GÜHRING

FT 200 U solid carbide three-fluted cutter

High feed drilling for reduced cycle times

FT 200 U

Maximum feed rates & top quality drilling results

High feed drill for reduced cycle times.

The 3-fluted FT 200 U solid carbide drill enables cost-efficient drilling up to and including 12xD without a prior piloting process.

Thanks to its pyramid tip properties combined with the in-house designed web thinning, it is able to achieve precise self centering and perfect material penetration. 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 isable to achieve optimal chips with its modified flute profile that curls chips tightly and breaks them reliably. In combination with a sickle-shaped cutting edge, the hardening in the edge area and the material stress is significantly reduced.

x **Tool life** increased by more than 20 %

x **efficient drilling** up to 12xD, without piloting

- Precise self-centring thanks to innovative tip geometry
- Maximum possible hole quality on the component with simultaneously high tool lives
- Cost-efficient machining thanks to high cutting data

3-fluted
Spiropoint tip

3 guide lands

Premium surfaces
on fluting, web thinning and drill point

Available in the diameter range
3xD, 5xD Ø 4.0 – 20.0 mm
8xD, 12xD Ø 4.0 – 16.0 mm

Application example

Component:	Transmission bell housing (truck), steel S355 J2G4	
Tool:	#6591, Ø 9.5 mm, 8xD	
Customer target:	Better performance than competitor's 3-fluted tool	
Difficulty:	Curved hole exit on component	
Cutting data:	**Gühring** v_c 90 m/min **f** 0.5 mm/rev	**Competition** v_c 90 m/min **f** 0.5 mm/rev
Tool life:	17 parts	14 parts

Ratio drills with coolant ducts, 3-fluted, 3xD

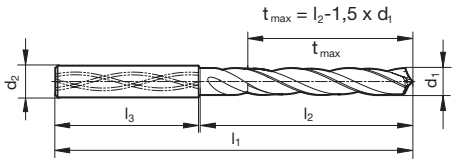
Article no. **6589**

Cutting data page 10

NEW | VHM | F | FT 200 U | 3xD | DIN 6537 K | 130° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

spiropoint grind • optimal centering • suitable for interrupted cutting • maximum performance



Article no. **6589**

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
4.040		6.0	66.0	24.0	36.0	6589 4.040
4.100		6.0	66.0	24.0	36.0	6589 4.100
4.200		6.0	66.0	24.0	36.0	6589 4.200
4.300		6.0	66.0	24.0	36.0	6589 4.300
4.370	11/64	6.0	66.0	24.0	36.0	6589 4.370
4.400		6.0	66.0	24.0	36.0	6589 4.400
4.500		6.0	66.0	24.0	36.0	6589 4.500
4.600		6.0	66.0	24.0	36.0	6589 4.600
4.650		6.0	66.0	24.0	36.0	6589 4.650
4.700		6.0	66.0	24.0	36.0	6589 4.700
4.760	3/16	6.0	66.0	28.0	36.0	6589 4.760
4.800		6.0	66.0	28.0	36.0	6589 4.800
4.900		6.0	66.0	28.0	36.0	6589 4.900
5.000		6.0	66.0	28.0	36.0	6589 5.000
5.100		6.0	66.0	28.0	36.0	6589 5.100
5.110		6.0	66.0	28.0	36.0	6589 5.110
5.160	13/64	6.0	66.0	28.0	36.0	6589 5.160
5.200		6.0	66.0	28.0	36.0	6589 5.200
5.300		6.0	66.0	28.0	36.0	6589 5.300
5.400		6.0	66.0	28.0	36.0	6589 5.400
5.410		6.0	66.0	28.0	36.0	6589 5.410
5.500		6.0	66.0	28.0	36.0	6589 5.500
5.550		6.0	66.0	28.0	36.0	6589 5.550
5.560	7/32	6.0	66.0	28.0	36.0	6589 5.560
5.600		6.0	66.0	28.0	36.0	6589 5.600
5.700		6.0	66.0	28.0	36.0	6589 5.700
5.800		6.0	66.0	28.0	36.0	6589 5.800
5.900		6.0	66.0	28.0	36.0	6589 5.900
5.950	15/64	6.0	66.0	28.0	36.0	6589 5.950
6.000		6.0	66.0	28.0	36.0	6589 6.000
6.100		8.0	79.0	34.0	36.0	6589 6.100
6.200		8.0	79.0	34.0	36.0	6589 6.200
6.300		8.0	79.0	34.0	36.0	6589 6.300
6.350	1/4	8.0	79.0	34.0	36.0	6589 6.350
6.400		8.0	79.0	34.0	36.0	6589 6.400
6.500		8.0	79.0	34.0	36.0	6589 6.500
6.530		8.0	79.0	34.0	36.0	6589 6.530
6.550		8.0	79.0	34.0	36.0	6589 6.550
6.600		8.0	79.0	34.0	36.0	6589 6.600
6.700		8.0	79.0	34.0	36.0	6589 6.700
6.750	17/64	8.0	79.0	34.0	36.0	6589 6.750
6.800		8.0	79.0	34.0	36.0	6589 6.800
6.900		8.0	79.0	34.0	36.0	6589 6.900
7.000		8.0	79.0	34.0	36.0	6589 7.000
7.100		8.0	79.0	41.0	36.0	6589 7.100
7.140	9/32	8.0	79.0	41.0	36.0	6589 7.140
7.200		8.0	79.0	41.0	36.0	6589 7.200
7.300		8.0	79.0	41.0	36.0	6589 7.300
7.400		8.0	79.0	41.0	36.0	6589 7.400
7.500		8.0	79.0	41.0	36.0	6589 7.500
7.540	19/64	8.0	79.0	41.0	36.0	6589 7.540
7.550		8.0	79.0	41.0	36.0	6589 7.550
7.600		8.0	79.0	41.0	36.0	6589 7.600
7.650		8.0	79.0	41.0	36.0	6589 7.650
7.700		8.0	79.0	41.0	36.0	6589 7.700
7.800		8.0	79.0	41.0	36.0	6589 7.800
7.900		8.0	79.0	41.0	36.0	6589 7.900
7.940	5/16	8.0	79.0	41.0	36.0	6589 7.940
8.000		8.0	79.0	41.0	36.0	6589 8.000
8.100		10.0	89.0	47.0	40.0	6589 8.100
8.200		10.0	89.0	47.0	40.0	6589 8.200
8.300		10.0	89.0	47.0	40.0	6589 8.300
8.330	21/64	10.0	89.0	47.0	40.0	6589 8.330
8.400		10.0	89.0	47.0	40.0	6589 8.400
8.500		10.0	89.0	47.0	40.0	6589 8.500

Article no. **6589**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
8.600		10.0	89.0	47.0	40.0	6589 8.600
8.700		10.0	89.0	47.0	40.0	6589 8.700
8.730	11/32	10.0	89.0	47.0	40.0	6589 8.730
8.800		10.0	89.0	47.0	40.0	6589 8.800
8.900		10.0	89.0	47.0	40.0	6589 8.900
9.000		10.0	89.0	47.0	40.0	6589 9.000
9.100		10.0	89.0	47.0	40.0	6589 9.100
9.130	23/64	10.0	89.0	47.0	40.0	6589 9.130
9.200		10.0	89.0	47.0	40.0	6589 9.200
9.250		10.0	89.0	47.0	40.0	6589 9.250
9.300		10.0	89.0	47.0	40.0	6589 9.300
9.340		10.0	89.0	47.0	40.0	6589 9.340
9.400		10.0	89.0	47.0	40.0	6589 9.400
9.500		10.0	89.0	47.0	40.0	6589 9.500
9.520	3/8	10.0	89.0	47.0	40.0	6589 9.520
9.550		10.0	89.0	47.0	40.0	6589 9.550
9.600		10.0	89.0	47.0	40.0	6589 9.600
9.700		10.0	89.0	47.0	40.0	6589 9.700
9.800		10.0	89.0	47.0	40.0	6589 9.800
9.900		10.0	89.0	47.0	40.0	6589 9.900
9.920	25/64	10.0	89.0	47.0	40.0	6589 9.920
10.000		10.0	89.0	47.0	40.0	6589 10.000
10.100		12.0	102.0	55.0	45.0	6589 10.100
10.200		12.0	102.0	55.0	45.0	6589 10.200
10.300		12.0	102.0	55.0	45.0	6589 10.300
10.320	13/32	12.0	102.0	55.0	45.0	6589 10.320
10.400		12.0	102.0	55.0	45.0	6589 10.400
10.500		12.0	102.0	55.0	45.0	6589 10.500
10.600		12.0	102.0	55.0	45.0	6589 10.600
10.700		12.0	102.0	55.0	45.0	6589 10.700
10.720	27/64	12.0	102.0	55.0	45.0	6589 10.720
10.800		12.0	102.0	55.0	45.0	6589 10.800
10.900		12.0	102.0	55.0	45.0	6589 10.900
11.000		12.0	102.0	55.0	45.0	6589 11.000
11.100		12.0	102.0	55.0	45.0	6589 11.100
11.110	7/16	12.0	102.0	55.0	45.0	6589 11.110
11.200		12.0	102.0	55.0	45.0	6589 11.200
11.300		12.0	102.0	55.0	45.0	6589 11.300
11.400		12.0	102.0	55.0	45.0	6589 11.400
11.500		12.0	102.0	55.0	45.0	6589 11.500
11.510	29/64	12.0	102.0	55.0	45.0	6589 11.510
11.550		12.0	102.0	55.0	45.0	6589 11.550
11.600		12.0	102.0	55.0	45.0	6589 11.600
11.700		12.0	102.0	55.0	45.0	6589 11.700
11.800		12.0	102.0	55.0	45.0	6589 11.800
11.900		12.0	102.0	55.0	45.0	6589 11.900
11.910	15/32	12.0	102.0	55.0	45.0	6589 11.910
12.000		12.0	102.0	55.0	45.0	6589 12.000
12.100		14.0	107.0	60.0	45.0	6589 12.100
12.200		14.0	107.0	60.0	45.0	6589 12.200
12.300	31/64	14.0	107.0	60.0	45.0	6589 12.300
12.400		14.0	107.0	60.0	45.0	6589 12.400
12.500		14.0	107.0	60.0	45.0	6589 12.500
12.600		14.0	107.0	60.0	45.0	6589 12.600
12.700	1/2	14.0	107.0	60.0	45.0	6589 12.700
12.800		14.0	107.0	60.0	45.0	6589 12.800
12.900		14.0	107.0	60.0	45.0	6589 12.900
13.000		14.0	107.0	60.0	45.0	6589 13.000
13.100	33/64	14.0	107.0	60.0	45.0	6589 13.100
13.200		14.0	107.0	60.0	45.0	6589 13.200
13.300		14.0	107.0	60.0	45.0	6589 13.300
13.400		14.0	107.0	60.0	45.0	6589 13.400
13.490	17/32	14.0	107.0	60.0	45.0	6589 13.490
13.500		14.0	107.0	60.0	45.0	6589 13.500
13.600		14.0	107.0	60.0	45.0	6589 13.600
13.700		14.0	107.0	60.0	45.0	6589 13.700

Article no.						6589
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
13.890	35/64	14.0	107.0	60.0	45.0	6589 13.890
13.900		14.0	107.0	60.0	45.0	6589 13.900
14.000		14.0	107.0	60.0	45.0	6589 14.000
14.100		16.0	115.0	65.0	48.0	6589 14.100
14.200		16.0	115.0	65.0	48.0	6589 14.200
14.290	9/16	16.0	115.0	65.0	48.0	6589 14.290
14.300		16.0	115.0	65.0	48.0	6589 14.300
14.400		16.0	115.0	65.0	48.0	6589 14.400
14.500		16.0	115.0	65.0	48.0	6589 14.500
14.600		16.0	115.0	65.0	48.0	6589 14.600
14.680	37/64	16.0	115.0	65.0	48.0	6589 14.680
14.700		16.0	115.0	65.0	48.0	6589 14.700
14.800		16.0	115.0	65.0	48.0	6589 14.800
14.900		16.0	115.0	65.0	48.0	6589 14.900
15.000		16.0	115.0	65.0	48.0	6589 15.000
15.080	19/32	16.0	115.0	65.0	48.0	6589 15.080
15.100		16.0	115.0	65.0	48.0	6589 15.100
15.200		16.0	115.0	65.0	48.0	6589 15.200
15.300		16.0	115.0	65.0	48.0	6589 15.300
15.400		16.0	115.0	65.0	48.0	6589 15.400
15.480	39/64	16.0	115.0	65.0	48.0	6589 15.480
15.500		16.0	115.0	65.0	48.0	6589 15.500
15.550		16.0	115.0	65.0	48.0	6589 15.550
15.600		16.0	115.0	65.0	48.0	6589 15.600
15.700		16.0	115.0	65.0	48.0	6589 15.700
15.800		16.0	115.0	65.0	48.0	6589 15.800
15.870	5/8	16.0	115.0	65.0	48.0	6589 15.870
15.900		16.0	115.0	65.0	48.0	6589 15.900
16.000		16.0	115.0	65.0	48.0	6589 16.000

Article no.						6589
d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
16.270	41/64	18.0	123.0	73.0	48.0	6589 16.270
16.300		18.0	123.0	73.0	48.0	6589 16.300
16.500		18.0	123.0	73.0	48.0	6589 16.500
16.670	21/32	18.0	123.0	73.0	48.0	6589 16.670
16.700		18.0	123.0	73.0	48.0	6589 16.700
16.900		18.0	123.0	73.0	48.0	6589 16.900
17.000		18.0	123.0	73.0	48.0	6589 17.000
17.070	43/64	18.0	123.0	73.0	48.0	6589 17.070
17.460	11/16	18.0	123.0	73.0	48.0	6589 17.460
17.500		18.0	123.0	73.0	48.0	6589 17.500
17.550		18.0	123.0	73.0	48.0	6589 17.550
17.700		18.0	123.0	73.0	48.0	6589 17.700
17.860	45/64	18.0	123.0	73.0	48.0	6589 17.860
18.000		18.0	123.0	73.0	48.0	6589 18.000
18.260	23/32	20.0	131.0	79.0	50.0	6589 18.260
18.500		20.0	131.0	79.0	50.0	6589 18.500
18.700		20.0	131.0	79.0	50.0	6589 18.700
18.900		20.0	131.0	79.0	50.0	6589 18.900
19.000		20.0	131.0	79.0	50.0	6589 19.000
19.050	3/4	20.0	131.0	79.0	50.0	6589 19.050
19.250		20.0	131.0	79.0	50.0	6589 19.250
19.300		20.0	131.0	79.0	50.0	6589 19.300
19.450	49/64	20.0	131.0	79.0	50.0	6589 19.450
19.500		20.0	131.0	79.0	50.0	6589 19.500
19.550		20.0	131.0	79.0	50.0	6589 19.550
19.700		20.0	131.0	79.0	50.0	6589 19.700
19.800		20.0	131.0	79.0	50.0	6589 19.800
19.840	25/32	20.0	131.0	79.0	50.0	6589 19.840
20.000		20.0	131.0	79.0	50.0	6589 20.000

Ratio drills with coolant ducts, 3-fluted, 5xD

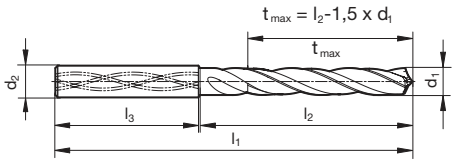
Article no. **6590**

Cutting data page 10

NEW | VHM | F | FT 200 U | 5xD | DIN 6537L | 130° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

spiropoint grind • optimal centering • suitable for interrupted cutting • maximum performance



Article no. **6590**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
4.000		6.0	74.0	36.0	36.0	6590 4.000
4.040		6.0	74.0	36.0	36.0	6590 4.040
4.100		6.0	74.0	36.0	36.0	6590 4.100
4.200		6.0	74.0	36.0	36.0	6590 4.200
4.300		6.0	74.0	36.0	36.0	6590 4.300
4.370	11/64	6.0	74.0	36.0	36.0	6590 4.370
4.400		6.0	74.0	36.0	36.0	6590 4.400
4.500		6.0	74.0	36.0	36.0	6590 4.500
4.600		6.0	74.0	36.0	36.0	6590 4.600
4.650		6.0	74.0	36.0	36.0	6590 4.650
4.700		6.0	74.0	36.0	36.0	6590 4.700
4.760	3/16	6.0	82.0	44.0	36.0	6590 4.760
4.800		6.0	82.0	44.0	36.0	6590 4.800
4.900		6.0	82.0	44.0	36.0	6590 4.900
5.000		6.0	82.0	44.0	36.0	6590 5.000
5.100		6.0	82.0	44.0	36.0	6590 5.100
5.110		6.0	82.0	44.0	36.0	6590 5.110
5.160	13/64	6.0	82.0	44.0	36.0	6590 5.160
5.200		6.0	82.0	44.0	36.0	6590 5.200
5.300		6.0	82.0	44.0	36.0	6590 5.300
5.400		6.0	82.0	44.0	36.0	6590 5.400
5.410		6.0	82.0	44.0	36.0	6590 5.410
5.500		6.0	82.0	44.0	36.0	6590 5.500
5.550		6.0	82.0	44.0	36.0	6590 5.550
5.560	7/32	6.0	82.0	44.0	36.0	6590 5.560
5.600		6.0	82.0	44.0	36.0	6590 5.600
5.700		6.0	82.0	44.0	36.0	6590 5.700
5.800		6.0	82.0	44.0	36.0	6590 5.800
5.900		6.0	82.0	44.0	36.0	6590 5.900
5.950	15/64	6.0	82.0	44.0	36.0	6590 5.950
6.000		6.0	82.0	44.0	36.0	6590 6.000
6.100		8.0	91.0	53.0	36.0	6590 6.100
6.200		8.0	91.0	53.0	36.0	6590 6.200
6.300		8.0	91.0	53.0	36.0	6590 6.300
6.350	1/4	8.0	91.0	53.0	36.0	6590 6.350
6.400		8.0	91.0	53.0	36.0	6590 6.400
6.500		8.0	91.0	53.0	36.0	6590 6.500
6.530		8.0	91.0	53.0	36.0	6590 6.530
6.550		8.0	91.0	53.0	36.0	6590 6.550
6.600		8.0	91.0	53.0	36.0	6590 6.600
6.700		8.0	91.0	53.0	36.0	6590 6.700
6.750	17/64	8.0	91.0	53.0	36.0	6590 6.750
6.800		8.0	91.0	53.0	36.0	6590 6.800
6.900		8.0	91.0	53.0	36.0	6590 6.900
7.000		8.0	91.0	53.0	36.0	6590 7.000
7.100		8.0	91.0	53.0	36.0	6590 7.100
7.140	9/32	8.0	91.0	53.0	36.0	6590 7.140
7.200		8.0	91.0	53.0	36.0	6590 7.200
7.300		8.0	91.0	53.0	36.0	6590 7.300
7.400		8.0	91.0	53.0	36.0	6590 7.400
7.500		8.0	91.0	53.0	36.0	6590 7.500
7.540	19/64	8.0	91.0	53.0	36.0	6590 7.540
7.550		8.0	91.0	53.0	36.0	6590 7.550
7.600		8.0	91.0	53.0	36.0	6590 7.600
7.650		8.0	91.0	53.0	36.0	6590 7.650
7.700		8.0	91.0	53.0	36.0	6590 7.700
7.800		8.0	91.0	53.0	36.0	6590 7.800
7.900		8.0	91.0	53.0	36.0	6590 7.900
7.940	5/16	8.0	91.0	53.0	36.0	6590 7.940
8.000		8.0	91.0	53.0	36.0	6590 8.000
8.100		10.0	103.0	61.0	40.0	6590 8.100
8.200		10.0	103.0	61.0	40.0	6590 8.200
8.300		10.0	103.0	61.0	40.0	6590 8.300
8.330	21/64	10.0	103.0	61.0	40.0	6590 8.330
8.400		10.0	103.0	61.0	40.0	6590 8.400
8.500		10.0	103.0	61.0	40.0	6590 8.500

Article no. **6590**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
8.600		10.0	103.0	61.0	40.0	6590 8.600
8.700		10.0	103.0	61.0	40.0	6590 8.700
8.730	11/32	10.0	103.0	61.0	40.0	6590 8.730
8.800		10.0	103.0	61.0	40.0	6590 8.800
8.900		10.0	103.0	61.0	40.0	6590 8.900
9.000		10.0	103.0	61.0	40.0	6590 9.000
9.100		10.0	103.0	61.0	40.0	6590 9.100
9.130	23/64	10.0	103.0	61.0	40.0	6590 9.130
9.200		10.0	103.0	61.0	40.0	6590 9.200
9.250		10.0	103.0	61.0	40.0	6590 9.250
9.300		10.0	103.0	61.0	40.0	6590 9.300
9.340		10.0	103.0	61.0	40.0	6590 9.340
9.400		10.0	103.0	61.0	40.0	6590 9.400
9.500		10.0	103.0	61.0	40.0	6590 9.500
9.520	3/8	10.0	103.0	61.0	40.0	6590 9.520
9.550		10.0	103.0	61.0	40.0	6590 9.550
9.600		10.0	103.0	61.0	40.0	6590 9.600
9.700		10.0	103.0	61.0	40.0	6590 9.700
9.800		10.0	103.0	61.0	40.0	6590 9.800
9.900		10.0	103.0	61.0	40.0	6590 9.900
9.920	25/64	10.0	103.0	61.0	40.0	6590 9.920
10.000		10.0	103.0	61.0	40.0	6590 10.000
10.100		12.0	118.0	71.0	45.0	6590 10.100
10.200		12.0	118.0	71.0	45.0	6590 10.200
10.300		12.0	118.0	71.0	45.0	6590 10.300
10.320	13/32	12.0	118.0	71.0	45.0	6590 10.320
10.400		12.0	118.0	71.0	45.0	6590 10.400
10.500		12.0	118.0	71.0	45.0	6590 10.500
10.600		12.0	118.0	71.0	45.0	6590 10.600
10.700		12.0	118.0	71.0	45.0	6590 10.700
10.720	27/64	12.0	118.0	71.0	45.0	6590 10.720
10.800		12.0	118.0	71.0	45.0	6590 10.800
10.900		12.0	118.0	71.0	45.0	6590 10.900
11.000		12.0	118.0	71.0	45.0	6590 11.000
11.100		12.0	118.0	71.0	45.0	6590 11.100
11.110	7/16	12.0	118.0	71.0	45.0	6590 11.110
11.200		12.0	118.0	71.0	45.0	6590 11.200
11.300		12.0	118.0	71.0	45.0	6590 11.300
11.400		12.0	118.0	71.0	45.0	6590 11.400
11.500		12.0	118.0	71.0	45.0	6590 11.500
11.510	29/64	12.0	118.0	71.0	45.0	6590 11.510
11.550		12.0	118.0	71.0	45.0	6590 11.550
11.600		12.0	118.0	71.0	45.0	6590 11.600
11.700		12.0	118.0	71.0	45.0	6590 11.700
11.800		12.0	118.0	71.0	45.0	6590 11.800
11.900		12.0	118.0	71.0	45.0	6590 11.900
11.910	15/32	12.0	118.0	71.0	45.0	6590 11.910
12.000		12.0	118.0	71.0	45.0	6590 12.000
12.100		14.0	124.0	77.0	45.0	6590 12.100
12.200		14.0	124.0	77.0	45.0	6590 12.200
12.300	31/64	14.0	124.0	77.0	45.0	6590 12.300
12.400		14.0	124.0	77.0	45.0	6590 12.400
12.500		14.0	124.0	77.0	45.0	6590 12.500
12.600		14.0	124.0	77.0	45.0	6590 12.600
12.700	1/2	14.0	124.0	77.0	45.0	6590 12.700
12.800		14.0	124.0	77.0	45.0	6590 12.800
12.900		14.0	124.0	77.0	45.0	6590 12.900
13.000		14.0	124.0	77.0	45.0	6590 13.000
13.100	33/64	14.0	124.0	77.0	45.0	6590 13.100
13.200		14.0	124.0	77.0	45.0	6590 13.200
13.300		14.0	124.0	77.0	45.0	6590 13.300
13.400		14.0	124.0	77.0	45.0	6590 13.400
13.490	17/32	14.0	124.0	77.0	45.0	6590 13.490
13.500		14.0	124.0	77.0	45.0	6590 13.500
13.600		14.0	124.0	77.0	45.0	6590 13.600
13.700		14.0	124.0	77.0	45.0	6590 13.700

Article no. **6590**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
13.800		14.0	124.0	77.0	45.0	6590 13.800
13.890	35/64	14.0	124.0	77.0	45.0	6590 13.890
13.900		14.0	124.0	77.0	45.0	6590 13.900
14.000		14.0	124.0	77.0	45.0	6590 14.000
14.100		16.0	133.0	83.0	48.0	6590 14.100
14.200		16.0	133.0	83.0	48.0	6590 14.200
14.290	9/16	16.0	133.0	83.0	48.0	6590 14.290
14.300		16.0	133.0	83.0	48.0	6590 14.300
14.400		16.0	133.0	83.0	48.0	6590 14.400
14.500		16.0	133.0	83.0	48.0	6590 14.500
14.600		16.0	133.0	83.0	48.0	6590 14.600
14.680	37/64	16.0	133.0	83.0	48.0	6590 14.680
14.700		16.0	133.0	83.0	48.0	6590 14.700
14.800		16.0	133.0	83.0	48.0	6590 14.800
14.900		16.0	133.0	83.0	48.0	6590 14.900
15.000		16.0	133.0	83.0	48.0	6590 15.000
15.080	19/32	16.0	133.0	83.0	48.0	6590 15.080
15.100		16.0	133.0	83.0	48.0	6590 15.100
15.200		16.0	133.0	83.0	48.0	6590 15.200
15.300		16.0	133.0	83.0	48.0	6590 15.300
15.400		16.0	133.0	83.0	48.0	6590 15.400
15.480	39/64	16.0	133.0	83.0	48.0	6590 15.480
15.500		16.0	133.0	83.0	48.0	6590 15.500
15.550		16.0	133.0	83.0	48.0	6590 15.550
15.600		16.0	133.0	83.0	48.0	6590 15.600
15.700		16.0	133.0	83.0	48.0	6590 15.700
15.800		16.0	133.0	83.0	48.0	6590 15.800
15.870	5/8	16.0	133.0	83.0	48.0	6590 15.870
15.900		16.0	133.0	83.0	48.0	6590 15.900
16.000		16.0	133.0	83.0	48.0	6590 16.000

Article no. **6590**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
16.270	41/64	18.0	143.0	93.0	48.0	6590 16.270
16.300		18.0	143.0	93.0	48.0	6590 16.300
16.500		18.0	143.0	93.0	48.0	6590 16.500
16.670	21/32	18.0	143.0	93.0	48.0	6590 16.670
16.700		18.0	143.0	93.0	48.0	6590 16.700
16.900		18.0	143.0	93.0	48.0	6590 16.900
17.000		18.0	143.0	93.0	48.0	6590 17.000
17.070	43/64	18.0	143.0	93.0	48.0	6590 17.070
17.460	11/16	18.0	143.0	93.0	48.0	6590 17.460
17.500		18.0	143.0	93.0	48.0	6590 17.500
17.550		18.0	143.0	93.0	48.0	6590 17.550
17.700		18.0	143.0	93.0	48.0	6590 17.700
17.860	45/64	18.0	143.0	93.0	48.0	6590 17.860
18.000		18.0	143.0	93.0	48.0	6590 18.000
18.260	23/32	20.0	153.0	101.0	50.0	6590 18.260
18.500		20.0	153.0	101.0	50.0	6590 18.500
18.700		20.0	153.0	101.0	50.0	6590 18.700
18.900		20.0	153.0	101.0	50.0	6590 18.900
19.000		20.0	153.0	101.0	50.0	6590 19.000
19.050	3/4	20.0	153.0	101.0	50.0	6590 19.050
19.250		20.0	153.0	101.0	50.0	6590 19.250
19.300		20.0	153.0	101.0	50.0	6590 19.300
19.450	49/64	20.0	153.0	101.0	50.0	6590 19.450
19.500		20.0	153.0	101.0	50.0	6590 19.500
19.550		20.0	153.0	101.0	50.0	6590 19.550
19.700		20.0	153.0	101.0	50.0	6590 19.700
19.800		20.0	153.0	101.0	50.0	6590 19.800
19.840	25/32	20.0	153.0	101.0	50.0	6590 19.840
20.000		20.0	153.0	101.0	50.0	6590 20.000

Ratio drills with coolant ducts, 3-fluted, 8xD

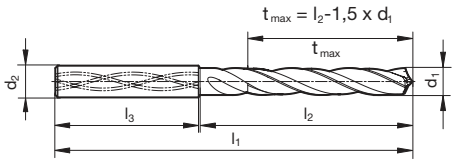
Article no. **6591**

Cutting data page 11

NEW | VHM | F | FT 200 U | 8xD | WN | 130° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

spiropoint grind • optimal centering • drilling without piloting • suitable for interrupted cutting • maximum performance



Article no. **6591**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
4.000		6.0	91.0	51.0	36.0	6591 4.000
4.040		6.0	91.0	51.0	36.0	6591 4.040
4.100		6.0	91.0	51.0	36.0	6591 4.100
4.200		6.0	91.0	51.0	36.0	6591 4.200
4.300		6.0	91.0	51.0	36.0	6591 4.300
4.370	11/64	6.0	91.0	51.0	36.0	6591 4.370
4.400		6.0	91.0	51.0	36.0	6591 4.400
4.500		6.0	91.0	51.0	36.0	6591 4.500
4.600		6.0	96.0	56.0	36.0	6591 4.600
4.700		6.0	96.0	56.0	36.0	6591 4.700
4.760	3/16	6.0	96.0	56.0	36.0	6591 4.760
4.800		6.0	96.0	56.0	36.0	6591 4.800
4.900		6.0	96.0	56.0	36.0	6591 4.900
5.000		6.0	96.0	56.0	36.0	6591 5.000
5.100		6.0	101.0	61.0	36.0	6591 5.100
5.110		6.0	101.0	61.0	36.0	6591 5.110
5.160	13/64	6.0	101.0	61.0	36.0	6591 5.160
5.200		6.0	101.0	61.0	36.0	6591 5.200
5.300		6.0	101.0	61.0	36.0	6591 5.300
5.400		6.0	101.0	61.0	36.0	6591 5.400
5.410		6.0	101.0	61.0	36.0	6591 5.410
5.500		6.0	101.0	61.0	36.0	6591 5.500
5.560	7/32	6.0	106.0	66.0	36.0	6591 5.560
5.600		6.0	106.0	66.0	36.0	6591 5.600
5.700		6.0	106.0	66.0	36.0	6591 5.700
5.800		6.0	106.0	66.0	36.0	6591 5.800
5.900		6.0	106.0	66.0	36.0	6591 5.900
5.950	15/64	6.0	106.0	66.0	36.0	6591 5.950
6.000		6.0	106.0	66.0	36.0	6591 6.000
6.100		8.0	126.0	86.0	36.0	6591 6.100
6.200		8.0	126.0	86.0	36.0	6591 6.200
6.300		8.0	126.0	86.0	36.0	6591 6.300
6.350	1/4	8.0	126.0	86.0	36.0	6591 6.350
6.400		8.0	126.0	86.0	36.0	6591 6.400
6.500		8.0	126.0	86.0	36.0	6591 6.500
6.530		8.0	126.0	86.0	36.0	6591 6.530
6.600		8.0	126.0	86.0	36.0	6591 6.600
6.700		8.0	126.0	86.0	36.0	6591 6.700
6.750	17/64	8.0	126.0	86.0	36.0	6591 6.750
6.800		8.0	126.0	86.0	36.0	6591 6.800
6.900		8.0	126.0	86.0	36.0	6591 6.900
7.000		8.0	126.0	86.0	36.0	6591 7.000
7.100		8.0	126.0	86.0	36.0	6591 7.100
7.140	9/32	8.0	126.0	86.0	36.0	6591 7.140
7.200		8.0	126.0	86.0	36.0	6591 7.200
7.300		8.0	126.0	86.0	36.0	6591 7.300
7.400		8.0	126.0	86.0	36.0	6591 7.400
7.500		8.0	126.0	86.0	36.0	6591 7.500
7.540	19/64	8.0	126.0	86.0	36.0	6591 7.540
7.600		8.0	126.0	86.0	36.0	6591 7.600
7.700		8.0	126.0	86.0	36.0	6591 7.700
7.800		8.0	126.0	86.0	36.0	6591 7.800
7.900		8.0	126.0	86.0	36.0	6591 7.900
7.940	5/16	8.0	126.0	86.0	36.0	6591 7.940
8.000		8.0	126.0	86.0	36.0	6591 8.000
8.100		10.0	150.0	106.0	40.0	6591 8.100
8.200		10.0	150.0	106.0	40.0	6591 8.200
8.300		10.0	150.0	106.0	40.0	6591 8.300
8.330	21/64	10.0	150.0	106.0	40.0	6591 8.330
8.400		10.0	150.0	106.0	40.0	6591 8.400
8.500		10.0	150.0	106.0	40.0	6591 8.500
8.600		10.0	150.0	106.0	40.0	6591 8.600
8.700		10.0	150.0	106.0	40.0	6591 8.700
8.730	11/32	10.0	150.0	106.0	40.0	6591 8.730
8.800		10.0	150.0	106.0	40.0	6591 8.800
8.900		10.0	150.0	106.0	40.0	6591 8.900

Article no. **6591**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
9.000		10.0	150.0	106.0	40.0	6591 9.000
9.100		10.0	150.0	106.0	40.0	6591 9.100
9.130	23/64	10.0	150.0	106.0	40.0	6591 9.130
9.200		10.0	150.0	106.0	40.0	6591 9.200
9.300		10.0	150.0	106.0	40.0	6591 9.300
9.340		10.0	150.0	106.0	40.0	6591 9.340
9.400		10.0	150.0	106.0	40.0	6591 9.400
9.500		10.0	150.0	106.0	40.0	6591 9.500
9.520	3/8	10.0	150.0	106.0	40.0	6591 9.520
9.600		10.0	150.0	106.0	40.0	6591 9.600
9.700		10.0	150.0	106.0	40.0	6591 9.700
9.800		10.0	150.0	106.0	40.0	6591 9.800
9.900		10.0	150.0	106.0	40.0	6591 9.900
9.920	25/64	10.0	150.0	106.0	40.0	6591 9.920
10.000		10.0	150.0	106.0	40.0	6591 10.000
10.100		12.0	175.0	126.0	45.0	6591 10.100
10.200		12.0	175.0	126.0	45.0	6591 10.200
10.300		12.0	175.0	126.0	45.0	6591 10.300
10.320	13/32	12.0	175.0	126.0	45.0	6591 10.320
10.400		12.0	175.0	126.0	45.0	6591 10.400
10.500		12.0	175.0	126.0	45.0	6591 10.500
10.600		12.0	175.0	126.0	45.0	6591 10.600
10.700		12.0	175.0	126.0	45.0	6591 10.700
10.720	27/64	12.0	175.0	126.0	45.0	6591 10.720
10.800		12.0	175.0	126.0	45.0	6591 10.800
10.900		12.0	175.0	126.0	45.0	6591 10.900
11.000		12.0	175.0	126.0	45.0	6591 11.000
11.100		12.0	175.0	126.0	45.0	6591 11.100
11.110	7/16	12.0	175.0	126.0	45.0	6591 11.110
11.200		12.0	175.0	126.0	45.0	6591 11.200
11.300		12.0	175.0	126.0	45.0	6591 11.300
11.400		12.0	175.0	126.0	45.0	6591 11.400
11.500		12.0	175.0	126.0	45.0	6591 11.500
11.510	29/64	12.0	175.0	126.0	45.0	6591 11.510
11.600		12.0	175.0	126.0	45.0	6591 11.600
11.700		12.0	175.0	126.0	45.0	6591 11.700
11.800		12.0	175.0	126.0	45.0	6591 11.800
11.900		12.0	175.0	126.0	45.0	6591 11.900
11.910	15/32	12.0	175.0	126.0	45.0	6591 11.910
12.000		12.0	175.0	126.0	45.0	6591 12.000
12.300	31/64	14.0	195.0	146.0	45.0	6591 12.300
12.500		14.0	195.0	146.0	45.0	6591 12.500
12.700	1/2	14.0	195.0	146.0	45.0	6591 12.700
13.000		14.0	195.0	146.0	45.0	6591 13.000
13.100	33/64	14.0	195.0	146.0	45.0	6591 13.100
13.490	17/32	14.0	195.0	146.0	45.0	6591 13.490
13.500		14.0	195.0	146.0	45.0	6591 13.500
13.890	35/64	14.0	195.0	146.0	45.0	6591 13.890
14.000		14.0	195.0	146.0	45.0	6591 14.000
14.290	9/16	16.0	218.0	166.0	48.0	6591 14.290
14.500		16.0	218.0	166.0	48.0	6591 14.500
14.680	37/64	16.0	218.0	166.0	48.0	6591 14.680
15.000		16.0	218.0	166.0	48.0	6591 15.000
15.080	19/32	16.0	218.0	166.0	48.0	6591 15.080
15.480	39/64	16.0	218.0	166.0	48.0	6591 15.480
15.500		16.0	218.0	166.0	48.0	6591 15.500
15.870	5/8	16.0	218.0	166.0	48.0	6591 15.870
16.000		16.0	218.0	166.0	48.0	6591 16.000

Ratio drills with coolant ducts, 3-fluted, 12xD

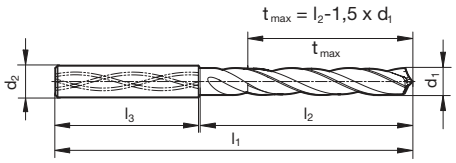
Article no. **6592**

Cutting data page 12

NEW | VHM | F | FT 200 U | 12xD | WN | 130° | h7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

spiropoint grind • optimal centering • drilling without piloting • suitable for interrupted cutting • maximum performance



Article no. **6592**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
4.000		6.0	109.0	69.0	36.0	6592 4.000
4.040		6.0	109.0	69.0	36.0	6592 4.040
4.100		6.0	109.0	69.0	36.0	6592 4.100
4.200		6.0	109.0	69.0	36.0	6592 4.200
4.300		6.0	109.0	69.0	36.0	6592 4.300
4.370	11/64	6.0	109.0	69.0	36.0	6592 4.370
4.400		6.0	109.0	69.0	36.0	6592 4.400
4.500		6.0	109.0	69.0	36.0	6592 4.500
4.600		6.0	116.0	76.0	36.0	6592 4.600
4.700		6.0	116.0	76.0	36.0	6592 4.700
4.760	3/16	6.0	116.0	76.0	36.0	6592 4.760
4.800		6.0	116.0	76.0	36.0	6592 4.800
4.900		6.0	116.0	76.0	36.0	6592 4.900
5.000		6.0	116.0	76.0	36.0	6592 5.000
5.100		6.0	123.0	83.0	36.0	6592 5.100
5.110		6.0	123.0	83.0	36.0	6592 5.110
5.160	13/64	6.0	123.0	83.0	36.0	6592 5.160
5.200		6.0	123.0	83.0	36.0	6592 5.200
5.300		6.0	123.0	83.0	36.0	6592 5.300
5.400		6.0	123.0	83.0	36.0	6592 5.400
5.410		6.0	123.0	83.0	36.0	6592 5.410
5.500		6.0	123.0	83.0	36.0	6592 5.500
5.560	7/32	6.0	130.0	90.0	36.0	6592 5.560
5.600		6.0	130.0	90.0	36.0	6592 5.600
5.700		6.0	130.0	90.0	36.0	6592 5.700
5.800		6.0	130.0	90.0	36.0	6592 5.800
5.900		6.0	130.0	90.0	36.0	6592 5.900
5.950	15/64	6.0	130.0	90.0	36.0	6592 5.950
6.000		6.0	130.0	90.0	36.0	6592 6.000
6.100		8.0	158.0	118.0	36.0	6592 6.100
6.200		8.0	158.0	118.0	36.0	6592 6.200
6.300		8.0	158.0	118.0	36.0	6592 6.300
6.350	1/4	8.0	158.0	118.0	36.0	6592 6.350
6.400		8.0	158.0	118.0	36.0	6592 6.400
6.500		8.0	158.0	118.0	36.0	6592 6.500
6.530		8.0	158.0	118.0	36.0	6592 6.530
6.600		8.0	158.0	118.0	36.0	6592 6.600
6.700		8.0	158.0	118.0	36.0	6592 6.700
6.750	17/64	8.0	158.0	118.0	36.0	6592 6.750
6.800		8.0	158.0	118.0	36.0	6592 6.800
6.900		8.0	158.0	118.0	36.0	6592 6.900
7.000		8.0	158.0	118.0	36.0	6592 7.000
7.100		8.0	158.0	118.0	36.0	6592 7.100
7.140	9/32	8.0	158.0	118.0	36.0	6592 7.140
7.200		8.0	158.0	118.0	36.0	6592 7.200
7.300		8.0	158.0	118.0	36.0	6592 7.300
7.400		8.0	158.0	118.0	36.0	6592 7.400
7.500		8.0	158.0	118.0	36.0	6592 7.500
7.540	19/64	8.0	158.0	118.0	36.0	6592 7.540
7.600		8.0	158.0	118.0	36.0	6592 7.600
7.700		8.0	158.0	118.0	36.0	6592 7.700
7.800		8.0	158.0	118.0	36.0	6592 7.800
7.900		8.0	158.0	118.0	36.0	6592 7.900
7.940	5/16	8.0	158.0	118.0	36.0	6592 7.940
8.000		8.0	158.0	118.0	36.0	6592 8.000
8.100		10.0	190.0	146.0	40.0	6592 8.100
8.200		10.0	190.0	146.0	40.0	6592 8.200
8.300		10.0	190.0	146.0	40.0	6592 8.300
8.330	21/64	10.0	190.0	146.0	40.0	6592 8.330
8.400		10.0	190.0	146.0	40.0	6592 8.400
8.500		10.0	190.0	146.0	40.0	6592 8.500
8.600		10.0	190.0	146.0	40.0	6592 8.600
8.700		10.0	190.0	146.0	40.0	6592 8.700
8.730	11/32	10.0	190.0	146.0	40.0	6592 8.730
8.800		10.0	190.0	146.0	40.0	6592 8.800
8.900		10.0	190.0	146.0	40.0	6592 8.900

Article no. **6592**

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm	Order no.
9.000		10.0	190.0	146.0	40.0	6592 9.000
9.100		10.0	190.0	146.0	40.0	6592 9.100
9.130	23/64	10.0	190.0	146.0	40.0	6592 9.130
9.200		10.0	190.0	146.0	40.0	6592 9.200
9.300		10.0	190.0	146.0	40.0	6592 9.300
9.340		10.0	190.0	146.0	40.0	6592 9.340
9.400		10.0	190.0	146.0	40.0	6592 9.400
9.500		10.0	190.0	146.0	40.0	6592 9.500
9.520	3/8	10.0	190.0	146.0	40.0	6592 9.520
9.600		10.0	190.0	146.0	40.0	6592 9.600
9.700		10.0	190.0	146.0	40.0	6592 9.700
9.800		10.0	190.0	146.0	40.0	6592 9.800
9.900		10.0	190.0	146.0	40.0	6592 9.900
9.920	25/64	10.0	190.0	146.0	40.0	6592 9.920
10.000		10.0	190.0	146.0	40.0	6592 10.000
10.100		12.0	223.0	174.0	45.0	6592 10.100
10.200		12.0	223.0	174.0	45.0	6592 10.200
10.300		12.0	223.0	174.0	45.0	6592 10.300
10.320	13/32	12.0	223.0	174.0	45.0	6592 10.320
10.400		12.0	223.0	174.0	45.0	6592 10.400
10.500		12.0	223.0	174.0	45.0	6592 10.500
10.600		12.0	223.0	174.0	45.0	6592 10.600
10.700		12.0	223.0	174.0	45.0	6592 10.700
10.720	27/64	12.0	223.0	174.0	45.0	6592 10.720
10.800		12.0	223.0	174.0	45.0	6592 10.800
10.900		12.0	223.0	174.0	45.0	6592 10.900
11.000		12.0	223.0	174.0	45.0	6592 11.000
11.100		12.0	223.0	174.0	45.0	6592 11.100
11.110	7/16	12.0	223.0	174.0	45.0	6592 11.110
11.200		12.0	223.0	174.0	45.0	6592 11.200
11.300		12.0	223.0	174.0	45.0	6592 11.300
11.400		12.0	223.0	174.0	45.0	6592 11.400
11.500		12.0	223.0	174.0	45.0	6592 11.500
11.510	29/64	12.0	223.0	174.0	45.0	6592 11.510
11.600		12.0	223.0	174.0	45.0	6592 11.600
11.700		12.0	223.0	174.0	45.0	6592 11.700
11.800		12.0	223.0	174.0	45.0	6592 11.800
11.900		12.0	223.0	174.0	45.0	6592 11.900
11.910	15/32	12.0	223.0	174.0	45.0	6592 11.910
12.000		12.0	223.0	174.0	45.0	6592 12.000
12.300	31/64	14.0	251.0	202.0	45.0	6592 12.300
12.500		14.0	251.0	202.0	45.0	6592 12.500
12.700	1/2	14.0	251.0	202.0	45.0	6592 12.700
13.000		14.0	251.0	202.0	45.0	6592 13.000
13.100	33/64	14.0	251.0	202.0	45.0	6592 13.100
13.490	17/32	14.0	251.0	202.0	45.0	6592 13.490
13.500		14.0	251.0	202.0	45.0	6592 13.500
13.890	35/64	14.0	251.0	202.0	45.0	6592 13.890
14.000		14.0	251.0	202.0	45.0	6592 14.000
14.290	9/16	16.0	282.0	230.0	48.0	6592 14.290
14.500		16.0	282.0	230.0	48.0	6592 14.500
14.680	37/64	16.0	282.0	230.0	48.0	6592 14.680
15.000		16.0	282.0	230.0	48.0	6592 15.000
15.080	19/32	16.0	282.0	230.0	48.0	6592 15.080
15.480	39/64	16.0	282.0	230.0	48.0	6592 15.480
15.500		16.0	282.0	230.0	48.0	6592 15.500
15.870	5/8	16.0	282.0	230.0	48.0	6592 15.870
16.000		16.0	282.0	230.0	48.0	6592 16.000

Ratio drills with coolant ducts, 3-fluted, FT200U, 3xD and 5xD

Machining group		f (mm/rev) with nom. Ø								
	v_c (m/min)	4	6	8	10	12	14	16	18	20
P1.1.1 Unalloyed steel. annealed. 0.15 % C. Rm 420 N/mm². 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/mm². 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/mm². 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/mm². 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/mm². 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/mm². 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/mm². 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/mm². 180 HB	130	0,300	0,410	0,510	0,605	0,695	0,785	0,865	0,945	1,025
P2.1.2 Low-alloy steel. heat-treated. Rm 930 N/mm². 275 HB	130	0,300	0,410	0,510	0,605	0,695	0,785	0,865	0,945	1,025
P2.1.3 Low-alloy steel. heat-treated. Rm 1020 N/mm². 300 HB	110	0,255	0,350	0,435	0,515	0,590	0,665	0,735	0,805	0,870
P2.1.4 Low-alloy steel. heat-treated. Rm 1190 N/mm². 350 HB	100	0,225	0,310	0,385	0,455	0,520	0,585	0,650	0,710	0,770
P3.1.1 High-alloy steel and tool steel. annealed. Rm 680 N/mm². 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/mm². 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/mm². 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/mm². 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	0,300	0,410	0,510	0,605	0,695	0,785	0,865	0,945	1,025
K1.1.2 Grey cast iron. pearlitic/martensitic. 260 HB	110	0,255	0,350	0,435	0,515	0,590	0,665	0,735	0,805	0,870
K1.2.1 Cast iron with spheroidal graphite. ferritic. 160 HB	110	0,255	0,350	0,435	0,515	0,590	0,665	0,735	0,805	0,870
K1.2.2 Cast iron with spheroidal graphite. pearlitic. 250 HB	105	0,240	0,330	0,410	0,485	0,555	0,625	0,695	0,760	0,820
K1.3.1 Malleable cast iron. ferritic. 130 HB	105	0,240	0,330	0,410	0,485	0,555	0,625	0,695	0,760	0,820
K1.3.2 Malleable cast iron. pearlitic. 230 HB	90	0,210	0,290	0,360	0,425	0,485	0,550	0,605	0,665	0,720
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/mm²	60	0,095	0,130	0,160	0,190	0,220	0,250	0,275	0,300	0,325
S2.1.2 Titanium alloys. Alpha and Beta alloys. hardened. Rm 1050 N/mm²	45	0,075	0,105	0,130	0,155	0,175	0,200	0,220	0,240	0,260
H1.1.1 Hardened steel. hardened and tempered. < 55 HRC	35	0,060	0,080	0,100	0,120	0,140	0,155	0,175	0,190	0,205
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										

All the values stated are guide values. You can find detailed cutting values online in our Gühring Navigator at navigator.guehring.de/en.

Ratio drills with coolant ducts, 3-fluted, FT 200 U, 8xD

Machining group		f (mm/rev) with nom. Ø						
	v_c (m/min)	4	6	8	10	12	14	16
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm², 125 HB	180	0.300	0.410	0.510	0.605	0.695	0.785	0.865
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm², 125 HB	160	0.270	0.370	0.460	0.545	0.625	0.705	0.780
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm², 190 HB	160	0.270	0.370	0.460	0.545	0.625	0.705	0.780
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm², 190 HB	155	0.255	0.350	0.435	0.515	0.590	0.665	0.735
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm², 250 HB	155	0.255	0.350	0.435	0.515	0.590	0.665	0.735
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm², 270 HB	145	0.240	0.330	0.410	0.485	0.555	0.625	0.695
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm², 300 HB	135	0.225	0.310	0.385	0.455	0.520	0.585	0.650
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm², 180 HB	130	0.305	0.410	0.515	0.610	0.700	0.785	0.870
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm², 275 HB	130	0.305	0.410	0.515	0.610	0.700	0.785	0.870
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm², 300 HB	110	0.260	0.350	0.435	0.515	0.595	0.665	0.740
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm², 350 HB	100	0.225	0.310	0.385	0.455	0.525	0.590	0.650
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm², 200 HB	80	0.190	0.260	0.325	0.385	0.440	0.495	0.550
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm², 325 HB	70	0.165	0.220	0.275	0.325	0.375	0.420	0.465
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
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm², 200 HB	55	0.085	0.115	0.145	0.175	0.200	0.225	0.245
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm², 240 HB	50	0.080	0.110	0.140	0.165	0.185	0.210	0.235
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	0.300	0.410	0.510	0.605	0.695	0.785	0.865
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	110	0.255	0.350	0.435	0.515	0.590	0.665	0.735
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	110	0.255	0.350	0.435	0.515	0.590	0.665	0.735
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	105	0.240	0.330	0.410	0.485	0.555	0.625	0.695
K1.3.1 Malleable cast iron, ferritic, 130 HB	105	0.240	0.330	0.410	0.485	0.555	0.625	0.695
K1.3.2 Malleable cast iron, pearlitic, 230 HB	90	0.210	0.290	0.360	0.425	0.485	0.550	0.605
K2.1.1 Vermicular graphite cast iron (GJV)	90	0.240	0.325	0.405	0.480	0.550	0.620	0.685
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	70	0.180	0.245	0.305	0.360	0.415	0.465	0.515
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	180	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	180	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	160	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	160	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	135	0.165	0.220	0.275	0.325	0.375	0.420	0.465
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	0.060	0.080	0.100	0.120	0.140	0.155	0.175
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	0.050	0.065	0.080	0.095	0.110	0.125	0.140
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	35	0.060	0.080	0.100	0.120	0.140	0.155	0.175
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	0.040	0.055	0.070	0.085	0.095	0.110	0.120
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.040	0.055	0.070	0.085	0.095	0.110	0.120
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm²	60	0.095	0.130	0.160	0.190	0.220	0.250	0.275
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm²	45	0.075	0.105	0.130	0.155	0.175	0.200	0.220
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	35	0.050	0.065	0.080	0.095	0.110	0.125	0.135
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								

All the values stated are guide values. You can find detailed cutting values online in our Gühring Navigator at navigator.guehring.de/en.

Ratio drills with coolant ducts, 3-fluted, FT 200 U, 12xD

Machining group		f (mm/rev) with nom. Ø						
	v_c (m/min)	4	6	8	10	12	14	16
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm², 125 HB	160	0.300	0.410	0.510	0.605	0.695	0.785	0.865
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm², 125 HB	145	0.270	0.370	0.460	0.545	0.625	0.705	0.780
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm², 190 HB	145	0.270	0.370	0.460	0.545	0.625	0.705	0.780
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm², 190 HB	135	0.255	0.350	0.435	0.515	0.590	0.665	0.735
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm², 250 HB	135	0.255	0.350	0.435	0.515	0.590	0.665	0.735
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm², 270 HB	130	0.240	0.330	0.410	0.485	0.555	0.625	0.695
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm², 300 HB	120	0.225	0.310	0.385	0.455	0.520	0.585	0.650
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm², 180 HB	110	0.300	0.410	0.510	0.605	0.695	0.785	0.865
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm², 275 HB	110	0.300	0.410	0.510	0.605	0.695	0.785	0.865
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm², 300 HB	95	0.255	0.350	0.435	0.515	0.590	0.665	0.735
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm², 350 HB	85	0.225	0.310	0.385	0.455	0.520	0.585	0.650
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm², 200 HB	80	0.190	0.260	0.325	0.385	0.440	0.495	0.550
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm², 325 HB	70	0.165	0.220	0.275	0.325	0.375	0.420	0.465
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
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm², 200 HB	55	0.085	0.115	0.145	0.175	0.200	0.225	0.245
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm², 240 HB	50	0.080	0.110	0.140	0.165	0.185	0.210	0.235
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	120	0.300	0.410	0.510	0.605	0.695	0.785	0.865
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	100	0.255	0.350	0.435	0.515	0.590	0.665	0.735
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	100	0.255	0.350	0.435	0.515	0.590	0.665	0.735
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	95	0.240	0.330	0.410	0.485	0.555	0.625	0.695
K1.3.1 Malleable cast iron, ferritic, 130 HB	95	0.240	0.330	0.410	0.485	0.555	0.625	0.695
K1.3.2 Malleable cast iron, pearlitic, 230 HB	85	0.210	0.290	0.360	0.425	0.485	0.550	0.605
K2.1.1 Vermicular graphite cast iron (GJV)	90	0.240	0.325	0.405	0.480	0.550	0.620	0.685
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	70	0.180	0.245	0.305	0.360	0.415	0.465	0.515
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	100	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	100	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	90	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	90	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	75	0.165	0.220	0.275	0.325	0.375	0.420	0.465
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	0.060	0.080	0.100	0.120	0.140	0.155	0.175
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	0.050	0.065	0.080	0.095	0.110	0.125	0.140
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	35	0.060	0.080	0.100	0.120	0.140	0.155	0.175
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	0.040	0.055	0.070	0.085	0.095	0.110	0.120
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.040	0.055	0.070	0.085	0.095	0.110	0.120
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm²	60	0.095	0.130	0.160	0.190	0.220	0.250	0.275
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm²	45	0.075	0.105	0.130	0.155	0.175	0.200	0.220
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	35	0.050	0.065	0.080	0.095	0.110	0.125	0.135
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								

All the values stated are guide values. You can find detailed cutting values online in our Gühring Navigator at navigator.guehring.de/en.

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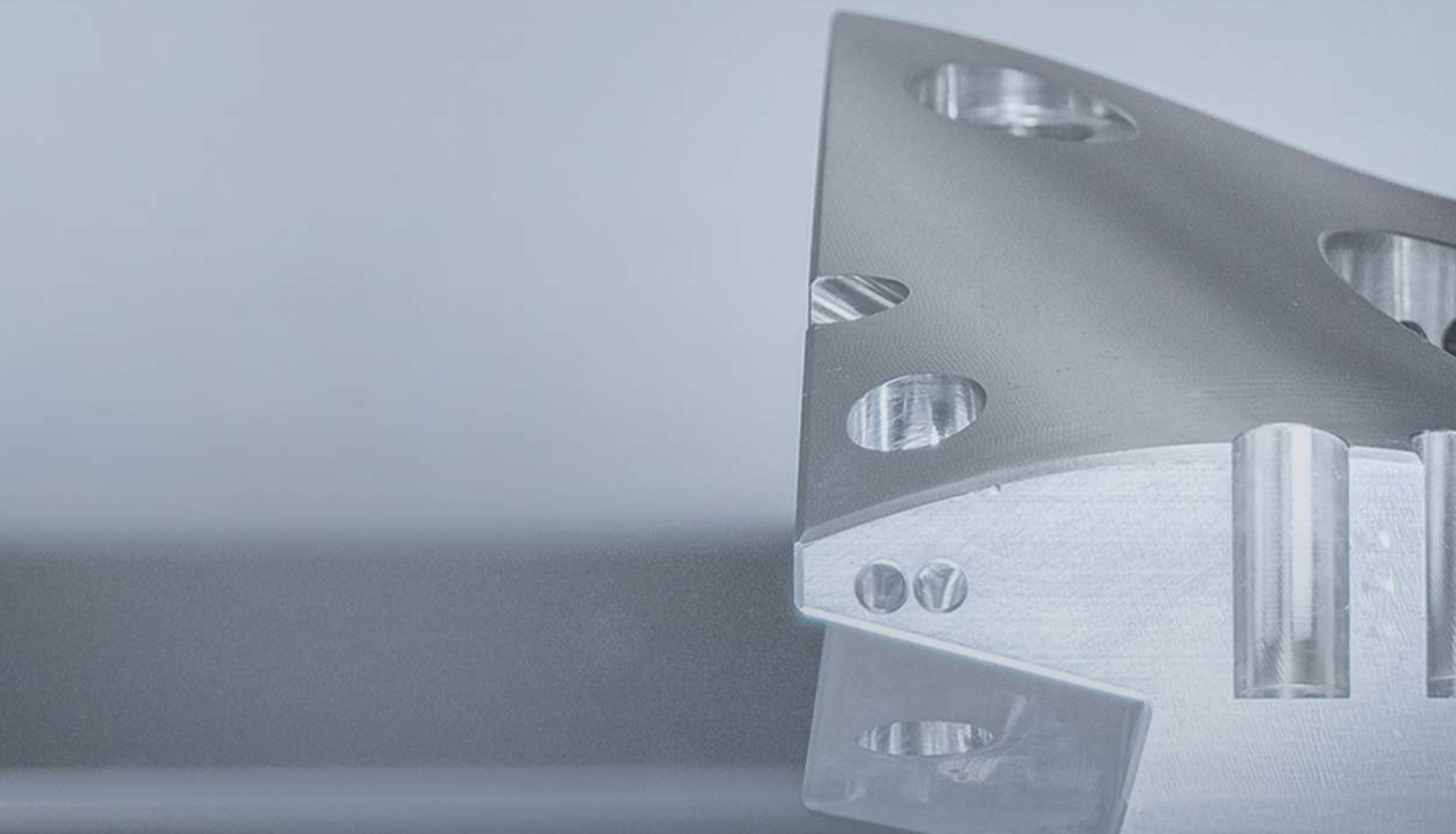


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