	StE 285	P275N
1.0501	C 35	C35
1.0503	C 45	C45
1.0505	StE 315	P315N
1.0511	C 40	C40
1.0528	C 30	C30
1.0529	StE 350 -3Z	S350GD
1.0535	C 55	C55
1.0539	StE 355N	S355NH
1.0540	C 50	C50
1.0547	St 52 –3U	S355J0H
1.0582	StE 360.7	L360NB
1.0601	C 60	C60
1.0710	15 S 10	–
1.0715	9 SMn 28	11SMn30
1.0718	9 SMnPb 28	11SMnPb30
1.0721	10 S 20	10S20
1.0722	10 S Pb 20	10SPb20
1.0726	35 S 20	35S20
1.0727	45 S 20	46S20
1.0728	60 S 20	–
1.0736	9 SMn 36	11SMn37
1.0737	9 SMnPb 36	11SMnPb37
1.0756	35 SPb 20	35SPb20
1.0757	45 SPb 20	46SPb20
1.0760	–	38SMn26
1.0761	–	38SMnPb26
1.0762	–	44SMn28
1.0763	–	44SMnPb28
1.0873	–	DC06 [Fe P06]
1.1103	EStE 255	S255NL1
1.1105	EStE 315	S315NL1
1.1121	Ck 10	C10E
1.1141	Ck15	C15E
1.1151	Ck 22	C22E
1.1158	Ck 25	C25E
1.1170	28 Mn 6	28Mn6
1.1178	Ck 30	C30E
1.1181	Ck 35	C35E
1.1186	Ck 40	C40E
1.1191	Ck 45	C45E
1.1203	Ck 55	C55E
1.1206	Ck 50	C50E
1.1221	Ck 60	C60E
1.1241	Cm 50	C50R
1.1750	C 75 W	C75W
1.2067	102 Cr 6	102Cr6
1.2080	–	X210Cr12
1.2083	–	X42Cr13
1.2419	–	105WCr6
1.2767	–	X45NiCrMo4
1.3243	S6-5-2-5	S 6-5-2-5
1.3343	S6-5-2	S 6-5-2
1.3344	S6-5-3	S 6-5-3
1.4000	X6Cr 13	X6Cr13
1.4002	X6CrAl 13	X6CrAl13
1.4003	X2Cr 11	X2CrNi12
1.4005	–	X12CrS13
1.4006	X10Cr 13	X12Cr13
1.4016	X6Cr 17	X6Cr17
1.4021	X20Cr 13	X20Cr13
1.4028	X30Cr 13	X30Cr13
1.4031	X38Cr 13	X38Cr13
1.4034	X46Cr 13	X46Cr13
1.4037	X65Cr13	X65Cr13
1.4057	X20CrNi 17 2	X17CrNi16-2
1.4104	X12CrMoS 17	X14CrMoS17
1.4105	X4CrMoS 18	X6CrMoS17
1.4109	X65CrMo 14	X70CrMo15
1.4110	X55CrMo 14	X55CrMo14
1.4112	X90CrMoV 18	X90CrMoV18
1.4113	X6CrMo 17 1	X6CrMo17-1
1.4116	X45CrMoV 15	X50CrMoV15
1.4120	X20CrMo 13	X20CrMo13
1.4122	X35CrMo 17	X39CrMo17-1
1.4125	X105CrMo 17	X105CrMo17
1.4301	X5CrNi 18 10	X5CrNi18-10
1.4303	X5CrNi 18 12	X4CrNi18-12
1.4305	X10CrNiS 18 9	X8CrNiS18-9
1.4306	X2CrNi 19 11	X2CrNi19-11
1.4310	X12CrNi 17 7	X10CrNi18-8
1.4311	X2CrNiN 18 10	X2CrNiN18-10
1.4313	X4CrNi 13 4	X3CrNiMo13-4
1.4318	X2CrNiN 18 7	X2CrNiN18-7
1.4335	X1CrNi 25 21	X1CrNi25-21
1.4361	X1CrNiSi 18 15	X1CrNiSi18-15-4
1.4362	X2CrNiN 23 4	X2CrNiN23-4
1.4401	X5CrNiMo 17 12 2	X5CrNiMo17-12-2
1.4404	X2CrNiMo 17 13 2	X2CrNiMo17-12-2
1.4410	X10CrNiMo 18 9	X2CrNiMoN25-7-4
1.4418	X4CrNiMo 16 5	X4CrNiMo16-5-1
1.4435	X2CrNiMo 18 14 3	X2CrNiMo18-14-3
1.4436	X5CrNiMo 17 13 3	X3CrNiMo17-13-3
1.4438	X2CrNiMo 18 16 4	X2CrNiMo18-15-4
1.4460	X4CrNiMo 27 5 2	X3CrNiMoN27-5-2
1.4462	X2CrNiMoN 22 5 3	X2CrNiMoN22-5-3
1.4509	X6CrTiNb 18	X2CrTiNb18
1.4510	X6CrTi 17	X3CrTi17
1.4511	X6CrNb 17	X3CrNb17
1.4512	X6CrTi 12	X2CrTi12
1.4520	X1CrTi 15	X2CrTi17
1.4521	X2CrMoTi 18 2	X2CrMoTi18-2
1.4522	X2CrMoNb 18 2	X2CrMoNb18-2
1.4532	X7CrNiMoAl 15 7	X8CrNiMoAl15-7-2
1.4541	X6CrNiTi18 10	X6CrNiTi18-10
1.4542	X5CrNiCuNb 17 4	X5CrNiCuNb16-4
1.4550	X6CrNiNb 18 10	X6CrNiNb18-10
1.4558	X2NiCrAlTi 32 20	X2NiCrAlTi32-20
1.4567	X3CrNiCu 18 9 X	X3CrNiCu18-9-4
1.4568	X7CrNiAl 17 7	X7CrNiAl17-7
1.4571	–	X6CrNiMoTi17-12-2
1.4577	X3CrNiMoTi 25 25	X3CrNiMoTi25-25
1.4592	X1CrMoTi 29 4	X2CrMoTi29-4
1.4713	X10CrAl 7	X10CrAlSi7
1.4724	X10CrAl 13	X10CrAlSi13
1.4742	X10CrAl 18	X10CrAlSi18
1.4762	X10CrAl 24	X10CrAlSi25
1.4821	X20CrNiSi 25 4	X20CrNiSi25-4
1.4828	X15CrNiSi 20 12	X15CrNiSi20-12
1.4833	X7CrNi 23 14	X7CrNi23-12
1.4841	X15CrNiSi 25 20	X15CrNiSi25-21
1.4845	X12CrNi 25 21	X12CrNi25-21
1.4864	X12NiCrSi 36 16	X12NiCrSi35-16
1.4878	X12CrNiTi18 9	X10CrNiTi18-10
1.4903	–	X10CrMoVNb9-1
1.5026	55 Si 7	55Si7
1.5131	50 MnSi 4	50MnSi4
1.5415	15 Mo 3	16Mo3
1.5530	21 MnB 5	20MnB5
1.5531	30 MnB 5	30MnB5
1.5532	38 MnB 5	38MnB5
1.5637	10 Ni 14	12Ni14
1.5662	–	X11CrMo5+I
1.5680	–	X12Ni5
1.5710	36 NiCr 6	36NiCr6
1.5715	–	16NiCrS4
1.5752	14 NiCr 14	15NiCr13
1.6210	15 MnNi 6 3	15MnNi6-3
1.6211	16 MnNi 6 3	16MnNi6-3
1.6310	20 MnMoNi 5 5	20MnMoNi5-5
1.6311	20 MnMoNi 4 5	20MnMoNi4-5
1.6341	11 NiMoV 5 3	11NiMoV5-3
1.6368	15 NiCuMoNb 5	15NiCuMoNb5
1.6511	36 CrNiMo 4	36CrNiMo4
1.6523	21 NiCrMo 2	21NiCrMo2-2
1.6526	21 NiCrMoS 2	21NiCrMoS2-2
1.6580	30 CrNiMo 8	30CrNiMo8
1.6582	34 CrNiMo 6	34CrNiMo6
1.6587	17 CrNiMo 6	18CrNiMo7-6
1.7003	38 Cr 2	38Cr2
1.7006	46 Cr 2	46Cr2
1.7016	17 Cr 3	17Cr3
1.7023	38 CrS 2	38CrS2
1.7025	46 CrS 2	46CrS2
1.7030	28 Cr 4	28Cr4
1.7033	34 Cr 4	34Cr4
1.7034	37 Cr 4	37Cr4
1.7035	41 Cr 4	41Cr4
1.7036	28 CrS 4	28CrS4
1.7037	34 CrS 4	34CrS4
1.7038	37 CrS 4	37CrS4
1.7039	41 CrS 4	41CrS4
1.7131	16 MnCr 5	16MnCr5
1.7139	16 MnCrS 5	16MnCrS5
1.7043	–	38Cr4
1.7147	20 MnCr 5	20MnCr5
1.7149	20 MnCrS 5	20MnCrS5
1.7176	55 Cr 3	55Cr3
1.7182	27 MnCrB 5 2	27MnCrB5-2
1.7185	33 MnCrB 5 2	33MnCrB5-2
1.7189	39 MnCrB 6 2	39MnCrB6-2
1.7213	25 CrMoS 4	25CrMoS4
1.7218	25 CrMo 4	25CrMo4
1.7219	–	26CrMo4-2
1.7220	34 CrMo 4	34CrMo4
1.7225	42 CrMo 4	42CrMo4
1.7226	34 CrMoS 4	34CrMoS4
1.7227	42 CrMoS 4	42CrMoS4
1.7228	50 CrMo 4	50CrMo4
1.7264	20 CrMo 5	20CrMo5
1.7321	20 MoCr 4	20MoCr4
1.7323	20 MoCrS 4	20MoCrS4
1.7333	22 CrMoS 3 5	22CrMoS3-5
1.7335	13 CrMo 4 4	13CrMo4-5
1.7362	12 CrMo 19 5	12CrMo19-5
1.7380	10 CrMo 9 10	10CrMo9-10
1.7383	–	11CrMo9-10
1.7779	–	20CrMoV13-5-5
1.8159	50 CrV 4	51CrV4
1.8504	34 CrAl 6	34CrAl6
1.8519	31 CrMoV 9	31CrMoV9
1.8550	34 CrAlNi 7	34CrAlNi7
1.8807	13 MnNiMoV 5 4	13MnNiMoV5-4
1.8812	18 MnMoV 5 2	18MnMoV5-2
1.8815	18 MnMoV 6 3	18MnMoV6-3
1.8821	StE 355 TM	P355M
1.8824	StE 420 TM	P420M
1.8826	StE 460 TM	P460M
1.8828	EStE 420 TM	P420ML2
1.8831	EStE 460 TM	P460ML2
1.8832	TStE 355 TM	P355ML1
1.8835	TStE 420 TM	P420ML1
1.8837	TStE 460 TM	P460ML1
1.8879	StE ...	P690Q
1.8880	WStE ...	P690QH
1.8881	TStE ...	P690QL1
1.8882	10 MnTi 3	10MnTi3
1.8888	EStE ...	P690QL2
1.8900	StE 380	S380N
1.8901	StE 460	S460N
1.8902	StE 420	S420N
1.8903	TStE 460	S460NL
1.8905	StE 460	P460N
1.8907	StE 500	S500N
1.8910	TStE 380	S380NL
1.8911	EStE 380	S380NL1
1.8912	TStE 420	S420NL
1.8913	EStE 420	S420NL1
1.8915	TStE 460	P460NL1
1.8917	WStE 500	S500NL
1.8918	EStE 460	P460NL2
1.8919	EStE 500	S500NL1
1.8930	WStE 380	P380NH
1.8932	WStE 420	P420NH
1.8935	WStE 460	P460NH
1.8937	TStE 500	P500NH
1.8972	StE 415.7	L415NB
1.8973	StE 415.7 TM	L415MB
1.8975	StE 445.7 TM	L450MB
1.8977	StE 480.7 TM	L485MB
1.8978	StE 550.7 TM	L555MB

ПЕРЕЧЕНЬ АРТИКУЛОВ

Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
11	428		СТП	Наборы сверл			
16	420	~5xD	DIN 338	Наборы сверл	HSCO	N	
17	419	~5xD	DIN 338	Наборы сверл	HSS	N	
18	421	~5xD	DIN 338	Наборы сверл	HSCO	Ti	
36	426		СТП	Наборы сверл			
73	427		СТП	Наборы сверл			
128	413		СТП	Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 16,0 мм	HSCO	V72	
129	414		СТП	Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 25,4 мм	HSCO	V72	
136	415		СТП	Спиральные полуфабрикаты без заточки короткие, хвостовик Ø 25,4 мм	HSCO	V72	
195	422	~5xD	DIN 338	Наборы сверл	HSCO	VA	
200	418	~5xD	DIN 338	Комплекты спиральных свёрл	HSS	N	
201	417	~5xD	DIN 338	Наборы сверл	HSS	N	
204	338, 587	~10xD	DIN 340	Спиральные сверла, длинные	HSS	N	
205	244	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
206	263	~5xD	DIN 338	Спиральные свёрла, средние	HSS	H	
207	269	~5xD	DIN 338	Спиральные свёрла, средние	HSS	W	
208	258	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
209	266	~5xD	DIN 338	Спиральные свёрла, средние	HSS	H	
210	272	~5xD	DIN 338	Спиральные свёрла, средние	HSS	W	
211	325	~10xD	DIN 339	Сверла под кондукторную втулку	HSS	N	
217	331, 580	~10xD	DIN 340	Спиральные сверла, длинные	HSS	N	
218	339, 588	~10xD	DIN 340	Спиральные сверла, длинные	HSS	H	
219	342, 591	~10xD	DIN 340	Спиральные сверла, длинные	HSS	W	
220	336, 585	~10xD	DIN 340	Спиральные сверла, длинные	HSS	N	
221	341, 590	~10xD	DIN 340	Спиральные сверла, длинные	HSS	H	
223	192	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	N	
224	204	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	H	
225	208	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	W	
226	200	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	N	
227	206	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	H	
228	210	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	W	
229	458	~5xD	DIN 345	Спиральные свёрла	HSS	N	
235	363, 612	~15xD	DIN 1869	Спиральные свёрла сверхдлинные, серия 1	HSS	N	
236	371, 620	~20xD	DIN 1869	Спиральные сверла сверхдлинные, серия 2	HSS	N	
237	377, 626	~25xD	DIN 1869	Спиральные сверла сверхдлинные, серия 3	HSS	N	
240	257	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
242	381, 630	>25xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
243	382, 631	>25xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
244	383, 632	>25xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
245	450	~5xD	DIN 345	Спиральные свёрла	HSS	N	
246	459	~5xD	DIN 345	Спиральные свёрла	HSS	H	
247	460	~5xD	DIN 345	Спиральные свёрла	HSS	W	
248	457	~5xD	DIN 345	Спиральные свёрла	HSS	N	
251	471	~5xD	DIN 346	Спиральные свёрла	HSS	N	
254	499		СТП	Свёрла с каналами COTC, длина канавки по заводскому стандарту	HSS	N	
255	500		СТП	Свёрла с каналами COTC, длина канавки по заводскому стандарту	HSS	N	
257	473	~10xD	DIN 341	Сверла под кондукторную втулку	HSS	N	
266	483, 633	~15xD	DIN 1870	Спиральные свёрла сверхдлинные, серия 1	HSS	N	
267	487, 637	~20xD	DIN 1870	Спиральные сверла сверхдлинные, серия 2	HSS	N	
268	412		СТП	Спиральные сверла короткие, хвостовик Ø 12,7 мм	HSS	N	
269	498	~7xD	СТП	Свёрла с каналами COTC	HSS	N	
270	502	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSS	N	
271	503	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSS	N	
272	504	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSS	N	
274	714		СТП	Ступенчатые свёрла для центровочных отверстий по DIN 332	HSS	N	D
280	689		СТП	Центровочные сверла без лыски	HSS	N	A
281	684		СТП	Центровочные сверла без лыски	HSS	N	A
282	685		СТП	Центровочные сверла без лыски	HSS	N	A
283	686		СТП	Центровочные сверла без лыски	HSS	N	R
284	687		СТП	Центровочные сверла без лыски	HSS	N	R
285	688		СТП	Центровочные сверла без лыски	HSS	N	B
287	693		DIN 333	Центровочные сверла с лыской	HSS	N	A
288	694		DIN 333	Центровочные сверла с лыской	HSS	N	R
289	695		СТП	Центровочные сверла с лыской	HSS	N	B
292	680		BS 328	Центровочные сверла без лыски	HSS	N	A
293	495	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
294	681		BS 328	Центровочные сверла без лыски	HSS	N	A
298	496	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
299	497	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
301	397, 649	~5xD	DIN 1899	Спиральные микросверла без каналов COTC HSS-E-PM	HSS-E-PM	N	
303	402, 654	~5xD	DIN 1899	Спиральные микросверла без каналов COTC HSS-E-PM	HSS-E-PM	N	
305	284	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	N	

Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
308	289	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	N	
311	330	~10xD	DIN 339	Сверла под кондукторную втулку	HSCO	N	
317	353, 602	~10xD	DIN 340	Спиральные сверла, длинные	HSCO	N	
329	218	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GV 120	
330	225	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GV 120	
336	355, 604	~10xD	DIN 340	Спиральные сверла, длинные	HSCO	GT 100	
345	463	~5xD	DIN 345	Спиральные свёрла	HSCO	N	
351	472	~5xD	DIN 346	Спиральные свёрла	HSCO	N	
357	480	~10xD	DIN 341	Сверла под кондукторную втулку	HSCO	N	
363	448	~3xD	СТП	Спиральные свёрла, средние	HSCO	GV 120	
370	505	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSCO	GT 100	
371	506	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSCO	GT 100	
372	507	~10xD	СТП	Свёрла с каналами COTC, длина канавки DIN 341	HSCO	GT 100	
374	508, 641	~15xD	СТП	Свёрла с каналами COTC, длина канавки DIN 1870	HSCO	GT 100	
375	509, 642	~15xD	СТП	Свёрла с каналами COTC, длина канавки DIN 1870	HSCO	GT 100	
376	510, 643	~15xD	СТП	Свёрла с каналами COTC, длина канавки DIN 1870	HSCO	GT 100	
378	718		СТП	Короткие ступенчатые сверла с цилиндрическим хвостовиком	HSS	N	
379	720		СТП	Короткие ступенчатые сверла с цилиндрическим хвостовиком	HSS	N	
380	721		СТП	Короткие ступенчатые сверла с цилиндрическим хвостовиком	HSS	N	
381	682		DIN 333	Центровочные сверла без лыски	HSCO	N	A
390	394	~10xD	СТП	Спиральные сверла с каналами COTC	HSS	N	
396	357, 606	~10xD	DIN 340	Спиральные сверла, длинные	HSCO	GT 100	
501	351, 600	~10xD	DIN 340	Спиральные сверла, длинные	HSS	GT 50	
502	365, 614	~15xD	DIN 1869	Спиральные свёрла сверхдлинные, серия 1	HSS	GT 100	
503	372, 621	~20xD	DIN 1869	Спиральные сверла сверхдлинные, серия 2	HSS	GT 100	
504	378, 627	~25xD	DIN 1869	Спиральные сверла сверхдлинные, серия 3	HSS	GT 100	
505	479	~10xD	DIN 341	Сверла под кондукторную втулку	HSS	GT 50	
506	350, 599	~10xD	DIN 340	Спиральные сверла, длинные	HSS	GT 100	
511	386	~5xD	СТП	Спиральные сверла с усиленным хвостовиком	HSCO	GU 500	
512	384	~3xD	СТП	Спиральные сверла с усиленным хвостовиком	HSCO	GU 500	
513	388	~5xD	СТП	Спиральные сверла с усиленным хвостовиком	HSS-E-PM	GT 500	
514	728		СТП	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	
515	237	~3xD	DIN 1897	Спиральные сверла, короткие	HSS-E-PM	GT 500	
520	735		СТП	Ступенчатые свёрла с конусом Морзе	HSS	N	
523	482	~10xD	СТП	Сверла под кондукторную втулку	HSS	N	
524	368, 617	~15xD	DIN 1869	Спиральные свёрла сверхдлинные, серия 1	HSS	GT 50	
525	485, 635	~15xD	DIN 1870	Спиральные свёрла сверхдлинные, серия 1	HSS	GT 50	
526	484, 634	~15xD	DIN 1870	Спиральные свёрла сверхдлинные, серия 1	HSS	GT 100	
527	488, 638	~20xD	DIN 1870	Спиральные сверла сверхдлинные, серия 2	HSS	GT 100	
528	375, 624	~20xD	DIN 1869	Спиральные сверла сверхдлинные, серия 2	HSS	GT 50	
529	379, 628	~25xD	DIN 1869	Спиральные сверла сверхдлинные, серия 3	HSS	GT 50	
531	416, 746		DIN 1898	Штифтовые сверла	HSS	N	
532	511, 747		DIN 1898	Штифтовые сверла	HSS	N	
533	737		DIN 344	Зенкера с цилиндрическим хвостовиком	HSS	N	
534	740		DIN 343	Зенкера с конусом Морзе	HSS	N	
535	344, 593	~10xD	DIN 340	Спиральные сверла, длинные	HSS	GT 100	
536	722		DIN 8374	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	A
537	732		СТП	Ступенчатые свёрла с конусом Морзе	HSS	N	
538	726		DIN 8376	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	
539	734		DIN 8377	Ступенчатые свёрла с конусом Морзе	HSS	N	
540	729		DIN 8378	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	
541	736		DIN 8379	Ступенчатые свёрла с конусом Морзе	HSS	N	
542	489, 639	~20xD	DIN 1870	Спиральные сверла сверхдлинные, серия 2	HSS	GT 50	
546	707		СТП	Центровочные сверла 142° для станков с ЧПУ	VHM	N	
549	274	~5xD	DIN 338	Спиральные свёрла, средние	HSS	GT 100	
550	281	~5xD	DIN 338	Спиральные свёрла, средние	HSS	GT 100	
551	476	~10xD	DIN 341	Сверла под кондукторную втулку	HSS	GT 100	
552	212	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	GT 80	
553	215	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	GT 80	
554	708		СТП	«Кузовное» сверло	HSS	DK 77	
555	743		DIN 1864	Зенкера с конусом Морзе	HSS	N	
556	702		СТП	Центровочные сверла 120° для станков с ЧПУ	HSS	N	
557	696		СТП	Центровочные сверла 90° для станков с ЧПУ	HSS	N	
558	461	~5xD	DIN 345	Спиральные свёрла	HSS	GT 100	
559	700		СТП	Центровочные сверла 90° для станков с ЧПУ	HSS	N	
560	256	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
561	327	~10xD	DIN 339	Сверла под кондукторную втулку	HSS	N	
563	491	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
564	492	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
565	493	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
566	494	>20xD	СТП	Спиральные свёрла сверхдлинные	HSS	GT 100	
567	703		СТП	Центровочные сверла 120° для станков с ЧПУ	HSS	N	

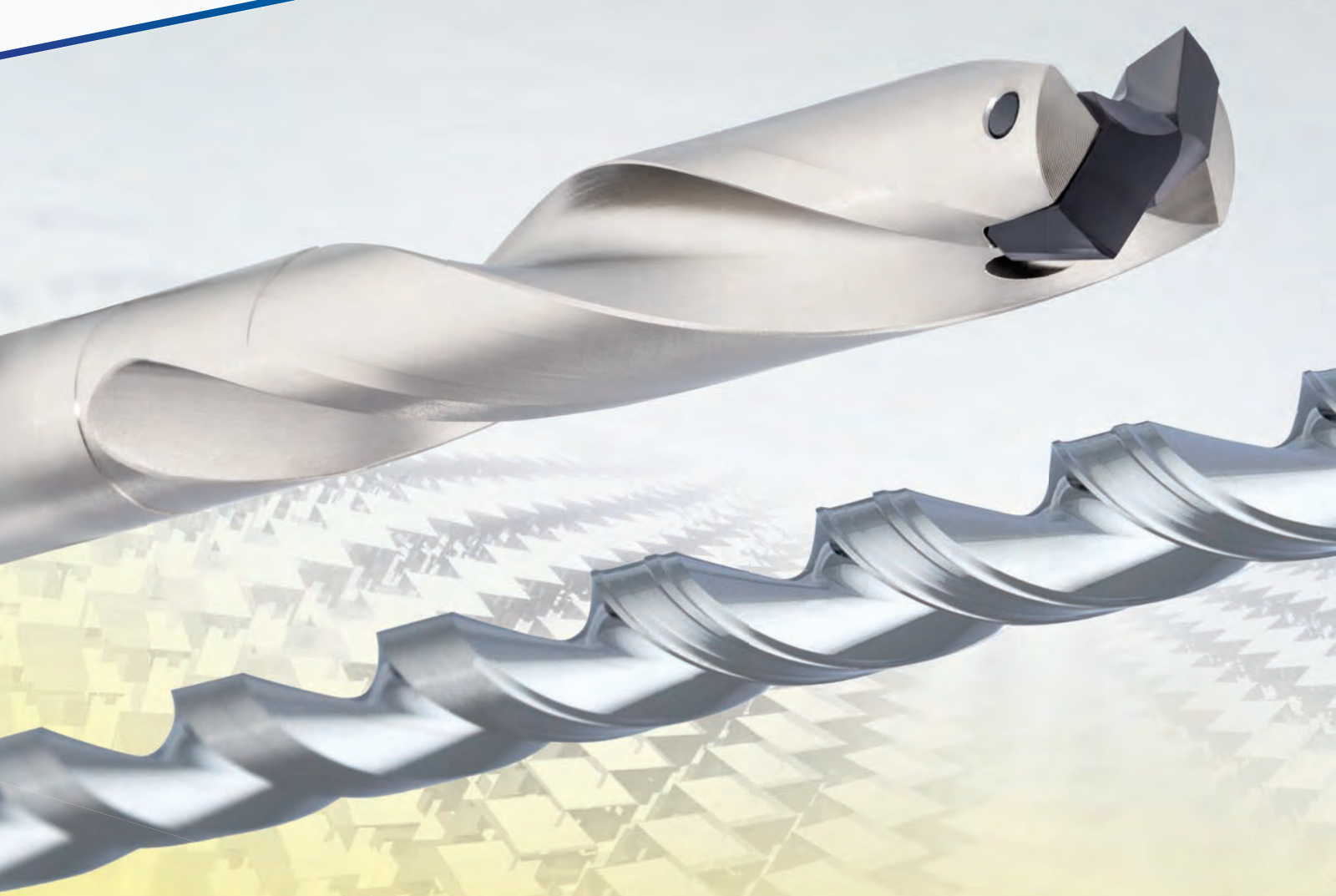
Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
568	697		СТП	Центровочные сверла 90° для станков с ЧПУ	HSS	N	
569	723		DIN 8374	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	B
571	380, 629	~25xD	DIN 1869	Спиральные сверла сверхдлинные, серия 3	HSCO	GT 100	
572	231	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	VA	
574	715		СТП	Ступенчатые свёрла для центровочных отверстий по DIN 332	HSS	N	DR
575	716		СТП	Ступенчатые свёрла для центровочных отверстий по DIN 332	HSS	N	D
576	717		СТП	Ступенчатые свёрла для центровочных отверстий по DIN 332	HSS	N	D
577	390		NAS 907	Спиральные сверла, длина 6 дюймов	HSS	N	
578	392		NAS 907	Спиральные сверла, длина 12 дюймов	HSS	N	
579	391		NAS 907	Спиральные сверла, длина 6 дюймов	HSS	N	
580	393		NAS 907	Спиральные сверла, длина 12 дюймов	HSS	N	
581	668		DIN 333	Центровочные сверла без лыски	HSS	N	A
582	670		DIN 333	Центровочные сверла без лыски	HSS	N	A
583	672		DIN 333	Центровочные сверла без лыски	HSS	N	R
584	674		DIN 333	Центровочные сверла без лыски	HSS	N	R
585	675		DIN 333	Центровочные сверла без лыски	HSS	N	B
586	676		DIN 333	Центровочные сверла без лыски	HSS	N	B
587	690		DIN 333	Центровочные сверла с лыской	HSS	N	A
588	691		DIN 333	Центровочные сверла с лыской	HSS	N	R
589	692		DIN 333	Центровочные сверла с лыской	HSS	N	B
590	671		DIN 333	Центровочные сверла без лыски	HSS	N	A
591	677		DIN 333	Центровочные сверла без лыски	HSS	N	B
592	454	~5xD	DIN 345	Спиральные свёрла	HSS	N	
594	678		ASME B94.11 M	Центровочные сверла без лыски	HSS	N	A
595	679		ASME B94.11 M	Центровочные сверла без лыски	HSS	N	B
605	301	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	Ti	
606	462	~5xD	DIN 345	Спиральные свёрла	HSS	GT 100	
608	308	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	Ti	
611	114	5xD	DIN 6539	Свёрла Ratio, 3-х лезвийные	VHM	GS 200 U	
613	669		DIN 333	Центровочные сверла без лыски	HSS	N	A
614	673		DIN 333	Центровочные сверла без лыски	HSS	N	R
617	358, 607	~10xD	DIN 340	Спиральные сверла, длинные	HSCO	Ti	
618	370, 619	~15xD	DIN 1869	Спиральные свёрла сверхдлинные, серия 1	HSCO	GT 100	
619	376, 625	~20xD	DIN 1869	Спиральные сверла сверхдлинные, серия 2	HSCO	GT 100	
620	486, 636	~15xD	DIN 1870	Спиральные свёрла сверхдлинные, серия 1	HSCO	GT 100	
621	490, 640	~20xD	DIN 1870	Спиральные сверла сверхдлинные, серия 2	HSCO	GT 100	
622	291	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	GT 100	
623	481	~10xD	DIN 341	Сверла под кондукторную втулку	HSCO	GT 100	
634	742		DIN 343	Зенкера с конусом Морзе	HSCO	N	
635	744		DIN 1864	Зенкера с конусом Морзе	HSCO	N	
636	724		СТП	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	
637	731		СТП	Ступенчатые свёрла с конусом Морзе	HSS	N	
638	725		СТП	Ступенчатые свёрла с цилиндрическим хвостовиком	HSS	N	
639	733		СТП	Ступенчатые свёрла с конусом Морзе	HSS	N	
645	466	~5xD	DIN 345	Спиральные свёрла	HSCO	GT 100	
651	250	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
652	277	~5xD	DIN 338	Спиральные свёрла, средние	HSS	GT 100	
653	196	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	N	
654	455	~5xD	DIN 345	Спиральные свёрла	HSS	N	
655	475	~10xD	DIN 341	Спиральные свёрла, средние	HSS	N	
656	478	~10xD	DIN 341	Сверла под кондукторную втулку	HSS	GT 100	
657	304	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	Ti	
658	294	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	GT 100	
659	222	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GV 120	
660	400, 652	~5xD	DIN 1899	Спиральные микросверла без каналов COTC HSS-E-PM	HSS-E-PM	N	
661	465	~5xD	DIN 345	Спиральные свёрла	HSCO	N	
662	467	~5xD	DIN 345	Спиральные свёрла	HSCO	GT 100	
663	449	~3xD	СТП	Спиральные свёрла, средние	HSCO	GV 120	
664	261	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
665	283	~5xD	DIN 338	Спиральные свёрла, средние	HSS	GT 100	
666	328	~10xD	DIN 339	Сверла под кондукторную втулку	HSS	N	
667	334, 583	~10xD	DIN 340	Спиральные сверла, длинные	HSS	N	
668	347, 596	~10xD	DIN 340	Спиральные сверла, длинные	HSS	GT 100	
669	360, 609	~10xD	DIN 340	Спиральные сверла, длинные	HSCO	Ti	
670	367, 616	~15xD	DIN 1869	Спиральные свёрла сверхдлинные, серия 1	HSS	GT 100	
671	374, 623	~20xD	DIN 1869	Спиральные сверла сверхдлинные, серия 2	HSS	GT 100	
672	203	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	N	
701	404, 656	~5xD	СТП	Спиральные микросверла без каналов COTC VHM	VHM	N	
702	243	~3xD	СТП	Спиральные сверла, короткие	VHM	N	
703	429		DIN 8037	Спиральные сверла с впайными твердосплавными пластинами	HM	N	
704	430		DIN 8038	Спиральные сверла с впайными твердосплавными пластинами	HM	N	
705	512		DIN 8041	Спиральные сверла с впайными твердосплавными пластинами	HM	N	

Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
706	362, 611	~10xD	СТП	Спиральные сверла, длинные	VHM	N	
707	432		СТП	Перовые сверла с впайной твердосплавной пластиной	HM	H	
710	323	~5xD	СТП	Спиральные свёрла, средние	HM	Duro 150	
716	433		СТП	Сверла для камня с впайной твердосплавной пластиной	HM	N	
723	701		СТП	Центровочные сверла 90° для станков с ЧПУ	VHM	N	
724	706		СТП	Центровочные сверла 120° для станков с ЧПУ	VHM	N	
729	745		СТП	Зенкера с конусом Морзе	HM	N	
730	239	3xD	DIN 6539	Спиральные сверла, короткие	VHM	N	
731	115	5xD	DIN 6539	Свёрла Ratio, 3-х лезвийные	VHM	GS 200 U	
732	319	~5xD	СТП	Спиральные свёрла, средние	VHM	N	
736	683		СТП	Центровочные сверла без лыски	VHM	N	A
738	727		СТП	Ступенчатые свёрла с цилиндрическим хвостовиком	VHM	N	
739	730		СТП	Ступенчатые свёрла с цилиндрическим хвостовиком	VHM	N	
745	116	5xD	DIN 6539	Свёрла Ratio, 3-х лезвийные	VHM	GS 200 G	
750	739		СТП	Зенкера с цилиндрическим хвостовиком	HM	N	
768	56	4xD	СТП	Свёрла Ratio с каналами под СОТС	VHM	RT 150 GG	
769	93	7xD	СТП	Свёрла Ratio с каналами под СОТС	VHM	RT 150 GG	
770	98	10xD	СТП	Свёрла Ratio с каналами под СОТС	VHM	RT 150 GG	
773	103	15xD	СТП	Свёрла Ratio с каналами под СОТС	VHM	RT 150 GN	
1018	313	~5xD	DIN 338	Спиральное сверло AeroX с крестообразной заточкой	M42	AeroX	
1025	117	5xD	DIN 6539	Свёрла Ratio, 3-х лезвийные	VHM	GS 200 G	
1027	119	5xD	DIN 6539	Свёрла Ratio, 3-х лезвийные	VHM	GS 200 F	
1032	120	3xD	СТП	Ступенчатые сверла Ratio, 3-лезвийные	VHM	GS 200 G	
1047	162		СТП	Сменные пластины RT 800	VHM	RT 800 WP	
1071	168		СТП	Зажимные винты RT 800			
1083	425	~5xD	DIN 338	Комплекты спиральных сверл AeroX	M42	AeroX	
1101	501	~10xD	СТП	Свёрла с каналами СОТС, длина канавки DIN 341	HSS	N	
1131	395	~5xD	СТП	Спиральные сверла с каналами СОТС	HSCO	GT 80 IK	
1132	396	~5xD	СТП	Спиральные сверла с каналами СОТС	HSCO	GT 80 IK	
1133	699		СТП	Центровочные сверла 90° для станков с ЧПУ	HSCO	N	
1134	704		СТП	Центровочные сверла 120° для станков с ЧПУ	HSCO	N	
1135	705		СТП	Центровочные сверла 120° для станков с ЧПУ	HSCO	N	
1136	698		СТП	Центровочные сверла 90° для станков с ЧПУ	HSCO	N	
1146	315	~5xD	DIN 338	Спиральные свёрла, средние	M42	N	
1147	719		СТП	Короткие ступенчатые сверла с цилиндрическим хвостовиком	HSS	N	
1149	431		СТП	Спиральные свёрла FK	VHM	FK	
1171	55	3xD	DIN 6538K	Свёрла Ratio с каналами под СОТС	HM	RT 80 U	
1172	84	5xD	DIN 6538M	Свёрла Ratio с каналами под СОТС	HM	RT 80 U	
1173	95	7xD	DIN 6538L	Свёрла Ratio с каналами под СОТС	HM	RT 80 U	
1180	54	3xD	DIN 6537K	Свёрла Ratio с каналами под СОТС	VHM	RT 100 F	
1181	43	3xD	DIN 6537K	Свёрла Ratio с каналами под СОТС	VHM	RT 100 U	
1182	80	5xD	DIN 6537L	Свёрла Ratio с каналами под СОТС	VHM	RT 100 F	
1183	66	5xD	DIN 6537L	Свёрла Ratio с каналами под СОТС	VHM	RT 100 U	
1184	21	3xD	DIN 6537K	Свёрла Ratio без каналов под СОТС	VHM	RT 100 U	
1199	317	~5xD	DIN 338	Спиральные свёрла, средние	M42	N	
1221	298	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	GT 100	
1222	468	~5xD	DIN 345	Спиральные свёрла	HSCO	GT 100	
1223	299	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	GT 100	
1224	469	~5xD	DIN 345	Спиральные свёрла	HSCO	GT 100	
1228	227	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GT 80	
1242	23	3xD	DIN 6539	Свёрла Ratio без каналов под СОТС	VHM	RT 100 U	
1243	36	5xD	СТП	Свёрла Ratio без каналов под СОТС	VHM	RT 100 U	
1259	235	~3xD	DIN 1897	Спиральные сверла, короткие	M42	N	
1260	309	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	VA	
1261	230	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	VA	
1262	470	~5xD	DIN 345	Спиральные свёрла	HSCO	VA	
1612	171, 558		СТП	Отвертки Torx			
1660	53	3xD	DIN 6537K	Свёрла Ratio с каналами под СОТС	VHM	RT 100 F	
1662	78	5xD	DIN 6537L	Свёрла Ratio с каналами под СОТС	VHM	RT 100 F	
1663	65	5xD	DIN 6537L	Свёрла Ratio с каналами под СОТС	VHM	RT 100 U	
1702	28	3xD	DIN 6539	Свёрла Ratio без каналов под СОТС	VHM	RT 100 F	
1946	389	~3xD	DIN 6537K	Спиральные сверла с усиленным хвостовиком	VHM	H	
2047	311	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	P2000	
2048	233	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	P2000	
2049	423	~5xD	DIN 338	Наборы сверл	HSCO	P2000	
2050	424	~3xD	DIN 1897	Наборы сверл	HSCO	P2000	
2456	254	~5xD	DIN 338	Спиральные свёрла, средние	HSS	N	
2457	280	~5xD	DIN 338	Спиральные свёрла, средние	HSS	GT 100	
2458	306	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	Ti	
2459	296	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	GT 100	
2460	199	~3xD	DIN 1897	Спиральные сверла, короткие	HSS	N	
2461	224	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GV 120	

Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
2462	349, 598	~10xD	DIN 340	Спиральные сверла, длинные	HSS	GT 100	
2463	241	~3xD	DIN 6539	Спиральные сверла, короткие	VHM	N	
2464	321	~5xD	СТП	Спиральные свёрла, средние	VHM	N	
2468	52	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 F	
2469	41	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
2470	77	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 F	
2471	63	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
2472	18	3xD	DIN 6537K	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2473	20	3xD	DIN 6539	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2474	34	5xD	СТП	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2475	27	3xD	DIN 6537K	Свёрла Ratio без каналов под COTC	VHM	RT 100 F	
2477	39	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
2478	76	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 F	
2479	61	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
2480	16	3xD	DIN 6537K	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2485	164		СТП	Сменные пластины RT 800	VHM	RT 800 WP	
2498	229	~3xD	DIN 1897	Спиральные сверла, короткие	HSCO	GT 80	
2711	89	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
2712	38	5xD	DIN 6537L	Свёрла Ratio без каналов под COTC	VHM	RT 100 F	
2713	113	5xD	DIN 6537L	Свёрла Ratio, 3-х лезвийные	VHM	FT 200 G	
2717	35	5xD	DIN 6537L	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2719	32	5xD	DIN 6537L	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2747	166		СТП	Сменные пластины RT 800	VHM	RT 800 WP	
2996	30	5xD	DIN 6537L	Свёрла Ratio без каналов под COTC	VHM	RT 100 U	
2997	288	~5xD	DIN 338	Спиральные свёрла, средние	HSCO	N	
3899	405, 657		СТП	Спиральные микросверла без каналов COTC VHM	VHM	N	
4044	85	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
4045	87	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
4071	158, 561		СТП	Зажимные винты			
4105	138	1xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4106	128	1,5xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4107	130	3xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4108	132	5xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4109	134	7xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4110	136	10xD	СТП	Корпуса для сменных пластин HT 800		HT 800 WP	
4111	151		СТП	Сменные пластины HT 800	VHM	HT 800 WP	
4112	139		СТП	Сменные пластины HT 800	VHM	HT 800 WP	
4113	142		СТП	Сменные пластины HT 800	VHM	HT 800 WP	
4114	148		СТП	Сменные пластины HT 800	VHM	HT 800 WP	
4115	145		СТП	Сменные пластины HT 800	VHM	HT 800 WP	
4915	169, 559		СТП	Динамометрический ключ			
4917	170, 560		СТП	Вставки Torx-Bit			
5018	540	20xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5019	551	30xD	СТП	Двулезвийное сверло ZB 80	HM	ZB 80	
5020	534	80.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5021	538	160.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5022	545	40xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5023	548	80xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5024	532	45.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5026	536	120.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5164	550	1100.000	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5242	159	3xD	СТП	Корпуса для сменных пластин RT 800		RT 800 WP	
5243	160	5xD	СТП	Корпуса для сменных пластин RT 800		RT 800 WP	
5248	161	7xD	СТП	Корпуса для сменных пластин RT 800		RT 800 WP	
5460	542	30xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5525	100	12xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 U	
5632	533	45.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5633	535	80.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5637	537	120.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5638	539	160.000	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5639	541	20xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5640	543	30xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5641	546	40xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5642	549	80xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5643	552	30xD	СТП	Двулезвийное сверло ZB 80	HM	ZB 80	
5644	555	30xD	СТП	Отднолезвийное сверло EB 800 со сменными пластинами	HM	EB 800	
5646	529	25xD	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5647	530	50xD	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5648	531	75xD	СТП	Отднолезвийное сверло EB 100	VHM	EB 100	
5689	544	40xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5690	547	80xD	СТП	Отднолезвийное сверло EB 80	HM	EB 80	
5747	566		СТП	Кондукторная втулка	HSS		

Артикул №	Стр.	Глубина сверления	Стандарты	Описание	Режущий материал	Тип	Форма
5748	565		СТП	Кондукторная втулка	VHM		
5749	573		СТП	Люнетные втулки для одно- и двухлезвийного сверла			
5750	571		СТП	нелегированная/низколегированная сталь			
5751	576		СТП	Фасонные люнетные втулки для двулезвийного сверла			
5752	569		СТП	Уплотнительные шайбы для однолезвийного сверла			
5753	575		СТП	Уплотнительные шайбы для двухлезвийного сверла			
5754	577		СТП	Регулировочные винты			
5755	578		СТП	Регулировочные винты			
5759	59	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 S	
5760	96	8xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 S	
6068	58	4xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 150 GG	
6069	94	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 150 GG	
6070	99	10xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 150 GG	
6128	157		СТП	Зажимные винты			
6400	108, 407, 659	4xD	СТП	ExclusiveLine микросверла без каналов COTC VHM	VHM	N	
6401	109, 408, 660	7xD	СТП	ExclusiveLine микросверла без каналов COTC VHM	VHM	N	
6405	110, 409, 661	5xD	СТП	ExclusiveLine микросверла с каналами COTC VHM	VHM	N	
6408	111, 410, 662	8xD	СТП	ExclusiveLine микросверла с каналами COTC VHM	VHM	N	
6412	112, 411, 663	15xD	СТП	ExclusiveLine микросверла с каналами COTC VHM	VHM	N	
6501	82	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 R	
6502	91	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 R	
6509	102, 523	15xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 T	
6511	104, 524	20xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 T	
6512	105, 525	25xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 T	
6513	106, 526	30xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 T	
6514	107, 527	40xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 T	
7632	155		СТП	Пластины HT 800	VHM		
7635	156		СТП	Пластины HT 800	VHM		
7645	154		СТП	Пластины HT 800	VHM		
8510	48	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 VA	
8511	72	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 VA	
8520	44	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 HF	
8521	68	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 HF	
8522	90	7xD	СТП	Свёрла Ratio с каналами под COTC	VHM	RT 100 HF	
8524	25	3xD	DIN 6537K	Свёрла Ratio без каналов под COTC	VHM	RT 100 HF	
8610	50	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 VA	
8611	74	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 VA	
8620	46	3xD	DIN 6537K	Свёрла Ratio с каналами под COTC	VHM	RT 100 HF	
8621	70	5xD	DIN 6537L	Свёрла Ratio с каналами под COTC	VHM	RT 100 HF	

Совершенство в сверлении



GÜHRING

GÜHRING

www.guehring.de

ООО "Фризар" - официальный дилер в России
241013, г. Брянск, ул. Литейная, д. 36А info@frizar.ru
тел./факс (483)258-66-33/(483)258-66-38 www.frizar.ru

ООО „Гюринг“ | Тел.: (495) 989-47-87 | Факс: (495) 989-47-97

Россия, 111397, г. Москва | Зеленый проспект, д.20 | info@guhring.ru | www.guhring.ru

170 091/16111-VI-18 | Printed in Germany | 2016