

# **GÜHRING**

**New Products and Additions**  
General Catalogue Edition 01

**2024**

Edition 2024 to the General Catalogue Edition 01

# ***NEW PRODUCTS***

new

## **RT 100 FB Micro Flat Bottom**

For the drilling of oblique or curved surfaces in the micro range

new

## **ExclusiveLine micro-precision drills XL**

High-performance micro-precision drill for drilling depths up to 20xD

new

## **ExclusiveLine micro-precision drills VA**

The specialist for stainless steels, special alloys and with long chipping materials

new

## **RT 100 InoxPro**

The drilling specialist for stainless steels

new

## **FT 200 U solid carbide three-fluted drill**

High feed drill for reduced cycle times

new

## **VB 100 P solid carbide four-fluted drill**

The straight-fluted drilling specialist for the machining of castings

new

## **EB 100 & EB 100 M**

The solid carbide single-fluted deep hole drilling tools for more cutting performance

new

## **EB 80 & EB 80 XXL**

The classic single-fluted deep hole drilling tools for universal machining



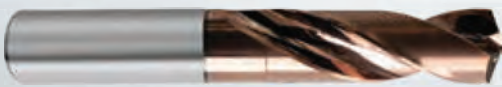
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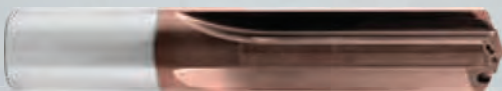
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new

## **MicroMill $\mu$ 55 U**

Universal micro milling cutter for maximum precision

new

## **RF 100 Micro Diver**

The smallest diver in the world

new

## **PCD Diver**

The new diver for alu

new

## **RF 100 Sharp extra short**

For 40 % higher milling performance

new

## **Pionex threading tools**

The new generation threading tools

new

## **Modular fluteless taps**

Modular system for maximum flexibility and economy

new

## **SC-Line micro-thread milling cutters**

Rapid thread milling with high-end performance

new

## **Quattro Drill extractor system**

Four-in-one: One tool for multiple machining operations

new

## **System 222**

High flexibility for grooving and parting off applications





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**Innovation that makes a difference**

New solutions for  
your machining tasks

**GÜHRING**

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	<b>Threading tools</b>
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# Drilling tools

When specialists are required

New high-performance drills –  
for example for VA and titanium

**GÜHRING**



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P	M	K	N	S	H	Tool illustration	Drilling depth	Shank form	Type	Tool material	Surface	d1/mm	Article no.	Page
<b>Solid carbide micro-precision drills without coolant ducts</b>														
●	●	○	○	○	○		<b>NEW</b> ~3xD	-HA	N	VHM	A	1.000 - 3.000	<b>6496</b>	13
<b>Exclusiveline micro-precision drills XL with coolant ducts</b>														
●	●	○	○	○	○		<b>NEW</b> 20xD	Cyl	N	VHM	A	1.000 - 3.000	<b>6493</b>	14
<b>Exclusiveline micro-precision drills VA without coolant ducts</b>														
○	●	○	●	○	○		<b>NEW</b> 3xD	Cyl	VA	VHM	X	0.500 - 3.000	<b>6487</b>	16
<b>Exclusiveline micro-precision drills VA with coolant ducts</b>														
○	●	○	●	○	○		<b>NEW</b> 3xD	Cyl	VA	VHM	X	1.000 - 3.000	<b>6488</b>	17
○	●	○	●	○	○		<b>NEW</b> 6xD	Cyl	VA	VHM	X	1.000 - 3.000	<b>6489</b>	18
○	●	○	●	○	○		<b>NEW</b> 10xD	Cyl	VA	VHM	X	1.000 - 3.000	<b>6490</b>	19
○	●	○	●	○	○		<b>NEW</b> 15xD	Cyl	VA	VHM	X	1.000 - 3.000	<b>6491</b>	20
<b>Ratio drills with coolant ducts</b>														
○	●	○	●	○	○		<b>NEW</b> 3xD	HA	INOX PRO	VHM	X	3.000 - 20.000	<b>8512</b>	22
○	●	○	●	○	○		<b>NEW</b> 5xD	HA	INOX PRO	VHM	X	3.000 - 20.000	<b>8513</b>	24
○	●	○	●	○	○		<b>NEW</b> 7xD	HA	INOX PRO	VHM	X	3.000 - 20.000	<b>8514</b>	26
<b>Ratio drills with coolant ducts, 3-fluted</b>														
●	○	●	○	○	○		<b>NEW</b> 3xD	HA	FT 200 U	VHM	F	4.000 - 20.000	<b>6589</b>	29
<b>Straight-fluted drill, 4-fluted, VB 100 P</b>														
○	○	○	●	○	○		<b>NEW</b> 3xD	HA	VB 100 P	VHM	Y	6.000 - 32.000	<b>6044</b>	32
○	○	○	●	○	○		<b>+Ø</b> 5xD	HA	VB 100 P	VHM	Y	6.000 - 32.000	<b>6045</b>	33
<b>EB 100 M single-fluted gun drills</b>														
●	●	○	○	○	○		<b>+Ø</b> 25xD	HA	EB 100 M	VHM	a	1.000 - 16.000	<b>5646</b>	35
○	○	○	●	●	○		<b>+Ø</b> 25xD	HA	EB 100 M	VHM	○	1.000 - 16.000	<b>5685</b>	36
●	●	○	○	○	○		<b>+Ø</b> 50xD	HA	EB 100 M	VHM	a	1.000 - 10.000	<b>5647</b>	37
○	○	○	●	●	○		<b>+Ø</b> 50xD	HA	EB 100 M	VHM	○	1.000 - 10.000	<b>5686</b>	38
●	●	○	○	○	○		<b>+Ø</b> 75xD	HA	EB 100 M	VHM	a	1.000 - 7.144	<b>5648</b>	39
○	○	○	●	●	○		<b>+Ø</b> 75xD	HA	EB 100 M	VHM	○	1.000 - 7.144	<b>5687</b>	39
<b>EB 100 single-fluted gun drills</b>														
○	○	○	●	●	○		<b>+Ø</b> SPL 30,00	HA	EB 100	VHM	○	0.900 - 2.000	<b>5684</b>	40
●	●	○	○	○	○		<b>+Ø</b> SPL 45,00	HA	EB 100	VHM	A	1.000 - 4.000	<b>5632</b>	40
○	○	○	●	●	○		<b>+Ø</b> SPL 45,00	HA	EB 100	VHM	○	0.900 - 4.000	<b>5024</b>	41
●	●	○	○	○	○		<b>+Ø</b> SPL 80,00	HA	EB 100	VHM	A	1.000 - 6.000	<b>5633</b>	41
○	○	○	●	●	○		<b>+Ø</b> SPL 80,00	HA	EB 100	VHM	○	1.000 - 6.000	<b>5020</b>	42



P	M	K	N	S	H	Tool illustration	Drilling depth	Shank form	Type	Tool material	Surface	d1/mm	Article no.	Page
<b>EB 100 single-fluted gun drills</b>														
•	•	•	○	○	○		+Ø SPL 120,00	HA	EB 100	VHM	A	1.500 - 6.000	5637	42
○	○	○	•	•	○		+Ø SPL 120,00	HA	EB 100	VHM	○	1.500 - 6.000	5026	43
•	•	•	○	○	○		+Ø SPL 160,00	HA	EB 100	VHM	A	1.500 - 8.000	5638	43
○	○	○	•	•	○		+Ø SPL 160,00	HA	EB 100	VHM	○	1.500 - 8.000	5021	44
<b>EB 80 single-fluted gun drills</b>														
•	○	•	○	○	○		+Ø 20xD	HA	EB 80	HM	S	3.969 - 25.400	5018	46
•	•	○	○	•	○		+Ø 20xD	HA	EB 80	HM	C	3.969 - 25.400	5639	47
○	○	○	•	○	○		NEW 20xD	HB	EB 80	HM	○	3.969 - 25.400	5234	48
•	○	•	○	○	○		+Ø 30xD	HA	EB 80	HM	S	3.969 - 25.400	5460	49
•	•	○	○	•	○		+Ø 30xD	HA	EB 80	HM	C	3.969 - 25.400	5640	50
○	○	○	•	○	○		NEW 30xD	HB	EB 80	HM	○	3.969 - 25.400	5812	51
•	○	•	○	○	○		+Ø 40xD	HA	EB 80	HM	S	3.969 - 25.400	5022	52
•	•	○	○	•	○		+Ø 40xD	HA	EB 80	HM	C	3.969 - 25.400	5641	53
○	○	○	•	○	○		+Ø 40xD	HB	EB 80	HM	○	3.969 - 25.400	5689	54
•	○	•	○	○	○		NEW 60xD	HA	EB 80	HM	S	3.919 - 15.950	6061	55
•	•	○	○	•	○		+Ø 60xD	HA	EB 80	HM	C	3.919 - 15.950	5669	56
○	○	○	•	○	○		NEW 60xD	HB	EB 80	HM	○	3.919 - 15.950	6060	57
•	○	•	○	○	○		+Ø 80xD	HA	EB 80	HM	S	3.919 - 15.950	5023	58
•	•	○	○	•	○		+Ø 80xD	HA	EB 80	HM	C	3.919 - 15.950	5642	59
○	○	○	•	○	○		+Ø 80xD	HB	EB 80	HM	○	3.919 - 15.950	5690	60
<b>EB 80 XXL single-fluted gun drills</b>														
•	○	•	•	○	○		+Ø GL 600	TBM-SEH	EB 80 XXL	HM	S	3.000 - 25.000	5688	61
•	○	•	•	○	○		+Ø GL 800	TBM-SEH	EB 80 XXL	HM	S	3.000 - 25.000	5691	62
•	○	•	•	○	○		+Ø GL 1000	TBM-SEH	EB 80 XXL	HM	S	3.000 - 32.000	5164	63
•	○	•	•	○	○		+Ø GL 1200	TBM-SEH	EB 80 XXL	HM	S	3.000 - 32.000	5692	64
•	○	•	•	○	○		+Ø GL 1400	TBM-SEH	EB 80 XXL	HM	S	4.000 - 32.000	5681	65
•	○	•	•	○	○		+Ø GL 1600	TBM-SEH	EB 80 XXL	HM	S	4.000 - 32.000	5693	66
•	○	•	•	○	○		+Ø GL 1800	TBM-SEH	EB 80 XXL	HM	S	4.000 - 32.000	5682	67
•	○	•	•	○	○		+Ø GL 2000	TBM-SEH	EB 80 XXL	HM	S	4.000 - 32.000	5694	68

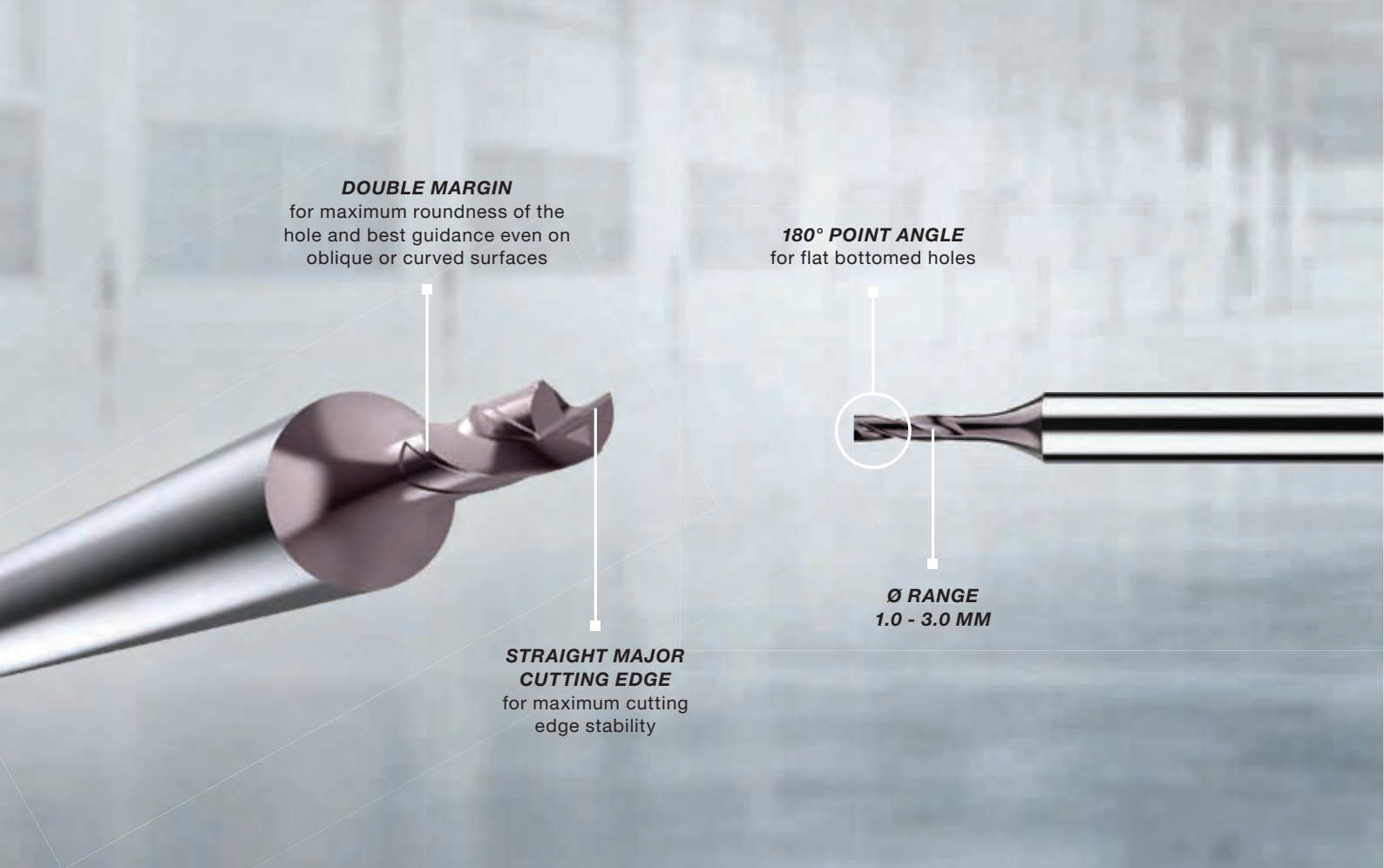
Drilling tools

# RT 100 FB Micro Flat Bottom



For the drilling of oblique or curved surfaces in the micro range

ideal for spot drilling | high process reliability | high surface quality



**DOUBLE MARGIN**

for maximum roundness of the hole and best guidance even on oblique or curved surfaces

**180° POINT ANGLE**

for flat bottomed holes

**Ø RANGE**  
1.0 - 3.0 MM

**STRAIGHT MAJOR CUTTING EDGE**

for maximum cutting edge stability

## Micro flat drill for universal use

The RT 100 FB Micro is ideal for drilling on oblique and curved surfaces. Because of the optimised tolerances and a large selection of dimensions, it guarantees an optimal starting situation for the subsequent tool regarding guidance and drilling. In addition, a flat bottomed hole can be produced with the 180° face geometry.





Solid carbide micro-precision drills without coolant ducts

Article no. 6496

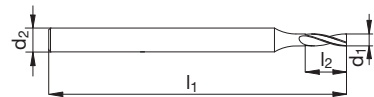


Cutting data page 69



P	M	K	N	S	H
●	●	●	○	○	○

double margin • reinforced shank • 180° point geometry for flat bottomed holes • for piloting, drilling, finishing • piloting in all positions and materials



Article no.

6496

Article no.

6496

d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
1.000	3.0	47.0	4.0	6496 1.000
1.050	3.0	47.0	4.2	6496 1.050
1.100	3.0	47.0	4.4	6496 1.100
1.150	3.0	47.0	4.6	6496 1.150
1.190	3.0	47.0	4.8	6496 1.190
1.200	3.0	47.0	4.8	6496 1.200
1.250	3.0	47.0	5.0	6496 1.250
1.300	3.0	47.0	5.2	6496 1.300
1.350	3.0	47.0	5.4	6496 1.350
1.400	3.0	47.0	5.6	6496 1.400
1.450	3.0	47.0	5.8	6496 1.450
1.500	3.0	47.0	6.0	6496 1.500
1.550	3.0	47.0	6.2	6496 1.550
1.590	3.0	47.0	6.4	6496 1.590
1.600	3.0	47.0	6.4	6496 1.600
1.650	3.0	47.0	6.6	6496 1.650
1.700	3.0	47.0	6.8	6496 1.700
1.750	3.0	47.0	7.0	6496 1.750
1.800	3.0	47.0	7.2	6496 1.800
1.850	3.0	47.0	7.4	6496 1.850
1.900	3.0	47.0	7.6	6496 1.900
1.950	3.0	47.0	7.8	6496 1.950
1.980	3.0	47.0	8.0	6496 1.980
2.000	4.0	50.0	8.0	6496 2.000

d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
2.050	4.0	50.0	8.2	6496 2.050
2.100	4.0	50.0	8.4	6496 2.100
2.150	4.0	50.0	8.6	6496 2.150
2.200	4.0	50.0	8.8	6496 2.200
2.250	4.0	50.0	9.0	6496 2.250
2.300	4.0	50.0	9.2	6496 2.300
2.320	4.0	50.0	9.4	6496 2.320
2.350	4.0	50.0	9.4	6496 2.350
2.380	4.0	50.0	9.6	6496 2.380
2.400	4.0	50.0	9.6	6496 2.400
2.450	4.0	50.0	9.8	6496 2.450
2.500	4.0	50.0	10.0	6496 2.500
2.550	4.0	50.0	10.2	6496 2.550
2.600	4.0	50.0	10.4	6496 2.600
2.650	4.0	50.0	10.6	6496 2.650
2.700	4.0	50.0	10.8	6496 2.700
2.750	4.0	50.0	11.0	6496 2.750
2.780	4.0	50.0	11.2	6496 2.780
2.800	4.0	50.0	11.2	6496 2.800
2.850	4.0	50.0	11.4	6496 2.850
2.900	4.0	50.0	11.6	6496 2.900
2.950	4.0	50.0	11.8	6496 2.950
3.000	6.0	50.0	12.0	6496 3.000

Micro drills



ExclusiveLine micro-precision drills XL with coolant ducts

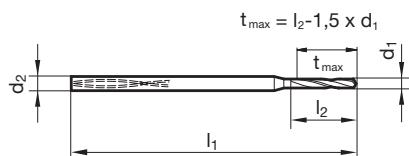
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Cutting data page 70



facet point grind • main cutting edge form straight • with main cutting edge preparation



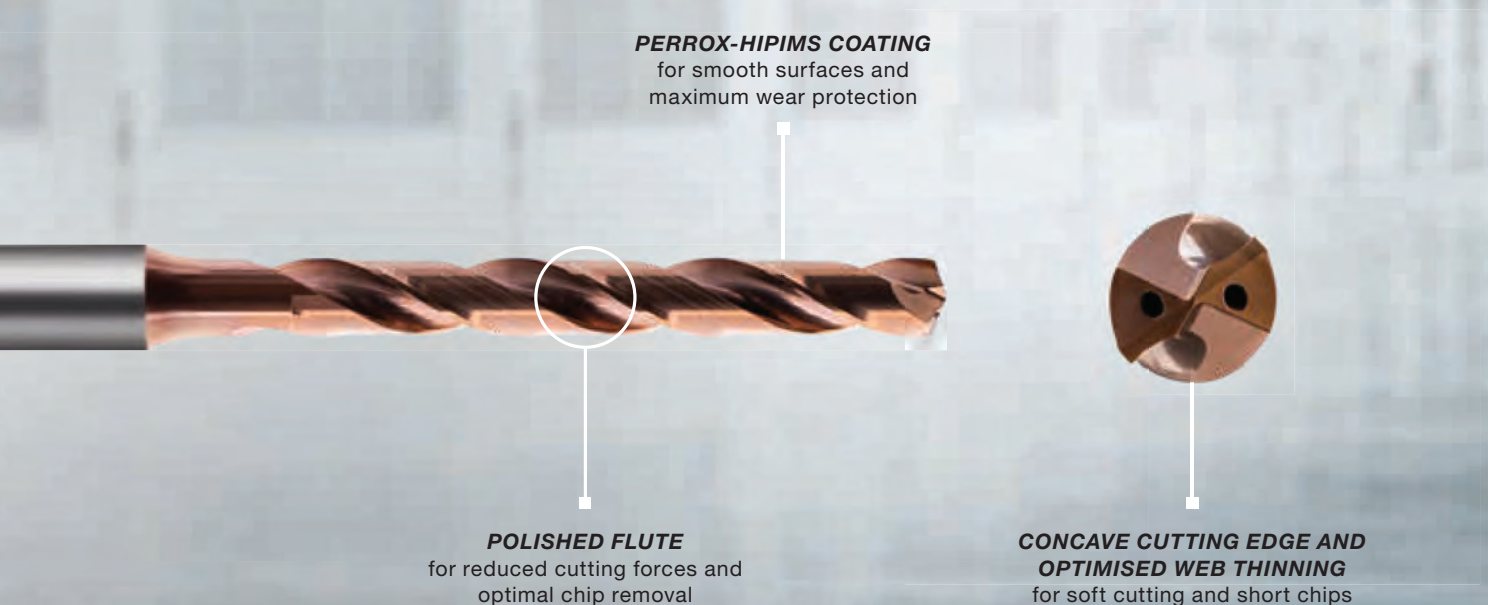
Article no.				6493				Article no.				6493			
d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	
1.000	3.0	59.0	23.0	6493 1.000	2.050	4.0	79.0	47.2	6493 2.050						
1.050	3.0	59.0	24.2	6493 1.050	2.100	4.0	91.0	48.3	6493 2.100						
1.100	3.0	59.0	25.3	6493 1.100	2.150	4.0	91.0	49.5	6493 2.150						
1.150	3.0	63.0	26.5	6493 1.150	2.200	4.0	91.0	50.6	6493 2.200						
1.190	3.0	63.0	27.4	6493 1.190	2.250	4.0	91.0	51.8	6493 2.250						
1.200	3.0	63.0	27.6	6493 1.200	2.300	4.0	91.0	52.9	6493 2.300						
1.250	3.0	63.0	28.8	6493 1.250	2.320	4.0	91.0	54.1	6493 2.320						
1.300	3.0	68.0	29.9	6493 1.300	2.350	4.0	91.0	54.1	6493 2.350						
1.350	3.0	68.0	31.1	6493 1.350	2.380	4.0	91.0	54.8	6493 2.380						
1.400	4.0	70.0	32.2	6493 1.400	2.400	4.0	91.0	55.2	6493 2.400						
1.450	4.0	70.0	33.4	6493 1.450	2.450	4.0	91.0	56.4	6493 2.450						
1.500	4.0	70.0	34.5	6493 1.500	2.500	4.0	91.0	57.5	6493 2.500						
1.550	4.0	70.0	35.7	6493 1.550	2.550	4.0	91.0	58.7	6493 2.550						
1.590	4.0	70.0	36.6	6493 1.590	2.600	4.0	102.0	59.8	6493 2.600						
1.600	4.0	70.0	36.8	6493 1.600	2.650	4.0	102.0	61.0	6493 2.650						
1.650	4.0	70.0	38.0	6493 1.650	2.700	4.0	102.0	62.1	6493 2.700						
1.700	4.0	79.0	39.4	6493 1.700	2.750	4.0	102.0	63.3	6493 2.750						
1.750	4.0	79.0	40.3	6493 1.750	2.780	4.0	102.0	64.0	6493 2.780						
1.800	4.0	79.0	41.4	6493 1.800	2.800	4.0	102.0	64.4	6493 2.800						
1.850	4.0	79.0	42.6	6493 1.850	2.850	4.0	102.0	65.6	6493 2.850						
1.900	4.0	79.0	43.7	6493 1.900	2.900	4.0	102.0	66.7	6493 2.900						
1.950	4.0	79.0	44.9	6493 1.950	2.950	4.0	102.0	67.9	6493 2.950						
1.980	4.0	79.0	45.6	6493 1.980	3.000	4.0	102.0	69.0	6493 3.000						
2.000	4.0	79.0	46.0	6493 2.000											

# ExclusiveLine micro drill VA



The specialist for stainless steels,  
special alloys and with long chipping materials

up to 100% higher feed rate | very high tool life | max. drilling depth 15xD



## High-end micro drill for micro machining M-S-N materials

The ExclusiveLine micro drill VA was developed specifically for machining stainless steel and special alloys. The coating provides maximum wear protection against abrasive alloy elements and protects against built-up edges. The polished flute and the optimised geometry ensure short chips and removal. All of this ensures a significant increase in cutting data and tool life.

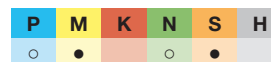


ExclusiveLine micro-precision drills VA without coolant ducts

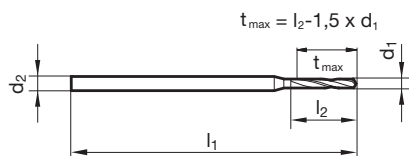
Article no. 6487



Cutting data page 71



Web thinning ≥ Ø 0.500 • facet point grind • main cutting edge is slightly concave • optimised cutting edge geometry



t<sub>max</sub> = l<sub>2</sub> - 1,5 x d<sub>1</sub>

Article no. 6487

Article no. 6487

Table with columns: d1 mm, d2 h6 mm, l1 mm, l2 mm, Order no. for article 6487

Table with columns: d1 mm, d2 h6 mm, l1 mm, l2 mm, Order no. for article 6487





ExclusiveLine micro-precision drills VA with coolant ducts

Article no. 6488

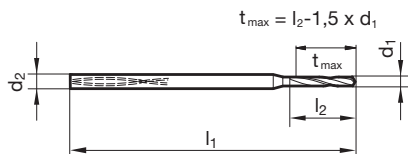


Cutting data page 72



P	M	K	N	S	H
○	●	○	●	○	●

Web thinning ≥ Ø 1.000 • facet point grind • main cutting edge is slightly concave • optimised cutting edge geometry



Article no.				6488	Article no.				6488
d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
1.000	3.0	38.0	5.5	6488 1.000	2.050	4.0	46.0	11.3	6488 2.050
1.020	3.0	38.0	5.7	6488 1.020	2.100	4.0	50.0	11.6	6488 2.100
1.050	3.0	38.0	5.8	6488 1.050	2.150	4.0	50.0	11.9	6488 2.150
1.100	3.0	38.0	6.1	6488 1.100	2.200	4.0	50.0	12.1	6488 2.200
1.150	3.0	38.0	6.4	6488 1.150	2.250	4.0	50.0	12.4	6488 2.250
1.180	3.0	38.0	6.5	6488 1.180	2.300	4.0	50.0	12.7	6488 2.300
1.190	3.0	38.0	6.6	6488 1.190	2.350	4.0	50.0	13.0	6488 2.350
1.200	3.0	38.0	6.6	6488 1.200	2.380	4.0	50.0	13.1	6488 2.380
1.250	3.0	38.0	6.9	6488 1.250	2.400	4.0	50.0	13.2	6488 2.400
1.280	3.0	38.0	7.1	6488 1.280	2.450	4.0	50.0	13.5	6488 2.450
1.300	3.0	38.0	7.2	6488 1.300	2.500	4.0	50.0	13.8	6488 2.500
1.350	3.0	38.0	7.5	6488 1.350	2.550	4.0	50.0	14.1	6488 2.550
1.400	4.0	46.0	7.7	6488 1.400	2.600	4.0	50.0	14.3	6488 2.600
1.450	4.0	46.0	8.0	6488 1.450	2.650	4.0	50.0	14.6	6488 2.650
1.460	4.0	46.0	8.1	6488 1.460	2.700	4.0	50.0	14.9	6488 2.700
1.500	4.0	46.0	8.3	6488 1.500	2.750	4.0	50.0	15.2	6488 2.750
1.550	4.0	46.0	8.6	6488 1.550	2.780	4.0	50.0	15.3	6488 2.780
1.560	4.0	46.0	8.6	6488 1.560	2.800	4.0	50.0	15.4	6488 2.800
1.590	4.0	46.0	8.8	6488 1.590	2.850	4.0	50.0	15.7	6488 2.850
1.600	4.0	46.0	8.8	6488 1.600	2.900	4.0	50.0	16.0	6488 2.900
1.650	4.0	46.0	9.1	6488 1.650	2.950	4.0	50.0	16.3	6488 2.950
1.660	4.0	46.0	9.2	6488 1.660	3.000	4.0	50.0	16.5	6488 3.000
1.700	4.0	46.0	9.4	6488 1.700					
1.750	4.0	46.0	9.7	6488 1.750					
1.800	4.0	46.0	9.9	6488 1.800					
1.850	4.0	46.0	10.2	6488 1.850					
1.900	4.0	46.0	10.5	6488 1.900					
1.950	4.0	46.0	10.8	6488 1.950					
1.980	4.0	46.0	10.9	6488 1.980					
2.000	4.0	46.0	11.0	6488 2.000					

Micro drills

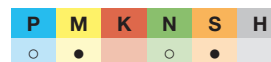


## ExclusiveLine micro-precision drills VA with coolant ducts

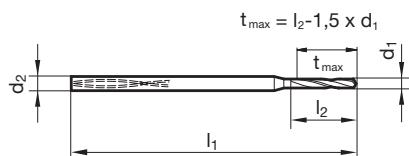
Article no. **6489**



Cutting data page 72



Web thinning  $\geq \varnothing 1.000$  • facet point grind • main cutting edge is slightly concave • optimised cutting edge geometry



Article no. <b>6489</b>				Article no. <b>6489</b>					
d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
1.000	3.0	48.0	9.0	6489 1.000	2.050	4.0	61.0	18.5	6489 2.050
1.050	3.0	48.0	9.5	6489 1.050	2.100	4.0	66.0	18.9	6489 2.100
1.100	3.0	48.0	9.9	6489 1.100	2.150	4.0	66.0	19.4	6489 2.150
1.150	3.0	48.0	10.4	6489 1.150	2.200	4.0	66.0	19.8	6489 2.200
1.190	3.0	48.0	10.8	6489 1.190	2.250	4.0	66.0	20.3	6489 2.250
1.200	3.0	51.0	10.8	6489 1.200	2.300	4.0	66.0	20.7	6489 2.300
1.250	3.0	51.0	11.3	6489 1.250	2.350	4.0	66.0	21.2	6489 2.350
1.300	3.0	51.0	11.7	6489 1.300	2.380	4.0	66.0	21.5	6489 2.380
1.350	3.0	51.0	12.2	6489 1.350	2.400	4.0	66.0	21.6	6489 2.400
1.400	4.0	56.0	12.6	6489 1.400	2.450	4.0	66.0	22.1	6489 2.450
1.450	4.0	56.0	13.1	6489 1.450	2.500	4.0	66.0	22.5	6489 2.500
1.500	4.0	56.0	13.5	6489 1.500	2.550	4.0	66.0	23.0	6489 2.550
1.550	4.0	56.0	14.0	6489 1.550	2.600	4.0	71.0	23.4	6489 2.600
1.590	4.0	56.0	14.4	6489 1.590	2.650	4.0	71.0	23.9	6489 2.650
1.600	4.0	56.0	14.4	6489 1.600	2.700	4.0	71.0	24.3	6489 2.700
1.650	4.0	56.0	14.9	6489 1.650	2.750	4.0	71.0	24.8	6489 2.750
1.700	4.0	61.0	15.3	6489 1.700	2.780	4.0	71.0	25.1	6489 2.780
1.750	4.0	61.0	15.8	6489 1.750	2.800	4.0	71.0	25.2	6489 2.800
1.800	4.0	61.0	16.2	6489 1.800	2.850	4.0	71.0	25.7	6489 2.850
1.850	4.0	61.0	16.7	6489 1.850	2.900	4.0	71.0	26.1	6489 2.900
1.900	4.0	61.0	17.1	6489 1.900	2.950	4.0	71.0	26.6	6489 2.950
1.950	4.0	61.0	17.6	6489 1.950	3.000	4.0	71.0	27.0	6489 3.000
1.980	4.0	61.0	17.9	6489 1.980					
2.000	4.0	61.0	18.0	6489 2.000					



ExclusiveLine micro-precision drills VA with coolant ducts

Article no. 6490

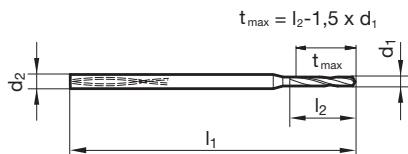


Cutting data page 73



P	M	K	N	S	H
○	●	○	●	○	●

Web thinning ≥ Ø 1.000 • facet point grind • main cutting edge is slightly concave • optimised cutting edge geometry



Article no.				6490	Article no.				6490
d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.	d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
1.000	3.0	48.0	13.0	6490 1.000	2.050	4.0	61.0	26.7	6490 2.050
1.050	3.0	48.0	13.7	6490 1.050	2.100	4.0	66.0	27.3	6490 2.100
1.100	3.0	48.0	14.3	6490 1.100	2.150	4.0	66.0	28.0	6490 2.150
1.150	3.0	48.0	15.0	6490 1.150	2.200	4.0	66.0	28.6	6490 2.200
1.190	3.0	48.0	15.5	6490 1.190	2.250	4.0	66.0	29.3	6490 2.250
1.200	3.0	51.0	15.6	6490 1.200	2.300	4.0	66.0	29.9	6490 2.300
1.250	3.0	51.0	16.3	6490 1.250	2.350	4.0	66.0	30.6	6490 2.350
1.300	3.0	51.0	16.9	6490 1.300	2.380	4.0	66.0	31.0	6490 2.380
1.350	3.0	51.0	17.6	6490 1.350	2.400	4.0	66.0	31.2	6490 2.400
1.400	4.0	56.0	18.2	6490 1.400	2.450	4.0	66.0	31.9	6490 2.450
1.450	4.0	56.0	18.9	6490 1.450	2.500	4.0	66.0	32.5	6490 2.500
1.500	4.0	56.0	19.5	6490 1.500	2.550	4.0	66.0	33.2	6490 2.550
1.550	4.0	56.0	20.2	6490 1.550	2.600	4.0	71.0	33.8	6490 2.600
1.590	4.0	56.0	20.7	6490 1.590	2.650	4.0	71.0	34.5	6490 2.650
1.600	4.0	56.0	20.8	6490 1.600	2.700	4.0	71.0	35.1	6490 2.700
1.650	4.0	56.0	21.5	6490 1.650	2.750	4.0	71.0	35.8	6490 2.750
1.700	4.0	61.0	22.1	6490 1.700	2.780	4.0	71.0	36.2	6490 2.780
1.750	4.0	61.0	22.8	6490 1.750	2.800	4.0	71.0	36.4	6490 2.800
1.800	4.0	61.0	23.4	6490 1.800	2.850	4.0	71.0	37.1	6490 2.850
1.850	4.0	61.0	24.1	6490 1.850	2.900	4.0	71.0	37.7	6490 2.900
1.900	4.0	61.0	24.7	6490 1.900	2.950	4.0	71.0	38.4	6490 2.950
1.950	4.0	61.0	25.4	6490 1.950	3.000	4.0	71.0	39.0	6490 3.000
1.980	4.0	61.0	25.8	6490 1.980					
2.000	4.0	61.0	26.0	6490 2.000					

Micro drills

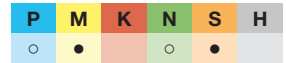


ExclusiveLine micro-precision drills VA with coolant ducts

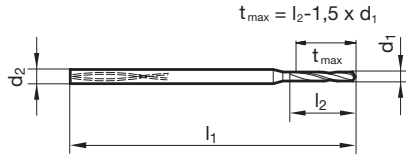
Article no. 6491



Cutting data page 73



Web thinning ≥ Ø 1.000 • facet point grind • main cutting edge is slightly concave • optimised cutting edge geometry



t<sub>max</sub> = l<sub>2</sub> - 1,5 x d<sub>1</sub>

Article no. 6491

Article no. 6491

d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
1.000	3.0	54.0	18.0	6491 1.000
1.050	3.0	54.0	18.9	6491 1.050
1.100	3.0	54.0	19.8	6491 1.100
1.150	3.0	54.0	20.7	6491 1.150
1.190	3.0	54.0	21.5	6491 1.190
1.200	3.0	58.0	21.6	6491 1.200
1.250	3.0	58.0	22.5	6491 1.250
1.300	3.0	58.0	23.4	6491 1.300
1.350	3.0	58.0	24.3	6491 1.350
1.400	4.0	64.0	25.2	6491 1.400
1.450	4.0	64.0	26.1	6491 1.450
1.500	4.0	64.0	27.0	6491 1.500
1.550	4.0	64.0	27.9	6491 1.550
1.590	4.0	64.0	28.7	6491 1.590
1.600	4.0	64.0	28.8	6491 1.600
1.650	4.0	64.0	29.7	6491 1.650
1.700	4.0	71.0	30.6	6491 1.700
1.750	4.0	71.0	31.5	6491 1.750
1.800	4.0	71.0	32.4	6491 1.800
1.850	4.0	71.0	33.3	6491 1.850
1.900	4.0	71.0	34.2	6491 1.900
1.950	4.0	71.0	35.1	6491 1.950
1.980	4.0	71.0	35.7	6491 1.980
2.000	4.0	71.0	36.0	6491 2.000

d1 mm	d2 h6 mm	l1 mm	l2 mm	Order no.
2.050	4.0	71.0	36.9	6491 2.050
2.100	4.0	79.0	37.8	6491 2.100
2.150	4.0	79.0	38.7	6491 2.150
2.200	4.0	79.0	39.6	6491 2.200
2.250	4.0	79.0	40.5	6491 2.250
2.300	4.0	79.0	41.4	6491 2.300
2.350	4.0	79.0	42.3	6491 2.350
2.380	4.0	79.0	42.9	6491 2.380
2.400	4.0	79.0	43.2	6491 2.400
2.450	4.0	79.0	44.1	6491 2.450
2.500	4.0	79.0	45.0	6491 2.500
2.550	4.0	79.0	45.9	6491 2.550
2.600	4.0	87.0	46.8	6491 2.600
2.650	4.0	87.0	47.7	6491 2.650
2.700	4.0	87.0	48.6	6491 2.700
2.750	4.0	87.0	49.5	6491 2.750
2.780	4.0	87.0	50.1	6491 2.780
2.800	4.0	87.0	50.4	6491 2.800
2.850	4.0	87.0	51.3	6491 2.850
2.900	4.0	87.0	52.2	6491 2.900
2.950	4.0	87.0	53.1	6491 2.950
3.000	4.0	87.0	54.0	6491 3.000



# RT 100 INOXPRO

## The drilling specialist for stainless steels

maximum performance | process-reliable up to 7xD | optimum chip control and removal

**OPTIMISED CARBIDE**  
with improved combination of  
hardness and toughness prevents  
cutting edge chippings

**ULTRA-SMOOTH  
PERROX COATING**  
increases wear protection

**PREMIUM SURFACES  
IN THE FLUTE**  
improve chip removal and  
prevent built-up edges

**SICKLE-SHAPED CUTTING EDGE**  
for optimum chip formation  
in stainless steel



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If you want to drill in stainless steels and titanium alloys, you will have to contend with high tool wear. Our new solid carbide drill RT 100 InoxPro is changing this: It delivers an exceptional performance thanks to its combination of carbide, geometry and coating specially tailored to this material group.

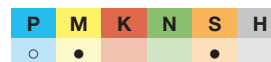


## Ratio drills with coolant ducts

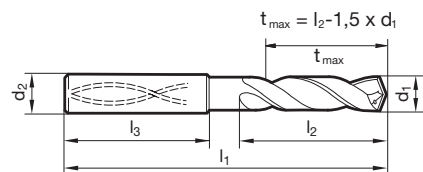
Article no. **8512**



Cutting data page 74



Web thinning  $\geq \varnothing 3.000$  • maximum performance • optimised cutting edge geometry • main cutting edge is slightly concave • exceptional hole quality



Article no. **8512**

Article no. **8512**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.000		6.0	62.0	20.0	36.0	8512 3.000	7.550		8.0	79.0	41.0	36.0	8512 7.550
3.100		6.0	62.0	20.0	36.0	8512 3.100	7.600		8.0	79.0	41.0	36.0	8512 7.600
3.170	1/8	6.0	62.0	20.0	36.0	8512 3.170	7.650		8.0	79.0	41.0	36.0	8512 7.650
3.200		6.0	62.0	20.0	36.0	8512 3.200	7.700		8.0	79.0	41.0	36.0	8512 7.700
3.250		6.0	62.0	20.0	36.0	8512 3.250	7.800		8.0	79.0	41.0	36.0	8512 7.800
3.300		6.0	62.0	20.0	36.0	8512 3.300	7.900		8.0	79.0	41.0	36.0	8512 7.900
3.400		6.0	62.0	20.0	36.0	8512 3.400	7.940	5/16	8.0	79.0	41.0	36.0	8512 7.940
3.500		6.0	62.0	20.0	36.0	8512 3.500	8.000		8.0	79.0	41.0	36.0	8512 8.000
3.570	9/64	6.0	62.0	20.0	36.0	8512 3.570	8.100		10.0	89.0	47.0	40.0	8512 8.100
3.600		6.0	62.0	20.0	36.0	8512 3.600	8.200		10.0	89.0	47.0	40.0	8512 8.200
3.700		6.0	62.0	20.0	36.0	8512 3.700	8.300		10.0	89.0	47.0	40.0	8512 8.300
3.800		6.0	66.0	24.0	36.0	8512 3.800	8.330	21/64	10.0	89.0	47.0	40.0	8512 8.330
3.900		6.0	66.0	24.0	36.0	8512 3.900	8.400		10.0	89.0	47.0	40.0	8512 8.400
3.970	5/32	6.0	66.0	24.0	36.0	8512 3.970	8.500		10.0	89.0	47.0	40.0	8512 8.500
4.000		6.0	66.0	24.0	36.0	8512 4.000	8.600		10.0	89.0	47.0	40.0	8512 8.600
4.040		6.0	66.0	24.0	36.0	8512 4.040	8.700		10.0	89.0	47.0	40.0	8512 8.700
4.100		6.0	66.0	24.0	36.0	8512 4.100	8.730	11/32	10.0	89.0	47.0	40.0	8512 8.730
4.200		6.0	66.0	24.0	36.0	8512 4.200	8.800		10.0	89.0	47.0	40.0	8512 8.800
4.300		6.0	66.0	24.0	36.0	8512 4.300	8.900		10.0	89.0	47.0	40.0	8512 8.900
4.370	11/64	6.0	66.0	24.0	36.0	8512 4.370	9.000		10.0	89.0	47.0	40.0	8512 9.000
4.400		6.0	66.0	24.0	36.0	8512 4.400	9.100		10.0	89.0	47.0	40.0	8512 9.100
4.500		6.0	66.0	24.0	36.0	8512 4.500	9.130	23/64	10.0	89.0	47.0	40.0	8512 9.130
4.600		6.0	66.0	24.0	36.0	8512 4.600	9.200		10.0	89.0	47.0	40.0	8512 9.200
4.650		6.0	66.0	24.0	36.0	8512 4.650	9.250		10.0	89.0	47.0	40.0	8512 9.250
4.700		6.0	66.0	24.0	36.0	8512 4.700	9.300		10.0	89.0	47.0	40.0	8512 9.300
4.760	3/16	6.0	66.0	28.0	36.0	8512 4.760	9.340		10.0	89.0	47.0	40.0	8512 9.340
4.800		6.0	66.0	28.0	36.0	8512 4.800	9.400		10.0	89.0	47.0	40.0	8512 9.400
4.900		6.0	66.0	28.0	36.0	8512 4.900	9.500		10.0	89.0	47.0	40.0	8512 9.500
5.000		6.0	66.0	28.0	36.0	8512 5.000	9.520	3/8	10.0	89.0	47.0	40.0	8512 9.520
5.100		6.0	66.0	28.0	36.0	8512 5.100	9.550		10.0	89.0	47.0	40.0	8512 9.550
5.110		6.0	66.0	28.0	36.0	8512 5.110	9.600		10.0	89.0	47.0	40.0	8512 9.600
5.160	13/64	6.0	66.0	28.0	36.0	8512 5.160	9.700		10.0	89.0	47.0	40.0	8512 9.700
5.200		6.0	66.0	28.0	36.0	8512 5.200	9.800		10.0	89.0	47.0	40.0	8512 9.800
5.300		6.0	66.0	28.0	36.0	8512 5.300	9.900		10.0	89.0	47.0	40.0	8512 9.900
5.400		6.0	66.0	28.0	36.0	8512 5.400	9.920	25/64	10.0	89.0	47.0	40.0	8512 9.920
5.410		6.0	66.0	28.0	36.0	8512 5.410	10.000		10.0	89.0	47.0	40.0	8512 10.000
5.500		6.0	66.0	28.0	36.0	8512 5.500	10.100		12.0	102.0	55.0	45.0	8512 10.100
5.550		6.0	66.0	28.0	36.0	8512 5.550	10.200		12.0	102.0	55.0	45.0	8512 10.200
5.560	7/32	6.0	66.0	28.0	36.0	8512 5.560	10.300		12.0	102.0	55.0	45.0	8512 10.300
5.600		6.0	66.0	28.0	36.0	8512 5.600	10.320	13/32	12.0	102.0	55.0	45.0	8512 10.320
5.700		6.0	66.0	28.0	36.0	8512 5.700	10.400		12.0	102.0	55.0	45.0	8512 10.400
5.800		6.0	66.0	28.0	36.0	8512 5.800	10.500		12.0	102.0	55.0	45.0	8512 10.500
5.900		6.0	66.0	28.0	36.0	8512 5.900	10.600		12.0	102.0	55.0	45.0	8512 10.600
5.950	15/64	6.0	66.0	28.0	36.0	8512 5.950	10.700		12.0	102.0	55.0	45.0	8512 10.700
6.000		6.0	66.0	28.0	36.0	8512 6.000	10.720	27/64	12.0	102.0	55.0	45.0	8512 10.720
6.100		8.0	79.0	34.0	36.0	8512 6.100	10.800		12.0	102.0	55.0	45.0	8512 10.800
6.200		8.0	79.0	34.0	36.0	8512 6.200	10.900		12.0	102.0	55.0	45.0	8512 10.900
6.300		8.0	79.0	34.0	36.0	8512 6.300	11.000		12.0	102.0	55.0	45.0	8512 11.000
6.350	1/4	8.0	79.0	34.0	36.0	8512 6.350	11.100		12.0	102.0	55.0	45.0	8512 11.100
6.400		8.0	79.0	34.0	36.0	8512 6.400	11.110	7/16	12.0	102.0	55.0	45.0	8512 11.110
6.500		8.0	79.0	34.0	36.0	8512 6.500	11.200		12.0	102.0	55.0	45.0	8512 11.200
6.530		8.0	79.0	34.0	36.0	8512 6.530	11.300		12.0	102.0	55.0	45.0	8512 11.300
6.550		8.0	79.0	34.0	36.0	8512 6.550	11.400		12.0	102.0	55.0	45.0	8512 11.400
6.600		8.0	79.0	34.0	36.0	8512 6.600	11.500		12.0	102.0	55.0	45.0	8512 11.500
6.700		8.0	79.0	34.0	36.0	8512 6.700	11.510	29/64	12.0	102.0	55.0	45.0	8512 11.510
6.750	17/64	8.0	79.0	34.0	36.0	8512 6.750	11.550		12.0	102.0	55.0	45.0	8512 11.550
6.800		8.0	79.0	34.0	36.0	8512 6.800	11.600		12.0	102.0	55.0	45.0	8512 11.600
6.900		8.0	79.0	34.0	36.0	8512 6.900	11.700		12.0	102.0	55.0	45.0	8512 11.700
7.000		8.0	79.0	34.0	36.0	8512 7.000	11.800		12.0	102.0	55.0	45.0	8512 11.800
7.100		8.0	79.0	41.0	36.0	8512 7.100	11.900		12.0	102.0	55.0	45.0	8512 11.900
7.140	9/32	8.0	79.0	41.0	36.0	8512 7.140	11.910	15/32	12.0	102.0	55.0	45.0	8512 11.910
7.200		8.0	79.0	41.0	36.0	8512 7.200	12.000		12.0	102.0	55.0	45.0	8512 12.000
7.300		8.0	79.0	41.0	36.0	8512 7.300	12.100		14.0	107.0	60.0	45.0	8512 12.100
7.400		8.0	79.0	41.0	36.0	8512 7.400	12.200		14.0	107.0	60.0	45.0	8512 12.200
7.500		8.0	79.0	41.0	36.0	8512 7.500	12.300	31/64	14.0	107.0	60.0	45.0	8512 12.300
7.540	19/64	8.0	79.0	41.0	36.0	8512 7.540	12.400		14.0	107.0	60.0	45.0	8512 12.400



Article no. 8512						Article no. 8512							
d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
12.500		14.0	107.0	60.0	45.0	8512 12.500	15.900		16.0	115.0	65.0	48.0	8512 15.900
12.600		14.0	107.0	60.0	45.0	8512 12.600	16.000		16.0	115.0	65.0	48.0	8512 16.000
12.700	1/2	14.0	107.0	60.0	45.0	8512 12.700	16.270	41/64	18.0	123.0	73.0	48.0	8512 16.270
12.800		14.0	107.0	60.0	45.0	8512 12.800	16.300		18.0	123.0	73.0	48.0	8512 16.300
12.900		14.0	107.0	60.0	45.0	8512 12.900	16.500		18.0	123.0	73.0	48.0	8512 16.500
13.000		14.0	107.0	60.0	45.0	8512 13.000	16.670	21/32	18.0	123.0	73.0	48.0	8512 16.670
13.100	33/64	14.0	107.0	60.0	45.0	8512 13.100	16.700		18.0	123.0	73.0	48.0	8512 16.700
13.200		14.0	107.0	60.0	45.0	8512 13.200	16.900		18.0	123.0	73.0	48.0	8512 16.900
13.300		14.0	107.0	60.0	45.0	8512 13.300	17.000		18.0	123.0	73.0	48.0	8512 17.000
13.400		14.0	107.0	60.0	45.0	8512 13.400	17.070	43/64	18.0	123.0	73.0	48.0	8512 17.070
13.490	17/32	14.0	107.0	60.0	45.0	8512 13.490	17.460	11/16	18.0	123.0	73.0	48.0	8512 17.460
13.500		14.0	107.0	60.0	45.0	8512 13.500	17.500		18.0	123.0	73.0	48.0	8512 17.500
13.600		14.0	107.0	60.0	45.0	8512 13.600	17.550		18.0	123.0	73.0	48.0	8512 17.550
13.700		14.0	107.0	60.0	45.0	8512 13.700	17.700		18.0	123.0	73.0	48.0	8512 17.700
13.800		14.0	107.0	60.0	45.0	8512 13.800	17.860	45/64	18.0	123.0	73.0	48.0	8512 17.860
13.890	35/64	14.0	107.0	60.0	45.0	8512 13.890	18.000		18.0	123.0	73.0	48.0	8512 18.000
13.900		14.0	107.0	60.0	45.0	8512 13.900	18.260	23/32	20.0	131.0	79.0	50.0	8512 18.260
14.000		14.0	107.0	60.0	45.0	8512 14.000	18.500		20.0	131.0	79.0	50.0	8512 18.500
14.100		16.0	115.0	65.0	48.0	8512 14.100	18.700		20.0	131.0	79.0	50.0	8512 18.700
14.200		16.0	115.0	65.0	48.0	8512 14.200	18.900		20.0	131.0	79.0	50.0	8512 18.900
14.290	9/16	16.0	115.0	65.0	48.0	8512 14.290	19.000		20.0	131.0	79.0	50.0	8512 19.000
14.300		16.0	115.0	65.0	48.0	8512 14.300	19.050	3/4	20.0	131.0	79.0	50.0	8512 19.050
14.400		16.0	115.0	65.0	48.0	8512 14.400	19.250		20.0	131.0	79.0	50.0	8512 19.250
14.500		16.0	115.0	65.0	48.0	8512 14.500	19.300		20.0	131.0	79.0	50.0	8512 19.300
14.600		16.0	115.0	65.0	48.0	8512 14.600	19.450	49/64	20.0	131.0	79.0	50.0	8512 19.450
14.680	37/64	16.0	115.0	65.0	48.0	8512 14.680	19.500		20.0	131.0	79.0	50.0	8512 19.500
14.700		16.0	115.0	65.0	48.0	8512 14.700	19.550		20.0	131.0	79.0	50.0	8512 19.550
14.800		16.0	115.0	65.0	48.0	8512 14.800	19.700		20.0	131.0	79.0	50.0	8512 19.700
14.900		16.0	115.0	65.0	48.0	8512 14.900	19.800		20.0	131.0	79.0	50.0	8512 19.800
15.000		16.0	115.0	65.0	48.0	8512 15.000	19.840	25/32	20.0	131.0	79.0	50.0	8512 19.840
15.080	19/32	16.0	115.0	65.0	48.0	8512 15.080	20.000		20.0	131.0	79.0	50.0	8512 20.000
15.100		16.0	115.0	65.0	48.0	8512 15.100							
15.200		16.0	115.0	65.0	48.0	8512 15.200							
15.300		16.0	115.0	65.0	48.0	8512 15.300							
15.400		16.0	115.0	65.0	48.0	8512 15.400							
15.480	39/64	16.0	115.0	65.0	48.0	8512 15.480							
15.500		16.0	115.0	65.0	48.0	8512 15.500							
15.550		16.0	115.0	65.0	48.0	8512 15.550							
15.600		16.0	115.0	65.0	48.0	8512 15.600							
15.700		16.0	115.0	65.0	48.0	8512 15.700							
15.800		16.0	115.0	65.0	48.0	8512 15.800							
15.870	5/8	16.0	115.0	65.0	48.0	8512 15.870							

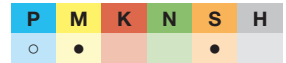


## Ratio drills with coolant ducts

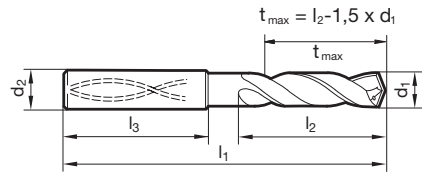
Article no. **8513**



Cutting data page 74



Web thinning  $\geq \varnothing 3.000$  • maximum performance • optimised cutting edge geometry • main cutting edge is slightly concave • exceptional hole quality



Article no. **8513**

Article no. **8513**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.000		6.0	66.0	28.0	36.0	8513 3.000	7.550		8.0	91.0	53.0	36.0	8513 7.550
3.100		6.0	66.0	28.0	36.0	8513 3.100	7.600		8.0	91.0	53.0	36.0	8513 7.600
3.170	1/8	6.0	66.0	28.0	36.0	8513 3.170	7.650		8.0	91.0	53.0	36.0	8513 7.650
3.200		6.0	66.0	28.0	36.0	8513 3.200	7.700		8.0	91.0	53.0	36.0	8513 7.700
3.250		6.0	66.0	28.0	36.0	8513 3.250	7.800		8.0	91.0	53.0	36.0	8513 7.800
3.300		6.0	66.0	28.0	36.0	8513 3.300	7.900		8.0	91.0	53.0	36.0	8513 7.900
3.400		6.0	66.0	28.0	36.0	8513 3.400	7.940	5/16	8.0	91.0	53.0	36.0	8513 7.940
3.500		6.0	66.0	28.0	36.0	8513 3.500	8.000		8.0	91.0	53.0	36.0	8513 8.000
3.570	9/64	6.0	66.0	28.0	36.0	8513 3.570	8.100		10.0	103.0	61.0	40.0	8513 8.100
3.600		6.0	66.0	28.0	36.0	8513 3.600	8.200		10.0	103.0	61.0	40.0	8513 8.200
3.700		6.0	66.0	28.0	36.0	8513 3.700	8.300		10.0	103.0	61.0	40.0	8513 8.300
3.800		6.0	74.0	36.0	36.0	8513 3.800	8.330	21/64	10.0	103.0	61.0	40.0	8513 8.330
3.900		6.0	74.0	36.0	36.0	8513 3.900	8.400		10.0	103.0	61.0	40.0	8513 8.400
3.970	5/32	6.0	74.0	36.0	36.0	8513 3.970	8.500		10.0	103.0	61.0	40.0	8513 8.500
4.000		6.0	74.0	36.0	36.0	8513 4.000	8.600		10.0	103.0	61.0	40.0	8513 8.600
4.040		6.0	74.0	36.0	36.0	8513 4.040	8.700		10.0	103.0	61.0	40.0	8513 8.700
4.100		6.0	74.0	36.0	36.0	8513 4.100	8.730	11/32	10.0	103.0	61.0	40.0	8513 8.730
4.200		6.0	74.0	36.0	36.0	8513 4.200	8.800		10.0	103.0	61.0	40.0	8513 8.800
4.300		6.0	74.0	36.0	36.0	8513 4.300	8.900		10.0	103.0	61.0	40.0	8513 8.900
4.370	11/64	6.0	74.0	36.0	36.0	8513 4.370	9.000		10.0	103.0	61.0	40.0	8513 9.000
4.400		6.0	74.0	36.0	36.0	8513 4.400	9.100		10.0	103.0	61.0	40.0	8513 9.100
4.500		6.0	74.0	36.0	36.0	8513 4.500	9.130	23/64	10.0	103.0	61.0	40.0	8513 9.130
4.600		6.0	74.0	36.0	36.0	8513 4.600	9.200		10.0	103.0	61.0	40.0	8513 9.200
4.650		6.0	74.0	36.0	36.0	8513 4.650	9.250		10.0	103.0	61.0	40.0	8513 9.250
4.700		6.0	74.0	36.0	36.0	8513 4.700	9.300		10.0	103.0	61.0	40.0	8513 9.300
4.760	3/16	6.0	82.0	44.0	36.0	8513 4.760	9.340		10.0	103.0	61.0	40.0	8513 9.340
4.800		6.0	82.0	44.0	36.0	8513 4.800	9.400		10.0	103.0	61.0	40.0	8513 9.400
4.900		6.0	82.0	44.0	36.0	8513 4.900	9.500		10.0	103.0	61.0	40.0	8513 9.500
5.000		6.0	82.0	44.0	36.0	8513 5.000	9.520	3/8	10.0	103.0	61.0	40.0	8513 9.520
5.100		6.0	82.0	44.0	36.0	8513 5.100	9.550		10.0	103.0	61.0	40.0	8513 9.550
5.110		6.0	82.0	44.0	36.0	8513 5.110	9.600		10.0	103.0	61.0	40.0	8513 9.600
5.160	13/64	6.0	82.0	44.0	36.0	8513 5.160	9.700		10.0	103.0	61.0	40.0	8513 9.700
5.200		6.0	82.0	44.0	36.0	8513 5.200	9.800		10.0	103.0	61.0	40.0	8513 9.800
5.300		6.0	82.0	44.0	36.0	8513 5.300	9.900		10.0	103.0	61.0	40.0	8513 9.900
5.400		6.0	82.0	44.0	36.0	8513 5.400	9.920	25/64	10.0	103.0	61.0	40.0	8513 9.920
5.410		6.0	82.0	44.0	36.0	8513 5.410	10.000		10.0	103.0	61.0	40.0	8513 10.000
5.500		6.0	82.0	44.0	36.0	8513 5.500	10.100		12.0	118.0	71.0	45.0	8513 10.100
5.550		6.0	82.0	44.0	36.0	8513 5.550	10.200		12.0	118.0	71.0	45.0	8513 10.200
5.560	7/32	6.0	82.0	44.0	36.0	8513 5.560	10.300		12.0	118.0	71.0	45.0	8513 10.300
5.600		6.0	82.0	44.0	36.0	8513 5.600	10.320	13/32	12.0	118.0	71.0	45.0	8513 10.320
5.700		6.0	82.0	44.0	36.0	8513 5.700	10.400		12.0	118.0	71.0	45.0	8513 10.400
5.800		6.0	82.0	44.0	36.0	8513 5.800	10.500		12.0	118.0	71.0	45.0	8513 10.500
5.900		6.0	82.0	44.0	36.0	8513 5.900	10.600		12.0	118.0	71.0	45.0	8513 10.600
5.950	15/64	6.0	82.0	44.0	36.0	8513 5.950	10.700		12.0	118.0	71.0	45.0	8513 10.700
6.000		6.0	82.0	44.0	36.0	8513 6.000	10.720	27/64	12.0	118.0	71.0	45.0	8513 10.720
6.100		8.0	91.0	53.0	36.0	8513 6.100	10.800		12.0	118.0	71.0	45.0	8513 10.800
6.200		8.0	91.0	53.0	36.0	8513 6.200	10.900		12.0	118.0	71.0	45.0	8513 10.900
6.300		8.0	91.0	53.0	36.0	8513 6.300	11.000		12.0	118.0	71.0	45.0	8513 11.000
6.350	1/4	8.0	91.0	53.0	36.0	8513 6.350	11.100		12.0	118.0	71.0	45.0	8513 11.100
6.400		8.0	91.0	53.0	36.0	8513 6.400	11.110	7/16	12.0	118.0	71.0	45.0	8513 11.110
6.500		8.0	91.0	53.0	36.0	8513 6.500	11.200		12.0	118.0	71.0	45.0	8513 11.200
6.530		8.0	91.0	53.0	36.0	8513 6.530	11.300		12.0	118.0	71.0	45.0	8513 11.300
6.550		8.0	91.0	53.0	36.0	8513 6.550	11.400		12.0	118.0	71.0	45.0	8513 11.400
6.600		8.0	91.0	53.0	36.0	8513 6.600	11.500		12.0	118.0	71.0	45.0	8513 11.500
6.700		8.0	91.0	53.0	36.0	8513 6.700	11.510	29/64	12.0	118.0	71.0	45.0	8513 11.510
6.750	17/64	8.0	91.0	53.0	36.0	8513 6.750	11.550		12.0	118.0	71.0	45.0	8513 11.550
6.800		8.0	91.0	53.0	36.0	8513 6.800	11.600		12.0	118.0	71.0	45.0	8513 11.600
6.900		8.0	91.0	53.0	36.0	8513 6.900	11.700		12.0	118.0	71.0	45.0	8513 11.700
7.000		8.0	91.0	53.0	36.0	8513 7.000	11.800		12.0	118.0	71.0	45.0	8513 11.800
7.100		8.0	91.0	53.0	36.0	8513 7.100	11.900		12.0	118.0	71.0	45.0	8513 11.900
7.140	9/32	8.0	91.0	53.0	36.0	8513 7.140	11.910	15/32	12.0	118.0	71.0	45.0	8513 11.910
7.200		8.0	91.0	53.0	36.0	8513 7.200	12.000		12.0	118.0	71.0	45.0	8513 12.000
7.300		8.0	91.0	53.0	36.0	8513 7.300	12.100		14.0	124.0	77.0	45.0	8513 12.100
7.400		8.0	91.0	53.0	36.0	8513 7.400	12.200		14.0	124.0	77.0	45.0	8513 12.200
7.500		8.0	91.0	53.0	36.0	8513 7.500	12.300	31/64	14.0	124.0	77.0	45.0	8513 12.300
7.540	19/64	8.0	91.0	53.0	36.0	8513 7.540	12.400		14.0	124.0	77.0	45.0	8513 12.400



Article no. 8513						Article no. 8513							
d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
12.500		14.0	124.0	77.0	45.0	8513 12.500	15.900		16.0	133.0	83.0	48.0	8513 15.900
12.600		14.0	124.0	77.0	45.0	8513 12.600	16.000		16.0	133.0	83.0	48.0	8513 16.000
12.700	1/2	14.0	124.0	77.0	45.0	8513 12.700	16.270	41/64	18.0	143.0	93.0	48.0	8513 16.270
12.800		14.0	124.0	77.0	45.0	8513 12.800	16.300		18.0	143.0	93.0	48.0	8513 16.300
12.900		14.0	124.0	77.0	45.0	8513 12.900	16.500		18.0	143.0	93.0	48.0	8513 16.500
13.000		14.0	124.0	77.0	45.0	8513 13.000	16.670	21/32	18.0	143.0	93.0	48.0	8513 16.670
13.100	33/64	14.0	124.0	77.0	45.0	8513 13.100	16.700		18.0	143.0	93.0	48.0	8513 16.700
13.200		14.0	124.0	77.0	45.0	8513 13.200	16.900		18.0	143.0	93.0	48.0	8513 16.900
13.300		14.0	124.0	77.0	45.0	8513 13.300	17.000		18.0	143.0	93.0	48.0	8513 17.000
13.400		14.0	124.0	77.0	45.0	8513 13.400	17.070	43/64	18.0	143.0	93.0	48.0	8513 17.070
13.490	17/32	14.0	124.0	77.0	45.0	8513 13.490	17.460	11/16	18.0	143.0	93.0	48.0	8513 17.460
13.500		14.0	124.0	77.0	45.0	8513 13.500	17.500		18.0	143.0	93.0	48.0	8513 17.500
13.600		14.0	124.0	77.0	45.0	8513 13.600	17.550		18.0	143.0	93.0	48.0	8513 17.550
13.700		14.0	124.0	77.0	45.0	8513 13.700	17.700		18.0	143.0	93.0	48.0	8513 17.700
13.800		14.0	124.0	77.0	45.0	8513 13.800	17.860	45/64	18.0	143.0	93.0	48.0	8513 17.860
13.890	35/64	14.0	124.0	77.0	45.0	8513 13.890	18.000		18.0	143.0	93.0	48.0	8513 18.000
13.900		14.0	124.0	77.0	45.0	8513 13.900	18.260	23/32	20.0	153.0	101.0	50.0	8513 18.260
14.000		14.0	124.0	77.0	45.0	8513 14.000	18.500		20.0	153.0	101.0	50.0	8513 18.500
14.100		16.0	133.0	83.0	48.0	8513 14.100	18.700		20.0	153.0	101.0	50.0	8513 18.700
14.200		16.0	133.0	83.0	48.0	8513 14.200	18.900		20.0	153.0	101.0	50.0	8513 18.900
14.290	9/16	16.0	133.0	83.0	48.0	8513 14.290	19.000		20.0	153.0	101.0	50.0	8513 19.000
14.300		16.0	133.0	83.0	48.0	8513 14.300	19.050	3/4	20.0	153.0	101.0	50.0	8513 19.050
14.400		16.0	133.0	83.0	48.0	8513 14.400	19.250		20.0	153.0	101.0	50.0	8513 19.250
14.500		16.0	133.0	83.0	48.0	8513 14.500	19.300		20.0	153.0	101.0	50.0	8513 19.300
14.600		16.0	133.0	83.0	48.0	8513 14.600	19.450	49/64	20.0	153.0	101.0	50.0	8513 19.450
14.680	37/64	16.0	133.0	83.0	48.0	8513 14.680	19.500		20.0	153.0	101.0	50.0	8513 19.500
14.700		16.0	133.0	83.0	48.0	8513 14.700	19.550		20.0	153.0	101.0	50.0	8513 19.550
14.800		16.0	133.0	83.0	48.0	8513 14.800	19.700		20.0	153.0	101.0	50.0	8513 19.700
14.900		16.0	133.0	83.0	48.0	8513 14.900	19.800		20.0	153.0	101.0	50.0	8513 19.800
15.000		16.0	133.0	83.0	48.0	8513 15.000	19.840	25/32	20.0	153.0	101.0	50.0	8513 19.840
15.080	19/32	16.0	133.0	83.0	48.0	8513 15.080	20.000		20.0	153.0	101.0	50.0	8513 20.000
15.100		16.0	133.0	83.0	48.0	8513 15.100							
15.200		16.0	133.0	83.0	48.0	8513 15.200							
15.300		16.0	133.0	83.0	48.0	8513 15.300							
15.400		16.0	133.0	83.0	48.0	8513 15.400							
15.480	39/64	16.0	133.0	83.0	48.0	8513 15.480							
15.500		16.0	133.0	83.0	48.0	8513 15.500							
15.550		16.0	133.0	83.0	48.0	8513 15.550							
15.600		16.0	133.0	83.0	48.0	8513 15.600							
15.700		16.0	133.0	83.0	48.0	8513 15.700							
15.800		16.0	133.0	83.0	48.0	8513 15.800							
15.870	5/8	16.0	133.0	83.0	48.0	8513 15.870							



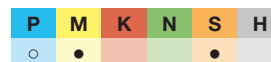


## Ratio drills with coolant ducts

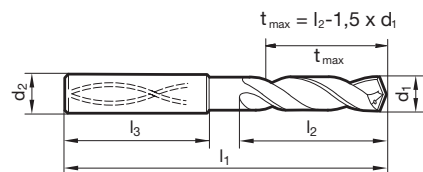
Article no. **8514**



Cutting data page 75



Web thinning  $\geq \varnothing 3.000$  • maximum performance • optimised cutting edge geometry • main cutting edge is slightly concave • exceptional hole quality



Article no. **8514**

Article no. **8514**

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.000		6.0	70.0	30.0	36.0	8514 3.000	7.550		8.0	116.0	76.0	36.0	8514 7.550
3.100		6.0	70.0	30.0	36.0	8514 3.100	7.600		8.0	116.0	76.0	36.0	8514 7.600
3.170	1/8	6.0	70.0	30.0	36.0	8514 3.170	7.650		8.0	116.0	76.0	36.0	8514 7.650
3.200		6.0	70.0	30.0	36.0	8514 3.200	7.700		8.0	116.0	76.0	36.0	8514 7.700
3.250		6.0	70.0	30.0	36.0	8514 3.250	7.800		8.0	116.0	76.0	36.0	8514 7.800
3.300		6.0	70.0	30.0	36.0	8514 3.300	7.900		8.0	116.0	76.0	36.0	8514 7.900
3.400		6.0	75.0	35.5	36.0	8514 3.400	7.940	5/16	8.0	116.0	76.0	36.0	8514 7.940
3.500		6.0	75.0	35.5	36.0	8514 3.500	8.000		8.0	116.0	76.0	36.0	8514 8.000
3.570	9/64	6.0	75.0	35.5	36.0	8514 3.570	8.100		10.0	131.0	87.0	40.0	8514 8.100
3.600		6.0	75.0	35.5	36.0	8514 3.600	8.200		10.0	131.0	87.0	40.0	8514 8.200
3.700		6.0	75.0	35.5	36.0	8514 3.700	8.300		10.0	131.0	87.0	40.0	8514 8.300
3.800		6.0	75.0	37.5	36.0	8514 3.800	8.330	21/64	10.0	131.0	87.0	40.0	8514 8.330
3.900		6.0	75.0	37.5	36.0	8514 3.900	8.400		10.0	131.0	87.0	40.0	8514 8.400
3.970	5/32	6.0	75.0	37.5	36.0	8514 3.970	8.500		10.0	131.0	87.0	40.0	8514 8.500
4.000		6.0	75.0	37.5	36.0	8514 4.000	8.600		10.0	131.0	87.0	40.0	8514 8.600
4.040		6.0	75.0	37.5	36.0	8514 4.040	8.700		10.0	131.0	87.0	40.0	8514 8.700
4.100		6.0	75.0	37.5	36.0	8514 4.100	8.730	11/32	10.0	131.0	87.0	40.0	8514 8.730
4.200		6.0	75.0	37.5	36.0	8514 4.200	8.800		10.0	131.0	87.0	40.0	8514 8.800
4.300		6.0	85.0	45.0	36.0	8514 4.300	8.900		10.0	131.0	87.0	40.0	8514 8.900
4.370	11/64	6.0	85.0	45.0	36.0	8514 4.370	9.000		10.0	131.0	87.0	40.0	8514 9.000
4.400		6.0	85.0	45.0	36.0	8514 4.400	9.100		10.0	139.0	95.0	40.0	8514 9.100
4.500		6.0	85.0	45.0	36.0	8514 4.500	9.130	23/64	10.0	139.0	95.0	40.0	8514 9.130
4.600		6.0	85.0	45.0	36.0	8514 4.600	9.200		10.0	139.0	95.0	40.0	8514 9.200
4.650		6.0	85.0	45.0	36.0	8514 4.650	9.250		10.0	139.0	95.0	40.0	8514 9.250
4.700		6.0	85.0	45.0	36.0	8514 4.700	9.300		10.0	139.0	95.0	40.0	8514 9.300
4.760	3/16	6.0	90.0	50.0	36.0	8514 4.760	9.340		10.0	139.0	95.0	40.0	8514 9.340
4.800		6.0	90.0	50.0	36.0	8514 4.800	9.400		10.0	139.0	95.0	40.0	8514 9.400
4.900		6.0	90.0	50.0	36.0	8514 4.900	9.500		10.0	139.0	95.0	40.0	8514 9.500
5.000		6.0	90.0	50.0	36.0	8514 5.000	9.520	3/8	10.0	139.0	95.0	40.0	8514 9.520
5.100		6.0	90.0	50.0	36.0	8514 5.100	9.550		10.0	139.0	95.0	40.0	8514 9.550
5.110		6.0	90.0	50.0	36.0	8514 5.110	9.600		10.0	139.0	95.0	40.0	8514 9.600
5.160	13/64	6.0	90.0	50.0	36.0	8514 5.160	9.700		10.0	139.0	95.0	40.0	8514 9.700
5.200		6.0	90.0	50.0	36.0	8514 5.200	9.800		10.0	139.0	95.0	40.0	8514 9.800
5.300		6.0	90.0	50.0	36.0	8514 5.300	9.900		10.0	139.0	95.0	40.0	8514 9.900
5.400		6.0	97.0	57.0	36.0	8514 5.400	9.920	25/64	10.0	139.0	95.0	40.0	8514 9.920
5.410		6.0	97.0	57.0	36.0	8514 5.410	10.000		10.0	139.0	95.0	40.0	8514 10.000
5.500		6.0	97.0	57.0	36.0	8514 5.500	10.100		12.0	155.0	106.0	45.0	8514 10.100
5.550		6.0	97.0	57.0	36.0	8514 5.550	10.200		12.0	155.0	106.0	45.0	8514 10.200
5.560	7/32	6.0	97.0	57.0	36.0	8514 5.560	10.300		12.0	155.0	106.0	45.0	8514 10.300
5.600		6.0	97.0	57.0	36.0	8514 5.600	10.320	13/32	12.0	155.0	106.0	45.0	8514 10.320
5.700		6.0	97.0	57.0	36.0	8514 5.700	10.400		12.0	155.0	106.0	45.0	8514 10.400
5.800		6.0	97.0	57.0	36.0	8514 5.800	10.500		12.0	155.0	106.0	45.0	8514 10.500
5.900		6.0	97.0	57.0	36.0	8514 5.900	10.600		12.0	155.0	106.0	45.0	8514 10.600
5.950	15/64	6.0	97.0	57.0	36.0	8514 5.950	10.700		12.0	155.0	106.0	45.0	8514 10.700
6.000		6.0	97.0	57.0	36.0	8514 6.000	10.720	27/64	12.0	155.0	106.0	45.0	8514 10.720
6.100		8.0	106.0	66.0	36.0	8514 6.100	10.800		12.0	155.0	106.0	45.0	8514 10.800
6.200		8.0	106.0	66.0	36.0	8514 6.200	10.900		12.0	155.0	106.0	45.0	8514 10.900
6.300		8.0	106.0	66.0	36.0	8514 6.300	11.000		12.0	155.0	106.0	45.0	8514 11.000
6.350	1/4	8.0	106.0	66.0	36.0	8514 6.350	11.100		12.0	163.0	114.0	45.0	8514 11.100
6.400		8.0	106.0	66.0	36.0	8514 6.400	11.110	7/16	12.0	163.0	114.0	45.0	8514 11.110
6.500		8.0	106.0	66.0	36.0	8514 6.500	11.200		12.0	163.0	114.0	45.0	8514 11.200
6.530		8.0	106.0	66.0	36.0	8514 6.530	11.300		12.0	163.0	114.0	45.0	8514 11.300
6.550		8.0	106.0	66.0	36.0	8514 6.550	11.400		12.0	163.0	114.0	45.0	8514 11.400
6.600		8.0	106.0	66.0	36.0	8514 6.600	11.500		12.0	163.0	114.0	45.0	8514 11.500
6.700		8.0	106.0	66.0	36.0	8514 6.700	11.510	29/64	12.0	163.0	114.0	45.0	8514 11.510
6.750	17/64	8.0	106.0	66.0	36.0	8514 6.750	11.550		12.0	163.0	114.0	45.0	8514 11.550
6.800		8.0	106.0	66.0	36.0	8514 6.800	11.600		12.0	163.0	114.0	45.0	8514 11.600
6.900		8.0	116.0	76.0	36.0	8514 6.900	11.700		12.0	163.0	114.0	45.0	8514 11.700
7.000		8.0	116.0	76.0	36.0	8514 7.000	11.800		12.0	163.0	114.0	45.0	8514 11.800
7.100		8.0	116.0	76.0	36.0	8514 7.100	11.900		12.0	163.0	114.0	45.0	8514 11.900
7.140	9/32	8.0	116.0	76.0	36.0	8514 7.140	11.910	15/32	12.0	163.0	114.0	45.0	8514 11.910
7.200		8.0	116.0	76.0	36.0	8514 7.200	12.000		12.0	163.0	114.0	45.0	8514 12.000
7.300		8.0	116.0	76.0	36.0	8514 7.300	12.100		14.0	182.0	133.0	45.0	8514 12.100
7.400		8.0	116.0	76.0	36.0	8514 7.400	12.200		14.0	182.0	133.0	45.0	8514 12.200
7.500		8.0	116.0	76.0	36.0	8514 7.500	12.300	31/64	14.0	182.0	133.0	45.0	8514 12.300
7.540	19/64	8.0	116.0	76.0	36.0	8514 7.540	12.400		14.0	182.0	133.0	45.0	8514 12.400



Article no. 8514						Article no. 8514							
d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
12.500		14.0	182.0	133.0	45.0	8514 12.500	15.900		16.0	204.0	152.0	48.0	8514 15.900
12.600		14.0	182.0	133.0	45.0	8514 12.600	16.000		16.0	204.0	152.0	48.0	8514 16.000
12.700	1/2	14.0	182.0	133.0	45.0	8514 12.700	16.270	41/64	18.0	223.0	171.0	48.0	8514 16.270
12.800		14.0	182.0	133.0	45.0	8514 12.800	16.300		18.0	223.0	171.0	48.0	8514 16.300
12.900		14.0	182.0	133.0	45.0	8514 12.900	16.500		18.0	223.0	171.0	48.0	8514 16.500
13.000		14.0	182.0	133.0	45.0	8514 13.000	16.670	21/32	18.0	223.0	171.0	48.0	8514 16.670
13.100	33/64	14.0	182.0	133.0	45.0	8514 13.100	16.700		18.0	223.0	171.0	48.0	8514 16.700
13.200		14.0	182.0	133.0	45.0	8514 13.200	16.900		18.0	223.0	171.0	48.0	8514 16.900
13.300		14.0	182.0	133.0	45.0	8514 13.300	17.000		18.0	223.0	171.0	48.0	8514 17.000
13.400		14.0	182.0	133.0	45.0	8514 13.400	17.070	43/64	18.0	223.0	171.0	48.0	8514 17.070
13.490	17/32	14.0	182.0	133.0	45.0	8514 13.490	17.460	11/16	18.0	223.0	171.0	48.0	8514 17.460
13.500		14.0	182.0	133.0	45.0	8514 13.500	17.500		18.0	223.0	171.0	48.0	8514 17.500
13.600		14.0	182.0	133.0	45.0	8514 13.600	17.550		18.0	223.0	171.0	48.0	8514 17.550
13.700		14.0	182.0	133.0	45.0	8514 13.700	17.700		18.0	223.0	171.0	48.0	8514 17.700
13.800		14.0	182.0	133.0	45.0	8514 13.800	17.860	45/64	18.0	223.0	171.0	48.0	8514 17.860
13.890	35/64	14.0	182.0	133.0	45.0	8514 13.890	18.000		18.0	223.0	171.0	48.0	8514 18.000
13.900		14.0	182.0	133.0	45.0	8514 13.900	18.260	23/32	20.0	244.0	190.0	50.0	8514 18.260
14.000		14.0	182.0	133.0	45.0	8514 14.000	18.500		20.0	244.0	190.0	50.0	8514 18.500
14.100		16.0	204.0	152.0	48.0	8514 14.100	18.700		20.0	244.0	190.0	50.0	8514 18.700
14.200		16.0	204.0	152.0	48.0	8514 14.200	18.900		20.0	244.0	190.0	50.0	8514 18.900
14.290	9/16	16.0	204.0	152.0	48.0	8514 14.290	19.000		20.0	244.0	190.0	50.0	8514 19.000
14.300		16.0	204.0	152.0	48.0	8514 14.300	19.050	3/4	20.0	244.0	190.0	50.0	8514 19.050
14.400		16.0	204.0	152.0	48.0	8514 14.400	19.250		20.0	244.0	190.0	50.0	8514 19.250
14.500		16.0	204.0	152.0	48.0	8514 14.500	19.300		20.0	244.0	190.0	50.0	8514 19.300
14.600		16.0	204.0	152.0	48.0	8514 14.600	19.450	49/64	20.0	244.0	190.0	50.0	8514 19.450
14.680	37/64	16.0	204.0	152.0	48.0	8514 14.680	19.500		20.0	244.0	190.0	50.0	8514 19.500
14.700		16.0	204.0	152.0	48.0	8514 14.700	19.550		20.0	244.0	190.0	50.0	8514 19.550
14.800		16.0	204.0	152.0	48.0	8514 14.800	19.700		20.0	244.0	190.0	50.0	8514 19.700
14.900		16.0	204.0	152.0	48.0	8514 14.900	19.800		20.0	244.0	190.0	50.0	8514 19.800
15.000		16.0	204.0	152.0	48.0	8514 15.000	19.840	25/32	20.0	244.0	190.0	50.0	8514 19.840
15.080	19/32	16.0	204.0	152.0	48.0	8514 15.080	20.000		20.0	244.0	190.0	50.0	8514 20.000
15.100		16.0	204.0	152.0	48.0	8514 15.100							
15.200		16.0	204.0	152.0	48.0	8514 15.200							
15.300		16.0	204.0	152.0	48.0	8514 15.300							
15.400		16.0	204.0	152.0	48.0	8514 15.400							
15.480	39/64	16.0	204.0	152.0	48.0	8514 15.480							
15.500		16.0	204.0	152.0	48.0	8514 15.500							
15.550		16.0	204.0	152.0	48.0	8514 15.550							
15.600		16.0	204.0	152.0	48.0	8514 15.600							
15.700		16.0	204.0	152.0	48.0	8514 15.700							
15.800		16.0	204.0	152.0	48.0	8514 15.800							
15.870	5/8	16.0	204.0	152.0	48.0	8514 15.870							

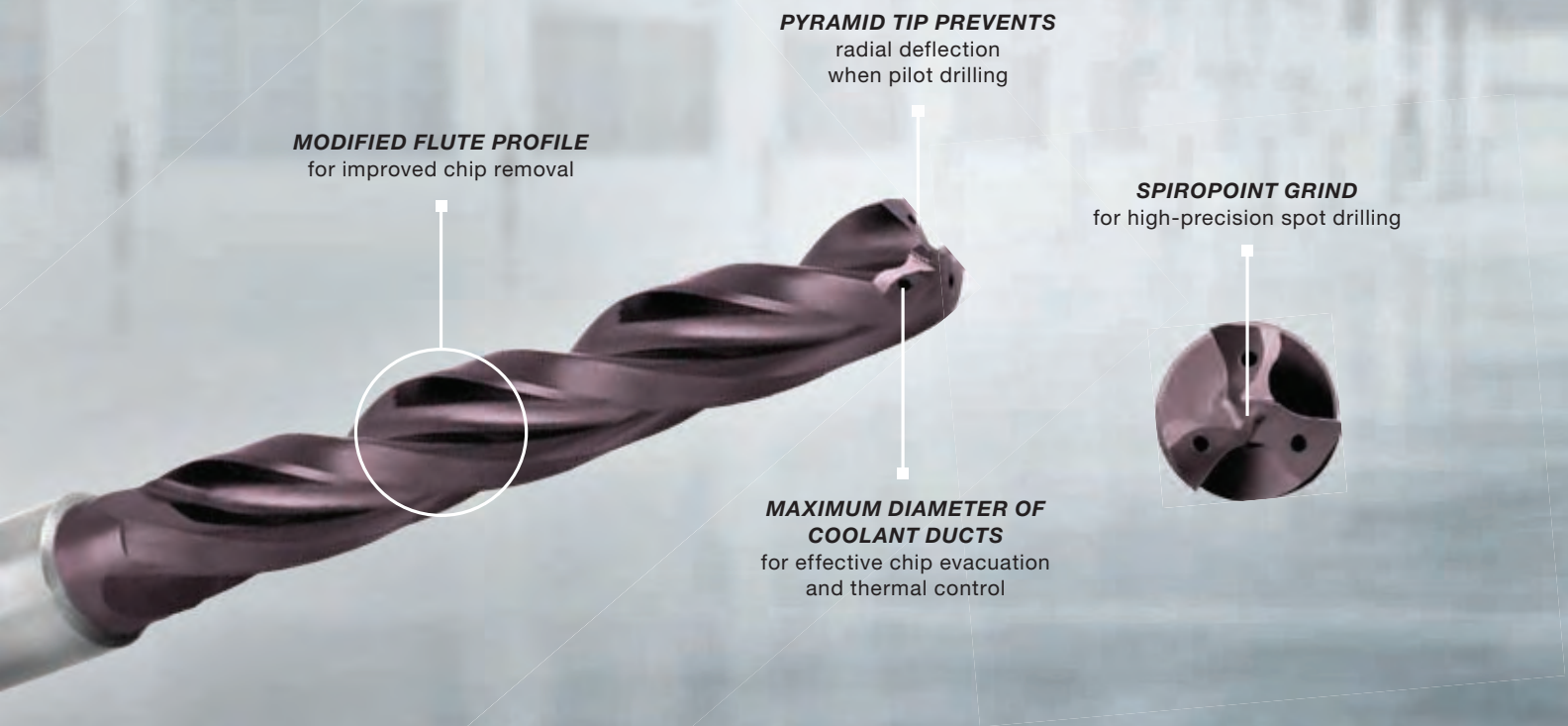


# FT 200 U solid carbide three-fluted drill



## High feed drill for reduced cycle times

good self-centring | perfect material penetration properties | cost-effective machining



**MODIFIED FLUTE PROFILE**  
for improved chip removal

**PYRAMID TIP PREVENTS**  
radial deflection  
when pilot drilling

**SPIROPOINT GRIND**  
for high-precision spot drilling

**MAXIMUM DIAMETER OF  
COOLANT DUCTS**  
for effective chip evacuation  
and thermal control

## Powerful and smooth under all operating conditions

The 3-fluted solid carbide drill FT 200 U ensures good self-centring thanks to its pyramid tip and has perfect material penetration properties in combination with the in-house designed web thinning. Thanks to the specially developed Spiropoint grind, the point angle is shaped like a funnel and enables high-precision spot drilling. The FT 200 U is able to achieve optimal chips with its modified flute profile that curls chips tightly and breaks them reliably. When combined with a sickle-shaped cutter, the drill significantly reduces work hardening thus lowering the stress factor of the material.



Ratio drills with coolant ducts, 3-fluted

Article no. **6589**

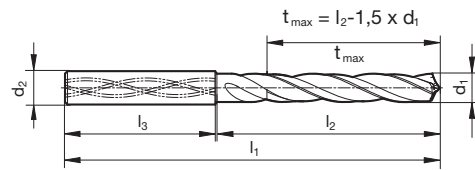


Cutting data page 76



<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	○	●	○	○	○

Web thinning ≥ Ø 4.000 • spiropoint grind • optimal centering • suitable for interrupted cutting • maximum performance



Article no.

**6589**

Article no.

**6589**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
4.000		6.0	66.0	24.0	36.0	6589 4.000	8.600		10.0	89.0	47.0	40.0	6589 8.600
4.040		6.0	66.0	24.0	36.0	6589 4.040	8.700		10.0	89.0	47.0	40.0	6589 8.700
4.100		6.0	66.0	24.0	36.0	6589 4.100	8.730	11/32	10.0	89.0	47.0	40.0	6589 8.730
4.200		6.0	66.0	24.0	36.0	6589 4.200	8.800		10.0	89.0	47.0	40.0	6589 8.800
4.300		6.0	66.0	24.0	36.0	6589 4.300	8.900		10.0	89.0	47.0	40.0	6589 8.900
4.370	11/64	6.0	66.0	24.0	36.0	6589 4.370	9.000		10.0	89.0	47.0	40.0	6589 9.000
4.400		6.0	66.0	24.0	36.0	6589 4.400	9.100		10.0	89.0	47.0	40.0	6589 9.100
4.500		6.0	66.0	24.0	36.0	6589 4.500	9.130	23/64	10.0	89.0	47.0	40.0	6589 9.130
4.600		6.0	66.0	24.0	36.0	6589 4.600	9.200		10.0	89.0	47.0	40.0	6589 9.200
4.650		6.0	66.0	24.0	36.0	6589 4.650	9.250		10.0	89.0	47.0	40.0	6589 9.250
4.700		6.0	66.0	24.0	36.0	6589 4.700	9.300		10.0	89.0	47.0	40.0	6589 9.300
4.760	3/16	6.0	66.0	28.0	36.0	6589 4.760	9.340		10.0	89.0	47.0	40.0	6589 9.340
4.800		6.0	66.0	28.0	36.0	6589 4.800	9.400		10.0	89.0	47.0	40.0	6589 9.400
4.900		6.0	66.0	28.0	36.0	6589 4.900	9.500		10.0	89.0	47.0	40.0	6589 9.500
5.000		6.0	66.0	28.0	36.0	6589 5.000	9.520	3/8	10.0	89.0	47.0	40.0	6589 9.520
5.100		6.0	66.0	28.0	36.0	6589 5.100	9.550		10.0	89.0	47.0	40.0	6589 9.550
5.110		6.0	66.0	28.0	36.0	6589 5.110	9.600		10.0	89.0	47.0	40.0	6589 9.600
5.160	13/64	6.0	66.0	28.0	36.0	6589 5.160	9.700		10.0	89.0	47.0	40.0	6589 9.700
5.200		6.0	66.0	28.0	36.0	6589 5.200	9.800		10.0	89.0	47.0	40.0	6589 9.800
5.300		6.0	66.0	28.0	36.0	6589 5.300	9.900		10.0	89.0	47.0	40.0	6589 9.900
5.400		6.0	66.0	28.0	36.0	6589 5.400	9.920	25/64	10.0	89.0	47.0	40.0	6589 9.920
5.410		6.0	66.0	28.0	36.0	6589 5.410	10.000		10.0	89.0	47.0	40.0	6589 10.000
5.500		6.0	66.0	28.0	36.0	6589 5.500	10.100		12.0	102.0	55.0	45.0	6589 10.100
5.550		6.0	66.0	28.0	36.0	6589 5.550	10.200		12.0	102.0	55.0	45.0	6589 10.200
5.560	7/32	6.0	66.0	28.0	36.0	6589 5.560	10.300		12.0	102.0	55.0	45.0	6589 10.300
5.600		6.0	66.0	28.0	36.0	6589 5.600	10.320	13/32	12.0	102.0	55.0	45.0	6589 10.320
5.700		6.0	66.0	28.0	36.0	6589 5.700	10.400		12.0	102.0	55.0	45.0	6589 10.400
5.800		6.0	66.0	28.0	36.0	6589 5.800	10.500		12.0	102.0	55.0	45.0	6589 10.500
5.900		6.0	66.0	28.0	36.0	6589 5.900	10.600		12.0	102.0	55.0	45.0	6589 10.600
5.950	15/64	6.0	66.0	28.0	36.0	6589 5.950	10.700		12.0	102.0	55.0	45.0	6589 10.700
6.000		6.0	66.0	28.0	36.0	6589 6.000	10.720	27/64	12.0	102.0	55.0	45.0	6589 10.720
6.100		8.0	79.0	34.0	36.0	6589 6.100	10.800		12.0	102.0	55.0	45.0	6589 10.800
6.200		8.0	79.0	34.0	36.0	6589 6.200	10.900		12.0	102.0	55.0	45.0	6589 10.900
6.300		8.0	79.0	34.0	36.0	6589 6.300	11.000		12.0	102.0	55.0	45.0	6589 11.000
6.350	1/4	8.0	79.0	34.0	36.0	6589 6.350	11.100		12.0	102.0	55.0	45.0	6589 11.100
6.400		8.0	79.0	34.0	36.0	6589 6.400	11.110	7/16	12.0	102.0	55.0	45.0	6589 11.110
6.500		8.0	79.0	34.0	36.0	6589 6.500	11.200		12.0	102.0	55.0	45.0	6589 11.200
6.530		8.0	79.0	34.0	36.0	6589 6.530	11.300		12.0	102.0	55.0	45.0	6589 11.300
6.550		8.0	79.0	34.0	36.0	6589 6.550	11.400		12.0	102.0	55.0	45.0	6589 11.400
6.600		8.0	79.0	34.0	36.0	6589 6.600	11.500		12.0	102.0	55.0	45.0	6589 11.500
6.700		8.0	79.0	34.0	36.0	6589 6.700	11.510	29/64	12.0	102.0	55.0	45.0	6589 11.510
6.750	17/64	8.0	79.0	34.0	36.0	6589 6.750	11.550		12.0	102.0	55.0	45.0	6589 11.550
6.800		8.0	79.0	34.0	36.0	6589 6.800	11.600		12.0	102.0	55.0	45.0	6589 11.600
6.900		8.0	79.0	34.0	36.0	6589 6.900	11.700		12.0	102.0	55.0	45.0	6589 11.700
7.000		8.0	79.0	34.0	36.0	6589 7.000	11.800		12.0	102.0	55.0	45.0	6589 11.800
7.100		8.0	79.0	41.0	36.0	6589 7.100	11.900		12.0	102.0	55.0	45.0	6589 11.900
7.140	9/32	8.0	79.0	41.0	36.0	6589 7.140	11.910	15/32	12.0	102.0	55.0	45.0	6589 11.910
7.200		8.0	79.0	41.0	36.0	6589 7.200	12.000		12.0	102.0	55.0	45.0	6589 12.000
7.300		8.0	79.0	41.0	36.0	6589 7.300	12.100		14.0	107.0	60.0	45.0	6589 12.100
7.400		8.0	79.0	41.0	36.0	6589 7.400	12.200		14.0	107.0	60.0	45.0	6589 12.200
7.500		8.0	79.0	41.0	36.0	6589 7.500	12.300	31/64	14.0	107.0	60.0	45.0	6589 12.300
7.540	19/64	8.0	79.0	41.0	36.0	6589 7.540	12.400		14.0	107.0	60.0	45.0	6589 12.400
7.550		8.0	79.0	41.0	36.0	6589 7.550	12.500		14.0	107.0	60.0	45.0	6589 12.500
7.600		8.0	79.0	41.0	36.0	6589 7.600	12.600		14.0	107.0	60.0	45.0	6589 12.600
7.650		8.0	79.0	41.0	36.0	6589 7.650	12.700	1/2	14.0	107.0	60.0	45.0	6589 12.700
7.700		8.0	79.0	41.0	36.0	6589 7.700	12.800		14.0	107.0	60.0	45.0	6589 12.800
7.800		8.0	79.0	41.0	36.0	6589 7.800	12.900		14.0	107.0	60.0	45.0	6589 12.900
7.900		8.0	79.0	41.0	36.0	6589 7.900	13.000		14.0	107.0	60.0	45.0	6589 13.000
7.940	5/16	8.0	79.0	41.0	36.0	6589 7.940	13.100	33/64	14.0	107.0	60.0	45.0	6589 13.100
8.000		8.0	79.0	41.0	36.0	6589 8.000	13.200		14.0	107.0	60.0	45.0	6589 13.200
8.100		10.0	89.0	47.0	40.0	6589 8.100	13.300		14.0	107.0	60.0	45.0	6589 13.300
8.200		10.0	89.0	47.0	40.0	6589 8.200	13.400		14.0	107.0	60.0	45.0	6589 13.400
8.300		10.0	89.0	47.0	40.0	6589 8.300	13.490	17/32	14.0	107.0	60.0	45.0	6589 13.490
8.330	21/64	10.0	89.0	47.0	40.0	6589 8.330	13.500		14.0	107.0	60.0	45.0	6589 13.500
8.400		10.0	89.0	47.0	40.0	6589 8.400	13.600		14.0	107.0	60.0	45.0	6589 13.600
8.500		10.0	89.0	47.0	40.0	6589 8.500	13.700		14.0	107.0	60.0	45.0	6589 13.700

Solid carbide drills



# Solid carbide drills

Solid carbide drills

Article no. <b>6589</b>						Article no. <b>6589</b>							
d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
13.800		14.0	107.0	60.0	45.0	6589 13.800	16.270	41/64	18.0	123.0	73.0	48.0	6589 16.270
13.890	35/64	14.0	107.0	60.0	45.0	6589 13.890	16.300		18.0	123.0	73.0	48.0	6589 16.300
13.900		14.0	107.0	60.0	45.0	6589 13.900	16.500		18.0	123.0	73.0	48.0	6589 16.500
14.000		14.0	107.0	60.0	45.0	6589 14.000	16.670	21/32	18.0	123.0	73.0	48.0	6589 16.670
14.100		16.0	115.0	65.0	48.0	6589 14.100	16.700		18.0	123.0	73.0	48.0	6589 16.700
14.200		16.0	115.0	65.0	48.0	6589 14.200	16.900		18.0	123.0	73.0	48.0	6589 16.900
14.290	9/16	16.0	115.0	65.0	48.0	6589 14.290	17.000		18.0	123.0	73.0	48.0	6589 17.000
14.300		16.0	115.0	65.0	48.0	6589 14.300	17.070	43/64	18.0	123.0	73.0	48.0	6589 17.070
14.400		16.0	115.0	65.0	48.0	6589 14.400	17.460	11/16	18.0	123.0	73.0	48.0	6589 17.460
14.500		16.0	115.0	65.0	48.0	6589 14.500	17.500		18.0	123.0	73.0	48.0	6589 17.500
14.600		16.0	115.0	65.0	48.0	6589 14.600	17.550		18.0	123.0	73.0	48.0	6589 17.550
14.680	37/64	16.0	115.0	65.0	48.0	6589 14.680	17.700		18.0	123.0	73.0	48.0	6589 17.700
14.700		16.0	115.0	65.0	48.0	6589 14.700	17.860	45/64	18.0	123.0	73.0	48.0	6589 17.860
14.800		16.0	115.0	65.0	48.0	6589 14.800	18.000		18.0	123.0	73.0	48.0	6589 18.000
14.900		16.0	115.0	65.0	48.0	6589 14.900	18.260	23/32	20.0	131.0	79.0	50.0	6589 18.260
15.000		16.0	115.0	65.0	48.0	6589 15.000	18.500		20.0	131.0	79.0	50.0	6589 18.500
15.080	19/32	16.0	115.0	65.0	48.0	6589 15.080	18.700		20.0	131.0	79.0	50.0	6589 18.700
15.100		16.0	115.0	65.0	48.0	6589 15.100	18.900		20.0	131.0	79.0	50.0	6589 18.900
15.200		16.0	115.0	65.0	48.0	6589 15.200	19.000		20.0	131.0	79.0	50.0	6589 19.000
15.300		16.0	115.0	65.0	48.0	6589 15.300	19.050	3/4	20.0	131.0	79.0	50.0	6589 19.050
15.400		16.0	115.0	65.0	48.0	6589 15.400	19.250		20.0	131.0	79.0	50.0	6589 19.250
15.480	39/64	16.0	115.0	65.0	48.0	6589 15.480	19.300		20.0	131.0	79.0	50.0	6589 19.300
15.500		16.0	115.0	65.0	48.0	6589 15.500	19.450	49/64	20.0	131.0	79.0	50.0	6589 19.450
15.550		16.0	115.0	65.0	48.0	6589 15.550	19.500		20.0	131.0	79.0	50.0	6589 19.500
15.600		16.0	115.0	65.0	48.0	6589 15.600	19.550		20.0	131.0	79.0	50.0	6589 19.550
15.700		16.0	115.0	65.0	48.0	6589 15.700	19.700		20.0	131.0	79.0	50.0	6589 19.700
15.800		16.0	115.0	65.0	48.0	6589 15.800	19.800		20.0	131.0	79.0	50.0	6589 19.800
15.870	5/8	16.0	115.0	65.0	48.0	6589 15.870	19.840	25/32	20.0	131.0	79.0	50.0	6589 19.840
15.900		16.0	115.0	65.0	48.0	6589 15.900	20.000		20.0	131.0	79.0	50.0	6589 20.000
16.000		16.0	115.0	65.0	48.0	6589 16.000							

# VB 100 P solid carbide four-fluted drill



The straight-fluted drilling specialist for the machining of castings

ideal chip evacuation | higher position accuracy | maximum tool life

**IDEAL HEAT DISSIPATION  
AND CHIP REMOVAL**  
thanks to Y coolant duct distribution



**PATENTED 2 AND 4-CUTTING EDGE**  
distribution for a high metal  
removal rate

## Precise piloting and drilling in cast iron

The VB 100 P, a straight-fluted 4-flute solid carbide drill, impresses with cost-effective machining of cast materials with an extreme cutting performance. The drill has a 2 and 4-flute design to meet high metal removal rates. In the first step, the two inner cutting edges machine and centre at a highly increased chip removal rate. In the second step, the high feed forces are dispersed among the four cutting edges to minimise wear and maximise quality. This results in shorter chips, higher cutting parameters and greater process reliability while maintaining the highest hole tolerances.



## Straight-fluted drill, 4-fluted, VB 100 P

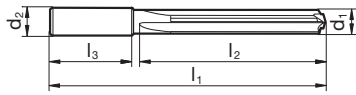
Article no. **6044**



Cutting data page 77



2+4 cutting geometry • with corner radius • exceptional hole quality • maximum performance



Article no. **6044**

Article no. **6044**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
6.000	6.0	80.0	42.0	36.0	6044 6.000
7.000	8.0	85.0	47.0	36.0	6044 7.000
8.000	8.0	95.0	57.0	36.0	6044 8.000
9.000	10.0	105.0	63.0	40.0	6044 9.000
10.000	10.0	110.0	68.0	40.0	6044 10.000
11.000	12.0	115.0	68.0	45.0	6044 11.000
12.000	12.0	120.0	73.0	45.0	6044 12.000
13.000	16.0	130.0	79.0	48.0	6044 13.000
14.000	16.0	135.0	84.0	48.0	6044 14.000
15.000	16.0	140.0	90.0	48.0	6044 15.000
16.000	16.0	140.0	90.0	48.0	6044 16.000
17.000	20.0	150.0	97.0	50.0	6044 17.000
18.000	20.0	155.0	102.0	50.0	6044 18.000
19.000	20.0	155.0	103.0	50.0	6044 19.000
20.000	20.0	160.0	108.0	50.0	6044 20.000
21.000	25.0	170.0	110.0	56.0	6044 21.000
22.000	25.0	175.0	116.0	56.0	6044 22.000
23.000	25.0	180.0	121.0	56.0	6044 23.000

d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
24.000	25.0	185.0	127.0	56.0	6044 24.000
25.000	32.0	195.0	130.0	60.0	6044 25.000
26.000	32.0	200.0	135.0	60.0	6044 26.000
27.000	32.0	200.0	136.0	60.0	6044 27.000
28.000	32.0	205.0	141.0	60.0	6044 28.000
29.000	32.0	210.0	147.0	60.0	6044 29.000
30.000	32.0	210.0	147.0	60.0	6044 30.000
31.000	32.0	215.0	153.0	60.0	6044 31.000
32.000	32.0	220.0	158.0	60.0	6044 32.000





Straight-fluted drill, 4-fluted, VB 100 P

Article no. 6045



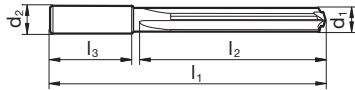
Cutting data page 77



2+4 cutting geometry • with corner radius • exceptional hole quality • maximum performance

P	M	K	N	S	H
		•	○		

Solid carbide drills



Article no. 6045						Article no. 6045							
	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.		d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	6.000	6.0	95.0	57.0	36.0	6045 6.000	NEW	24.000	25.0	230.0	172.0	56.0	6045 24.000
NEW	7.000	8.0	100.0	62.0	36.0	6045 7.000	NEW	25.000	25.0	245.0	187.0	56.0	6045 25.000
	8.000	8.0	110.0	72.0	36.0	6045 8.000		26.000	32.0	250.0	185.0	60.0	6045 26.000
NEW	9.000	10.0	120.0	78.0	40.0	6045 9.000	NEW	27.000	32.0	255.0	191.0	60.0	6045 27.000
NEW	10.000	10.0	130.0	88.0	40.0	6045 10.000		28.000	32.0	260.0	196.0	60.0	6045 28.000
NEW	11.000	12.0	140.0	93.0	45.0	6045 11.000	NEW	29.000	32.0	265.0	202.0	60.0	6045 29.000
	12.000	12.0	145.0	98.0	45.0	6045 12.000	NEW	30.000	32.0	270.0	207.0	60.0	6045 30.000
NEW	13.000	14.0	155.0	108.0	45.0	6045 13.000	NEW	31.000	32.0	280.0	218.0	60.0	6045 31.000
NEW	14.000	14.0	160.0	113.0	45.0	6045 14.000	NEW	32.000	32.0	285.0	223.0	60.0	6045 32.000
NEW	15.000	16.0	170.0	120.0	48.0	6045 15.000							
	16.000	16.0	175.0	125.0	48.0	6045 16.000							
NEW	17.000	18.0	185.0	135.0	48.0	6045 17.000							
	18.000	20.0	190.0	137.0	50.0	6045 18.000							
NEW	19.000	20.0	195.0	143.0	50.0	6045 19.000							
	20.000	20.0	200.0	148.0	50.0	6045 20.000							
NEW	21.000	25.0	215.0	155.0	56.0	6045 21.000							
NEW	22.000	25.0	220.0	161.0	56.0	6045 22.000							
NEW	23.000	25.0	225.0	166.0	56.0	6045 23.000							

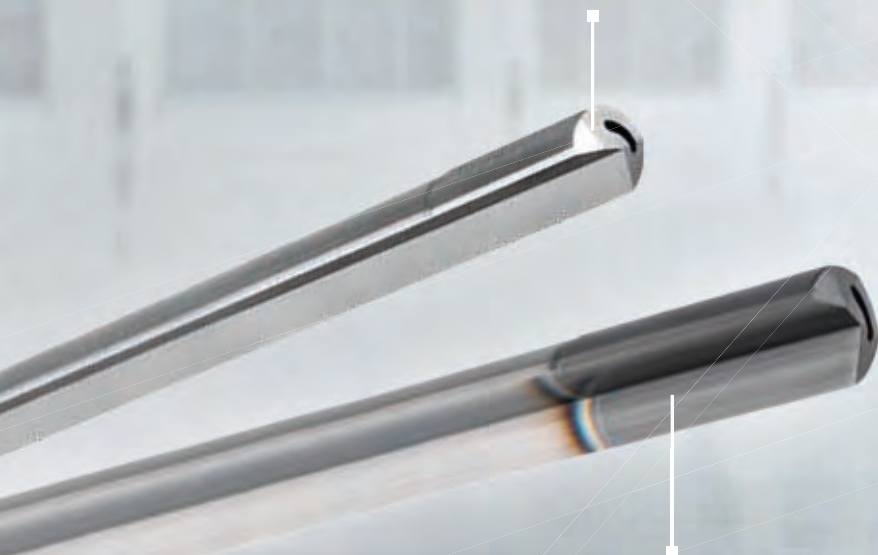
# EB 100 EB 100 M



The solid carbide single-fluted deep hole drilling tools for more cutting performance

high process capability | highest hole quality | universally applicable

**GRINDING GEOMETRY**  
for almost all materials



**PREMIUM SURFACE  
IN THE FLUTE**  
improves chip removal and  
prevents built-up edges

**KIDNEY-SHAPED COOLANT DUCT**  
for optimum lubricant supply  
and chip removal



## High-performance deep-hole drilling tools for more cutting performance

The solid carbide single-fluted deep-hole drilling tools EB 100 M and EB 100 are characterised by compliance with the tightest hole tolerances in a diameter range from  $\varnothing$  0.900 mm to  $\varnothing$  16.000 mm. Hole depths of up to 80xD can be produced with only one tool in almost all materials with dry and wet machining.





EB 100 M single-fluted gun drills

Article no. 5646



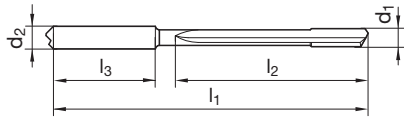
Cutting data page 78



solid carbide shank with MQL shank end • head form G

P	M	K	N	S	H
•	•	•	○	○	○

Deep hole drills



Article no. 5646

Article no. 5646

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	1.000		3.0	65.0	32.0	28.0	5646 1.000
	1.100		3.0	70.0	34.0	28.0	5646 1.100
	1.191	3/64	3.0	70.0	39.0	28.0	5646 1.190
NEW	1.200		3.0	70.0	35.0	28.0	5646 1.200
NEW	1.300		4.0	80.0	43.0	28.0	5646 1.300
NEW	1.400		4.0	80.0	45.0	28.0	5646 1.400
	1.500		4.0	80.0	49.0	28.0	5646 1.500
	1.588	1/16	4.0	85.0	51.0	28.0	5646 1.590
NEW	1.600		4.0	85.0	49.0	28.0	5646 1.600
NEW	1.700		4.0	85.0	49.0	28.0	5646 1.700
NEW	1.800		4.0	85.0	50.0	28.0	5646 1.800
NEW	1.900		4.0	85.0	50.0	28.0	5646 1.900
	1.984	5/64	4.0	95.0	64.0	28.0	5646 1.980
	2.000		4.0	95.0	65.0	28.0	5646 2.000
	2.381	3/32	4.0	100.0	70.0	28.0	5646 2.380
	2.500		4.0	115.0	85.0	28.0	5646 2.500
	2.778	7/64	4.0	115.0	85.0	28.0	5646 2.780
	3.000		6.0	145.0	105.0	36.0	5646 3.000
	3.175	1/8	6.0	145.0	105.0	36.0	5646 3.170
	3.500		6.0	145.0	105.0	36.0	5646 3.500
	3.572	9/64	6.0	160.0	120.0	36.0	5646 3.570
	3.969	5/32	6.0	160.0	120.0	36.0	5646 3.970
	4.000		6.0	160.0	120.0	36.0	5646 4.000
	4.366	11/64	6.0	220.0	180.0	36.0	5646 4.370
NEW	4.500		6.0	220.0	178.0	36.0	5646 4.500
	4.763	3/16	6.0	220.0	180.0	36.0	5646 4.760
	5.000		6.0	220.0	180.0	36.0	5646 5.000
	5.159	13/64	6.0	220.0	180.0	36.0	5646 5.160
NEW	5.500		6.0	220.0	179.0	36.0	5646 5.500
	5.556	7/32	6.0	220.0	180.0	36.0	5646 5.560
	5.953	15/64	6.0	220.0	180.0	36.0	5646 5.950
	6.000		6.0	220.0	180.0	36.0	5646 6.000
	6.350	1/4	8.0	260.0	210.0	36.0	5646 6.350
	6.500		8.0	260.0	210.0	36.0	5646 6.500
	6.747	17/64	8.0	260.0	210.0	36.0	5646 6.750
	7.000		8.0	260.0	210.0	36.0	5646 7.000
	7.144	9/32	8.0	285.0	240.0	36.0	5646 7.140
NEW	7.500		8.0	285.0	240.0	36.0	5646 7.500
	7.541	19/64	8.0	285.0	240.0	36.0	5646 7.540

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	7.938	5/16	8.0	285.0	240.0	36.0	5646 7.940
	8.000		8.0	285.0	240.0	36.0	5646 8.000
NEW	8.334	21/64	10.0	310.0	260.0	40.0	5646 8.330
NEW	8.500		10.0	315.0	268.0	40.0	5646 8.500
NEW	8.731	11/32	10.0	330.0	280.0	40.0	5646 8.730
	9.000		10.0	350.0	300.0	40.0	5646 9.000
NEW	9.128	23/64	10.0	350.0	300.0	40.0	5646 9.130
NEW	9.500		10.0	350.0	300.0	40.0	5646 9.500
NEW	9.525	3/8	10.0	350.0	300.0	40.0	5646 9.530
NEW	9.922	25/64	10.0	350.0	300.0	40.0	5646 9.920
	10.000		10.0	350.0	300.0	40.0	5646 10.000
NEW	10.319	13/32	12.0	385.0	330.0	45.0	5646 10.320
NEW	10.500		12.0	395.0	340.0	45.0	5646 10.500
NEW	10.716	27/64	12.0	405.0	350.0	45.0	5646 10.720
	11.000		12.0	420.0	360.0	45.0	5646 11.000
	11.113	7/16	12.0	420.0	360.0	45.0	5646 11.113
NEW	11.500		12.0	420.0	360.0	45.0	5646 11.500
NEW	11.509	29/64	12.0	420.0	360.0	45.0	5646 11.510
NEW	11.906	15/32	12.0	420.0	360.0	45.0	5646 11.910
	12.000		12.0	420.0	360.0	45.0	5646 12.000
NEW	12.303	31/64	14.0	440.0	385.0	45.0	5646 12.300
NEW	12.500		14.0	450.0	395.0	45.0	5646 12.500
	12.700	1/2	14.0	455.0	396.0	45.0	5646 12.700
NEW	13.000		14.0	460.0	405.0	45.0	5646 13.000
NEW	13.097	33/64	14.0	465.0	410.0	45.0	5646 13.100
NEW	13.494	17/32	14.0	480.0	425.0	45.0	5646 13.490
NEW	13.500		14.0	485.0	430.0	45.0	5646 13.500
NEW	13.891	35/64	14.0	490.0	435.0	45.0	5646 13.890
	14.000		14.0	500.0	437.0	45.0	5646 14.000
NEW	14.288	9/16	16.0	510.0	450.0	48.0	5646 14.290
NEW	14.500		16.0	520.0	460.0	48.0	5646 14.500
NEW	14.684	37/64	16.0	525.0	465.0	48.0	5646 14.680
	15.000		16.0	535.0	468.0	48.0	5646 15.000
NEW	15.081	19/32	16.0	540.0	475.0	48.0	5646 15.080
NEW	15.478	39/64	16.0	550.0	485.0	48.0	5646 15.480
NEW	15.500		16.0	555.0	490.0	48.0	5646 15.500
	15.875	5/8	16.0	560.0	495.0	48.0	5646 15.875
	16.000		16.0	565.0	499.0	48.0	5646 16.000



## EB 100 M single-fluted gun drills

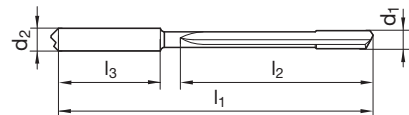
Article no. **5685**



solid carbide shank with MQL shank end • head form G

Cutting data page 78

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
○	○	○	●	●	○



Article no. **5685**

Article no. **5685**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	1.000		3.0	65.0	32.0	28.0	5685 1.000
	1.100		3.0	70.0	34.0	28.0	5685 1.100
	1.191	3/64	3.0	70.0	39.0	28.0	5685 1.190
NEW	1.200		3.0	70.0	35.0	28.0	5685 1.200
NEW	1.300		4.0	80.0	43.0	28.0	5685 1.300
NEW	1.400		4.0	80.0	45.0	28.0	5685 1.400
	1.500		4.0	80.0	49.0	28.0	5685 1.500
	1.588	1/16	4.0	85.0	51.0	28.0	5685 1.590
NEW	1.600		4.0	85.0	49.0	28.0	5685 1.600
NEW	1.700		4.0	85.0	49.0	28.0	5685 1.700
NEW	1.800		4.0	85.0	50.0	28.0	5685 1.800
NEW	1.900		4.0	85.0	50.0	28.0	5685 1.900
	1.984	5/64	4.0	95.0	64.0	28.0	5685 1.980
	2.000		4.0	95.0	65.0	28.0	5685 2.000
	2.381	3/32	4.0	100.0	70.0	28.0	5685 2.380
	2.500		4.0	115.0	85.0	28.0	5685 2.500
	2.778	7/64	4.0	115.0	85.0	28.0	5685 2.780
	3.000		6.0	145.0	105.0	36.0	5685 3.000
	3.175	1/8	6.0	145.0	105.0	36.0	5685 3.170
	3.500		6.0	145.0	105.0	36.0	5685 3.500
	3.572	9/64	6.0	160.0	120.0	36.0	5685 3.570
	3.969	5/32	6.0	160.0	120.0	36.0	5685 3.970
	4.000		6.0	160.0	120.0	36.0	5685 4.000
	4.366	11/64	6.0	220.0	180.0	36.0	5685 4.370
NEW	4.500		6.0	220.0	178.0	36.0	5685 4.500
	4.763	3/16	6.0	220.0	180.0	36.0	5685 4.760
	5.000		6.0	220.0	180.0	36.0	5685 5.000
	5.159	13/64	6.0	220.0	180.0	36.0	5685 5.160
NEW	5.500		6.0	220.0	179.0	36.0	5685 5.500
	5.556	7/32	6.0	220.0	180.0	36.0	5685 5.560
	5.953	15/64	6.0	220.0	180.0	36.0	5685 5.950
	6.000		6.0	220.0	180.0	36.0	5685 6.000
	6.350	1/4	8.0	260.0	210.0	36.0	5685 6.350
	6.500		8.0	260.0	210.0	36.0	5685 6.500
	6.747	17/64	8.0	260.0	210.0	36.0	5685 6.750
	7.000		8.0	260.0	210.0	36.0	5685 7.000
	7.144	9/32	8.0	285.0	240.0	36.0	5685 7.140
NEW	7.500		8.0	285.0	240.0	36.0	5685 7.500
	7.541	19/64	8.0	285.0	240.0	36.0	5685 7.540

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	7.938	5/16	8.0	285.0	240.0	36.0	5685 7.940
	8.000		8.0	285.0	240.0	36.0	5685 8.000
NEW	8.334	21/64	10.0	310.0	260.0	40.0	5685 8.330
NEW	8.500		10.0	315.0	268.0	40.0	5685 8.500
NEW	8.731	11/32	10.0	330.0	280.0	40.0	5685 8.730
	9.000		10.0	350.0	300.0	40.0	5685 9.000
NEW	9.128	23/64	10.0	350.0	300.0	40.0	5685 9.130
NEW	9.500		10.0	350.0	300.0	40.0	5685 9.500
NEW	9.525	3/8	10.0	350.0	300.0	40.0	5685 9.530
NEW	9.922	25/64	10.0	350.0	300.0	40.0	5685 9.920
	10.000		10.0	350.0	300.0	40.0	5685 10.000
NEW	10.319	13/32	12.0	385.0	330.0	45.0	5685 10.320
NEW	10.500		12.0	395.0	340.0	45.0	5685 10.500
NEW	10.716	27/64	12.0	405.0	350.0	45.0	5685 10.720
	11.000		12.0	420.0	360.0	45.0	5685 11.000
	11.113	7/16	12.0	420.0	360.0	45.0	5685 11.113
NEW	11.500		12.0	420.0	360.0	45.0	5685 11.500
NEW	11.509	29/64	12.0	420.0	360.0	45.0	5685 11.510
NEW	11.906	15/32	12.0	420.0	360.0	45.0	5685 11.910
	12.000		12.0	420.0	360.0	45.0	5685 12.000
NEW	12.303	31/64	14.0	440.0	385.0	45.0	5685 12.300
NEW	12.500		14.0	450.0	395.0	45.0	5685 12.500
	12.700	1/2	14.0	455.0	396.0	45.0	5685 12.700
NEW	13.000		14.0	460.0	405.0	45.0	5685 13.000
NEW	13.097	33/64	14.0	465.0	410.0	45.0	5685 13.100
NEW	13.494	17/32	14.0	480.0	425.0	45.0	5685 13.490
NEW	13.500		14.0	485.0	430.0	45.0	5685 13.500
NEW	13.891	35/64	14.0	490.0	435.0	45.0	5685 13.890
	14.000		14.0	500.0	437.0	45.0	5685 14.000
NEW	14.288	9/16	16.0	510.0	450.0	48.0	5685 14.290
NEW	14.500		16.0	520.0	460.0	48.0	5685 14.500
NEW	14.684	37/64	16.0	525.0	465.0	48.0	5685 14.680
	15.000		16.0	535.0	468.0	48.0	5685 15.000
NEW	15.081	19/32	16.0	540.0	475.0	48.0	5685 15.080
NEW	15.478	39/64	16.0	550.0	485.0	48.0	5685 15.480
NEW	15.500		16.0	555.0	490.0	48.0	5685 15.500
	15.875	5/8	16.0	560.0	495.0	48.0	5685 15.875
	16.000		16.0	565.0	499.0	48.0	5685 16.000



EB 100 M single-fluted gun drills

Article no. 5647



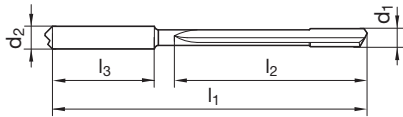
Cutting data page 78



solid carbide shank with MQL shank end • head form G

P	M	K	N	S	H
•	•	•	○	○	○

Deep hole drills



Article no. 5647

Article no. 5647

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	1.000		3.0	90.0	57.0	28.0	5647 1.000
	1.100		3.0	100.0	64.0	28.0	5647 1.100
	1.191	3/64	3.0	100.0	68.0	28.0	5647 1.190
NEW	1.200		3.0	100.0	65.0	28.0	5647 1.200
NEW	1.300		4.0	110.0	75.0	28.0	5647 1.300
NEW	1.400		4.0	115.0	80.0	28.0	5647 1.400
	1.500		4.0	120.0	86.0	28.0	5647 1.500
	1.588	1/16	4.0	125.0	91.0	28.0	5647 1.590
NEW	1.600		4.0	125.0	89.0	28.0	5647 1.600
NEW	1.700		4.0	125.0	89.0	28.0	5647 1.700
NEW	1.800		4.0	125.0	89.0	28.0	5647 1.800
NEW	1.900		4.0	125.0	89.0	28.0	5647 1.900
	1.984	5/64	4.0	145.0	114.0	28.0	5647 1.980
	2.000		4.0	145.0	115.0	28.0	5647 2.000
	2.381	3/32	4.0	160.0	130.0	28.0	5647 2.380
	2.500		4.0	185.0	155.0	28.0	5647 2.500
	2.778	7/64	4.0	185.0	155.0	28.0	5647 2.780
	3.000		6.0	230.0	190.0	36.0	5647 3.000
	3.175	1/8	6.0	230.0	190.0	36.0	5647 3.170
	3.500		6.0	230.0	190.0	36.0	5647 3.500
	3.572	9/64	6.0	260.0	220.0	36.0	5647 3.570
	3.969	5/32	6.0	260.0	220.0	36.0	5647 3.970
	4.000		6.0	260.0	220.0	36.0	5647 4.000
	4.366	11/64	6.0	290.0	245.0	36.0	5647 4.370
NEW	4.500		6.0	290.0	248.0	36.0	5647 4.500

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	4.763	3/16	6.0	310.0	268.0	36.0	5647 4.760
	5.000		6.0	370.0	330.0	36.0	5647 5.000
	5.159	13/64	6.0	370.0	330.0	36.0	5647 5.160
NEW	5.500		6.0	370.0	329.0	36.0	5647 5.500
	5.556	7/32	6.0	370.0	330.0	36.0	5647 5.560
	5.953	15/64	6.0	370.0	330.0	36.0	5647 5.950
	6.000		6.0	370.0	330.0	36.0	5647 6.000
	6.350	1/4	8.0	430.0	385.0	36.0	5647 6.350
	6.500		8.0	430.0	385.0	36.0	5647 6.500
	6.747	17/64	8.0	430.0	385.0	36.0	5647 6.750
	7.000		8.0	430.0	385.0	36.0	5647 7.000
	7.144	9/32	8.0	485.0	440.0	36.0	5647 7.140
NEW	7.500		8.0	485.0	440.0	36.0	5647 7.500
	7.541	19/64	8.0	485.0	440.0	36.0	5647 7.540
	7.938	5/16	8.0	485.0	440.0	36.0	5647 7.940
	8.000		8.0	485.0	440.0	36.0	5647 8.000
NEW	8.334	21/64	10.0	520.0	470.0	40.0	5647 8.330
NEW	8.500		10.0	530.0	480.0	40.0	5647 8.500
NEW	8.731	11/32	10.0	545.0	495.0	40.0	5647 8.730
	9.000		10.0	555.0	506.0	40.0	5647 9.000
NEW	9.128	23/64	10.0	565.0	515.0	40.0	5647 9.130
NEW	9.500		10.0	585.0	535.0	40.0	5647 9.500
NEW	9.525	3/8	10.0	590.0	540.0	40.0	5647 9.530
NEW	9.922	25/64	10.0	610.0	560.0	40.0	5647 9.920
	10.000		10.0	615.0	562.0	40.0	5647 10.000



## EB 100 M single-fluted gun drills

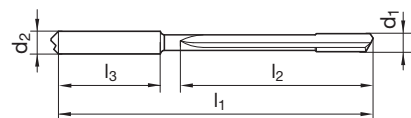
Article no. **5686**



solid carbide shank with MQL shank end • head form G

Cutting data page 78

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
○	○	○	●	●	○



Article no. **5686**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	1.000		3.0	90.0	57.0	28.0	5686 1.000
	1.100		3.0	100.0	64.0	28.0	5686 1.100
	1.191	3/64	3.0	100.0	68.0	28.0	5686 1.190
NEW	1.200		3.0	100.0	65.0	28.0	5686 1.200
NEW	1.300		4.0	110.0	75.0	28.0	5686 1.300
NEW	1.400		4.0	115.0	80.0	28.0	5686 1.400
	1.500		4.0	120.0	86.0	28.0	5686 1.500
	1.588	1/16	4.0	125.0	91.0	28.0	5686 1.590
NEW	1.600		4.0	125.0	89.0	28.0	5686 1.600
NEW	1.700		4.0	125.0	89.0	28.0	5686 1.700
NEW	1.800		4.0	125.0	89.0	28.0	5686 1.800
NEW	1.900		4.0	125.0	89.0	28.0	5686 1.900
	1.984	5/64	4.0	145.0	114.0	28.0	5686 1.980
	2.000		4.0	145.0	115.0	28.0	5686 2.000
	2.381	3/32	4.0	160.0	130.0	28.0	5686 2.380
	2.500		4.0	185.0	155.0	28.0	5686 2.500
	2.778	7/64	4.0	185.0	155.0	28.0	5686 2.780
	3.000		6.0	230.0	190.0	36.0	5686 3.000
	3.175	1/8	6.0	230.0	190.0	36.0	5686 3.170
	3.500		6.0	230.0	190.0	36.0	5686 3.500
	3.572	9/64	6.0	260.0	220.0	36.0	5686 3.570
	3.969	5/32	6.0	260.0	220.0	36.0	5686 3.970
	4.000		6.0	260.0	220.0	36.0	5686 4.000
	4.366	11/64	6.0	290.0	245.0	36.0	5686 4.370
NEW	4.500		6.0	290.0	248.0	36.0	5686 4.500

Article no. **5686**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	4.763	3/16	6.0	310.0	268.0	36.0	5686 4.760
	5.000		6.0	370.0	330.0	36.0	5686 5.000
	5.159	13/64	6.0	370.0	330.0	36.0	5686 5.160
NEW	5.500		6.0	370.0	329.0	36.0	5686 5.500
	5.556	7/32	6.0	370.0	330.0	36.0	5686 5.560
	5.953	15/64	6.0	370.0	330.0	36.0	5686 5.950
	6.000		6.0	370.0	330.0	36.0	5686 6.000
	6.350	1/4	8.0	430.0	385.0	36.0	5686 6.350
	6.500		8.0	430.0	385.0	36.0	5686 6.500
	6.747	17/64	8.0	430.0	385.0	36.0	5686 6.750
	7.000		8.0	430.0	385.0	36.0	5686 7.000
	7.144	9/32	8.0	485.0	440.0	36.0	5686 7.140
NEW	7.500		8.0	485.0	440.0	36.0	5686 7.500
	7.541	19/64	8.0	485.0	440.0	36.0	5686 7.540
	7.938	5/16	8.0	485.0	440.0	36.0	5686 7.940
	8.000		8.0	485.0	440.0	36.0	5686 8.000
NEW	8.334	21/64	10.0	520.0	470.0	40.0	5686 8.330
NEW	8.500		10.0	530.0	480.0	40.0	5686 8.500
NEW	8.731	11/32	10.0	545.0	495.0	40.0	5686 8.730
	9.000		10.0	555.0	506.0	40.0	5686 9.000
NEW	9.128	23/64	10.0	565.0	515.0	40.0	5686 9.130
NEW	9.500		10.0	585.0	535.0	40.0	5686 9.500
NEW	9.525	3/8	10.0	590.0	540.0	40.0	5686 9.530
NEW	9.922	25/64	10.0	610.0	560.0	40.0	5686 9.920
	10.000		10.0	615.0	562.0	40.0	5686 10.000



EB 100 M single-fluted gun drills

Article no. 5648



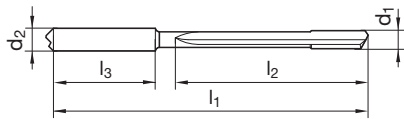
Cutting data page 78



solid carbide shank with MQL shank end • head form G

P	M	K	N	S	H
•	•	•	○	○	○

Deep hole drills



Article no. 5648

Article no. 5648

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.000		3.0	115.0	82.0	28.0	5648 1.000
NEW	1.100		3.0	130.0	92.0	28.0	5648 1.100
	1.191	3/64	3.0	130.0	98.0	28.0	5648 1.190
NEW	1.200		3.0	130.0	94.0	28.0	5648 1.200
NEW	1.300		4.0	145.0	108.0	28.0	5648 1.300
NEW	1.400		4.0	155.0	117.0	28.0	5648 1.400
	1.500		4.0	155.0	124.0	28.0	5648 1.500
	1.588	1/16	4.0	165.0	131.0	28.0	5648 1.590
NEW	1.600		4.0	165.0	128.0	28.0	5648 1.600
NEW	1.700		4.0	165.0	128.0	28.0	5648 1.700
NEW	1.800		4.0	165.0	129.0	28.0	5648 1.800
NEW	1.900		4.0	165.0	129.0	28.0	5648 1.900
	1.984	5/64	4.0	195.0	163.0	28.0	5648 1.980
	2.000		4.0	195.0	165.0	28.0	5648 2.000
	2.381	3/32	4.0	220.0	190.0	28.0	5648 2.380
	2.500		4.0	255.0	220.0	28.0	5648 2.500
	2.778	7/64	4.0	255.0	220.0	28.0	5648 2.780
	3.000		6.0	290.0	247.0	36.0	5648 3.000
	3.175	1/8	6.0	320.0	280.0	36.0	5648 3.170

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	3.500		6.0	320.0	280.0	36.0	5648 3.500
	3.572	9/64	6.0	360.0	320.0	36.0	5648 3.570
	3.969	5/32	6.0	360.0	320.0	36.0	5648 3.970
	4.000		6.0	360.0	320.0	36.0	5648 4.000
	4.366	11/64	6.0	395.0	355.0	36.0	5648 4.370
NEW	4.500		6.0	395.0	352.0	36.0	5648 4.500
	4.763	3/16	6.0	430.0	387.0	36.0	5648 4.760
	5.000		6.0	450.0	406.0	36.0	5648 5.000
	5.159	13/64	6.0	465.0	419.0	36.0	5648 5.160
NEW	5.500		6.0	495.0	450.0	36.0	5648 5.500
	5.556	7/32	6.0	525.0	485.0	36.0	5648 5.560
	5.953	15/64	6.0	525.0	485.0	36.0	5648 5.950
	6.000		6.0	525.0	485.0	36.0	5648 6.000
	6.350	1/4	8.0	560.0	516.0	36.0	5648 6.350
	6.500		8.0	575.0	528.0	36.0	5648 6.500
	6.747	17/64	8.0	595.0	548.0	36.0	5648 6.750
	7.000		8.0	615.0	568.0	36.0	5648 7.000
	7.144	9/32	8.0	625.0	580.0	36.0	5648 7.140

EB 100 M single-fluted gun drills

Article no. 5687

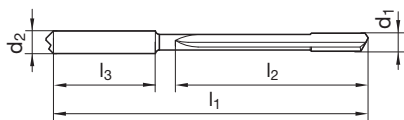


Cutting data page 78



solid carbide shank with MQL shank end • head form G

P	M	K	N	S	H
○	○	○	•	•	○



Article no. 5687

Article no. 5687

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.000		3.0	115.0	82.0	28.0	5687 1.000
NEW	1.100		3.0	130.0	92.0	28.0	5687 1.100
	1.191	3/64	3.0	130.0	98.0	28.0	5687 1.190
NEW	1.200		3.0	130.0	94.0	28.0	5687 1.200
NEW	1.300		4.0	145.0	108.0	28.0	5687 1.300
NEW	1.400		4.0	155.0	117.0	28.0	5687 1.400
	1.500		4.0	155.0	124.0	28.0	5687 1.500
	1.588	1/16	4.0	165.0	131.0	28.0	5687 1.590
NEW	1.600		4.0	165.0	128.0	28.0	5687 1.600
NEW	1.700		4.0	165.0	128.0	28.0	5687 1.700
NEW	1.800		4.0	165.0	129.0	28.0	5687 1.800
NEW	1.900		4.0	165.0	129.0	28.0	5687 1.900
	1.984	5/64	4.0	195.0	163.0	28.0	5687 1.980
	2.000		4.0	195.0	165.0	28.0	5687 2.000
	2.381	3/32	4.0	220.0	190.0	28.0	5687 2.380
	2.500		4.0	255.0	220.0	28.0	5687 2.500
	2.778	7/64	4.0	255.0	220.0	28.0	5687 2.780
	3.000		6.0	290.0	247.0	36.0	5687 3.000
	3.175	1/8	6.0	320.0	280.0	36.0	5687 3.170

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	3.500		6.0	320.0	280.0	36.0	5687 3.500
	3.572	9/64	6.0	360.0	320.0	36.0	5687 3.570
	3.969	5/32	6.0	360.0	320.0	36.0	5687 3.970
	4.000		6.0	360.0	320.0	36.0	5687 4.000
	4.366	11/64	6.0	395.0	355.0	36.0	5687 4.370
NEW	4.500		6.0	395.0	352.0	36.0	5687 4.500
	4.763	3/16	6.0	430.0	387.0	36.0	5687 4.760
	5.000		6.0	450.0	406.0	36.0	5687 5.000
	5.159	13/64	6.0	465.0	419.0	36.0	5687 5.160
NEW	5.500		6.0	495.0	450.0	36.0	5687 5.500
	5.556	7/32	6.0	525.0	485.0	36.0	5687 5.560
	5.953	15/64	6.0	525.0	485.0	36.0	5687 5.950
	6.000		6.0	525.0	485.0	36.0	5687 6.000
	6.350	1/4	8.0	560.0	516.0	36.0	5687 6.350
	6.500		8.0	575.0	528.0	36.0	5687 6.500
	6.747	17/64	8.0	595.0	548.0	36.0	5687 6.750
	7.000		8.0	615.0	568.0	36.0	5687 7.000
	7.144	9/32	8.0	625.0	580.0	36.0	5687 7.140



# Solid carbide single-fluted gun drills

Deep hole drills

## EB 100 single-fluted gun drills

Article no. **5684**

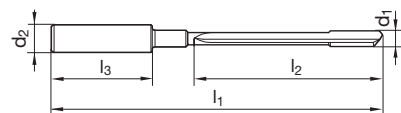


Cutting data page 78



flute length 30 mm • head form G

P	M	K	N	S	H
○	○	○	●	○	○



Article no. **5684**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	0.900		4.0	75.0	30.0	28.0	5684 0.900
	1.000		4.0	75.0	30.0	28.0	5684 1.000
	1.100		4.0	75.0	30.0	28.0	5684 1.100
	1.191	3/64	4.0	75.0	30.0	28.0	5684 1.190
	1.200		4.0	75.0	30.0	28.0	5684 1.200
	1.300		4.0	75.0	30.0	28.0	5684 1.300
	1.400		4.0	75.0	30.0	28.0	5684 1.400
	1.500		4.0	75.0	30.0	28.0	5684 1.500
	1.588	1/16	4.0	75.0	30.0	28.0	5684 1.590
	1.600		4.0	75.0	30.0	28.0	5684 1.600
NEW	1.700		4.0	75.0	30.0	28.0	5684 1.700
NEW	1.800		4.0	75.0	30.0	28.0	5684 1.800

Article no. **5684**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.900		4.0	75.0	30.0	28.0	5684 1.900
	1.984	5/64	4.0	75.0	30.0	28.0	5684 1.980
	2.000		4.0	75.0	30.0	28.0	5684 2.000

## EB 100 single-fluted gun drills

Article no. **5632**

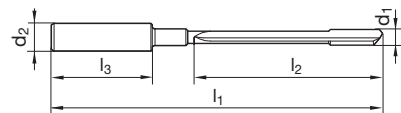


Cutting data page 78



flute length 45 mm • head form G

P	M	K	N	S	H
●	●	●	○	○	○



Article no. **5632**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.000		4.0	90.0	45.0	28.0	5632 1.000
	1.100		4.0	90.0	45.0	28.0	5632 1.100
	1.191	3/64	4.0	90.0	45.0	28.0	5632 1.190
	1.200		4.0	90.0	45.0	28.0	5632 1.200
	1.300		4.0	90.0	45.0	28.0	5632 1.300
	1.400		4.0	90.0	45.0	28.0	5632 1.400
	1.500		4.0	90.0	45.0	28.0	5632 1.500
	1.588	1/16	4.0	90.0	45.0	28.0	5632 1.590
	1.600		4.0	90.0	45.0	28.0	5632 1.600
NEW	1.700		4.0	90.0	45.0	28.0	5632 1.700
NEW	1.800		4.0	90.0	45.0	28.0	5632 1.800
	1.900		4.0	90.0	45.0	28.0	5632 1.900
	1.984	5/64	4.0	90.0	45.0	28.0	5632 1.980
	2.000		4.0	90.0	45.0	28.0	5632 2.000
NEW	2.381	3/32	4.0	100.0	45.0	28.0	5632 2.380
	2.500		10.0	100.0	45.0	40.0	5632 2.500
	2.700		10.0	100.0	45.0	40.0	5632 2.700
NEW	2.778	7/64	10.0	100.0	45.0	40.0	5632 2.780

Article no. **5632**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	3.000		10.0	100.0	45.0	40.0	5632 3.000
NEW	3.175	1/8	10.0	100.0	45.0	40.0	5632 3.170
	3.200		10.0	100.0	45.0	40.0	5632 3.200
NEW	3.500		10.0	100.0	45.0	40.0	5632 3.500
NEW	3.572	9/64	10.0	100.0	45.0	40.0	5632 3.570
NEW	3.969	5/32	10.0	100.0	45.0	40.0	5632 3.970
NEW	4.000		10.0	100.0	45.0	40.0	5632 4.000



EB 100 single-fluted gun drills

Article no. 5024

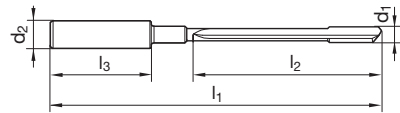


Cutting data page 78



flute length 45 mm • head form G

P	M	K	N	S	H
○	○	○	●	●	○



Article no. 5024

Article no. 5024

	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
	0.900		4.0	90.0	45.0	28.0	5024 0.900
	1.000		4.0	90.0	45.0	28.0	5024 1.000
	1.100		4.0	90.0	45.0	28.0	5024 1.100
	1.191	3/64	4.0	90.0	45.0	28.0	5024 1.190
	1.200		4.0	90.0	45.0	28.0	5024 1.200
	1.300		4.0	90.0	45.0	28.0	5024 1.300
	1.400		4.0	90.0	45.0	28.0	5024 1.400
	1.500		4.0	90.0	45.0	28.0	5024 1.500
	1.588	1/16	4.0	90.0	45.0	28.0	5024 1.590
	1.600		4.0	90.0	45.0	28.0	5024 1.600
NEW	1.700		4.0	90.0	45.0	28.0	5024 1.700
NEW	1.800		4.0	90.0	45.0	28.0	5024 1.800
	1.900		4.0	90.0	45.0	28.0	5024 1.900
	1.984	5/64	4.0	90.0	45.0	28.0	5024 1.980
	2.000		4.0	90.0	45.0	28.0	5024 2.000
NEW	2.381	3/32	4.0	100.0	45.0	28.0	5024 2.380
	2.500		10.0	100.0	45.0	40.0	5024 2.500
	2.700		10.0	100.0	45.0	40.0	5024 2.700

	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	2.778	7/64	10.0	100.0	45.0	40.0	5024 2.780
	3.000		10.0	100.0	45.0	40.0	5024 3.000
NEW	3.175	1/8	10.0	100.0	45.0	40.0	5024 3.170
	3.200		10.0	100.0	45.0	40.0	5024 3.200
NEW	3.500		10.0	100.0	45.0	40.0	5024 3.500
NEW	3.572	9/64	10.0	100.0	45.0	40.0	5024 3.570
NEW	3.969	5/32	10.0	100.0	45.0	40.0	5024 3.970
NEW	4.000		10.0	100.0	45.0	40.0	5024 4.000

EB 100 single-fluted gun drills

Article no. 5633

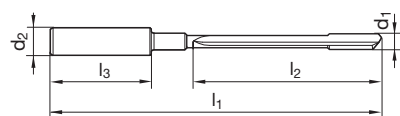


Cutting data page 78



flute length 80 mm • head form G

P	M	K	N	S	H
●	●	●	○	○	○



Article no. 5633

Article no. 5633

	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
	1.000		4.0	125.0	80.0	28.0	5633 1.000
	1.100		4.0	125.0	80.0	28.0	5633 1.100
	1.191	3/64	4.0	125.0	80.0	28.0	5633 1.190
	1.200		4.0	125.0	80.0	28.0	5633 1.200
	1.300		4.0	125.0	80.0	28.0	5633 1.300
	1.400		4.0	125.0	80.0	28.0	5633 1.400
	1.500		4.0	125.0	80.0	28.0	5633 1.500
	1.588	1/16	4.0	125.0	80.0	28.0	5633 1.590
	1.600		4.0	125.0	80.0	28.0	5633 1.600
NEW	1.700		4.0	125.0	80.0	28.0	5633 1.700
NEW	1.800		4.0	125.0	80.0	28.0	5633 1.800
	1.900		4.0	125.0	80.0	28.0	5633 1.900
	1.984	5/64	4.0	125.0	80.0	28.0	5633 1.980
	2.000		4.0	125.0	80.0	28.0	5633 2.000
NEW	2.381	3/32	4.0	135.0	80.0	28.0	5633 2.380
	2.500		10.0	135.0	80.0	40.0	5633 2.500
	2.700		10.0	135.0	80.0	40.0	5633 2.700
NEW	2.778	7/64	10.0	135.0	80.0	40.0	5633 2.780

	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	3.000		10.0	135.0	80.0	40.0	5633 3.000
	3.175	1/8	10.0	135.0	80.0	40.0	5633 3.170
	3.200		10.0	135.0	80.0	40.0	5633 3.200
	3.500		10.0	135.0	80.0	40.0	5633 3.500
NEW	3.572	9/64	10.0	135.0	80.0	40.0	5633 3.570
NEW	3.969	5/32	10.0	135.0	80.0	40.0	5633 3.970
	4.000		10.0	135.0	80.0	40.0	5633 4.000
	4.200		10.0	135.0	80.0	40.0	5633 4.200
NEW	4.366	11/64	10.0	135.0	80.0	40.0	5633 4.370
	4.500		10.0	135.0	80.0	40.0	5633 4.500
NEW	4.763	3/16	10.0	135.0	80.0	40.0	5633 4.760
	5.000		10.0	135.0	80.0	40.0	5633 5.000
NEW	5.159	13/64	10.0	135.0	80.0	40.0	5633 5.160
NEW	5.500		10.0	135.0	80.0	40.0	5633 5.500
NEW	5.556	7/32	10.0	135.0	80.0	40.0	5633 5.560
NEW	5.953	15/64	10.0	135.0	80.0	40.0	5633 5.950
NEW	6.000		16.0	145.0	80.0	48.0	5633 6.000





# Solid carbide single-fluted gun drills

Deep hole drills

## EB 100 single-fluted gun drills

Article no. **5020**

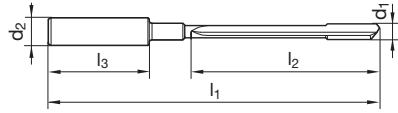


Cutting data page 78



flute length 80 mm • head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
○	○	○	●	●	○



Article no. **5020**

Article no. **5020**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.000		4.0	125.0	80.0	28.0	5020 1.000
	1.100		4.0	125.0	80.0	28.0	5020 1.100
	1.191	3/64	4.0	125.0	80.0	28.0	5020 1.190
	1.200		4.0	125.0	80.0	28.0	5020 1.200
	1.300		4.0	125.0	80.0	28.0	5020 1.300
	1.400		4.0	125.0	80.0	28.0	5020 1.400
	1.500		4.0	125.0	80.0	28.0	5020 1.500
	1.588	1/16	4.0	125.0	80.0	28.0	5020 1.590
	1.600		4.0	125.0	80.0	28.0	5020 1.600
NEW	1.700		4.0	125.0	80.0	28.0	5020 1.700
NEW	1.800		4.0	125.0	80.0	28.0	5020 1.800
	1.900		4.0	125.0	80.0	28.0	5020 1.900
	1.984	5/64	4.0	125.0	80.0	28.0	5020 1.980
	2.000		4.0	125.0	80.0	28.0	5020 2.000
NEW	2.381	3/32	4.0	135.0	80.0	28.0	5020 2.380
	2.500		10.0	135.0	80.0	40.0	5020 2.500
	2.700		10.0	135.0	80.0	40.0	5020 2.700
NEW	2.778	7/64	10.0	135.0	80.0	40.0	5020 2.780

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	3.000		10.0	135.0	80.0	40.0	5020 3.000
NEW	3.175	1/8	10.0	135.0	80.0	40.0	5020 3.170
	3.200		10.0	135.0	80.0	40.0	5020 3.200
	3.500		10.0	135.0	80.0	40.0	5020 3.500
NEW	3.572	9/64	10.0	135.0	80.0	40.0	5020 3.570
NEW	3.969	5/32	10.0	135.0	80.0	40.0	5020 3.970
	4.000		10.0	135.0	80.0	40.0	5020 4.000
	4.200		10.0	135.0	80.0	40.0	5020 4.200
NEW	4.366	11/64	10.0	135.0	80.0	40.0	5020 4.370
	4.500		10.0	135.0	80.0	40.0	5020 4.500
NEW	4.763	3/16	10.0	135.0	80.0	40.0	5020 4.760
	5.000		10.0	135.0	80.0	40.0	5020 5.000
NEW	5.159	13/64	10.0	135.0	80.0	40.0	5020 5.160
NEW	5.500		10.0	135.0	80.0	40.0	5020 5.500
NEW	5.556	7/32	10.0	135.0	80.0	40.0	5020 5.560
NEW	5.953	15/64	10.0	135.0	80.0	40.0	5020 5.950
NEW	6.000		16.0	145.0	80.0	48.0	5020 6.000

## EB 100 single-fluted gun drills

Article no. **5637**

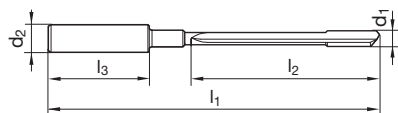


Cutting data page 78



flute length 120 mm • head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	●	●	○	○	○



Article no. **5637**

Article no. **5637**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.500		4.0	165.0	120.0	28.0	5637 1.500
	1.588	1/16	4.0	165.0	120.0	28.0	5637 1.590
	1.600		4.0	165.0	120.0	28.0	5637 1.600
NEW	1.700		4.0	165.0	120.0	28.0	5637 1.700
NEW	1.800		4.0	165.0	120.0	28.0	5637 1.800
NEW	1.900		4.0	165.0	120.0	28.0	5637 1.900
	1.984	5/64	4.0	165.0	120.0	28.0	5637 1.980
	2.000		4.0	165.0	120.0	28.0	5637 2.000
NEW	2.381	3/32	4.0	175.0	120.0	28.0	5637 2.380
	2.500		10.0	175.0	120.0	40.0	5637 2.500
	2.700		10.0	175.0	120.0	40.0	5637 2.700
NEW	2.778	7/64	10.0	175.0	120.0	40.0	5637 2.780
	3.000		10.0	175.0	120.0	40.0	5637 3.000
NEW	3.175	1/8	10.0	175.0	120.0	40.0	5637 3.170
	3.200		10.0	175.0	120.0	40.0	5637 3.200
	3.500		10.0	175.0	120.0	40.0	5637 3.500
NEW	3.572	9/64	10.0	175.0	120.0	40.0	5637 3.570
NEW	3.969	5/32	10.0	175.0	120.0	40.0	5637 3.970

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	4.000		10.0	175.0	120.0	40.0	5637 4.000
	4.200		10.0	175.0	120.0	40.0	5637 4.200
NEW	4.366	11/64	10.0	175.0	120.0	40.0	5637 4.370
	4.500		10.0	175.0	120.0	40.0	5637 4.500
NEW	4.763	3/16	10.0	175.0	120.0	40.0	5637 4.760
	5.000		10.0	175.0	120.0	40.0	5637 5.000
NEW	5.159	13/64	10.0	175.0	120.0	40.0	5637 5.160
NEW	5.500		10.0	175.0	120.0	40.0	5637 5.500
NEW	5.556	7/32	10.0	175.0	120.0	40.0	5637 5.560
NEW	5.953	15/64	10.0	175.0	120.0	40.0	5637 5.950
NEW	6.000		16.0	185.0	120.0	48.0	5637 6.000



EB 100 single-fluted gun drills

Article no. 5026

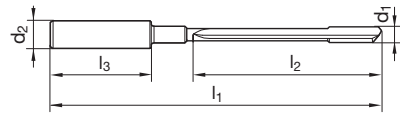


flute length 120 mm • head form G

Cutting data page 78

P	M	K	N	S	H
○	○	○	●	●	○

Deep hole drills



Article no. 5026

Article no. 5026

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.500		4.0	165.0	120.0	28.0	5026 1.500
	1.588	1/16	4.0	165.0	120.0	28.0	5026 1.590
	1.600		4.0	165.0	120.0	28.0	5026 1.600
NEW	1.700		4.0	165.0	120.0	28.0	5026 1.700
NEW	1.800		4.0	165.0	120.0	28.0	5026 1.800
NEW	1.900		4.0	165.0	120.0	28.0	5026 1.900
	1.984	5/64	4.0	165.0	120.0	28.0	5026 1.980
	2.000		4.0	165.0	120.0	28.0	5026 2.000
NEW	2.381	3/32	4.0	175.0	120.0	28.0	5026 2.380
	2.500		10.0	175.0	120.0	40.0	5026 2.500
	2.700		10.0	175.0	120.0	40.0	5026 2.700
NEW	2.778	7/64	10.0	175.0	120.0	40.0	5026 2.780
	3.000		10.0	175.0	120.0	40.0	5026 3.000
NEW	3.175	1/8	10.0	175.0	120.0	40.0	5026 3.170
	3.200		10.0	175.0	120.0	40.0	5026 3.200
	3.500		10.0	175.0	120.0	40.0	5026 3.500
NEW	3.572	9/64	10.0	175.0	120.0	40.0	5026 3.570
NEW	3.969	5/32	10.0	175.0	120.0	40.0	5026 3.970

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	4.000		10.0	175.0	120.0	40.0	5026 4.000
	4.200		10.0	175.0	120.0	40.0	5026 4.200
NEW	4.366	11/64	10.0	175.0	120.0	40.0	5026 4.370
	4.500		10.0	175.0	120.0	40.0	5026 4.500
NEW	4.763	3/16	10.0	175.0	120.0	40.0	5026 4.760
	5.000		10.0	175.0	120.0	40.0	5026 5.000
NEW	5.159	13/64	10.0	175.0	120.0	40.0	5026 5.160
NEW	5.500		10.0	175.0	120.0	40.0	5026 5.500
NEW	5.556	7/32	10.0	175.0	120.0	40.0	5026 5.560
NEW	5.953	15/64	10.0	175.0	120.0	40.0	5026 5.950
NEW	6.000		16.0	185.0	120.0	48.0	5026 6.000

EB 100 single-fluted gun drills

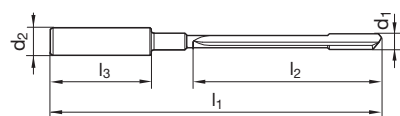
Article no. 5638



flute length 160 mm • head form G

Cutting data page 78

P	M	K	N	S	H
●	●	●	○	○	○



Article no. 5638

Article no. 5638

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
	1.500		4.0	205.0	160.0	28.0	5638 1.500
	1.588	1/16	4.0	205.0	160.0	28.0	5638 1.590
	1.600		4.0	205.0	160.0	28.0	5638 1.600
NEW	1.700		4.0	205.0	160.0	28.0	5638 1.700
NEW	1.800		4.0	205.0	160.0	28.0	5638 1.800
NEW	1.900		4.0	205.0	160.0	28.0	5638 1.900
	1.984	5/64	4.0	205.0	160.0	28.0	5638 1.980
	2.000		4.0	205.0	160.0	28.0	5638 2.000
NEW	2.381	3/32	4.0	215.0	160.0	28.0	5638 2.380
	2.500		10.0	215.0	160.0	40.0	5638 2.500
	2.700		10.0	215.0	160.0	40.0	5638 2.700
NEW	2.778	7/64	10.0	215.0	160.0	40.0	5638 2.780
	3.000		10.0	215.0	160.0	40.0	5638 3.000
NEW	3.175	1/8	10.0	215.0	160.0	40.0	5638 3.170
	3.200		10.0	215.0	160.0	40.0	5638 3.200
	3.500		10.0	215.0	160.0	40.0	5638 3.500
NEW	3.572	9/64	10.0	215.0	160.0	40.0	5638 3.570
NEW	3.969	5/32	10.0	215.0	160.0	40.0	5638 3.970
	4.000		10.0	215.0	160.0	40.0	5638 4.000
	4.200		10.0	215.0	160.0	40.0	5638 4.200
NEW	4.366	11/64	10.0	215.0	160.0	40.0	5638 4.370
	4.500		10.0	215.0	160.0	40.0	5638 4.500
NEW	4.763	3/16	10.0	215.0	160.0	40.0	5638 4.760
	5.000		10.0	215.0	160.0	40.0	5638 5.000

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	5.159	13/64	10.0	215.0	160.0	40.0	5638 5.160
NEW	5.500		10.0	215.0	160.0	40.0	5638 5.500
NEW	5.556	7/32	10.0	215.0	160.0	40.0	5638 5.560
NEW	5.953	15/64	10.0	215.0	160.0	40.0	5638 5.950
	6.000		16.0	225.0	160.0	48.0	5638 6.000
NEW	6.350	1/4	16.0	225.0	160.0	48.0	5638 6.350
NEW	6.500		16.0	225.0	160.0	48.0	5638 6.500
NEW	6.747	17/64	16.0	225.0	160.0	48.0	5638 6.750
NEW	7.000		16.0	225.0	160.0	48.0	5638 7.000
NEW	7.144	9/32	16.0	225.0	160.0	48.0	5638 7.140
NEW	7.500		16.0	225.0	160.0	48.0	5638 7.500
NEW	7.541	19/64	16.0	225.0	160.0	48.0	5638 7.540
NEW	7.938	5/16	16.0	225.0	160.0	48.0	5638 7.940
	8.000		16.0	225.0	160.0	48.0	5638 8.000



# EB 80 EB 80 XXL



## The classic single-fluted deep hole drilling tools for universal machining

**inexpensive deep hole drilling solution | high drilling qualities | universally applicable**



**TOTAL LENGTHS  
UP TO 3.600 MM**



**GRINDING GEOMETRY**  
for almost all materials



**LARGE SELECTION**  
of clamping sleeves

## Universal talents for tight hole tolerances

The EB 80 and EB 80 XXL brazed single-fluted deep-hole drilling tools are characterised by their ability to maintain tight hole tolerances in a diameter range from  $\varnothing$  2.000 mm to  $\varnothing$  40.000 mm. Total tool lengths of up to 3,600 mm can be used on deep hole drilling machines. On machining centers, drilling depths of 40xD can be produced with one tool in almost all materials with dry and wet machining.



## EB 80 single-fluted gun drills

Article no. **5018**

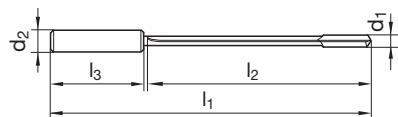


Cutting data page 79



with recessed coolant chamber • head form G • with lateral chip breaker

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	○	●	○	○	○



Article no. <b>5018</b>							Article no. <b>5018</b>								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
NEW	3.969	5/32	10.0	150.0	100.0	40.0	5018 3.970	NEW	14.684	37/64	25.0	420.0	360.0	56.0	5018 14.680
	4.000		12.0	150.0	100.0	45.0	5018 4.000	NEW	15.000		25.0	430.0	370.0	56.0	5018 15.000
	4.200		12.0	160.0	110.0	45.0	5018 4.200	NEW	15.081	19/32	25.0	430.0	370.0	56.0	5018 15.080
NEW	4.366	11/64	12.0	170.0	120.0	45.0	5018 4.370	NEW	15.478	39/64	25.0	445.0	380.0	56.0	5018 15.480
	4.500		12.0	170.0	120.0	45.0	5018 4.500	NEW	15.500		25.0	445.0	380.0	56.0	5018 15.500
NEW	4.763	3/16	12.0	180.0	130.0	45.0	5018 4.760	NEW	15.875	5/8	25.0	450.0	390.0	56.0	5018 15.880
	5.000		16.0	180.0	130.0	48.0	5018 5.000	NEW	16.000		25.0	455.0	395.0	56.0	5018 16.000
NEW	5.159	13/64	16.0	180.0	130.0	48.0	5018 5.160	NEW	16.272	41/64	25.0	460.0	400.0	56.0	5018 16.270
	5.500		16.0	190.0	140.0	48.0	5018 5.500	NEW	16.500		25.0	465.0	405.0	56.0	5018 16.500
NEW	5.556	7/32	16.0	200.0	150.0	48.0	5018 5.560	NEW	16.669	21/32	25.0	470.0	410.0	56.0	5018 16.670
NEW	5.953	15/64	16.0	210.0	160.0	48.0	5018 5.950	NEW	17.000		25.0	475.0	415.0	56.0	5018 17.000
	6.000		16.0	210.0	160.0	48.0	5018 6.000	NEW	17.066	43/64	25.0	475.0	415.0	56.0	5018 17.070
NEW	6.350	1/4	16.0	220.0	170.0	48.0	5018 6.350	NEW	17.463	11/16	25.0	485.0	425.0	56.0	5018 17.460
	6.500		16.0	220.0	170.0	48.0	5018 6.500	NEW	17.859	45/64	25.0	495.0	435.0	56.0	5018 17.860
NEW	6.747	17/64	16.0	235.0	185.0	48.0	5018 6.750	NEW	18.000		25.0	500.0	440.0	56.0	5018 18.000
	7.000		16.0	235.0	185.0	48.0	5018 7.000	NEW	18.256	23/32	25.0	505.0	445.0	56.0	5018 18.260
NEW	7.144	9/32	16.0	240.0	190.0	48.0	5018 7.140	NEW	18.653	47/64	25.0	515.0	455.0	56.0	5018 18.650
NEW	7.500		16.0	245.0	195.0	48.0	5018 7.500	NEW	19.000		25.0	520.0	460.0	56.0	5018 19.000
NEW	7.541	19/64	16.0	250.0	200.0	48.0	5018 7.540	NEW	19.050	3/4	32.0	525.0	460.0	60.0	5018 19.050
NEW	7.938	5/16	16.0	260.0	210.0	48.0	5018 7.940	NEW	19.447	49/64	32.0	535.0	470.0	60.0	5018 19.450
	8.000		16.0	260.0	210.0	48.0	5018 8.000	NEW	19.844	25/32	32.0	545.0	480.0	60.0	5018 19.840
NEW	8.334	21/64	16.0	270.0	215.0	48.0	5018 8.330	NEW	20.000		32.0	550.0	485.0	60.0	5018 20.000
NEW	8.500		16.0	275.0	220.0	48.0	5018 8.500	NEW	20.241	51/64	32.0	550.0	485.0	60.0	5018 20.240
NEW	8.731	11/32	16.0	280.0	230.0	48.0	5018 8.730	NEW	20.638	13/16	32.0	555.0	490.0	60.0	5018 20.640
	9.000		16.0	280.0	230.0	48.0	5018 9.000	NEW	21.000		32.0	560.0	495.0	60.0	5018 21.000
NEW	9.128	23/64	16.0	290.0	235.0	48.0	5018 9.130	NEW	21.034	53/64	32.0	560.0	495.0	60.0	5018 21.030
NEW	9.500		16.0	300.0	245.0	48.0	5018 9.500	NEW	21.431	27/32	32.0	570.0	505.0	60.0	5018 21.430
NEW	9.525	3/8	16.0	290.0	240.0	48.0	5018 9.530	NEW	21.828	55/64	32.0	580.0	515.0	60.0	5018 21.830
NEW	9.922	25/64	16.0	310.0	250.0	48.0	5018 9.920	NEW	22.000		32.0	580.0	515.0	60.0	5018 22.000
	10.000		20.0	320.0	260.0	50.0	5018 10.000	NEW	22.225		32.0	585.0	520.0	60.0	5018 22.230
NEW	10.319	13/32	20.0	320.0	265.0	50.0	5018 10.320	NEW	22.622	57/64	32.0	595.0	530.0	60.0	5018 22.620
NEW	10.500		20.0	330.0	275.0	50.0	5018 10.500	NEW	23.000		32.0	605.0	540.0	60.0	5018 23.000
NEW	10.716	27/64	20.0	340.0	285.0	50.0	5018 10.720	NEW	23.019	29/32	32.0	605.0	540.0	60.0	5018 23.020
NEW	11.000		20.0	340.0	285.0	50.0	5018 11.000	NEW	23.416	59/64	32.0	615.0	550.0	60.0	5018 23.420
NEW	11.113	7/16	20.0	340.0	290.0	50.0	5018 11.110	NEW	23.813	15/16	32.0	625.0	560.0	60.0	5018 23.810
NEW	11.500		20.0	355.0	300.0	50.0	5018 11.500	NEW	24.000		32.0	625.0	560.0	60.0	5018 24.000
NEW	11.906	15/32	20.0	370.0	305.0	50.0	5018 11.910	NEW	24.209	61/64	32.0	630.0	565.0	60.0	5018 24.210
	12.000		20.0	370.0	310.0	50.0	5018 12.000	NEW	24.606	31/32	32.0	640.0	575.0	60.0	5018 24.610
NEW	12.303	31/64	20.0	370.0	315.0	50.0	5018 12.300	NEW	25.000	63/64	32.0	650.0	585.0	60.0	5018 25.000
NEW	12.500		20.0	380.0	325.0	50.0	5018 12.500	NEW	25.400	1	32.0	660.0	595.0	60.0	5018 25.400
NEW	12.700	1/2	20.0	385.0	330.0	50.0	5018 12.700								
NEW	13.000		20.0	390.0	335.0	50.0	5018 13.000								
NEW	13.097	33/64	20.0	390.0	335.0	50.0	5018 13.100								
NEW	13.500		20.0	395.0	340.0	50.0	5018 13.500								
NEW	13.891	35/64	20.0	395.0	340.0	50.0	5018 13.890								
NEW	14.000		20.0	400.0	345.0	50.0	5018 14.000								
NEW	14.288	9/16	25.0	410.0	350.0	56.0	5018 14.290								
NEW	14.500		25.0	420.0	355.0	56.0	5018 14.500								



EB 80 single-fluted gun drills

Article no. 5639



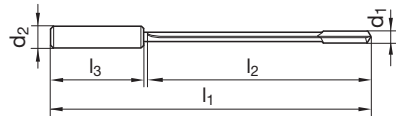
Cutting data page 79



head form G

P	M	K	N	S	H
●	●	○	○	●	○

Deep hole drills



Article no. 5639							Article no. 5639								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
	3.969	5/32	10.0	150.0	100.0	40.0	5639 3.970	NEW	14.684	37/64	25.0	420.0	360.0	56.0	5639 14.680
	4.000		12.0	150.0	100.0	45.0	5639 4.000		15.000		25.0	430.0	370.0	56.0	5639 15.000
	4.200		12.0	160.0	110.0	45.0	5639 4.200	NEW	15.081	19/32	25.0	430.0	370.0	56.0	5639 15.080
NEW	4.366	11/64	12.0	170.0	120.0	45.0	5639 4.370	NEW	15.478	39/64	25.0	445.0	380.0	56.0	5639 15.480
	4.500		12.0	170.0	120.0	45.0	5639 4.500		15.500		25.0	445.0	380.0	56.0	5639 15.500
NEW	4.763	3/16	12.0	180.0	130.0	45.0	5639 4.760	NEW	15.875	5/8	25.0	450.0	390.0	56.0	5639 15.880
	5.000		16.0	180.0	130.0	48.0	5639 5.000		16.000		25.0	455.0	395.0	56.0	5639 16.000
	5.159	13/64	16.0	180.0	130.0	48.0	5639 5.156	NEW	16.272	41/64	25.0	460.0	400.0	56.0	5639 16.270
	5.500		16.0	190.0	140.0	48.0	5639 5.500	NEW	16.500		25.0	465.0	405.0	56.0	5639 16.500
NEW	5.556	7/32	16.0	200.0	150.0	48.0	5639 5.560	NEW	16.669	21/32	25.0	470.0	410.0	56.0	5639 16.670
NEW	5.953	15/64	16.0	210.0	160.0	48.0	5639 5.950	NEW	17.000		25.0	475.0	415.0	56.0	5639 17.000
	6.000		16.0	210.0	160.0	48.0	5639 6.000	NEW	17.066	43/64	25.0	475.0	415.0	56.0	5639 17.070
	6.350	1/4	16.0	220.0	170.0	48.0	5639 6.350	NEW	17.463	11/16	25.0	485.0	425.0	56.0	5639 17.460
	6.500		16.0	220.0	170.0	48.0	5639 6.500	NEW	17.859	45/64	25.0	495.0	435.0	56.0	5639 17.860
NEW	6.747	17/64	16.0	235.0	185.0	48.0	5639 6.750	NEW	18.000		25.0	500.0	440.0	56.0	5639 18.000
	7.000		16.0	235.0	185.0	48.0	5639 7.000	NEW	18.256	23/32	25.0	505.0	445.0	56.0	5639 18.260
NEW	7.144	9/32	16.0	240.0	190.0	48.0	5639 7.140	NEW	18.653	47/64	25.0	515.0	455.0	56.0	5639 18.650
	7.500		16.0	245.0	195.0	48.0	5639 7.500	NEW	19.000		25.0	520.0	460.0	56.0	5639 19.000
NEW	7.541	19/64	16.0	250.0	200.0	48.0	5639 7.540	NEW	19.050	3/4	32.0	525.0	460.0	60.0	5639 19.050
	7.938	5/16	16.0	260.0	210.0	48.0	5639 7.938	NEW	19.447	49/64	32.0	535.0	470.0	60.0	5639 19.450
	8.000		16.0	260.0	210.0	48.0	5639 8.000	NEW	19.844	25/32	32.0	545.0	480.0	60.0	5639 19.840
NEW	8.334	21/64	16.0	270.0	215.0	48.0	5639 8.330	NEW	20.000		32.0	550.0	485.0	60.0	5639 20.000
	8.500		16.0	275.0	220.0	48.0	5639 8.500	NEW	20.241	51/64	32.0	550.0	485.0	60.0	5639 20.240
NEW	8.731	11/32	16.0	280.0	230.0	48.0	5639 8.730	NEW	20.638	13/16	32.0	555.0	490.0	60.0	5639 20.640
	9.000		16.0	280.0	230.0	48.0	5639 9.000	NEW	21.000		32.0	560.0	495.0	60.0	5639 21.000
NEW	9.128	23/64	16.0	290.0	235.0	48.0	5639 9.130	NEW	21.034	53/64	32.0	560.0	495.0	60.0	5639 21.030
	9.500		16.0	300.0	245.0	48.0	5639 9.500	NEW	21.431	27/32	32.0	570.0	505.0	60.0	5639 21.430
	9.525	3/8	16.0	290.0	240.0	48.0	5639 9.525	NEW	21.828	55/64	32.0	580.0	515.0	60.0	5639 21.830
NEW	9.922	25/64	16.0	310.0	250.0	48.0	5639 9.920	NEW	22.000		32.0	580.0	515.0	60.0	5639 22.000
	10.000		20.0	320.0	260.0	50.0	5639 10.000	NEW	22.225		32.0	585.0	520.0	60.0	5639 22.230
NEW	10.319	13/32	20.0	320.0	265.0	50.0	5639 10.320	NEW	22.622	57/64	32.0	595.0	530.0	60.0	5639 22.620
	10.500		20.0	330.0	275.0	50.0	5639 10.500	NEW	23.000		32.0	605.0	540.0	60.0	5639 23.000
NEW	10.716	27/64	20.0	340.0	285.0	50.0	5639 10.720	NEW	23.019	29/32	32.0	605.0	540.0	60.0	5639 23.020
	11.000		20.0	340.0	285.0	50.0	5639 11.000	NEW	23.416	59/64	32.0	615.0	550.0	60.0	5639 23.420
	11.113	7/16	20.0	340.0	290.0	50.0	5639 11.113	NEW	23.813	15/16	32.0	625.0	560.0	60.0	5639 23.810
	11.500		20.0	355.0	300.0	50.0	5639 11.500	NEW	24.000		32.0	625.0	560.0	60.0	5639 24.000
NEW	11.906	15/32	20.0	370.0	305.0	50.0	5639 11.910	NEW	24.209	61/64	32.0	630.0	565.0	60.0	5639 24.210
	12.000		20.0	370.0	310.0	50.0	5639 12.000	NEW	24.606	31/32	32.0	640.0	575.0	60.0	5639 24.610
NEW	12.303	31/64	20.0	370.0	315.0	50.0	5639 12.300	NEW	25.000	63/64	32.0	650.0	585.0	60.0	5639 25.000
	12.500		20.0	380.0	325.0	50.0	5639 12.500	NEW	25.400	1	32.0	660.0	595.0	60.0	5639 25.400
	12.700	1/2	20.0	385.0	330.0	50.0	5639 12.700								
	13.000		20.0	390.0	335.0	50.0	5639 13.000								
NEW	13.097	33/64	20.0	390.0	335.0	50.0	5639 13.100								
	13.500		20.0	395.0	340.0	50.0	5639 13.500								
NEW	13.891	35/64	20.0	395.0	340.0	50.0	5639 13.890								
	14.000		20.0	400.0	345.0	50.0	5639 14.000								
NEW	14.288	9/16	25.0	410.0	350.0	56.0	5639 14.290								
	14.500		25.0	420.0	355.0	56.0	5639 14.500								





## EB 80 single-fluted gun drills

Article no. **5234**

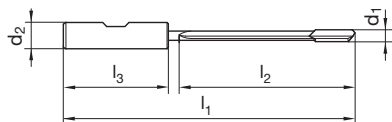


Cutting data page 79



head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
○	○	○	●	○	○



Article no. **5234**

Article no. **5234**

Article no. <b>5234</b>						Article no. <b>5234</b>							
d1		d2 h6	l1	l2	l3	Order no.	d1		d2 h6	l1	l2	l3	Order no.
mm	inch	mm	mm	mm	mm		mm	inch	mm	mm	mm	mm	
3.969	5/32	10.0	150.0	100.0	40.0	5234 3.970	14.684	37/64	25.0	420.0	360.0	56.0	5234 14.680
4.000		12.0	150.0	100.0	45.0	5234 4.000	15.000		25.0	430.0	370.0	56.0	5234 15.000
4.200		12.0	160.0	110.0	45.0	5234 4.200	15.081	19/32	25.0	430.0	370.0	56.0	5234 15.080
4.366	11/64	12.0	170.0	120.0	45.0	5234 4.370	15.478	39/64	25.0	445.0	380.0	56.0	5234 15.480
4.500		12.0	170.0	120.0	45.0	5234 4.500	15.500		25.0	445.0	380.0	56.0	5234 15.500
4.763	3/16	12.0	180.0	130.0	45.0	5234 4.760	15.875	5/8	25.0	450.0	390.0	56.0	5234 15.880
5.000		16.0	180.0	130.0	48.0	5234 5.000	16.000		25.0	455.0	395.0	56.0	5234 16.000
5.159	13/64	16.0	180.0	130.0	48.0	5234 5.160	16.272	41/64	25.0	460.0	400.0	56.0	5234 16.270
5.500		16.0	190.0	140.0	48.0	5234 5.500	16.500		25.0	465.0	405.0	56.0	5234 16.500
5.556	7/32	16.0	200.0	150.0	48.0	5234 5.560	16.669	21/32	25.0	470.0	410.0	56.0	5234 16.670
5.953	15/64	16.0	210.0	160.0	48.0	5234 5.950	17.000		25.0	475.0	415.0	56.0	5234 17.000
6.000		16.0	210.0	160.0	48.0	5234 6.000	17.066	43/64	25.0	475.0	415.0	56.0	5234 17.070
6.350	1/4	16.0	220.0	170.0	48.0	5234 6.350	17.463	11/16	25.0	485.0	425.0	56.0	5234 17.460
6.500		16.0	220.0	170.0	48.0	5234 6.500	17.859	45/64	25.0	495.0	435.0	56.0	5234 17.860
6.747	17/64	16.0	235.0	185.0	48.0	5234 6.750	18.000		25.0	500.0	440.0	56.0	5234 18.000
7.000		16.0	235.0	185.0	48.0	5234 7.000	18.256	23/32	25.0	505.0	445.0	56.0	5234 18.260
7.144	9/32	16.0	240.0	190.0	48.0	5234 7.140	18.653	47/64	25.0	515.0	455.0	56.0	5234 18.650
7.500		16.0	245.0	195.0	48.0	5234 7.500	19.000		25.0	520.0	460.0	56.0	5234 19.000
7.541	19/64	16.0	250.0	200.0	48.0	5234 7.540	19.050	3/4	32.0	525.0	460.0	60.0	5234 19.050
7.938	5/16	16.0	260.0	210.0	48.0	5234 7.940	19.447	49/64	32.0	535.0	570.0	60.0	5234 19.450
8.000		16.0	260.0	210.0	48.0	5234 8.000	19.844	25/32	32.0	545.0	480.0	60.0	5234 19.840
8.334	21/64	16.0	270.0	215.0	48.0	5234 8.330	20.000		32.0	550.0	485.0	60.0	5234 20.000
8.500		16.0	275.0	220.0	48.0	5234 8.500	20.241	51/64	32.0	550.0	485.0	60.0	5234 20.240
8.731	11/32	16.0	280.0	230.0	48.0	5234 8.730	20.638	13/16	32.0	555.0	490.0	60.0	5234 20.640
9.000		16.0	280.0	230.0	48.0	5234 9.000	21.000		32.0	560.0	495.0	60.0	5234 21.000
9.128	23/64	16.0	290.0	235.0	48.0	5234 9.130	21.034	53/64	32.0	560.0	495.0	60.0	5234 21.030
9.500		16.0	300.0	245.0	48.0	5234 9.500	21.431	27/32	32.0	570.0	505.0	60.0	5234 21.430
9.525	3/8	16.0	290.0	240.0	48.0	5234 9.530	21.828	55/64	32.0	580.0	515.0	60.0	5234 21.830
9.922	25/64	16.0	310.0	250.0	48.0	5234 9.920	22.000		32.0	580.0	515.0	60.0	5234 22.000
10.000		20.0	320.0	260.0	50.0	5234 10.000	22.225		32.0	585.0	520.0	60.0	5234 22.230
10.319	13/32	20.0	320.0	265.0	50.0	5234 10.320	22.622	57/64	32.0	595.0	530.0	60.0	5234 22.620
10.500		20.0	330.0	275.0	50.0	5234 10.500	23.000		32.0	605.0	540.0	60.0	5234 23.000
10.716	27/64	20.0	340.0	285.0	50.0	5234 10.720	23.019	29/32	32.0	605.0	540.0	60.0	5234 23.020
11.000		20.0	340.0	285.0	50.0	5234 11.000	23.416	59/64	32.0	615.0	550.0	60.0	5234 23.420
11.113	7/16	20.0	340.0	290.0	50.0	5234 11.110	23.813	15/16	32.0	625.0	560.0	60.0	5234 23.810
11.500		20.0	355.0	300.0	50.0	5234 11.500	24.000		32.0	625.0	560.0	60.0	5234 24.000
11.906	15/32	20.0	370.0	305.0	50.0	5234 11.910	24.209	61/64	32.0	630.0	565.0	60.0	5234 24.210
12.000		20.0	370.0	310.0	50.0	5234 12.000	24.606	31/32	32.0	640.0	575.0	60.0	5234 24.610
12.303	31/64	20.0	370.0	315.0	50.0	5234 12.300	25.000	63/64	32.0	650.0	585.0	60.0	5234 25.000
12.500		20.0	380.0	325.0	50.0	5234 12.500	25.400	1	32.0	660.0	595.0	60.0	5234 25.400
12.700	1/2	20.0	385.0	330.0	50.0	5234 12.700							
13.000		20.0	390.0	335.0	50.0	5234 13.000							
13.097	33/64	20.0	390.0	335.0	50.0	5234 13.100							
13.500		20.0	395.0	340.0	50.0	5234 13.500							
13.891	35/64	20.0	395.0	340.0	50.0	5234 13.890							
14.000		20.0	400.0	345.0	50.0	5234 14.000							
14.288	9/16	25.0	410.0	350.0	56.0	5234 14.290							
14.500		25.0	420.0	355.0	56.0	5234 14.500							





EB 80 single-fluted gun drills

Article no. 5460



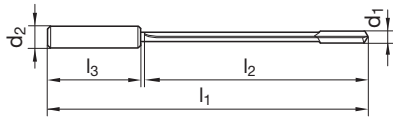
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with recessed coolant chamber • head form G • with lateral chip breaker

P	M	K	N	S	H
●	○	●	○	○	○

Deep hole drills



Article no. 5460							Article no. 5460								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
NEW	3.969	5/32	10.0	200.0	155.0	40.0	5460 3.970	NEW	14.684	37/64	25.0	570.0	509.0	56.0	5460 14.680
	4.000		12.0	200.0	155.0	45.0	5460 4.000	NEW	15.000		25.0	580.0	520.0	56.0	5460 15.000
	4.200		12.0	210.0	165.0	45.0	5460 4.200	NEW	15.081	19/32	25.0	580.0	520.0	56.0	5460 15.080
NEW	4.366	11/64	12.0	215.0	165.0	45.0	5460 4.370	NEW	15.478	39/64	25.0	595.0	534.0	56.0	5460 15.480
	4.500		12.0	220.0	175.0	45.0	5460 4.500	NEW	15.500		25.0	600.0	535.0	56.0	5460 15.500
NEW	4.763	3/16	12.0	230.0	180.0	45.0	5460 4.760	NEW	15.875	5/8	25.0	610.0	549.0	56.0	5460 15.880
	5.000		16.0	230.0	182.0	48.0	5460 5.000	NEW	16.000		25.0	615.0	555.0	56.0	5460 16.000
NEW	5.159	13/64	16.0	230.0	197.0	48.0	5460 5.160	NEW	16.272	41/64	25.0	620.0	559.0	56.0	5460 16.270
	5.500		16.0	245.0	197.0	48.0	5460 5.500	NEW	16.500		25.0	630.0	569.0	56.0	5460 16.500
NEW	5.556	7/32	16.0	260.0	207.0	48.0	5460 5.560	NEW	16.669	21/32	25.0	635.0	574.0	56.0	5460 16.670
NEW	5.953	15/64	16.0	260.0	212.0	48.0	5460 5.950	NEW	17.000		25.0	645.0	584.0	56.0	5460 17.000
	6.000		16.0	260.0	212.0	48.0	5460 6.000	NEW	17.066	43/64	25.0	645.0	584.0	56.0	5460 17.070
NEW	6.350	1/4	16.0	275.0	227.0	48.0	5460 6.350	NEW	17.463	11/16	25.0	660.0	599.0	56.0	5460 17.460
	6.500		16.0	275.0	227.0	48.0	5460 6.500	NEW	17.859	45/64	25.0	675.0	614.0	56.0	5460 17.860
NEW	6.747	17/64	16.0	290.0	242.0	48.0	5460 6.750	NEW	18.000		25.0	680.0	619.0	56.0	5460 18.000
	7.000		16.0	290.0	242.0	48.0	5460 7.000	NEW	18.256	23/32	25.0	685.0	624.0	56.0	5460 18.260
NEW	7.144	9/32	16.0	315.0	262.0	48.0	5460 7.140	NEW	18.653	47/64	25.0	700.0	639.0	56.0	5460 18.650
NEW	7.500		16.0	320.0	270.0	48.0	5460 7.500	NEW	19.000		25.0	710.0	649.0	56.0	5460 19.000
NEW	7.541	19/64	16.0	320.0	272.0	48.0	5460 7.540	NEW	19.050	3/4	32.0	715.0	650.0	60.0	5460 19.050
NEW	7.938	5/16	16.0	320.0	272.0	48.0	5460 7.940	NEW	19.447	49/64	32.0	730.0	665.0	60.0	5460 19.450
	8.000		16.0	320.0	272.0	48.0	5460 8.000	NEW	19.844	25/32	32.0	745.0	680.0	60.0	5460 19.840
NEW	8.334	21/64	16.0	355.0	302.0	48.0	5460 8.330	NEW	20.000		32.0	750.0	685.0	60.0	5460 20.000
NEW	8.500		16.0	360.0	305.0	48.0	5460 8.500	NEW	20.241	51/64	32.0	750.0	685.0	60.0	5460 20.240
NEW	8.731	11/32	16.0	370.0	317.0	48.0	5460 8.730	NEW	20.638	13/16	32.0	760.0	695.0	60.0	5460 20.640
	9.000		16.0	350.0	302.0	48.0	5460 9.000	NEW	21.000		32.0	770.0	705.0	60.0	5460 21.000
NEW	9.128	23/64	16.0	395.0	327.0	48.0	5460 9.130	NEW	21.034	53/64	32.0	770.0	705.0	60.0	5460 21.030
NEW	9.500		16.0	395.0	340.0	48.0	5460 9.500	NEW	21.431	27/32	32.0	785.0	720.0	60.0	5460 21.430
NEW	9.525	3/8	16.0	380.0	330.0	48.0	5460 9.530	NEW	21.828	55/64	32.0	795.0	730.0	60.0	5460 21.830
NEW	9.922	25/64	16.0	400.0	350.0	48.0	5460 9.920	NEW	22.000		32.0	800.0	735.0	60.0	5460 22.000
	10.000		20.0	400.0	350.0	50.0	5460 10.000	NEW	22.225		32.0	810.0	745.0	60.0	5460 22.230
NEW	10.319	13/32	20.0	425.0	370.0	50.0	5460 10.320	NEW	22.622	57/64	32.0	820.0	755.0	60.0	5460 22.620
NEW	10.500		20.0	435.0	380.0	50.0	5460 10.500	NEW	23.000		32.0	835.0	770.0	60.0	5460 23.000
NEW	10.716	27/64	20.0	430.0	380.0	50.0	5460 10.720	NEW	23.019	29/32	32.0	835.0	770.0	60.0	5460 23.020
NEW	11.000		20.0	430.0	380.0	50.0	5460 11.000	NEW	23.416	59/64	32.0	850.0	785.0	60.0	5460 23.420
NEW	11.113	7/16	20.0	430.0	380.0	50.0	5460 11.110	NEW	23.813	15/16	32.0	860.0	798.0	60.0	5460 23.810
NEW	11.500		20.0	470.0	415.0	50.0	5460 11.500	NEW	24.000		32.0	865.0	800.0	60.0	5460 24.000
NEW	11.906	15/32	20.0	450.0	400.0	50.0	5460 11.910	NEW	24.209	61/64	32.0	875.0	810.0	60.0	5460 24.210
	12.000		20.0	450.0	400.0	50.0	5460 12.000	NEW	24.606	31/32	32.0	885.0	820.0	60.0	5460 24.610
NEW	12.303	31/64	20.0	495.0	440.0	50.0	5460 12.300	NEW	25.000	63/64	32.0	900.0	835.0	60.0	5460 25.000
NEW	12.500		20.0	505.0	450.0	50.0	5460 12.500	NEW	25.400	1	32.0	910.0	845.0	60.0	5460 25.400
NEW	12.700	1/2	20.0	500.0	450.0	50.0	5460 12.700								
NEW	13.000		20.0	520.0	465.0	50.0	5460 13.000								
NEW	13.097	33/64	20.0	520.0	465.0	50.0	5460 13.100								
NEW	13.500		20.0	530.0	475.0	50.0	5460 13.500								
NEW	13.891	35/64	20.0	535.0	480.0	50.0	5460 13.890								
NEW	14.000		20.0	540.0	485.0	50.0	5460 14.000								
NEW	14.288	9/16	25.0	555.0	494.0	56.0	5460 14.290								
NEW	14.500		25.0	565.0	500.0	56.0	5460 14.500								



## EB 80 single-fluted gun drills

Article no. **5640**

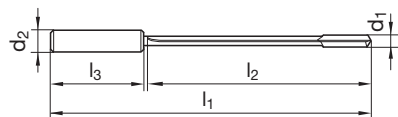


Cutting data page 79



head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	●	○	○	●	○



Article no. <b>5640</b>							Article no. <b>5640</b>								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
	3.969	5/32	10.0	200.0	155.0	40.0	5640 3.970	NEW	14.684	37/64	25.0	570.0	509.0	56.0	5640 14.680
	4.000		12.0	200.0	155.0	45.0	5640 4.000		15.000		25.0	580.0	520.0	56.0	5640 15.000
	4.200		12.0	210.0	165.0	45.0	5640 4.200	NEW	15.081	19/32	25.0	580.0	520.0	56.0	5640 15.080
NEW	4.366	11/64	12.0	215.0	165.0	45.0	5640 4.370	NEW	15.478	39/64	25.0	595.0	534.0	56.0	5640 15.480
	4.500		12.0	220.0	175.0	45.0	5640 4.500		15.500		25.0	600.0	535.0	56.0	5640 15.500
NEW	4.763	3/16	12.0	230.0	180.0	45.0	5640 4.760	NEW	15.875	5/8	25.0	610.0	549.0	56.0	5640 15.880
	5.000		16.0	230.0	182.0	48.0	5640 5.000		16.000		25.0	615.0	555.0	56.0	5640 16.000
	5.159	13/64	16.0	230.0	182.0	48.0	5640 5.156	NEW	16.272	41/64	25.0	620.0	559.0	56.0	5640 16.270
	5.500		16.0	245.0	197.0	48.0	5640 5.500	NEW	16.500		25.0	630.0	569.0	56.0	5640 16.500
NEW	5.556	7/32	16.0	260.0	207.0	48.0	5640 5.560	NEW	16.669	21/32	25.0	635.0	574.0	56.0	5640 16.670
NEW	5.953	15/64	16.0	260.0	212.0	48.0	5640 5.950	NEW	17.000		25.0	645.0	584.0	56.0	5640 17.000
	6.000		16.0	260.0	212.0	48.0	5640 6.000	NEW	17.066	43/64	25.0	645.0	584.0	56.0	5640 17.070
	6.350	1/4	16.0	275.0	227.0	48.0	5640 6.350	NEW	17.463	11/16	25.0	660.0	599.0	56.0	5640 17.460
	6.500		16.0	275.0	227.0	48.0	5640 6.500	NEW	17.859	45/64	25.0	675.0	614.0	56.0	5640 17.860
NEW	6.747	17/64	16.0	290.0	242.0	48.0	5640 6.750	NEW	18.000		25.0	680.0	619.0	56.0	5640 18.000
	7.000		16.0	290.0	242.0	48.0	5640 7.000	NEW	18.256	23/32	25.0	685.0	624.0	56.0	5640 18.260
NEW	7.144	9/32	16.0	315.0	262.0	48.0	5640 7.140	NEW	18.653	47/64	25.0	700.0	639.0	56.0	5640 18.650
	7.500		16.0	320.0	270.0	48.0	5640 7.500	NEW	19.000		25.0	710.0	649.0	56.0	5640 19.000
NEW	7.541	19/64	16.0	320.0	272.0	48.0	5640 7.540	NEW	19.050	3/4	32.0	715.0	650.0	60.0	5640 19.050
	7.938	5/16	16.0	320.0	272.0	48.0	5640 7.938	NEW	19.447	49/64	32.0	730.0	665.0	60.0	5640 19.450
	8.000		16.0	320.0	272.0	48.0	5640 8.000	NEW	19.844	25/32	32.0	745.0	680.0	60.0	5640 19.840
NEW	8.334	21/64	16.0	355.0	302.0	48.0	5640 8.330	NEW	20.000		32.0	750.0	685.0	60.0	5640 20.000
	8.500		16.0	360.0	305.0	48.0	5640 8.500	NEW	20.241	51/64	32.0	750.0	685.0	60.0	5640 20.240
NEW	8.731	11/32	16.0	370.0	317.0	48.0	5640 8.730	NEW	20.638	13/16	32.0	760.0	695.0	60.0	5640 20.640
	9.000		16.0	350.0	302.0	48.0	5640 9.000	NEW	21.000		32.0	770.0	705.0	60.0	5640 21.000
NEW	9.128	23/64	16.0	395.0	327.0	48.0	5640 9.130	NEW	21.034	53/64	32.0	770.0	705.0	60.0	5640 21.030
	9.500		16.0	395.0	340.0	48.0	5640 9.500	NEW	21.431	27/32	32.0	785.0	720.0	60.0	5640 21.430
	9.525	3/8	16.0	380.0	330.0	48.0	5640 9.525	NEW	21.828	55/64	32.0	795.0	730.0	60.0	5640 21.830
NEW	9.922	25/64	16.0	400.0	350.0	48.0	5640 9.920	NEW	22.000		32.0	800.0	735.0	60.0	5640 22.000
	10.000		20.0	400.0	350.0	50.0	5640 10.000	NEW	22.225		32.0	810.0	745.0	60.0	5640 22.230
NEW	10.319	13/32	20.0	425.0	370.0	50.0	5640 10.320	NEW	22.622	57/64	32.0	820.0	755.0	60.0	5640 22.620
	10.500		20.0	435.0	380.0	50.0	5640 10.500	NEW	23.000		32.0	835.0	770.0	60.0	5640 23.000
NEW	10.716	27/64	20.0	430.0	380.0	50.0	5640 10.720	NEW	23.019	29/32	32.0	835.0	770.0	60.0	5640 23.020
	11.000		20.0	430.0	380.0	50.0	5640 11.000	NEW	23.416	59/64	32.0	850.0	785.0	60.0	5640 23.420
	11.113	7/16	20.0	430.0	380.0	50.0	5640 11.113	NEW	23.813	15/16	32.0	860.0	798.0	60.0	5640 23.810
	11.500		20.0	470.0	415.0	50.0	5640 11.500	NEW	24.000		32.0	865.0	800.0	60.0	5640 24.000
NEW	11.906	15/32	20.0	450.0	400.0	50.0	5640 11.910	NEW	24.209	61/64	32.0	875.0	810.0	60.0	5640 24.210
	12.000		20.0	450.0	400.0	50.0	5640 12.000	NEW	24.606	31/32	32.0	885.0	820.0	60.0	5640 24.610
NEW	12.303	31/64	20.0	495.0	440.0	50.0	5640 12.300	NEW	25.000	63/64	32.0	900.0	835.0	60.0	5640 25.000
	12.500		20.0	505.0	450.0	50.0	5640 12.500	NEW	25.400	1	32.0	910.0	845.0	60.0	5640 25.400
	12.700	1/2	20.0	500.0	450.0	50.0	5640 12.700								
	13.000		20.0	520.0	465.0	50.0	5640 13.000								
NEW	13.097	33/64	20.0	520.0	465.0	50.0	5640 13.100								
	13.500		20.0	530.0	475.0	50.0	5640 13.500								
NEW	13.891	35/64	20.0	535.0	480.0	50.0	5640 13.890								
	14.000		20.0	540.0	485.0	50.0	5640 14.000								
NEW	14.288	9/16	25.0	555.0	494.0	56.0	5640 14.290								
	14.500		25.0	565.0	500.0	56.0	5640 14.500								



EB 80 single-fluted gun drills

Article no. 5812



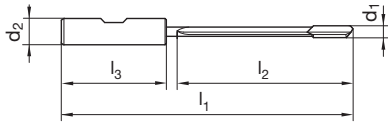
Cutting data page 79



head form G

P	M	K	N	S	H
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Deep hole drills



Article no. 5812

Article no. 5812

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.969	5/32	10.0	200.0	155.0	40.0	5812 3.970	14.684	37/64	25.0	570.0	509.0	56.0	5812 14.680
4.000		12.0	200.0	155.0	45.0	5812 4.000	15.000		25.0	580.0	520.0	56.0	5812 15.000
4.200		12.0	210.0	165.0	45.0	5812 4.200	15.081	19/32	25.0	580.0	520.0	56.0	5812 15.080
4.366	11/64	12.0	215.0	165.0	45.0	5812 4.370	15.478	39/64	25.0	595.0	534.0	56.0	5812 15.480
4.500		12.0	220.0	175.0	45.0	5812 4.500	15.500		25.0	600.0	535.0	56.0	5812 15.500
4.763	3/16	12.0	230.0	180.0	45.0	5812 4.760	15.875	5/8	25.0	610.0	549.0	56.0	5812 15.880
5.000		16.0	230.0	182.0	48.0	5812 5.000	16.000		25.0	615.0	555.0	56.0	5812 16.000
5.159	13/64	16.0	230.0	197.0	48.0	5812 5.160	16.272	41/64	25.0	620.0	559.0	56.0	5812 16.270
5.500		16.0	245.0	197.0	48.0	5812 5.500	16.500		25.0	630.0	569.0	56.0	5812 16.500
5.556	7/32	16.0	260.0	207.0	48.0	5812 5.560	16.669	21/32	25.0	635.0	574.0	56.0	5812 16.670
5.953	15/64	16.0	260.0	212.0	48.0	5812 5.950	17.000		25.0	645.0	584.0	56.0	5812 17.000
6.000		16.0	260.0	212.0	48.0	5812 6.000	17.066	43/64	25.0	645.0	584.0	56.0	5812 17.070
6.350	1/4	16.0	275.0	227.0	48.0	5812 6.350	17.463	11/16	25.0	660.0	599.0	56.0	5812 17.460
6.500		16.0	275.0	227.0	48.0	5812 6.500	17.859	45/64	25.0	675.0	614.0	56.0	5812 17.860
6.747	17/64	16.0	290.0	242.0	48.0	5812 6.750	18.000		25.0	680.0	619.0	56.0	5812 18.000
7.000		16.0	290.0	242.0	48.0	5812 7.000	18.256	23/32	25.0	685.0	624.0	56.0	5812 18.260
7.144	9/32	16.0	315.0	262.0	48.0	5812 7.140	18.653	47/64	25.0	700.0	639.0	56.0	5812 18.650
7.500		16.0	320.0	270.0	48.0	5812 7.500	19.000		25.0	710.0	649.0	56.0	5812 19.000
7.541	19/64	16.0	320.0	272.0	48.0	5812 7.540	19.050	3/4	32.0	715.0	650.0	60.0	5812 19.050
7.938	5/16	16.0	320.0	272.0	48.0	5812 7.940	19.447	49/64	32.0	730.0	665.0	60.0	5812 19.450
8.000		16.0	320.0	272.0	48.0	5812 8.000	19.844	25/32	32.0	745.0	680.0	60.0	5812 19.840
8.334	21/64	16.0	355.0	302.0	48.0	5812 8.330	20.000		32.0	750.0	685.0	60.0	5812 20.000
8.500		16.0	360.0	305.0	48.0	5812 8.500	20.241	51/64	32.0	750.0	685.0	60.0	5812 20.240
8.731	11/32	16.0	370.0	317.0	48.0	5812 8.730	20.638	13/16	32.0	760.0	695.0	60.0	5812 20.640
9.000		16.0	350.0	302.0	48.0	5812 9.000	21.000		32.0	770.0	705.0	60.0	5812 21.000
9.128	23/64	16.0	395.0	327.0	48.0	5812 9.130	21.034	53/64	32.0	770.0	705.0	60.0	5812 21.030
9.500		16.0	395.0	340.0	48.0	5812 9.500	21.431	27/32	32.0	785.0	720.0	60.0	5812 21.430
9.525	3/8	16.0	380.0	330.0	48.0	5812 9.530	21.828	55/64	32.0	795.0	730.0	60.0	5812 21.830
9.922	25/64	16.0	400.0	350.0	48.0	5812 9.920	22.000		32.0	800.0	735.0	60.0	5812 22.000
10.000		20.0	400.0	350.0	50.0	5812 10.000	22.225		32.0	810.0	745.0	60.0	5812 22.230
10.319	13/32	20.0	425.0	370.0	50.0	5812 10.320	22.622	57/64	32.0	820.0	755.0	60.0	5812 22.620
10.500		20.0	435.0	380.0	50.0	5812 10.500	23.000		32.0	835.0	770.0	60.0	5812 23.000
10.716	27/64	20.0	430.0	380.0	50.0	5812 10.720	23.019	29/32	32.0	835.0	770.0	60.0	5812 23.020
11.000		20.0	430.0	380.0	50.0	5812 11.000	23.416	59/64	32.0	850.0	785.0	60.0	5812 23.420
11.113	7/16	20.0	430.0	380.0	50.0	5812 11.110	23.813	15/16	32.0	860.0	798.0	60.0	5812 23.810
11.500		20.0	470.0	415.0	50.0	5812 11.500	24.000		32.0	865.0	800.0	60.0	5812 24.000
11.906	15/32	20.0	450.0	400.0	50.0	5812 11.910	24.209	61/64	32.0	875.0	810.0	60.0	5812 24.210
12.000		20.0	450.0	400.0	50.0	5812 12.000	24.606	31/32	32.0	885.0	820.0	60.0	5812 24.610
12.303	31/64	20.0	495.0	440.0	50.0	5812 12.300	25.000	63/64	32.0	900.0	835.0	60.0	5812 25.000
12.500		20.0	505.0	450.0	50.0	5812 12.500	25.400	1	32.0	910.0	845.0	60.0	5812 25.400
12.700	1/2	20.0	500.0	450.0	50.0	5812 12.700							
13.000		20.0	520.0	465.0	50.0	5812 13.000							
13.097	33/64	20.0	520.0	465.0	50.0	5812 13.100							
13.500		20.0	530.0	475.0	50.0	5812 13.500							
13.891	35/64	20.0	535.0	480.0	50.0	5812 13.890							
14.000		20.0	540.0	485.0	50.0	5812 14.000							
14.288	9/16	25.0	555.0	494.0	56.0	5812 14.290							
14.500		25.0	565.0	500.0	56.0	5812 14.500							



## EB 80 single-fluted gun drills

Article no. **5022**

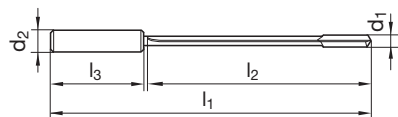


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with recessed coolant chamber • head form G • with lateral chip breaker

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	○	●	○	○	○



Article no. <b>5022</b>							Article no. <b>5022</b>								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
NEW	3.969	5/32	10.0	230.0	185.0	40.0	5022 3.970	NEW	14.684	37/64	25.0	715.0	654.0	56.0	5022 14.680
	4.000		12.0	230.0	185.0	45.0	5022 4.000	NEW	15.000		25.0	730.0	670.0	56.0	5022 15.000
	4.200		12.0	240.0	195.0	45.0	5022 4.200	NEW	15.081	19/32	25.0	730.0	670.0	56.0	5022 15.080
NEW	4.366	11/64	12.0	250.0	205.0	45.0	5022 4.370	NEW	15.478	39/64	25.0	755.0	690.0	56.0	5022 15.480
	4.500		12.0	250.0	205.0	45.0	5022 4.500	NEW	15.500		25.0	755.0	690.0	56.0	5022 15.500
NEW	4.763	3/16	12.0	275.0	225.0	45.0	5022 4.760	NEW	15.875	5/8	25.0	765.0	704.0	56.0	5022 15.880
	5.000		16.0	280.0	232.0	48.0	5022 5.000	NEW	16.000		25.0	775.0	715.0	56.0	5022 16.000
NEW	5.159	13/64	16.0	280.0	252.0	48.0	5022 5.160	NEW	16.272	41/64	25.0	785.0	724.0	56.0	5022 16.270
	5.500		16.0	300.0	252.0	48.0	5022 5.500	NEW	16.500		25.0	795.0	734.0	56.0	5022 16.500
NEW	5.556	7/32	16.0	315.0	262.0	48.0	5022 5.560	NEW	16.669	21/32	25.0	800.0	739.0	56.0	5022 16.670
NEW	5.953	15/64	16.0	330.0	277.0	48.0	5022 5.950	NEW	17.000		25.0	815.0	754.0	56.0	5022 17.000
	6.000		16.0	320.0	272.0	48.0	5022 6.000	NEW	17.066	43/64	25.0	820.0	759.0	56.0	5022 17.070
NEW	6.350	1/4	16.0	340.0	292.0	48.0	5022 6.350	NEW	17.463	11/16	25.0	835.0	774.0	56.0	5022 17.460
	6.500		16.0	340.0	292.0	48.0	5022 6.500	NEW	17.859	45/64	25.0	850.0	789.0	56.0	5022 17.860
NEW	6.747	17/64	16.0	365.0	312.0	48.0	5022 6.750	NEW	18.000		25.0	860.0	799.0	56.0	5022 18.000
	7.000		16.0	370.0	322.0	48.0	5022 7.000	NEW	18.256	23/32	25.0	870.0	809.0	56.0	5022 18.260
NEW	7.144	9/32	16.0	385.0	332.0	48.0	5022 7.140	NEW	18.653	47/64	25.0	885.0	824.0	56.0	5022 18.650
NEW	7.500		16.0	395.0	345.0	48.0	5022 7.500	NEW	19.000		25.0	900.0	839.0	56.0	5022 19.000
NEW	7.541	19/64	16.0	395.0	345.0	48.0	5022 7.540	NEW	19.050	3/4	32.0	905.0	840.0	60.0	5022 19.050
NEW	7.938	5/16	16.0	420.0	372.0	48.0	5022 7.940	NEW	19.447	49/64	32.0	925.0	860.0	60.0	5022 19.450
	8.000		16.0	420.0	372.0	48.0	5022 8.000	NEW	19.844	25/32	32.0	940.0	875.0	60.0	5022 19.840
NEW	8.334	21/64	16.0	440.0	387.0	48.0	5022 8.330	NEW	20.000		32.0	950.0	885.0	60.0	5022 20.000
NEW	8.500		16.0	445.0	390.0	48.0	5022 8.500	NEW	20.241	51/64	32.0	950.0	885.0	60.0	5022 20.240
NEW	8.731	11/32	16.0	450.0	402.0	48.0	5022 8.730	NEW	20.638	13/16	32.0	965.0	900.0	60.0	5022 20.640
	9.000		16.0	450.0	402.0	48.0	5022 9.000	NEW	21.000		32.0	980.0	915.0	60.0	5022 21.000
NEW	9.128	23/64	16.0	475.0	422.0	48.0	5022 9.130	NEW	21.034	53/64	32.0	980.0	915.0	60.0	5022 21.030
NEW	9.500		16.0	490.0	435.0	48.0	5022 9.500	NEW	21.431	27/32	32.0	1000.0	935.0	60.0	5022 21.430
NEW	9.525	3/8	16.0	480.0	432.0	48.0	5022 9.530	NEW	21.828	55/64	32.0	1015.0	950.0	60.0	5022 21.830
NEW	9.922	25/64	16.0	510.0	460.0	48.0	5022 9.920	NEW	22.000		32.0	1020.0	955.0	60.0	5022 22.000
	10.000		20.0	510.0	460.0	50.0	5022 10.000	NEW	22.225		32.0	1030.0	965.0	60.0	5022 22.230
NEW	10.319	13/32	20.0	530.0	475.0	50.0	5022 10.320	NEW	22.622	57/64	32.0	1050.0	985.0	60.0	5022 22.620
NEW	10.500		20.0	540.0	485.0	50.0	5022 10.500	NEW	23.000		32.0	1065.0	1000.0	60.0	5022 23.000
NEW	10.716	27/64	20.0	545.0	490.0	50.0	5022 10.720	NEW	23.019	29/32	32.0	1065.0	1000.0	60.0	5022 23.020
NEW	11.000		20.0	550.0	500.0	50.0	5022 11.000	NEW	23.416	59/64	32.0	1080.0	1015.0	60.0	5022 23.420
NEW	11.113	7/16	20.0	550.0	500.0	50.0	5022 11.110	NEW	23.813	15/16	32.0	1100.0	1035.0	60.0	5022 23.810
NEW	11.500		20.0	585.0	530.0	50.0	5022 11.500	NEW	24.000		32.0	1105.0	1040.0	60.0	5022 24.000
NEW	11.906	15/32	20.0	600.0	550.0	50.0	5022 11.910	NEW	24.209	61/64	32.0	1115.0	1050.0	60.0	5022 24.210
	12.000		20.0	600.0	550.0	50.0	5022 12.000	NEW	24.606	31/32	32.0	1130.0	1065.0	60.0	5022 24.610
NEW	12.303	31/64	20.0	615.0	560.0	50.0	5022 12.300	NEW	25.000	63/64	32.0	1150.0	1085.0	60.0	5022 25.000
NEW	12.500		20.0	630.0	575.0	50.0	5022 12.500	NEW	25.400	1	32.0	1165.0	1100.0	60.0	5022 25.400
NEW	12.700	1/2	20.0	635.0	585.0	50.0	5022 12.700								
NEW	13.000		20.0	650.0	595.0	50.0	5022 13.000								
NEW	13.097	33/64	20.0	650.0	595.0	50.0	5022 13.100								
NEW	13.500		20.0	660.0	605.0	50.0	5022 13.500								
NEW	13.891	35/64	20.0	675.0	620.0	50.0	5022 13.890								
NEW	14.000		20.0	680.0	625.0	50.0	5022 14.000								
NEW	14.288	9/16	25.0	700.0	639.0	56.0	5022 14.290								
NEW	14.500		25.0	710.0	645.0	56.0	5022 14.500								



EB 80 single-fluted gun drills

Article no. 5641



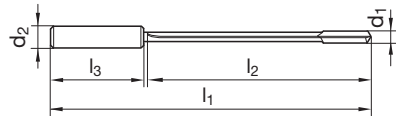
Cutting data page 79



head form G

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Deep hole drills



Article no. 5641							Article no. 5641								
	d1		d2 h6	l1	l2	l3	Order no.		d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm			mm	inch	mm	mm	mm	mm	
	3.969	5/32	10.0	230.0	185.0	40.0	5641 3.970	NEW	14.684	37/64	25.0	715.0	654.0	56.0	5641 14.680
	4.000		12.0	230.0	185.0	45.0	5641 4.000		15.000		25.0	730.0	670.0	56.0	5641 15.000
	4.200		12.0	240.0	195.0	45.0	5641 4.200	NEW	15.081	19/32	25.0	730.0	670.0	56.0	5641 15.080
NEW	4.366	11/64	12.0	250.0	205.0	45.0	5641 4.370	NEW	15.478	39/64	25.0	755.0	690.0	56.0	5641 15.480
	4.500		12.0	250.0	205.0	45.0	5641 4.500		15.500		25.0	755.0	690.0	56.0	5641 15.500
NEW	4.763	3/16	12.0	275.0	225.0	45.0	5641 4.760	NEW	15.875	5/8	25.0	765.0	704.0	56.0	5641 15.880
	5.000		16.0	280.0	232.0	48.0	5641 5.000		16.000		25.0	775.0	715.0	56.0	5641 16.000
	5.159	13/64	16.0	280.0	232.0	48.0	5641 5.156	NEW	16.272	41/64	25.0	785.0	724.0	56.0	5641 16.270
	5.500		16.0	300.0	252.0	48.0	5641 5.500	NEW	16.500		25.0	795.0	734.0	56.0	5641 16.500
NEW	5.556	7/32	16.0	315.0	262.0	48.0	5641 5.560	NEW	16.669	21/32	25.0	800.0	739.0	56.0	5641 16.670
NEW	5.953	15/64	16.0	330.0	277.0	48.0	5641 5.950	NEW	17.000		25.0	815.0	754.0	56.0	5641 17.000
	6.000		16.0	320.0	272.0	48.0	5641 6.000	NEW	17.066	43/64	25.0	820.0	759.0	56.0	5641 17.070
	6.350	1/4	16.0	340.0	292.0	48.0	5641 6.350	NEW	17.463	11/16	25.0	835.0	774.0	56.0	5641 17.460
	6.500		16.0	340.0	292.0	48.0	5641 6.500	NEW	17.859	45/64	25.0	850.0	789.0	56.0	5641 17.860
NEW	6.747	17/64	16.0	365.0	312.0	48.0	5641 6.750	NEW	18.000		25.0	860.0	799.0	56.0	5641 18.000
	7.000		16.0	370.0	322.0	48.0	5641 7.000	NEW	18.256	23/32	25.0	870.0	809.0	56.0	5641 18.260
NEW	7.144	9/32	16.0	385.0	332.0	48.0	5641 7.140	NEW	18.653	47/64	25.0	885.0	824.0	56.0	5641 18.650
	7.500		16.0	395.0	345.0	48.0	5641 7.500	NEW	19.000		25.0	900.0	839.0	56.0	5641 19.000
NEW	7.541	19/64	16.0	395.0	345.0	48.0	5641 7.540	NEW	19.050	3/4	32.0	905.0	840.0	60.0	5641 19.050
	7.938	5/16	16.0	420.0	372.0	48.0	5641 7.938	NEW	19.447	49/64	32.0	925.0	860.0	60.0	5641 19.450
	8.000		16.0	420.0	372.0	48.0	5641 8.000	NEW	19.844	25/32	32.0	940.0	875.0	60.0	5641 19.840
NEW	8.334	21/64	16.0	440.0	387.0	48.0	5641 8.330	NEW	20.000		32.0	950.0	885.0	60.0	5641 20.000
	8.500		16.0	445.0	390.0	48.0	5641 8.500	NEW	20.241	51/64	32.0	950.0	885.0	60.0	5641 20.240
NEW	8.731	11/32	16.0	450.0	402.0	48.0	5641 8.730	NEW	20.638	13/16	32.0	965.0	900.0	60.0	5641 20.640
	9.000		16.0	450.0	402.0	48.0	5641 9.000	NEW	21.000		32.0	980.0	915.0	60.0	5641 21.000
NEW	9.128	23/64	16.0	475.0	422.0	48.0	5641 9.130	NEW	21.034	53/64	32.0	980.0	915.0	60.0	5641 21.030
	9.500		16.0	490.0	435.0	48.0	5641 9.500	NEW	21.431	27/32	32.0	1000.0	935.0	60.0	5641 21.430
	9.525	3/8	16.0	480.0	432.0	48.0	5641 9.525	NEW	21.828	55/64	32.0	1015.0	950.0	60.0	5641 21.830
NEW	9.922	25/64	16.0	510.0	460.0	48.0	5641 9.920	NEW	22.000		32.0	1020.0	955.0	60.0	5641 22.000
	10.000		20.0	510.0	460.0	50.0	5641 10.000	NEW	22.225		32.0	1030.0	965.0	60.0	5641 22.230
NEW	10.319	13/32	20.0	530.0	475.0	50.0	5641 10.320	NEW	22.622	57/64	32.0	1050.0	985.0	60.0	5641 22.620
	10.500		20.0	540.0	485.0	50.0	5641 10.500	NEW	23.000		32.0	1065.0	1000.0	60.0	5641 23.000
NEW	10.716	27/64	20.0	545.0	490.0	50.0	5641 10.720	NEW	23.019	29/32	32.0	1065.0	1000.0	60.0	5641 23.020
	11.000		20.0	550.0	500.0	50.0	5641 11.000	NEW	23.416	59/64	32.0	1080.0	1015.0	60.0	5641 23.420
	11.113	7/16	20.0	550.0	500.0	50.0	5641 11.113	NEW	23.813	15/16	32.0	1100.0	1035.0	60.0	5641 23.810
	11.500		20.0	585.0	530.0	50.0	5641 11.500	NEW	24.000		32.0	1105.0	1040.0	60.0	5641 24.000
NEW	11.906	15/32	20.0	600.0	550.0	50.0	5641 11.910	NEW	24.209	61/64	32.0	1115.0	1050.0	60.0	5641 24.210
	12.000		20.0	600.0	550.0	50.0	5641 12.000	NEW	24.606	31/32	32.0	1130.0	1065.0	60.0	5641 24.610
NEW	12.303	31/64	20.0	615.0	560.0	50.0	5641 12.300	NEW	25.000	63/64	32.0	1150.0	1085.0	60.0	5641 25.000
	12.500		20.0	630.0	575.0	50.0	5641 12.500	NEW	25.400	1	32.0	1165.0	1100.0	60.0	5641 25.400
	12.700	1/2	20.0	635.0	585.0	50.0	5641 12.700								
	13.000		20.0	650.0	595.0	50.0	5641 13.000								
NEW	13.097	33/64	20.0	650.0	595.0	50.0	5641 13.100								
	13.500		20.0	660.0	605.0	50.0	5641 13.500								
NEW	13.891	35/64	20.0	675.0	620.0	50.0	5641 13.890								
	14.000		20.0	680.0	625.0	50.0	5641 14.000								
NEW	14.288	9/16	25.0	700.0	639.0	56.0	5641 14.290								
	14.500		25.0	710.0	645.0	56.0	5641 14.500								



## EB 80 single-fluted gun drills

Article no. **5689**

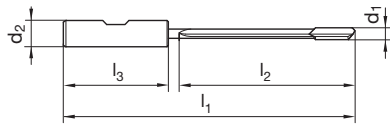


Cutting data page 79



head form G

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Article no. **5689**

Article no. **5689**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	3.969	5/32	10.0	230.0	185.0	40.0	5689 3.970
	4.000		12.0	230.0	185.0	45.0	5689 4.000
NEW	4.200		12.0	240.0	195.0	45.0	5689 4.200
NEW	4.366	11/64	12.0	250.0	205.0	45.0	5689 4.370
NEW	4.500		12.0	250.0	205.0	45.0	5689 4.500
NEW	4.763	3/16	12.0	275.0	225.0	45.0	5689 4.760
	5.000		16.0	280.0	232.0	48.0	5689 5.000
NEW	5.159	13/64	16.0	280.0	252.0	48.0	5689 5.160
NEW	5.500		16.0	300.0	252.0	48.0	5689 5.500
NEW	5.556	7/32	16.0	315.0	262.0	48.0	5689 5.560
NEW	5.953	15/64	16.0	330.0	277.0	48.0	5689 5.950
	6.000		16.0	320.0	272.0	48.0	5689 6.000
NEW	6.350	1/4	16.0	340.0	292.0	48.0	5689 6.350
NEW	6.500		16.0	340.0	292.0	48.0	5689 6.500
NEW	6.747	17/64	16.0	365.0	312.0	48.0	5689 6.750
	7.000		16.0	370.0	322.0	48.0	5689 7.000
NEW	7.144	9/32	16.0	385.0	332.0	48.0	5689 7.140
NEW	7.500		16.0	395.0	345.0	48.0	5689 7.500
NEW	7.541	19/64	16.0	395.0	345.0	48.0	5689 7.540
NEW	7.938	5/16	16.0	420.0	372.0	48.0	5689 7.940
	8.000		16.0	420.0	372.0	48.0	5689 8.000
NEW	8.334	21/64	16.0	440.0	387.0	48.0	5689 8.330
NEW	8.500		16.0	445.0	390.0	48.0	5689 8.500
NEW	8.731	11/32	16.0	450.0	402.0	48.0	5689 8.730
	9.000		16.0	450.0	402.0	48.0	5689 9.000
NEW	9.128	23/64	16.0	475.0	422.0	48.0	5689 9.130
NEW	9.500		16.0	490.0	435.0	48.0	5689 9.500
NEW	9.525	3/8	16.0	480.0	432.0	48.0	5689 9.530
NEW	9.922	25/64	16.0	510.0	460.0	48.0	5689 9.920
	10.000		20.0	510.0	460.0	50.0	5689 10.000
NEW	10.319	13/32	20.0	530.0	475.0	50.0	5689 10.320
NEW	10.500		20.0	540.0	485.0	50.0	5689 10.500
NEW	10.716	27/64	20.0	545.0	490.0	50.0	5689 10.720
NEW	11.000		20.0	550.0	500.0	50.0	5689 11.000
NEW	11.113	7/16	20.0	550.0	500.0	50.0	5689 11.110
NEW	11.500		20.0	585.0	530.0	50.0	5689 11.500
NEW	11.906	15/32	20.0	600.0	550.0	50.0	5689 11.910
	12.000		20.0	600.0	550.0	50.0	5689 12.000
NEW	12.303	31/64	20.0	615.0	560.0	50.0	5689 12.300
NEW	12.500		20.0	630.0	575.0	50.0	5689 12.500
NEW	12.700	1/2	20.0	635.0	585.0	50.0	5689 12.700
NEW	13.000		20.0	650.0	595.0	50.0	5689 13.000
NEW	13.097	33/64	20.0	650.0	595.0	50.0	5689 13.100
NEW	13.500		20.0	660.0	605.0	50.0	5689 13.500
NEW	13.891	35/64	20.0	675.0	620.0	50.0	5689 13.890
NEW	14.000		20.0	680.0	625.0	50.0	5689 14.000
NEW	14.288	9/16	25.0	700.0	639.0	56.0	5689 14.290
NEW	14.500		25.0	710.0	645.0	56.0	5689 14.500

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	14.684	37/64	25.0	715.0	654.0	56.0	5689 14.680
NEW	15.000		25.0	730.0	670.0	56.0	5689 15.000
NEW	15.081	19/32	25.0	730.0	670.0	56.0	5689 15.080
NEW	15.478	39/64	25.0	755.0	690.0	56.0	5689 15.480
NEW	15.500		25.0	755.0	690.0	56.0	5689 15.500
NEW	15.875	5/8	25.0	765.0	704.0	56.0	5689 15.880
NEW	16.000		25.0	775.0	715.0	56.0	5689 16.000
NEW	16.272	41/64	25.0	785.0	724.0	56.0	5689 16.270
NEW	16.500		25.0	795.0	734.0	56.0	5689 16.500
NEW	16.669	21/32	25.0	800.0	739.0	56.0	5689 16.670
NEW	17.000		25.0	815.0	754.0	56.0	5689 17.000
NEW	17.066	43/64	25.0	820.0	759.0	56.0	5689 17.070
NEW	17.463	11/16	25.0	835.0	774.0	56.0	5689 17.460
NEW	17.859	45/64	25.0	850.0	789.0	56.0	5689 17.860
NEW	18.000		25.0	860.0	799.0	56.0	5689 18.000
NEW	18.256	23/32	25.0	870.0	809.0	56.0	5689 18.260
NEW	18.653	47/64	25.0	885.0	824.0	56.0	5689 18.650
NEW	19.000		25.0	900.0	839.0	56.0	5689 19.000
NEW	19.050	3/4	32.0	905.0	840.0	60.0	5689 19.050
NEW	19.447	49/64	32.0	925.0	860.0	60.0	5689 19.450
NEW	19.844	25/32	32.0	940.0	875.0	60.0	5689 19.840
NEW	20.000		32.0	950.0	885.0	60.0	5689 20.000
NEW	20.241	51/64	32.0	950.0	885.0	60.0	5689 20.240
NEW	20.638	13/16	32.0	965.0	900.0	60.0	5689 20.640
NEW	21.000		32.0	980.0	915.0	60.0	5689 21.000
NEW	21.034	53/64	32.0	980.0	915.0	60.0	5689 21.030
NEW	21.431	27/32	32.0	1000.0	935.0	60.0	5689 21.430
NEW	21.828	55/64	32.0	1015.0	950.0	60.0	5689 21.830
NEW	22.000		32.0	1020.0	955.0	60.0	5689 22.000
NEW	22.225		32.0	1030.0	965.0	60.0	5689 22.230
NEW	22.622	57/64	32.0	1050.0	985.0	60.0	5689 22.620
NEW	23.000		32.0	1065.0	1000.0	60.0	5689 23.000
NEW	23.019	29/32	32.0	1065.0	1000.0	60.0	5689 23.020
NEW	23.416	59/64	32.0	1080.0	1015.0	60.0	5689 23.420
NEW	23.813	15/16	32.0	1100.0	1035.0	60.0	5689 23.810
NEW	24.000		32.0	1105.0	1040.0	60.0	5689 24.000
NEW	24.209	61/64	32.0	1115.0	1050.0	60.0	5689 24.210
NEW	24.606	31/32	32.0	1130.0	1065.0	60.0	5689 24.610
NEW	25.000	63/64	32.0	1150.0	1085.0	60.0	5689 25.000
NEW	25.400	1	32.0	1165.0	1100.0	60.0	5689 25.400



EB 80 single-fluted gun drills

Article no. 6061



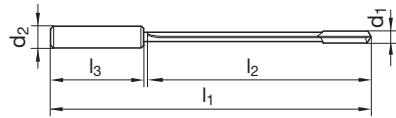
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with recessed coolant chamber • head form G • with lateral chip breaker

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Deep hole drills



Article no. 6061

Article no. 6061

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.919		10.0	310.0	265.0	40.0	6061 3.920	10.269		20.0	730.0	675.0	50.0	6061 10.270
3.969	5/32	10.0	310.0	265.0	40.0	6061 3.970	10.450		20.0	745.0	690.0	50.0	6061 10.450
4.150		12.0	325.0	275.0	45.0	6061 4.150	10.666		20.0	755.0	700.0	50.0	6061 10.670
4.316		12.0	345.0	290.0	45.0	6061 4.320	10.950		20.0	780.0	725.0	50.0	6061 10.950
4.450		12.0	345.0	295.0	45.0	6061 4.450	11.063		20.0	785.0	730.0	50.0	6061 11.060
4.713		12.0	375.0	315.0	45.0	6061 4.710	11.450		20.0	810.0	755.0	50.0	6061 11.450
4.950		16.0	375.0	325.0	48.0	6061 4.950	11.866		20.0	835.0	780.0	50.0	6061 11.870
5.109		16.0	390.0	335.0	48.0	6061 5.110	11.950		20.0	845.0	790.0	50.0	6061 11.950
5.450		16.0	410.0	360.0	48.0	6061 5.450	12.253		20.0	860.0	805.0	50.0	6061 12.250
5.506		16.0	420.0	367.0	48.0	6061 5.510	12.450		20.0	875.0	820.0	50.0	6061 12.450
5.903		16.0	445.0	390.0	48.0	6061 5.900	12.650		20.0	890.0	835.0	50.0	6061 12.650
5.953	15/64	16.0	445.0	390.0	48.0	6061 5.950	12.950		20.0	910.0	855.0	50.0	6061 12.950
6.300		16.0	470.0	415.0	48.0	6061 6.300	13.047		20.0	910.0	855.0	50.0	6061 13.050
6.450		16.0	480.0	425.0	48.0	6061 6.450	13.450		20.0	925.0	870.0	50.0	6061 13.450
6.697		16.0	500.0	447.0	48.0	6061 6.700	13.851		20.0	950.0	895.0	50.0	6061 13.850
6.950		16.0	510.0	460.0	48.0	6061 6.950	13.950		20.0	955.0	900.0	50.0	6061 13.950
7.094		16.0	525.0	472.0	48.0	6061 7.090	14.238		25.0	980.0	919.0	56.0	6061 14.240
7.450		16.0	545.0	490.0	48.0	6061 7.450	14.450		25.0	995.0	935.0	56.0	6061 14.450
7.491		16.0	550.0	497.0	48.0	6061 7.490	14.634		25.0	1005.0	944.0	56.0	6061 14.630
7.888		16.0	575.0	525.0	48.0	6061 7.890	14.950		25.0	1025.0	965.0	56.0	6061 14.950
7.950		16.0	575.0	525.0	48.0	6061 7.950	15.031		25.0	1030.0	969.0	56.0	6061 15.030
8.284		16.0	600.0	547.0	48.0	6061 8.280	15.428		25.0	1055.0	994.0	56.0	6061 15.430
8.450		16.0	610.0	555.0	48.0	6061 8.450	15.450		25.0	1060.0	1000.0	56.0	6061 15.450
8.681		16.0	625.0	572.0	48.0	6061 8.680	15.825		25.0	1080.0	1019.0	56.0	6061 15.830
8.950		16.0	645.0	590.0	48.0	6061 8.950	15.950		25.0	1090.0	1030.0	56.0	6061 15.950
9.078		16.0	655.0	602.0	48.0	6061 9.080							
9.450		16.0	675.0	625.0	48.0	6061 9.450							
9.475		16.0	680.0	625.0	48.0	6061 9.480							
9.872		16.0	705.0	652.0	48.0	6061 9.870							
9.950		20.0	710.0	655.0	50.0	6061 9.950							





## EB 80 single-fluted gun drills

Article no. **5669**

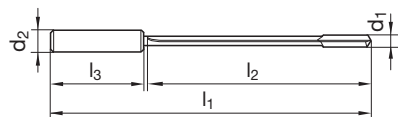


Cutting data page 79



head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	●	○	○	●	○



Article no. **5669**

Article no. **5669**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	3.919		10.0	310.0	265.0	40.0	5669 3.920
	3.969	5/32	10.0	310.0	265.0	40.0	5669 3.970
	4.150		12.0	325.0	275.0	45.0	5669 4.150
NEW	4.316		12.0	345.0	290.0	45.0	5669 4.320
	4.450		12.0	345.0	295.0	45.0	5669 4.450
NEW	4.713		12.0	375.0	315.0	45.0	5669 4.710
	4.950		16.0	375.0	325.0	48.0	5669 4.950
	5.109		16.0	390.0	335.0	48.0	5669 5.106
	5.450		16.0	410.0	360.0	48.0	5669 5.450
NEW	5.506		16.0	420.0	367.0	48.0	5669 5.510
NEW	5.903		16.0	445.0	390.0	48.0	5669 5.900
	5.953	15/64	16.0	445.0	390.0	48.0	5669 5.950
	6.300		16.0	470.0	415.0	48.0	5669 6.300
	6.450		16.0	480.0	425.0	48.0	5669 6.450
NEW	6.697		16.0	500.0	447.0	48.0	5669 6.700
	6.950		16.0	510.0	460.0	48.0	5669 6.950
NEW	7.094		16.0	525.0	472.0	48.0	5669 7.090
	7.450		16.0	545.0	490.0	48.0	5669 7.450
NEW	7.491		16.0	550.0	497.0	48.0	5669 7.490
	7.888		16.0	575.0	520.0	48.0	5669 7.888
	7.950		16.0	575.0	525.0	48.0	5669 7.950
NEW	8.284		16.0	600.0	547.0	48.0	5669 8.280
	8.450		16.0	610.0	555.0	48.0	5669 8.450
NEW	8.681		16.0	625.0	572.0	48.0	5669 8.680
	8.950		16.0	645.0	590.0	48.0	5669 8.950
NEW	9.078		16.0	655.0	602.0	48.0	5669 9.080
	9.450		16.0	675.0	625.0	48.0	5669 9.450
	9.475		16.0	680.0	625.0	48.0	5669 9.475
NEW	9.872		16.0	705.0	652.0	48.0	5669 9.870
	9.950		20.0	710.0	655.0	50.0	5669 9.950

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	10.269		20.0	730.0	675.0	50.0	5669 10.270
	10.450		20.0	745.0	690.0	50.0	5669 10.450
NEW	10.666		20.0	755.0	700.0	50.0	5669 10.670
	10.950		20.0	780.0	725.0	50.0	5669 10.950
	11.063		20.0	785.0	730.0	50.0	5669 11.063
	11.450		20.0	810.0	755.0	50.0	5669 11.450
NEW	11.866		20.0	835.0	780.0	50.0	5669 11.870
	11.950		20.0	845.0	790.0	50.0	5669 11.950
NEW	12.253		20.0	860.0	805.0	50.0	5669 12.250
	12.450		20.0	875.0	820.0	50.0	5669 12.450
	12.650		20.0	890.0	835.0	50.0	5669 12.650
	12.950		20.0	910.0	855.0	50.0	5669 12.950
NEW	13.047		20.0	910.0	855.0	50.0	5669 13.050
	13.450		20.0	925.0	870.0	50.0	5669 13.450
NEW	13.851		20.0	950.0	895.0	50.0	5669 13.850
	13.950		20.0	955.0	900.0	50.0	5669 13.950
NEW	14.238		25.0	980.0	919.0	56.0	5669 14.240
	14.450		25.0	995.0	935.0	56.0	5669 14.450
NEW	14.634		25.0	1005.0	944.0	56.0	5669 14.630
	14.950		25.0	1025.0	965.0	56.0	5669 14.950
NEW	15.031		25.0	1030.0	969.0	56.0	5669 15.030
NEW	15.428		25.0	1055.0	994.0	56.0	5669 15.430
	15.450		25.0	1060.0	1000.0	56.0	5669 15.450
NEW	15.825		25.0	1080.0	1019.0	56.0	5669 15.830
	15.950		25.0	1090.0	1030.0	56.0	5669 15.950



EB 80 single-fluted gun drills

Article no. 6060



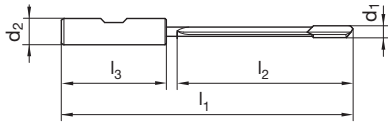
Cutting data page 79



head form G

P	M	K	N	S	H
○	○	○	●	○	○

Deep hole drills



Article no. 6060

Article no. 6060

d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.	d1 mm	inch	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
3.919		10.0	310.0	265.0	40.0	6060 3.920	10.269		20.0	730.0	675.0	50.0	6060 10.270
3.969	5/32	10.0	310.0	265.0	40.0	6060 3.970	10.450		20.0	745.0	690.0	50.0	6060 10.450
4.150		12.0	325.0	275.0	45.0	6060 4.150	10.666		20.0	755.0	700.0	50.0	6060 10.670
4.316		12.0	345.0	290.0	45.0	6060 4.320	10.950		20.0	780.0	725.0	50.0	6060 10.950
4.450		12.0	345.0	295.0	45.0	6060 4.450	11.063		20.0	785.0	730.0	50.0	6060 11.060
4.713		12.0	375.0	315.0	45.0	6060 4.710	11.450		20.0	810.0	755.0	50.0	6060 11.450
4.950		16.0	375.0	325.0	48.0	6060 4.950	11.866		20.0	835.0	780.0	50.0	6060 11.870
5.109		16.0	390.0	335.0	48.0	6060 5.110	11.950		20.0	845.0	790.0	50.0	6060 11.950
5.450		16.0	410.0	360.0	48.0	6060 5.450	12.253		20.0	860.0	805.0	50.0	6060 12.250
5.506		16.0	420.0	367.0	48.0	6060 5.510	12.450		20.0	875.0	820.0	50.0	6060 12.450
5.903		16.0	445.0	390.0	48.0	6060 5.900	12.650		20.0	890.0	835.0	50.0	6060 12.650
5.953	15/64	16.0	445.0	390.0	48.0	6060 5.950	12.950		20.0	910.0	855.0	50.0	6060 12.950
6.300		16.0	470.0	415.0	48.0	6060 6.300	13.047		20.0	910.0	855.0	50.0	6060 13.050
6.450		16.0	480.0	425.0	48.0	6060 6.450	13.450		20.0	925.0	870.0	50.0	6060 13.450
6.697		16.0	500.0	447.0	48.0	6060 6.700	13.851		20.0	950.0	895.0	50.0	6060 13.850
6.950		16.0	510.0	460.0	48.0	6060 6.950	13.950		20.0	955.0	900.0	50.0	6060 13.950
7.094		16.0	525.0	472.0	48.0	6060 7.090	14.238		25.0	980.0	919.0	56.0	6060 14.240
7.450		16.0	545.0	490.0	48.0	6060 7.450	14.450		25.0	995.0	935.0	56.0	6060 14.450
7.491		16.0	550.0	497.0	48.0	6060 7.490	14.634		25.0	1005.0	944.0	56.0	6060 14.630
7.888		16.0	575.0	525.0	48.0	6060 7.890	14.950		25.0	1025.0	965.0	56.0	6060 14.950
7.950		16.0	575.0	525.0	48.0	6060 7.950	15.031		25.0	1030.0	969.0	56.0	6060 15.030
8.284		16.0	600.0	547.0	48.0	6060 8.280	15.428		25.0	1055.0	994.0	56.0	6060 15.430
8.450		16.0	610.0	555.0	48.0	6060 8.450	15.450		25.0	1060.0	1000.0	56.0	6060 15.450
8.681		16.0	625.0	572.0	48.0	6060 8.680	15.825		25.0	1080.0	1019.0	56.0	6060 15.830
8.950		16.0	645.0	590.0	48.0	6060 8.950	15.950		25.0	1090.0	1030.0	56.0	6060 15.950
9.078		16.0	655.0	602.0	48.0	6060 9.080							
9.450		16.0	675.0	625.0	48.0	6060 9.450							
9.475		16.0	680.0	625.0	48.0	6060 9.480							
9.872		16.0	705.0	652.0	48.0	6060 9.870							
9.950		16.0	710.0	655.0	48.0	6060 9.950							



## EB 80 single-fluted gun drills

Article no. **5023**

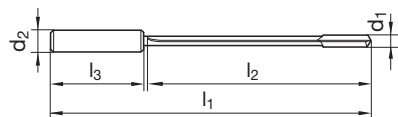


Cutting data page 79



with recessed coolant chamber • head form G • with lateral chip breaker

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
•	○	•	○	○	○



Article no. **5023**

Article no. **5023**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	3.919		10.0	390.0	345.0	40.0	5023 3.920
NEW	3.969	5/32	10.0	390.0	345.0	40.0	5023 3.970
NEW	4.150		12.0	405.0	355.0	45.0	5023 4.150
NEW	4.316		12.0	430.0	380.0	45.0	5023 4.320
NEW	4.450		12.0	430.0	380.0	45.0	5023 4.450
NEW	4.713		12.0	460.0	410.0	45.0	5023 4.710
	4.950		16.0	480.0	432.0	48.0	5023 4.950
NEW	5.109		16.0	480.0	432.0	48.0	5023 5.110
NEW	5.450		16.0	520.0	470.0	48.0	5023 5.450
NEW	5.506		16.0	530.0	477.0	48.0	5023 5.510
NEW	5.903		16.0	560.0	512.0	48.0	5023 5.900
NEW	5.953	15/64	16.0	560.0	512.0	48.0	5023 5.950
NEW	6.300		16.0	590.0	542.0	48.0	5023 6.300
NEW	6.450		16.0	605.0	556.0	48.0	5023 6.450
NEW	6.697		16.0	635.0	582.0	48.0	5023 6.700
NEW	6.950		16.0	650.0	602.0	48.0	5023 6.950
NEW	7.094		16.0	665.0	612.0	48.0	5023 7.090
NEW	7.450		16.0	695.0	640.0	48.0	5023 7.450
NEW	7.491		16.0	700.0	647.0	48.0	5023 7.490
NEW	7.888		16.0	740.0	692.0	48.0	5023 7.890
	7.950		16.0	740.0	692.0	48.0	5023 7.950
NEW	8.284		16.0	765.0	712.0	48.0	5023 8.280
NEW	8.450		16.0	780.0	725.0	48.0	5023 8.450
NEW	8.681		16.0	800.0	747.0	48.0	5023 8.680
NEW	8.950		16.0	820.0	772.0	48.0	5023 8.950
NEW	9.078		16.0	835.0	782.0	48.0	5023 9.080
NEW	9.450		16.0	865.0	815.0	48.0	5023 9.450
NEW	9.475		16.0	870.0	822.0	48.0	5023 9.480
NEW	9.872		16.0	900.0	847.0	48.0	5023 9.870
	9.950		20.0	910.0	860.0	50.0	5023 9.950

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	10.269		20.0	935.0	880.0	50.0	5023 10.270
NEW	10.450		20.0	955.0	900.0	50.0	5023 10.450
NEW	10.666		20.0	970.0	915.0	50.0	5023 10.670
NEW	10.950		20.0	995.0	945.0	50.0	5023 10.950
NEW	11.063		20.0	995.0	945.0	50.0	5023 11.060
NEW	11.450		20.0	1040.0	985.0	50.0	5023 11.450
NEW	11.866		20.0	1070.0	1015.0	50.0	5023 11.870
	11.950		20.0	1080.0	1030.0	50.0	5023 11.950
NEW	12.253		20.0	1105.0	1050.0	50.0	5023 12.250
NEW	12.450		20.0	1125.0	1070.0	50.0	5023 12.450
NEW	12.650		20.0	1140.0	1090.0	50.0	5023 12.650
NEW	12.950		20.0	1170.0	1115.0	50.0	5023 12.950
NEW	13.047		20.0	1170.0	1115.0	50.0	5023 13.050
NEW	13.450		20.0	1195.0	1140.0	50.0	5023 13.450
NEW	13.851		20.0	1225.0	1170.0	50.0	5023 13.850
NEW	13.950		20.0	1235.0	1180.0	50.0	5023 13.950
NEW	14.238		25.0	1265.0	1204.0	56.0	5023 14.240
NEW	14.450		25.0	1285.0	1225.0	56.0	5023 14.450
NEW	14.634		25.0	1300.0	1239.0	56.0	5023 14.630
NEW	14.950		25.0	1325.0	1265.0	56.0	5023 14.950
NEW	15.031		25.0	1330.0	1269.0	56.0	5023 15.030
NEW	15.428		25.0	1365.0	1304.0	56.0	5023 15.430
NEW	15.450		25.0	1370.0	1310.0	56.0	5023 15.450
NEW	15.825		25.0	1395.0	1334.0	56.0	5023 15.830
NEW	15.950		25.0	1410.0	1350.0	56.0	5023 15.950



EB 80 single-fluted gun drills

Article no. 5642



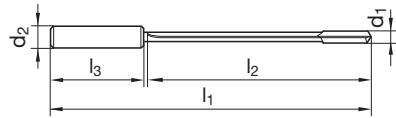
Cutting data page 79



head form G

P	M	K	N	S	H
●	●	○	○	●	○

Deep hole drills



Article no. 5642

Article no. 5642

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	3.919		10.0	390.0	345.0	40.0	5642 3.920
	3.969	5/32	10.0	390.0	345.0	40.0	5642 3.970
	4.150		12.0	405.0	355.0	45.0	5642 4.150
NEW	4.316		12.0	430.0	380.0	45.0	5642 4.320
	4.450		12.0	430.0	380.0	45.0	5642 4.450
NEW	4.713		12.0	460.0	410.0	45.0	5642 4.710
	4.950		16.0	480.0	432.0	48.0	5642 4.950
	5.109		16.0	480.0	432.0	48.0	5642 5.106
	5.450		16.0	520.0	470.0	48.0	5642 5.450
NEW	5.506		16.0	530.0	477.0	48.0	5642 5.510
NEW	5.903		16.0	560.0	512.0	48.0	5642 5.900
	5.953	15/64	16.0	560.0	512.0	48.0	5642 5.950
	6.300		16.0	590.0	542.0	48.0	5642 6.300
	6.450		16.0	605.0	556.0	48.0	5642 6.450
NEW	6.697		16.0	635.0	582.0	48.0	5642 6.700
	6.950		16.0	650.0	602.0	48.0	5642 6.950
NEW	7.094		16.0	665.0	612.0	48.0	5642 7.090
	7.450		16.0	695.0	640.0	48.0	5642 7.450
NEW	7.491		16.0	700.0	647.0	48.0	5642 7.490
	7.888		16.0	740.0	692.0	48.0	5642 7.888
	7.950		16.0	740.0	692.0	48.0	5642 7.950
NEW	8.284		16.0	765.0	712.0	48.0	5642 8.280
	8.450		16.0	780.0	725.0	48.0	5642 8.450
NEW	8.681		16.0	800.0	747.0	48.0	5642 8.680
	8.950		16.0	820.0	772.0	48.0	5642 8.950
NEW	9.078		16.0	835.0	782.0	48.0	5642 9.080
	9.450		16.0	865.0	815.0	48.0	5642 9.450
	9.475		16.0	870.0	822.0	48.0	5642 9.475
NEW	9.872		16.0	900.0	847.0	48.0	5642 9.870
	9.950		20.0	910.0	860.0	50.0	5642 9.950

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	10.269		20.0	935.0	880.0	50.0	5642 10.270
	10.450		20.0	955.0	900.0	50.0	5642 10.450
NEW	10.666		20.0	970.0	915.0	50.0	5642 10.670
	10.950		20.0	995.0	945.0	50.0	5642 10.950
	11.063		20.0	995.0	945.0	50.0	5642 11.063
	11.450		20.0	1040.0	985.0	50.0	5642 11.450
NEW	11.866		20.0	1070.0	1015.0	50.0	5642 11.870
	11.950		20.0	1080.0	1030.0	50.0	5642 11.950
NEW	12.253		20.0	1105.0	1050.0	50.0	5642 12.250
	12.450		20.0	1125.0	1070.0	50.0	5642 12.450
	12.650		20.0	1140.0	1090.0	50.0	5642 12.650
	12.950		20.0	1170.0	1115.0	50.0	5642 12.950
NEW	13.047		20.0	1170.0	1115.0	50.0	5642 13.050
	13.450		20.0	1195.0	1140.0	50.0	5642 13.450
NEW	13.851		20.0	1225.0	1170.0	50.0	5642 13.850
	13.950		20.0	1235.0	1180.0	50.0	5642 13.950
NEW	14.238		25.0	1265.0	1204.0	56.0	5642 14.240
	14.450		25.0	1285.0	1225.0	56.0	5642 14.450
NEW	14.634		25.0	1300.0	1239.0	56.0	5642 14.630
	14.950		25.0	1325.0	1265.0	56.0	5642 14.950
NEW	15.031		25.0	1330.0	1269.0	56.0	5642 15.030
NEW	15.428		25.0	1365.0	1304.0	56.0	5642 15.430
	15.450		25.0	1370.0	1310.0	56.0	5642 15.450
NEW	15.825		25.0	1395.0	1334.0	56.0	5642 15.830
	15.950		25.0	1410.0	1350.0	56.0	5642 15.950



## EB 80 single-fluted gun drills

Article no. **5690**

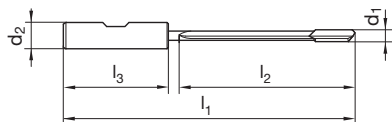


Cutting data page 79



head form G

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
○	○	○	●	○	○



Article no. **5690**

Article no. **5690**

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	3.919		10.0	390.0	345.0	40.0	5690 3.920
	3.969	5/32	10.0	390.0	345.0	40.0	5690 3.970
NEW	4.150		12.0	405.0	355.0	45.0	5690 4.150
NEW	4.316		12.0	430.0	380.0	45.0	5690 4.320
NEW	4.450		12.0	430.0	380.0	45.0	5690 4.450
NEW	4.713		12.0	460.0	410.0	45.0	5690 4.710
	4.950		16.0	480.0	432.0	48.0	5690 4.950
NEW	5.109		16.0	480.0	432.0	48.0	5690 5.110
NEW	5.450		16.0	520.0	470.0	48.0	5690 5.450
NEW	5.506		16.0	530.0	477.0	48.0	5690 5.510
NEW	5.903		16.0	560.0	512.0	48.0	5690 5.900
	5.953	15/64	16.0	560.0	512.0	48.0	5690 5.950
NEW	6.300		16.0	590.0	542.0	48.0	5690 6.300
NEW	6.450		16.0	605.0	556.0	48.0	5690 6.450
NEW	6.697		16.0	635.0	582.0	48.0	5690 6.700
	6.950		16.0	650.0	602.0	48.0	5690 6.950
NEW	7.094		16.0	665.0	612.0	48.0	5690 7.090
NEW	7.450		16.0	695.0	640.0	48.0	5690 7.450
NEW	7.491		16.0	700.0	647.0	48.0	5690 7.490
NEW	7.888		16.0	740.0	692.0	48.0	5690 7.890
	7.950		16.0	740.0	692.0	48.0	5690 7.950
NEW	8.284		16.0	765.0	712.0	48.0	5690 8.280
NEW	8.450		16.0	780.0	725.0	48.0	5690 8.450
NEW	8.681		16.0	800.0	747.0	48.0	5690 8.680
	8.950		16.0	820.0	772.0	48.0	5690 8.950
NEW	9.078		16.0	835.0	782.0	48.0	5690 9.080
NEW	9.450		16.0	865.0	815.0	48.0	5690 9.450
NEW	9.475		16.0	870.0	822.0	48.0	5690 9.480
NEW	9.872		16.0	900.0	847.0	48.0	5690 9.870
	9.950		20.0	910.0	860.0	50.0	5690 9.950

	d1		d2 h6	l1	l2	l3	Order no.
	mm	inch	mm	mm	mm	mm	
NEW	10.269		20.0	935.0	880.0	50.0	5690 10.270
NEW	10.450		20.0	955.0	900.0	50.0	5690 10.450
NEW	10.666		20.0	970.0	915.0	50.0	5690 10.670
NEW	10.950		20.0	995.0	945.0	50.0	5690 10.950
NEW	11.063		20.0	995.0	945.0	50.0	5690 11.060
NEW	11.450		20.0	1040.0	985.0	50.0	5690 11.450
NEW	11.866		20.0	1070.0	1015.0	50.0	5690 11.870
	11.950		20.0	1080.0	1030.0	50.0	5690 11.950
NEW	12.253		20.0	1105.0	1050.0	50.0	5690 12.250
NEW	12.450		20.0	1125.0	1070.0	50.0	5690 12.450
NEW	12.650		20.0	1140.0	1090.0	50.0	5690 12.650
NEW	12.950		20.0	1170.0	1115.0	50.0	5690 12.950
NEW	13.047		20.0	1170.0	1115.0	50.0	5690 13.050
NEW	13.450		20.0	1195.0	1140.0	50.0	5690 13.450
NEW	13.851		20.0	1225.0	1170.0	50.0	5690 13.850
NEW	13.950		20.0	1235.0	1180.0	50.0	5690 13.950
NEW	14.238		25.0	1265.0	1204.0	56.0	5690 14.240
NEW	14.450		25.0	1285.0	1225.0	56.0	5690 14.450
NEW	14.634		25.0	1300.0	1239.0	56.0	5690 14.630
NEW	14.950		25.0	1325.0	1265.0	56.0	5690 14.950
NEW	15.031		25.0	1330.0	1269.0	56.0	5690 15.030
NEW	15.428		25.0	1365.0	1304.0	56.0	5690 15.430
NEW	15.450		25.0	1370.0	1310.0	56.0	5690 15.450
NEW	15.825		25.0	1395.0	1334.0	56.0	5690 15.830
NEW	15.950		25.0	1410.0	1350.0	56.0	5690 15.950



EB 80 XXL single-fluted gun drills

Article no. 5688



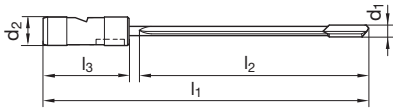
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bright flute • head form G • driver for deep drilling machines

P	M	K	N	S	H
•	○	•	•	○	○

Deep hole drills



Article no. 5688

Article no. 5688

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
	3.000	25.0	600.0	500.0	70.0	5688 3.000
NEW	3.500	25.0	600.0	500.0	70.0	5688 3.500
	4.000	25.0	600.0	500.0	70.0	5688 4.000
NEW	4.500	25.0	600.0	500.0	70.0	5688 4.500
	5.000	25.0	600.0	500.0	70.0	5688 5.000
NEW	5.500	25.0	600.0	500.0	70.0	5688 5.500
	6.000	25.0	600.0	500.0	70.0	5688 6.000
NEW	6.500	25.0	600.0	500.0	70.0	5688 6.500
	7.000	25.0	600.0	500.0	70.0	5688 7.000
NEW	7.500	25.0	600.0	500.0	70.0	5688 7.500
	8.000	25.0	600.0	500.0	70.0	5688 8.000
NEW	8.500	25.0	600.0	500.0	70.0	5688 8.500
	9.000	25.0	600.0	500.0	70.0	5688 9.000
NEW	9.500	25.0	600.0	500.0	70.0	5688 9.500
	10.000	25.0	600.0	500.0	70.0	5688 10.000
NEW	10.500	25.0	600.0	500.0	70.0	5688 10.500
	11.000	25.0	600.0	500.0	70.0	5688 11.000
	11.500	25.0	600.0	500.0	70.0	5688 11.500
NEW	12.000	25.0	600.0	500.0	70.0	5688 12.000
	12.500	25.0	600.0	500.0	70.0	5688 12.500
NEW	13.000	25.0	600.0	500.0	70.0	5688 13.000
	13.500	25.0	600.0	500.0	70.0	5688 13.500
NEW	14.000	25.0	600.0	500.0	70.0	5688 14.000
	14.500	25.0	600.0	500.0	70.0	5688 14.500

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
	15.000	25.0	600.0	500.0	70.0	5688 15.000
NEW	15.500	25.0	600.0	500.0	70.0	5688 15.500
	16.000	25.0	600.0	500.0	70.0	5688 16.000
NEW	16.500	25.0	600.0	500.0	70.0	5688 16.500
	17.000	25.0	600.0	500.0	70.0	5688 17.000
	18.000	25.0	600.0	500.0	70.0	5688 18.000
	19.000	25.0	600.0	500.0	70.0	5688 19.000
	20.000	25.0	600.0	500.0	70.0	5688 20.000
	21.000	25.0	600.0	500.0	70.0	5688 21.000
	22.000	25.0	600.0	500.0	70.0	5688 22.000
	23.000	25.0	600.0	500.0	70.0	5688 23.000
	24.000	25.0	600.0	500.0	70.0	5688 24.000
	25.000	25.0	600.0	500.0	70.0	5688 25.000



# Brazed single-fluted gun drills

Deep hole drills

EB 80 XXL single-fluted gun drills

Article no. 5691

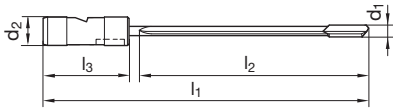


Cutting data page 79



bright flute • head form G • driver for deep drilling machines

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Article no. 5691

Article no. 5691

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	3.000	25.0	800.0	700.0	70.0	5691 3.000
	3.500	25.0	800.0	700.0	70.0	5691 3.500
	4.000	25.0	800.0	700.0	70.0	5691 4.000
NEW	4.500	25.0	800.0	700.0	70.0	5691 4.500
	5.000	25.0	800.0	700.0	70.0	5691 5.000
NEW	5.500	25.0	800.0	700.0	70.0	5691 5.500
	6.000	25.0	800.0	700.0	70.0	5691 6.000
NEW	6.500	25.0	800.0	700.0	70.0	5691 6.500
	7.000	25.0	800.0	700.0	70.0	5691 7.000
NEW	7.500	25.0	800.0	700.0	70.0	5691 7.500
	8.000	25.0	800.0	700.0	70.0	5691 8.000
NEW	8.500	25.0	800.0	700.0	70.0	5691 8.500
	9.000	25.0	800.0	700.0	70.0	5691 9.000
NEW	9.500	25.0	800.0	700.0	70.0	5691 9.500
	10.000	25.0	800.0	700.0	70.0	5691 10.000
NEW	10.500	25.0	800.0	700.0	70.0	5691 10.500
	11.000	25.0	800.0	700.0	70.0	5691 11.000
	11.500	25.0	800.0	700.0	70.0	5691 11.500
NEW	12.000	25.0	800.0	700.0	70.0	5691 12.000
	12.500	25.0	800.0	700.0	70.0	5691 12.500
NEW	13.000	25.0	800.0	700.0	70.0	5691 13.000
	13.500	25.0	800.0	700.0	70.0	5691 13.500
NEW	14.000	25.0	800.0	700.0	70.0	5691 14.000
	14.500	25.0	800.0	700.0	70.0	5691 14.500

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	15.000	25.0	800.0	700.0	70.0	5691 15.000
	15.500	25.0	800.0	700.0	70.0	5691 15.500
	16.000	25.0	800.0	700.0	70.0	5691 16.000
NEW	16.500	25.0	800.0	700.0	70.0	5691 16.500
	17.000	25.0	800.0	700.0	70.0	5691 17.000
	18.000	25.0	800.0	700.0	70.0	5691 18.000
	19.000	25.0	800.0	700.0	70.0	5691 19.000
	20.000	25.0	800.0	700.0	70.0	5691 20.000
	21.000	25.0	800.0	700.0	70.0	5691 21.000
	22.000	25.0	800.0	700.0	70.0	5691 22.000
	23.000	25.0	800.0	700.0	70.0	5691 23.000
	24.000	25.0	800.0	700.0	70.0	5691 24.000
	25.000	25.0	800.0	700.0	70.0	5691 25.000





EB 80 XXL single-fluted gun drills

Article no. 5164



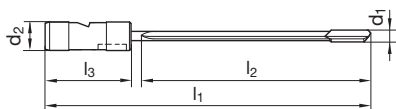
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bright flute • head form G • driver for deep drilling machines

P	M	K	N	S	H
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Deep hole drills



		Article no. 5164				
		d1	d2 h6	l1	l2	l3
		mm	mm	mm	mm	mm
		3.000	25.0	1000.0	900.0	70.0
NEW		3.500	25.0	1000.0	900.0	70.0
		4.000	25.0	1000.0	900.0	70.0
NEW		4.500	25.0	1000.0	900.0	70.0
		5.000	25.0	1000.0	900.0	70.0
NEW		5.500	25.0	1000.0	900.0	70.0
		6.000	25.0	1000.0	900.0	70.0
NEW		6.500	25.0	1000.0	900.0	70.0
		7.000	25.0	1000.0	900.0	70.0
NEW		7.500	25.0	1000.0	900.0	70.0
		8.000	25.0	1000.0	900.0	70.0
NEW		8.500	25.0	1000.0	900.0	70.0
		9.000	25.0	1000.0	900.0	70.0
NEW		9.500	25.0	1000.0	900.0	70.0
		10.000	25.0	1000.0	900.0	70.0
NEW		10.500	25.0	1000.0	900.0	70.0
		11.000	25.0	1000.0	900.0	70.0
		11.500	25.0	1000.0	900.0	70.0
NEW		12.000	25.0	1000.0	900.0	70.0
		12.500	25.0	1000.0	900.0	70.0
		13.000	25.0	1000.0	900.0	70.0
NEW		13.500	25.0	1000.0	900.0	70.0
		14.000	25.0	1000.0	900.0	70.0
NEW		14.500	25.0	1000.0	900.0	70.0

		Article no. 5164				
		d1	d2 h6	l1	l2	l3
		mm	mm	mm	mm	mm
		15.000	25.0	1000.0	900.0	70.0
NEW		15.500	25.0	1000.0	900.0	70.0
		16.000	25.0	1000.0	900.0	70.0
NEW		16.500	25.0	1000.0	900.0	70.0
		17.000	25.0	1000.0	900.0	70.0
		18.000	25.0	1000.0	900.0	70.0
		19.000	25.0	1000.0	900.0	70.0
		20.000	25.0	1000.0	900.0	70.0
		21.000	25.0	1000.0	900.0	70.0
		22.000	25.0	1000.0	900.0	70.0
		23.000	25.0	1000.0	900.0	70.0
		24.000	25.0	1000.0	900.0	70.0
		25.000	25.0	1000.0	900.0	70.0
NEW		26.000	25.0	1000.0	895.0	75.0
NEW		27.000	25.0	1000.0	895.0	75.0
NEW		28.000	25.0	1000.0	895.0	75.0
NEW		29.000	25.0	1000.0	895.0	75.0
NEW		30.000	25.0	1000.0	895.0	75.0
NEW		31.000	25.0	1000.0	895.0	75.0
NEW		32.000	25.0	1000.0	895.0	75.0



# Brazed single-fluted gun drills

Deep hole drills

## EB 80 XXL single-fluted gun drills

Article no. **5692**

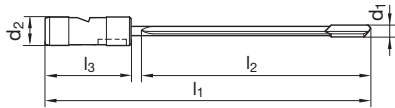


Cutting data page 79



bright flute • head form G • driver for deep drilling machines

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
●	○	●	●	○	○



Article no. **5692**

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	3.000	25.0	1200.0	1100.0	70.0	5692 3.000
	3.500	25.0	1200.0	1100.0	70.0	5692 3.500
	4.000	25.0	1200.0	1100.0	70.0	5692 4.000
NEW	4.500	25.0	1200.0	1100.0	70.0	5692 4.500
	5.000	25.0	1200.0	1100.0	70.0	5692 5.000
NEW	5.500	25.0	1200.0	1100.0	70.0	5692 5.500
	6.000	25.0	1200.0	1100.0	70.0	5692 6.000
NEW	6.500	25.0	1200.0	1100.0	70.0	5692 6.500
	7.000	25.0	1200.0	1100.0	70.0	5692 7.000
NEW	7.500	25.0	1200.0	1100.0	70.0	5692 7.500
	8.000	25.0	1200.0	1100.0	70.0	5692 8.000
NEW	8.500	25.0	1200.0	1100.0	70.0	5692 8.500
	9.000	25.0	1200.0	1100.0	70.0	5692 9.000
NEW	9.500	25.0	1200.0	1100.0	70.0	5692 9.500
	10.000	25.0	1200.0	1100.0	70.0	5692 10.000
NEW	10.500	25.0	1200.0	1100.0	70.0	5692 10.500
	11.000	25.0	1200.0	1100.0	70.0	5692 11.000
	11.500	25.0	1200.0	1100.0	70.0	5692 11.500
NEW	12.000	25.0	1200.0	1100.0	70.0	5692 12.000
	12.500	25.0	1200.0	1100.0	70.0	5692 12.500
	13.000	25.0	1200.0	1100.0	70.0	5692 13.000
NEW	13.500	25.0	1200.0	1100.0	70.0	5692 13.500
	14.000	25.0	1200.0	1100.0	70.0	5692 14.000
NEW	14.500	25.0	1200.0	1100.0	70.0	5692 14.500

Article no. **5692**

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
	15.000	25.0	1200.0	1100.0	70.0	5692 15.000
NEW	15.500	25.0	1200.0	1100.0	70.0	5692 15.500
	16.000	25.0	1200.0	1100.0	70.0	5692 16.000
NEW	16.500	25.0	1200.0	1100.0	70.0	5692 16.500
	17.000	25.0	1200.0	1100.0	70.0	5692 17.000
	18.000	25.0	1200.0	1100.0	70.0	5692 18.000
	19.000	25.0	1200.0	1100.0	70.0	5692 19.000
	20.000	25.0	1200.0	1100.0	70.0	5692 20.000
	21.000	25.0	1200.0	1100.0	70.0	5692 21.000
	22.000	25.0	1200.0	1100.0	70.0	5692 22.000
	23.000	25.0	1200.0	1100.0	70.0	5692 23.000
	24.000	25.0	1200.0	1100.0	70.0	5692 24.000
	25.000	25.0	1200.0	1100.0	70.0	5692 25.000
NEW	26.000	25.0	1200.0	1095.0	75.0	5692 26.000
NEW	27.000	25.0	1200.0	1095.0	75.0	5692 27.000
NEW	28.000	25.0	1200.0	1095.0	75.0	5692 28.000
NEW	29.000	25.0	1200.0	1095.0	75.0	5692 29.000
NEW	30.000	25.0	1200.0	1095.0	75.0	5692 30.000
NEW	31.000	25.0	1200.0	1095.0	75.0	5692 31.000
NEW	32.000	25.0	1200.0	1095.0	75.0	5692 32.000



EB 80 XXL single-fluted gun drills

Article no. 5681



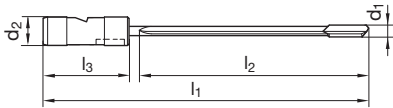
Cutting data page 79



bright flute • head form G • driver for deep drilling machines

P	M	K	N	S	H
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Deep hole drills



Article no. 5681

Article no. 5681

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	4.000	25.0	1400.0	1300.0	70.0	5681 4.000
	4.500	25.0	1400.0	1300.0	70.0	5681 4.500
	5.000	25.0	1400.0	1300.0	70.0	5681 5.000
NEW	5.500	25.0	1400.0	1300.0	70.0	5681 5.500
	6.000	25.0	1400.0	1300.0	70.0	5681 6.000
NEW	6.500	25.0	1400.0	1300.0	70.0	5681 6.500
	7.000	25.0	1400.0	1300.0	70.0	5681 7.000
NEW	7.500	25.0	1400.0	1300.0	70.0	5681 7.500
	8.000	25.0	1400.0	1300.0	70.0	5681 8.000
NEW	8.500	25.0	1400.0	1300.0	70.0	5681 8.500
	9.000	25.0	1400.0	1300.0	70.0	5681 9.000
NEW	9.500	25.0	1400.0	1300.0	70.0	5681 9.500
	10.000	25.0	1400.0	1300.0	70.0	5681 10.000
NEW	10.500	25.0	1400.0	1300.0	70.0	5681 10.500
	11.000	25.0	1400.0	1300.0	70.0	5681 11.000
	11.500	25.0	1400.0	1300.0	70.0	5681 11.500
	12.000	25.0	1400.0	1300.0	70.0	5681 12.000
NEW	12.500	25.0	1400.0	1300.0	70.0	5681 12.500
	13.000	25.0	1400.0	1300.0	70.0	5681 13.000
NEW	13.500	25.0	1400.0	1300.0	70.0	5681 13.500
	14.000	25.0	1400.0	1300.0	70.0	5681 14.000
NEW	14.500	25.0	1400.0	1300.0	70.0	5681 14.500
	15.000	25.0	1400.0	1300.0	70.0	5681 15.000
NEW	15.500	25.0	1400.0	1300.0	70.0	5681 15.500

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	16.000	25.0	1400.0	1300.0	70.0	5681 16.000
	16.500	25.0	1400.0	1300.0	70.0	5681 16.500
	17.000	25.0	1400.0	1300.0	70.0	5681 17.000
	18.000	25.0	1400.0	1300.0	70.0	5681 18.000
	19.000	25.0	1400.0	1300.0	70.0	5681 19.000
	20.000	25.0	1400.0	1300.0	70.0	5681 20.000
	21.000	25.0	1400.0	1300.0	70.0	5681 21.000
	22.000	25.0	1400.0	1300.0	70.0	5681 22.000
	23.000	25.0	1400.0	1300.0	70.0	5681 23.000
	24.000	25.0	1400.0	1300.0	70.0	5681 24.000
	25.000	25.0	1400.0	1300.0	70.0	5681 25.000
NEW	26.000	25.0	1400.0	1295.0	75.0	5681 26.000
NEW	27.000	25.0	1400.0	1295.0	75.0	5681 27.000
NEW	28.000	25.0	1400.0	1295.0	75.0	5681 28.000
NEW	29.000	25.0	1400.0	1295.0	75.0	5681 29.000
NEW	30.000	25.0	1400.0	1295.0	75.0	5681 30.000
NEW	31.000	25.0	1400.0	1295.0	75.0	5681 31.000
NEW	32.000	25.0	1400.0	1295.0	75.0	5681 32.000



# Brazed single-fluted gun drills

Deep hole drills

EB 80 XXL single-fluted gun drills

Article no. 5693

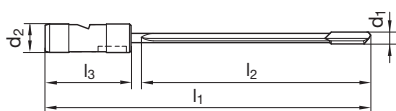


Cutting data page 79



bright flute • head form G • driver for deep drilling machines

P	M	K	N	S	H
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Article no. 5693

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	4.000	25.0	1600.0	1500.0	70.0	5693 4.000
	4.500	25.0	1600.0	1500.0	70.0	5693 4.500
	5.000	25.0	1600.0	1500.0	70.0	5693 5.000
	5.500	25.0	1600.0	1500.0	70.0	5693 5.500
	6.000	25.0	1600.0	1500.0	70.0	5693 6.000
	6.500	25.0	1600.0	1500.0	70.0	5693 6.500
	7.000	25.0	1600.0	1500.0	70.0	5693 7.000
	7.500	25.0	1600.0	1500.0	70.0	5693 7.500
	8.000	25.0	1600.0	1500.0	70.0	5693 8.000
NEW	8.500	25.0	1600.0	1500.0	70.0	5693 8.500
	9.000	25.0	1600.0	1500.0	70.0	5693 9.000
	9.500	25.0	1600.0	1500.0	70.0	5693 9.500
	10.000	25.0	1600.0	1500.0	70.0	5693 10.000
NEW	10.500	25.0	1600.0	1500.0	70.0	5693 10.500
	11.000	25.0	1600.0	1500.0	70.0	5693 11.000
	11.500	25.0	1600.0	1500.0	70.0	5693 11.500
	12.000	25.0	1600.0	1500.0	70.0	5693 12.000
NEW	12.500	25.0	1600.0	1500.0	70.0	5693 12.500
	13.000	25.0	1600.0	1500.0	70.0	5693 13.000
NEW	13.500	25.0	1600.0	1500.0	70.0	5693 13.500
	14.000	25.0	1600.0	1500.0	70.0	5693 14.000
NEW	14.500	25.0	1600.0	1500.0	70.0	5693 14.500
	15.000	25.0	1600.0	1500.0	70.0	5693 15.000
NEW	15.500	25.0	1600.0	1500.0	70.0	5693 15.500

Article no. 5693

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	16.000	25.0	1600.0	1500.0	70.0	5693 16.000
	16.500	25.0	1600.0	1500.0	70.0	5693 16.500
	17.000	25.0	1600.0	1500.0	70.0	5693 17.000
	18.000	25.0	1600.0	1500.0	70.0	5693 18.000
	19.000	25.0	1600.0	1500.0	70.0	5693 19.000
	20.000	25.0	1600.0	1500.0	70.0	5693 20.000
	21.000	25.0	1600.0	1500.0	70.0	5693 21.000
	22.000	25.0	1600.0	1500.0	70.0	5693 22.000
	23.000	25.0	1600.0	1500.0	70.0	5693 23.000
	24.000	25.0	1600.0	1500.0	70.0	5693 24.000
	25.000	25.0	1600.0	1500.0	70.0	5693 25.000
NEW	26.000	25.0	1600.0	1495.0	75.0	5693 26.000
NEW	27.000	25.0	1600.0	1495.0	75.0	5693 27.000
NEW	28.000	25.0	1600.0	1495.0	75.0	5693 28.000
NEW	29.000	25.0	1600.0	1495.0	75.0	5693 29.000
NEW	30.000	25.0	1600.0	1495.0	75.0	5693 30.000
NEW	31.000	25.0	1600.0	1495.0	75.0	5693 31.000
NEW	32.000	25.0	1600.0	1495.0	75.0	5693 32.000



EB 80 XXL single-fluted gun drills

Article no. 5682



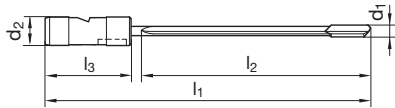
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bright flute • head form G • driver for deep drilling machines

Deep hole drills



Article no. 5682

Article no. 5682

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	4.000	25.0	1800.0	1700.0	70.0	5682 4.000
	4.500	25.0	1800.0	1700.0	70.0	5682 4.500
	5.000	25.0	1800.0	1700.0	70.0	5682 5.000
NEW	5.500	25.0	1800.0	1700.0	70.0	5682 5.500
	6.000	25.0	1800.0	1700.0	70.0	5682 6.000
NEW	6.500	25.0	1800.0	1700.0	70.0	5682 6.500
	7.000	25.0	1800.0	1700.0	70.0	5682 7.000
NEW	7.500	25.0	1800.0	1700.0	70.0	5682 7.500
	8.000	25.0	1800.0	1700.0	70.0	5682 8.000
NEW	8.500	25.0	1800.0	1700.0	70.0	5682 8.500
	9.000	25.0	1800.0	1700.0	70.0	5682 9.000
NEW	9.500	25.0	1800.0	1700.0	70.0	5682 9.500
	10.000	25.0	1800.0	1700.0	70.0	5682 10.000
NEW	10.500	25.0	1800.0	1700.0	70.0	5682 10.500
	11.000	25.0	1800.0	1700.0	70.0	5682 11.000
	11.500	25.0	1800.0	1700.0	70.0	5682 11.500
	12.000	25.0	1800.0	1700.0	70.0	5682 12.000
NEW	12.500	25.0	1800.0	1700.0	70.0	5682 12.500
	13.000	25.0	1800.0	1700.0	70.0	5682 13.000
NEW	13.500	25.0	1800.0	1700.0	70.0	5682 13.500
	14.000	25.0	1800.0	1700.0	70.0	5682 14.000
NEW	14.500	25.0	1800.0	1700.0	70.0	5682 14.500
	15.000	25.0	1800.0	1700.0	70.0	5682 15.000
NEW	15.500	25.0	1800.0	1700.0	70.0	5682 15.500

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	16.000	25.0	1800.0	1700.0	70.0	5682 16.000
	16.500	25.0	1800.0	1700.0	70.0	5682 16.500
	17.000	25.0	1800.0	1700.0	70.0	5682 17.000
	18.000	25.0	1800.0	1700.0	70.0	5682 18.000
	19.000	25.0	1800.0	1700.0	70.0	5682 19.000
	20.000	25.0	1800.0	1700.0	70.0	5682 20.000
	21.000	25.0	1800.0	1700.0	70.0	5682 21.000
	22.000	25.0	1800.0	1700.0	70.0	5682 22.000
	23.000	25.0	1800.0	1700.0	70.0	5682 23.000
	24.000	25.0	1800.0	1700.0	70.0	5682 24.000
	25.000	25.0	1800.0	1700.0	70.0	5682 25.000
	26.000	25.0	1800.0	1695.0	75.0	5682 26.000
	27.000	25.0	1800.0	1695.0	75.0	5682 27.000
	28.000	25.0	1800.0	1695.0	75.0	5682 28.000
	29.000	25.0	1800.0	1695.0	75.0	5682 29.000
	30.000	25.0	1800.0	1695.0	75.0	5682 30.000
	31.000	25.0	1800.0	1695.0	75.0	5682 31.000
	32.000	25.0	1800.0	1695.0	75.0	5682 32.000



# Brazed single-fluted gun drills

Deep hole drills

EB 80 XXL single-fluted gun drills

Article no. 5694

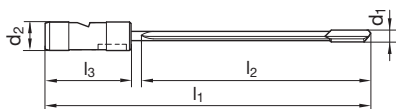


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bright flute • head form G • driver for deep drilling machines

P	M	K	N	S	H
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Article no. 5694

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	4.000	25.0	2000.0	1900.0	70.0	5694 4.000
	4.500	25.0	2000.0	1900.0	70.0	5694 4.500
	5.000	25.0	2000.0	1900.0	70.0	5694 5.000
NEW	5.500	25.0	2000.0	1900.0	70.0	5694 5.500
	6.000	25.0	2000.0	1900.0	70.0	5694 6.000
NEW	6.500	25.0	2000.0	1900.0	70.0	5694 6.500
	7.000	25.0	2000.0	1900.0	70.0	5694 7.000
NEW	7.500	25.0	2000.0	1900.0	70.0	5694 7.500
	8.000	25.0	2000.0	1900.0	70.0	5694 8.000
NEW	8.500	25.0	2000.0	1900.0	70.0	5694 8.500
	9.000	25.0	2000.0	1900.0	70.0	5694 9.000
NEW	9.500	25.0	2000.0	1900.0	70.0	5694 9.500
	10.000	25.0	2000.0	1900.0	70.0	5694 10.000
NEW	10.500	25.0	2000.0	1900.0	70.0	5694 10.500
	11.000	25.0	2000.0	1900.0	70.0	5694 11.000
	11.500	25.0	2000.0	1900.0	70.0	5694 11.500
	12.000	25.0	2000.0	1900.0	70.0	5694 12.000
NEW	12.500	25.0	2000.0	1900.0	70.0	5694 12.500
	13.000	25.0	2000.0	1900.0	70.0	5694 13.000
NEW	13.500	25.0	2000.0	1900.0	70.0	5694 13.500
	14.000	25.0	2000.0	1900.0	70.0	5694 14.000
NEW	14.500	25.0	2000.0	1900.0	70.0	5694 14.500
	15.000	25.0	2000.0	1900.0	70.0	5694 15.000
NEW	15.500	25.0	2000.0	1900.0	70.0	5694 15.500

Article no. 5694

	d1 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	Order no.
NEW	16.000	25.0	2000.0	1900.0	70.0	5694 16.000
	16.500	25.0	2000.0	1900.0	70.0	5694 16.500
	17.000	25.0	2000.0	1900.0	70.0	5694 17.000
	18.000	25.0	2000.0	1900.0	70.0	5694 18.000
	19.000	25.0	2000.0	1900.0	70.0	5694 19.000
	20.000	25.0	2000.0	1900.0	70.0	5694 20.000
	21.000	25.0	2000.0	1900.0	70.0	5694 21.000
	22.000	25.0	2000.0	1900.0	70.0	5694 22.000
	23.000	25.0	2000.0	1900.0	70.0	5694 23.000
	24.000	25.0	2000.0	1900.0	70.0	5694 24.000
	25.000	25.0	2000.0	1900.0	70.0	5694 25.000
	26.000	25.0	2000.0	1895.0	75.0	5694 26.000
	27.000	25.0	2000.0	1895.0	75.0	5694 27.000
	28.000	25.0	2000.0	1895.0	75.0	5694 28.000
	29.000	25.0	2000.0	1895.0	75.0	5694 29.000
	30.000	25.0	2000.0	1895.0	75.0	5694 30.000
	31.000	25.0	2000.0	1895.0	75.0	5694 31.000
	32.000	25.0	2000.0	1895.0	75.0	5694 32.000



RT 100 FB Micro





Machining group		f (mm/rev) with nom. Ø				
		A				
	v <sub>c</sub> (m/min)	1	1.5	2	2.5	3
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	60	0.015	0.020	0.025	0.035	0.040
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	55	0.010	0.020	0.025	0.030	0.035
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	55	0.010	0.020	0.025	0.030	0.035
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	50	0.010	0.015	0.025	0.030	0.035
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	50	0.010	0.015	0.025	0.030	0.035
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	50	0.010	0.015	0.020	0.025	0.030
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	45	0.010	0.015	0.020	0.025	0.030
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	50	0.015	0.020	0.025	0.035	0.040
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	50	0.015	0.020	0.025	0.035	0.040
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	45	0.010	0.015	0.025	0.030	0.035
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	40	0.010	0.015	0.020	0.025	0.030
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	40	0.015	0.020	0.025	0.035	0.040
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	35	0.010	0.015	0.025	0.030	0.035
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	25	0.005	0.005	0.010	0.010	0.015
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	25	0.005	0.005	0.010	0.010	0.010
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	20	0.005	0.005	0.010	0.010	0.010
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	20	0.005	0.005	0.010	0.010	0.015
M2.2.1 Duplex steel, high-strength stainless steels	15	0.005	0.005	0.010	0.010	0.010
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	50	0.015	0.020	0.025	0.035	0.040
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	45	0.010	0.015	0.025	0.030	0.035
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	45	0.010	0.015	0.025	0.030	0.035
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	40	0.010	0.015	0.020	0.025	0.030
K1.3.1 Malleable cast iron, ferritic, 130 HB	40	0.010	0.015	0.020	0.025	0.030
K1.3.2 Malleable cast iron, pearlitic, 230 HB	35	0.010	0.015	0.020	0.025	0.030
K2.1.1 Vermicular graphite cast iron (GJV)	40	0.005	0.010	0.015	0.020	0.020
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	30	0.005	0.010	0.010	0.015	0.015
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	100	0.025	0.040	0.055	0.065	0.080
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	100	0.025	0.040	0.055	0.065	0.080
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	100	0.025	0.040	0.055	0.065	0.080
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	100	0.025	0.040	0.055	0.065	0.080
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	85	0.025	0.035	0.045	0.055	0.070
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	80	0.015	0.020	0.025	0.035	0.040
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	70	0.010	0.015	0.025	0.030	0.035
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	65	0.010	0.015	0.020	0.025	0.030
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics						
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.						
N4.1.3 Non-metallic materials: Graphite						
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	25	0.015	0.020	0.025	0.035	0.040
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	20	0.010	0.015	0.020	0.025	0.030
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	20	0.015	0.020	0.025	0.035	0.040
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	15	0.010	0.015	0.020	0.025	0.030
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	15	0.010	0.015	0.020	0.025	0.030
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	20	0.015	0.020	0.025	0.035	0.040
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	15	0.010	0.015	0.020	0.025	0.030
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	25	0.005	0.005	0.010	0.010	0.015
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC						
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC						
H2.1.1 Chilled cast iron, 400 HB	20	0.005	0.005	0.010	0.010	0.015
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	15	0.005	0.005	0.005	0.010	0.010





ExclusiveLine micro-precision drills XL with coolant ducts, 20xD



Machining group	 	f (mm/rev) with nom. Ø								
		v <sub>c</sub> (m/min)	1	1.2	1.5	1.8	2	2.2	2.5	3
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	100	0.0450	0.0540	0.0675	0.0810	0.0900	0.0990	0.1125	0.1350	
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	90	0.0405	0.0485	0.0610	0.0730	0.0810	0.0890	0.1015	0.1215	
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	90	0.0405	0.0485	0.0610	0.0730	0.0810	0.0890	0.1015	0.1215	
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	85	0.0385	0.0460	0.0575	0.0690	0.0765	0.0840	0.0955	0.1145	
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	85	0.0385	0.0460	0.0575	0.0690	0.0765	0.0840	0.0955	0.1145	
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	80	0.0360	0.0430	0.0540	0.0650	0.0720	0.0790	0.0900	0.1080	
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0340	0.0405	0.0505	0.0610	0.0675	0.0745	0.0845	0.1015	
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	90	0.0350	0.0420	0.0525	0.0630	0.0700	0.0770	0.0875	0.1050	
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	90	0.0350	0.0420	0.0525	0.0630	0.0700	0.0770	0.0875	0.1050	
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0300	0.0355	0.0445	0.0535	0.0595	0.0655	0.0745	0.0895	
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	70	0.0265	0.0315	0.0395	0.0475	0.0525	0.0580	0.0655	0.0790	
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	80	0.0250	0.0300	0.0375	0.0450	0.0500	0.0550	0.0625	0.0750	
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	70	0.0215	0.0255	0.0320	0.0385	0.0425	0.0470	0.0530	0.0640	
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	80	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600	
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	70	0.0180	0.0215	0.0270	0.0325	0.0360	0.0395	0.0450	0.0540	
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	70	0.0170	0.0205	0.0255	0.0305	0.0340	0.0375	0.0425	0.0510	
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	80	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600	
M2.2.1 Duplex steel, high-strength stainless steels	70	0.0170	0.0205	0.0255	0.0305	0.0340	0.0375	0.0425	0.0510	
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	140	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	120	0.0510	0.0610	0.0765	0.0920	0.1020	0.1120	0.1275	0.1530	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	120	0.0510	0.0610	0.0765	0.0920	0.1020	0.1120	0.1275	0.1530	
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	110	0.0480	0.0575	0.0720	0.0865	0.0960	0.1055	0.1200	0.1440	
K1.3.1 Malleable cast iron, ferritic, 130 HB	110	0.0480	0.0575	0.0720	0.0865	0.0960	0.1055	0.1200	0.1440	
K1.3.2 Malleable cast iron, pearlitic, 230 HB	100	0.0420	0.0505	0.0630	0.0755	0.0840	0.0925	0.1050	0.1260	
K2.1.1 Vermicular graphite cast iron (GJV)										
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)										
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	135	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800	
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	135	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800	
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	135	0.0800	0.0960	0.1200	0.1440	0.1600	0.1760	0.2000	0.2400	
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	135	0.0800	0.0960	0.1200	0.1440	0.1600	0.1760	0.2000	0.2400	
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	115	0.0680	0.0815	0.1020	0.1225	0.1360	0.1495	0.1700	0.2040	
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	130	0.0350	0.0420	0.0525	0.0630	0.0700	0.0770	0.0875	0.1050	
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	110	0.0300	0.0355	0.0445	0.0535	0.0595	0.0655	0.0745	0.0895	
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	105	0.0280	0.0335	0.0420	0.0505	0.0560	0.0615	0.0700	0.0840	
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics										
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.										
N4.1.3 Non-metallic materials: Graphite										
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	40	0.0150	0.0180	0.0225	0.0270	0.0300	0.0330	0.0375	0.0450	
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	0.0120	0.0145	0.0180	0.0215	0.0240	0.0265	0.0300	0.0360	
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	35	0.0150	0.0180	0.0225	0.0270	0.0300	0.0330	0.0375	0.0450	
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	0.0105	0.0125	0.0160	0.0190	0.0210	0.0230	0.0260	0.0315	
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.0105	0.0125	0.0160	0.0190	0.0210	0.0230	0.0260	0.0315	
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	35	0.0120	0.0145	0.0180	0.0215	0.0240	0.0265	0.0300	0.0360	
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	25	0.0095	0.0115	0.0145	0.0175	0.0190	0.0210	0.0240	0.0290	
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC										
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC										
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC										
H2.1.1 Chilled cast iron, 400 HB										
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC										



ExclusiveLine micro-precision drills VA without coolant ducts, 3xD



Cutting data

Machining group		f (mm/rev) with nom. Ø							
		v <sub>c</sub> (m/min)	0.5	0.8	1	1.2	1.5	2	2.5
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	90	0.0400	0.0640	0.0800	0.0960	0.1200	0.1600	0.2000	0.2400
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	80	0.0360	0.0575	0.0720	0.0865	0.1080	0.1440	0.1800	0.2160
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	80	0.0360	0.0575	0.0720	0.0865	0.1080	0.1440	0.1800	0.2160
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	75	0.0340	0.0545	0.0680	0.0815	0.1020	0.1360	0.1700	0.2040
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	75	0.0340	0.0545	0.0680	0.0815	0.1020	0.1360	0.1700	0.2040
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	70	0.0320	0.0510	0.0640	0.0770	0.0960	0.1280	0.1600	0.1920
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	70	0.0300	0.0480	0.0600	0.0720	0.0900	0.1200	0.1500	0.1800
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	80	0.0350	0.0560	0.0700	0.0840	0.1050	0.1400	0.1750	0.2100
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	80	0.0350	0.0560	0.0700	0.0840	0.1050	0.1400	0.1750	0.2100
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	70	0.0300	0.0475	0.0595	0.0715	0.0895	0.1190	0.1490	0.1785
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	60	0.0265	0.0420	0.0525	0.0630	0.0790	0.1050	0.1315	0.1575
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	60	0.0350	0.0560	0.0700	0.0840	0.1050	0.1400	0.1750	0.2100
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	50	0.0300	0.0475	0.0595	0.0715	0.0895	0.1190	0.1490	0.1785
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	40	0.0125	0.0200	0.0250	0.0300	0.0375	0.0500	0.0625	0.0750
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	35	0.0115	0.0180	0.0225	0.0270	0.0340	0.0450	0.0565	0.0675
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	35	0.0105	0.0170	0.0215	0.0255	0.0320	0.0425	0.0530	0.0640
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	25	0.0075	0.0120	0.0150	0.0180	0.0225	0.0300	0.0375	0.0450
M2.2.1 Duplex steel, high-strength stainless steels	20	0.0065	0.0100	0.0130	0.0155	0.0190	0.0255	0.0320	0.0385
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB									
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB									
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB									
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB									
K1.3.1 Malleable cast iron, ferritic, 130 HB									
K1.3.2 Malleable cast iron, pearlitic, 230 HB									
K2.1.1 Vermicular graphite cast iron (GJV)									
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)									
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	270	0.0300	0.0480	0.0600	0.0720	0.0900	0.1200	0.1500	0.1800
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	270	0.0300	0.0480	0.0600	0.0720	0.0900	0.1200	0.1500	0.1800
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	180	0.0400	0.0640	0.0800	0.0960	0.1200	0.1600	0.2000	0.2400
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	180	0.0400	0.0640	0.0800	0.0960	0.1200	0.1600	0.2000	0.2400
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	155	0.0340	0.0545	0.0680	0.0815	0.1020	0.1360	0.1700	0.2040
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	125	0.0300	0.0480	0.0600	0.0720	0.0900	0.1200	0.1500	0.1800
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	105	0.0255	0.0410	0.0510	0.0610	0.0765	0.1020	0.1275	0.1530
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	100	0.0240	0.0385	0.0480	0.0575	0.0720	0.0960	0.1200	0.1440
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics									
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.									
N4.1.3 Non-metallic materials: Graphite									
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	30	0.0100	0.0160	0.0200	0.0240	0.0300	0.0400	0.0500	0.0600
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	25	0.0080	0.0130	0.0160	0.0190	0.0240	0.0320	0.0400	0.0480
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	25	0.0100	0.0160	0.0200	0.0240	0.0300	0.0400	0.0500	0.0600
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	15	0.0070	0.0110	0.0140	0.0170	0.0210	0.0280	0.0350	0.0420
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	20	0.0070	0.0110	0.0140	0.0170	0.0210	0.0280	0.0350	0.0420
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	25	0.0075	0.0120	0.0150	0.0180	0.0225	0.0300	0.0375	0.0450
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	15	0.0060	0.0095	0.0120	0.0145	0.0180	0.0240	0.0300	0.0360
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC									
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC									
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC									
H2.1.1 Chilled cast iron, 400 HB									
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC									



ExclusiveLine micro-precision drills VA with coolant ducts, ≤ 6xD



Machining group		f (mm/rev) with nom. Ø							
			1	1.2	1.5	1.8	2	2.2	2.5
	v <sub>c</sub> (m/min)								
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	100	0.0500	0.0600	0.0750	0.0900	0.1000	0.1100	0.1250	0.1500
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	90	0.0450	0.0540	0.0675	0.0810	0.0900	0.0990	0.1125	0.1350
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	90	0.0450	0.0540	0.0675	0.0810	0.0900	0.0990	0.1125	0.1350
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	85	0.0425	0.0510	0.0640	0.0765	0.0850	0.0935	0.1065	0.1275
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	85	0.0425	0.0510	0.0640	0.0765	0.0850	0.0935	0.1065	0.1275
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	80	0.0400	0.0480	0.0600	0.0720	0.0800	0.0880	0.1000	0.1200
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0375	0.0450	0.0565	0.0675	0.0750	0.0825	0.0940	0.1125
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	90	0.0500	0.0600	0.0750	0.0900	0.1000	0.1100	0.1250	0.1500
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	90	0.0500	0.0600	0.0750	0.0900	0.1000	0.1100	0.1250	0.1500
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0425	0.0510	0.0640	0.0765	0.0850	0.0935	0.1065	0.1275
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	70	0.0375	0.0450	0.0565	0.0675	0.0750	0.0825	0.0940	0.1125
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	70	0.0500	0.0600	0.0750	0.0900	0.1000	0.1100	0.1250	0.1500
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	60	0.0425	0.0510	0.0640	0.0765	0.0850	0.0935	0.1065	0.1275
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	100	0.0370	0.0445	0.0555	0.0665	0.0740	0.0815	0.0925	0.1110
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	90	0.0335	0.0400	0.0500	0.0600	0.0665	0.0735	0.0830	0.1000
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	85	0.0315	0.0375	0.0470	0.0565	0.0630	0.0690	0.0785	0.0945
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	80	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
M2.2.1 Duplex steel, high-strength stainless steels	70	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB									
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB									
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB									
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB									
K1.3.1 Malleable cast iron, ferritic, 130 HB									
K1.3.2 Malleable cast iron, pearlitic, 230 HB									
K2.1.1 Vermicular graphite cast iron (GJV)									
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)									
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	300	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	300	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	200	0.0800	0.0960	0.1200	0.1440	0.1600	0.1760	0.2000	0.2400
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	200	0.0800	0.0960	0.1200	0.1440	0.1600	0.1760	0.2000	0.2400
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	170	0.0680	0.0815	0.1020	0.1225	0.1360	0.1495	0.1700	0.2040
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	150	0.0500	0.0600	0.0750	0.0900	0.1000	0.1100	0.1250	0.1500
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	130	0.0425	0.0510	0.0640	0.0765	0.0850	0.0935	0.1065	0.1275
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	120	0.0400	0.0480	0.0600	0.0720	0.0800	0.0880	0.1000	0.1200
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics									
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.									
N4.1.3 Non-metallic materials: Graphite									
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	50	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	40	0.0160	0.0190	0.0240	0.0290	0.0320	0.0350	0.0400	0.0480
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	45	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	30	0.0140	0.0170	0.0210	0.0250	0.0280	0.0310	0.0350	0.0420
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	30	0.0140	0.0170	0.0210	0.0250	0.0280	0.0310	0.0350	0.0420
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	45	0.0150	0.0180	0.0225	0.0270	0.0300	0.0330	0.0375	0.0450
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	35	0.0120	0.0145	0.0180	0.0215	0.0240	0.0265	0.0300	0.0360
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC									
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC									
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC									
H2.1.1 Chilled cast iron, 400 HB									
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC									



ExclusiveLine micro-precision drills VA with coolant ducts, > 6xD



Cutting data

Machining group		f (mm/rev) with nom. Ø							
			1	1.2	1.5	1.8	2	2.2	2.5
	v <sub>c</sub> (m/min)								
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	100	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	90	0.0270	0.0325	0.0405	0.0485	0.0540	0.0595	0.0675	0.0810
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	90	0.0270	0.0325	0.0405	0.0485	0.0540	0.0595	0.0675	0.0810
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	85	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	85	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	80	0.0240	0.0290	0.0360	0.0430	0.0480	0.0530	0.0600	0.0720
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0225	0.0270	0.0340	0.0405	0.0450	0.0495	0.0560	0.0675
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	90	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	90	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	75	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	70	0.0225	0.0270	0.0340	0.0405	0.0450	0.0495	0.0560	0.0675
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	70	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	60	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	100	0.0370	0.0445	0.0555	0.0665	0.0740	0.0815	0.0925	0.1110
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	90	0.0335	0.0400	0.0500	0.0600	0.0665	0.0735	0.0830	0.1000
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	85	0.0315	0.0375	0.0470	0.0565	0.0630	0.0690	0.0785	0.0945
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	80	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
M2.2.1 Duplex steel, high-strength stainless steels	70	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB									
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB									
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB									
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB									
K1.3.1 Malleable cast iron, ferritic, 130 HB									
K1.3.2 Malleable cast iron, pearlitic, 230 HB									
K2.1.1 Vermicular graphite cast iron (GJV)									
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)									
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	300	0.0400	0.0480	0.0600	0.0720	0.0800	0.0880	0.1000	0.1200
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	300	0.0400	0.0480	0.0600	0.0720	0.0800	0.0880	0.1000	0.1200
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	200	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	200	0.0600	0.0720	0.0900	0.1080	0.1200	0.1320	0.1500	0.1800
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	170	0.0510	0.0610	0.0765	0.0920	0.1020	0.1120	0.1275	0.1530
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	150	0.0300	0.0360	0.0450	0.0540	0.0600	0.0660	0.0750	0.0900
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	130	0.0255	0.0305	0.0385	0.0460	0.0510	0.0560	0.0640	0.0765
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	120	0.0240	0.0290	0.0360	0.0430	0.0480	0.0530	0.0600	0.0720
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics									
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.									
N4.1.3 Non-metallic materials: Graphite									
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	50	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	40	0.0160	0.0190	0.0240	0.0290	0.0320	0.0350	0.0400	0.0480
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	45	0.0200	0.0240	0.0300	0.0360	0.0400	0.0440	0.0500	0.0600
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	30	0.0140	0.0170	0.0210	0.0250	0.0280	0.0310	0.0350	0.0420
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	30	0.0140	0.0170	0.0210	0.0250	0.0280	0.0310	0.0350	0.0420
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	40	0.0120	0.0145	0.0180	0.0215	0.0240	0.0265	0.0300	0.0360
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	30	0.0095	0.0115	0.0145	0.0175	0.0190	0.0210	0.0240	0.0290
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC									
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC									
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC									
H2.1.1 Chilled cast iron, 400 HB									
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC									



Ratio drills with coolant ducts, RT 100 InoxPro, 3xD and 5xD



Machining group		f (mm/rev) with nom. Ø									
			3	4	6	8	10	12	14	16	20
	v <sub>c</sub> (m/min)										
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB		140	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550	0.650
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB		125	0.140	0.170	0.235	0.290	0.345	0.395	0.445	0.495	0.585
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB		125	0.140	0.170	0.235	0.290	0.345	0.395	0.445	0.495	0.585
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB		120	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465	0.555
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB		120	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465	0.555
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB		110	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440	0.520
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB		105	0.115	0.145	0.195	0.245	0.290	0.330	0.370	0.410	0.490
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB		115	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440	0.520
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB		115	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440	0.520
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB		100	0.105	0.130	0.175	0.220	0.260	0.300	0.335	0.375	0.440
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB		85	0.090	0.115	0.155	0.195	0.230	0.265	0.295	0.330	0.390
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB		75	0.095	0.120	0.165	0.205	0.240	0.275	0.310	0.345	0.405
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB		65	0.080	0.100	0.140	0.170	0.205	0.235	0.265	0.290	0.345
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives		105	0.095	0.120	0.165	0.205	0.240	0.275	0.310	0.345	0.405
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB		95	0.085	0.110	0.145	0.180	0.215	0.250	0.280	0.310	0.365
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB		90	0.080	0.100	0.140	0.170	0.205	0.235	0.265	0.290	0.345
M2.1.1 Stainless steel, austenitic, quenched, 180 HB		85	0.075	0.095	0.130	0.160	0.190	0.220	0.250	0.275	0.325
M2.2.1 Duplex steel, high-strength stainless steels		70	0.065	0.080	0.110	0.140	0.165	0.185	0.210	0.235	0.275
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB											
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB											
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB											
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB											
K1.3.1 Malleable cast iron, ferritic, 130 HB											
K1.3.2 Malleable cast iron, pearlitic, 230 HB											
K2.1.1 Vermicular graphite cast iron (GJV)											
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)											
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB											
N1.1.2 Wrought aluminium alloys, hardened, 100 HB											
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB											
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB											
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB											
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %											
N3.1.2 Copper and copper alloys: CuZn, CuSnZn											
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte											
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics											
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.											
N4.1.3 Non-metallic materials: Graphite											
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB		60	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.260
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB		50	0.050	0.060	0.085	0.105	0.120	0.140	0.160	0.175	0.205
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB		50	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.260
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB		35	0.045	0.055	0.075	0.090	0.105	0.125	0.140	0.155	0.180
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB		35	0.045	0.055	0.075	0.090	0.105	0.125	0.140	0.155	0.180
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>		60	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.260
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>		45	0.050	0.060	0.085	0.105	0.120	0.140	0.160	0.175	0.205
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC											
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC											
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC											
H2.1.1 Chilled cast iron, 400 HB											
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC											



## Ratio drills with coolant ducts, RT 100 InoxPro, 7xD





Machining group		f (mm/rev) with nom. Ø									
		v <sub>c</sub> (m/min)	3	4	6	8	10	12	14	16	20
	<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	140	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440	0.520
<b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	125	0.110	0.140	0.185	0.235	0.275	0.315	0.355	0.395	0.470	
<b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	125	0.110	0.140	0.185	0.235	0.275	0.315	0.355	0.395	0.470	
<b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	120	0.105	0.130	0.175	0.220	0.260	0.300	0.335	0.375	0.440	
<b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	120	0.105	0.130	0.175	0.220	0.260	0.300	0.335	0.375	0.440	
<b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	110	0.100	0.120	0.165	0.205	0.245	0.280	0.315	0.350	0.415	
<b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	105	0.090	0.115	0.155	0.195	0.230	0.265	0.295	0.330	0.390	
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	115	0.095	0.120	0.165	0.205	0.240	0.275	0.310	0.345	0.405	
<b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	115	0.095	0.120	0.165	0.205	0.240	0.275	0.310	0.345	0.405	
<b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	100	0.080	0.100	0.140	0.170	0.205	0.235	0.265	0.290	0.345	
<b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	85	0.070	0.090	0.120	0.150	0.180	0.205	0.230	0.255	0.305	
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	75	0.075	0.095	0.130	0.160	0.190	0.220	0.250	0.275	0.325	
<b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	65	0.065	0.080	0.110	0.140	0.165	0.185	0.210	0.235	0.275	
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives	100	0.075	0.095	0.130	0.160	0.190	0.220	0.250	0.275	0.325	
<b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	90	0.070	0.085	0.115	0.145	0.175	0.200	0.225	0.245	0.295	
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	85	0.065	0.080	0.110	0.140	0.165	0.185	0.210	0.235	0.275	
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB	80	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.260	
<b>M2.2.1</b> Duplex steel, high-strength stainless steels	70	0.050	0.065	0.090	0.110	0.130	0.150	0.170	0.185	0.220	
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB											
<b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB											
<b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB											
<b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB											
<b>K1.3.1</b> Malleable cast iron, ferritic, 130 HB											
<b>K1.3.2</b> Malleable cast iron, pearlitic, 230 HB											
<b>K2.1.1</b> Vermicular graphite cast iron (GJV)											
<b>K2.2.1</b> Austenitic-ferritic spheroidal graphite cast iron (ADI)											
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB											
<b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB											
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB											
<b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB											
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB											
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 %											
<b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn											
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte											
<b>N4.1.1</b> Non-metallic materials: Duroplastics, fibre-reinforced plastics											
<b>N4.1.2</b> Non-metallic materials: Hard rubber, wood, etc.											
<b>N4.1.3</b> Non-metallic materials: Graphite											
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB	45	0.050	0.060	0.080	0.100	0.120	0.140	0.155	0.175	0.205	
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB	35	0.040	0.050	0.065	0.080	0.095	0.110	0.125	0.140	0.165	
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	40	0.050	0.060	0.080	0.100	0.120	0.140	0.155	0.175	0.205	
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	25	0.035	0.040	0.055	0.070	0.085	0.095	0.110	0.120	0.145	
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.035	0.040	0.055	0.070	0.085	0.095	0.110	0.120	0.145	
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	45	0.050	0.060	0.080	0.100	0.120	0.140	0.155	0.175	0.205	
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	35	0.040	0.050	0.065	0.080	0.095	0.110	0.125	0.140	0.165	
<b>H1.1.1</b> Hardened steel, hardened and tempered, < 55 HRC											
<b>H1.1.2</b> Hardened steel, hardened and tempered, < 60 HRC											
<b>H1.1.3</b> Hardened steel, hardened and tempered, > 60 HRC											
<b>H2.1.1</b> Chilled cast iron, 400 HB											
<b>H2.1.2</b> Chilled cast iron, hardened and tempered, < 55 HRC											





Ratio drills with coolant ducts, 3-fluted, FT 200 U, 3xD



Machining group		f (mm/rev) with nom. Ø								
										
	vc (m/min)	4	6	8	10	12	14	16	18	20
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	180	0.300	0.410	0.510	0.605	0.695	0.785	0.865	0.945	1.025
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	160	0.270	0.370	0.460	0.545	0.625	0.705	0.780	0.855	0.925
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	160	0.270	0.370	0.460	0.545	0.625	0.705	0.780	0.855	0.925
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	155	0.255	0.350	0.435	0.515	0.590	0.665	0.735	0.805	0.870
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	155	0.255	0.350	0.435	0.515	0.590	0.665	0.735	0.805	0.870
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	145	0.240	0.330	0.410	0.485	0.555	0.625	0.695	0.760	0.820
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	135	0.225	0.310	0.385	0.455	0.520	0.585	0.650	0.710	0.770
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	130	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	130	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	110	0.205	0.275	0.345	0.410	0.470	0.525	0.585	0.640	0.690
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	100	0.180	0.245	0.305	0.360	0.415	0.465	0.515	0.565	0.610
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	90	0.190	0.260	0.325	0.385	0.440	0.495	0.550	0.600	0.650
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	75	0.165	0.220	0.275	0.325	0.375	0.420	0.465	0.510	0.555
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	60	0.095	0.130	0.160	0.190	0.220	0.250	0.275	0.300	0.325
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	55	0.085	0.115	0.145	0.175	0.200	0.225	0.245	0.270	0.295
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	50	0.080	0.110	0.140	0.165	0.185	0.210	0.235	0.255	0.275
M2.1.1 Stainless steel, austenitic, quenched, 180 HB										
M2.2.1 Duplex steel, high-strength stainless steels										
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	130	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	110	0.205	0.275	0.345	0.410	0.470	0.525	0.585	0.640	0.690
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	110	0.205	0.275	0.345	0.410	0.470	0.525	0.585	0.640	0.690
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	105	0.190	0.260	0.325	0.385	0.440	0.495	0.550	0.600	0.650
K1.3.1 Malleable cast iron, ferritic, 130 HB	105	0.190	0.260	0.325	0.385	0.440	0.495	0.550	0.600	0.650
K1.3.2 Malleable cast iron, pearlitic, 230 HB	90	0.165	0.230	0.285	0.335	0.385	0.435	0.480	0.525	0.570
K2.1.1 Vermicular graphite cast iron (GJV)	100	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	75	0.180	0.245	0.305	0.360	0.415	0.465	0.515	0.565	0.610
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	200	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	200	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	180	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	180	0.240	0.325	0.405	0.480	0.550	0.620	0.685	0.750	0.815
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	155	0.205	0.275	0.345	0.410	0.470	0.525	0.585	0.640	0.690
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %										
N3.1.2 Copper and copper alloys: CuZn, CuSnZn										
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte										
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics										
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.										
N4.1.3 Non-metallic materials: Graphite										
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	40	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.240	0.260
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	0.060	0.085	0.105	0.120	0.140	0.160	0.175	0.190	0.205
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	35	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.240	0.260
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	0.055	0.075	0.090	0.105	0.125	0.140	0.155	0.165	0.180
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.055	0.075	0.090	0.105	0.125	0.140	0.155	0.165	0.180
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	40	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.240	0.260
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	30	0.060	0.085	0.105	0.120	0.140	0.160	0.175	0.190	0.205
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	40	0.075	0.105	0.130	0.155	0.175	0.200	0.220	0.240	0.260
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC										
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC										
H2.1.1 Chilled cast iron, 400 HB										
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC										



## Drills, 4-fluted, VB 100 P, 3xD and 5xD



Machining group		f (mm/rev) with nom. Ø									
		v <sub>c</sub> (m/min)	6	8	10	12	16	20	24	28	32
	P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB										
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB											
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB											
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB											
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB											
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB											
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB											
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB											
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB											
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB											
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB											
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB											
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB											
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives											
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB											
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB											
M2.1.1 Stainless steel, austenitic, quenched, 180 HB											
M2.2.1 Duplex steel, high-strength stainless steels											
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	140	0.340	0.420	0.500	0.575	0.715	0.845	0.975	1.095	1.210	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	120	0.290	0.360	0.425	0.490	0.605	0.720	0.825	0.930	1.030	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	120	0.290	0.360	0.425	0.490	0.605	0.720	0.825	0.930	1.030	
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	110	0.270	0.340	0.400	0.460	0.570	0.675	0.780	0.875	0.970	
K1.3.1 Malleable cast iron, ferritic, 130 HB	110	0.270	0.340	0.400	0.460	0.570	0.675	0.780	0.875	0.970	
K1.3.2 Malleable cast iron, pearlitic, 230 HB	100	0.235	0.295	0.350	0.400	0.500	0.595	0.680	0.765	0.845	
K2.1.1 Vermicular graphite cast iron (GJV)	95	0.235	0.295	0.350	0.400	0.500	0.595	0.680	0.765	0.845	
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	70	0.180	0.220	0.260	0.300	0.375	0.445	0.510	0.575	0.635	
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB											
N1.1.2 Wrought aluminium alloys, hardened, 100 HB											
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	180	0.305	0.380	0.450	0.515	0.645	0.760	0.875	0.985	1.090	
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	180	0.305	0.380	0.450	0.515	0.645	0.760	0.875	0.985	1.090	
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	155	0.260	0.325	0.385	0.440	0.545	0.650	0.745	0.835	0.925	
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %											
N3.1.2 Copper and copper alloys: CuZn, CuSnZn											
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte											
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics											
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.											
N4.1.3 Non-metallic materials: Graphite											
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB											
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB											
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB											
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB											
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB											
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>											
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>											
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC											
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC											
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC											
H2.1.1 Chilled cast iron, 400 HB											
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC											



## Single-fluted gun drills EB 100 M, EB 100

### Correction of length diameter ratio:

< 25xD	100 %	< 45xD	90 %	< 65xD	75 %
< 80xD	60 %	< 150xD	50 %		



Machining group	Ø		f (mm/rev) with nom. Ø												
	vc (m/min)		1	2	3	4	5	6	7	8	10	12	14	16	
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	90	95	0.004	0.010	0.020	0.025	0.030	0.035	0.040	0.040	0.050	0.060	0.065	0.075	
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	80	85	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.065	
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	80	85	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.065	
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	75	80	0.003	0.009	0.015	0.020	0.025	0.030	0.030	0.035	0.045	0.050	0.055	0.060	
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	75	80	0.003	0.009	0.015	0.020	0.025	0.030	0.030	0.035	0.045	0.050	0.055	0.060	
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	70	75	0.003	0.008	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.045	0.050	0.060	
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	70	70	0.003	0.008	0.015	0.020	0.020	0.025	0.030	0.030	0.040	0.045	0.050	0.055	
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	75	80	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.035	0.045	0.050	0.060	0.065	
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	75	80	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.035	0.045	0.050	0.060	0.065	
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	65	65	0.003	0.008	0.015	0.020	0.020	0.025	0.030	0.030	0.035	0.045	0.050	0.055	
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	55	60	0.002	0.007	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	60	65	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.035	0.045	0.050	0.060	0.065	
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	50	55	0.003	0.008	0.015	0.020	0.020	0.025	0.030	0.030	0.035	0.045	0.050	0.055	
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	50	55	0.003	0.008	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.045	0.050	0.060	
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	45	45	0.003	0.007	0.015	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.045	0.050	
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	45	45	0.002	0.007	0.015	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.045	0.050	
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	40	40	0.002	0.006	0.011	0.015	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.045	
M2.2.1 Duplex steel, high-strength stainless steels	35	35	0.002	0.005	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.035	
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	80	85	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	70	70	0.005	0.015	0.025	0.035	0.040	0.045	0.050	0.055	0.070	0.080	0.090	0.100	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	70	70	0.005	0.015	0.025	0.035	0.040	0.045	0.050	0.055	0.070	0.080	0.090	0.100	
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	65	65	0.005	0.015	0.025	0.030	0.035	0.045	0.050	0.055	0.065	0.075	0.085	0.095	
K1.3.1 Malleable cast iron, ferritic, 130 HB	65	65	0.005	0.015	0.025	0.030	0.035	0.045	0.050	0.055	0.065	0.075	0.085	0.095	
K1.3.2 Malleable cast iron, pearlitic, 230 HB	55	60	0.004	0.012	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.065	0.075	0.080	
K2.1.1 Vermicular graphite cast iron (GJV)	65	70	0.004	0.012	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.070	0.080	0.085	
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	50	50	0.003	0.009	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.065	
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	100	105	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	100	105	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	160	170	0.025	0.075	0.135	0.170	0.200	0.235	0.265	0.295	0.350	0.405	0.460	0.510	
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	160	170	0.025	0.075	0.135	0.170	0.200	0.235	0.265	0.295	0.350	0.405	0.460	0.510	
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	135	145	0.020	0.060	0.115	0.145	0.170	0.200	0.225	0.250	0.295	0.345	0.390	0.435	
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	80	85	0.008	0.025	0.045	0.055	0.065	0.075	0.085	0.095	0.115	0.135	0.150	0.165	
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	70	70	0.007	0.020	0.035	0.045	0.055	0.065	0.075	0.080	0.100	0.115	0.130	0.140	
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	65	65	0.007	0.020	0.035	0.045	0.055	0.060	0.070	0.075	0.090	0.105	0.120	0.135	
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	60	65	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	60	65	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
N4.1.3 Non-metallic materials: Graphite	60	65	0.006	0.015	0.030	0.040	0.045	0.055	0.060	0.065	0.080	0.095	0.105	0.115	
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	40	40	0.002	0.005	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.035	
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	35	0.002	0.004	0.008	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.030	0.030	
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	25	25	0.001	0.004	0.007	0.009	0.011	0.012	0.015	0.015	0.020	0.020	0.025	0.025	
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	25	0.001	0.004	0.007	0.008	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.025	
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	20	20	0.001	0.003	0.006	0.008	0.009	0.011	0.012	0.015	0.015	0.020	0.020	0.025	
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	30	30	0.001	0.004	0.008	0.010	0.011	0.015	0.015	0.015	0.020	0.025	0.025	0.030	
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	25	30	0.001	0.004	0.007	0.009	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.025	
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	30	30	0.002	0.005	0.010	0.012	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.035	
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	20	20	0.001	0.004	0.008	0.010	0.011	0.015	0.015	0.015	0.020	0.025	0.025	0.030	
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	20	20	0.001	0.004	0.007	0.009	0.011	0.012	0.015	0.015	0.020	0.020	0.025	0.025	
H2.1.1 Chilled cast iron, 400 HB	20	20	0.001	0.004	0.008	0.010	0.011	0.015	0.015	0.015	0.020	0.025	0.025	0.030	
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	15	15	0.001	0.003	0.005	0.007	0.008	0.009	0.011	0.012	0.015	0.015	0.020	0.020	



Single-fluted gun drills EB 80, EB 80 XXL



Machining group	○	Ⓢ ⓐ	f (mm/rev) with nom. Ø								
	v <sub>c</sub> (m/min)		4	8	10	12	14	16	20	25	32
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	80	85	0.020	0.040	0.045	0.050	0.060	0.065	0.080	0.095	0.110
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	70	75	0.020	0.035	0.040	0.045	0.055	0.060	0.070	0.085	0.100
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	70	75	0.020	0.035	0.040	0.045	0.055	0.060	0.070	0.085	0.100
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	70	70	0.020	0.030	0.040	0.045	0.050	0.055	0.065	0.080	0.095
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	70	70	0.020	0.030	0.040	0.045	0.050	0.055	0.065	0.080	0.095
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	65	65	0.015	0.030	0.035	0.040	0.045	0.050	0.065	0.075	0.090
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	60	65	0.015	0.030	0.035	0.040	0.045	0.050	0.060	0.070	0.085
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	70	75	0.020	0.035	0.040	0.045	0.050	0.060	0.070	0.085	0.100
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	70	75	0.020	0.035	0.040	0.045	0.050	0.060	0.070	0.085	0.100
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	60	60	0.015	0.030	0.035	0.040	0.045	0.050	0.060	0.070	0.085
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	55	55	0.015	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.075
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	60	65	0.020	0.035	0.040	0.045	0.050	0.060	0.070	0.085	0.100
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	50	55	0.015	0.030	0.035	0.040	0.045	0.050	0.060	0.070	0.085
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	50	55	0.015	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.075
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	45	45	0.015	0.025	0.025	0.030	0.035	0.040	0.045	0.055	0.065
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	45	45	0.012	0.020	0.025	0.030	0.035	0.035	0.045	0.055	0.060
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	40	40	0.012	0.020	0.025	0.030	0.035	0.035	0.045	0.050	0.060
M2.2.1 Duplex steel, high-strength stainless steels	35	35	0.010	0.020	0.020	0.025	0.030	0.030	0.035	0.045	0.050
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	80	85	0.030	0.050	0.060	0.070	0.080	0.085	0.105	0.125	0.145
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	70	70	0.025	0.045	0.050	0.060	0.065	0.075	0.090	0.105	0.125
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	70	70	0.025	0.045	0.050	0.060	0.065	0.075	0.090	0.105	0.125
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	65	65	0.025	0.040	0.050	0.055	0.065	0.070	0.085	0.100	0.115
K1.3.1 Malleable cast iron, ferritic, 130 HB	65	65	0.025	0.040	0.050	0.055	0.065	0.070	0.085	0.100	0.115
K1.3.2 Malleable cast iron, pearlitic, 230 HB	55	60	0.020	0.035	0.040	0.050	0.055	0.060	0.075	0.085	0.105
K2.1.1 Vermicular graphite cast iron (GJV)	65	70	0.025	0.040	0.050	0.060	0.065	0.075	0.085	0.105	0.120
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	50	50	0.020	0.030	0.040	0.045	0.050	0.055	0.065	0.080	0.090
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	80	85	0.035	0.060	0.070	0.080	0.090	0.100	0.120	0.145	0.170
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	80	85	0.035	0.060	0.070	0.080	0.090	0.100	0.120	0.145	0.170
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	120	125	0.095	0.165	0.200	0.230	0.260	0.290	0.350	0.415	0.490
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	120	125	0.095	0.165	0.200	0.230	0.260	0.290	0.350	0.415	0.490
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	100	105	0.080	0.140	0.170	0.195	0.225	0.250	0.295	0.355	0.415
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	70	75	0.040	0.065	0.080	0.095	0.105	0.115	0.140	0.165	0.195
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	60	60	0.035	0.055	0.070	0.080	0.090	0.100	0.120	0.140	0.165
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	55	60	0.030	0.055	0.065	0.075	0.085	0.095	0.110	0.135	0.155
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	60	65	0.025	0.040	0.050	0.060	0.065	0.075	0.085	0.105	0.120
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	60	65	0.025	0.040	0.050	0.060	0.065	0.075	0.085	0.105	0.120
N4.1.3 Non-metallic materials: Graphite	60	65	0.025	0.040	0.050	0.060	0.065	0.075	0.085	0.105	0.120
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	40	40	0.010	0.015	0.020	0.025	0.025	0.030	0.035	0.040	0.050
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	35	0.008	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.040
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	25	25	0.007	0.015	0.015	0.015	0.020	0.020	0.025	0.030	0.035
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	25	0.007	0.012	0.015	0.015	0.020	0.020	0.025	0.030	0.035
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	20	20	0.006	0.011	0.015	0.015	0.015	0.020	0.025	0.025	0.030
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	30	30	0.007	0.015	0.015	0.015	0.020	0.020	0.025	0.030	0.035
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	25	30	0.006	0.011	0.015	0.015	0.020	0.020	0.025	0.030	0.035
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	30	30	0.007	0.015	0.015	0.015	0.020	0.020	0.025	0.030	0.035
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	20	20	0.006	0.010	0.012	0.015	0.015	0.015	0.020	0.025	0.030
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	20	20	0.005	0.009	0.011	0.015	0.015	0.015	0.020	0.025	0.030
H2.1.1 Chilled cast iron, 400 HB	20	20	0.007	0.015	0.015	0.015	0.020	0.020	0.025	0.030	0.035
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	15	15	0.005	0.009	0.011	0.012	0.015	0.015	0.020	0.020	0.025



# Milling tools

Highest milling performance thanks to new designs

With these milling innovations,  
the chips fly exactly the way you want them

**GÜHRING**

Page

- 84 **Solid carbide milling cutters**
- 91 **Diamond/PCD milling cutters**



Milling tools

P	M	K	N	S	H	Tool illustration	Z	Hardness	Cutting edge profile	Length	Tool material	Surface	d1/mm	Article no.	Page	
<b>Micro-precision milling cutter MicroMill μ 55 U</b>																
•	•	•	○	•	•		<b>NEW</b>		55 HRC	45°			0.200 - 3.000	<b>6829</b>	84	
<b>Ratio end mills RF 100 Micro Diver</b>																
•	•	•	•	•	○				48 HRC	45°				0.500 - 3.175	<b>6808</b>	86
•	•	•	•	•	○				48 HRC	45°				0.500 - 3.175	<b>6809</b>	87
•	•	•	•	•	○		<b>NEW</b>		48 HRC	R±0,01				0.500 - 3.000	<b>6691</b>	88
•	•	•	•	•	○		<b>NEW</b>		48 HRC	R±0,01				0.500 - 3.000	<b>6692</b>	89
<b>PCD Diver (3-fluted)</b>																
•	•	•	•	•	•		<b>NEW</b>			R±0,05			12.000 - 32.000	<b>4190</b>	91	
<b>Ratio end mills RF 100 Sharp extra short</b>																
•	•	•	•	•	•		<b>NEW</b>			45°				0.800 - 16.000	<b>6938</b>	93
•	•	•	•	•	•		<b>NEW</b>			45°				3.500 - 16.000	<b>6939</b>	93
<b>Ratio end mill sets RF 100 Sharp extra short</b>																
•	•	•	•	•	•		<b>NEW</b>			45°				<b>6468</b>	94	
•	•	•	•	•	•		<b>NEW</b>			45°				<b>6469</b>	94	



# MicroMill $\mu$ 55 U



## Micro milling cutter for maximum precision

useable in almost all materials | 3 lengths per diameter | from  $\varnothing$  0.20mm -  $\varnothing$  3.00mm

**3 RANGES PER DIAMETER**  
for maximum tool life with  
maximum flexibility:  
2xD - 3xD - 5xD

**THE HIPIMS-PERROX COATING**  
achieves a very high surface quality for  
optimum chip removal as well as perfect  
protection against wear and oxidation  
during dry and wet machining

**GÜHROJET COOLANT DUCTS**  
targeted cooling and lubrication  
perfect hardness-toughness ratio  
directly in the cutting area and an  
effective chip removal

**DIAMETER-DEPENDENT  
NUMBER OF CUTTING EDGES**  
for optimised chip space and  
high overall feed rates

## Precision milling cutters for the highest requirements in the smallest dimensions

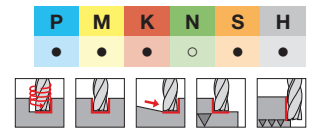
The MicroMill  $\mu$  55 U impresses with many features that make the requirements of micro-precision machining easier. The Gührojet cooling ensures the best chip removal and wear reduction, the Perrox coating protects the tool from wear and reduces the friction between the tool and the chip. With the reduced diameter tolerance, precise, dimensionally accurate results can be achieved.



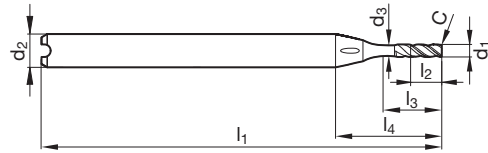
Cutting data page 96



high-precision micro-precision milling cutters with 3 different ranges l3 • with internal cooling: GühroJet peripheral cooling with 6 or 4 exits • neck clearance • centre cutting



High-performance milling cutters



Article no. **6829**

d1 -0,008 mm	d2 h5 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	c mm x 45°	Z	Order no.
0.20	4.00	0.18	45	0.20	0.40	9.1	0.006	3	6829 0.201
0.20	4.00	0.18	45	0.20	0.75	9.5	0.006	3	6829 0.202
0.20	4.00	0.18	45	0.20	1.00	9.7	0.006	3	6829 0.203
0.25	4.00	0.23	45	0.25	0.50	9.0	0.007	3	6829 0.251
0.25	4.00	0.23	45	0.25	0.90	9.4	0.007	3	6829 0.252
0.25	4.00	0.23	45	0.25	1.25	9.7	0.007	3	6829 0.253
0.30	4.00	0.28	45	0.30	0.60	9.0	0.009	3	6829 0.301
0.30	4.00	0.28	45	0.30	1.10	9.5	0.009	3	6829 0.302
0.30	4.00	0.28	45	0.30	1.50	9.9	0.009	3	6829 0.303
0.40	4.00	0.38	45	0.40	0.80	8.9	0.012	4	6829 0.401
0.40	4.00	0.38	45	0.40	1.40	9.5	0.012	4	6829 0.402
0.40	4.00	0.38	45	0.40	2.00	10.1	0.012	4	6829 0.403
0.50	4.00	0.45	45	0.50	1.00	9.0	0.010	4	6829 0.501
0.50	4.00	0.45	45	0.50	1.80	9.8	0.010	4	6829 0.502
0.50	4.00	0.45	45	0.50	2.50	10.5	0.010	4	6829 0.503
0.60	4.00	0.55	45	0.60	1.20	8.9	0.012	4	6829 0.601
0.60	4.00	0.55	45	0.60	2.10	9.8	0.012	4	6829 0.602
0.60	4.00	0.55	45	0.60	3.00	10.7	0.012	4	6829 0.603
0.80	4.00	0.75	45	0.80	1.60	8.7	0.016	4	6829 0.801
0.80	4.00	0.75	45	0.80	2.80	9.9	0.016	4	6829 0.802
0.80	4.00	0.75	45	0.80	4.00	11.1	0.016	4	6829 0.803
1.00	4.00	0.92	45	1.00	2.00	8.7	0.020	4	6829 1.001
1.00	4.00	0.92	45	1.00	3.50	10.2	0.020	4	6829 1.002
1.00	4.00	0.92	45	1.00	5.00	11.7	0.020	4	6829 1.003
1.20	4.00	1.12	50	1.20	2.40	8.7	0.012	4	6829 1.201
1.20	4.00	1.12	50	1.20	4.20	10.5	0.012	4	6829 1.202
1.20	4.00	1.12	50	1.20	6.00	12.3	0.012	4	6829 1.203
1.50	4.00	1.40	50	1.50	3.00	8.6	0.015	4	6829 1.501
1.50	4.00	1.40	50	1.50	5.50	11.1	0.015	4	6829 1.502
1.50	4.00	1.40	50	1.50	7.50	13.1	0.015	4	6829 1.503
1.80	4.00	1.70	50	1.80	3.60	8.5	0.018	4	6829 1.801
1.80	4.00	1.70	50	1.80	6.50	11.4	0.018	4	6829 1.802
1.80	4.00	1.70	50	1.80	9.00	13.9	0.018	4	6829 1.803
2.00	6.00	1.85	50	2.00	4.00	13.2	0.020	4	6829 2.001
2.00	6.00	1.85	57	2.00	7.50	16.7	0.020	4	6829 2.002
2.00	6.00	1.85	57	2.00	10.00	19.2	0.020	4	6829 2.003
2.20	6.00	2.05	50	2.20	4.40	13.2	0.022	4	6829 2.201
2.20	6.00	2.05	57	2.20	8.00	16.8	0.022	4	6829 2.202
2.20	6.00	2.05	57	2.20	11.00	19.8	0.022	4	6829 2.203
2.50	6.00	2.35	50	2.50	5.00	13.1	0.025	4	6829 2.501
2.50	6.00	2.35	57	2.50	9.00	17.1	0.025	4	6829 2.502
2.50	6.00	2.35	57	2.50	12.50	20.6	0.025	4	6829 2.503
3.00	6.00	2.85	50	3.00	6.00	12.9	0.030	4	6829 3.001
3.00	6.00	2.85	57	3.00	11.00	17.9	0.030	4	6829 3.002
3.00	6.00	2.85	57	3.00	15.00	21.9	0.030	4	6829 3.003

# MICRO **RF 100** *diver*

## The smallest diver in the world

plunge and mill with just one tool | extreme cutting values | very high cutting depths

**GÜHROJET COOLANT DUCTS**  
targeted cooling and lubrication  
perfect hardness-toughness ratio  
directly in the cutting area  
effective chip removal

**VARIABLE CORNER DESIGN**  
with radius and corner chamfer  
for maximum application  
flexibility in various industries

**SYMMETRICAL DRILL FACE**  
optimised for drilling and  
ramping operations high cutting  
edge stability

**THE HIPIMS COATING PERROX**  
achieves a very high surface quality for  
optimum chip removal as well as perfect  
protection against wear and oxidation  
during dry and wet machining

**INNOVATIVE FLUTE PROFILE**  
very high tool stability and  
low-vibration cut



**RF 100 MICRO DIVER IN ACTION**  
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## Universal application in every material

As a high-performance milling cutter for the micro range, the RF 100 Micro Diver has excellent plunging properties. Since the milling cutter covers a wide range of operations in almost all materials, it is particularly suitable for customers who value flexibility. The tool is available in two different lengths: 2.5xD and 5xD. As an addition, the Micro Diver is now also available from Ø 0.5 mm and with a corner radius



## Ratio end mills RF 100 Micro Diver

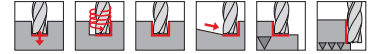
Article no. **6808**



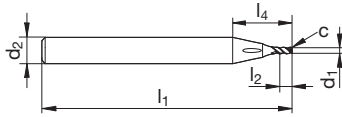
Cutting data page 98



for extreme cutting values and cutting performance • with internal cooling: GühroJet peripheral cooling with 6 or 4 exits • centre cutting • with special drill face



High-performance milling cutters



Article no. **6808**

	d1 h8 mm	d2 h5 mm	l1 mm	l2 mm	l4 mm	c mm x 45°	Z	Order no.
NEW	0.50	4.00	38	1.2	9.3	0.010	3	6808 0.500
NEW	0.75	4.00	38	1.8	9.3	0.015	3	6808 0.750
	0.79	4.00	38	1.9	9.3	0.016	3	6808 0.790
	0.80	4.00	38	2.0	9.3	0.016	3	6808 0.800
	1.00	4.00	38	2.5	9.3	0.020	3	6808 1.000
	1.19	4.00	38	2.9	9.4	0.024	3	6808 1.190
	1.20	4.00	38	3.0	9.4	0.024	3	6808 1.200
	1.50	4.00	45	3.7	9.8	0.030	3	6808 1.500
	1.59	4.00	44	3.9	9.9	0.032	3	6808 1.590
	1.80	4.00	45	4.5	10.3	0.036	3	6808 1.800
	1.98	6.00	50	4.9	14.7	0.040	3	6808 1.980
	2.00	6.00	50	5.0	14.7	0.040	3	6808 2.000
	2.20	6.00	50	5.5	14.9	0.044	3	6808 2.200
	2.38	6.00	50	5.9	15.2	0.048	3	6808 2.380
	2.50	6.00	50	6.2	15.3	0.050	3	6808 2.500
	2.78	6.00	50	6.9	15.9	0.056	3	6808 2.780
	2.80	6.00	50	7.0	15.9	0.056	3	6808 2.800
	3.00	6.00	50	7.5	16.2	0.060	3	6808 3.000
	3.17	6.00	50	7.9	16.6	0.064	3	6808 3.175



Ratio end mills RF 100 Micro Diver

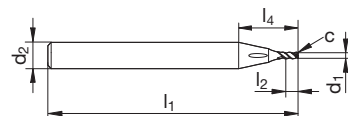
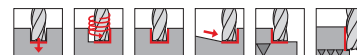
Article no. 6809



Cutting data page 100



for extreme cutting values and cutting performance • with internal cooling: GühroJet peripheral cooling with 6 or 4 exits • centre cutting • with special drill face



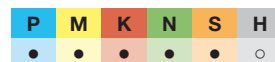
Article no. **6809**

	d1 h8 mm	d2 h5 mm	l1 mm	l2 mm	l4 mm	c mm x 45°	Z	Order no.
NEW	0.50	4.00	38	2.5	10.6	0.010	3	6809 0.500
NEW	0.75	4.00	38	3.7	11.2	0.015	3	6809 0.750
NEW	0.79	4.00	38	3.9	11.3	0.016	3	6809 0.790
NEW	0.80	4.00	38	4.0	11.3	0.016	3	6809 0.800
	1.00	4.00	45	5.0	11.8	0.020	3	6809 1.000
	1.19	4.00	50	5.9	12.4	0.024	3	6809 1.190
	1.50	4.00	50	7.5	13.5	0.030	3	6809 1.500
	1.59	4.00	50	7.9	13.9	0.032	3	6809 1.590
	1.98	6.00	57	9.9	19.6	0.040	3	6809 1.980
	2.00	6.00	57	10.0	19.7	0.040	3	6809 2.000
	2.38	6.00	57	11.9	21.1	0.048	3	6809 2.380
	2.50	6.00	57	12.5	21.6	0.050	3	6809 2.500
	2.78	6.00	57	13.9	22.8	0.056	3	6809 2.780
	3.00	6.00	57	15.0	23.7	0.060	3	6809 3.000
	3.17	6.00	57	15.8	24.6	0.064	3	6809 3.175

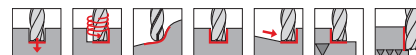
High-performance milling cutters



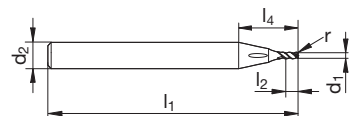
Cutting data page 98



for extreme cutting values and cutting performance • with internal cooling: GühroJet peripheral cooling with 6 or 4 exits • centre cutting • with special drill face



High-performance milling cutters



Article no. **6691**

d1 h8 mm	d2 h5 mm	l1 mm	l2 mm	l4 mm	r mm	Z	Order no.
0.50	4.00	38	1.2	9.3	0.05	3	6691 0.500
0.50	4.00	38	1.2	9.3	0.10	3	6691 0.501
0.75	4.00	38	1.8	9.3	0.05	3	6691 0.750
0.75	4.00	38	1.8	9.3	0.10	3	6691 0.751
0.80	4.00	38	2.0	9.3	0.05	3	6691 0.800
0.80	4.00	38	2.0	9.3	0.10	3	6691 0.801
1.00	4.00	38	2.5	9.3	0.05	3	6691 1.000
1.00	4.00	38	2.5	9.3	0.10	3	6691 1.001
1.00	4.00	38	2.5	9.3	0.20	3	6691 1.002
1.20	4.00	38	3.0	9.4	0.10	3	6691 1.201
1.20	4.00	38	3.0	9.4	0.20	3	6691 1.202
1.50	4.00	45	3.7	9.8	0.10	3	6691 1.501
1.50	4.00	45	3.7	9.8	0.20	3	6691 1.502
1.50	4.00	45	3.7	9.8	0.30	3	6691 1.503
1.80	4.00	45	4.5	10.2	0.10	3	6691 1.801
1.80	4.00	45	4.5	10.2	0.20	3	6691 1.802
1.80	4.00	45	4.5	10.2	0.30	3	6691 1.803
2.00	6.00	50	5.0	14.7	0.10	3	6691 2.001
2.00	6.00	50	5.0	14.7	0.20	3	6691 2.002
2.00	6.00	50	5.0	14.7	0.30	3	6691 2.003
2.00	6.00	50	5.0	14.7	0.50	3	6691 2.005
2.20	6.00	50	5.5	14.9	0.20	3	6691 2.202
2.20	6.00	50	5.5	14.9	0.50	3	6691 2.205
2.50	6.00	50	6.2	15.4	0.20	3	6691 2.502
2.50	6.00	50	6.2	15.4	0.30	3	6691 2.503
2.50	6.00	50	6.2	15.4	0.50	3	6691 2.505
2.80	6.00	50	7.0	15.9	0.20	3	6691 2.802
2.80	6.00	50	7.0	15.9	0.30	3	6691 2.803
2.80	6.00	50	7.0	15.9	0.50	3	6691 2.805
3.00	6.00	50	7.5	16.3	0.20	3	6691 3.002
3.00	6.00	50	7.5	16.3	0.30	3	6691 3.003
3.00	6.00	50	7.5	16.3	0.50	3	6691 3.005



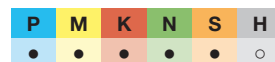


Ratio end mills RF 100 Micro Diver

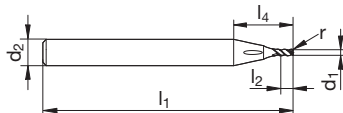
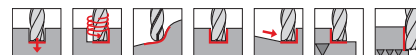
Article no. 6692



Cutting data page 100



for extreme cutting values and cutting performance • with internal cooling: GühroJet peripheral cooling with 6 or 4 exits • centre cutting • with special drill face



Article no. **6692**

d1 h8 mm	d2 h5 mm	l1 mm	l2 mm	l4 mm	r mm	Z	Order no.
0.50	4.00	38	2.5	10.6	0.05	3	6692 0.500
0.50	4.00	38	2.5	10.6	0.10	3	6692 0.501
0.75	4.00	38	3.7	11.2	0.05	3	6692 0.750
0.75	4.00	38	3.7	11.2	0.10	3	6692 0.751
0.80	4.00	38	4.0	11.3	0.05	3	6692 0.800
0.80	4.00	38	4.0	11.3	0.10	3	6692 0.801
1.00	4.00	45	5.0	11.8	0.05	3	6692 1.000
1.00	4.00	45	5.0	11.8	0.10	3	6692 1.001
1.00	4.00	45	5.0	11.8	0.20	3	6692 1.002
1.20	4.00	50	6.0	12.4	0.10	3	6692 1.201
1.20	4.00	50	6.0	12.4	0.20	3	6692 1.202
1.50	4.00	50	7.5	13.5	0.10	3	6692 1.501
1.50	4.00	50	7.5	13.5	0.20	3	6692 1.502
1.50	4.00	50	7.5	13.5	0.30	3	6692 1.503
1.80	4.00	50	9.0	14.7	0.10	3	6692 1.801
1.80	4.00	50	9.0	14.7	0.20	3	6692 1.802
1.80	4.00	50	9.0	14.7	0.30	3	6692 1.803
2.00	6.00	57	10.0	19.7	0.10	3	6692 2.001
2.00	6.00	57	10.0	19.7	0.20	3	6692 2.002
2.00	6.00	57	10.0	19.7	0.30	3	6692 2.003
2.00	6.00	57	10.0	19.7	0.50	3	6692 2.005
2.20	6.00	57	11.0	20.4	0.20	3	6692 2.202
2.20	6.00	57	11.0	20.4	0.50	3	6692 2.205
2.50	6.00	57	12.5	21.6	0.20	3	6692 2.502
2.50	6.00	57	12.5	21.6	0.30	3	6692 2.503
2.50	6.00	57	12.5	21.6	0.50	3	6692 2.505
2.80	6.00	57	14.0	22.9	0.20	3	6692 2.802
2.80	6.00	57	14.0	22.9	0.30	3	6692 2.803
2.80	6.00	57	14.0	22.9	0.50	3	6692 2.805
3.00	6.00	57	15.0	23.8	0.20	3	6692 3.002
3.00	6.00	57	15.0	23.8	0.30	3	6692 3.003
3.00	6.00	57	15.0	23.8	0.50	3	6692 3.005

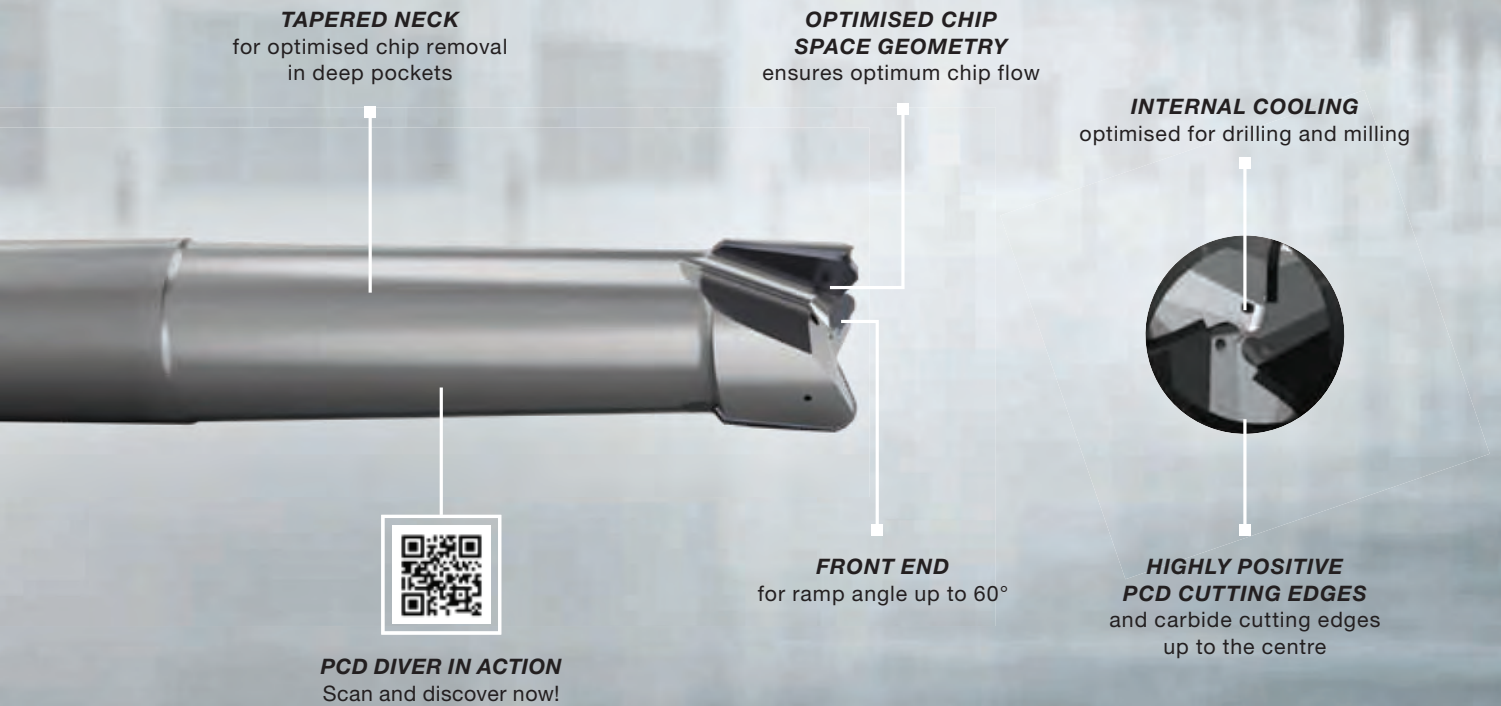
High-performance milling cutters





## The new diver for alu

maximum tool lives | ramping up to 60° | very smooth operation



## High-volume milling cutter for maximum machining rates

Meet our all-rounder for maximum machining rates and neverending tool lives in aluminium: The PCD Diver impresses with its ultra-hard PCD cutting material and very smooth operation. With this tool, you can easily achieve ramp angles of 60° – and you don't have to worry about burr development when milling profiles and structural components. The diameters range from 12.0 to 32.0 mm and the milling cutter is available with a reach of approx. 3xD as standard with corner radii.



PCD Diver (3-fluted)

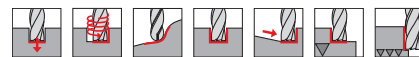
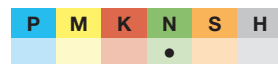
Article no. 4190



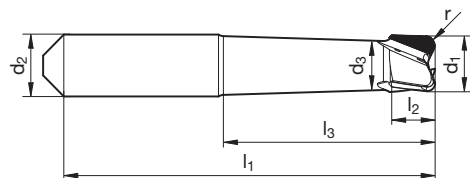
Cutting data page 95



with special front end • with internal cooling: radial and axial exits • suitable for MQL • three highly positive PCD cutting edges • tapered neck • centre cutting



High-performance milling cutters



Article no. **4190**

d1 ±0,02 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Order no.
12.00	12.00	10.50	75	8.0	28.00	2.00	3	4190 12.020
16.00	16.00	12.53	103	12.0	53.00	2.00	3	4190 16.020
20.00	20.00	15.76	120	14.0	68.00	3.00	3	4190 20.030
25.00	25.00	19.87	145	18.0	87.00	3.00	3	4190 25.030
32.00	32.00	27.58	170	20.0	108.00	4.00	3	4190 32.040

# RF100 SHARP

EXTRA SHORT



## For 40 % higher milling performance

full flexibility in milling operations | powerful & smooth on all machines

**EXTRA-TOUGH CUTTING MATERIAL**  
prevents damage to cutting edges  
even under unstable conditions

**EXTRA SHORT DESIGN**  
maximum stability and  
hardly any radial deflection

**SPECIAL FRONT END**  
for slot drilling and  
high plunging angles



**1xD CUTTING EDGE LENGTH,  
2xD THE REACH**

maximum feed rate when  
slotting and more flexibility with  
deeper contours

**AICrN COATING**  
for highest wear resistance

**RF 100 SHARP EXTRA  
SHORT IN ACTION**  
Scan and discover now!

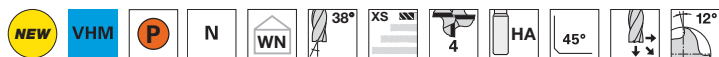
## Specialist for soft, tough and high-alloyed materials

Milling soft, tough and high-alloyed materials presents particular challenges when it comes to the tool. If you choose the wrong one, you will end up with chips that stick and jam – causing the tool to break. With our sharpest solid carbide milling cutter to date, you don't have to worry as you'll achieve high-quality machining results.



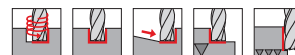
Ratio end mills RF 100 Sharp extra short

Article no. 6938



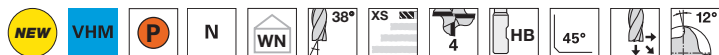
especially for soft, tough and high-alloyed materials • neck clearance • centre cutting • 40% higher milling performance thanks to short stable design • with special front end

Cutting data page 102



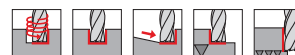
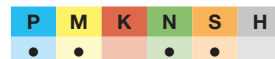
Ratio end mills RF 100 Sharp extra short

Article no. 6939

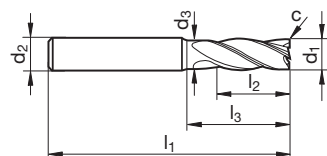


especially for soft, tough and high-alloyed materials • neck clearance • centre cutting • 40% higher milling performance thanks to short stable design • with special front end

Cutting data page 102



High-performance milling cutters



Article no. 6938 6939

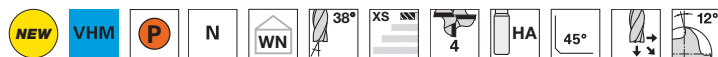
d1 e8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Order no.
0.80	4.00	0.75	40	0.8	1.7	0.00	4	6938 0.800
1.00	4.00	0.92	40	1.0	2.1	0.01	4	6938 1.000
1.20	4.00	1.12	40	1.2	2.5	0.01	4	6938 1.200
1.40	4.00	1.32	40	1.4	2.9	0.01	4	6938 1.400
1.50	4.00	1.40	40	1.5	3.2	0.01	4	6938 1.500
1.60	4.00	1.50	40	1.6	3.4	0.01	4	6938 1.600
1.80	4.00	1.70	40	1.8	3.8	0.01	4	6938 1.800
2.00	6.00	1.85	50	2.0	4.2	0.02	4	6938 2.000
2.50	6.00	2.35	50	2.5	5.3	0.02	4	6938 2.500
2.80	6.00	2.65	50	2.8	5.9	0.02	4	6938 2.800
3.00	6.00	2.85	50	3.0	6.3	0.03	4	6938 3.000
3.50	6.00	3.30	50	3.5	7.4	0.03	4	6938 3.500 6939 3.500
3.80	6.00	3.60	50	3.8	8.0	0.03	4	6938 3.800 6939 3.800
4.00	6.00	3.80	50	4.0	8.4	0.04	4	6938 4.000 6939 4.000
4.50	6.00	4.30	50	4.5	9.5	0.04	4	6938 4.500 6939 4.500
4.80	6.00	4.60	50	4.8	10.1	0.04	4	6938 4.800 6939 4.800
5.00	6.00	4.80	50	5.0	10.5	0.05	4	6938 5.000 6939 5.000
5.50	6.00	5.30	50	5.5	12.0	0.05	4	6938 5.500 6939 5.500
5.70	6.00	5.50	50	5.7	12.0	0.05	4	6938 5.700 6939 5.700
6.00	6.00	5.70	50	6.0	12.0	0.06	4	6938 6.000 6939 6.000
6.70	8.00	6.40	55	6.7	16.0	0.06	4	6938 6.700 6939 6.700
7.00	8.00	6.70	55	7.0	16.0	0.07	4	6938 7.000 6939 7.000
7.70	8.00	7.40	55	7.7	16.0	0.07	4	6938 7.700 6939 7.700
8.00	8.00	7.70	55	8.0	16.0	0.08	4	6938 8.000 6939 8.000
9.00	10.00	8.70	61	9.0	20.0	0.09	4	6938 9.000 6939 9.000
9.70	10.00	9.40	61	9.7	20.0	0.09	4	6938 9.700 6939 9.700
10.00	10.00	9.50	61	10.0	20.0	0.10	4	6938 10.000 6939 10.000
11.00	12.00	10.50	70	11.0	24.0	0.11	4	6938 11.000 6939 11.000
11.70	12.00	11.20	70	11.7	24.0	0.11	4	6938 11.700 6939 11.700
12.00	12.00	11.50	70	12.0	24.0	0.12	4	6938 12.000 6939 12.000
14.00	14.00	13.50	75	14.0	28.0	0.14	4	6938 14.000 6939 14.000
15.60	16.00	15.10	82	15.6	32.0	0.15	4	6938 15.600 6939 15.600
16.00	16.00	15.50	82	16.0	32.0	0.16	4	6938 16.000 6939 16.000



High-performance milling cutters

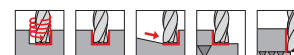
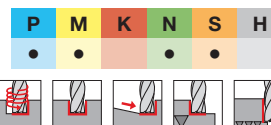
## Ratio end mill sets RF 100 Sharp extra short

Article no. **6468**



especially for soft, tough and high-alloyed materials • 40% higher milling performance thanks to short stable design • neck clearance • special front end • consisting of art. no. 6938

Cutting data page 102

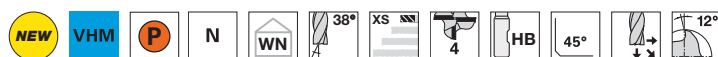


Article no. **6468**

Ø-range mm	Pieces/set	Order no.
6/8/10/12	4	6468 1.000

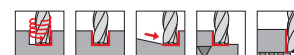
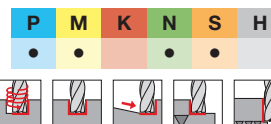
## Ratio end mill sets RF 100 Sharp extra short

Article no. **6469**



especially for soft, tough and high-alloyed materials • 40% higher milling performance thanks to short stable design • neck clearance • special front end • consisting of art. no. 6939

Cutting data page 102



Article no. **6469**

Ø-range mm	Pieces/set	Order no.
6/8/10/12	4	6469 1.000



## PCD Diver

## Milling conditions:

**HPC** stable machining conditions  
high drive power

 short tools

 long tools



Cutting data

Machining group	Application	v <sub>c</sub> (m/min)	a <sub>p</sub> max.	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø				
					12	16	20	25	32
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB N1.1.2 Wrought aluminium alloys, hardened, 100 HB	Slotting	750	0.6xD	1xD	0.10	0.14	0.16	0.18	0.23
	Roughing	940	0.6xD	0.60xD	0.12	0.16	0.19	0.21	0.27
	Finishing	1500	0.6xD	0.02xD	0.11	0.15	0.17	0.19	0.25
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	Slotting	650	0.6xD	1xD	0.10	0.14	0.16	0.18	0.23
	Roughing	815	0.6xD	0.60xD	0.12	0.16	0.19	0.21	0.27
	Finishing	1300	0.6xD	0.02xD	0.11	0.15	0.17	0.19	0.25
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	Slotting	515	0.6xD	1xD	0.10	0.14	0.16	0.18	0.23
	Roughing	640	0.6xD	0.60xD	0.12	0.16	0.19	0.21	0.27
	Finishing	1030	0.6xD	0.02xD	0.11	0.15	0.17	0.19	0.25
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 % N3.1.2 Copper and copper alloys: CuZn, CuSnZn	Slotting	525	0.6xD	1xD	0.09	0.12	0.13	0.15	0.19
	Roughing	655	0.6xD	0.60xD	0.10	0.14	0.16	0.18	0.23
	Finishing	1050	0.6xD	0.02xD	0.10	0.13	0.15	0.17	0.21
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	Slotting	410	0.6xD	1xD	0.08	0.11	0.12	0.14	0.18
	Roughing	515	0.6xD	0.60xD	0.10	0.13	0.15	0.17	0.21
	Finishing	825	0.6xD	0.02xD	0.09	0.12	0.13	0.15	0.19





## MicroMill $\mu$ 55 U, G-Mold 48 F, G-Mold 65 F

### Milling conditions:

<b>HPC</b>	stable machining conditions high drive power
	short tools
	long tools

### Correction factors:

	$a_p$ roughing > 1.5xD	$v_c$ -25 %	$f_z$ -25 %
	medium length tools	$v_c$ -40 %	$f_z$ -40 %
	extra length tools	$v_c$ -60 %	$f_z$ -55 %
	uncoated tools	$v_c$ -50 %	$f_z$ -25 %



Cutting data

Machining group	Application	$v_c$ (m/min)	$a_e$ max.	$f_z$ (mm/z) with nom. $\emptyset$								
				1	3	6	8	10	12	16	20	25
<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB <b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB <b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	Slotting	120	1xD	0.004	0.012	0.025	0.030	0.045	0.055	0.070	0.090	0.115
	Roughing	140	0.75xD	0.005	0.016	0.030	0.040	0.050	0.060	0.085	0.105	0.130
	Finishing	240	0.02xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.100	0.125
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB <b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB <b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB <b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	Slotting	105	1xD	0.004	0.012	0.025	0.030	0.045	0.055	0.070	0.090	0.115
	Roughing	120	0.75xD	0.005	0.016	0.030	0.040	0.050	0.060	0.085	0.105	0.130
	Finishing	210	0.02xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.100	0.125
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	Slotting	90	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	105	0.75xD	0.005	0.014	0.030	0.040	0.050	0.060	0.075	0.095	0.120
	Finishing	180	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.090	0.115
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives <b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	Slotting	90	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	105	0.75xD	0.005	0.014	0.030	0.040	0.050	0.060	0.075	0.095	0.120
	Finishing	180	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.090	0.115
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	Slotting	65	1xD	0.003	0.010	0.020	0.025	0.040	0.045	0.060	0.075	0.095
	Roughing	75	0.75xD	0.004	0.013	0.025	0.035	0.045	0.050	0.070	0.085	0.110
	Finishing	130	0.02xD	0.004	0.013	0.025	0.035	0.040	0.050	0.065	0.085	0.105
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB	Slotting	60	1xD	0.003	0.010	0.020	0.025	0.040	0.045	0.060	0.075	0.095
	Roughing	75	0.6xD	0.005	0.014	0.025	0.035	0.045	0.055	0.075	0.090	0.115
	Finishing	120	0.01xD	0.004	0.011	0.025	0.030	0.040	0.045	0.060	0.075	0.095
<b>M2.2.1</b> Duplex steel, high-strength stainless steels	Slotting	45	1xD	0.003	0.009	0.020	0.025	0.035	0.040	0.055	0.065	0.085
	Roughing	55	0.6xD	0.004	0.012	0.025	0.030	0.040	0.050	0.065	0.080	0.100
	Finishing	90	0.01xD	0.003	0.010	0.020	0.025	0.035	0.040	0.055	0.065	0.085
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB <b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB <b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB <b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB	Slotting	110	1xD	0.004	0.012	0.025	0.030	0.045	0.055	0.070	0.090	0.115
	Roughing	125	0.75xD	0.005	0.016	0.030	0.040	0.050	0.060	0.085	0.105	0.130
	Finishing	220	0.02xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.100	0.125
<b>K1.3.1</b> Malleable cast iron, ferritic, 130 HB <b>K1.3.2</b> Malleable cast iron, pearlitic, 230 HB	Slotting	90	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.080	0.100
	Roughing	90	0.75xD	0.004	0.012	0.025	0.030	0.040	0.050	0.065	0.080	0.100
	Finishing	185	0.02xD	0.004	0.013	0.025	0.035	0.045	0.055	0.070	0.090	0.110
<b>K2.1.1</b> Vermicular graphite cast iron (GJV) <b>K2.2.1</b> Austenitic-ferritic spheroidal graphite cast iron (ADI)	Slotting	75	1xD	0.003	0.010	0.020	0.025	0.040	0.045	0.060	0.075	0.095
	Roughing	75	0.75xD	0.004	0.011	0.025	0.030	0.040	0.045	0.060	0.075	0.095
	Finishing	150	0.02xD	0.004	0.013	0.025	0.035	0.040	0.050	0.065	0.085	0.105
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB	Slotting	350	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	400	0.75xD	0.005	0.014	0.030	0.040	0.050	0.060	0.075	0.095	0.120
	Finishing	700	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.090	0.115
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, $\leq$ 12 % Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, $\leq$ 12 % Si, 90 HB	Slotting	200	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	230	0.75xD	0.005	0.014	0.030	0.040	0.050	0.060	0.075	0.095	0.120
	Finishing	400	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.090	0.115
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	Slotting	160	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	160	0.75xD	0.004	0.013	0.025	0.035	0.040	0.050	0.065	0.085	0.105
	Finishing	315	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.090	0.115





Machining group	Application	V <sub>c</sub> (m/min)	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø								
				1	3	6	8	10	12	16	20	25
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 % <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn	Slotting	220	1xD	0.004	0.013	0.025	0.035	0.050	0.060	0.080	0.100	0.125
	Roughing	255	0.75xD	0.006	0.017	0.035	0.045	0.060	0.070	0.090	0.115	0.145
	Finishing	440	0.02xD	0.006	0.017	0.035	0.045	0.055	0.065	0.090	0.110	0.140
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	Slotting	170	1xD	0.004	0.012	0.025	0.030	0.045	0.055	0.075	0.090	0.115
	Roughing	200	0.75xD	0.005	0.016	0.030	0.040	0.055	0.065	0.085	0.105	0.130
	Finishing	345	0.02xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.100	0.125
<b>N4.1.1</b> Non-metallic materials: Duroplastics, fibre-reinforced plastics	Slotting	120	1xD	0.004	0.012	0.025	0.035	0.045	0.055	0.075	0.095	0.120
	Roughing	140	0.75xD	0.005	0.016	0.030	0.045	0.055	0.065	0.085	0.110	0.135
	Finishing	240	0.02xD	0.005	0.016	0.030	0.040	0.050	0.060	0.085	0.105	0.130
<b>N4.1.2</b> Non-metallic materials: Hard rubber, wood, etc.	Slotting	160	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.085	0.105
	Roughing	185	0.75xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.095	0.120
	Finishing	320	0.02xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.095	0.115
<b>N4.1.3</b> Non-metallic materials: Graphite	Slotting	190	1xD	0.005	0.016	0.030	0.040	0.060	0.070	0.095	0.120	0.150
	Roughing	220	0.75xD	0.007	0.021	0.040	0.055	0.070	0.085	0.110	0.140	0.175
	Finishing	380	0.02xD	0.007	0.020	0.040	0.055	0.065	0.080	0.105	0.130	0.165
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB	Slotting	25	1xD	0.003	0.010	0.020	0.025	0.035	0.045	0.060	0.075	0.090
	Roughing	30	0.6xD	0.004	0.013	0.025	0.035	0.045	0.055	0.070	0.090	0.110
	Finishing	50	0.01xD	0.004	0.011	0.020	0.030	0.035	0.045	0.060	0.075	0.090
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB	Slotting	20	1xD	0.003	0.010	0.020	0.025	0.035	0.045	0.060	0.075	0.090
	Roughing	25	0.6xD	0.004	0.013	0.025	0.035	0.045	0.055	0.070	0.090	0.110
	Finishing	40	0.01xD	0.004	0.011	0.020	0.030	0.035	0.045	0.060	0.075	0.090
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	Slotting	15	1xD	0.003	0.008	0.015	0.020	0.030	0.035	0.045	0.060	0.075
	Roughing	15	0.6xD	0.004	0.011	0.020	0.030	0.035	0.045	0.055	0.070	0.090
	Finishing	30	0.01xD	0.003	0.009	0.020	0.025	0.030	0.035	0.045	0.060	0.075
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	Slotting	10	1xD	0.002	0.007	0.015	0.020	0.030	0.035	0.045	0.055	0.070
	Roughing	15	0.6xD	0.003	0.010	0.020	0.025	0.035	0.040	0.055	0.065	0.085
	Finishing	20	0.01xD	0.003	0.008	0.015	0.020	0.030	0.035	0.045	0.055	0.070
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	Slotting	10	1xD	0.003	0.008	0.015	0.020	0.030	0.035	0.045	0.060	0.075
	Roughing	15	0.6xD	0.004	0.011	0.020	0.030	0.035	0.045	0.055	0.070	0.090
	Finishing	25	0.01xD	0.003	0.009	0.020	0.025	0.030	0.035	0.045	0.060	0.075
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	Slotting	50	1xD	0.004	0.011	0.020	0.030	0.040	0.050	0.065	0.080	0.105
	Roughing	65	0.6xD	0.005	0.015	0.030	0.040	0.050	0.060	0.080	0.100	0.125
	Finishing	105	0.02xD	0.005	0.014	0.025	0.035	0.045	0.055	0.070	0.090	0.115
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	Slotting	45	1xD	0.003	0.010	0.020	0.025	0.035	0.045	0.060	0.075	0.090
	Roughing	55	0.6xD	0.004	0.013	0.025	0.035	0.045	0.055	0.070	0.090	0.110
	Finishing	90	0.02xD	0.004	0.012	0.025	0.030	0.040	0.050	0.065	0.080	0.100
<b>H1.1.1</b> Hardened steel, hardened and tempered, < 55 HRC	Slotting	55	1xD	0.003	0.009	0.020	0.025	0.035	0.040	0.055	0.070	0.090
	Roughing	85	0.33xD	0.005	0.014	0.025	0.035	0.045	0.055	0.075	0.090	0.115
	Finishing	110	0.01xD	0.004	0.011	0.020	0.030	0.035	0.040	0.055	0.070	0.090
<b>H1.1.2</b> Hardened steel, hardened and tempered, < 60 HRC	Roughing	85	0.03xD	0.007	0.022	0.045	0.060	0.075	0.090	0.120	0.150	0.185
	Finishing	90	0.005xD	0.003	0.008	0.015	0.020	0.025	0.030	0.045	0.055	0.065
<b>H1.1.3</b> Hardened steel, hardened and tempered, > 60 HRC	Roughing	70	0.03xD	0.007	0.020	0.040	0.055	0.065	0.080	0.105	0.130	0.165
	Finishing	75	0.005xD	0.002	0.007	0.015	0.020	0.025	0.030	0.040	0.045	0.060
<b>H2.1.1</b> Chilled cast iron, 400 HB	Slotting	70	1xD	0.003	0.010	0.020	0.025	0.035	0.045	0.060	0.070	0.090
	Roughing	110	0.33xD	0.005	0.014	0.030	0.035	0.045	0.055	0.075	0.095	0.115
	Finishing	145	0.01xD	0.004	0.011	0.020	0.030	0.035	0.045	0.060	0.070	0.090
<b>H2.1.2</b> Chilled cast iron, hardened and tempered, < 55 HRC	Slotting	50	1xD	0.003	0.008	0.015	0.025	0.030	0.040	0.050	0.065	0.080
	Roughing	75	0.33xD	0.004	0.012	0.025	0.035	0.040	0.050	0.065	0.085	0.105
	Finishing	105	0.01xD	0.003	0.010	0.020	0.025	0.030	0.040	0.050	0.065	0.080



## RF 100 Micro Diver, 2.5xD

### Milling conditions:

**HSC** stable machining conditions  
low cutting depths, high cutting values

**Long tools**



Cutting data

Machining group	Application	v <sub>c</sub> (m/min) with nom. Ø				a <sub>p</sub> max.	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø							
		0.79 - 1.2	1.5 - 1.98	2.0 - 2.5	2.78 - 3.175			0.8	1	1.2	1.5	1.8	2	2.5	3
		<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB <b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB <b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB													
Plunging	120	130	145	160	1xD	1xD	0.0040	0.0050	0.0060	0.0080	0.0120	0.0140	0.0170	0.0200	
<b>P1.1.1</b> - <b>P1.1.7</b> (continued)															
Slotting	130	145	160	170	1xD	1xD	0.0060	0.0080	0.0100	0.0120	0.0160	0.0180	0.0230	0.0270	
<b>P1.1.1</b> - <b>P1.1.7</b> (continued)															
Roughing	200	210	220	230	2xD	0.25xD	0.0100	0.0120	0.0150	0.0180	0.0240	0.0270	0.0340	0.0400	
<b>P1.1.1</b> - <b>P1.1.7</b> (continued)															
Finishing	240	250	260	275	2xD	0.03xD	0.0060	0.0080	0.0090	0.0120	0.0170	0.0190	0.0240	0.0290	
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB <b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB <b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB <b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB															
Plunging	110	120	135	145	1xD	1xD	0.0040	0.0050	0.0060	0.0070	0.0110	0.0120	0.0150	0.0180	
<b>P2.1.1</b> - <b>P2.1.4</b> (continued)															
Slotting	120	135	145	155	1xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0140	0.0160	0.0200	0.0240	
<b>P2.1.1</b> - <b>P2.1.4</b> (continued)															
Roughing	185	195	200	210	2xD	0.25xD	0.0090	0.0110	0.0130	0.0160	0.0220	0.0240	0.0300	0.0360	
<b>P2.1.1</b> - <b>P2.1.4</b> (continued)															
Finishing	220	230	240	250	2xD	0.03xD	0.0060	0.0070	0.0080	0.0100	0.0160	0.0170	0.0220	0.0260	
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB															
Plunging	100	110	120	130	0.75xD	1xD	0.0030	0.0040	0.0040	0.0050	0.0080	0.0090	0.0110	0.0140	
<b>P3.1.1</b> - <b>P3.1.2</b> (continued)															
Slotting	110	120	130	145	0.75xD	1xD	0.0040	0.0050	0.0060	0.0080	0.0110	0.0120	0.0150	0.0180	
<b>P3.1.1</b> - <b>P3.1.2</b> (continued)															
Roughing	180	185	195	205	2xD	0.2xD	0.0070	0.0090	0.0100	0.0130	0.0170	0.0190	0.0240	0.0290	
<b>P3.1.1</b> - <b>P3.1.2</b> (continued)															
Finishing	200	210	220	230	2xD	0.03xD	0.0040	0.0050	0.0060	0.0080	0.0120	0.0130	0.0160	0.0190	
<b>P3.1.1</b> - <b>P3.1.2</b> (continued)															
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives <b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB															
Plunging	110	120	135	145	1xD	1xD	0.0040	0.0050	0.0060	0.0070	0.0110	0.0120	0.0150	0.0180	
<b>M1.1.1</b> - <b>M1.1.2</b> (continued)															
Slotting	120	135	145	155	1xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0140	0.0160	0.0200	0.0240	
<b>M1.1.1</b> - <b>M1.1.2</b> (continued)															
Roughing	185	195	200	210	2xD	0.25xD	0.0090	0.0110	0.0130	0.0160	0.0220	0.0240	0.0300	0.0360	
<b>M1.1.1</b> - <b>M1.1.2</b> (continued)															
Finishing	220	230	240	250	2xD	0.03xD	0.0060	0.0070	0.0080	0.0100	0.0160	0.0170	0.0220	0.0260	
<b>M1.1.1</b> - <b>M1.1.2</b> (continued)															
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB															
Plunging	80	90	100	105	1xD	1xD	0.0030	0.0040	0.0050	0.0070	0.0100	0.0110	0.0140	0.0160	
<b>M1.1.3</b> (continued)															
Slotting	90	100	105	115	1xD	1xD	0.0050	0.0070	0.0080	0.0100	0.0130	0.0140	0.0180	0.0220	
<b>M1.1.3</b> (continued)															
Roughing	135	140	150	155	2xD	0.25xD	0.0080	0.0100	0.0120	0.0150	0.0200	0.0220	0.0270	0.0330	
<b>M1.1.3</b> (continued)															
Finishing	160	170	175	185	2xD	0.03xD	0.0050	0.0060	0.0080	0.0090	0.0140	0.0160	0.0200	0.0230	
<b>M1.1.3</b> (continued)															
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB															
Plunging	90	100	110	120	0.75xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0090	0.0110	0.0130	0.0160	
<b>M2.1.1</b> (continued)															
Slotting	100	110	120	130	0.75xD	1xD	0.0050	0.0060	0.0080	0.0090	0.0130	0.0140	0.0180	0.0210	
<b>M2.1.1</b> (continued)															
Roughing	160	170	175	185	2xD	0.2xD	0.0080	0.0100	0.0120	0.0150	0.0200	0.0220	0.0280	0.0340	
<b>M2.1.1</b> (continued)															
Finishing	180	185	195	205	2xD	0.03xD	0.0050	0.0060	0.0070	0.0090	0.0140	0.0150	0.0190	0.0230	
<b>M2.1.1</b> (continued)															
<b>M2.2.1</b> Duplex steel, high-strength stainless steels															
Plunging	65	75	80	90	0.75xD	1xD	0.0030	0.0040	0.0040	0.0060	0.0080	0.0090	0.0110	0.0140	
<b>M2.2.1</b> (continued)															
Slotting	75	80	90	95	0.75xD	1xD	0.0040	0.0060	0.0070	0.0080	0.0110	0.0120	0.0150	0.0180	
<b>M2.2.1</b> (continued)															
Roughing	120	125	130	135	2xD	0.2xD	0.0070	0.0090	0.0110	0.0130	0.0180	0.0200	0.0240	0.0290	
<b>M2.2.1</b> (continued)															
Finishing	135	140	145	150	2xD	0.03xD	0.0040	0.0050	0.0060	0.0080	0.0120	0.0130	0.0170	0.0200	
<b>M2.2.1</b> (continued)															
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB <b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB <b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB <b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB															
Plunging	110	120	135	145	1xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0090	0.0110	0.0130	0.0160	
<b>K1.1.1</b> - <b>K1.2.2</b> (continued)															
Slotting	120	135	145	155	1xD	1xD	0.0050	0.0060	0.0080	0.0090	0.0130	0.0140	0.0180	0.0210	
<b>K1.1.1</b> - <b>K1.2.2</b> (continued)															
Roughing	185	195	200	210	2xD	0.25xD	0.0080	0.0090	0.0110	0.0140	0.0190	0.0210	0.0260	0.0320	
<b>K1.1.1</b> - <b>K1.2.2</b> (continued)															
Finishing	220	230	240	250	2xD	0.03xD	0.0050	0.0060	0.0070	0.0090	0.0140	0.0150	0.0190	0.0230	
<b>K1.1.1</b> - <b>K1.2.2</b> (continued)															



Machining group	Application	$v_c$ (m/min) with nom. $\emptyset$				$a_p$ max.	$a_e$ max.	$f_z$ (mm/z) with nom. $\emptyset$																			
		0.79 - 1.2	1.5 - 1.98	2.0 - 2.5	2.78 - 3.175			0.8	1	1.2	1.5	1.8	2	2.5	3												
		<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB																									
Plunging														170	185	205	225	1xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0160	0.0180	0.0230	0.0270
Slotting														185	205	225	245	1xD	1xD	0.0090	0.0110	0.0130	0.0160	0.0220	0.0240	0.0300	0.0360
Roughing														285	300	315	325	2xD	0.25xD	0.0130	0.0160	0.0190	0.0240	0.0320	0.0360	0.0450	0.0540
Finishing														335	355	370	385	2xD	0.03xD	0.0080	0.0100	0.0120	0.0160	0.0230	0.0260	0.0320	0.0390
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, $\leq 12\%$ Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, $\leq 12\%$ Si, 90 HB																											
Plunging														170	185	205	225	1xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0160	0.0180	0.0230	0.0270
Slotting														185	205	225	245	1xD	1xD	0.0090	0.0110	0.0130	0.0160	0.0220	0.0240	0.0300	0.0360
Roughing														285	300	315	325	2xD	0.25xD	0.0130	0.0160	0.0190	0.0240	0.0320	0.0360	0.0450	0.0540
Finishing														335	355	370	385	2xD	0.03xD	0.0080	0.0100	0.0120	0.0160	0.0230	0.0260	0.0320	0.0390
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, $> 12\%$ Si, 130 HB																											
Plunging														135	150	165	175	1xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0160	0.0180	0.0230	0.0270
Slotting														150	165	175	190	1xD	1xD	0.0090	0.0110	0.0130	0.0160	0.0220	0.0240	0.0300	0.0360
Roughing														225	235	245	260	2xD	0.25xD	0.0130	0.0160	0.0190	0.0240	0.0320	0.0360	0.0450	0.0540
Finishing														265	280	295	305	2xD	0.03xD	0.0080	0.0100	0.0120	0.0160	0.0230	0.0260	0.0320	0.0390
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb $> 1\%$ <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn																											
Plunging														160	175	195	210	1xD	1xD	0.0050	0.0060	0.0070	0.0090	0.0140	0.0150	0.0190	0.0230
Slotting														175	195	210	230	1xD	1xD	0.0070	0.0090	0.0110	0.0140	0.0180	0.0200	0.0250	0.0300
Roughing														270	280	295	310	2xD	0.25xD	0.0110	0.0140	0.0160	0.0200	0.0270	0.0300	0.0380	0.0450
Finishing														315	335	350	365	2xD	0.03xD	0.0070	0.0090	0.0100	0.0130	0.0190	0.0220	0.0270	0.0320
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte																											
Plunging														125	140	150	165	1xD	1xD	0.0040	0.0060	0.0070	0.0080	0.0120	0.0140	0.0170	0.0210
Slotting														140	150	165	180	1xD	1xD	0.0070	0.0080	0.0100	0.0120	0.0170	0.0180	0.0230	0.0280
Roughing														210	220	230	240	2xD	0.25xD	0.0100	0.0120	0.0150	0.0190	0.0250	0.0280	0.0350	0.0410
Finishing														250	260	275	285	2xD	0.03xD	0.0060	0.0080	0.0100	0.0120	0.0180	0.0200	0.0250	0.0300
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB																											
Plunging														50	55	60	65	0.5xD	1xD	0.0030	0.0030	0.0040	0.0050	0.0070	0.0080	0.0100	0.0120
Slotting														55	60	65	70	0.5xD	1xD	0.0040	0.0050	0.0060	0.0070	0.0100	0.0110	0.0140	0.0170
Roughing														95	100	105	110	2xD	0.15xD	0.0080	0.0090	0.0110	0.0140	0.0190	0.0210	0.0260	0.0310
Finishing														100	105	110	115	2xD	0.03xD	0.0040	0.0050	0.0060	0.0070	0.0110	0.0120	0.0150	0.0180
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB																											
Plunging														40	45	50	55	0.5xD	1xD	0.0030	0.0030	0.0040	0.0050	0.0070	0.0080	0.0100	0.0120
Slotting														45	50	55	60	0.5xD	1xD	0.0040	0.0050	0.0060	0.0070	0.0100	0.0110	0.0140	0.0170
Roughing														80	85	90	90	2xD	0.15xD	0.0080	0.0090	0.0110	0.0140	0.0190	0.0210	0.0260	0.0310
Finishing														85	90	90	95	2xD	0.03xD	0.0040	0.0050	0.0060	0.0070	0.0110	0.0120	0.0150	0.0180
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB																											
Plunging														30	30	35	40	0.5xD	1xD	0.0020	0.0030	0.0030	0.0040	0.0060	0.0070	0.0080	0.0100
Slotting														30	35	40	40	0.5xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0080	0.0090	0.0110	0.0130
Roughing														55	55	60	60	2xD	0.15xD	0.0060	0.0080	0.0090	0.0110	0.0150	0.0170	0.0210	0.0250
Finishing														55	60	65	65	2xD	0.03xD	0.0030	0.0040	0.0050	0.0060	0.0090	0.0100	0.0120	0.0140
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB																											
Plunging														20	25	25	30	0.5xD	1xD	0.0020	0.0030	0.0030	0.0040	0.0060	0.0060	0.0080	0.0100
Slotting														25	25	30	30	0.5xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0080	0.0080	0.0110	0.0130
Roughing														40	40	45	45	2xD	0.15xD	0.0060	0.0070	0.0090	0.0110	0.0140	0.0160	0.0200	0.0240
Finishing														40	45	45	50	2xD	0.03xD	0.0030	0.0040	0.0040	0.0050	0.0080	0.0090	0.0110	0.0140
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB																											
Plunging														25	30	30	35	0.5xD	1xD	0.0020	0.0030	0.0030	0.0040	0.0060	0.0070	0.0080	0.0100
Slotting														30	30	35	35	0.5xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0080	0.0090	0.0110	0.0130
Roughing														50	50	50	55	2xD	0.15xD	0.0060	0.0080	0.0090	0.0110	0.0150	0.0170	0.0210	0.0250
Finishing														50	55	55	60	2xD	0.03xD	0.0030	0.0040	0.0050	0.0060	0.0090	0.0100	0.0120	0.0140
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>																											
Plunging														80	90	95	105	0.75xD	1xD	0.0040	0.0050	0.0060	0.0070	0.0110	0.0120	0.0150	0.0180
Slotting														90	95	105	115	0.75xD	1xD	0.0060	0.0070	0.0090	0.0110	0.0140	0.0160	0.0200	0.0240
Roughing														140	150	155	165	2xD	0.2xD	0.0090	0.0120	0.0140	0.0170	0.0230	0.0260	0.0320	0.0380
Finishing														160	165	175	180	2xD	0.03xD	0.0060	0.0070	0.0080	0.0100	0.0160	0.0170	0.0220	0.0260
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>																											
Plunging														65	75	80	90	0.75xD	1xD	0.0030	0.0040	0.0050	0.0060	0.0100	0.0110	0.0130	0.0160
Slotting														75	80	90	95	0.75xD	1xD	0.0050	0.0060	0.0080	0.0100	0.0130	0.0140	0.0180	0.0220
Roughing														120	125	130	140	2xD	0.2xD	0.0080	0.0100	0.0120	0.0160	0.0210	0.0230	0.0290	0.0350
Finishing														135	140	145	155	2xD	0.03xD	0.0050	0.0060	0.0070	0.0090	0.0140	0.0160	0.0190	0.0230



## RF 100 Micro Diver, 5xD

### Milling conditions:

**HSC** stable machining conditions  
low cutting depths, high cutting values

 extra-long tools



Cutting data

Machining group	Application	v <sub>c</sub> (m/min) with nom. Ø				a <sub>p</sub> max.	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø						
		0.79 - 1.2	1.5 - 1.98	2.0 - 2.5	2.78 - 3.175			1	1.2	1.5	2	2.5	2.8	3
<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB <b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB <b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	Plunging	50	55	60	65	0.5xD	1xD	0.0020	0.0030	0.0040	0.0060	0.0080	0.0090	0.0090
	Slotting	65	75	80	85	0.25xD	1xD	0.0040	0.0050	0.0060	0.0090	0.0110	0.0130	0.0140
	Roughing	145	150	155	165	2.5xD	0.08xD	0.0120	0.0140	0.0170	0.0260	0.0320	0.0360	0.0380
	Finishing	145	150	155	165	5xD	0.02xD	0.0050	0.0060	0.0080	0.0130	0.0160	0.0180	0.0190
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB <b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB <b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB <b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	Plunging	45	50	55	60	0.5xD	1xD	0.0020	0.0030	0.0030	0.0050	0.0070	0.0080	0.0080
	Slotting	60	65	75	80	0.25xD	1xD	0.0040	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Roughing	130	135	145	150	2.5xD	0.08xD	0.0100	0.0120	0.0150	0.0230	0.0290	0.0320	0.0340
	Finishing	130	135	145	150	5xD	0.02xD	0.0050	0.0050	0.0070	0.0110	0.0140	0.0160	0.0170
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	Plunging	40	45	50	55	0.5xD	1xD	0.0020	0.0020	0.0020	0.0040	0.0050	0.0060	0.0060
	Slotting	55	60	65	70	0.25xD	1xD	0.0030	0.0030	0.0040	0.0060	0.0080	0.0080	0.0090
	Roughing	120	125	130	135	2.5xD	0.08xD	0.0080	0.0090	0.0120	0.0170	0.0210	0.0240	0.0260
	Finishing	120	125	130	135	5xD	0.02xD	0.0030	0.0040	0.0050	0.0090	0.0110	0.0120	0.0130
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives <b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	Plunging	45	50	55	60	0.5xD	1xD	0.0020	0.0030	0.0030	0.0050	0.0070	0.0080	0.0080
	Slotting	60	65	75	80	0.25xD	1xD	0.0040	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Roughing	130	135	145	150	2.5xD	0.08xD	0.0100	0.0120	0.0150	0.0230	0.0290	0.0320	0.0340
	Finishing	130	135	145	150	5xD	0.02xD	0.0050	0.0050	0.0070	0.0110	0.0140	0.0160	0.0170
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	Plunging	30	35	40	45	0.5xD	1xD	0.0020	0.0020	0.0030	0.0050	0.0060	0.0070	0.0070
	Slotting	45	50	55	60	0.25xD	1xD	0.0030	0.0040	0.0050	0.0070	0.0090	0.0100	0.0110
	Roughing	95	100	105	110	2.5xD	0.08xD	0.0090	0.0110	0.0140	0.0210	0.0260	0.0290	0.0310
	Finishing	95	100	105	110	5xD	0.02xD	0.0040	0.0050	0.0060	0.0100	0.0130	0.0140	0.0160
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB	Plunging	35	40	45	50	0.5xD	1xD	0.0020	0.0020	0.0030	0.0050	0.0060	0.0070	0.0070
	Slotting	50	55	60	65	0.25xD	1xD	0.0030	0.0040	0.0050	0.0070	0.0090	0.0100	0.0110
	Roughing	105	110	120	125	2.5xD	0.08xD	0.0090	0.0110	0.0130	0.0200	0.0250	0.0280	0.0300
	Finishing	105	110	120	125	5xD	0.02xD	0.0040	0.0050	0.0060	0.0100	0.0130	0.0140	0.0150
<b>M2.2.1</b> Duplex steel, high-strength stainless steels	Plunging	25	30	30	35	0.5xD	1xD	0.0020	0.0020	0.0020	0.0040	0.0050	0.0060	0.0060
	Slotting	35	40	45	50	0.25xD	1xD	0.0030	0.0030	0.0040	0.0060	0.0080	0.0090	0.0090
	Roughing	85	90	90	95	2.5xD	0.05xD	0.0080	0.0090	0.0120	0.0170	0.0220	0.0240	0.0260
	Finishing	80	85	85	90	5xD	0.02xD	0.0040	0.0040	0.0050	0.0090	0.0110	0.0120	0.0130
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB <b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB <b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB <b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB	Plunging	45	50	55	60	0.5xD	1xD	0.0020	0.0020	0.0030	0.0050	0.0060	0.0070	0.0070
	Slotting	60	65	75	80	0.25xD	1xD	0.0030	0.0040	0.0050	0.0070	0.0090	0.0100	0.0110
	Roughing	130	135	145	150	2.5xD	0.08xD	0.0090	0.0110	0.0130	0.0200	0.0250	0.0280	0.0300
	Finishing	130	135	145	150	5xD	0.02xD	0.0040	0.0050	0.0060	0.0100	0.0130	0.0140	0.0150



Machining group	Application	v <sub>c</sub> (m/min) with nom. Ø				a <sub>p</sub> max.	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø						
		0.79 - 1.2	1.5 - 1.98	2.0 - 2.5	2.78 - 3.175			1	1.2	1.5	2	2.5	2.8	3
		<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB												
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB	Plunging	65	75	80	90	0.5xD	1xD	0.0030	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Slotting	95	105	110	120	0.25xD	1xD	0.0050	0.0060	0.0080	0.0120	0.0150	0.0170	0.0180
	Roughing	190	200	210	220	2.5xD	0.1xD	0.0140	0.0170	0.0210	0.0310	0.0390	0.0440	0.0470
	Finishing	200	210	220	230	5xD	0.02xD	0.0070	0.0080	0.0100	0.0170	0.0210	0.0240	0.0260
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB														
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	Plunging	65	75	80	90	0.5xD	1xD	0.0030	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Slotting	95	105	110	120	0.25xD	1xD	0.0050	0.0060	0.0080	0.0120	0.0150	0.0170	0.0180
	Roughing	190	200	210	220	2.5xD	0.1xD	0.0140	0.0170	0.0210	0.0310	0.0390	0.0440	0.0470
	Finishing	200	210	220	230	5xD	0.02xD	0.0070	0.0080	0.0100	0.0170	0.0210	0.0240	0.0260
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB														
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	Plunging	55	60	65	70	0.5xD	1xD	0.0030	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Slotting	75	80	90	95	0.25xD	1xD	0.0050	0.0060	0.0080	0.0120	0.0150	0.0170	0.0180
	Roughing	150	160	165	175	2.5xD	0.1xD	0.0140	0.0170	0.0210	0.0310	0.0390	0.0440	0.0470
	Finishing	160	170	175	185	5xD	0.02xD	0.0070	0.0080	0.0100	0.0170	0.0210	0.0240	0.0260
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 % <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn														
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 % <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn	Plunging	65	70	75	85	0.5xD	1xD	0.0030	0.0030	0.0040	0.0070	0.0080	0.0090	0.0100
	Slotting	90	95	105	115	0.25xD	1xD	0.0050	0.0050	0.0070	0.0100	0.0130	0.0140	0.0150
	Roughing	180	190	200	210	2.5xD	0.1xD	0.0120	0.0140	0.0180	0.0260	0.0330	0.0370	0.0390
	Finishing	190	200	210	220	5xD	0.02xD	0.0060	0.0070	0.0090	0.0140	0.0180	0.0200	0.0210
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte														
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	Plunging	50	55	60	65	0.5xD	1xD	0.0020	0.0030	0.0040	0.0060	0.0080	0.0090	0.0090
	Slotting	70	75	85	90	0.25xD	1xD	0.0040	0.0050	0.0060	0.0090	0.0120	0.0130	0.0140
	Roughing	140	150	155	165	2.5xD	0.1xD	0.0110	0.0130	0.0160	0.0240	0.0300	0.0340	0.0360
	Finishing	150	155	165	170	5xD	0.02xD	0.0050	0.0060	0.0080	0.0130	0.0160	0.0180	0.0200
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB														
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB	Plunging	20	20	25	25	0.5xD	1xD	0.0010	0.0020	0.0020	0.0040	0.0050	0.0050	0.0060
	Slotting	30	30	35	35	0.25xD	1xD	0.0020	0.0030	0.0040	0.0060	0.0070	0.0080	0.0080
	Roughing	60	60	65	70	2.5xD	0.08xD	0.0070	0.0080	0.0110	0.0160	0.0200	0.0220	0.0240
	Finishing	60	60	65	70	5xD	0.02xD	0.0030	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB														
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB	Plunging	15	20	20	20	0.5xD	1xD	0.0010	0.0020	0.0020	0.0040	0.0050	0.0050	0.0060
	Slotting	25	25	30	30	0.25xD	1xD	0.0020	0.0030	0.0040	0.0060	0.0070	0.0080	0.0080
	Roughing	55	55	60	60	2.5xD	0.05xD	0.0070	0.0080	0.0110	0.0160	0.0200	0.0220	0.0240
	Finishing	50	55	55	60	5xD	0.02xD	0.0030	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB														
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	Plunging	10	15	15	15	0.5xD	1xD	0.0010	0.0010	0.0020	0.0030	0.0040	0.0040	0.0050
	Slotting	15	15	20	20	0.25xD	1xD	0.0020	0.0020	0.0030	0.0040	0.0060	0.0060	0.0070
	Roughing	35	40	40	40	2.5xD	0.05xD	0.0060	0.0070	0.0090	0.0130	0.0160	0.0180	0.0190
	Finishing	35	35	40	40	5xD	0.02xD	0.0030	0.0030	0.0040	0.0060	0.0080	0.0090	0.0100
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB														
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	Plunging	10	10	10	10	0.5xD	1xD	0.0010	0.0010	0.0020	0.0030	0.0040	0.0040	0.0040
	Slotting	10	15	15	15	0.25xD	1xD	0.0020	0.0020	0.0030	0.0040	0.0050	0.0060	0.0060
	Roughing	25	30	30	30	2.5xD	0.05xD	0.0050	0.0070	0.0080	0.0120	0.0150	0.0170	0.0180
	Finishing	25	25	30	30	5xD	0.02xD	0.0020	0.0030	0.0040	0.0060	0.0080	0.0080	0.0090
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB														
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	Plunging	10	10	10	15	0.5xD	1xD	0.0010	0.0010	0.0020	0.0030	0.0040	0.0040	0.0050
	Slotting	15	15	15	20	0.25xD	1xD	0.0020	0.0020	0.0030	0.0040	0.0060	0.0060	0.0070
	Roughing	30	35	35	35	2.5xD	0.05xD	0.0060	0.0070	0.0090	0.0130	0.0160	0.0180	0.0190
	Finishing	30	30	35	35	5xD	0.02xD	0.0030	0.0030	0.0040	0.0060	0.0080	0.0090	0.0100
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>														
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	Plunging	30	35	40	40	0.5xD	1xD	0.0020	0.0030	0.0030	0.0050	0.0070	0.0080	0.0080
	Slotting	45	50	55	55	0.25xD	1xD	0.0040	0.0040	0.0050	0.0080	0.0100	0.0110	0.0120
	Roughing	95	100	105	110	2.5xD	0.08xD	0.0100	0.0120	0.0150	0.0230	0.0290	0.0320	0.0340
	Finishing	95	100	105	110	5xD	0.02xD	0.0050	0.0050	0.0070	0.0110	0.0140	0.0160	0.0170
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>														
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	Plunging	25	30	35	35	0.5xD	1xD	0.0020	0.0020	0.0030	0.0050	0.0060	0.0070	0.0070
	Slotting	35	40	45	50	0.25xD	1xD	0.0030	0.0040	0.0050	0.0070	0.0090	0.0100	0.0110
	Roughing	80	85	90	90	2.5xD	0.08xD	0.0090	0.0110	0.0140	0.0200	0.0260	0.0290	0.0310
	Finishing	80	85	90	90	5xD	0.02xD	0.0040	0.0050	0.0060	0.0100	0.0130	0.0140	0.0150



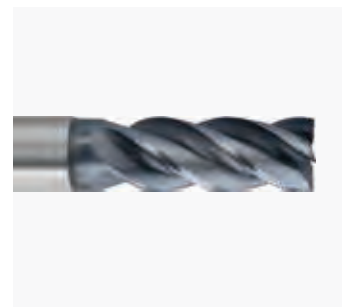
## RF 100 Sharp

### Milling conditions:

<b>HPC</b>	stable machining conditions high drive power
<b>MTC</b>	unstable machining conditions low drive power
	long tools
	long (DIN)+ tools

### Correction factors:

	$a_p$ roughing > 1.5 x D	$v_c$ -25 %	$f_z$ -25 %
	medium length tools	$v_c$ -40 %	$f_z$ -40 %
	extra short tools		$f_z$ +40 %



Cutting data

Machining group	Application	$v_c$ (m/min)	$a_e$ max.	$f_z$ (mm/z) with nom. $\emptyset$								
				1	3	4	6	8	10	12	16	20
<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB <b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB <b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	Slotting	180	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	205	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	360	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB <b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB <b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB <b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	Slotting	160	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	185	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.100	0.125
	Finishing	320	0.02xD	0.006	0.018	0.025	0.035	0.050	0.060	0.075	0.095	0.120
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	Slotting	135	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	155	0.75xD	0.006	0.017	0.025	0.035	0.045	0.060	0.070	0.090	0.115
	Finishing	270	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives <b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	Slotting	120	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	140	0.75xD	0.006	0.017	0.025	0.035	0.045	0.060	0.070	0.090	0.115
	Finishing	240	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	Slotting	90	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	100	0.75xD	0.005	0.016	0.020	0.030	0.040	0.050	0.060	0.085	0.105
	Finishing	175	0.02xD	0.005	0.015	0.020	0.030	0.040	0.050	0.060	0.080	0.100
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB	Slotting	80	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	100	0.6xD	0.005	0.016	0.020	0.030	0.045	0.055	0.065	0.085	0.110
	Finishing	160	0.01xD	0.005	0.014	0.020	0.025	0.035	0.045	0.055	0.070	0.090
<b>M2.2.1</b> Duplex steel, high-strength stainless steels	Slotting	60	1xD	0.003	0.010	0.015	0.020	0.030	0.040	0.045	0.065	0.080
	Roughing	75	0.6xD	0.005	0.014	0.020	0.030	0.040	0.045	0.055	0.075	0.095
	Finishing	120	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.065	0.080
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB <b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB <b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB <b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB												
<b>K1.3.1</b> Malleable cast iron, ferritic, 130 HB <b>K1.3.2</b> Malleable cast iron, pearlitic, 230 HB												
<b>K2.1.1</b> Vermicular graphite cast iron (GJV) <b>K2.2.1</b> Austenitic-ferritic spheroidal graphite cast iron (ADI)												
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB	Slotting	500	1xD	0.007	0.021	0.030	0.040	0.055	0.080	0.095	0.130	0.160
	Roughing	575	0.75xD	0.009	0.028	0.035	0.055	0.075	0.090	0.110	0.145	0.185
	Finishing	1000	0.02xD	0.009	0.026	0.035	0.055	0.070	0.090	0.105	0.140	0.175
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	Slotting	230	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	265	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	460	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
<b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	Slotting	180	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	180	0.75xD	0.006	0.018	0.025	0.035	0.050	0.060	0.070	0.095	0.120
	Finishing	365	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130



Machining group	Application	V <sub>c</sub> (m/min)	a <sub>e</sub> max.	f <sub>z</sub> (mm/z) with nom. Ø								
				1	3	4	6	8	10	12	16	20
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 % <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn	Slotting	250	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	290	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	500	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	Slotting	195	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	225	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.100	0.125
	Finishing	390	0.02xD	0.006	0.018	0.025	0.035	0.050	0.060	0.075	0.095	0.120
<b>N4.1.1</b> Non-metallic materials: Duroplastics, fibre-reinforced plastics	Slotting	150	1xD	0.006	0.017	0.020	0.035	0.045	0.065	0.075	0.100	0.125
	Roughing	175	0.75xD	0.007	0.022	0.030	0.045	0.060	0.070	0.085	0.115	0.145
	Finishing	300	0.02xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
<b>N4.1.2</b> Non-metallic materials: Hard rubber, wood, etc.	Slotting	200	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	230	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.105	0.130
	Finishing	400	0.02xD	0.006	0.019	0.025	0.035	0.050	0.060	0.075	0.100	0.125
<b>N4.1.3</b> Non-metallic materials: Graphite	Slotting	240	1xD	0.007	0.021	0.030	0.040	0.055	0.080	0.095	0.130	0.160
	Roughing	275	0.75xD	0.009	0.028	0.035	0.055	0.075	0.090	0.110	0.145	0.185
	Finishing	480	0.02xD	0.009	0.026	0.035	0.055	0.070	0.090	0.105	0.140	0.175
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB	Slotting	30	1xD	0.004	0.011	0.015	0.020	0.030	0.040	0.050	0.065	0.080
	Roughing	40	0.6xD	0.005	0.014	0.020	0.030	0.040	0.050	0.060	0.075	0.095
	Finishing	60	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.050	0.065	0.080
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB	Slotting	25	1xD	0.004	0.011	0.015	0.020	0.030	0.040	0.050	0.065	0.080
	Roughing	30	0.6xD	0.005	0.014	0.020	0.030	0.040	0.050	0.060	0.075	0.095
	Finishing	50	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.050	0.065	0.080
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	Slotting	15	1xD	0.003	0.009	0.010	0.015	0.025	0.030	0.040	0.050	0.065
	Roughing	20	0.6xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.060	0.080
	Finishing	35	0.01xD	0.003	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.065
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	Slotting	15	1xD	0.003	0.008	0.010	0.015	0.020	0.030	0.035	0.050	0.060
	Roughing	15	0.6xD	0.004	0.011	0.015	0.020	0.030	0.035	0.045	0.060	0.075
	Finishing	25	0.01xD	0.003	0.009	0.010	0.020	0.025	0.030	0.035	0.050	0.060
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	Slotting	15	1xD	0.003	0.009	0.010	0.015	0.025	0.030	0.040	0.050	0.065
	Roughing	20	0.6xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.060	0.080
	Finishing	30	0.01xD	0.003	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.065
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	Slotting	70	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	90	0.6xD	0.006	0.018	0.025	0.035	0.050	0.060	0.070	0.095	0.120
	Finishing	140	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	Slotting	60	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	75	0.6xD	0.005	0.016	0.020	0.030	0.045	0.055	0.065	0.085	0.110
	Finishing	120	0.02xD	0.005	0.015	0.020	0.030	0.040	0.050	0.060	0.080	0.100
<b>H1.1.1</b> Hardened steel, hardened and tempered, < 55 HRC												
<b>H1.1.2</b> Hardened steel, hardened and tempered, < 60 HRC												
<b>H1.1.3</b> Hardened steel, hardened and tempered, > 60 HRC												
<b>H2.1.1</b> Chilled cast iron, 400 HB												
<b>H2.1.2</b> Chilled cast iron, hardened and tempered, < 55 HRC												





# Threading tools

Maximum flexibility and economic efficiency

We are rethinking fluteless tapping –  
as a modular system

**GÜHRING**

Page	<b>Taps</b>
110	High-performance taps Pionex
111	Through-holes
120	Blind holes
129	Through- and blind holes
133	<b>Fluteless taps</b>
133	High-performance fluteless taps Pionex
138	Modular fluteless taps
140	<b>Thread milling cutters</b>
140	SC-Line Thread milling cutters



P	M	K	N	S	H	Tool illustration	Stand-ard	Type	Form	Tool material	Sur-face	d1/mm	Article no.	Page
<b>Taps for ISO metric fine threads</b>														
•	•	○	○	○			<b>NEW</b>	WN	VA R45	C	HSS-E	A	M8 x 0,75 - M20 x 1,5	<b>4860</b> 110
<b>Taps for BSP threads</b>														
•	•	○	○	○			<b>NEW</b>	WN	VA R45	C	HSS-E	A	G1/8 - G1/2	<b>4861</b> 110
<b>Taps for ISO metric threads</b>														
•	○						+Ø	DIN 371	N	B	HSS-E	S	M2 - M10	<b>313</b> 111
•	○						+Ø	DIN 376	N	B	HSS-E	S	M3 - M36	<b>315</b> 111
•	○						+Ø	DIN 371	N	B	HSS-E	S	M2 - M10	<b>2991</b> 112
•							<b>NEW</b>	DIN 371	H	B	HSS-E	S	M2 - M24	<b>4791</b> 112
•							<b>NEW</b>	DIN 371	H	B	HSS-E	●	M2 - M10	<b>4792</b> 113
○	•	○					+Ø	DIN 371	VA	B	HSS-E	○	M2 - M10	<b>2869</b> 113
		•					+Ø	DIN 371	AI	B	HSS-E	○	M1,6 - M10	<b>805</b> 114
<b>Taps for ISO metric fine threads</b>														
•	○						<b>NEW</b>	DIN 374	N	B	HSS-E	S	M5 x 0,5 - M30 x 2	<b>4778</b> 114
•	○	○					+Ø	DIN 374	N	B	HSS-E	○	M8 x 1 - M20 x 1,5	<b>2992</b> 115
•	○						+Ø	DIN 374	N	B	HSS-E	S	M8 x 1 - M20 x 1,5	<b>2993</b> 115
•							+Ø	DIN 374	H	B	HSS-E	●	M3 x 0,35 - M24 x 1,5	<b>2943</b> 116
•							<b>NEW</b>	DIN 374	H	B	HSS-E	S	M8 x 0,75 - M24 x 1,5	<b>4793</b> 116
•							<b>NEW</b>	DIN 374	H	B	HSS-E	●	M8 x 1 - M20 x 1,5	<b>4794</b> 117
<b>Taps for UNC threads</b>														
•	○	○					+Ø	~DIN 376	N	B	HSS-E	○	7/16 - 14 - 1 - 8	<b>2883</b> 117
○	•	○					+Ø	~DIN 376	VA	B	HSS-E	○	1/2 - 13 - 1 - 8	<b>2873</b> 118
<b>Taps for UNF threads</b>														
•	○	○					+Ø	~DIN 374	N	B	HSS-E	○	4 - 48 - 1 - 12	<b>2885</b> 118
<b>Taps for BSP threads</b>														
•							<b>NEW</b>	DIN 5156	H	B	HSS-E	S	G1/16 - G1	<b>4795</b> 119
<b>Taps for ISO metric threads</b>														
•	○						+Ø	DIN 376	N R40	C	HSS-E	S	M3 - M36	<b>2441</b> 120
•	○						+Ø	DIN 371	N R40	C	HSS-E	○	M2 - M10	<b>2994</b> 121
•	○						+Ø	DIN 371	N R40	C	HSS-E	S	M2 - M10	<b>2995</b> 121
○	•						+Ø	DIN 371	VA R15	C	HSS-E	S	M2 - M10	<b>2896</b> 122
•	○						+Ø	DIN 376	VA R40	C	HSS-E	○	M12 - M30	<b>2863</b> 122



P	M	K	N	S	H	Tool illustration	Stand- ard	Type	Form	Tool material	Sur- face	d1/mm	Article no.	Page
<b>Taps for ISO metric fine threads</b>														
•							+Ø DIN 374	NR40	C	HSS-E	S	M3 x 0,35 - M30 x 2	852	123
•	○						+Ø DIN 374	NR40	C	HSS-E		M4 x 0,5 - M30 x 2	2853	124
•	○						NEW DIN 374	NR40	C	HSS-E	S	M5 x 0,5 - M30 x 2	4779	125
•							NEW DIN 374	HR40	C	HSS-E	S	M8 x 0,75 - M24 x 1,5	4796	126
•	○						NEW DIN 374	VAR40	C	HSS-E		M3 x 0,35 - M24 x 1,5	4798	125
<b>Taps with coolant ducts for ISO metric fine threads</b>														
	•						+Ø DIN 374	GG	C	HSS-E		M8 x 1 - M24 x 1,5	1904	126
<b>Taps for UNC threads</b>														
•	○						+Ø ~DIN 376	NR40	C	HSS-E		7/16 - 14 - 1 - 8	2857	127
<b>Taps for BSP threads</b>														
•							NEW DIN 5156	HR40	C	HSS-E	S	G1/16 - G1	4797	127
•	○						NEW DIN 5156	VAR40	C	HSS-E		G1/16 - G1 1/2	4799	128
<b>Taps for ISO metric threads</b>														
	•						+Ø DIN 376	GG	C	HSS-E	F	M3 - M30	1919	129
<b>Taps for ISO metric fine threads</b>														
	•						+Ø DIN 374	GG	C	HSS-E	F	M3 x 0,35 - M30 x 1,5	169	130
<b>Taps for UNC threads</b>														
	•						NEW ~DIN 371	GG	C	HSS-E	F	2 - 56 - 1 - 8	4857	131
<b>Taps for UNF threads</b>														
	•						NEW ~DIN 374	GG	C	HSS-E	F	1/4 - 28 - 1 - 12	4858	132
<b>Taps for BSP threads</b>														
	•						NEW DIN 5156	GG	C	HSS-E	F	G1/8 - G2	4859	132
<b>Fluteless taps for ISO metric threads</b>														
•	•	•	•	•			NEW ~DIN 371	N	E	HSS-E-PM	C	M2 - M20	4703	133
<b>Fluteless taps with coolant ducts for ISO metric threads</b>														
•	•	•	•	•			NEW ~DIN 371	N	C	HSS-E-PM	C	M5 - M20	4705	133
•	•	•	•	•			NEW ~DIN 371	N	E	HSS-E-PM	C	M5 - M20	4707	134
<b>Fluteless taps for ISO metric fine threads</b>														
•	•	•	•	•			+Ø ~DIN 374	N	C	HSS-E-PM	C	M8 x 1 - M24 x 1,5	4490	134
•	•	•	•	•			NEW ~DIN 374	N	E	HSS-E-PM	C	M8 x 1 - M20 x 1,5	4704	135
<b>Fluteless taps with coolant ducts for ISO metric fine threads</b>														
•	•	•	•	•			NEW ~DIN 374	N	C	HSS-E-PM	C	M8 x 1 - M20 x 1,5	4706	135
•	•	•	•	•			NEW ~DIN 374	N	E	HSS-E-PM	C	M8 x 1 - M20 x 1,5	4708	136



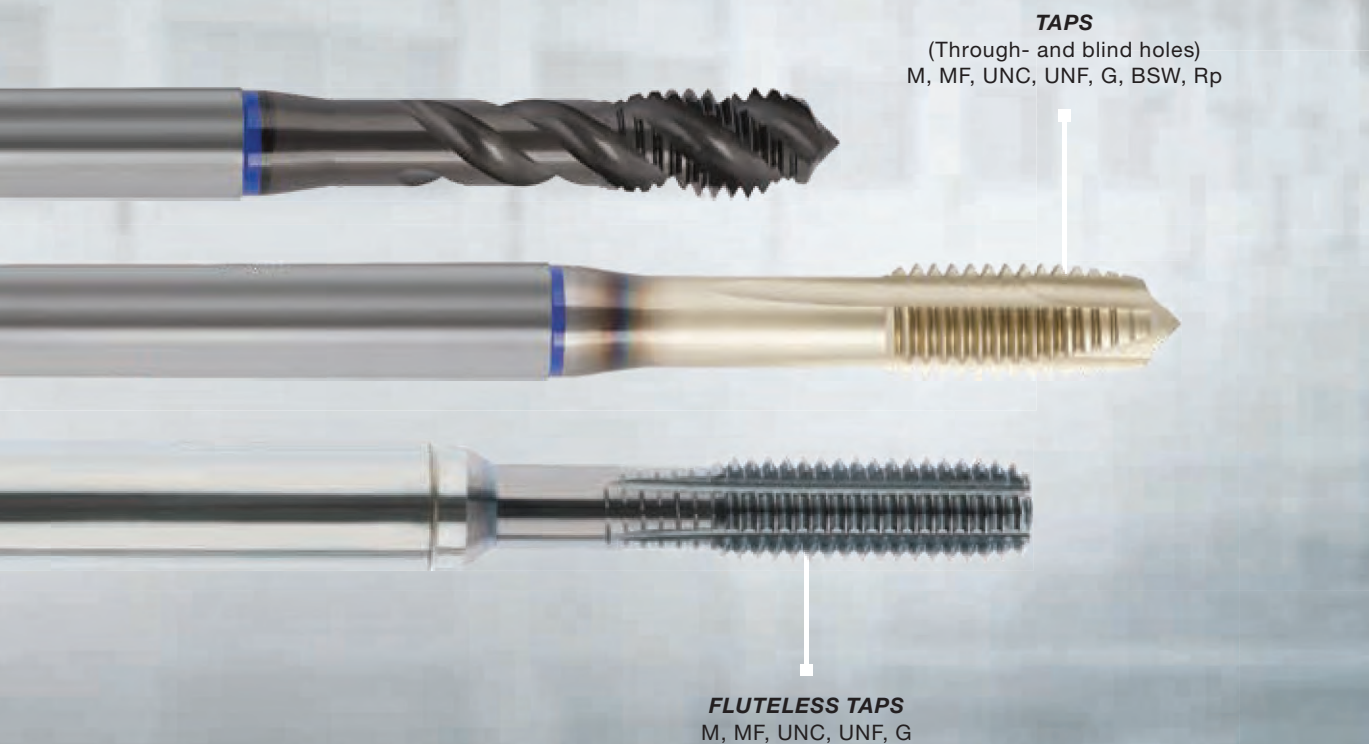
P	M	K	N	S	H	Tool illustration	Stand- ard	Type	Form	Tool material	Sur- face	d1/mm	Article no.	Page
<b>Interchangeable heads</b>														
●	○	●	●	○				<b>NEW</b>	C	VHM	P	M12 x 1,5 - M24 x 3	4871	138
<b>Interchangeable shanks</b>														
								<b>NEW</b>		HSS-E	○		4873	138
<b>Micro thread milling cutters for ISO metric threads</b>														
●	●	●	●	○				<b>NEW</b>	WN	SC MTM3 SP	VHM	S	M2 - M20	4477 140
●	●	●	●	○				<b>NEW</b>	WN	MTM3 SP	VHM	S	UNF No1-72 - UNF 5/8-18	4880 140

# Pionex threading tools



## The new generation threading tools

higher cutting speeds | outstanding tool lifes | ideal chip removal



**TAPS**  
(Through- and blind holes)  
M, MF, UNC, UNF, G, BSW, Rp

**FLUTELESS TAPS**  
M, MF, UNC, UNF, G

## Powerful under all operating conditions

Especially in thread machining, process reliability combined with high tool lifes present a big challenge. These criteria are met by our Pionex programme. Universal high performance combined with the highest process reliability and economic efficiency.



## Taps for ISO metric fine threads

Article no. **4860**

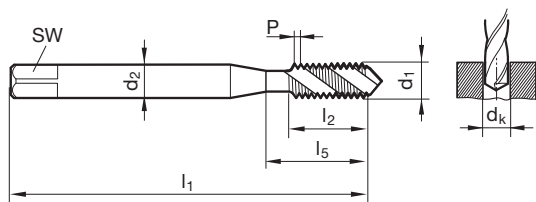


Cutting data page 141



long design

P	M	K	N	S	H
●	●	○	○	○	○



Standard	<b>Company std.</b>
Article no.	<b>4860</b>

Taps

d1	d2	SW	dk	l1	l2	l5	Order no.
M8 x 0,75	6.00	4.90	7.20	180.00	14.00	120.00	4860 8.004
M8 x 1	6.00	4.90	7.00	180.00	14.00	120.00	4860 8.005
M9 x 1	7.00	5.50	8.00	200.00	14.00	140.00	4860 9.005
M10 x 1	7.00	5.50	9.00	200.00	16.00	140.00	4860 10.005
M12 x 1,5	9.00	7.00	10.50	220.00	18.50	158.00	4860 12.007
M14 x 1,5	11.00	9.00	12.50	220.00	20.00	160.00	4860 14.007
M16 x 1,5	12.00	9.00	14.50	220.00	20.00	160.00	4860 16.007
M20 x 1,5	16.00	12.00	18.50	280.00	25.00	217.00	4860 20.007

## Taps for BSP threads

Article no. **4861**

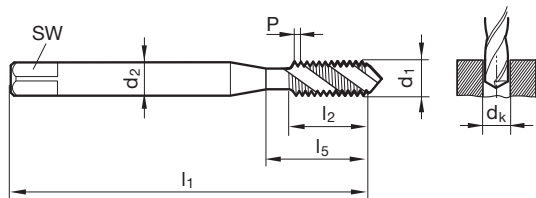


Cutting data page 141



long design

P	M	K	N	S	H
●	●	○	○	○	○



Standard	<b>Company std.</b>
Article no.	<b>4861</b>

d1	P	d2	SW	dk	l1	l2	l5	Order no.
G1/8	28	7.00	5.50	8.80	200.00	16.00	140.00	4861 9.728
G1/4	19	11.00	9.00	11.80	220.00	20.00	160.00	4861 13.157
G3/8	19	12.00	9.00	15.25	250.00	25.00	160.00	4861 16.662
G1/2	14	16.00	12.00	19.00	280.00	27.00	217.00	4861 20.955



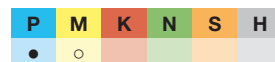


Taps for ISO metric threads

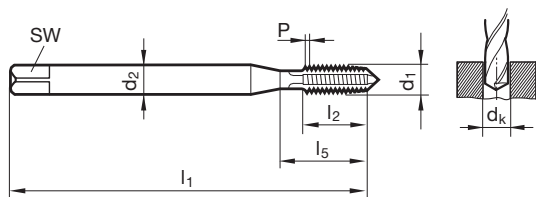
Article no. 313



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 371**  
Article no. **313**

	d1	P	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	mm	
NEW	M2	0.400	2.80	2.10	1.60	45.00	8.00	13.50	313 2.000
	M3	0.500	3.50	2.70	2.50	56.00	10.00	18.00	313 3.000
	M4	0.700	4.50	3.40	3.30	63.00	12.00	21.00	313 4.000
	M5	0.800	6.00	4.90	4.20	70.00	14.00	25.00	313 5.000
	M6	1.000	6.00	4.90	5.00	80.00	16.00	30.00	313 6.000
	M8	1.250	8.00	6.20	6.80	90.00	17.00	35.00	313 8.000
	M10	1.500	10.00	8.00	8.50	100.00	20.00	39.00	313 10.000

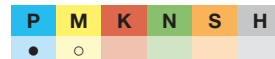
Taps

Taps for ISO metric threads

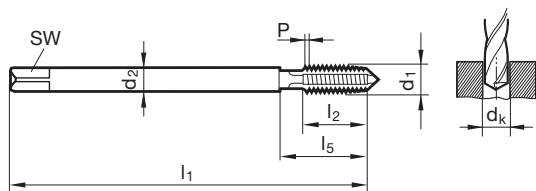
Article no. 315



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 376**  
Article no. **315**

	d1	P	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	mm	
	M3	0.500	2.20	1.80	2.50	56.00	10.00	18.00	315 3.000
	M4	0.700	2.80	2.10	3.30	63.00	12.00	21.00	315 4.000
	M5	0.800	3.50	2.70	4.20	70.00	14.00	25.00	315 5.000
	M6	1.000	4.50	3.40	5.00	80.00	16.00	30.00	315 6.000
	M8	1.250	6.00	4.90	6.80	90.00	17.00	35.00	315 8.000
	M10	1.500	7.00	5.50	8.50	100.00	20.00	39.00	315 10.000
	M12	1.750	9.00	7.00	10.20	110.00	24.00	49.00	315 12.000
	M14	2.000	11.00	9.00	12.00	110.00	26.00	53.00	315 14.000
	M16	2.000	12.00	9.00	14.00	110.00	26.00	54.00	315 16.000
	M18	2.500	14.00	11.00	15.50	125.00	30.00	62.00	315 18.000
	M20	2.500	16.00	12.00	17.50	140.00	32.00	62.00	315 20.000
NEW	M22	2.500	18.00	14.50	19.50	140.00	32.00	62.00	315 22.000
	M24	3.000	18.00	14.50	21.00	160.00	36.00	73.00	315 24.000
NEW	M27	3.000	20.00	16.00	24.00	160.00	36.00	73.00	315 27.000
NEW	M30	3.500	22.00	18.00	26.50	180.00	40.00	85.00	315 30.000
NEW	M36	4.000	28.00	22.00	32.00	200.00	50.00	102.00	315 36.000

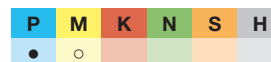


## Taps for ISO metric threads

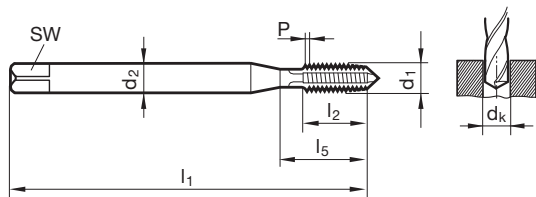
Article no. **2991**



Cutting data page 143



$P \leq 1000 \text{ N/mm}^2$



Standard **DIN 371**  
Article no. **2991**

	d1	d2	SW	dk	l1	l2	l5	Order no.
NEW	M2	2.80	2.10	1.60	45.00	8.00	13.50	2991 2.000
	M3	3.50	2.70	2.50	56.00	10.00	18.00	2991 3.000
	M4	4.50	3.40	3.30	63.00	12.00	21.00	2991 4.000
	M5	6.00	4.90	4.20	70.00	14.00	25.00	2991 5.000
	M6	6.00	4.90	5.00	80.00	16.00	30.00	2991 6.000
	M8	8.00	6.20	6.80	90.00	17.00	35.00	2991 8.000
	M10	10.00	8.00	8.50	100.00	20.00	39.00	2991 10.000

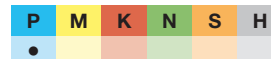
Taps

## Taps for ISO metric threads

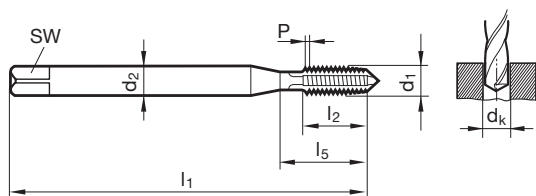
Article no. **4791**



Cutting data page 144



$P \leq 1200 \text{ N/mm}^2$



Standard **DIN 371**  
Article no. **4791**

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M2	0.400	2.80	2.10	1.60	45.00	8.00	13.50	4791 2.000
M2,5	0.450	2.80	2.10	2.05	50.00	9.00	14.50	4791 2.500
M3	0.500	3.50	2.70	2.50	56.00	10.00	18.00	4791 3.000
M4	0.700	4.50	3.40	3.30	63.00	12.00	21.00	4791 4.000
M5	0.800	6.00	4.90	4.20	70.00	14.00	25.00	4791 5.000
M6	1.000	6.00	4.90	5.00	80.00	16.00	30.00	4791 6.000
M8	1.250	8.00	6.20	6.80	90.00	17.00	35.00	4791 8.000
M10	1.500	10.00	8.00	8.50	100.00	20.00	39.00	4791 10.000
M12	1.750	9.00	7.00	10.20	110.00	24.00	49.00	4791 12.000
M14	2.000	11.00	9.00	12.00	110.00	26.00	53.00	4791 14.000
M16	2.000	12.00	9.00	14.00	110.00	26.00	54.00	4791 16.000
M18	2.500	14.00	11.00	15.50	125.00	30.00	62.00	4791 18.000
M20	2.500	16.00	12.00	17.50	140.00	32.00	62.00	4791 20.000
M24	3.000	18.00	14.50	21.00	160.00	36.00	73.00	4791 24.000

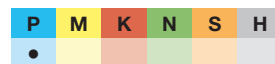


Taps for ISO metric threads

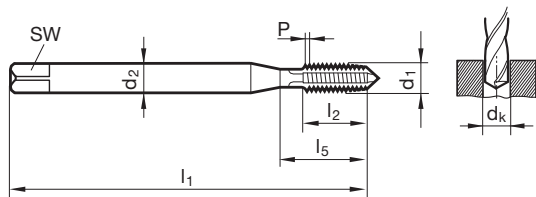
Article no. **4792**



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard	<b>DIN 371</b>
Article no.	<b>4792</b>

d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
M2	2.80	2.10	1.60	45.00	8.00	13.50	4792 2.000
M2,5	2.80	2.10	2.05	50.00	9.00	14.50	4792 2.500
M3	3.50	2.70	2.50	56.00	10.00	18.00	4792 3.000
M4	4.50	3.40	3.30	63.00	12.00	21.00	4792 4.000
M5	6.00	4.90	4.20	70.00	14.00	25.00	4792 5.000
M6	6.00	4.90	5.00	80.00	16.00	30.00	4792 6.000
M8	8.00	6.20	6.80	90.00	17.00	35.00	4792 8.000
M10	10.00	8.00	8.50	100.00	20.00	39.00	4792 10.000

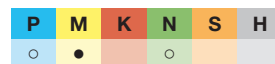
Taps

Taps for ISO metric threads

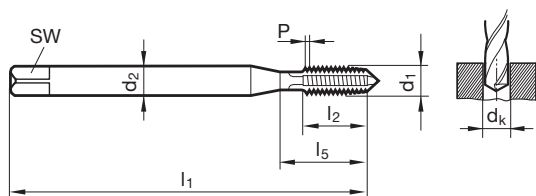
Article no. **2869**



Cutting data page 147



P ≤ 1000 N/mm<sup>2</sup>



Standard	<b>DIN 371</b>
Article no.	<b>2869</b>

	d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
NEW	M2	0.400	2.80	2.10	1.60	45.00	8.00	13.50	2869 2.000
NEW	M2,5	0.450	2.80	2.10	2.05	50.00	9.00	14.50	2869 2.500
	M3	0.500	3.50	2.70	2.50	56.00	10.00	18.00	2869 3.000
	M4	0.700	4.50	3.40	3.30	63.00	12.00	21.00	2869 4.000
	M5	0.800	6.00	4.90	4.20	70.00	14.00	25.00	2869 5.000
	M6	1.000	6.00	4.90	5.00	80.00	16.00	30.00	2869 6.000
	M8	1.250	8.00	6.20	6.80	90.00	17.00	35.00	2869 8.000
	M10	1.500	10.00	8.00	8.50	100.00	20.00	39.00	2869 10.000



## Taps for ISO metric threads

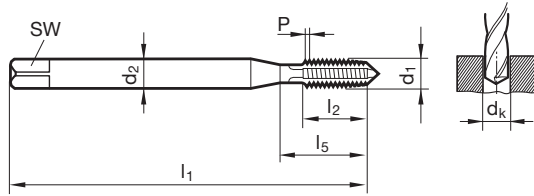
Article no. **805**



Cutting data page 146



N ≤ 7% Si



Standard **DIN 371**  
Article no. **805**

Taps

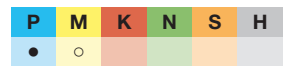
	d1	P	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	mm	
NEW	M1,6	0.350	2.50	2.10	1.25	40.00	6.40	6.40	805 1.600
	M2	0.400	2.80	2.10	1.60	45.00	8.00	13.50	805 2.000
	M2,2	0.450	2.80	2.10	1.75	45.00	9.00	14.50	805 2.200
	M2,3	0.400	2.80	2.10	1.90	45.00	9.00	14.50	805 2.300
	M2,5	0.450	2.80	2.10	2.05	50.00	9.00	14.50	805 2.500
	M2,6	0.450	2.80	2.10	2.15	50.00	9.00	14.50	805 2.600
	M3	0.500	3.50	2.70	2.50	56.00	10.00	18.00	805 3.000
	M3,5	0.600	4.00	3.00	2.90	56.00	12.00	20.00	805 3.500
	M4	0.700	4.50	3.40	3.30	63.00	12.00	21.00	805 4.000
	M5	0.800	6.00	4.90	4.20	70.00	14.00	25.00	805 5.000
M6	1.000	6.00	4.90	5.00	80.00	16.00	30.00	805 6.000	
M8	1.250	8.00	6.20	6.80	90.00	17.00	35.00	805 8.000	
M10	1.500	10.00	8.00	8.50	100.00	20.00	39.00	805 10.000	

## Taps for ISO metric fine threads

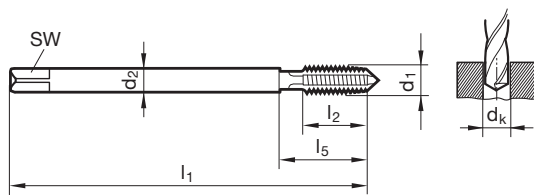
Article no. **4778**



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



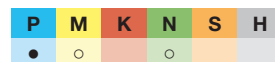
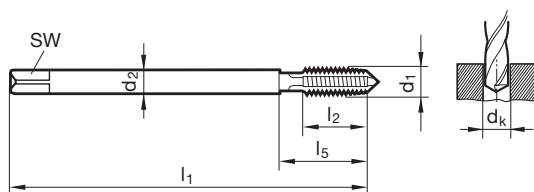
Standard **DIN 374**  
Article no. **4778**

d1	d2	SW	dk	l1	l2	l5	Order no.
	mm	mm	mm	mm	mm	mm	
M5 x 0,5	3.50	2.70	4.50	70.00	10.00	25.00	4778 5.003
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	30.00	4778 6.004
M8 x 0,75	6.00	4.90	7.20	80.00	14.00	30.00	4778 8.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	4778 8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	4778 10.005
M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	4778 12.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	4778 12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	4778 14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	4778 16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	4778 18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	4778 20.007
M22 x 1,5	18.00	14.50	20.50	125.00	25.00	44.00	4778 22.007
M24 x 1,5	18.00	14.50	22.50	140.00	28.00	48.00	4778 24.007
M24 x 2	18.00	14.50	22.00	140.00	28.00	48.00	4778 24.008
M26 x 1,5	18.00	14.50	24.50	140.00	28.00	50.00	4778 26.007
M27 x 1,5	20.00	16.00	25.50	140.00	28.00	53.00	4778 27.007
M27 x 2	20.00	16.00	25.00	140.00	28.00	53.00	4778 27.008
M28 x 1,5	20.00	16.00	26.50	140.00	28.00	53.00	4778 28.007
M30 x 1,5	22.00	18.00	28.50	150.00	28.00	53.00	4778 30.007
M30 x 2	22.00	18.00	28.00	150.00	28.00	53.00	4778 30.008

## Taps for ISO metric fine threads

Article no. **2992**

Cutting data page 143

P ≤ 1000 N/mm<sup>2</sup>

Standard

**DIN 374**

Article no.

**2992**

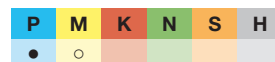
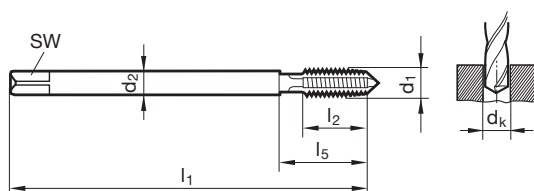
	d1	d2	SW	dk	l1	l2	l5	Order no.
	M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	2992 8.005
	M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	2992 10.005
	M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	2992 12.005
NEW	M12 x 1,25	9.00	7.00	10.80	100.00	20.00	40.00	2992 12.006
NEW	M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	2992 12.007
	M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	2992 14.007
	M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	2992 16.007
	M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	2992 18.007
NEW	M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	2992 20.007

Taps

## Taps for ISO metric fine threads

Article no. **2993**

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P ≤ 1000 N/mm<sup>2</sup>

Standard

**DIN 374**

Article no.

**2993**

	d1	d2	SW	dk	l1	l2	l5	Order no.
	M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	2993 8.005
	M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	2993 10.005
	M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	2993 12.005
NEW	M12 x 1,25	9.00	7.00	10.80	100.00	20.00	40.00	2993 12.006
NEW	M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	2993 12.007
	M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	2993 14.007
	M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	2993 16.007
	M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	2993 18.007
NEW	M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	2993 20.007

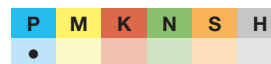


## Taps for ISO metric fine threads

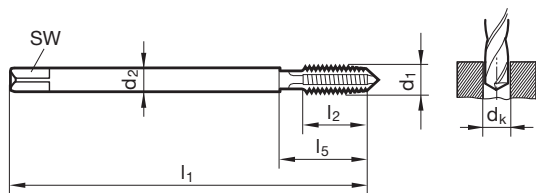
Article no. **2943**



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard **DIN 374**  
Article no. **2943**

Taps

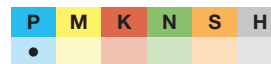
	d1	d2	SW	dk	l1	l2	l5	Order no.
	M3 x 0,35	2.20	1.80	2.65	56.00	7.00	18.00	2943 3.002
	M4 x 0,5	2.80	2.10	3.50	63.00	8.00	21.00	2943 4.003
	M5 x 0,5	3.50	2.70	4.50	70.00	10.00	25.00	2943 5.003
	M6 x 0,75	4.50	3.40	5.20	80.00	13.00	30.00	2943 6.004
	M8 x 0,75	6.00	4.90	7.20	80.00	14.00	30.00	2943 8.004
	M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	2943 8.005
	M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	2943 10.005
NEW	M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	2943 12.005
	M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	2943 12.007
	M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	2943 14.007
	M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	2943 16.007
	M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	2943 18.007
	M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	2943 20.007
	M22 x 1,5	18.00	14.50	20.50	125.00	25.00	44.00	2943 22.007
	M24 x 1,5	18.00	14.50	22.50	140.00	28.00	48.00	2943 24.007

## Taps for ISO metric fine threads

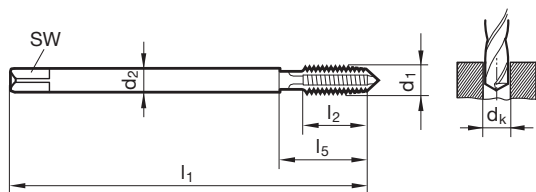
Article no. **4793**



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard **DIN 374**  
Article no. **4793**

	d1	d2	SW	dk	l1	l2	l5	Order no.
	M8 x 0,75	6.00	4.90	7.20	80.00	14.00	30.00	4793 8.004
	M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	4793 8.005
	M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	4793 10.005
	M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	4793 12.005
	M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	4793 12.007
	M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	4793 14.007
	M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	4793 16.007
	M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	4793 20.007
	M22 x 1,5	18.00	14.50	20.50	125.00	25.00	44.00	4793 22.007
	M24 x 1,5	18.00	14.50	22.50	140.00	28.00	48.00	4793 24.007

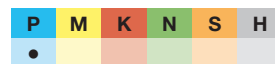


Taps for ISO metric fine threads

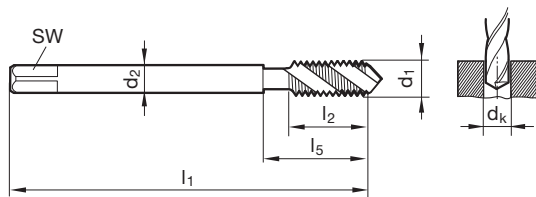
Article no. 4794



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard **DIN 374**  
Article no. **4794**

d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	4794 8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	4794 10.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	4794 12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	4794 14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	4794 16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	4794 18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	4794 20.007

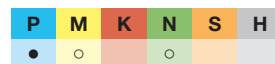
Taps

Taps for UNC threads

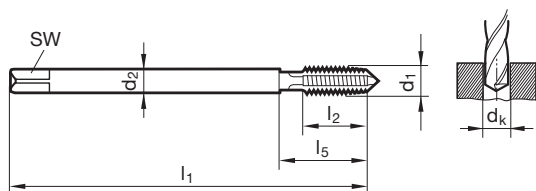
Article no. 2883



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **~DIN 376**  
Article no. **2883**

	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
	7/16 - 14	8.00	6.20	9.40	100.00	22.00	42.00	2883 11.113
	1/2 - 13	9.00	7.00	10.80	110.00	25.00	49.00	2883 12.700
NEW	9/16 - 12	11.00	9.00	12.20	110.00	28.00	53.00	2883 14.288
	5/8 - 11	12.00	9.00	13.50	110.00	30.00	53.00	2883 15.875
	3/4 - 10	14.00	11.00	16.50	125.00	33.00	62.00	2883 19.050
	7/8 - 9	18.00	14.50	19.50	140.00	35.00	62.00	2883 22.225
	1 - 8	18.00	14.50	22.25	160.00	38.00	73.00	2883 25.400



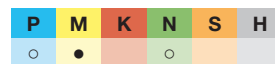


## Taps for UNC threads

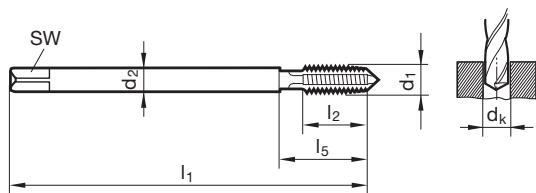
Article no. **2873**



Cutting data page 147



$P \leq 1000 \text{ N/mm}^2$



Standard

~DIN 376

Article no.

**2873**

	d1	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	
	1/2 - 13	9.00	7.00	10.80	110.00	25.00	49.00	2873 12.700
	5/8 - 11	12.00	9.00	13.50	110.00	30.00	53.00	2873 15.875
	3/4 - 10	14.00	11.00	16.50	125.00	33.00	62.00	2873 19.050
NEW	7/8 - 9	18.00	14.50	19.50	140.00	35.00	62.00	2873 22.225
	1 - 8	18.00	14.50	22.25	160.00	38.00	73.00	2873 25.400

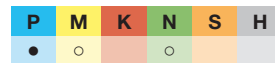
Taps

## Taps for UNF threads

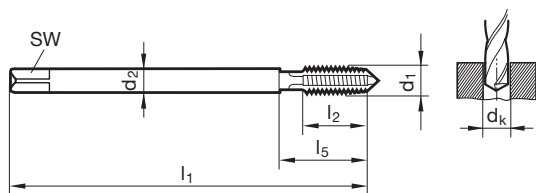
Article no. **2885**



Cutting data page 143



$P \leq 1000 \text{ N/mm}^2$



Standard

~DIN 374

Article no.

**2885**

	d1	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	
	4 - 48	2.20	1.80	2.40	56.00	10.00	18.00	2885 2.845
	6 - 40	2.50	2.10	2.95	56.00	11.00	20.00	2885 3.505
	10 - 32	3.50	2.70	4.10	70.00	14.00	25.00	2885 4.826
	12 - 28	4.00	3.00	4.60	80.00	16.00	30.00	2885 5.486
	1/4 - 28	4.50	3.40	5.50	80.00	16.00	30.00	2885 6.350
NEW	5/16 - 24	6.00	4.90	6.90	90.00	17.00	35.00	2885 7.938
	3/8 - 24	7.00	5.50	8.50	90.00	18.00	35.00	2885 9.525
NEW	7/16 - 20	8.00	6.20	9.90	100.00	22.00	42.00	2885 11.113
NEW	1/2 - 20	9.00	7.00	11.50	100.00	20.00	40.00	2885 12.700
	5/8 - 18	12.00	9.00	14.50	100.00	22.00	44.00	2885 15.875
	7/8 - 14	18.00	14.50	20.40	125.00	25.00	44.00	2885 22.225
	1 - 12	18.00	14.50	23.25	140.00	28.00	50.00	2885 25.400

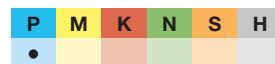


Taps for BSP threads

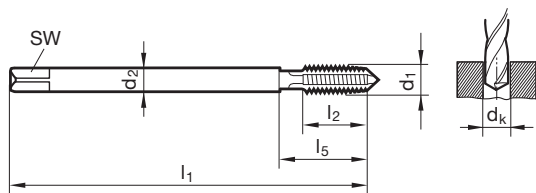
Article no. 4795



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard

DIN 5156

Article no.

4795

d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
G1/16	6.00	4.90	6.80	90.00	18.00	30.00
G1/8	7.00	5.50	8.80	90.00	18.00	35.00
G1/4	11.00	9.00	11.80	100.00	20.00	40.00
G3/8	12.00	9.00	15.25	100.00	22.00	44.00
G1/2	16.00	12.00	19.00	125.00	25.00	44.00
G3/4	20.00	16.00	24.50	140.00	28.00	53.00
G1	25.00	20.00	30.75	160.00	30.00	56.00

Order no.

4795 7.723

4795 9.728

4795 13.157

4795 16.662

4795 20.955

4795 26.441

4795 33.249

Taps

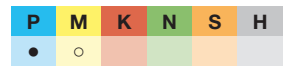


## Taps for ISO metric threads

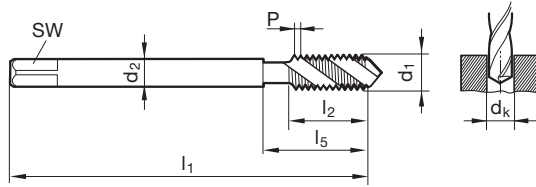
Article no. **2441**



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 376**  
Article no. **2441**

Taps

	d1	P	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	mm	
	M3	0.500	2.20	1.80	2.50	56.00	6.00	18.00	2441 3.000
	M4	0.700	2.80	2.10	3.30	63.00	7.50	21.00	2441 4.000
	M5	0.800	3.50	2.70	4.20	70.00	8.50	25.00	2441 5.000
	M6	1.000	4.50	3.40	5.00	80.00	11.00	30.00	2441 6.000
	M8	1.250	6.00	4.90	6.80	90.00	14.00	35.00	2441 8.000
	M10	1.500	7.00	5.50	8.50	100.00	16.00	39.00	2441 10.000
	M12	1.750	9.00	7.00	10.20	110.00	18.50	49.00	2441 12.000
	M14	2.000	11.00	9.00	12.00	110.00	20.00	53.00	2441 14.000
	M16	2.000	12.00	9.00	14.00	110.00	20.00	54.00	2441 16.000
NEW	M18	2.500	14.00	11.00	15.50	125.00	25.00	62.00	2441 18.000
	M20	2.500	16.00	12.00	17.50	140.00	25.00	62.00	2441 20.000
	M22	2.500	18.00	14.50	19.50	140.00	27.00	62.00	2441 22.000
	M24	3.000	18.00	14.50	21.00	160.00	30.00	73.00	2441 24.000
NEW	M27	3.000	20.00	16.00	24.00	160.00	30.00	73.00	2441 27.000
NEW	M30	3.500	22.00	18.00	26.50	180.00	35.00	85.00	2441 30.000
NEW	M36	4.000	28.00	22.00	32.00	200.00	40.00	102.00	2441 36.000

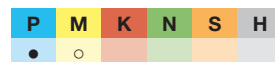


Taps for ISO metric threads

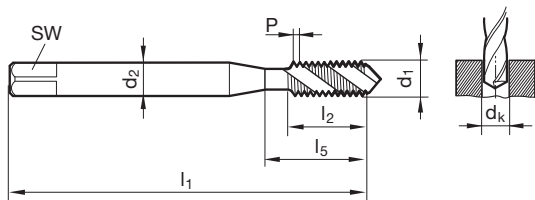
Article no. **2994**



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 371**  
Article no. **2994**

	d1	d2	SW	dk	l1	l2	l5	Order no.
NEW	M2	2.80	2.10	1.60	45.00	4.50	13.50	2994 2.000
	M3	3.50	2.70	2.50	56.00	6.00	18.00	2994 3.000
	M4	4.50	3.40	3.30	63.00	7.50	21.00	2994 4.000
	M5	6.00	4.90	4.20	70.00	8.50	25.00	2994 5.000
	M6	6.00	4.90	5.00	80.00	11.00	30.00	2994 6.000
	M8	8.00	6.20	6.80	90.00	14.00	35.00	2994 8.000
	M10	10.00	8.00	8.50	100.00	16.00	39.00	2994 10.000

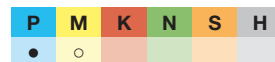
Taps

Taps for ISO metric threads

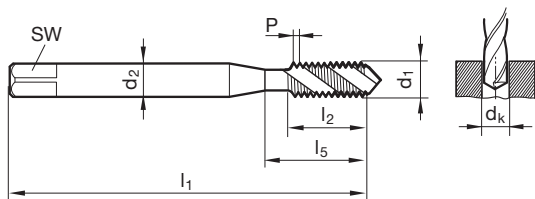
Article no. **2995**



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 371**  
Article no. **2995**

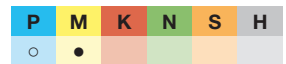
	d1	d2	SW	dk	l1	l2	l5	Order no.
NEW	M2	2.80	2.10	1.60	45.00	4.50	13.50	2995 2.000
	M3	3.50	2.70	2.50	56.00	6.00	18.00	2995 3.000
	M4	4.50	3.40	3.30	63.00	7.50	21.00	2995 4.000
	M5	6.00	4.90	4.20	70.00	8.50	25.00	2995 5.000
	M6	6.00	4.90	5.00	80.00	11.00	30.00	2995 6.000
	M8	8.00	6.20	6.80	90.00	14.00	35.00	2995 8.000
	M10	10.00	8.00	8.50	100.00	16.00	39.00	2995 10.000

## Taps for ISO metric threads

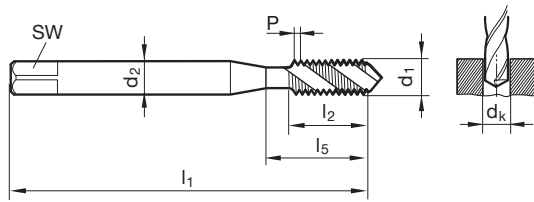
Article no. **2896**



Cutting data page 147



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 371**  
Article no. **2896**

	d1	P	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	mm	
NEW	M2	0.400	2.80	2.10	1.60	45.00	4.50	13.50	2896 2.000
NEW	M2,5	0.450	2.80	2.10	2.05	50.00	5.00	14.50	2896 2.500
	M3	0.500	3.50	2.70	2.50	56.00	6.00	18.00	2896 3.000
NEW	M3,5	0.600	4.00	3.00	2.90	56.00	7.00	20.00	2896 3.500
	M4	0.700	4.50	3.40	3.30	63.00	7.50	21.00	2896 4.000
	M5	0.800	6.00	4.90	4.20	70.00	8.50	25.00	2896 5.000
	M6	1.000	6.00	4.90	5.00	80.00	11.00	30.00	2896 6.000
	M8	1.250	8.00	6.20	6.80	90.00	14.00	35.00	2896 8.000
	M10	1.500	10.00	8.00	8.50	100.00	16.00	39.00	2896 10.000

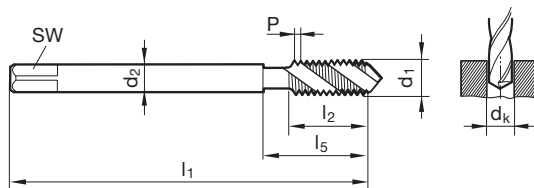
Taps

## Taps for ISO metric threads

Article no. **2863**



Cutting data page 147



Standard **DIN 376**  
Article no. **2863**

	d1	d2	SW	dk	l1	l2	l5	Order no.
		mm	mm	mm	mm	mm	mm	
	M12	9.00	7.00	10.20	110.00	18.50	49.00	2863 12.000
	M14	11.00	9.00	12.00	110.00	20.00	53.00	2863 14.000
	M16	12.00	9.00	14.00	110.00	20.00	54.00	2863 16.000
	M18	14.00	11.00	15.50	125.00	25.00	62.00	2863 18.000
	M20	16.00	12.00	17.50	140.00	25.00	62.00	2863 20.000
	M22	18.00	14.50	19.50	140.00	27.00	62.00	2863 22.000
	M24	18.00	14.50	21.00	160.00	30.00	73.00	2863 24.000
NEW	M30	22.00	18.00	26.50	180.00	35.00	85.00	2863 30.000

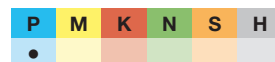
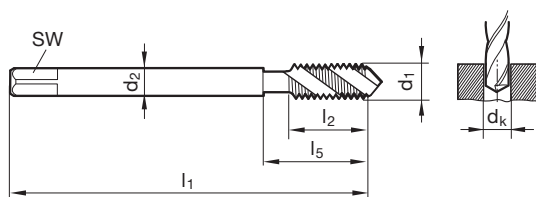


## Taps for ISO metric fine threads

Article no. 852



Cutting data page 142

P ≤ 800 N/mm<sup>2</sup>

								Standard
								DIN 374
								Article no.
								852
								Order no.
	d1	d2	SW	dk	l1	l2	l5	
		mm	mm	mm	mm	mm	mm	
	M3 x 0,35	2.20	1.80	2.65	56.00	4.00	18.00	852 3.002
	M3,5 x 0,35	2.50	2.10	3.15	56.00	4.00	20.00	852 3.502
	M4 x 0,5	2.80	2.10	3.50	63.00	5.00	21.00	852 4.003
	M5 x 0,5	3.50	2.70	4.50	70.00	5.00	25.00	852 5.003
	M6 x 0,5	4.50	3.40	5.50	80.00	5.00	30.00	852 6.003
	M6 x 0,75	4.50	3.40	5.20	80.00	8.00	30.00	852 6.004
	M8 x 0,5	6.00	4.90	7.50	80.00	8.00	30.00	852 8.003
	M8 x 0,75	6.00	4.90	7.20	80.00	8.00	30.00	852 8.004
	M8 x 1	6.00	4.90	7.00	90.00	11.00	35.00	852 8.005
	M10 x 0,75	7.00	5.50	9.20	90.00	11.00	35.00	852 10.004
	M10 x 1	7.00	5.50	9.00	90.00	11.00	35.00	852 10.005
	M10 x 1,25	7.00	5.50	8.80	100.00	14.00	39.00	852 10.006
	M12 x 1	9.00	7.00	11.00	100.00	11.00	40.00	852 12.005
	M12 x 1,25	9.00	7.00	10.80	100.00	15.00	40.00	852 12.006
	M12 x 1,5	9.00	7.00	10.50	100.00	15.00	40.00	852 12.007
	M14 x 1	11.00	9.00	13.00	100.00	11.00	40.00	852 14.005
	M14 x 1,25	11.00	9.00	12.80	100.00	15.00	40.00	852 14.006
	M14 x 1,5	11.00	9.00	12.50	100.00	15.00	40.00	852 14.007
	M16 x 1	12.00	9.00	15.00	100.00	11.00	44.00	852 16.005
	M16 x 1,5	12.00	9.00	14.50	100.00	15.00	44.00	852 16.007
	M18 x 1	14.00	11.00	17.00	110.00	12.00	44.00	852 18.005
	M18 x 1,5	14.00	11.00	16.50	110.00	16.00	44.00	852 18.007
	M20 x 1	16.00	12.00	19.00	125.00	12.00	44.00	852 20.005
	M20 x 1,5	16.00	12.00	18.50	125.00	16.00	44.00	852 20.007
	M22 x 1,5	18.00	14.50	20.50	125.00	16.00	44.00	852 22.007
	M24 x 1,5	18.00	14.50	22.50	140.00	16.00	48.00	852 24.007
	M24 x 2	18.00	14.50	22.00	140.00	22.00	48.00	852 24.008
NEW	M30 x 1,5	22.00	18.00	28.50	150.00	20.00	53.00	852 30.007
NEW	M30 x 2	22.00	18.00	28.00	150.00	20.00	53.00	852 30.008

Taps

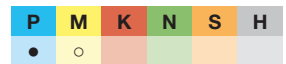


## Taps for ISO metric fine threads

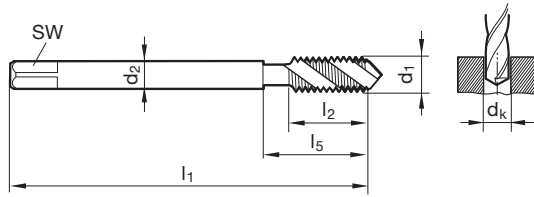
Article no. **2853**



Cutting data page 143-144



P ≤ 1000 N/mm<sup>2</sup>



Standard **DIN 374**  
Article no. **2853**

Taps

	d1	d2	SW	dk	l1	l2	l5	Order no.
	mm		mm	mm	mm	mm	mm	
	M4 x 0,5	2.80	2.10	3.50	63.00	5.00	21.00	2853 4.003
	M5 x 0,5	3.50	2.70	4.50	70.00	5.00	25.00	2853 5.003
	M6 x 0,75	4.50	3.40	5.20	80.00	8.00	30.00	2853 6.004
	M8 x 1	6.00	4.90	7.00	90.00	11.00	35.00	2853 8.005
	M10 x 1	7.00	5.50	9.00	90.00	11.00	35.00	2853 10.005
	M10 x 1,25	7.00	5.50	8.80	100.00	14.00	39.00	2853 10.006
	M12 x 1	9.00	7.00	11.00	100.00	11.00	40.00	2853 12.005
	M12 x 1,25	9.00	7.00	10.80	100.00	15.00	40.00	2853 12.006
	M12 x 1,5	9.00	7.00	10.50	100.00	15.00	40.00	2853 12.007
	M14 x 1	11.00	9.00	13.00	100.00	11.00	40.00	2853 14.005
	M14 x 1,25	11.00	9.00	12.80	100.00	15.00	40.00	2853 14.006
	M14 x 1,5	11.00	9.00	12.50	100.00	15.00	40.00	2853 14.007
	M16 x 1	12.00	9.00	15.00	100.00	11.00	44.00	2853 16.005
	M16 x 1,5	12.00	9.00	14.50	100.00	15.00	44.00	2853 16.007
	M18 x 1	14.00	11.00	17.00	110.00	12.00	44.00	2853 18.005
	M18 x 1,5	14.00	11.00	16.50	110.00	16.00	44.00	2853 18.007
	M20 x 1,5	16.00	12.00	18.50	125.00	16.00	44.00	2853 20.007
	M22 x 1,5	18.00	14.50	20.50	125.00	16.00	44.00	2853 22.007
NEW	M24 x 1,5	18.00	14.50	22.50	140.00	16.00	48.00	2853 24.007
	M24 x 2	18.00	14.50	22.00	140.00	22.00	48.00	2853 24.008
	M26 x 1,5	18.00	14.50	24.50	140.00	20.00	50.00	2853 26.007
	M27 x 1,5	20.00	16.00	25.50	140.00	20.00	53.00	2853 27.007
	M27 x 2	20.00	16.00	25.00	140.00	20.00	53.00	2853 27.008
	M28 x 1,5	20.00	16.00	26.50	140.00	20.00	53.00	2853 28.007
	M30 x 1,5	22.00	18.00	28.50	150.00	20.00	53.00	2853 30.007
	M30 x 2	22.00	18.00	28.00	150.00	20.00	53.00	2853 30.008

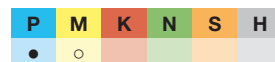
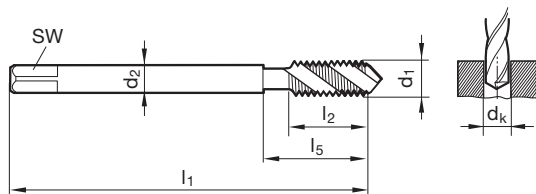


## Taps for ISO metric fine threads

Article no. 4779



Cutting data page 143-144

P ≤ 1000 N/mm<sup>2</sup>

Standard

DIN 374

Article no.

4779

d1	d2	SW	dk	l1	l2	l5	Order no.
M5 x 0,5	3.50	2.70	4.50	70.00	5.00	25.00	4779 5.003
M6 x 0,75	4.50	3.40	5.20	80.00	8.00	30.00	4779 6.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	35.00	4779 8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	35.00	4779 10.005
M10 x 1,25	7.00	5.50	8.80	100.00	14.00	39.00	4779 10.006
M12 x 1	9.00	7.00	11.00	100.00	11.00	40.00	4779 12.005
M12 x 1,25	9.00	7.00	10.80	100.00	15.00	40.00	4779 12.006
M12 x 1,5	9.00	7.00	10.50	100.00	15.00	40.00	4779 12.007
M14 x 1	11.00	9.00	13.00	100.00	11.00	40.00	4779 14.005
M14 x 1,25	11.00	9.00	12.80	100.00	15.00	40.00	4779 14.006
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	40.00	4779 14.007
M16 x 1	12.00	9.00	15.00	100.00	11.00	44.00	4779 16.005
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	44.00	4779 16.007
M18 x 1	14.00	11.00	17.00	110.00	12.00	44.00	4779 18.005
M18 x 1,5	14.00	11.00	16.50	110.00	16.00	44.00	4779 18.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	44.00	4779 20.007
M22 x 1,5	18.00	14.50	20.50	125.00	16.00	44.00	4779 22.007
M24 x 1,5	18.00	14.50	22.50	140.00	16.00	48.00	4779 24.007
M24 x 2	18.00	14.50	22.00	140.00	22.00	48.00	4779 24.008
M26 x 1,5	18.00	14.50	24.50	140.00	20.00	50.00	4779 26.007
M27 x 1,5	20.00	16.00	25.50	140.00	20.00	53.00	4779 27.007
M27 x 2	20.00	16.00	25.00	140.00	20.00	53.00	4779 27.008
M28 x 1,5	20.00	16.00	26.50	140.00	20.00	53.00	4779 28.007
M30 x 1,5	22.00	18.00	28.50	150.00	20.00	53.00	4779 30.007
M30 x 2	22.00	18.00	28.00	150.00	20.00	53.00	4779 30.008

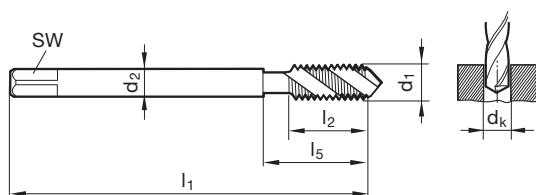
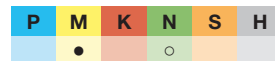
Taps

## Taps for ISO metric fine threads

Article no. 4798



Cutting data page 147



Standard

DIN 374

Article no.

4798

d1	d2	SW	dk	l1	l2	l5	Order no.
M3 x 0,35	2.20	1.80	2.65	56.00	4.00	18.00	4798 3.002
M4 x 0,5	2.80	2.10	3.50	63.00	5.00	21.00	4798 4.003
M5 x 0,5	3.50	2.70	4.50	70.00	5.00	25.00	4798 5.003
M6 x 0,5	4.50	3.40	5.50	80.00	5.00	30.00	4798 6.003
M6 x 0,75	4.50	3.40	5.20	80.00	8.00	30.00	4798 6.004
M8 x 0,5	6.00	4.90	7.50	80.00	8.00	30.00	4798 8.003
M8 x 0,75	6.00	4.90	7.20	80.00	8.00	30.00	4798 8.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	35.00	4798 8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	35.00	4798 10.005
M12 x 1	9.00	7.00	11.00	100.00	11.00	40.00	4798 12.005
M12 x 1,5	9.00	7.00	10.50	100.00	15.00	40.00	4798 12.007
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	40.00	4798 14.007
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	44.00	4798 16.007
M18 x 1,5	14.00	11.00	16.50	110.00	16.00	44.00	4798 18.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	44.00	4798 20.007
M22 x 1,5	18.00	14.50	20.50	125.00	16.00	44.00	4798 22.007
M24 x 1,5	18.00	14.50	22.50	140.00	16.00	48.00	4798 24.007

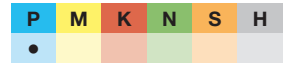


## Taps for ISO metric fine threads

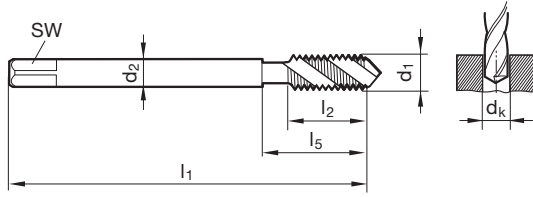
Article no. **4796**



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



Standard **DIN 374**  
Article no. **4796**

d1	d2	SW	dk	l1	l2	l5	Order no.
mm		mm	mm	mm	mm	mm	
M8 x 0,75	6.00	4.90	7.20	80.00	8.00	30.00	4796 8.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	35.00	4796 8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	35.00	4796 10.005
M12 x 1	9.00	7.00	11.00	100.00	11.00	40.00	4796 12.005
M12 x 1,5	9.00	7.00	10.50	100.00	15.00	40.00	4796 12.007
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	40.00	4796 14.007
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	44.00	4796 16.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	44.00	4796 20.007
M22 x 1,5	18.00	14.50	20.50	125.00	16.00	44.00	4796 22.007
M24 x 1,5	18.00	14.50	22.50	140.00	16.00	48.00	4796 24.007

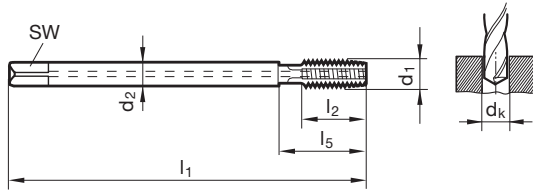
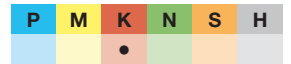
Taps

## Taps with coolant ducts for ISO metric fine threads

Article no. **1904**



Cutting data page 145



Standard **DIN 374**  
Article no. **1904**

d1	d2	SW	dk	l1	l2	l5	Order no.
mm		mm	mm	mm	mm	mm	
M8 x 1	6.00	4.90	7.00	90.00	17.00	35.00	1904 8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	35.00	1904 10.005
M12 x 1	9.00	7.00	11.00	100.00	20.00	40.00	1904 12.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	40.00	1904 12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	40.00	1904 14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	44.00	1904 16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	44.00	1904 18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	44.00	1904 20.007
NEW M22 x 1,5	18.00	14.50	20.50	125.00	25.00	44.00	1904 22.007
NEW M24 x 1,5	18.00	14.50	22.50	140.00	28.00	48.00	1904 24.007

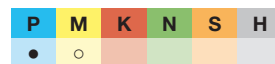


Taps for UNC threads

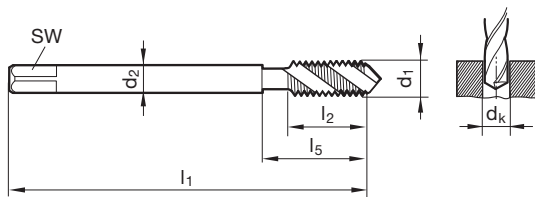
Article no. 2857



Cutting data page 143



P ≤ 1000 N/mm<sup>2</sup>



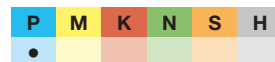
								Standard	~DIN 376
								Article no.	2857
								Order no.	
d1	d2	SW	dk	l1	l2	l5			
mm	mm	mm	mm	mm	mm	mm			
7/16 - 14	8.00	6.20	9.40	100.00	18.00	42.00	2857 11.113		
1/2 - 13	9.00	7.00	10.80	110.00	20.00	49.00	2857 12.700		
9/16 - 12	11.00	9.00	12.20	110.00	21.00	53.00	2857 14.288		
5/8 - 11	12.00	9.00	13.50	110.00	24.00	53.00	2857 15.875		
3/4 - 10	14.00	11.00	16.50	125.00	25.00	62.00	2857 19.050		
7/8 - 9	18.00	14.50	19.50	140.00	28.00	62.00	2857 22.225		
NEW 1 - 8	18.00	14.50	22.25	160.00	32.00	73.00	2857 25.400		

Taps for BSP threads

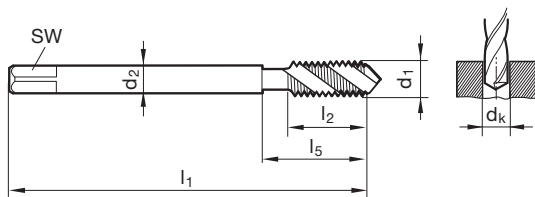
Article no. 4797



Cutting data page 144



P ≤ 1200 N/mm<sup>2</sup>



								Standard	DIN 5156
								Article no.	4797
								Order no.	
d1	P	d2	SW	dk	l1	l2	l5		
mm	G/inch	mm	mm	mm	mm	mm	mm		
G1/16	28	6.00	4.90	6.80	90.00	11.00	30.00	4797 7.723	
G1/8	28	7.00	5.50	8.80	90.00	11.00	35.00	4797 9.728	
G1/4	19	11.00	9.00	11.80	100.00	14.00	40.00	4797 13.157	
G3/8	19	12.00	9.00	15.25	100.00	14.00	44.00	4797 16.662	
G1/2	14	16.00	12.00	19.00	125.00	18.00	44.00	4797 20.955	
G3/4	14	20.00	16.00	24.50	140.00	20.00	53.00	4797 26.441	
G1	11	25.00	20.00	30.75	160.00	24.00	56.00	4797 33.249	

Taps



## Taps for BSP threads

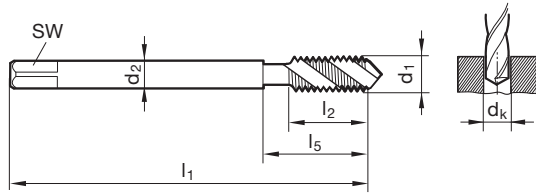
Article no. **4799**



Cutting data page 147



P	M	K	N	S	H
	•		○		



Standard	<b>DIN 5156</b>
Article no.	<b>4799</b>

Taps

d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
G1/16	28	6.00	4.90	6.80	90.00	11.00	30.00	4799 7.723
G1/8	28	7.00	5.50	8.80	90.00	11.00	35.00	4799 9.728
G1/4	19	11.00	9.00	11.80	100.00	14.00	40.00	4799 13.157
G3/8	19	12.00	9.00	15.25	100.00	14.00	44.00	4799 16.662
G1/2	14	16.00	12.00	19.00	125.00	18.00	44.00	4799 20.955
G3/4	14	20.00	16.00	24.50	140.00	20.00	53.00	4799 26.441
G1	11	25.00	20.00	30.75	160.00	24.00	56.00	4799 33.249
G1 1/4	11	32.00	24.00	39.50	170.00	25.00	57.00	4799 41.910
G1 1/2	11	36.00	29.00	45.25	190.00	27.00	60.00	4799 47.803

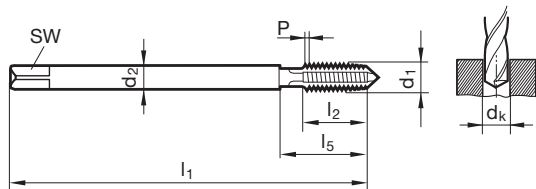
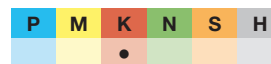


Taps for ISO metric threads

Article no. 1919



Cutting data page 145



									Standard
									DIN 376
									Article no.
									1919
									Order no.
	d1	P	d2	SW	dk	l1	l2	l5	
		mm	mm	mm	mm	mm	mm	mm	
	M3	0.500	2.20	1.80	2.50	56.00	10.00	18.00	1919 3.000
	M4	0.700	2.80	2.10	3.30	63.00	12.00	21.00	1919 4.000
	M5	0.800	3.50	2.70	4.20	70.00	14.00	25.00	1919 5.000
	M6	1.000	4.50	3.40	5.00	80.00	16.00	30.00	1919 6.000
	M8	1.250	6.00	4.90	6.80	90.00	17.00	35.00	1919 8.000
	M10	1.500	7.00	5.50	8.50	100.00	20.00	39.00	1919 10.000
	M12	1.750	9.00	7.00	10.20	110.00	24.00	49.00	1919 12.000
	M14	2.000	11.00	9.00	12.00	110.00	26.00	53.00	1919 14.000
	M16	2.000	12.00	9.00	14.00	110.00	26.00	54.00	1919 16.000
	M18	2.500	14.00	11.00	15.50	125.00	30.00	62.00	1919 18.000
	M20	2.500	16.00	12.00	17.50	140.00	32.00	62.00	1919 20.000
NEW	M22	2.500	18.00	14.50	19.50	140.00	32.00	62.00	1919 22.000
NEW	M24	3.000	18.00	14.50	21.00	160.00	36.00	73.00	1919 24.000
NEW	M30	3.500	22.00	18.00	26.50	180.00	40.00	85.00	1919 30.000

Taps

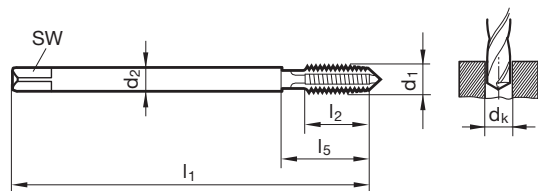


## Taps for ISO metric fine threads

Article no. **169**



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Standard **DIN 374**  
Article no. **169**

Taps

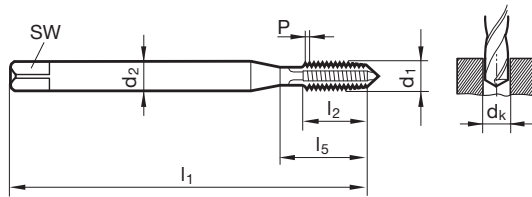
	d1	P	d2	SW	dk	l1	l2	l5	Order no.
	mm	mm	mm	mm	mm	mm	mm	mm	
	M3 x 0,35	0.350	2.20	1.80	2.65	56.00	7.00	18.00	169 3.002
	M4 x 0,5	0.500	2.80	2.10	3.50	63.00	8.00	21.00	169 4.003
	M5 x 0,5	0.500	3.50	2.70	4.50	70.00	10.00	25.00	169 5.003
	M6 x 0,75	0.750	4.50	3.40	5.20	80.00	13.00	30.00	169 6.004
	M8 x 0,75	0.750	6.00	4.90	7.20	80.00	14.00	30.00	169 8.004
	M8 x 1	1.000	6.00	4.90	7.00	90.00	17.00	35.00	169 8.005
	M10 x 1	1.000	7.00	5.50	9.00	90.00	16.00	35.00	169 10.005
NEW	M12 x 1	1.000	9.00	7.00	11.00	100.00	20.00	40.00	169 12.005
	M12 x 1,5	1.500	9.00	7.00	10.50	100.00	20.00	40.00	169 12.007
	M14 x 1,5	1.500	11.00	9.00	12.50	100.00	20.00	40.00	169 14.007
	M16 x 1,5	1.500	12.00	9.00	14.50	100.00	22.00	44.00	169 16.007
	M18 x 1,5	1.500	14.00	11.00	16.50	110.00	25.00	44.00	169 18.007
	M20 x 1,5	1.500	16.00	12.00	18.50	125.00	25.00	44.00	169 20.007
	M22 x 1,5	1.500	18.00	14.50	20.50	125.00	25.00	44.00	169 22.007
	M24 x 1,5	1.500	18.00	14.50	22.50	140.00	28.00	48.00	169 24.007
NEW	M27 x 1,5	1.500	20.00	16.00	25.50	140.00	28.00	53.00	169 27.007
NEW	M30 x 1,5	1.500	22.00	18.00	28.50	150.00	28.00	53.00	169 30.007

## Taps for UNC threads

Article no. 4857



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Standard

~DIN 371

Article no.

4857

d1	d2	SW	dk	l1	l2	l5	Order no.
mm	mm	mm	mm	mm	mm	mm	
2 - 56	2.80	2.10	1.85	45.00	9.00	14.50	4857 2.184
3 - 48	2.80	2.10	2.10	50.00	9.00	14.50	4857 2.515
4 - 40	3.50	2.70	2.35	56.00	11.00	18.00	4857 2.845
5 - 40	3.50	2.70	2.65	56.00	11.00	18.00	4857 3.175
6 - 32	4.00	3.00	2.85	56.00	12.00	20.00	4857 3.505
8 - 32	4.50	3.40	3.50	63.00	12.00	21.00	4857 4.166
10 - 24	6.00	4.90	3.90	70.00	14.00	25.00	4857 4.826
12 - 24	6.00	4.90	4.50	80.00	16.00	30.00	4857 5.486
1/4 - 20	7.00	5.50	5.10	80.00	16.00	30.00	4857 6.350
5/16 - 18	8.00	6.20	6.60	90.00	18.00	35.00	4857 7.938
3/8 - 16	10.00	8.00	8.00	100.00	20.00	39.00	4857 9.525
7/16 - 14	8.00	6.20	9.40	100.00	22.00	42.00	4857 11.113
1/2 - 13	9.00	7.00	10.80	110.00	25.00	49.00	4857 12.700
9/16 - 12	11.00	9.00	12.20	110.00	28.00	53.00	4857 14.288
5/8 - 11	12.00	9.00	13.50	110.00	30.00	53.00	4857 15.875
3/4 - 10	14.00	11.00	16.50	125.00	33.00	62.00	4857 19.050
7/8 - 9	18.00	14.50	19.50	140.00	35.00	62.00	4857 22.225
1 - 8	18.00	14.50	22.25	160.00	38.00	73.00	4857 25.400

Taps



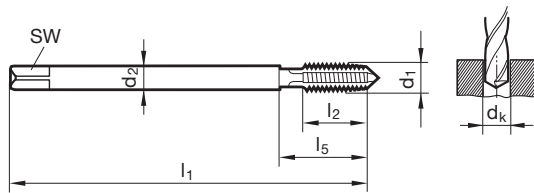


## Taps for UNF threads

Article no. **4858**



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Standard **~DIN 374**  
Article no. **4858**

Taps

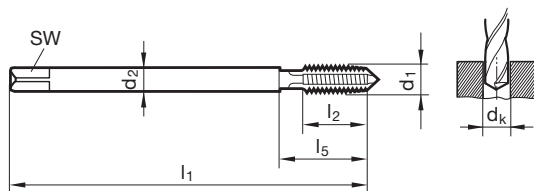
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
1/4 - 28	4.50	3.40	5.50	80.00	16.00	30.00	4858 6.350
5/16 - 24	6.00	4.90	6.90	90.00	17.00	35.00	4858 7.938
3/8 - 24	7.00	5.50	8.50	90.00	18.00	35.00	4858 9.525
7/16 - 20	8.00	6.20	9.90	100.00	22.00	42.00	4858 11.113
1/2 - 20	9.00	7.00	11.50	100.00	20.00	40.00	4858 12.700
9/16 - 18	11.00	9.00	12.90	100.00	22.00	40.00	4858 14.288
3/4 - 16	14.00	11.00	17.50	110.00	25.00	44.00	4858 19.050
7/8 - 14	18.00	14.50	20.40	125.00	25.00	44.00	4858 22.225
1 - 12	18.00	14.50	23.25	140.00	28.00	50.00	4858 25.400

## Taps for BSP threads

Article no. **4859**



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Standard **DIN 5156**  
Article no. **4859**

d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Order no.
G1/8	28	7.00	5.50	8.80	90.00	18.00	35.00	4859 9.728
G1/4	19	11.00	9.00	11.80	100.00	20.00	40.00	4859 13.157
G3/8	19	12.00	9.00	15.25	100.00	22.00	44.00	4859 16.662
G1/2	14	16.00	12.00	19.00	125.00	25.00	44.00	4859 20.955
G3/4	14	20.00	16.00	24.50	140.00	28.00	53.00	4859 26.441
G1	11	25.00	20.00	30.75	160.00	30.00	56.00	4859 33.249
G1 1/4	11	32.00	24.00	39.50	170.00	30.00	57.00	4859 41.910
G1 1/2	11	36.00	29.00	45.25	190.00	32.00	60.00	4859 47.803
G2	11	45.00	35.00	57.00	220.00	40.00	95.00	4859 59.614



Fluteless taps for ISO metric threads

Article no. 4703

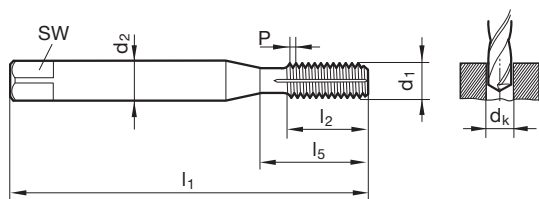


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	

N ≥ 7% Si



									Standard	~DIN 371
									Article no.	4703
									Order no.	
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm			
M2	0.400	2.80	2.10	1.85	45.00	8.00	13.50	~DIN 371		4703 2.000
M2,5	0.450	2.80	2.10	2.30	50.00	9.00	14.50	~DIN 371		4703 2.500
M3	0.500	3.50	2.70	2.80	56.00	10.00	18.00	~DIN 371		4703 3.000
M4	0.700	4.50	3.40	3.70	63.00	12.00	21.00	~DIN 371		4703 4.000
M5	0.800	6.00	4.90	4.65	70.00	14.00	25.00	~DIN 371		4703 5.000
M6	1.000	6.00	4.90	5.55	80.00	16.00	30.00	~DIN 371		4703 6.000
M8	1.250	8.00	6.20	7.40	90.00	17.00	35.00	~DIN 371		4703 8.000
M10	1.500	10.00	8.00	9.30	100.00	20.00	39.00	~DIN 371		4703 10.000
M12	1.750	9.00	7.00	11.20	110.00	24.00	49.00	~DIN 376		4703 12.000
M14	2.000	11.00	9.00	13.10	110.00	26.00	53.00	~DIN 376		4703 14.000
M16	2.000	12.00	9.00	15.10	110.00	26.00	54.00	~DIN 376		4703 16.000
M20	2.500	16.00	12.00	18.90	140.00	32.00	62.00	~DIN 376		4703 20.000

Fluteless taps

Fluteless taps with coolant ducts for ISO metric threads

Article no. 4705

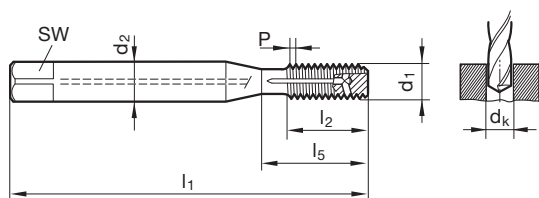


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	

N ≥ 7% Si



									Standard	~DIN 371
									Article no.	4705
									Order no.	
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm			
M5	0.800	6.00	4.90	4.65	70.00	8.50	25.00	~DIN 371		4705 5.000
M6	1.000	6.00	4.90	5.55	80.00	11.00	30.00	~DIN 371		4705 6.000
M8	1.250	8.00	6.20	7.40	90.00	14.00	35.00	~DIN 371		4705 8.000
M10	1.500	10.00	8.00	9.30	100.00	16.00	39.00	~DIN 371		4705 10.000
M12	1.750	9.00	7.00	11.20	110.00	18.50	49.00	~DIN 376		4705 12.000
M14	2.000	11.00	9.00	13.10	110.00	20.00	53.00	~DIN 376		4705 14.000
M16	2.000	12.00	9.00	15.10	110.00	20.00	54.00	~DIN 376		4705 16.000
M20	2.500	16.00	12.00	18.90	140.00	25.00	62.00	~DIN 376		4705 20.000



# High-performance fluteless taps Pionex

## Fluteless taps with coolant ducts for ISO metric threads

Article no. **4707**

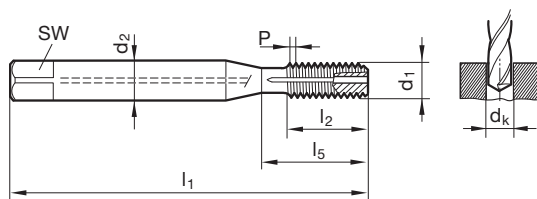


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	•

N ≥ 7% Si



Standard	~DIN 371
Article no.	<b>4707</b>

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Standard	Order no.
M5	0.800	6.00	4.90	4.65	70.00	8.50	25.00	~DIN 371	4707 5.000
M6	1.000	6.00	4.90	5.55	80.00	11.00	30.00	~DIN 371	4707 6.000
M8	1.250	8.00	6.20	7.40	90.00	14.00	35.00	~DIN 371	4707 8.000
M10	1.500	10.00	8.00	9.30	100.00	16.00	39.00	~DIN 371	4707 10.000
M12	1.750	9.00	7.00	11.20	110.00	18.50	49.00	~DIN 376	4707 12.000
M14	2.000	11.00	9.00	13.10	110.00	20.00	53.00	~DIN 376	4707 14.000
M16	2.000	12.00	9.00	15.10	110.00	20.00	54.00	~DIN 376	4707 16.000
M20	2.500	16.00	12.00	18.90	140.00	25.00	62.00	~DIN 376	4707 20.000

Fluteless taps

## Fluteless taps for ISO metric fine threads

Article no. **4490**

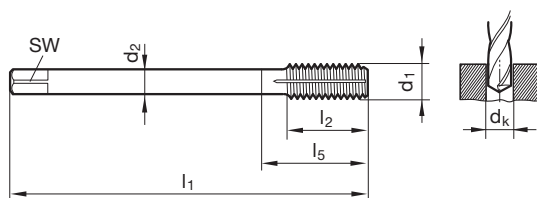


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	•

N ≥ 7% Si



Standard	~DIN 374
Article no.	<b>4490</b>

	d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm	Standard	Order no.
	M8 x 1	1.000	6.00	4.90	7.55	90.00	17.00	35.00	~DIN 374	4490 8.005
	M10 x 1	1.000	7.00	5.50	9.55	90.00	16.00	35.00	~DIN 374	4490 10.005
	M10 x 1,25	1.250	7.00	5.50	9.40	100.00	20.00	39.00	~DIN 374	4490 10.006
NEW	M12 x 1	1.000	9.00	7.00	11.55	100.00	20.00	40.00	~DIN 374	4490 12.005
	M12 x 1,25	1.250	9.00	7.00	11.40	100.00	20.00	40.00	~DIN 374	4490 12.006
	M12 x 1,5	1.500	9.00	7.00	11.30	100.00	20.00	40.00	~DIN 374	4490 12.007
	M14 x 1,25	1.250	11.00	9.00	13.40	100.00	20.00	40.00	~DIN 374	4490 14.006
	M14 x 1,5	1.500	11.00	9.00	13.30	100.00	20.00	40.00	~DIN 374	4490 14.007
	M16 x 1,5	1.500	12.00	9.00	15.30	100.00	22.00	44.00	~DIN 374	4490 16.007
NEW	M18 x 1,5	1.500	14.00	11.00	17.30	110.00	25.00	44.00	~DIN 374	4490 18.007
	M20 x 1,5	1.500	16.00	12.00	19.30	125.00	25.00	44.00	~DIN 374	4490 20.007
NEW	M24 x 1,5	1.500	18.00	14.50	23.30	140.00	28.00	48.00	~DIN 374	4490 24.007



Fluteless taps for ISO metric fine threads

Article no. 4704

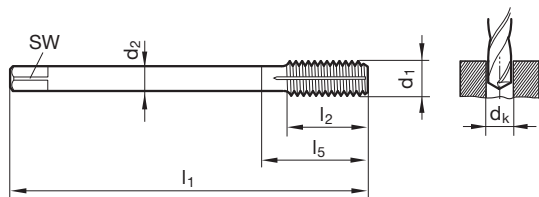


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	

N ≥ 7% Si



Standard	~DIN 374
Article no.	4704

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M8 x 1	1.000	6.00	4.90	7.55	90.00	17.00	35.00	4704 8.005
M10 x 1	1.000	7.00	5.50	9.55	90.00	16.00	35.00	4704 10.005
M10 x 1,25	1.250	7.00	5.50	9.40	100.00	20.00	39.00	4704 10.006
M12 x 1,25	1.250	9.00	7.00	11.40	100.00	20.00	40.00	4704 12.006
M12 x 1,5	1.500	9.00	7.00	11.30	100.00	20.00	40.00	4704 12.007
M14 x 1,25	1.250	11.00	9.00	13.40	100.00	20.00	40.00	4704 14.006
M14 x 1,5	1.500	11.00	9.00	13.30	100.00	20.00	40.00	4704 14.007
M16 x 1,5	1.500	12.00	9.00	15.30	100.00	22.00	44.00	4704 16.007
M20 x 1,5	1.500	16.00	12.00	19.30	125.00	25.00	44.00	4704 20.007

Fluteless taps

Fluteless taps with coolant ducts for ISO metric fine threads

Article no. 4706

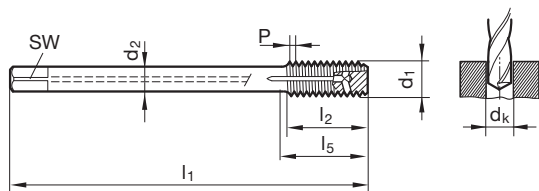


Cutting data page 141



P	M	K	N	S	H
•	•	•	•	•	

N ≥ 7% Si



Standard	~DIN 374
Article no.	4706

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M8 x 1	1.000	6.00	4.90	7.55	90.00	11.00	35.00	4706 8.005
M10 x 1	1.000	7.00	5.50	9.55	90.00	11.00	35.00	4706 10.005
M10 x 1,25	1.250	7.00	5.50	9.40	100.00	14.00	39.00	4706 10.006
M12 x 1,25	1.250	9.00	7.00	11.40	100.00	15.00	40.00	4706 12.006
M12 x 1,5	1.500	9.00	7.00	11.30	100.00	15.00	40.00	4706 12.007
M14 x 1,25	1.250	11.00	9.00	13.40	100.00	15.00	40.00	4706 14.006
M14 x 1,5	1.500	11.00	9.00	13.30	100.00	15.00	40.00	4706 14.007
M16 x 1,5	1.500	12.00	9.00	15.30	100.00	15.00	44.00	4706 16.007
M20 x 1,5	1.500	16.00	12.00	19.30	125.00	16.00	44.00	4706 20.007

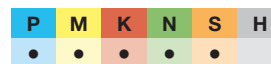


## Fluteless taps with coolant ducts for ISO metric fine threads

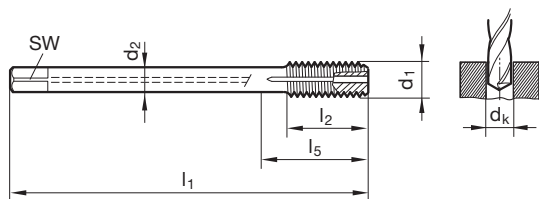
Article no. **4708**



Cutting data page 141



N ≥ 7% Si



Standard

~DIN 374

Article no.

**4708**

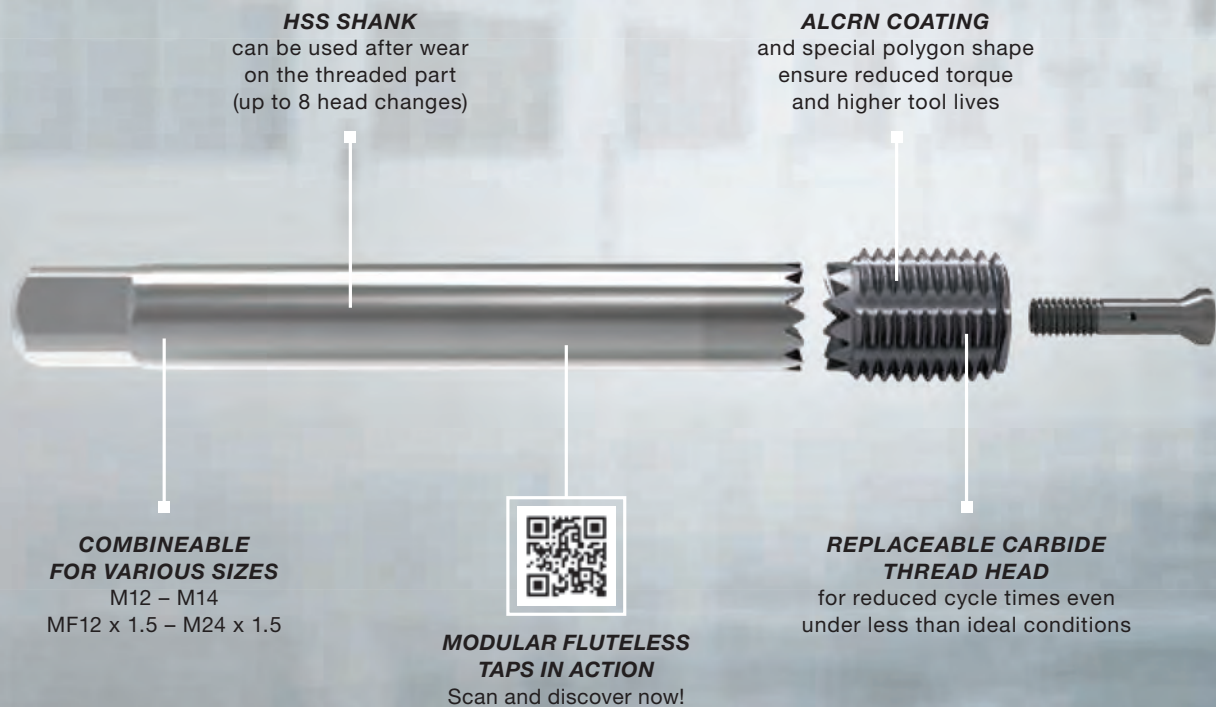
Fluteless taps

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M8 x 1	1.000	6.00	4.90	7.55	90.00	11.00	35.00	4708 8.005
M10 x 1	1.000	7.00	5.50	9.55	90.00	11.00	35.00	4708 10.005
M10 x 1,25	1.250	7.00	5.50	9.40	100.00	14.00	39.00	4708 10.006
M12 x 1,25	1.250	9.00	7.00	11.40	100.00	15.00	40.00	4708 12.006
M12 x 1,5	1.500	9.00	7.00	11.30	100.00	15.00	40.00	4708 12.007
M14 x 1,25	1.250	11.00	9.00	13.40	100.00	15.00	40.00	4708 14.006
M14 x 1,5	1.500	11.00	9.00	13.30	100.00	15.00	40.00	4708 14.007
M16 x 1,5	1.500	12.00	9.00	15.30	100.00	15.00	44.00	4708 16.007
M20 x 1,5	1.500	16.00	12.00	19.30	125.00	16.00	44.00	4708 20.007

# Modular fluteless taps

## Modular system for maximum flexibility and economy

economical machining | high flexibility | also suitable for suboptimal conditions



## High-performance thanks to innovative material combination

These fluteless taps combine wear resistance with toughness. The concept consists of a steel shank (HSS-E) and an exchangeable thread head made of carbide with an AlCrN coating. Both components are connected via a screw. Compared to a threading tool made of HSS-E, the carbide thread head both reduces cycle time and increases tool life – even under less than ideal conditions. And because the steel shank makes the tool cheaper than monolithic solid carbide tools, the customer benefits from a double cost advantage.



## Interchangeable heads

Article no. **4871**

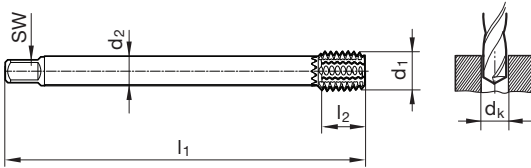


Cutting data page 148



P	M	K	N	S	H
●	○	●	●	○	○

incl. screw • same interface values can be combined with each other



Standard **~DIN 374/~DIN 376**

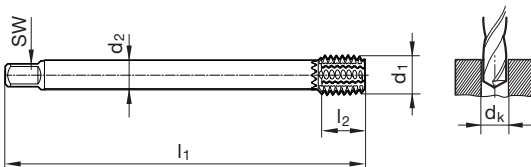
Article no. **4871**

Fluteless taps

d1	P	dk	l2	Size	Z	Standard	Order no.
mm	mm	mm	mm	Interface			
M12 x 1,75	1.750	11.20	12.00	1	7	~DIN 376	4871 12.000
M12 x 1,5	1.500	11.30	12.00	1	7	~DIN 374	4871 12.007
M14 x 2	2.000	13.10	14.00	2	7	~DIN 376	4871 14.000
M14 x 1,5	1.500	13.30	14.00	2	7	~DIN 374	4871 14.007
M16 x 2	2.000	15.10	14.00	3	8	~DIN 376	4871 16.000
M16 x 1,5	1.500	15.30	14.00	3	8	~DIN 374	4871 16.007
M18 x 2,5	2.500	16.90	18.00	4	8	~DIN 376	4871 18.000
M18 x 1,5	1.500	17.30	18.00	4	8	~DIN 374	4871 18.007
M20 x 2,5	2.500	18.90	18.00	5	8	~DIN 376	4871 20.000
M20 x 1,5	1.500	19.30	18.00	5	8	~DIN 374	4871 20.007
M22 x 2,5	2.500	20.90	18.00	6	8	~DIN 376	4871 22.000
M22 x 1,5	1.500	21.30	18.00	6	8	~DIN 374	4871 22.007
M24 x 3	3.000	22.70	21.00	6	8	~DIN 376	4871 24.000
M24 x 1,5	1.500	23.30	21.00	6	8	~DIN 374	4871 24.007

## Interchangeable shanks

Article no. **4873**



Standard **~DIN 374/~DIN 376**

Article no. **4873**

d2	SW	l1	Size	Standard	Order no.
mm	mm	mm	Interface		
9.00	7.00	110.00	1	~DIN 376	4873 12.000
9.00	7.00	100.00	1	~DIN 374	4873 12.007
11.00	9.00	110.00	2	~DIN 376	4873 14.000
11.00	9.00	100.00	2	~DIN 374	4873 14.007
12.00	9.00	110.00	3	~DIN 376	4873 16.000
12.00	9.00	100.00	3	~DIN 374	4873 16.007
14.00	11.00	125.00	4	~DIN 376	4873 18.000
14.00	11.00	110.00	4	~DIN 374	4873 18.007
16.00	12.00	140.00	5	~DIN 376	4873 20.000
16.00	12.00	125.00	5	~DIN 374	4873 20.007
18.00	14.50	140.00	6	~DIN 376	4873 22.000
18.00	14.50	125.00	6	~DIN 374	4873 22.007
18.00	14.50	160.00	6	~DIN 376	4873 24.000
18.00	14.50	140.00	6	~DIN 374	4873 24.007



# SC-Line micro thread milling cutters

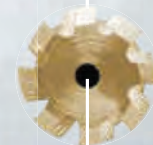


## Rapid thread milling with high-end performance

up to 50 % reduced cycle time | tool life extended by up to 100%

**OPTIMISED GEOMETRY**  
for the production of thread depths up to 4xD

**UP TO 8 CUTTING EDGES**  
ensure much faster machining



**INCREASED WEAR RESISTANCE**  
thanks to the combination of new carbide, Sirius coating and new tool geometry

**FROM M4 WITH INTERNAL COOLING**  
for safe chip removal

## Micro thread milling cutter for true-to-gauge results

With the micro-precision thread milling cutters from the SC-Line range, it is possible to manufacture true-to-gauge for longer, with a radius correction not being required until significantly later. In addition, the SC-Line thread milling cutter cuts significantly faster thanks to its high number of cutting edges – even in the micro-precision field. The result is top processing times in diameter ranges up to 4xD and in materials up to 1300 N/mm<sup>2</sup>. The tool's left-cutting geometry enables the tool life to be extended by up to 100%, especially in climb milling operations.



## Micro thread milling cutters for ISO metric threads

Article no. **4477**

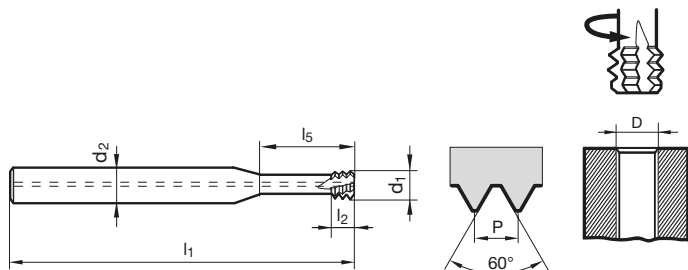


M2 - M3 with 2 cooling grooves • with internal cooling  $\geq$  M4 • rotation-direction left-hand

Cutting data page 149

P	M	K	N	S	H
•	•	•	•	•	○

H = 55 HRC



Standard Article no.	Company std.
	<b>4477</b>
	Order no.
	4477 2.000
	4477 2.500
	4477 3.000
	4477 4.000
	4477 5.000
	4477 6.000
	4477 8.000
	4477 10.000
	4477 12.000
	4477 16.000
	4477 20.000

D	P mm	d1 mm	d2 mm	l1 mm	l2 mm	l5 mm	Z
M2	0.400	1.55	3.00	39.00	1.20	8.00	4
M2,5	0.450	1.95	3.00	39.00	1.40	10.00	4
M3	0.500	2.40	3.00	39.00	1.50	12.50	4
M4	0.700	3.20	6.00	58.00	2.10	16.50	4
M5	0.800	4.00	6.00	58.00	2.40	20.50	4
M6	1.000	4.80	8.00	73.00	3.00	24.50	6
M8	1.250	6.20	8.00	73.00	3.80	32.50	6
M10	1.500	8.00	10.00	84.00	4.50	40.50	6
M12	1.750	9.60	12.00	100.00	5.30	48.50	6
M16	2.000	12.50	14.00	115.00	6.00	64.50	6
M20	2.500	15.80	16.00	130.00	7.50	80.50	6

Thread milling cutters

## Micro thread milling cutters for ISO metric threads

Article no. **4880**

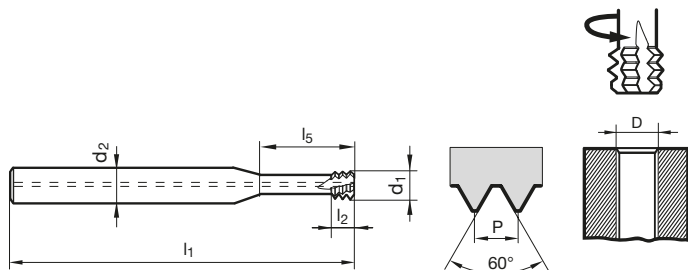


M1.6 - M3 with 2 cooling grooves • with internal cooling  $\geq$  M3.5 • rotation-direction left-hand

Cutting data page 149

P	M	K	N	S	H
•	•	•	•	•	○

H = 55 HRC



Standard Article no.	Company std.
	<b>4880</b>
	Order no.
	4880 1.853
	4880 1.854
	4880 2.184
	4880 2.515
	4880 2.845
	4880 3.175
	4880 3.176
	4880 3.505
	4880 4.165
	4880 4.166
	4880 4.825
	4880 4.826
	4880 5.485
	4880 6.349
	4880 6.350
	4880 7.937
	4880 7.938
	4880 9.525
	4880 11.112
	4880 11.113
	4880 12.700
	4880 12.701
	4880 15.874
	4880 15.875

D	P mm	d1 mm	d2 mm	l1 mm	l2 mm	l5 mm	Z
UNF No1-72	0.353	1.45	3.00	39.00	1.10	5.80	4
UNC No1+UNF No2-64	0.397	1.40	3.00	39.00	1.20	6.00	4
UNC No2+UNF No3-56	0.454	1.65	3.00	39.00	1.40	7.00	4
UNC No3+UNF No4-48	0.529	1.90	3.00	39.00	1.60	8.00	4
UNC No4-40	0.635	2.10	3.00	39.00	1.90	9.00	5
UNC No5+UNF No6-40	0.635	2.45	3.00	39.00	1.90	10.00	5
UNF No5-44	0.577	2.45	3.00	39.00	1.70	10.00	5
UNC No6-32	0.794	2.55	3.00	39.00	2.40	11.00	5
UNF No8-36	0.706	3.30	6.00	58.00	2.10	12.00	5
UNC No8-32	0.794	3.20	6.00	58.00	2.40	13.00	5
UNF No10-32	0.794	3.70	6.00	58.00	2.40	15.00	5
UNC No10+UNC No12-24	1.058	3.50	6.00	58.00	3.20	16.00	5
UNF No12-28	0.907	4.20	6.00	58.00	2.70	16.00	6
UNF 1/4-28	0.907	5.00	6.00	58.00	2.70	19.60	6
UNC 1/4-20	1.270	4.75	6.00	58.00	3.80	20.00	6
UNF 5/16+UNF3/8-24	1.058	6.60	8.00	73.00	3.20	24.00	6
UNC 5/16-18	1.411	6.00	6.00	58.00	4.20	23.00	6
UNC 3/8-16	1.587	6.70	8.00	73.00	4.80	25.00	6
UNF 7/16-20	1.270	8.00	8.00	73.00	3.80	34.60	6
UNC 7/16-14	1.814	7.70	8.00	73.00	5.40	25.00	6
UNF 1/2-20	1.270	9.95	10.00	84.00	3.80	31.00	6
UNC 1/2-13	1.954	9.95	10.00	84.00	5.90	31.00	6
UNF 5/8-18	1.411	12.00	12.00	90.00	4.20	35.00	6
UNC 5/8-11	2.309	12.00	12.00	90.00	6.90	35.00	6

## High-performance taps and fluteless taps Pionex



Machining group	Taps				Fluteless taps
	Blind holes		Through-holes		
	HSS-E	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM
	A	A	S	S	C
v <sub>c</sub> (m/min)					
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	18	23	20	26	27
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	18	23	20	26	27
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	18	23	20	26	27
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	18	23	20	26	27
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	18	23	20	26	27
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	15	20	17	22	27
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	13	16	14	18	27
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	18	23	20	26	22
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	15	20	17	22	22
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	13	16	14	18	22
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	11	14	12	15	22
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	11	14	12	15	16
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	11	14	12	15	16
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	11	14	12	15	11
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	11	14	12	15	11
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	6	8	7	9	8
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	4	5	4	5	7
M2.2.1 Duplex steel, high-strength stainless steels	3	4	3	4	
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	14	19	16	21	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	14	19	16	21	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	14	19	16	21	27
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	14	19	16	21	27
K1.3.1 Malleable cast iron, ferritic, 130 HB	14	19	16	21	27
K1.3.2 Malleable cast iron, pearlitic, 230 HB	14	19	16	21	27
K2.1.1 Vermicular graphite cast iron (GJV)	9	11	10	12	22
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	9	11	10	12	22
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	25	33	28	36	17
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	25	33	28	36	17
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	20	26	22	29	33
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	20	26	22	29	33
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	15	20	17	22	27
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %					
N3.1.2 Copper and copper alloys: CuZn, CuSnZn					
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte					
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics					
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.					
N4.1.3 Non-metallic materials: Graphite					
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	2	2	2	2	4
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	2	2	2	2	4
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	2	2	2	2	4
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	2	2	2	2	4
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	2	2	2	2	4
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	2	2	2	2	4
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	2	2	2	2	4
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC					
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC					
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC					
H2.1.1 Chilled cast iron, 400 HB					
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC					



## Taps ISO P ≤ 850 N/mm<sup>2</sup>



Cutting data

Machining group	Blind holes		Through-holes		Through-, blind holes
	HSS-E		HSS-E		HSS-E-PM
	○	Ⓢ	○	Ⓢ	○
v <sub>c</sub> (m/min)					
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	12	17	13	18	12
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	12	17	13	18	12
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	12	17	13	18	12
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	12	17	13	18	12
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	12	17	13	18	12
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB					
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB					
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB					
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB					
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB					
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB					
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB					
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB					
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives					
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB					
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB					
M2.1.1 Stainless steel, austenitic, quenched, 180 HB					
M2.2.1 Duplex steel, high-strength stainless steels					
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB					
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB					
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB					
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB					
K1.3.1 Malleable cast iron, ferritic, 130 HB					
K1.3.2 Malleable cast iron, pearlitic, 230 HB					
K2.1.1 Vermicular graphite cast iron (GJV)					
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)					
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB					
N1.1.2 Wrought aluminium alloys, hardened, 100 HB					
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB					
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB					
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB					
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %					
N3.1.2 Copper and copper alloys: CuZn, CuSnZn					
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte					
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics					
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.					
N4.1.3 Non-metallic materials: Graphite					
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB					
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB					
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB					
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB					
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB					
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>					
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>					
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC					
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC					
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC					
H2.1.1 Chilled cast iron, 400 HB					
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC					

Taps ISO P ≤ 1020 N/mm<sup>2</sup>, ISO M, ISO N

Machining group	Blind holes				Through-holes			
	HSS-E			HSS-E-PM	HSS-E		HSS-E-PM	VHM
	⊙	Ⓢ	ⓐ	Ⓢ	⊙	Ⓢ	Ⓢ	ⓐ
	v <sub>c</sub> (m/min)							
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	14	17	17	22	15	18	24	46
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	14	17	17	22	15	18	24	46
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	14	17	17	22	15	18	24	46
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	14	17	17	22	15	18	24	46
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	14	17	17	22	15	18	24	46
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	12	14	14	19	13	16	20	39
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	10	12	12	15	11	13	17	32
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	12	14	14	18	13	15	20	39
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	10	12	12	15	11	13	17	33
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	8	10	10	13	9	11	14	27
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB								
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB								
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB								
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	9	11	11	15	10	12	16	
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	9	11	11	15	10	12	16	
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	6	7	7	9	6	7	10	
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	3	4	4	5	4	5	6	
M2.2.1 Duplex steel, high-strength stainless steels								
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB								
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB								
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB								
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB								
K1.3.1 Malleable cast iron, ferritic, 130 HB								
K1.3.2 Malleable cast iron, pearlitic, 230 HB								
K2.1.1 Vermicular graphite cast iron (GJV)								
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)								
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	16		20		18			
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	16		20		18			
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB								
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB								
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB								
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %								
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	16				18			
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte								
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics								
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.								
N4.1.3 Non-metallic materials: Graphite								
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB								
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB								
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB								
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB								
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB								
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>								
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>								
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC								
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC								
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC								
H2.1.1 Chilled cast iron, 400 HB								
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC								



## Taps ISO P 900 up to 1200 N/mm<sup>2</sup>, ISO K, ISO N



Cutting data

Machining group	Blind holes					Through-holes			Through-, blind holes	
	HSS-E		HSS-E-PM			HSS-E		HSS-E-PM	HSS-E	HSS-E-PM
	●	●	●	●	●	●	●	●	●	●
v <sub>c</sub> (m/min)										
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB										
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB										
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB										
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB										
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB										
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB										
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB										
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB										
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	10	12	12	15	17	11	13	18	12	15
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	8	10	10	13	14	9	11	15	10	13
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	7	8	8	11	12	8	9	13	8	11
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	6	7	7	9	9	6	7	10	7	9
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	6	7	7	9	9	6	7	10	7	9
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives										
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB										
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB										
M2.1.1 Stainless steel, austenitic, quenched, 180 HB										
M2.2.1 Duplex steel, high-strength stainless steels										
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB									19	25
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB									19	25
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB									19	25
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB									19	25
K1.3.1 Malleable cast iron, ferritic, 130 HB									19	25
K1.3.2 Malleable cast iron, pearlitic, 230 HB									19	25
K2.1.1 Vermicular graphite cast iron (GJV)									9	12
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)									9	12
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB										
N1.1.2 Wrought aluminium alloys, hardened, 100 HB										
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB									16	20
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB									16	20
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB									12	15
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %										
N3.1.2 Copper and copper alloys: CuZn, CuSnZn										
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte										
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics										
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.										
N4.1.3 Non-metallic materials: Graphite										
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB										
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB										
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB										
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB										
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB										
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>										
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>										
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC										
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC										
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC										
H2.1.1 Chilled cast iron, 400 HB										
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC										



Taps ISO P 900 up to 1200 N/mm<sup>2</sup>, ISO K, ISO N

Machining group	Through-, blind holes			
	HSS-E		VHM	
	○	⦿	○	⦿
v <sub>c</sub> (m/min)				
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB				
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB				
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB				
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB				
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB				
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB				
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB				
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB				
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB				
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB				
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB				
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB				
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB				
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives				
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB				
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB				
M2.1.1 Stainless steel, austenitic, quenched, 180 HB				
M2.2.1 Duplex steel, high-strength stainless steels				
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	16	20	34	51
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	16	20	34	51
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	16	20	34	51
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	16	20	34	51
K1.3.1 Malleable cast iron, ferritic, 130 HB	16	20	34	51
K1.3.2 Malleable cast iron, pearlitic, 230 HB	16	20	34	51
K2.1.1 Vermicular graphite cast iron (GJV)		10	17	25
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)		10	17	25
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB				
N1.1.2 Wrought aluminium alloys, hardened, 100 HB				
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB				
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB				
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB				
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %				
N3.1.2 Copper and copper alloys: CuZn, CuSnZn				
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte				
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics				
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.				
N4.1.3 Non-metallic materials: Graphite				
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB				
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB				
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB				
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB				
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB				
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>				
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>				
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC				
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC				
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC				
H2.1.1 Chilled cast iron, 400 HB				
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC				





## Taps ISO N, ISO S



Cutting data

Machining group	Blind holes				Through-holes			
	HSS-E		VHM		HSS-E		VHM	
	○	⊙	○	⊙	○	⊙	○	⊙
$v_c$ (m/min)								
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB								
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB								
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB								
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB								
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB								
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB								
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB								
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB								
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB								
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB								
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB								
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB								
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB								
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives								
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB								
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB								
M2.1.1 Stainless steel, austenitic, quenched, 180 HB								
M2.2.1 Duplex steel, high-strength stainless steels								
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB								
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB								
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB								
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB								
K1.3.1 Malleable cast iron, ferritic, 130 HB								
K1.3.2 Malleable cast iron, pearlitic, 230 HB								
K2.1.1 Vermicular graphite cast iron (GJV)								
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)								
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	14	27			15	29		
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	14	27			15	29		
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	11	21	28	53	12	23	31	59
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	11	21	28	53	12	23	31	59
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	8	16	21	40	9	18	23	44
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	14	27			15	29		
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	14	27			15	29		
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	14	27			15	29		
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics								
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.								
N4.1.3 Non-metallic materials: Graphite								
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB								
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB								
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB								
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB								
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB								
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>		3				3		
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>		3				3		
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC								
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC								
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC								
H2.1.1 Chilled cast iron, 400 HB								
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC								

Taps ISO M, ISO P  $\leq 1020$  N/mm<sup>2</sup>, ISO N

Machining group	Blind holes					Through-holes	
	HSS-E			HSS-E-PM		HSS-E	
	○	●	⦿	⦿	⦿	○	●
	v <sub>c</sub> (m/min)						
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	12	14	17	22	22	13	15
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	12	14	17	22	22	13	15
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	12	14	17	22	22	13	15
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	12	14	17	22	22	13	15
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	12	14	17	22	22	13	15
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	10	12	14	19	19	11	13
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	8	10	12	15	15	9	11
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	10	12	14	18	18	11	13
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	9	10	12	15	15	9	11
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	7	8	10	13	13	8	9
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB							
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB							
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB							
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	8	9	11	15	15	9	10
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	8	9	11	15	15	9	10
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	5	6	7	9	9	5	6
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	3	3	4	5	5	3	4
M2.2.1 Duplex steel, high-strength stainless steels							
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB							
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB							
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB							
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB							
K1.3.1 Malleable cast iron, ferritic, 130 HB							
K1.3.2 Malleable cast iron, pearlitic, 230 HB							
K2.1.1 Vermicular graphite cast iron (GJV)							
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)							
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	14	16			25	15	18
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	14	16			25	15	18
N2.1.1 Aluminium casting alloys, non-hardened, $\leq 12$ % Si, 75 HB							
N2.1.2 Aluminium casting alloys, hardened, $\leq 12$ % Si, 90 HB							
N2.1.3 Aluminium casting alloys, non-hardened, $> 12$ % Si, 130 HB							
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb $> 1$ %							
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	14	16				15	18
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte							
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics							
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.							
N4.1.3 Non-metallic materials: Graphite							
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB							
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB							
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB							
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB							
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB							
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>							
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>							
H1.1.1 Hardened steel, hardened and tempered, $< 55$ HRC							
H1.1.2 Hardened steel, hardened and tempered, $< 60$ HRC							
H1.1.3 Hardened steel, hardened and tempered, $> 60$ HRC							
H2.1.1 Chilled cast iron, 400 HB							
H2.1.2 Chilled cast iron, hardened and tempered, $< 55$ HRC							



## Modular fluteless taps



Cutting data

Machining group	Through-, blind holes
	VHM
	v <sub>c</sub> (m/min)
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	48
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	48
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	48
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	48
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	48
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	48
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	48
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	38
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	38
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	38
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	38
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	29
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	29
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	19
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	19
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	14
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	12
M2.2.1 Duplex steel, high-strength stainless steels	12
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	48
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	48
K1.3.1 Malleable cast iron, ferritic, 130 HB	48
K1.3.2 Malleable cast iron, pearlitic, 230 HB	48
K2.1.1 Vermicular graphite cast iron (GJV)	38
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	38
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	58
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	58
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	58
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	58
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	48
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	
N4.1.3 Non-metallic materials: Graphite	
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	6
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	6
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	6
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	6
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	6
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	6
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	6
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	
H2.1.1 Chilled cast iron, 400 HB	
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	

## SC-Line Thread milling cutters SC-MTM3



Machining group	v <sub>c</sub> (m/min)	f <sub>z</sub> (mm/z) with milling part-Ø (d1)										
		1	2	3	4	5	6	8	10	12	14	16
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	100	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB	90	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB	90	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB	90	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	90	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	80	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	80	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	65	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB	65	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	65	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	60	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
M2.2.1 Duplex steel, high-strength stainless steels	55	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	140	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	140	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	115	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	115	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K1.3.1 Malleable cast iron, ferritic, 130 HB	115	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K1.3.2 Malleable cast iron, pearlitic, 230 HB	115	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K2.1.1 Vermicular graphite cast iron (GJV)	100	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	100	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.055	0.060	0.065
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	280	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	280	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	250	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	250	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	250	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	140	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	140	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	110	0.010	0.015	0.020	0.025	0.025	0.030	0.040	0.045	0.050	0.055	0.060
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	300	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	300	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
N4.1.3 Non-metallic materials: Graphite	300	0.010	0.015	0.020	0.025	0.030	0.035	0.045	0.050	0.060	0.065	0.070
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	55	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	55	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	55	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	55	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	55	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>	40	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>	40	0.005	0.010	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045	0.050
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	50	0.005	0.010	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	50	0.005	0.010	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	50	0.005	0.010	0.015	0.015	0.020	0.020	0.025	0.030	0.035	0.040	0.045
H2.1.1 Chilled cast iron, 400 HB												
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC												



# Grooving tools

**Focus on process reliability**

These new geometries impress with the highest precision in your machining

**GÜHRING**

Page









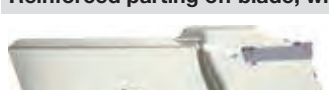



155	<b>Micro-precision tools for turning</b>
157	<b>Indexable inserts for parting off</b>
158	<b>Tool holders for micro-precision tools</b>
160	<b>Tool holders for indexable inserts</b>



P	M	K	N	S	H	Tool illustration	Type	Cutting direction	Tool material	Surface	Article no.	Page	
<b>Cutting inserts for drilling into solid material and boring out Quattro Drill</b>													
•	•	•					<b>NEW</b>	QG106		VHM		26906	155
•	•	•					<b>NEW</b>	QG106		VHM		26907	155
•	•	•					<b>NEW</b>	QG108		VHM		27290	155
•	•	•					<b>NEW</b>	QG108		VHM		27291	155
<b>Indexable inserts for parting off</b>													
			•				<b>NEW</b>	GZ222		VHM		26607	157
			•				<b>NEW</b>	GZ222		VHM		26608	157
			•				<b>NEW</b>	GZ222		VHM		26609	157





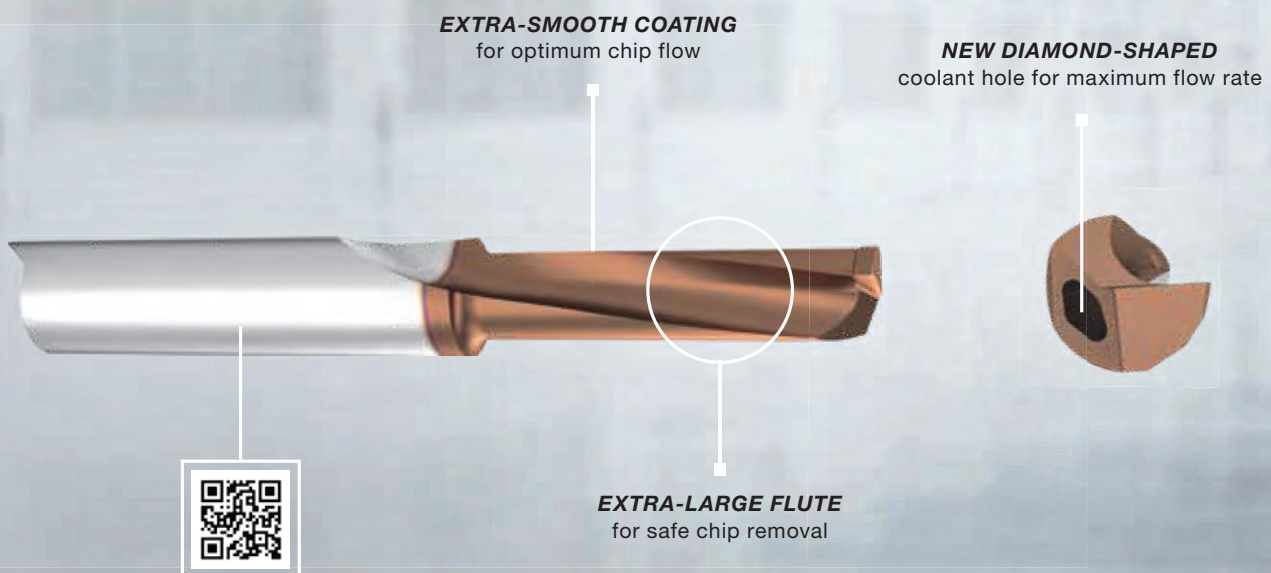
Tool illustration	Type	Design	Article no.	Page
<b>Round shank holders, clamping screw above, four clamping surfaces</b>				
	NEW	GB106		25325 158
	NEW	GB108		27018 159
<b>Reinforced parting off blade, without IC</b>				
	NEW	GS222		26202 160
	NEW	GS222		26203 160
<b>Reinforced parting off blade, with IC</b>				
	NEW	GS222		26206 161
	NEW	GS222		26207 161

Grooving tools

# Quattro Drill extractor system

**Four-in-one: One tool for  
multiple machining operations**

save time during the tool change cycle | high process reliability thanks to patented coolant duct



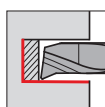
**QUATTRO DRILL IN ACTION**  
Scan and discover now!

## The new extractor system

This new extractor system offers an efficient solution for machines with limited tool spaces. Thanks to the multifunction tool's versatile application options, tedious tool changes and non-productive times are eliminated. The Quattro Drill is ideal for short turned parts with hole machining up to 4xD and can be used for drilling into solid material, boring out, chamfering and turning the outer diameter as well as a plane face. The Gühring tool also impresses when it comes to chip removal thanks to a maximum flute size and a special Signum coating with surface smoothing. With a proprietary IC bore, it enables maximum coolant efficiency. The Quattro Drill is available in different shank diameters and machining lengths.



**Cutting inserts for drilling into solid material and boring out Quattro Drill**



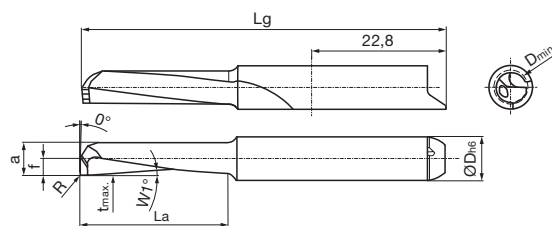
face flat 90°

drilling depth 2.5xD and 4.0xD • for tool holders type GB106, art. nr. 25325 • 4 applications: drilling into solid material, boring out, chamfering, turning



Cutting data page 162

Right-hand design as shown. Left-hand design is mirror image.



Article no. **26906**



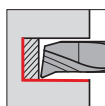
Dmin. mm	R mm	W1 °	f mm	a mm	tmax. mm	La mm	Lg mm	D h6 mm	Code no.	Description
4.00	0.20	5	2.00	3.80	0.20	11.00	47.00	6.00	6.001	QG106.0538.020.11.40.R
4.00	0.20	5	2.00	3.80	0.20	17.00	52.00	6.00	6.002	QG106.0538.020.17.40.R
5.00	0.20	5	2.50	4.80	0.20	13.50	47.00	6.00	6.003	QG106.0548.020.13.50.R
5.00	0.20	5	2.50	4.80	0.20	21.00	52.00	6.00	6.004	QG106.0548.020.21.50.R

On the left-hand design, the designation changes to .L

Article no. **26907**



**Cutting inserts for drilling into solid material and boring out Quattro Drill**



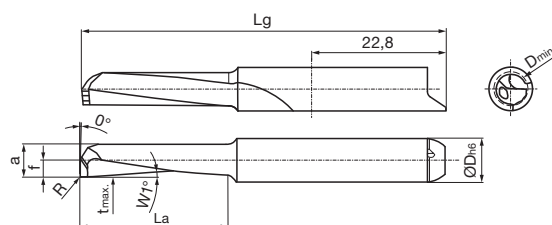
face flat 90°

drilling depth 2.5xD and 4.0xD • for tool holders type GB108, art. Nr. 27018 • 4 applications: drilling into solid material, boring out, chamfering, turning



Cutting data page 162

Right-hand design as shown. Left-hand design is mirror image.



Article no. **27290**



Dmin. mm	R mm	W1 °	f mm	a mm	tmax. mm	La mm	Lg mm	D h6 mm	Code no.	Description
6.00	0.20	5	3.00	5.80	0.20	16.00	52.00	8.00	8.001	QG108.0558.020.16.60.R
6.00	0.20	5	3.00	5.80	0.20	25.00	62.00	8.00	8.002	QG108.0558.020.25.60.R
7.00	0.20	5	3.50	6.80	0.20	18.50	57.00	8.00	8.003	QG108.0568.020.18.70.R
7.00	0.20	5	3.50	6.80	0.20	29.00	67.00	8.00	8.004	QG108.0568.020.29.70.R

On the left-hand design, the designation changes to .L

Article no. **27291**

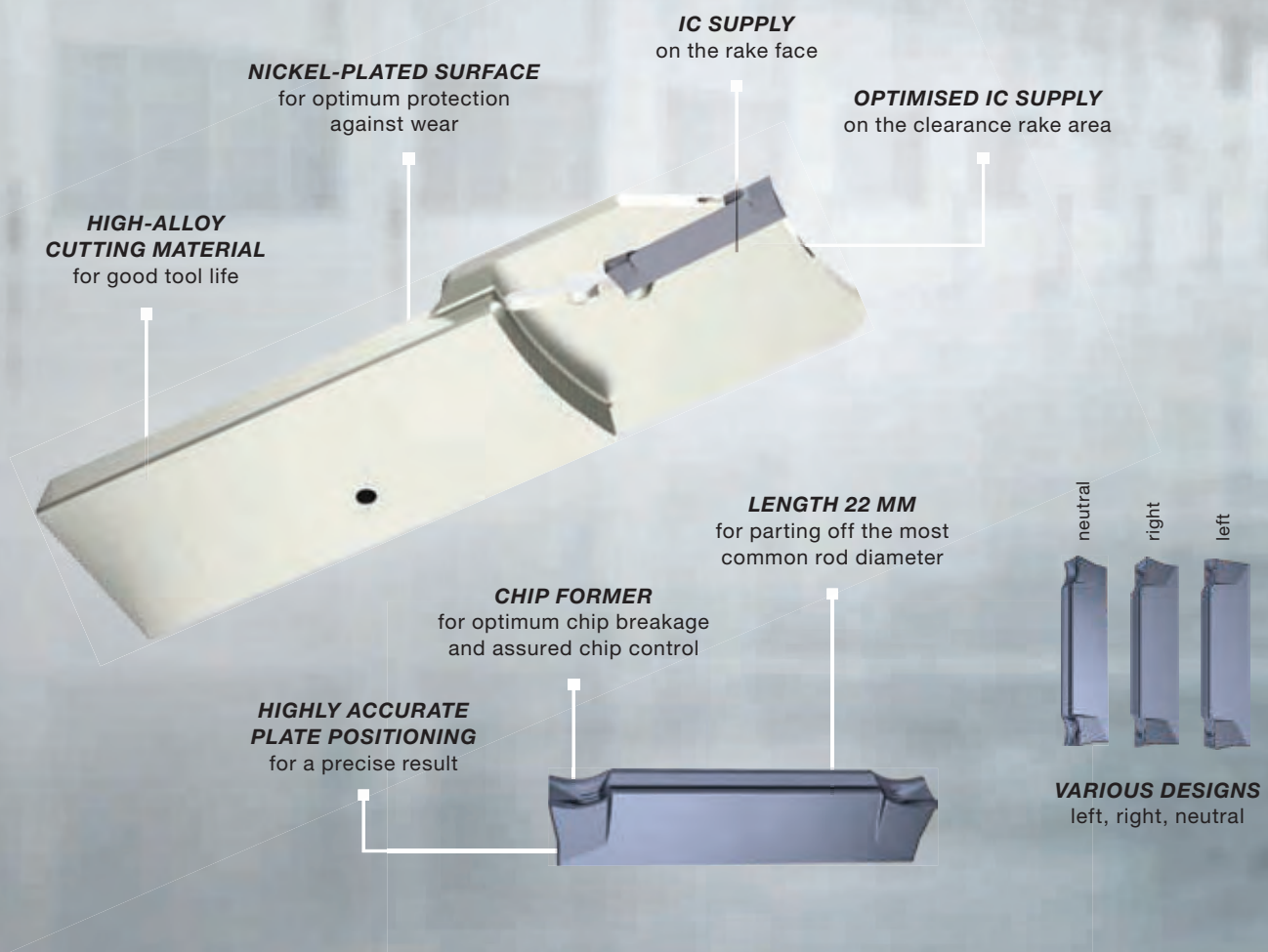


Boring out

# SYSTEM 222

## High flexibility for grooving and parting off applications

high tool life | maximum stability | high-precision even with deep grooving and parting off

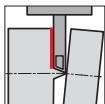


## Reliable parting off without post-processing

Whether as a parting off blade or cutting insert – the system 222 is ideally suited for precise grooving and parting off applications. With two cutting edges and a length of 22 mm, the indexable inserts are ideally suited for parting off the most common bar diameters. An innovative chip former constricts the chip and breaks it. The result is reliable chip removal and good surface finish quality. The system 222 blades rely on reinforcement and offer reliable cooling of the clearance and rake faces for outstanding enhanced performance.



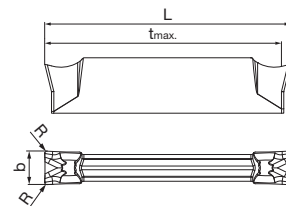
Indexable inserts for parting off



with chip former • geometry NN. sintered • for tool holders type GH222/GS222



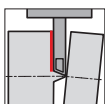
○ Cutting data page 163



Article no. **26607** ○ (N)

b mm	L mm	R mm	tmax. mm	Code no.	Description
3.00	22.00	0.20	21.00	22.030	GZ222.0300.020.NN.02.N

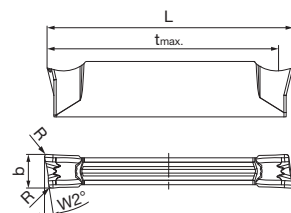
Indexable inserts for parting off



with chip former • geometry NN. sintered • for tool holders type GH222/GS222



○ Cutting data page 163



Right-hand design as shown. Left-hand design is mirror image.

Article no. **26608** ○ (R)

b mm	L mm	R mm	tmax. mm	Code no.	Description
3.00	22.35	0.20	21.00	22.030	GZ222.0300.020.NN.02.R

On the left-hand design, the designation changes to .L

Article no. **26609** ○ (L)

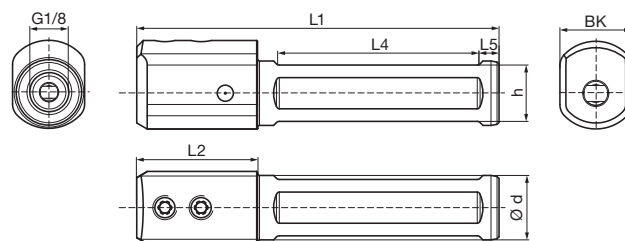
Parting off



# Tool holders for micro-precision tools

## Round shank holders, clamping screw above, four clamping surfaces

for inserts type 106 with IC • particularly suitable for Quattro Drill,  
art. no. 26906, 26907  
with central internal coolant supply



Article no. **25325**



d mm	h mm	L1 mm	L2 mm	L4 mm	L5 mm	BK mm	Code no.	Description
16.00	14.00	90.00	30.00	50.00	4.00	18.0	6.001	GB106.0016.090.00.22.N.IK.Z
20.00	18.00	95.00	30.00	55.00	4.00		6.002	GB106.0020.095.00.22.N.IK.Z
22.00	20.00	95.00		55.00	4.00		6.003	GB106.0022.095.00.22.N.IK.Z

Tool holders

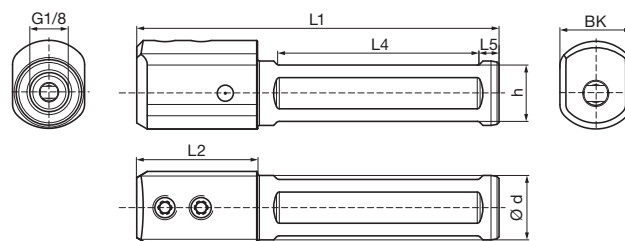
### Spare parts

Article no.	Clamping screw	Tightening torque Nm
25900		
Code 6.000	M6x7.5x15IP	4-4.5
Article no.	Torx-Plus wrench	
25904		
Code 15.000	T15IP T-handle	



**Round shank holders, clamping screw above, four clamping surfaces**

for inserts type 108 with IC • particularly suitable for Quattro Drill,  
art. no. 27290, 27291  
with central internal coolant supply



Article no. **27018**

d mm	h mm	L1 mm	L2 mm	L4 mm	L5 mm	BK mm	Code no.	Description
16.00	14.00	90.00	30.00	50.00	4.00	16.5	8.001	GB108.0016.090.00.22.N.IK.Z
20.00	18.00	95.00	30.00	55.00	4.00	20.5	8.002	GB108.0020.095.00.22.N.IK.Z
22.00	20.00	95.00	30.00	55.00	4.00		8.003	GB108.0022.095.00.22.N.IK.Z

**Spare parts**

Article no.	Clamping screw	Tightening torque Nm
25900		
Code 6.000	M6x7.5x15IP	4-4.5

Article no.	Torx-Plus wrench
25904	
Code 15.000	T15IP T-handle

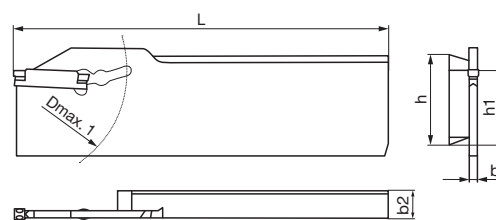
Tool holders





## Reinforced parting off blade, without IC

for indexable inserts type 222/122



Right-hand/right-hand design as shown. Left-hand/left-hand design is mirror image.

Article no. **26202**



b mm	b2 mm	h mm	h1 mm	L mm	Dmax. 1 mm	Size	Code no.	Description
2.25	8.00	26.00	21.40	110.00	66.00	03	22.002	GS222.0826.110.03.01.R.00.R
2.25	8.00	32.00	25.00	120.00	66.00	03	22.003	GS222.0832.120.03.01.R.00.R

Tool holders

For left-hand/left-hand design, the designation changes to .L.00.L

Article no. **26203**



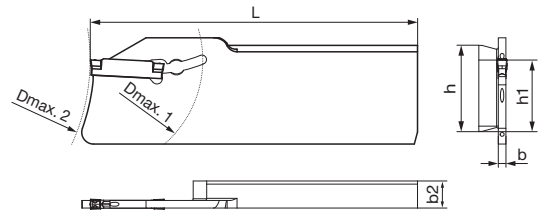
### Spare parts

Article no. 25921 Code 15.000	Mounting key
Article no. 25909 Code 4.000	IC locking screw



**Reinforced parting off blade, with IC**

for indexable inserts type 222/122



Right-hand/right-hand design as shown. Left-hand/left-hand design is mirror image.

Article no. **26206**



b mm	b2 mm	h mm	h1 mm	L mm	Dmax. 1 mm	Dmax. 2 mm	Size	Code no.	Description
2.25	8.00	26.00	21.40	99.54	66.00	120.00	03	22.002	GS222.0826.097.03.01.R.IK.R
2.25	8.00	32.00	25.00	123.02	66.00	120.00	03	22.003	GS222.0832.120.03.01.R.IK.R

For left-hand/left-hand design, the designation changes to .L.IK.L

Article no. **26207**



**Spare parts**

Article no. 25921 Code 15.000	Mounting key
Article no. 25909 Code 4.000	IC locking screw



## Drilling into solid material and boring out



Machining group	Length	v <sub>c</sub> (m/min) by system		f (mm/rev) by application	
		106	108	Drilling	Boring out
<b>P1.1.1</b> Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.2</b> Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB <b>P1.1.3</b> Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.4</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB <b>P1.1.5</b> Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB <b>P1.1.6</b> Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB <b>P1.1.7</b> Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB	K	80	110	0.020	0.040
	M	60	80	0.020	0.040
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB <b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB <b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB <b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB	K	80	110	0.020	0.040
	M	60	80	0.020	0.040
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB	K	80	110	0.020	0.040
	M	60	80	0.020	0.040
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives <b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB <b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB	K	70	95	0.015	0.030
	M	55	75	0.015	0.030
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB <b>M2.2.1</b> Duplex steel, high-strength stainless steels	K	70	95	0.015	0.030
	M	55	75	0.015	0.030
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB <b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB <b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB <b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB <b>K1.3.1</b> Malleable cast iron, ferritic, 130 HB <b>K1.3.2</b> Malleable cast iron, pearlitic, 230 HB	K	80	110	0.025	0.050
	M	60	80	0.025	0.050
<b>K2.1.1</b> Vermicular graphite cast iron (GJV) <b>K2.2.1</b> Austenitic-ferritic spheroidal graphite cast iron (ADI)					
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB <b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB					
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB <b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB <b>N2.1.3</b> Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB					
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 % <b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn <b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte					
<b>N4.1.1</b> Non-metallic materials: Duroplastics, fibre-reinforced plastics <b>N4.1.2</b> Non-metallic materials: Hard rubber, wood, etc. <b>N4.1.3</b> Non-metallic materials: Graphite					
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB <b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB <b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB <b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB <b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB					
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup> <b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>					
<b>H1.1.1</b> Hardened steel, hardened and tempered, < 55 HRC <b>H1.1.2</b> Hardened steel, hardened and tempered, < 60 HRC <b>H1.1.3</b> Hardened steel, hardened and tempered, > 60 HRC					
<b>H2.1.1</b> Chilled cast iron, 400 HB <b>H2.1.2</b> Chilled cast iron, hardened and tempered, < 55 HRC					

Cutting data

K = short tools with La/Dmin. &lt; 3.5 | M = medium length tools with La/Dmin. from 3.5 - 6.5



## Parting off



Machining group	System 222		
	v <sub>c</sub> (m/min)	NN neutral	NN L/R
		f (mm/rev)	
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB			
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB			
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB			
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB			
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB			
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB			
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB			
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB			
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB			
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB			
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB			
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB			
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB			
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives			
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB			
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB			
M2.1.1 Stainless steel, austenitic, quenched, 180 HB			
M2.2.1 Duplex steel, high-strength stainless steels			
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB			
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB			
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB			
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB			
K1.3.1 Malleable cast iron, ferritic, 130 HB			
K1.3.2 Malleable cast iron, pearlitic, 230 HB			
K2.1.1 Vermicular graphite cast iron (GJV)			
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)			
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	400	0.150	0.100
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	400	0.150	0.100
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	400	0.150	0.100
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	400	0.150	0.100
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	400	0.150	0.100
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	400	0.150	0.100
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	400	0.150	0.100
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	400	0.150	0.100
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	400	0.150	0.100
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	400	0.150	0.100
N4.1.3 Non-metallic materials: Graphite	400	0.150	0.100
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB			
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB			
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB			
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB			
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB			
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>			
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>			
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC			
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC			
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC			
H2.1.1 Chilled cast iron, 400 HB			
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC			

# Article no. index

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**GÜHRING**



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315	111	143	Taps for ISO metric threads	HSS-E	N
805	114	146	Taps for ISO metric threads	HSS-E	AI
852	123	142	Taps for ISO metric fine threads	HSS-E	N R40
1904	126	145	Taps with coolant ducts for ISO metric fine threads	HSS-E	GG
1919	129	145	Taps for ISO metric threads	HSS-E	GG
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2863	122	147	Taps for ISO metric threads	HSS-E	VA R40
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4704	135	141	Fluteless taps for ISO metric fine threads	HSS-E-PM	N
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4706	135	141	Fluteless taps with coolant ducts for ISO metric fine threads	HSS-E-PM	N
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5021	44	78	EB 100 single-fluted gun drills	Solid carbide	EB 100
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5638	43	78	EB 100 single-fluted gun drills	Solid carbide	EB 100
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5641	53	79	EB 80 single-fluted gun drills	Carbide	EB 80
5642	59	79	EB 80 single-fluted gun drills	Carbide	EB 80
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5647	37	78	EB 100 M single-fluted gun drills	Solid carbide	EB 100 M
5648	39	78	EB 100 M single-fluted gun drills	Solid carbide	EB 100 M
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Article no.	Page	Cutting values	Description	Tool material	Type
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6469	94	102	Ratio end mill sets RF 100 Sharp extra short	Solid carbide	N
6487	16	71	ExclusiveLine micro-precision drills VA without coolant ducts	Solid carbide	VA
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6496	13	69	Solid carbide micro-precision drills without coolant ducts	Solid carbide	N
6589	29	76	Ratio drills with coolant ducts, 3-fluted	Solid carbide	FT 200 U
6691	88	98	Ratio end mills RF 100 Micro Diver	Solid carbide	NH
6692	89	100	Ratio end mills RF 100 Micro Diver	Solid carbide	NH
6808	86	98	Ratio end mills RF 100 Micro Diver	Solid carbide	NH
6809	87	100	Ratio end mills RF 100 Micro Diver	Solid carbide	NH
6829	84	96	Micro-precision milling cutter MicroMill $\mu$ 55 U	Solid carbide	N
6938	93	102	Ratio end mills RF 100 Sharp extra short	Solid carbide	N
6939	93	102	Ratio end mills RF 100 Sharp extra short	Solid carbide	N
8512	22	74	Ratio drills with coolant ducts	Solid carbide	INOX
8513	24	74	Ratio drills with coolant ducts	Solid carbide	INOX
8514	26	75	Ratio drills with coolant ducts	Solid carbide	INOX
25325	158		Round shank holders, clamping screw above, four clamping surfaces		GB106
26202	160		Reinforced parting off blade, without IC		GS222
26203	160		Reinforced parting off blade, without IC		GS222
26206	161		Reinforced parting off blade, with IC		GS222
26207	161		Reinforced parting off blade, with IC		GS222
26607	157	163	Indexable inserts for parting off	Solid carbide	GZ222
26608	157	163	Indexable inserts for parting off	Solid carbide	GZ222
26609	157	163	Indexable inserts for parting off	Solid carbide	GZ222
26906	155	162	Cutting inserts for drilling into solid material and boring out Quattro Drill	Solid carbide	QG106
26907	155	162	Cutting insert for drilling and boring	Solid carbide	QG106
27018	159		Round shank holders, clamping screw above, four clamping surfaces		GB108
27290	155	162	Cutting inserts for drilling into solid material and boring out Quattro Drill	Solid carbide	QG108
27291	155	162	Cutting insert for drilling and boring	Solid carbide	QG108

# Material examples cutting data tables

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>P1.1.1</b>	Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB			
<b>P1.1.2</b>	Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB			
1.0037	St 37-2	S235JR	-	E24-2
1.0038	St 37-3	S275J2G3	A570.36	E28-3
1.0045	S 355 JR	S 1207	-	E36-2
1.0050	St 50-2	E 295	A570 Gr. 50	A50-2
1.0060	St 60-2	-	A572 Gr. 65	A60-2
1.0114	S 235 J0	S 235 J0	-	E24-3
1.0143	S 275 J0	S 275 J0	-	E28-3
1.0144	St 44-3 N	S 275 J2 G3	A573 Gr. 81	E28-3
1.0149	Ro St 44-2	S 275 J0 H	-	-
1.0301	C10	C10	1010	34C10, XC10
1.0330	St 12	Fe P01	-	DC 01/Fe P01
1.0338	St4	Fe P04	A620(1008)	Fe 14
1.0401	C15	-	1015	C18RR, XC18
1.0402	C22	1 C 22	1020	C20
1.0443	GS-45		A2765-35	E23-45M
1.0539	S355NH			TSE355-4
1.0545	S355N			E355R
1.0546	S355NL			E355FP
1.0547	S355J0H			TSE355-3
1.0549	S355NLH			
1.0553	St52-3U		A14880-40	320-560M
1.0562	St E 355		A633 Gr. C	FeE355KGN
1.0570	St 52-3	S355JR	1	E36-3
1.0715	9SMn28		1213	S250
1.0718	9SMnPb28		12L13	S250Pb
1.0721	10S20		1108	10S20
1.0722	10SPb20		11L08	10PbF2
1.0736	9SMn36		1215	S300
1.0737	9SMnPb36		12L14	S300Pb
1.0972	S315MC			E315D
1.0976	S355MC			E355D
1.0982	S460MC			
1.0984	S500MC			E490D
1.0986	S500MC			E560D
1.1121	CK10		1010	XC10
1.1141	CK15	32C	1015	XC15
1.1151	C22E		1020	2C22
1.8900	StE380		A572-60	
<b>P1.1.3</b>	Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB			
<b>P1.1.4</b>	Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB			
1.0501	C35		1035	1C35
1.0503	C45		1045	XC42H1TS
1.0511	C40		1040	1C40
1.0540	C50			
1.0551	GS-52		A2770-36	280-480M
1.0553	St52-3U		A14880-40	320-560M
1.0577	S 355 J 2 G 4		A738	A52FP
1.0726	35S20	8M	1140	35MF6
1.0727	45S20		1146	45MF4
1.1157	40Mn4	15	1039	40M5
1.1158	C25E		1025	XC25
1.1166	34Mn5		1536	
1.1167	36Mn5		1335	40M5
1.1170	28Mn6	14A	1330	20M5
1.1178	C30E			XC32
1.1180	C35R		1035	3C35
1.1181	C35E		1035	XC38
1.1191	CK45		1045	XC45
1.1206	C50E		1050	2C50
1.1213	Cf53		1050	XC48HTS

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>P1.1.5</b>	Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB			
1.0501	C35		1035	1C35
1.0503	C45		1045	XC42H1TS
1.0614	C76D		1074	XC75
1.0616	C86D		1086	XC80
1.0618	C92D		1095	XC90
1.0726	35S20	8M	1140	35MF6
1.1157	40Mn4	15	1039	40M5
1.1165	30Mn5		1036	35M5
1.1167	36Mn5		1335	40M5
1.1186	C40E		1040	2C40
1.1191	CK45		1045	2C45
1.1201	C45R		1049	3C45
1.1213	Cf53		1050	XC48HTS
1.7242	18CrMo4			
1.7337	16CrMo4-4		A387 Gr.12	
1.7362	12CrMo195			Z10CD5-05
<b>P1.1.6</b>	Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB			
1.0603	C67		107	XC65
1.0605	C75		1075	
1.1203	CK55		1055	2C55
1.1209	C55R		1055	3C55
1.1221	CK60	43D	1060	2C60
1.1231	C67E		1070	XC68
1.1248	C75E		1074	XC75
1.1269	C85E		1086	XC90
1.1274	CK 101	C 100S	1095	XC100
1.1545	C 105 W1	C 105U	W1	Y1 105
1.1663	C125W		W112	Y2120
<b>P1.1.7</b>	Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB			
1.0070	St 70-2		1055	A70-2
1.0535	C55		1055	1C55
1.0601	C60	43D	1060	1C60
1.1203	CK55		1055	2C55
1.1221	CK60	43D	1060	2C60
1.1274	CK 101	C 100S	1095	XC100
1.1545	C 105 W1	C 105U	W1	Y1 105
1.1663	C125W		W112	Y2120
1.5120	38MnSi4			
1.5710	36NiCr6	111A	3135	35NC6
1.7701	51CrMoV4			
<b>P2.1.1</b>	Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB			
1.0904	55Si7	45	9255	55S7
1.0961	60SiCr7		9262	60SC6
1.2067	102CR6	100CR6	L3	Y100C6
1.2108	90CrSi5		L1	
1.2210	115CrV3		L2	100C3
1.2241	51CrV4			
1.2330	35CrMo4		4135	34CD4
1.2419	105WCr6			105WC13
1.2510	100MnCrW4		01	90 MWCV 5
1.2542	45WCrV7		S1	
1.2550	60WCrV7		S1	55WC20
1.2713	55NiCrMoV6		L6	55NCDV7
1.2721	50NiCr13		L6	55NCV6
1.2842	90MnCrV8		O2	90MV8
1.3501	100Cr2		E50100	
1.3505	100Cr6	31	52100	100C6
1.5024	46Si7			45S7
1.5025	51Si7	50Si7	9259H	51S7
1.5027	60Si7	60Si7	9260	60S7
1.5028	65Si7		9260H	
1.5415	15Mo3		A204Gr.A	15D3

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>P2.1.1</b> Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB				
1.5419	20Mo4		4419	
1.5423	16Mo5		4520	
1.5622	14Ni6		A350-LF5	16N6
1.5732	14NiCr10		3415	14NC11
1.5752	14NiCr14	36A	3310	12NC15
1.6511	36CrNiMo4	110	9840	40NCD3
1.6523	21NiCrMo2	362	8620	20NCD2
1.6546	40NiCrMo2-2		8740	
1.6566	17NiCrMo6-4			
1.6587	17CrNiMo6			18NCD6
1.6657	10NiCrMo13-4			
1.7015	10Cr3		5015	12C3
1.7033	34Cr4	18B	5132	32C4
1.7035	41Cr4	18	5140	42C4
1.7131	16MnCr5		5115	16MC5
1.7139	16MnCrS5			
1.7176	55Cr3	48	5155	55C3
1.7225	42CrMo4	42 CrMo 4	4140	42 CD 4
1.7228	55NiCrMoV6G	33		
1.7380	10CrMo9-10		A182F22	12CD9-10
1.7715	14MoV6-3			
1.8159	50CrV4	47	6150	50CrV4
1.8161	58CrV4			
1.8509	41CrAlMo7	41B	A355A	40CAD6-12
1.8523	39CrMoV13-9	40C		
<b>P2.1.2</b> Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB				
1.5415	15Mo3		A204Gr.A	15D3
1.5423	16Mo5		4520	
1.5622	14Ni6		A350-LF5	16N6
1.5732	14NiCr10		3415	14NC11
1.5752	14NiCr14	36A	3310	12NC15
1.5755	31NiCr14			18NC13
1.6565	40NiCrMo6	24	4340	35NCD6
1.6587	17CrNiMo6			18NCD6
1.6657	10NiCrMo13-4			
1.6957	26NiCrMoV14-5			
1.7015	10Cr3		5015	12C3
1.7262	15CrMo5			12CD4
1.7335	13CrMo4-4		A182-F11	15CD4-5
1.7380	10CrMo9-10		A182F22	12CD9-10
1.7715	14MoV6-3			
1.7733	24CrMoV55			20CDV6
1.7755	GS-45CrMoV10-4			
1.8070	21CrMoV511			
<b>P2.1.3</b> Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB				
1.1730	C45W3		C45W	XC48
1.2332	47CrMo4	19A	4142	42CD4
1.5736	36NiCr10		3435	30NC11
1.6523	21NiCrMo2	362	8620	20NCD2
1.7033	34Cr4	18B	5132	32C4
1.7218	25CrMo4		4130	25CD4
1.8515	32CrMo12	40B		30CD12
<b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB				
1.0904	55Si7	45	9255	55S7
1.0961	60SiCr7		9262	60SC6
1.2067	100Cr6		L3	Y100C6
1.2419	105WCr6			105WC13
1.2542	45WCrV7		S1	
1.2713	55NiCrMoV6		L6	55NCDV7
1.4882	X50CrMnNiNbN219			Z50CMNNb21-09
1.5120	38MnSi4			

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>P2.1.4</b> Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB				
1.5710	36NiCr6	111A	3135	35NC6
1.5755	31NiCr14			18NC13
1.6511	36CrNiMo4	110	9840	40NCD3
1.6546	40NiCrMo2-2		8740	
1.7035	41Cr4	18	5140	42C4
1.7176	55Cr3	48	5155	55C3
1.7220	34CrMo4		4135	35CD4
1.7223	41CrMo4		4142	
1.7225	42CrMo4	42 CrMo 4	4140	42 CD 4
1.7361	32CrMo12	40B		30CD12
1.8159	50CrV4	47	6150	50CrV4
1.8161	58CrV4			
1.8509	41CrAlMo7	41B	A355A	40CAD6-12
1.8523	39CrMoV13-9	40C		
<b>P3.1.1</b> High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB				
1.2080	X210Cr12	X210Cr12	D3	Z200C12
1.2162	21MnCr5			20MC5
1.2311	40CrMnMo7			40CMD8
1.2312	40CrMnMoS8.6		P20+S	40CMD8S
1.2316	X36CrMo17	X38CrMo16		
1.2343	X38CrMoV5-1		H11	Z38CDV5
1.2344	X40CrMoV5-1		H13	Z40CDV5
1.2363	X100CrMoV5-1		A2	Z100CDV5
1.2379	X155CrVMo121		D2	Z160CDV12
1.2436	X210CrW12		D4(D6)	Z200CD12
1.2510	100MnCrW4		O1	90 MWCV 5
1.2581	X30WCrV9-3		H21	Z30WCV9
1.2601	X165CrMoV12			
1.2606	X37CrMoW51		H12	Z35CWDV5
1.2764	X19NiCrMo4			
1.2767	X45NiCrMo4			45NCD16
1.2842	90MnCrV8		O2	90MV8
1.3243	S6-5-2-5		T15	KCV06-05-05-04-02
1.3249	S18-1-2-5		T4	Z80WKCV18-05-04
1.3343	S6-5-2		M2	Z85WDCV
1.3348	S2-9-2		M7	Z100DCWV09-04-02
1.3355	S18-0-1		T1	Z80WCV18-4-01
1.4718	X45CrSi9-3	52	HNV3	Z45CS9
1.5662	X8Ni9		ASMA353	9Ni
1.5680	12Ni19		2515	Z18N5
<b>P3.1.2</b> High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB				
1.2080	X210Cr12	X210Cr12	D3	Z200C12
1.2344	X40CrMoV5-1		H13	Z40CDV5
1.2363	X100CrMoV5-1		A2	Z100CDV5
1.2436	X210CrW12		D4(D6)	Z200CD12
1.2581	X30WCrV9-3		H21	Z30WCV9
1.2601	X165CrMoV12			
1.2714	55NiCrMoV7		6F3/L6	55NiCrMoV7
1.3202	S12-1-4-5			
1.3207	S10-4-3-10			Z130WKCDV
1.3243	S6-5-2-5		T15	KCV06-05-05-04-02
1.3246	S7-4-2-5		M35	Z110WKCDV07-05-04
1.3247	S2-10-1-8		M42	Z110DKCWV09-08-04
1.3255	S18-1-2-5		T4	Z80WKCV18-05-04
1.3343	S6-5-2		M2	Z85WDCV
1.3348	S2-9-2		M7	Z100DCWV09-04-02
1.3355	S18-0-1		T1	Z80WCV18-4-01
1.4718	X45CrSi9-3	52	HNV3	Z45CS9
1.4935	X20CrMoWV121		422	
1.5680	12Ni19		2515	Z18N5

# Material examples cutting data tables

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>M1.1.1</b> Stainless steel, ferritic/martensitic, with machining additives				
1.4005	X12CrS13		416	Z11CF13
1.4029	X29CrS13			
1.4035	X46CrS13			
1.4104	X14CrMoS17		430F	Z10CF17
1.4105	X6CrMoS17			
1.4523	X2CrMoTiS18-2			
<b>M1.1.2</b> Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB				
1.4000	X6Cr13		403	Z6C13
1.4001	X7Cr14		410 S	Z8C13
1.4002	X6CrAl13		405	Z6CA13
1.4006	X12Cr13	56A	410	Z10C13
1.4016	X6Cr17	X8Cr17	430	Z8C17
1.4027	GX20Cr14			Z20C13M
1.4028	X30Cr13		420	Z30C13
1.4034	X46Cr13			Z40C14
1.4057	X19CrNi17-2	57	431	Z15CN16-02
1.4086	GX120Cr29			
1.4112	X90CrMoV18		440B	
1.4113	X6CrMo17		434	Z8CD17-01
1.4313	X3CrNi13-4		CA6-NM	Z4CND13-04M
1.4340	GX40CrNi274			
1.4417	X2CrNiMoSi195		S31500	
1.4418	X4CrNiMo165			Z6CND16-04-01
1.4510	X6CrTi17		XM8	Z4CT17
1.4511	X6CrNb17			Z4CNb17
1.4512	X6CrTi12		409	Z3CT12
1.4720	X20CrMo13			
1.4724	X10CrAl113		405	Z10C13
1.4742	X10CrAl118	60	430	Z10CAS18
1.4747	X80CrNiSi20	59	HNV6	Z80CSN20-02
1.4749	X18CrN28		446	
1.4762	X10CrAl24		446	Z10CAS24
1.4871	X53CrMnNiN21-9		EV8	Z52CMN21-09
<b>M1.1.3</b> Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB				
1.4000	X6Cr13		403	Z6C13
1.4001	X7Cr14		410 S	Z8C13
1.4006	X12Cr13	56A	410	Z10C13
1.4016	X6Cr17	X8Cr17	430	Z8C17
1.4021	X20Cr13		420	Z20C13
1.4027	GX20Cr14			Z20C13M
1.4031	X40Cr13		420	Z40C14
1.4034	X46Cr13			Z40C14
1.4057	X19CrNi17-2	57	431	Z15CN16-02
1.4113	X6CrMo17		434	Z8CD17-01
1.4313	X3CrNi13-4		CA6-NM	Z4CND13-04M
1.4544	A 700		321	Z 10 CNT 18 11
1.4546	X5CrNiNb18-10		348	
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB				
1.4020	X13MnNiN18-13-2			
1.4301	X5CrNi18-10		304	Z5CN18-09
1.4303	X4CrNi18-12			
1.4305	X8CrNiS18-9	58M	303	Z8CNF18-09
1.4306	X2CrNi19-11	X3CrNi1810KD	304L	Z2CN18-09
1.4307	X2CrNi18-9			
1.4310	X10CrNi18-8		301	Z12CN17-07
1.4311	X2CrNiN18-10		304LN	Z2CN18-10
1.4315	X5CrNiN19-9			
1.4318	X2CrNiN18-7			

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>M2.1.1</b> Stainless steel, austenitic, quenched, 180 HB				
1.4325	X9CrNi18-9			
1.4335	X1CrNi25-21			
1.4361	X1CrNiSi18-15-4			
1.4369	X11CrNiMnN19-8-6			
1.4371	X2CrMnNiN17-7-5		202	Z8CMN18-08-05
1.4372	X12CrMnNiN17-7-5			
1.4373	X12CrMnNiN18-9-5			
1.4376	X8CrMnNi19-6-3			
1.4378	X6CrMnNiN18-13-3			
1.4401	X5CrNiMo17-12-2		316	Z3CND17-11-01
1.4404	X2CrNiMo17-12-2		316L	Z2CND17-12
1.4406	X2CrNiMoN17-11-2		316LN	Z2CND17-12AZ
1.4432	X2CrNiMo17-12-3			
1.4434	X2CrNiMoN18-12-4			
1.4435	X2CrNiMo18-14-3		316L	Z3CND17-12-03
1.4438	X2CrNiMo18-15-4		317L	Z2CND19-15-04
1.4439	X2CrNiMoN17-13-5		(s31726)	Z3CND18-14-06AZ
1.4449	X2CrNiMo18-12-3		317	
1.4466	X1CrNiMoN25-22-2			
1.4529	X1NiCrMoCuN25-20-7			
1.4539	X1NiCrMoCu25-20-5			Z2NCU25-20
1.4541	X6CrNiTi18-10		321	Z6CNT18-10
1.4547	X1CrNiMoCuN20-18-7		S31254	
1.4550	X6CrNiNb18-10	58F	347	Z6CNb18-10
1.4558	X2NiCrAlTi32-20			
1.4560	X3CrNiCu19-9-2			
1.4563	X1NiCrMoCu31-27-4			
1.4565	X2CrNiMnMoN25-18-6-5			
1.4567	X3CrNiCu18-9-4			
1.4570	X6CrNiCuS18-9-2			
1.4571	X6CrNiMoTi17-12-2	58J	316Ti	Z6NDT17-12
1.4578	X3CrNiCuMo17-11-3-2			
1.4580	X6CrNiMoNb17-12-2			
1.4597	X8CrMnCuNb17-8-3			
1.4598	X2CrNiMoCuS17-10-2			
1.4615	X3CrMnNiCu15-8-5-3			
1.4618	X9CrMnNiCu17-8-5-2			
1.4640	X5CrNiCu19-6-2			
1.4646	X6CrMnNiCuN18-12-4-2			
1.4650	X2CrNiCu19-10			
1.4652	X1CrNiMoCuN24-22-8			
1.4659	X1CrNiMoCuNW24-22-6			
<b>M2.1.1</b> Duplex steel, high-strength stainless steels				
1.4062	X2CrNiN22-2			
1.4669	X1CrNiMoCuN25-25-5			
1.4424	X2CrNiMo20-7-2			
1.4362	X2CrNiN23-4		S32304	Z2CN23-04AZ
1.4162	X2CrMnNiMoN25-18-6-5			
1.4482	X2CrMnNiMoN22-5-3			
1.4462	X2CrNiMoN22-5-3			Z3CND22-05Az
1.4662	X1CrNiMoCuN26-25-5			
1.4507	X2CrNiMoCuN25-6-3			
1.4460	X1CrNiMoCuN20-18-7		329	
1.4410	X2CrNiMoN25-7-4			Z5CND20-12M
1.4501	X2CrNiMoCuWN25-7-4			
1.4477	X2CrNiMoCuN25-6-3			
1.4658	X1NiCrMoCu25-20-5			

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>K1.1.1</b> Grey cast iron, pearlitic/ferritic, 180 HB				
0.6010	GG10	GJL-100	A48 20 B	Ft 10 D
0.6015	GG15	GJL-150	A48 25 B	Ft 15 D
0.6020	GG20	GJL-200	A48 30 B	Ft 20 D
0.6025	GG25	GJL-250	A48 40 B	Ft 25 D
0.6660	GGL-NiCr 20 2	GJLA-XNiCr 20-2	1050/700/7	L-NC 202
<b>K1.1.2</b> Grey cast iron, pearlitic/martensitic, 260 HB				
0.6025	GG25	GJL-250	A48 40 B	Ft 25 D
0.6030	GG30	GJL-300	A48 45 B	Ft 30 D
0.6035	GG35	GJL-350	A48 50 B	Ft 35 D
0.6040	GG40	GJL-400	A48 60 B	Ft 40 D
<b>K1.2.1</b> Cast iron with spheroidal graphite, ferritic, 160 HB				
0.7033	GGG35.3	GJS-350-22-LT	-	FGS 370-17
0.7040	GGG40	GJS-400-15	60-40-18	FCS 400-12
0.7043	GGG40.3	GJS-400-18-LT	60-40-18	FGS 370-17
<b>K1.2.2</b> Cast iron with spheroidal graphite, pearlitic, 250 HB				
0.7050	GGG50	GJS-500-7	80-55-06	FGS 500-7
0.7060	GGG60	GJS-600-3	80-55-06	FGS 600-3
0.7070	GGG70	GJS-700-2	100-70-03	FGS 700-2
0.7652	GGG NiMn 13-7	GJSA-XNiMn 13-7	-	FGS Ni13 Mn7
0.7660	GGG NiCr 20-2	GJSA-XNiCr 20-2	A436 D2	FGS Ni20 Cr2
<b>K1.3.1</b> Malleable cast iron, ferritic, 130 HB				
0.8135	GTS-35	GJMB350-10	32510	MN 35-10
<b>K1.3.2</b> Malleable cast iron, pearlitic, 230 HB				
0.8145	GTS-45	GJMB450-6	A220-40010	MN 450
0.8155	GTS-55	GJMB-550-4	50005	MP 50-5
0.8165	GTS-65	GJMB-650-2	70003	MN 650-3
0.8170	GTS-70	GJMB-700-2	90001	MN 700-2
<b>K2.1.1</b> Vermicular graphite cast iron (GJV)				
5.2100	GJV-300			
5.2201	GJV-400			
5.2301	GJV-500			
<b>K2.2.1</b> Austenitic-ferritic spheroidal graphite cast iron (ADI)				
5.3400	GJS-800-10			
5.3402	GJS-900-8			
5.3403	GJS-1050-6			

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>N1.1.1</b> Wrought aluminium alloys, non-hardened, 60 HB				
3.0205	Al99		Al99	
3.0255	Al99.5		1000	A59050C
3.3206	AlMgSi0.5	AW-6060		
3.3315	AlMg1			
<b>N1.1.2</b> Wrought aluminium alloys, hardened, 100 HB				
3.1325	AlCuMg1			
3.1655	AlCuSiPb			
3.2315	AlMgSi1			
3.4345	AlZnMgCu0,5		7050	AZ4GU/9051
3.4365	AlZnMgCu1,5		7075	7075
<b>N2.1.1</b> Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB				
3.2163	AlSi9Cu3			
3.2382	AlSi10Mg			
3.2383	AlSi0Mg(Cu)		A360.2	
3.2581	AlSi12			
3.3561	AlMg5			
<b>N2.1.2</b> Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB				
2.1871	AlCu4TiMg			
3.1754	AlCu4Ni2Mg			
3.2371	AlSi7Mg		4218B	
3.2373	AlSi9MgWA		SC64D	A-S7G
3.2381	AlSi10Mg			
3.5106	MgAg3SE2Zr1		QE22	
<b>N3.1.1</b> Copper and copper alloys: Free-machining alloy, Pb > 1 %				
2.0375	CuZn36Pb3			
2.1090	CuSn75pb		C93200	U-E7Z5pb4
2.1096	CuSn5ZnPb		c83600	
2.1098	CuSn2Znpb		C83600	
2.1182	CuPb15Sn		C23000	U-pb15E8
<b>N3.1.2</b> Copper and copper alloys: CuZn, CuSnZn, 90 HB				
2.0240	CuZn15			
2.0321	CuZn37		C27200	CuZn36,CuZn37
2.0590	CuZn40Fe			
2.0592	CuZn35Al1		C86500	HTB1
2.0596	CuZn34Al2		C86200	U-Z36N3
2.1293	CuCrZr		C18200	U-Cr0-8Zr
<b>N3.1.3</b> Copper and copper alloys: CuSn, lead-free copper and copper electrolyte				
2.0060	E-Cu57			
2.0966	CuAl10Ni5Fe4		C63000	U-A10N
2.0975	CuAl10Ni		B-148-52	
2.1050	CuSn10		c90700	
2.1052	G-CuSn12		C90800	UE12P
2.1292	G-CuCrF35		C81500	

# Material examples cutting data tables

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>S1.1.1</b> Heat-resistant alloys, Fe-based, annealed, 200 HB				
1.4558	X2NiCrAlTi3220		N08800	
1.4562	X1NiCrMoCu32287		N08031	
1.4563	X1NiCrMoCuN31274		N08028	Z1NCDU31-27-03
1.4864	X12NiCrSi36-16		330	Z12NCS37-18
1.4865	GX40NiCrSi38-18			
1.4958	X5NiCrAlTi3120			
<b>S1.1.2</b> Heat-resistant alloys, Fe-based, hardened, 280 HB				
1.4977	X40CoCrNi2020			Z42CNKDWNb
<b>S1.1.3</b> Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB				
2.4360	NiCu30Fe			NU30
2.4603	NiCr 30 FeMo		5390A	NC22FeD
2.4610	NiMo16Cr16Ti			
2.4630	NiCr20Ti			NC20T
2.4631	NiCr20TiAl			NC20TA
2.4642	NiCr29Fe			Nnc30Fe
2.4856	NiCr22Mo9Nb			NC22FeDNb
<b>S1.1.4</b> Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB				
2.4375	NiCu30Al		4676	NU30AT
2.4662	NiFe35Cr14MoTi		5660	ZSNCDT42
2.4668	NiCr19Fe19NbMo		5383	NC19eNB
2.4670	S-NiCr13A16MoNb		5391	NC12AD
2.4694	NiCr16Fe7TiAl			
2.4955	NiFe25Cr20NbTi			
2.4964	CoCr20W15Ni		5772	KC20WN
<b>S1.1.5</b> Heat-resistant alloys, Ni- or Co-based, cast, 320 HB				
2.4669	NiCr15Fe7TiAl			NC15TNbA
2.4685	G-NiMo28			
2.4810	G-NiMo30			
2.4973	NiCr19Co11MoTi		AMS 5399	NC19KDT
3.7115	TiAl5Sn2			
<b>S2.1.1</b> Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>				
2.4674	NiCo15Cr10MoAlTi		AMS 5397	
3.7025	Ti1		R50250	
3.7225	Ti1pd		R52250	
<b>S2.1.2</b> Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>				
3.7124	TiCu2			
3.7145	TiAl6Sn2Zr4Mo2Si		R54620	
3.7165	TiAl6V4		AMS R56400	T-A6V
3.7185	TiAl4Mo4Sn2			
3.7195	TiAl3V2.5			

Mat. no.	DIN	EN	AISI/ASTM/SAE	AFNOR
<b>H1.1.1</b> Hardened steel, hardened and tempered, < 55 HRC				
<b>H1.1.2</b> Hardened steel, hardened and tempered, < 60 HRC				
<b>H1.1.3</b> Hardened steel, hardened and tempered, > 60 HRC				
1.1231	Ck 67	C 67S	1070	XC 68
1.1248	Ck 75	C 75S	1078, 1080	XC 75
1.1274	Ck 101	C 100S	1095	XC100
1.1545	C 105 W1	C 105U	W1	Y1 105
1.1730	C 45 W3			
1.2067	102CR6	100CR6		
1.2343	X37CrMoV5-1			
1.2361	X91CrMoV18			
1.2379	X155CrMoV12-1			
1.2762	75CrMoNiW67			
1.3401	GX120Mn12		A128(A)	Z120M12
1.6746	32NiCrMo14-5	32nIcRm0145		35NCD14
1.7131	16MnCr5			
1.7176	55Cr3	48	5155	55C3
1.7225	42CrMo4	42 CrMo 4	4140	42 CD 4
<b>H2.1.1</b> Chilled cast iron, 400 HB				
0.9620	GX260NiCr42	GJN-HV520	A532 IB	FB Ni4 Cr2 BC
0.9625	GX330NiCr42	GJN-HV550	A532 IA	FB Ni4 Cr2 HC
0.9630	GX300 CrNiSi 9 5 2	GJN-HV600	A532 ID	FB Cr9 Ni5
0.9640	GX300CrMoNi1521			
0.9650	GX260Cr27			
0.9655	GX300CrNM0271			
1.4841	X15CrNiSi25-20	X 15 CrNiSi 25 20	310	Z15CNS25-20
<b>H2.1.2</b> Chilled cast iron, hardened and tempered, < 55 HRC				
0.9635	GX300 CrMo 15 3			
0.9645	GX260 CrMoNi 20 21			





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OCI interface, data interface

# ISO codes

<b>P</b>	Steel, high-alloyed steel
<b>M</b>	Stainless steel
<b>K</b>	Grey cast iron, spheroidal graphite iron and malleable cast iron
<b>N</b>	Aluminium and other non-ferrous metals
<b>S</b>	Special, super and titanium alloys
<b>H</b>	Hardened steel and chilled cast iron
<b>O</b>	Fibre-reinforced plastics (FRP), graphite

On the programme pages you will find for every tool recommendations regarding suitability for the application groups and details of max. tensile strength and hardness.

- optimal suitability
- limited suitability

# Surfaces

- bright
- steam tempered
- nitrided
- nitrided lands
- golden brown
- AlCrN
- FIRE/nanoFIRE
- TiAlN
- TiAlN SuperA
- TiAlN nanoA
- TiCN
- TiN
- TiSiN
- Perrox
- Carbo
- Cristall C
- Signum
- Raptor
- nickel-plated
- burnished
- Endurum
- Ferrox
- Sirius
- Zenit



# Pictograms



New product



Dimension extension

<b>Tool material</b>	<b>VHM</b> Solid carbide	<b>HM</b> Carbide	<b>HSS</b> High-speed steel	<b>HSCO</b>	<b>HSS-E</b>	<b>M42</b>	<b>HSS-E-PM</b>	<b>Cermet</b>	<b>PKD</b> Polycrystalline diamond																							
<b>Machining depth</b>	3xD	5xD	7xD	8xD	10xD	12xD	15xD	20xD	25xD	80xD	~5xD	~10xD	>25xD	GL 600	GL 1200	GL 2000	...															
<b>Tolerance on Ø</b>	m7	h5	h6	h7	H7	h8	ISO2/6H	6HX	ISO3/6G	6GX	7GX	6H +0,1	±0,015	+0,004 +0,005	...																	
<b>Shank form</b>	HA to DIN 6535	HB	HE	B	-HA	Cyl cylindrical	MK Morse taper	3 3-flats on shank	TBM-SEH Standard groove rear																							
<b>Standard</b>	DIN 208 to DIN	DIN 338	DIN 340	DIN 371	DIN 376	DIN 371/376	DIN 1897	DIN 6527 K	DIN 6527 L	DIN 6537 K	DIN 6537 L	DIN 5156	DIN 6528	~DIN 8094	... to Gühring Standard																	
<b>Type</b>	N	H	W	VA	Nr f	RT 100 HF	RT 100 U	RT 100 T	RT 100 XF	GU 3FS	GT 500 DZ	EB 80 XXL	HT 800 WP	MTMH3-Z	TM SP	GE104	...															
<b>Internal coolant</b>	with internal coolant				without internal coolant																											
<b>Cutting direction</b>	right-hand			left-hand			neutral																									
<b>Web thinning</b>																																
<b>Hole type</b>	Through-hole threads			Blind-hole threads			Through-hole and blind-hole threads																									
<b>Form</b>	A	B	C	D	DR	R																										
<b>Application</b>	Slotting	Roughing	Ramping	Helix	Drilling	Finishing	Copying																									
<b>Length</b>	short (DIN)	long (DIN)	2,5xD	medium length	3xD	extra length	4xD	5xD																								
<b>No. of cutting edges</b>	2	3	4	5	6	6+	2-4	3-4	4-5	5-6	...																					
<b>Helix angle</b>	Size of helix angle/no. of different helix angles																															
<b>Rake angle</b>	Rake angle of circumference cutting edges																															
<b>Cutting edge form</b>	45° Corner chamfer			R±0,01			R±0,02			R±0,01			R±0,03			R±0,05			...			60°			82°	90°	120°	135°	140°	160°	125°	...
<b>Feed</b>	for lateral feed			for lateral feed and oblique plunging						for lateral feed, oblique plunging and drilling																						
<b>Hardness</b>	48 HRC	55 HRC	62 HRC	63 HRC	65 HRC	66 HRC	workable material hardness in HRC																									

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