ADD engineering

PREMIUM LINE
SOLID CARBIDE END MILLS

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SOLID CARBIDE END MILLS

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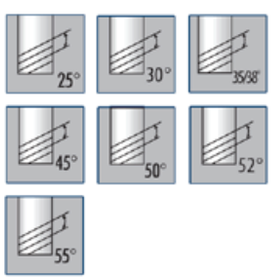
Machined materials

Pages colors according with group of machined materials.
All drills are universal to use.

Universal	Steel	Hard materials	Stainless steel	Aluminium and non-ferrous metals

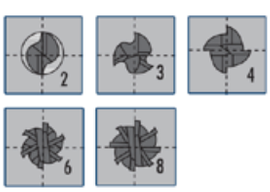
Pictograms

Helix angle

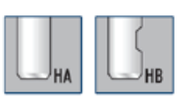


Machined materials

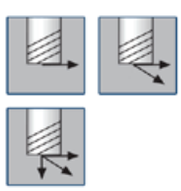
Teeth number



Shaft type



Feed direction



For high-speed and high-perfomance machining

Corner radius

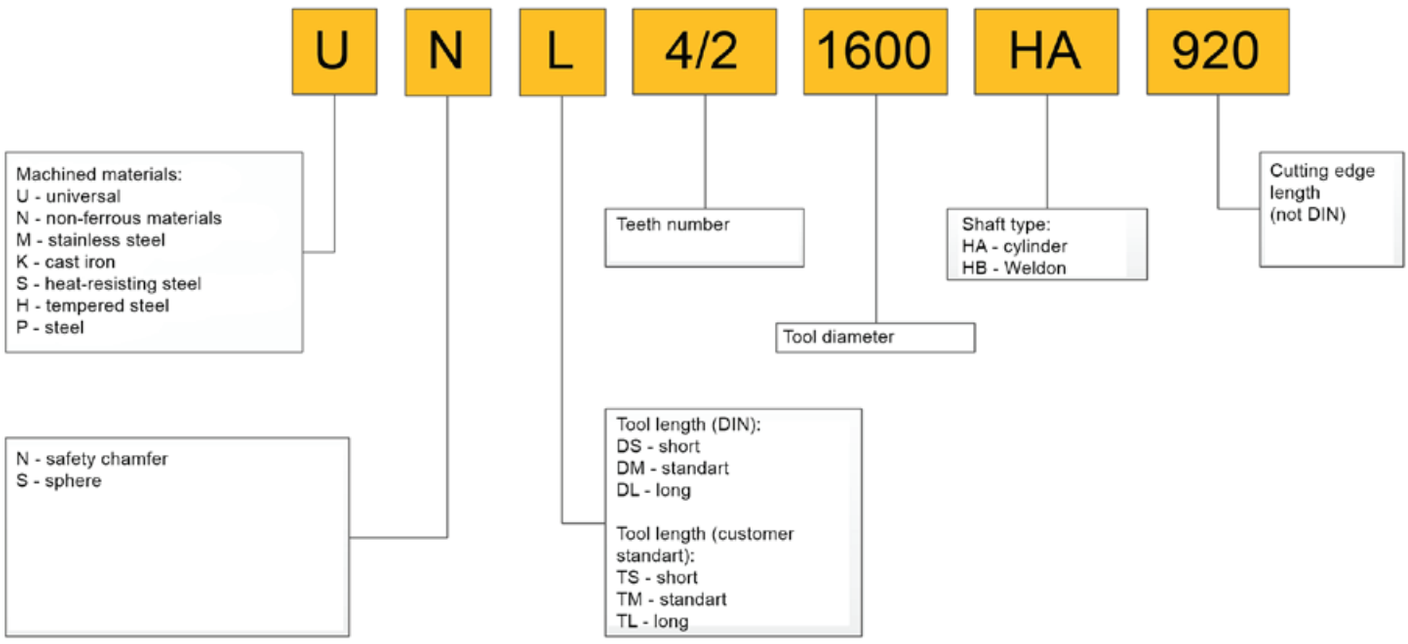
Point angle

Drills with 4 guide margins

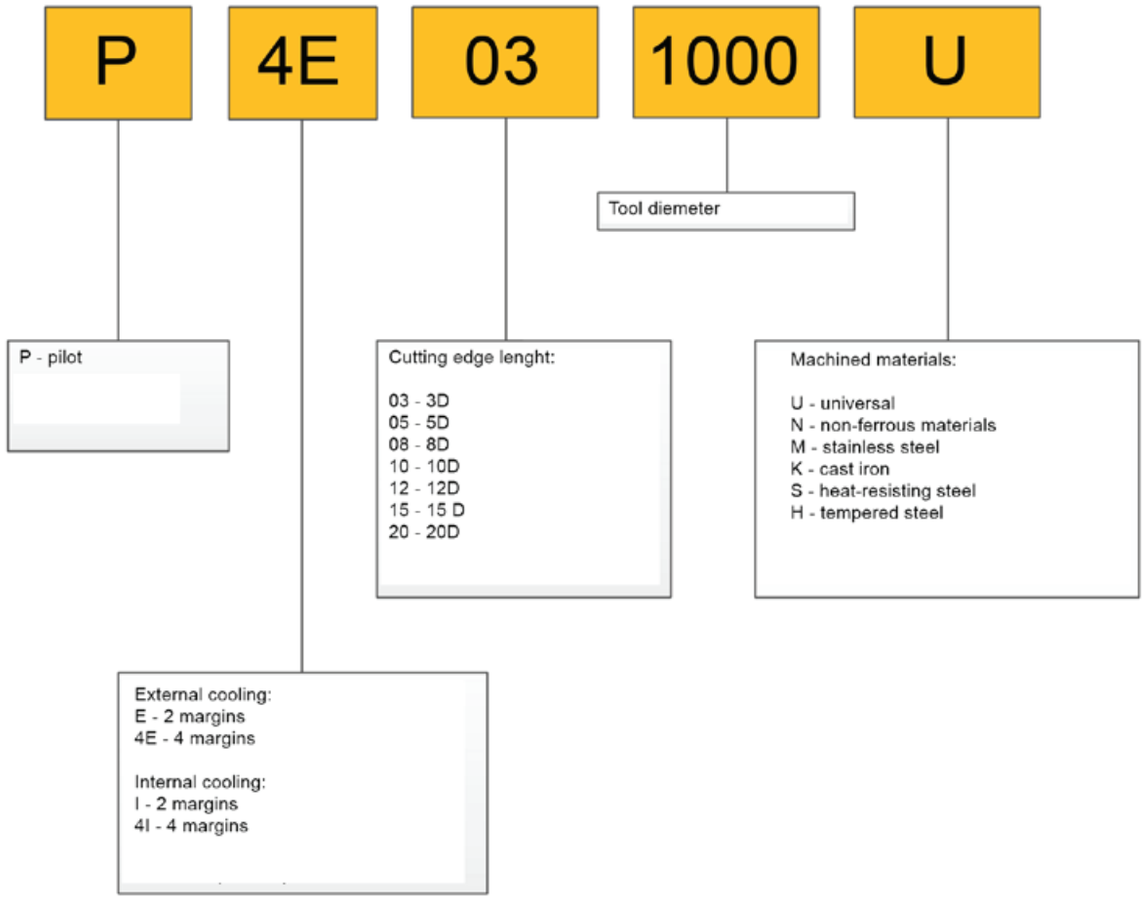
Internal/external cooling

Coating

End mills code



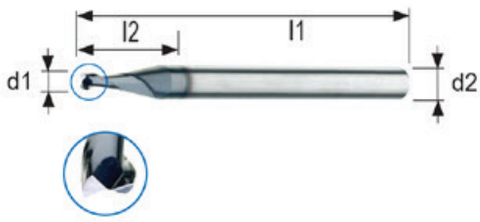
Drills code

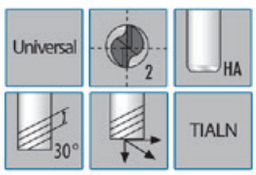


UNIVERSAL

Series UNTM2

Solid carbide end mills, micro
standart, Z=2



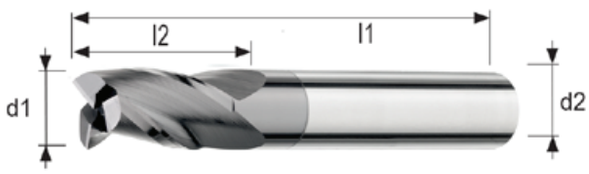


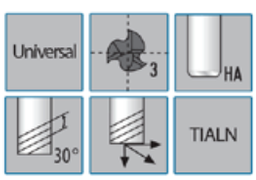
Ø d1	Ø d2	l2	l1	Z	
0,1	3	0,3	38	2	UNTM2/2.0010HA0030
0,15	3	0,3	38	2	UNTM2/2.0015HA0030
0,2	3	0,5	38	2	UNTM2/2.0020HA0050
0,25	3	0,5	38	2	UNTM2/2.0025HA0050
0,3	3	1,0	38	2	UNTM2/2.0030HA0100
0,4	3	1,0	38	2	UNTM2/2.0040HA0100
0,5	3	1,5	38	2	UNTM2/2.0050HA0150
0,6	3	1,5	38	2	UNTM2/2.0060HA0150
0,7	3	2,0	38	2	UNTM2/2.0070HA0200
0,8	3	2,0	38	2	UNTM2/2.0080HA0200
0,9	3	2,5	38	2	UNTM2/2.0090HA0250
1,0	3	3,0	38	2	UNTM2/2.0100HA0300
1,1	3	3,0	38	2	UNTM2/2.0110HA0300
1,2	3	4,0	38	2	UNTM2/2.0120HA0400
1,3	3	4,0	38	2	UNTM2/2.0130HA0400
1,4	3	4,0	38	2	UNTM2/2.0140HA0400
1,5	3	4,0	38	2	UNTM2/2.0150HA0400
1,6	3	4,0	38	2	UNTM2/2.0160HA0400
1,7	3	4,0	38	2	UNTM2/2.0170HA0400
1,8	3	5,0	38	2	UNTM2/2.0180HA0500
1,9	3	5,0	38	2	UNTM2/2.0190HA0500
2,0	3	5,0	38	2	UNTM2/2.0200HA0500

UNIVERSAL

Series UNTM3

Solid carbide end mills
standart, Z=3



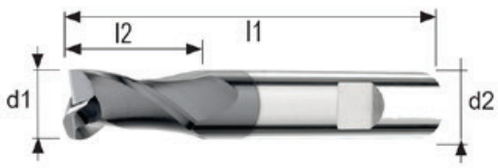


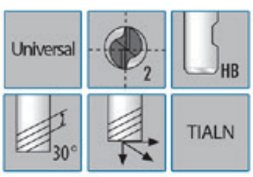
Ø d1	Ø d2	l2	l1	Z	
1,0	3	3	38	3	UNTM3/1.0100HA0300
1,5	3	5	38	3	UNTM3/1.0150HA0500
2,0	3	7	38	3	UNTM3/1.0200HA0700
2,5	3	7	38	3	UNTM3/1.0250HA0700
3,0	3	8	38	3	UNTM3/1.0300HA0800
3,5	4	11	50	3	UNTM3/1.0350HA1100
4,0	4	11	50	3	UNTM3/1.0400HA1100
4,5	5	11	50	3	UNTM3/1.0450HA1100
5,0	5	10	50	3	UNTM3/1.0500HA1000
5,5	6	10	50	3	UNTM3/1.0550HA1000
6,0	6	10	57	3	UNTM3/1.0600HA1000
6,75	8	13	63	3	UNTM3/1.0675HA1300
7,0	8	13	63	3	UNTM3/1.0700HA1300
7,75	8	16	63	3	UNTM3/1.0775HA1600
8,0	8	16	63	3	UNTM3/1.0800HA1600
8,7	10	16	72	3	UNTM3/1.0870HA41600
9,0	10	16	72	3	UNTM3/1.0900HA1600
9,7	10	19	72	3	UNTM3/1.0970HA1900
10,0	10	22	72	3	UNTM3/1.1000HA2200
11,0	12	22	83	3	UNTM3/1.1100HA2200
11,7	12	22	83	3	UNTM3/1.1170HA2200
12,0	12	22	83	3	UNTM3/1.1200HA2200
13,7	14	22	83	3	UNTM3/1.1370HA2200
14,0	14	22	83	3	UNTM3/1.1400HA2200
15,7	16	26	83	3	UNTM3/1.1570HA2600
16,0	16	26	83	3	UNTM3/1.1600HA2600
17,7	18	26	92	3	UNTM3/1.1770HA2600
18,0	18	26	92	3	UNTM3/1.1800HA2600
19,7	20	32	104	3	UNTM3/1.1970HA3200
20,0	20	32	104	3	UNTM3/1.2000HA3200

UNIVERSAL

Series UNDL2

Solid carbide end mills
long, Z=2



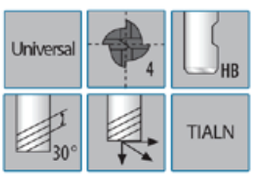


Ø d1	Ø d2	l2	l1	Z	
1,0	3	2	38	2	UNDL2/2.0100HB
1,5	3	3	38	2	UNDL2/2.0150HB
2,0	3	6	38	2	UNDL2/2.0200HB
2,5	3	6	38	2	UNDL2/2.0250HB
2,8	3	7	38	2	UNDL2/2.0280HB
3,0	3	7	38	2	UNDL2/2.0300HB
3,5	6	8	57	2	UNDL2/2.0350HB
4,0	6	8	57	2	UNDL2/2.0400HB
4,5	6	10	57	2	UNDL2/2.0450HB
4,8	6	10	57	2	UNDL2/2.0480HB
5,0	6	10	57	2	UNDL2/2.0500HB
5,5	6	10	57	2	UNDL2/2.0550HB
5,75	6	10	57	2	UNDL2/2.0575HB
6,0	6	10	57	2	UNDL2/2.0600HB
6,75	8	13	63	2	UNDL2/2.0675HB
7,0	8	16	63	2	UNDL2/2.0700HB
7,5	8	16	63	2	UNDL2/2.0750HB
7,75	8	16	63	2	UNDL2/2.0775HB
8,0	8	16	63	2	UNDL2/2.0800HB
8,7	10	16	72	2	UNDL2/2.0870HB
9,0	10	16	72	2	UNDL2/2.0900HB
9,7	10	19	72	2	UNDL2/2.0970HB
10,0	10	19	72	2	UNDL2/2.1000HB
11,7	12	22	83	2	UNDL2/2.1170HB
12,0	12	22	83	2	UNDL2/2.1200HB
13,7	14	22	83	2	UNDL2/2.1370HB
14,0	14	22	83	2	UNDL2/2.1400HB
15,7	16	26	92	2	UNDL2/2.1570HB
16,0	16	26	92	2	UNDL2/2.1600HB
18,0	18	26	92	2	UNDL2/2.1800HB
20,0	20	32	104	2	UNDL2/2.2000HB

UNIVERSAL

Series UNDL4

Solid carbide end mills
long, Z=4

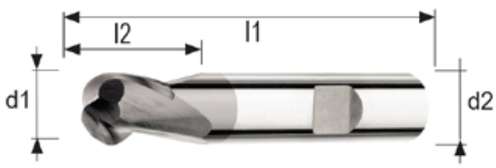


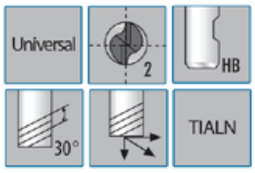
Ø d1	Ø d2	l2	l1	Z	
2,0	3	7	57	4	UNDL4/2.0200HB
3,0	6	8	57	4	UNDL4/2.0300HB
3,5	6	10	57	4	UNDL4/2.0350HB
4,0	6	11	57	4	UNDL4/2.0400HB
5,0	6	13	57	4	UNDL4/2.0500HB
6,0	6	13	57	4	UNDL4/2.0600HB
7,0	8	16	63	4	UNDL4/2.0700HB
8,0	8	19	63	4	UNDL4/2.0800HB
9,0	10	22	73	4	UNDL4/2.0900HB
10,0	10	22	72	4	UNDL4/2.1000HB
12,0	12	26	83	4	UNDL4/2.1200HB
14,0	14	26	83	4	UNDL4/2.1400HB
16,0	16	32	92	4	UNDL4/2.1600HB
18,0	18	32	92	4	UNDL4/2.1800HB
20,0	20	38	104	4	UNDL4/2.2000HB

UNIVERSAL

Series USTS2

Solid carbide end mills, ball-nosed
short, Z=2

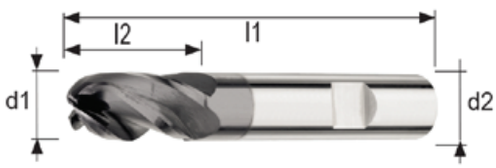


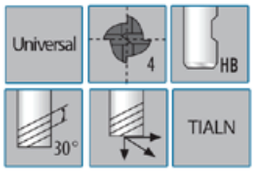


Ø d1	Ø d2	l2	l1	Z	
1,0	6	3	50	2	USTS2/2.0100HB0300
2,0	6	4	50	2	USTS2/2.0200HB0400
2,5	6	4	50	2	USTS2/2.0250HB0400
3,0	6	5	50	2	USTS2/2.0300HB0500
3,5	6	5	50	2	USTS2/2.0350HB0500
4,0	6	6	54	2	USTS2/2.0400HB0600
4,5	6	6	54	2	USTS2/2.0450HB0600
5,0	6	7	54	2	USTS2/2.0500HB0700
6,0	6	9	54	2	USTS2/2.0600HB0900
8,0	8	12	58	2	USTS2/2.0800HB1200
10,0	10	14	66	2	USTS2/2.1000HB1400
12,0	12	14	73	2	USTS2/2.1200HB1400
14,0	14	16	75	2	USTS2/2.1400HB1600
16,0	16	18	82	2	USTS2/2.1600HB1800
18,0	18	20	88	2	USTS2/2.1800HB2000
20,0	20	22	92	2	USTS2/2.2000HB2200

Series USTM4

Solid carbide end mills, ball-nosed
standart, Z=4



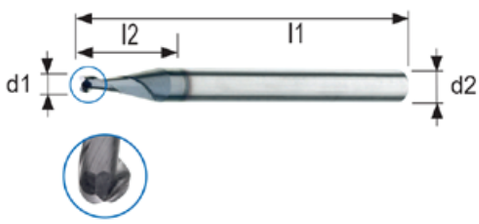


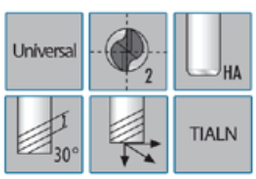
Ø d1	Ø d2	l2	l1	Z	
3,0	3	7	38	4	USTM4/2.0300HB0700
4,0	4	14	50	4	USTM4/2.0400HB1400
5,0	6	16	50	4	USTM4/2.0500HB1600
6,0	6	19	60	4	USTM4/2.0600HB1900
8,0	8	20	60	4	USTM4/2.0800HB2000
10,0	10	21	70	4	USTM4/2.1000HB2100
12,0	12	25	75	4	USTM4/2.1200HB2500
16,0	16	32	88	4	USTM4/2.1600HB3200
20,0	20	38	104	4	USTM4/2.2000HB3800

UNIVERSAL

Series USTM2

Solid carbide end mills, ball-nosed micro
standart, Z=2



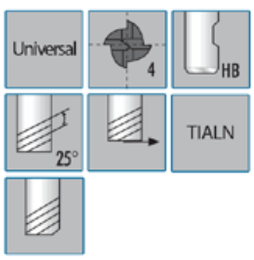


Ø d1	Ø d2	l2	l1	Z	
0,2	3	0,5	38	2	USTM2/2.0020HA0050
0,25	3	0,5	38	2	USTM2/2.0025HA0050
0,3	3	1,0	38	2	USTM2/2.0030HA0100
0,4	3	1,0	38	2	USTM2/2.0040HA0100
0,5	3	1,5	38	2	USTM2/2.0050HA0150
0,6	3	1,5	38	2	USTM2/2.0060HA0150
0,7	3	2,0	38	2	USTM2/2.0070HA0200
0,8	3	2,0	38	2	USTM2/2.0080HA0200
0,9	3	2,5	38	2	USTM2/2.0090HA0250
1,0	3	3,0	38	2	USTM2/2.0100HA0300
1,1	3	3,0	38	2	USTM2/2.0110HA0300
1,2	3	4,0	38	2	USTM2/2.0120HA0300
1,4	3	4,0	38	2	USTM2/2.0140HA0400
1,5	3	4,0	38	2	USTM2/2.0150HA0400
1,6	3	5,0	38	2	USTM2/2.0160HA0500
1,8	3	5,0	38	2	USTM2/2.0180HA0500
2,0	3	5,0	38	2	USTM2/2.0200HA0500

UNIVERSAL

Series UPTM4

Solid carbide end mills for rough machining
standart, Z=4

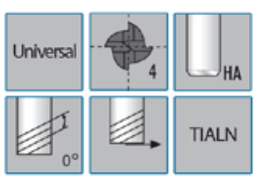


Ø d1	Ø d2	l2	l1	Z	
3,0	6	6	57	4	UPTM4.0300HB0600
4,0	6	8	57	4	UPTM4.0400HB0800
5,0	6	10	57	4	UPTM4.0500HB1000
6,0	6	13	57	4	UPTM4.0600HB1300
8,0	8	16	63	4	UPTM4.0800HB1600
10,0	10	22	72	4	UPTM4.1000HB2200
12,0	12	26	83	4	UPTM4.1200HB2600
14,0	14	26	83	4	UPTM4.1400HB2600
16,0	16	32	92	4	UPTM4.1600HB3200
20,0	20	38	104	4	UPTM4.2000HB3800
25,0	25	45	121	4	UPTM4.2500HB4500

UNIVERSAL

Series UFTM4

Solid carbide end mills, profile
standart, Z=4

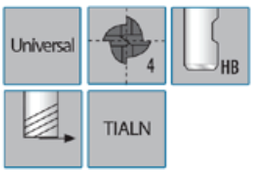


Ø d1	Ø d2	l1	R	Z	
5,6	6	58	0,2	4	UF02TM4.0560
5,4	6	58	0,3	4	UF03TM4.0540
5,2	6	58	0,4	4	UF04TM4.0520
7,0	8	70	0,5	4	UF05TM4.0700
6,0	8	70	1,0	4	UF10TM4.0600
7,0	10	75	1,5	4	UF15TM4.0700
6,0	10	75	2,0	4	UF20TM4.0600
7,0	12	75	2,5	4	UF25TM4.0700
6,0	12	75	3,0	4	UF30TM4.0600
9,0	16	80	3,5	4	UF35TM4.0900
8,0	16	80	4,0	4	UF40TM4.0800
7,0	16	80	4,5	4	UF45TM4.7800
10,0	20	80	5,0	4	UF50TM4.1000
8,0	20	80	6,0	4	UF60TM4.0800
9,0	25	100	8,0	4	UF80TM4.0900
5,0	25	100	10,0	4	UF100TM4.0500

UNIVERSAL

Series UK90DL3/4

Solid carbide end mills for chamfering
Z=3/4

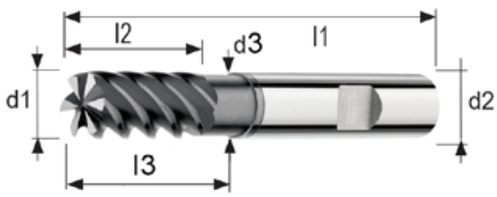


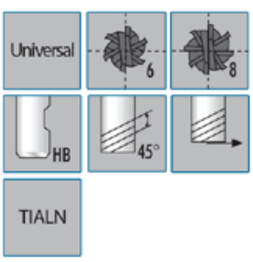
Ø d1	Ø d2	l1	Z	
1,0	3	38	3	UK90DL3.0100HB
2,0	3	38	3	UK90DL3.0200HB
3,0	3	38	4	UK90DL4.0300HB
4,0	4	54	4	UK90DL4.0400HB
6,0	6	57	4	UK90DL4.0600HB
8,0	8	63	4	UK90DL4.0800HB
10,0	10	72	4	UK90DL4.1000HB
12,0	12	83	4	UK90DL4.1200HB
16,0	16	92	4	UK90DL4.1600HB
20,0	20	104	4	UK90DL4.2000HB

UNIVERSAL

Series UNDL6/8

Solid carbide end mills
long, Z=6/8



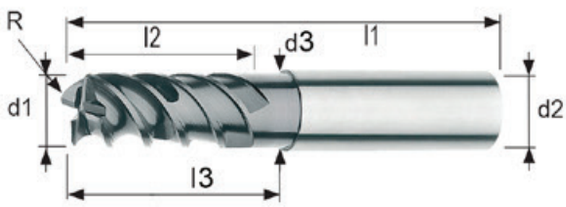


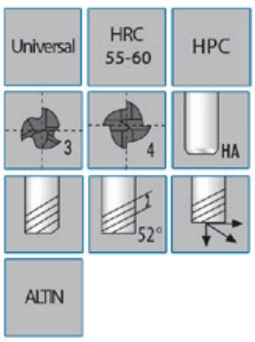
Ø d1	Ø d2	l2	l1	Ø d3	l3	Z	
3,0	6	8	57	2,7	11	6	UNDL6.0300HB
4,0	6	11	57	3,7	16	6	UNDL6.0400HB
5,0	6	13	57	4,6	18	6	UNDL6.0500HB
6,0	6	13	57	5,5	18	6	UNDL6.0600HB
8,0	8	19	63	7,5	24	6	UNDL6.0800HB
10,0	10	22	72	9,5	32	6	UNDL6.1000HB
12,0	12	26	83	11,5	36	6	UNDL6.1200HB
14,0	14	26	83	13,5	36	6	UNDL6.1400HB
16,0	16	32	92	15,5	42	6	UNDL6.1600HB
18,0	18	32	92	17,5	42	8	UNDL8.1800HB
20,0	20	38	104	19,5	48	8	UNDL8.2000HB
25,0	25	45	121	24,5	65	8	UNDL8.2500HB

STEEL MACHINING

Series PRTM3/4

Solid carbide end mills, corner radius
standart, Z=3/4



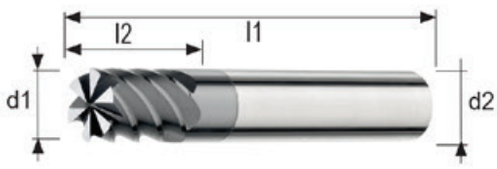


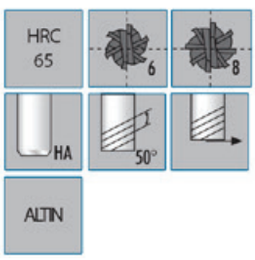
Ø d1	Ø d2	l2	l1	R	Ø d3	l3	Z	
3,0	6	8	57	0,2	2,9	18	3	PR02TM3/1.0300HA0800
3,0	6	8	57	0,5	2,9	18	3	PR05TM3/1.0300HA0800
4,0	6	11	57	0,3	3,8	21	4	PR03TM4/2.0400HA1100
4,0	6	11	57	0,5	3,8	21	4	PR05TM4/2.0400HA1100
4,0	6	11	57	1,0	3,8	21	4	PR10TM4/2.0400HA1100
5,0	6	13	57	0,3	4,8	21	4	PR03TM4/2.0500HA1300
5,0	6	13	57	0,5	4,8	21	4	PR05TM4/2.0500HA1300
5,0	6	13	57	1,0	4,8	21	4	PR10TM4/2.0500HA1300
6,0	6	13	57	0,3	5,8	21	4	PR03TM4/2.0600HA1300
6,0	6	13	57	0,5	5,8	21	4	PR05TM4/2.0600HA1300
6,0	6	13	57	1,0	5,8	21	4	PR10TM4/2.0600HA1300
6,0	6	13	57	1,5	5,8	21	4	PR15TM4/2.0600HA1300
6,0	6	13	57	2,0	5,8	21	4	PR20TM4/2.0600HA1300
8,0	8	19	63	0,5	7,8	27	4	PR05TM4/2.0800HA1900
8,0	8	19	63	1,0	7,8	27	4	PR10TM4/2.0800HA1900
8,0	8	19	63	1,5	7,8	27	4	PR15TM4/2.0800HA1900
8,0	8	19	63	2,0	7,8	27	4	PR20TM4/2.0800HA1900
10,0	10	22	72	0,5	9,8	32	4	PR05TM4/2.1000HA2200
10,0	10	22	72	1,0	9,8	32	4	PR10TM4/2.1000HA2200
10,0	10	22	72	1,5	9,8	32	4	PR15TM4/2.1000HA2200
10,0	10	22	72	2,0	9,8	32	4	PR20TM4/2.1000HA2200
12,0	12	26	83	0,5	11,8	38	4	PR05TM4/2.1200HA2600
12,0	12	26	83	1,0	11,8	38	4	PR10TM4/2.1200HA2600
12,0	12	26	83	1,5	11,8	38	4	PR15TM4/2.1200HA2600
12,0	12	26	83	2,0	11,8	38	4	PR20TM4/2.1200HA2600
16,0	16	32	92	0,5	15,8	44	4	PR05TM4/2.1600HA3200
16,0	16	32	92	1,0	15,8	44	4	PR10TM4/2.1600HA3200
16,0	16	32	92	1,5	15,8	44	4	PR15TM4/2.1600HA3200
16,0	16	32	92	2,0	15,8	44	4	PR20TM4/2.1600HA3200
16,0	16	32	150	1,0	15,8	44	4	PR10XTM4/2.1600HA3200
20,0	20	38	92	0,5	19,8	54	4	PR05TM4/2.2000HA3800
20,0	20	38	92	1,0	19,8	54	4	PR10TM4/2.2000HA3800
20,0	20	38	92	1,5	19,8	54	4	PR15TM4/2.2000HA3800
20,0	20	38	92	2,0	19,8	54	4	PR20TM4/2.2000HA3800
20,0	20	38	150	1,0	19,8	54	4	PR10XTM4/2.2000HA3800
25,0	25	38	160	2,0	19,8	54	4	PR20TM4/2.2500HA3800

HARD MATERIALS MACHINING

Series HNTS6/8

Solid carbide end mills
short, Z=6/8



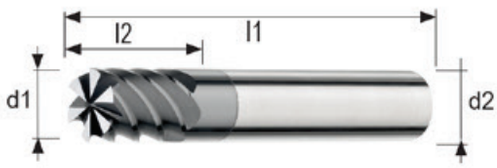


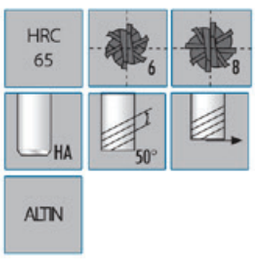
Ø d1	Ø d2	l2	l1	Z	
4,0	6	10	54	6	HNTS6.0400HA1000
5,0	6	10	54	6	HNTS6.0500HA1000
6,0	6	10	54	6	HNTS6.0600HA1000
7,0	8	12	58	6	HNTS6.0700HA1200
8,0	8	12	58	6	HNTS6.0800HA1200
9,0	10	14	66	6	HNTS6.0900HA1400
10,0	10	14	66	6	HNTS6.1000HA1400
12,0	12	16	73	6	HNTS6.1200HA1600
14,0	14	20	82	8	HNTS8.1400HA2000
16,0	16	20	82	8	HNTS8.1600HA2000
18,0	18	25	92	8	HNTS8.1800HA2500
20,0	20	25	92	8	HNTS8.2000HA2500

HARD MATERIALS MACHINING

Series HNTM6/8

Solid carbide end mills
standart, Z=6/8

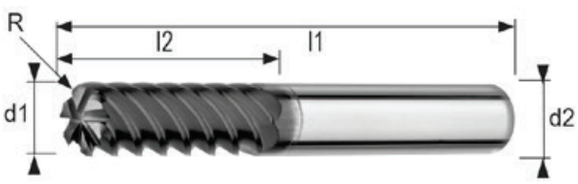


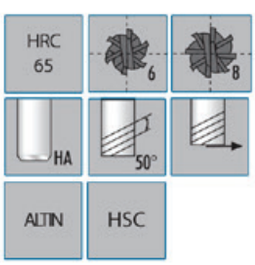


Ø d1	Ø d2	l2	l1	Z	
3,0	6	8	57	6	HNTM6.0300HA0800
4,0	6	11	57	6	HNTM6.0400HA1100
5,0	6	13	57	6	HNTM6.0500HA1300
6,0	6	13	57	6	HNTM6.0600HA1300
8,0	8	19	63	6	HNTM6.0800HA4900
10,0	10	22	72	6	HNTM6.1000HA2200
12,0	12	26	83	6	HNTM6.1200HA2600
14,0	14	26	83	8	HNTM8.1400HA2600
16,0	16	32	92	8	HNTM8.1600HA3200
18,0	18	32	92	8	HNTM8.1800HA3200
20,0	20	38	104	8	HNTM8.2000HA3800

Series HRTL6/8

Solid carbide end mills, corner radius
long, Z=6/8



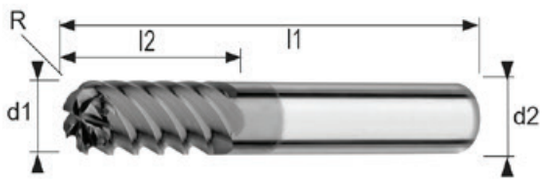


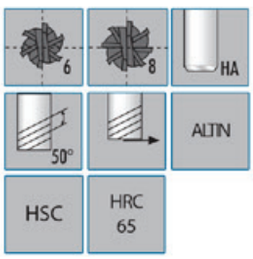
Ø d1	Ø d2	l2	l1	R	Z	
6,0	6	18	62	0,5	6	HR05TL6.0600HA1800
8,0	8	24	68	0,5	6	HR05TL6.0800HA2400
8,0	8	24	68	1,0	6	HR10TL6.0800HA2400
10,0	10	30	80	0,5	6	HR05TL6.1000HA3000
10,0	10	30	80	1,0	6	HR15TL6.1000HA3000
12,0	12	36	93	0,5	6	HR05TL6.1200HA3600
12,0	12	36	93	1,0	6	HR10TL6.1200HA3600
12,0	12	36	93	1,5	6	HR15TL6.1200HA3600
12,0	12	36	93	2,0	6	HR20TL6.1200HA3600
16,0	16	48	108	0,5	8	HR05TL8.1600HA4800
16,0	16	48	108	1,0	8	HR10TL8.1600HA4800
16,0	16	48	108	1,5	8	HR15TL8.1600HA4800
16,0	16	48	108	2,0	8	HR20TL8.1600HA4800
20,0	20	60	126	2,0	8	HR20TL8.2000HA6000

HARD MATERIALS MACHINING

Series HRTM6/8

Solid carbide end mills, corner radius
standart, Z=6/8



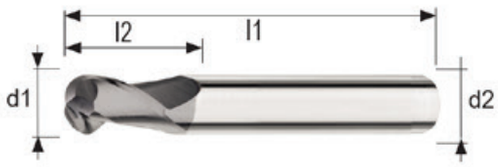


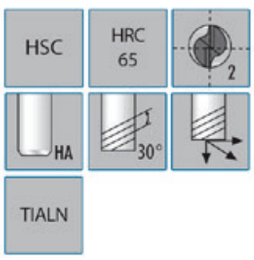
Ø d1	Ø d2	l2	l1	R	Z	
6,0	6	13	57	0,5	6	HR05TM6.0600HA1300
6,0	6	13	57	1,0	6	HR10TM6.0600HA1300
8,0	8	19	63	0,5	6	HR05TM6.0800HA1900
8,0	8	19	63	1,0	6	HR10TM6.0800HA1900
10,0	10	22	72	0,5	6	HR05TM6.1000HA2200
10,0	10	22	72	1,0	6	HR10TM6.1000HA2200
12,0	12	26	83	0,5	6	HR05TM6.1200HA2600
12,0	12	26	83	1,0	6	HR10TM6.1200HA2600
12,0	12	26	83	1,5	6	HR15TM6.1200HA2600
12,0	12	26	83	2,0	6	HR20TM6.1200HA2600
12,0	12	26	83	2,5	6	HR25TM6.1200HA2600
16,0	16	32	92	0,5	8	HR05TM8.1600HA3200
16,0	16	32	92	1,0	8	HR10TM8.1600HA3200
16,0	16	32	92	1,5	8	HR15TM8.1600HA3200
16,0	16	32	92	2,0	8	HR20TM8.1600HA3200
16,0	16	32	92	2,5	8	HR25TM8.1600HA3200
16,0	16	32	92	3,0	8	HR30TM8.1600HA3200
20,0	20	38	104	2,5	8	HR20TM8.2000HA3800

HARD MATERIALS MACHINING

Series HSTL2

Solid carbide end mills, ball-nosed
long, Z=2

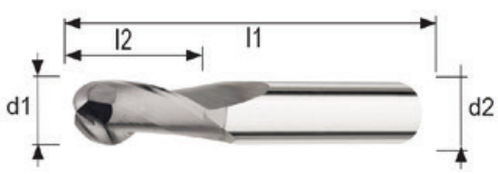


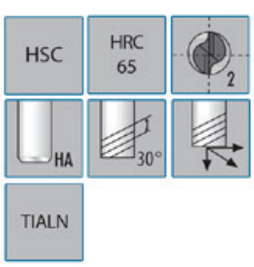


Ø d1	Ø d2	l2	l1	Z	
1,0	3	1,5	50	2	HSTL2/2.0100HA
1,5	3	5,5	50	2	HSTL2/2.0150HA
2,0	3	3,0	50	2	HSTL2/2.0200HA
2,5	3	4,0	50	2	HSTL2/2.0250HA
3,0	3	6,0	75	2	HSTL2/2.0300HA
4,0	4	8,0	75	2	HSTL2/2.0400HA
5,0	6	10,0	75	2	HSTL2/2.0500HA
6,0	6	12,0	100	2	HSTL2/2.0600HA
8,0	8	14,0	100	2	HSTL2/2.0800HA
10,0	10	18,0	100	2	HSTL2/2.1000HA
12,0	12	22,0	150	2	HSTL2/2.1200HA
14,0	14	26,0	150	2	HSTL2/2.1400HA
16,0	16	30,0	150	2	HSTL2/2.1600HA
18,0	18	34,0	150	2	HSTL2/2.1800HA
20,0	20	38,0	150	2	HSTL2/2.2000HA

Series HSTS2

Solid carbide end mills, ball-nosed
short, Z=2



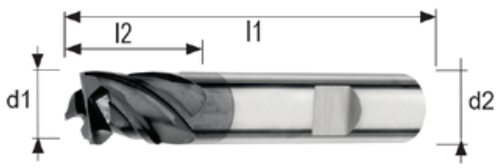


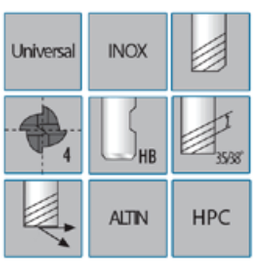
Ø d1	Ø d2	l2	l1	Z	
3,0	3	6	50	2	HSTS2/2.0300HA0600
4,0	4	8	54	2	HSTS2/2.0400HA0800
5,0	6	10	54	2	HSTS2/2.0500HA1000
6,0	6	12	54	2	HSTS2/2.0600HA1200
8,0	8	14	58	2	HSTS2/2.0800HA1400
10,0	10	18	66	2	HSTS2/2.1000HA1800
12,0	12	22	73	2	HSTS2/2.1200HA2200
14,0	14	26	75	2	HSTS2/2.1400HA2600
16,0	16	30	82	2	HSTS2/2.1600HA3000
18,0	18	34	84	2	HSTS2/2.1800HA3400
20,0	20	38	92	2	HSTS2/2.2000HA3800

STAINLESS STEEL MACHINING

Series MCTS4

Solid carbide end mills
short, Z=4



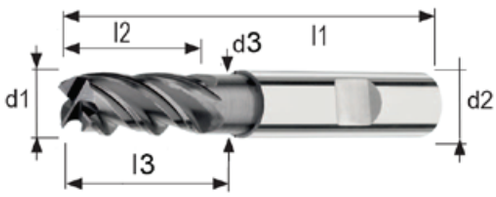


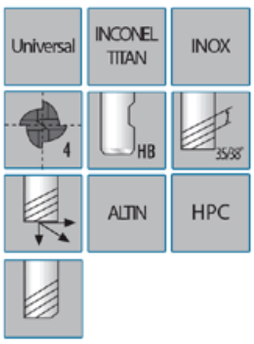
Ø d1	Ø d2	l2	l1	фаска	Z	
3,0	6	6	54	0,1	4	MC01TS4/2.0300HB0600
4,0	6	8	54	0,13	4	MC013TS4/2.0400HB0800
5,0	6	9	54	0,18	4	MC018TS4/2.0500HB0900
6,0	6	10	54	0,2	4	MC02TS4/2.0600HB1000
7,0	8	12	58	0,2	4	MC02TS4/2.0700HB1200
8,0	8	12	58	0,2	4	MC02TS4/2.0800HB1200
9,0	10	14	66	0,3	4	MC03TS4/2.0900HB1400
10,0	10	14	66	0,3	4	MC03TS4/2.1000HB1400
11,0	12	16	73	0,3	4	MC03TS4/2.1100HB1600
12,0	12	16	73	0,3	4	MC03TS4/2.1200HB1600
13,0	14	18	75	0,3	4	MC03TS4/2.1300HB1800
14,0	14	18	75	0,3	4	MC03TS4/2.1400HB1800
16,0	16	22	82	0,4	4	MC04TS4/2.1600HB2200
18,0	18	24	84	0,4	4	MC04TS4/2.1800HB2400
20,0	20	26	92	0,5	4	MC05TS4/2.2000HB2600
25,0	25	32	92	0,5	4	MC05TS4/2.2500HB3200

STAINLESS STEEL MACHINING

Series MCTM4

Solid carbide end mills
standart, Z=4

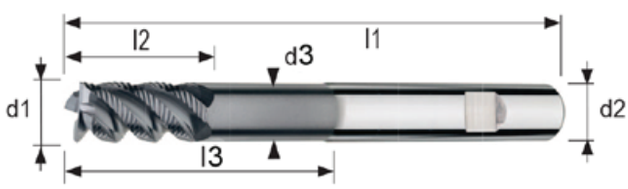


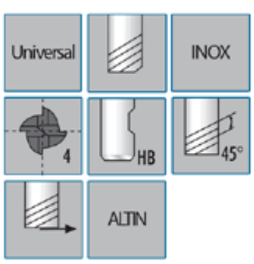


Ø d1	Ø d2	l2	l1	Ø d3	l3	фаска	Z	
3,0	6	8	57	2,8	18	0,13	4	MC013TM4/2.0300HB0800
4,0	6	11	57	3,6	21	0,13	4	MC013TM4/2.0400HB1100
5,0	6	13	57	4,6	21	0,18	4	MC018TM4/2.0500HB1300
6,0	6	13	57	5,5	21	0,2	4	MC02TM4/2.0600HB1300
7,0	8	19	63	6,5	27	0,2	4	MC02TM4/2.0700HB1900
8,0	8	19	63	7,5	27	0,2	4	MC02TM4/2.0800HB1900
9,0	10	22	72	8,5	32	0,3	4	MC03TM4/2.0900HB2200
10,0	10	22	72	9,5	32	0,3	4	MC03TM4/2.1000HB2200
11,0	12	26	83	10,5	38	0,3	4	MC03TM4/2.1100HB2600
12,0	12	26	83	11,5	38	0,3	4	MC03TM4/2.1200HB2600
14,0	14	26	83	13,5	42	0,3	4	MC03TM4/2.1400HB2600
16,0	16	32	92	15,5	44	0,4	4	MC04TM4/2.1600HB3200
18,0	18	32	92	17,5	50	0,4	4	MC04TM4/2.1800HB3200
20,0	20	38	104	19,5	54	0,5	4	MC05TM4/2.2000HB3800
25,0	25	42	104	24	65	0,5	4	MC05TM4/2.2500HB4200

Series MPTL4

Solid carbide end mills
long, Z=4



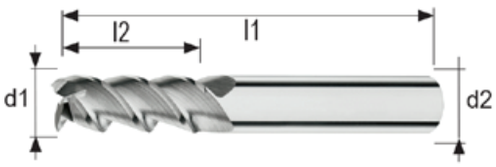


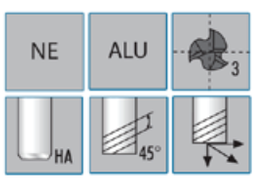
Ø d1	Ø d2	l2	l1	Ø d3	l3	фаска	Z	
6,0	6	22	80	5,7	40	0,4	4	MPTL4.0600HB2200
8,0	8	27	100	7,4	50	0,4	4	MPTL4.0800HB2700
10,0	10	32	100	9,2	60	0,4	4	MPTL4.1000HB3200
12,0	12	42	120	11,0	60	0,4	4	MPTL4.1200HB4200
16,0	16	52	150	15,0	100	0,4	4	MPTL4.1600HB5200
20,0	20	62	150	19,0	100	0,4	4	MPTL4.2000HB6200
25,0	25	82	150	24,0	100	0,5	4	MPTL4.2500HB8200

NON-IRON METAL & ALUMINIUM MACHINING

Series NNTL3

Solid carbide end mills
long, Z=3

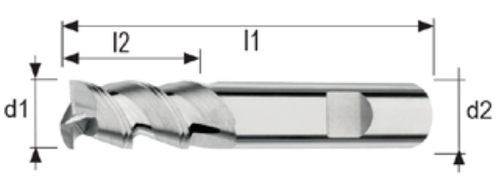


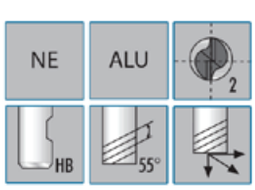


Ø d1	Ø d2	l2	l1	Z	
6,0	6	16	60	3	NNTL3/1.0600HA1600
8,0	8	25	78	3	NNTL3/1.0800HA2500
10,0	10	28	78	3	NNTL3/1.1000HA2800
12,0	12	32	89	3	NNTL3/1.1200HA3200
14,0	14	32	89	3	NNTL3/1.1400HA3200
16,0	16	36	104	3	NNTL3/1.1600HA3600
20,0	20	45	111	3	NNTL3/1.2000HA4500
25,0	25	50	126	3	NNTL3/1.2500HA5000

Series NNDL2

Solid carbide end mills
long, Z=2





Ø d1	Ø d2	l2	l1	Z	
3,0	6	8	57	2	NNDL2/2.0300HB
4,0	6	11	57	2	NNDL2/2.0400HB
5,0	6	13	57	2	NNDL2/2.0500HB
6,0	6	13	57	2	NNDL2/2.0600HB
8,0	8	19	63	2	NNDL2/2.0800HB
10,0	10	22	72	2	NNDL2/2.1000HB
12,0	12	26	83	2	NNDL2/2.1200HB
14,0	14	26	83	2	NNDL2/2.1400HB
16,0	16	32	92	2	NNDL2/2.1600HB
18,0	18	32	92	2	NNDL2/2.1800HB
20,0	20	38	104	2	NNDL2/2.2000HB

Cutting parameters for UNDL2, NNTL3, NNDL2, UNDL4, UNTM3 series

	(Nm/mm2)	Vc (m/min)	ø2 fz	ø3 fz	ø4 fz	ø5 fz	ø6 fz	ø8 fz	ø10 fz	ø12 fz	ø14 fz	ø16 fz	ø18-20 fz
general structural steels	< 500	120	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
general structural steels	>700	105	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
free cutting steels	< 850	95	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
free cutting steels	850 - 1000	90	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
free cutting steels	1400	80	0,008	0,012	0,018	0,018	0,028	0,040	0,055	0,070	0,080	0,090	0,110
alloyed case-hardened steels	1000	80	0,008	0,008	0,015	0,015	0,018	0,030	0,035	0,040	0,040	0,060	0,080
nitriding steels	1000	80	0,008	0,008	0,015	0,015	0,018	0,030	0,035	0,040	0,040	0,060	0,080
alloyed heat-treated steels	850	100	0,010	0,010	0,020	0,020	0,030	0,040	0,050	0,060	0,060	0,080	0,100
tool steels		70	0,008	0,012	0,018	0,018	0,028	0,040	0,055	0,070	0,080	0,090	0,110
cast iron	< 180 HB	120	0,008	0,008	0,015	0,020	0,020	0,030	0,040	0,045	0,045	0,060	0,080
nodular graphite and malleable iron		60	0,011	0,023	0,027	0,030	0,033	0,045	0,056	0,068	0,075	0,090	0,115
cast iron with nodular graphite		90	0,011	0,023	0,027	0,030	0,033	0,045	0,056	0,068	0,075	0,090	0,115
AL- and AL-alloys (under 12% Si)		200	0,008	0,008	0,015	0,015	0,025	0,030	0,040	0,050	0,050	0,065	0,085
AL- and AL-alloys (under 12 % SI)		200	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
Brass, copper, bronze, red brass		80	0,012	0,012	0,025	0,030	0,037	0,051	0,068	0,090	0,100	0,113	0,135
Duroplastics and thermoplastics		40											
Titanium and titaniul alloys		60	0,008	0,012	0,013	0,016	0,019	0,028	0,036	0,051	0,060	0,068	0,084

Cutting parameters for PR02TM3 series

	(Nm/mm2)	Vc (m/min)	ø4 fz	ø5 fz	ø6 fz	ø8 fz	ø10 fz	ø12 fz	ø16 fz	ø20 fz
General structural steels	<500	250	0,045	0,045	0,055	0,07	0,08	0,10	0,12	0,12
Free cutting steels	<850	240	0,040	0,040	0,055	0,06	0,07	0,08	0,10	0,10
Non-alloyed heat-treated steels	700-850	200	0,040	0,040	0,050	0,06	0,07	0,08	0,10	0,10
Alloyed heat-treated steels	850-1000	180	0,040	0,040	0,050	0,06	0,07	0,08	0,10	0,10
Rust-proof steels, austenitic	<700	120	0,025	0,025	0,035	0,04	0,04	0,05	0,07	0,07
Cast iron	<180 HB	200	0,045	0,045	0,055	0,07	0,08	0,01	0,12	0,12
Titanium and titanium alloys	<850	160	0,040	0,040	0,040	0,06	0,07	0,08	0,10	0,10
Copper low-alloyed	<400	280	0,045	0,045	0,055	0,07	0,08	0,10	0,12	0,12

Cutting parameters for MC013TM4, MC01TS4 series

	(Nm/mm2)	Vc (m/min)	ø6 fz	ø8 fz	ø10 fz	ø12 fz	ø16 fz	ø20 fz
general structural steels	<500	300	0,030	0,038	0,049	0,060	0,071	0,086
general structural steels	500-850	280	0,030	0,038	0,045	0,056	0,068	0,079
free cutting steels	<850	230	0,030	0,038	0,045	0,056	0,068	0,079
free cutting steels	850-1000	150	0,026	0,038	0,041	0,049	0,060	0,075
non-alloyed heat-treated steels	<700	230	0,019	0,026	0,034	0,041	0,049	0,060
non-alloyed heat-treated steels	700-850	230	0,030	0,040	0,045	0,060	0,075	0,090
non-alloyed heat-treated steels	850-1000	230	0,025	0,035	0,045	0,05	0,065	0,086
alloyed heat-treated steels	850-1000	230	0,025	0,035	0,045	0,05	0,065	0,086
alloyed heat-treated steels	1000-1200	190	0,02	0,03	0,04	0,05	0,06	0,075
Non-alloyed steels	850-1000	250	0,03	0,04	0,05	0,065	0,08	0,1
Tool steels	<850	240	0,025	0,035	0,045	0,05	0,065	0,08
Tool steels	850-1100	230	0,025	0,035	0,045	0,05	0,065	0,08
Tool steels	1100-1400	220	0,02	0,03	0,04	0,045	0,6	0,075
Rust-proof steels,sulfated	<700	150	0,025	0,035	0,045	0,055	0,065	0,08
Rust-proof steels,austenitic	<700	120	0,02	0,03	0,04	0,05	0,06	0,075
Rust-proof steels,austenitic	>850	110	0,025	0,035	0,045	0,055	0,065	0,08
Rust-proof steels,martensitic	<1100	110	0,02	0,03	0,04	0,05	0,06	0,075
Cast iron	<180HB	200	0,04	0,05	0,065	0,08	0,095	0,115
Cast iron	>180HB	150	0,035	0,045	0,06	0,075	0,09	0,11
Cast iron (GGG, GT)	>180HB	150	0,04	0,05	0,065	0,08	0,095	0,115
Cast iron (GGG, GT)	>260HB	120	0,035	0,045	0,06	0,075	0,09	0,11
Titanium, titanium alloyes	>850	70	0,02	0,03	0,04	0,05	0,06	0,075
Titanium, titanium alloyes	850-1200	60	0,025	0,03	0,04	0,045	0,055	0,065

Cutting parameters for UNDL6, HNTS6, HR05TL6, HNTM8, HR05TM6 series

	(Nm/mm2)	Vc (m/min)	ø2 fz	ø4 fz	ø6 fz	ø8 fz	ø10 fz	ø12 fz	ø16 fz	ø20 fz
alloyed steel	<1200 до 35 HRC	130	0,018	0,040	0,060	0,080	0,100	0,110	0,140	0,180
low tempered steel	<1450 до 45 HRC	120	0,010	0,025	0,040	0,055	0,065	0,070	0,800	0,100
tempered steel	45-55 HRC	100	0,010	0,025	0,035	0,045	0,055	0,060	0,070	0,090
tempered steel	55-65 HRC	80	0,010	0,020	0,030	0,040	0,050	0,060	0,070	0,080
tempered steel	65-70 HRC	60	0,008	0,020	0,030	0,040	0,045	0,050	0,060	0,070

Cutting parameters for UPTM4, MPTL4 series

	(Nm/mm2)	Vc (m/min)	ø6 fz	ø8 fz	ø10 fz	ø12 fz	ø14 fz	ø16 fz	ø20 fz
alloyed steel	400-800	170	0,010	0,020	0,025	0,030	0,040	0,050	0,065
rust-proof steel, austenitic	>1200	150	0,020	0,030	0,040	0,050	0,080	0,100	0,120
rust-proof steel, martensitic	>1200	160	0,030	0,040	0,050	0,060	0,100	0,120	0,150
titanium	>1100	100	0,050	0,080	0,100	0,120	0,140	0,160	0,200
titanium	>1500	80	0,050	0,080	0,100	0,120	0,140	0,160	0,200
nickel	>1600	70	0,040	0,060	0,070	0,100	0,120	0,150	0,200
Hardox, Inconel, Waspaloy	>1300	50	0,040	0,060	0,070	0,100	0,120	0,150	0,200

Cutting parameters for UNTM2, USTM2 series

	(N/mm²)	Vc (m/min)	ø0,2-0,4	ø0,5	ø0,6	ø0,8	ø1,0	ø1,5	ø2,0	ø3,0	ø4,0	ø5,0	ø6,0
general structural steels	< 50	190	0,004	0,004	0,006	0,006	0,009	0,009	0,018	0,025	0,035	0,061	0,061
general structural steels	> 500 - 850	170	0,004	0,004	0,006	0,006	0,009	0,009	0,018	0,025	0,035	0,061	0,061
free cutting steels	< 850	170	0,004	0,004	0,006	0,006	0,009	0,009	0,018	0,025	0,035	0,061	0,061
free cutting steels	850 - 1000	140	0,003	0,003	0,004	0,004	0,006	0,006	0,013	0,018	0,025	0,041	0,041
non-alloyed heat-treated steels	< 700	150	0,003	0,003	0,004	0,004	0,006	0,006	0,011	0,015	0,023	0,034	0,034
non-alloyed heat-treated steels	700 - 850	130	0,003	0,003	0,004	0,004	0,006	0,006	0,013	0,018	0,025	0,041	0,041
non-alloyed heat-treated steels	850 - 1000	110	0,003	0,003	0,004	0,004	0,006	0,006	0,013	0,018	0,025	0,041	0,041
alloyed heat-treated steels	850 - 1000	95	0,004	0,004	0,006	0,006	0,009	0,009	0,018	0,025	0,035	0,061	0,030
alloyed heat-treated steels	1000 - 1200	80	0,003	0,003	0,004	0,004	0,006	0,006	0,011	0,015	0,023	0,034	0,030
non-alloyed case-hardened steels	< 750	130	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,030
alloyed case-hardened steels	850 - 1000	110	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,035
alloyed case-hardened steels	1000 - 1200	75	0,003	0,003	0,004	0,005	0,010	0,012	0,018	0,025	0,035	0,070	0,035
nitriding steels	> 850 - 1000	110	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,035
nitriding steels	1000 - 1200	75	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,035
tool steels	< 850	110	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,035
tool steels	850 - 1000	85	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,035
rust-proof steels, sulfated	< 850	110	0,003	0,003	0,004	0,005	0,010	0,012	0,018	0,025	0,035	0,070	0,800
rust-proof steels, austenitic	< 850	90	0,004	0,004	0,005	0,006	0,012	0,015	0,020	0,030	0,050	0,080	0,100
tempered steel	45 - 55 HRC	100	0,004	0,004	0,006	0,006	0,009	0,010	0,025	0,035	0,035	0,061	0,061
tempered steel	55 - 65 HRC	80	0,003	0,003	0,005	0,005	0,007	0,008	0,015	0,020	0,020	0,030	0,004
tempered steel	65 - 70 HRC	60	0,002	0,0025	0,004	0,004	0,006	0,007	0,012	0,012	0,017	0,022	0,030

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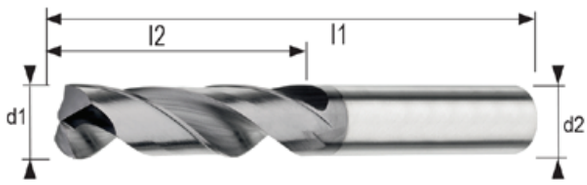
Solid carbide drills 3xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I03	Series E03
3,00	6	20	62	14	I03.0300U	E03.0300U
3,10	6	20	62	14	I03.0310U	E03.0310U
3,20	6	20	62	14	I03.0320U	E03.0320U
3,30	6	20	62	14	I03.0330U	E03.0330U
3,40	6	20	62	14	I03.0340U	E03.0340U
3,50	6	20	62	14	I03.0350U	E03.0350U
3,60	6	20	62	14	I03.0360U	E03.0360U
3,70	6	20	62	14	I03.0370U	E03.0370U
3,80	6	24	66	17	I03.0380U	E03.0380U
3,90	6	24	66	17	I03.0390U	E03.0390U
4,00	6	24	66	17	I03.0400U	E03.0400U
4,10	6	24	66	17	I03.0410U	E03.0410U
4,20	6	24	66	17	I03.0420U	E03.0420U
4,30	6	24	66	17	I03.0430U	E03.0430U
4,40	6	24	66	17	I03.0440U	E03.0440U
4,50	6	24	66	17	I03.0450U	E03.0450U
4,60	6	24	66	17	I03.0460U	E03.0460U
4,70	6	24	66	17	I03.0470U	E03.0470U
4,80	6	28	66	20	I03.0480U	E03.0480U
4,90	6	28	66	20	I03.0490U	E03.0490U
5,00	6	28	66	20	I03.0500U	E03.0500U
5,10	6	28	66	20	I03.0510U	E03.0510U
5,20	6	28	66	20	I03.0520U	E03.0520U
5,30	6	28	66	20	I03.0530U	E03.0530U
5,40	6	28	66	20	I03.0540U	E03.0540U
5,50	6	28	66	20	I03.0550U	E03.0550U
5,60	6	28	66	20	I03.0560U	E03.0560U
5,70	6	28	66	20	I03.0570U	E03.0570U
5,80	6	28	66	20	I03.0580U	E03.0580U
5,90	6	28	66	20	I03.0590U	E03.0590U
6,00	6	28	66	20	I03.0600U	E03.0600U
6,10	8	34	79	24	I03.0610U	E03.0610U
6,20	8	34	79	24	I03.0620U	E03.0620U
6,30	8	34	79	24	I03.0630U	E03.0630U
6,40	8	34	79	24	I03.0640U	E03.0640U

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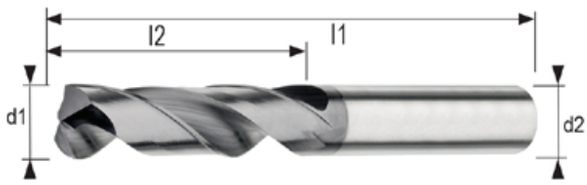
Solid carbide drills 3xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I03	Series E03
6,50	8	34	79	24	I03.0650U	E03.0650U
6,60	8	34	79	24	I03.0660U	E03.0660U
6,70	8	34	79	24	I03.0670U	E03.0670U
6,80	8	34	79	24	I03.0680U	E03.0680U
6,90	8	34	79	24	I03.0690U	E03.0690U
7,00	8	34	79	24	I03.0700U	E03.0700U
7,10	8	41	79	29	I03.0710U	E03.0710U
7,20	8	41	79	29	I03.0720U	E03.0720U
7,30	8	41	79	29	I03.0730U	E03.0730U
7,40	8	41	79	29	I03.0740U	E03.0740U
7,50	8	41	79	29	I03.0750U	E03.0750U
7,60	8	41	79	29	I03.0760U	E03.0760U
7,70	8	41	79	29	I03.0770U	E03.0770U
7,80	8	41	79	29	I03.0780U	E03.0780U
7,90	8	41	79	29	I03.0790U	E03.0790U
8,00	8	41	79	29	I03.0800U	E03.0800U
8,10	10	47	89	35	I03.0810U	E03.0810U
8,20	10	47	89	35	I03.0820U	E03.0820U
8,30	10	47	89	35	I03.0830U	E03.0830U
8,40	10	47	89	35	I03.0840U	E03.0840U
8,50	10	47	89	35	I03.0850U	E03.0850U
8,60	10	47	89	35	I03.0860U	E03.0860U
8,70	10	47	89	35	I03.0870U	E03.0870U
8,80	10	47	89	35	I03.0880U	E03.0880U
8,90	10	47	89	35	I03.0890U	E03.0890U
9,00	10	47	89	35	I03.0900U	E03.0900U
9,10	10	47	89	35	I03.0910U	E03.0910U
9,20	10	47	89	35	I03.0920U	E03.0920U
9,30	10	47	89	35	I03.0930U	E03.0930U
9,40	10	47	89	35	I03.0940U	E03.0940U
9,50	10	47	89	35	I03.0950U	E03.0950U
9,60	10	47	89	35	I03.0960U	E03.0960U
9,70	10	47	89	35	I03.0970U	E03.0970U
9,80	10	47	89	35	I03.0980U	E03.0980U

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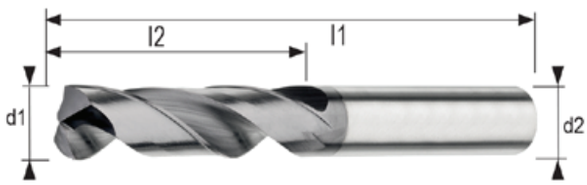
Solid carbide drills 3xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I03	Серия E03
9,90	10	47	89	35	I03.0990U	E03.0990U
10,00	10	47	89	35	I03.1000U	E03.1000U
10,10	12	55	102	40	I03.1010U	E03.1010U
10,20	12	55	102	40	I03.1020U	E03.1020U
10,30	12	55	102	40	I03.1030U	E03.1030U
10,40	12	55	102	40	I03.1040U	E03.1040U
10,50	12	55	102	40	I03.1050U	E03.1050U
10,60	12	55	102	40	I03.1060U	E03.1060U
10,70	12	55	102	40	I03.1070U	E03.1070U
10,80	12	55	102	40	I03.1080U	E03.1080U
10,90	12	55	102	40	I03.1090U	E03.1090U
11,00	12	55	102	40	I03.1100U	E03.1100U
11,10	12	55	102	40	I03.1110U	E03.1110U
11,20	12	55	102	40	I03.1120U	E03.1120U
11,30	12	55	102	40	I03.1130U	E03.1130U
11,40	12	55	102	40	I03.1140U	E03.1140U
11,50	12	55	102	40	I03.1150U	E03.1150U
11,60	12	55	102	40	I03.1160U	E03.1160U
11,70	12	55	102	40	I03.1170U	E03.1170U
11,80	12	55	102	40	I03.1180U	E03.1180U
11,90	12	55	102	40	I03.1190U	E03.1190U
12,00	12	55	102	40	I03.1200U	E03.1200U
12,30	14	60	107	43	I03.1230U	E03.1230U
12,50	14	60	107	43	I03.1250U	E03.1250U
12,80	14	60	107	43	I03.1280U	E03.1280U
13,00	14	60	107	43	I03.1300U	E03.1300U
13,50	14	60	107	43	I03.1350U	E03.1350U
13,80	14	60	107	43	I03.1380U	E03.1380U
14,00	14	60	107	43	I03.1400U	E03.1400U
14,50	16	65	115	45	I03.1450U	E03.1450U
14,80	16	65	115	45	I03.1480U	E03.1480U
15,00	16	65	115	45	I03.1500U	E03.1500U
15,50	16	65	115	45	I03.1550U	E03.1550U
15,80	16	65	115	45	I03.1580U	E03.1580U
16,00	16	65	115	45	I03.1600U	E03.1600U

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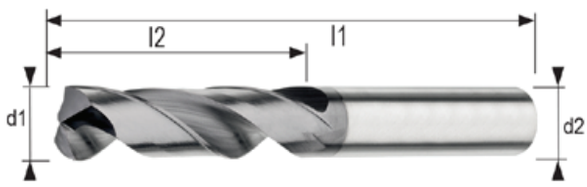
Solid carbide drills 3xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I03	Series E03
16,50	18	73	123	51	I03.1650U	E03.1650U
16,80	18	73	123	51	I03.1680U	E03.1680U
17,00	18	73	123	51	I03.1700U	E03.1700U
17,50	18	73	123	51	I03.1750U	E03.1750U
17,80	18	73	123	51	I03.1780U	E03.1780U
18,00	18	73	123	51	I03.1800U	E03.1800U
18,50	20	79	131	55	I03.1850U	E03.1850U
19,00	20	79	131	55	I03.1900U	E03.1900U
19,50	20	79	131	55	I03.1950U	E03.1950U
19,80	20	79	131	55	I03.1980U	E03.1980U
20,00	20	79	131	55	I03.2000U	E03.2000U

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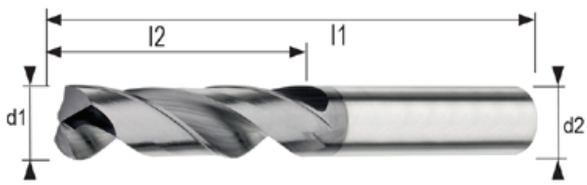
Solid carbide drills 5xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I05	Series E05
0,50	3	10	50			E05.0050U
0,60	3	10	50			E05.0060U
0,70	3	10	50			E05.0070U
0,80	3	10	50			E05.0080U
0,90	3	10	50			E05.0090U
1,00	3	10	55	6,5	I05.0100U	E05.0100U
1,10	3	12	55	9,5	I05.0110U	E05.0110U
1,20	3	12	55	9,5	I05.0120U	E05.0120U
1,30	3	12	55	9,5	I05.0130U	E05.0130U
1,40	3	12	55	9,5	I05.0140U	E05.0140U
1,50	3	12	55	9,5	I05.0150U	E05.0150U
1,60	3	16	55	13,0	I05.0160U	E05.0160U
1,70	3	16	55	13,0	I05.0170U	E05.0170U
1,80	3	16	55	13,0	I05.0180U	E05.0180U
1,90	3	16	55	13,0	I05.0190U	E05.0190U
2,00	3	16	57	13,0	I05.0200U	E05.0200U
2,10	3	21	57	16,0	I05.0210U	E05.0210U
2,20	3	21	57	16,0	I05.0220U	E05.0220U
2,30	3	21	57	16,0	I05.0230U	E05.0230U
2,40	3	21	57	16,0	I05.0240U	E05.0240U
2,50	3	21	57	16,0	I05.0250U	E05.0250U
2,60	3	21	57	18,5	I05.0260U	E05.0260U
2,70	3	21	57	18,5	I05.0270U	E05.0270U
2,75	3	21	57	18,5	I05.0275U	
2,80	3	21	57	18,5	I05.0280U	E05.0280U
2,90	3	21	57	18,5	I05.0290U	E05.0290U
3,00	6	28	66	23,0	I05.0300U	E05.0300U
3,10	6	28	66	23,0	I05.0310U	E05.0310U
3,20	6	28	66	23,0	I05.0320U	E05.0320U
3,30	6	28	66	23,0	I05.0330U	E05.0330U
3,40	6	28	66	23,0	I05.0340U	E05.0340U
3,50	6	28	66	23,0	I05.0350U	E05.0350U
3,60	6	28	66	23,0	I05.0360U	E05.0360U
3,65	6	28	66	23,0	I05.0365U	
3,70	6	28	66	23,0	I05.0370U	E05.0370U

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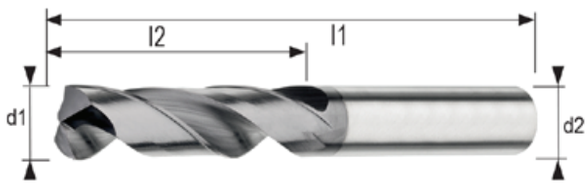
Solid carbide drills 5xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I05	Series E05
3,80	6	36	74	29,0	I05.0380U	E05.0380U
3,90	6	36	74	29,0	I05.0390U	E05.0390U
4,00	6	36	74	29,0	I05.0400U	E05.0400U
4,10	6	36	74	29,0	I05.0410U	E05.0410U
4,20	6	36	74	29,0	I05.0420U	E05.0420U
4,30	6	36	74	29,0	I05.0430U	E05.0430U
4,40	6	36	74	29,0	I05.0440U	E05.0440U
4,50	6	36	74	29,0	I05.0450U	E05.0450U
4,60	6	36	74	29,0	I05.0460U	E05.0460U
4,65	6	36	74	29,0	I05.0465U	E05.0465U
4,70	6	36	74	29,0	I05.0470U	E05.0470U
4,80	6	44	82	35,0	I05.0480U	E05.0480U
4,90	6	44	82	35,0	I05.0490U	E05.0490U
5,00	6	44	82	35,0	I05.0500U	E05.0500U
5,10	6	44	82	35,0	I05.0510U	E05.0510U
5,20	6	44	82	35,0	I05.0520U	E05.0520U
5,30	6	44	82	35,0	I05.0530U	E05.0530U
5,40	6	44	82	35,0	I05.0540U	E05.0540U
5,50	6	44	82	35,0	I05.0550U	E05.0550U
5,55	6	44	82	35,0	I05.0555U	
5,60	6	44	82	35,0	I05.0560U	E05.0560U
5,65	6	44	82	35,0	I05.0565U	
5,70	6	44	82	35,0	I05.0570U	E05.0570U
5,80	6	44	82	35,0	I05.0580U	E05.0580U
5,90	6	44	82	35,0	I05.0590U	E05.0590U
6,00	6	44	82	35,0	I05.0600U	E05.0600U
6,10	8	53	91	43,0	I05.0610U	E05.0610U
6,20	8	53	91	43,0	I05.0620U	E05.0620U
6,30	8	53	91	43,0	I05.0630U	E05.0630U
6,40	8	53	91	43,0	I05.0640U	E05.0640U
6,50	8	53	91	43,0	I05.0650U	E05.0650U
6,60	8	53	91	43,0	I05.0660U	E05.0660U
6,70	8	53	91	43,0	I05.0670U	E05.0670U
6,80	8	53	91	43,0	I05.0680U	E05.0680U
6,90	8	53	91	43,0	I05.0690U	E05.0690U

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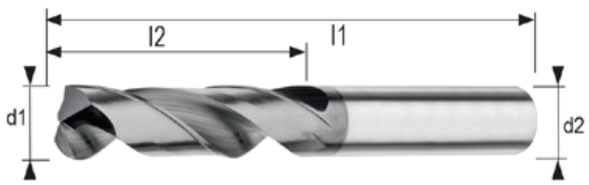
Solid carbide drills 5xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I05	Series E05
7,00	8	53	91	43,0	I05.0700U	E05.0700U
7,10	8	53	91	43,0	I05.0710U	E05.0710U
7,20	8	53	91	43,0	I05.0720U	E05.0720U
7,30	8	53	91	43,0	I05.0730U	E05.0730U
7,40	8	53	91	43,0	I05.0740U	E05.0740U
7,50	8	53	91	43,0	I05.0750U	E05.0750U
7,60	8	53	91	43,0	I05.0760U	E05.0760U
7,65	8	53	91	43,0	I05.0765U	
7,70	8	53	91	43,0	I05.0770U	E05.0770U
7,80	8	53	91	43,0	I05.0780U	E05.0780U
7,90	8	53	91	43,0	I05.0790U	E05.0790U
8,00	8	53	91	43,0	I05.0800U	E05.0800U
8,10	10	61	103	49,0	I05.0810U	E05.0810U
8,20	10	61	103	49,0	I05.0820U	E05.0820U
8,30	10	61	103	49,0	I05.0830U	E05.0830U
8,40	10	61	103	49,0	I05.0840U	E05.0840U
8,50	10	61	103	49,0	I05.0850U	E05.0850U
8,60	10	61	103	49,0	I05.0860U	E05.0860U
8,70	10	61	103	49,0	I05.0870U	E05.0870U
8,80	10	61	103	49,0	I05.0880U	E05.0880U
8,90	10	61	103	49,0	I05.0890U	E05.0890U
9,00	10	61	103	49,0	I05.0900U	E05.0900U
9,10	10	61	103	49,0	I05.0910U	E05.0910U
9,20	10	61	103	49,0	I05.0920U	E05.0920U
9,30	10	61	103	49,0	I05.0930U	E05.0930U
9,40	10	61	103	49,0	I05.0940U	E05.0940U
9,50	10	61	103	49,0	I05.0950U	E05.0950U
9,55	10	61	103	49,0	I05.0955U	
9,60	10	61	103	49,0	I05.0960U	E05.0960U
9,70	10	61	103	49,0	I05.0970U	E05.0970U
9,80	10	61	103	49,0	I05.0980U	E05.0980U
9,90	10	61	103	49,0	I05.0990U	E05.0990U
10,00	10	61	103	49,0	I05.1000U	E05.1000U
10,10	12	71	118	56,0	I05.1010U	E05.1010U
10,20	12	71	118	56,0	I05.1020U	E05.1020U

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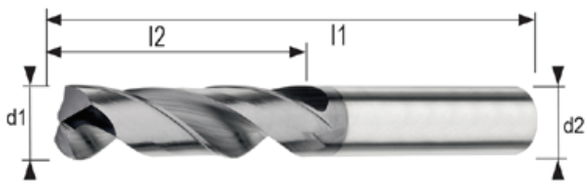
Solid carbide drills 5xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I05	Series E05
10,30	12	71	118	56,0	I05.1030U	E05.1030U
10,40	12	71	118	56,0	I05.1040U	E05.1040U
10,50	12	71	118	56,0	I05.1050U	E05.1050U
10,60	12	71	118	56,0	I05.1060U	E05.1060U
10,70	12	71	118	56,0	I05.1070U	E05.1070U
10,80	12	71	118	56,0	I05.1080U	E05.1080U
10,90	12	71	118	56,0	I05.1090U	E05.1090U
11,00	12	71	118	56,0	I05.1100U	E05.1100U
11,10	12	71	118	56,0	I05.1110U	E05.1110U
11,20	12	71	118	56,0	I05.1120U	E05.1120U
11,30	12	71	118	56,0	I05.1130U	E05.1130U
11,40	12	71	118	56,0	I05.1140U	E05.1140U
11,50	12	71	118	56,0	I05.1150U	E05.1150U
11,55	12	71	118	56,0	I05.1155U	
11,60	12	71	118	56,0	I05.1160U	E05.1160U
11,70	12	71	118	56,0	I05.1170U	E05.1170U
11,80	12	71	118	56,0	I05.1180U	E05.1180U
11,90	12	71	118	56,0	I05.1190U	E05.1190U
12,00	12	71	118	56,0	I05.1200U	E05.1200U
12,20	14	77	124	60,0	I05.1220U	E05.1220U
12,30	14	77	124	60,0	I05.1230U	E05.1230U
12,50	14	77	124	60,0	I05.1250U	E05.1250U
12,80	14	77	124	60,0	I05.1280U	E05.1280U
13,00	14	77	124	60,0	I05.1300U	E05.1300U
13,50	14	77	124	60,0	I05.1350U	E05.1350U
13,80	14	77	124	60,0	I05.1380U	E05.1380U
14,00	14	77	124	60,0	I05.1400U	E05.1400U
14,50	16	83	133	63,0	I05.1450U	E05.1450U
14,80	16	83	133	63,0	I05.1480U	E05.1480U
15,00	16	83	133	63,0	I05.1500U	E05.1500U
15,10	16	83	133	63,0	I05.1510U	
15,50	16	83	133	63,0	I05.1550U	E05.1550U
15,80	16	83	133	63,0	I05.1580U	E05.1580U
16,00	16	83	133	63,0	I05.1600U	E05.1600U
16,50	18	93	143	71,0	I05.1650U	E05.1650U

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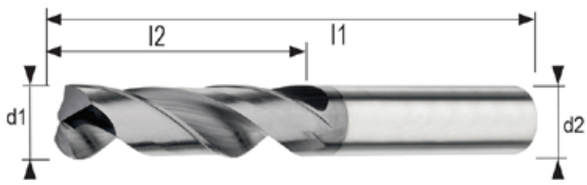
Solid carbide drills 5xD



Ø d1	Ø d2	l2	l1	Max. depth of drilling	Series I05	Series E05
16,80	18	93	143	71,0	I05.1680U	E05.1680U
17,00	18	93	143	71,0	I05.1700U	E05.1700U
17,50	18	93	143	71,0	I05.1750U	E05.1750U
17,80	18	93	143	71,0	I05.1780U	E05.1780U
18,00	18	93	143	71,0	I05.1800U	E05.1800U
18,50	20	101	153	77,0	I05.1850U	E05.1850U
19,00	20	101	153	77,0	I05.1900U	E05.1900U
19,50	20	101	153	77,0	I05.1950U	E05.1950U
20,00	20	101	153	77,0	I05.2000U	E05.2000U

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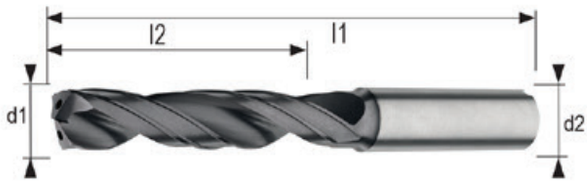
Series 4I05

Solid carbide drills 5xD,
4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
3,00	6	28	66	23	4I05.0300U
3,10	6	28	66	23	4I05.0310U
3,20	6	28	66	23	4I05.0320U
3,30	6	28	66	23	4I05.0330U
3,40	6	28	66	23	4I05.0340U
3,50	6	28	66	23	4I05.0350U
3,60	6	28	66	23	4I05.0360U
3,70	6	28	66	23	4I05.0370U
3,80	6	36	74	29	4I05.0380U
3,90	6	36	74	29	4I05.0390U
4,00	6	36	74	29	4I05.0400U
4,10	6	36	74	29	4I05.0410U
4,20	6	36	74	29	4I05.0420U
4,30	6	36	74	29	4I05.0430U
4,40	6	36	74	29	4I05.0440U
4,50	6	36	74	29	4I05.0450U
4,60	6	36	74	29	4I05.0460U
4,70	6	36	74	29	4I05.0470U
4,80	6	44	82	35	4I05.0480U
4,90	6	44	82	35	4I05.0490U
5,00	6	44	82	35	4I05.0500U
5,10	6	44	82	35	4I05.0510U
5,20	6	44	82	35	4I05.0520U
5,30	6	44	82	35	4I05.0530U
5,40	6	44	82	35	4I05.0540U
5,50	6	44	82	35	4I05.0550U
5,60	6	44	82	35	4I05.0560U
5,70	6	44	82	35	4I05.0570U
5,80	6	44	82	35	4I05.0580U
5,90	6	44	82	35	4I05.0590U
6,00	6	44	82	35	4I05.0600U
6,10	8	53	91	43	4I05.0610U
6,20	8	53	91	43	4I05.0620U
6,30	8	53	91	43	4I05.0630U
6,40	8	53	91	43	4I05.0640U

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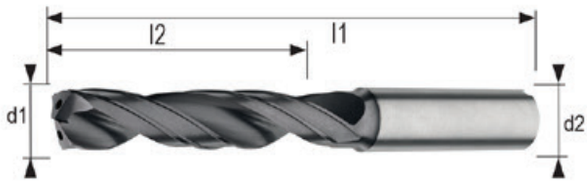
Series 4I05

Solid carbide drills 5xD,
4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
6,50	8	53	91	43	4I05.0650U
6,60	8	53	91	43	4I05.0660U
6,70	8	53	91	43	4I05.0670U
6,80	8	53	91	43	4I05.0680U
6,90	8	53	91	43	4I05.0690U
7,00	8	53	91	43	4I05.0700U
7,10	8	53	91	43	4I05.0710U
7,20	8	53	91	43	4I05.0720U
7,30	8	53	91	43	4I05.0730U
7,40	8	53	91	43	4I05.0740U
7,50	8	53	91	43	4I05.0750U
7,60	8	53	91	43	4I05.0760U
7,70	8	53	91	43	4I05.0770U
7,80	8	53	91	43	4I05.0780U
7,90	8	53	91	43	4I05.0790U
8,00	8	53	91	43	4I05.0800U
8,10	10	61	103	49	4I05.0810U
8,20	10	61	103	49	4I05.0820U
8,30	10	61	103	49	4I05.0830U
8,40	10	61	103	49	4I05.0840U
8,50	10	61	103	49	4I05.0850U
8,60	10	61	103	49	4I05.0860U
8,70	10	61	103	49	4I05.0870U
8,80	10	61	103	49	4I05.0880U
8,90	10	61	103	49	4I05.0890U
9,00	10	61	103	49	4I05.0900U
9,10	10	61	103	49	4I05.0910U
9,20	10	61	103	49	4I05.0920U
9,30	10	61	103	49	4I05.0930U
9,40	10	61	103	49	4I05.0940U
9,50	10	61	103	49	4I05.0950U
9,60	10	61	103	49	4I05.0960U
9,70	10	61	103	49	4I05.0970U
9,80	10	61	103	49	4I05.0980U
9,90	10	61	103	49	4I05.0990U

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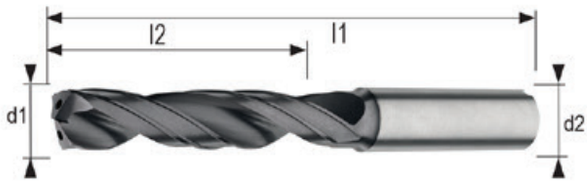
Series 4I05

Solid carbide drills 5xD,
4 margins

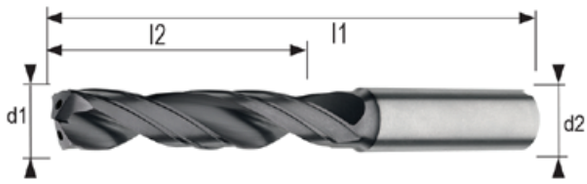


Ø d1	Ø d2	l2	l1	Max depth of drilling	
10,00	10,00	61	103	49	4I05.1000U
10,10	12,00	71	118	56	4I05.1010U
10,20	12,00	71	118	56	4I05.1020U
10,30	12,00	71	118	56	4I05.1030U
10,40	12,00	71	118	56	4I05.1040U
10,50	12,00	71	118	56	4I05.1050U
10,60	12,00	71	118	56	4I05.1060U
10,70	12,00	71	118	56	4I05.1070U
10,80	12,00	71	118	56	4I05.1080U
10,90	12,00	71	118	56	4I05.1090U
11,00	12,00	71	118	56	4I05.1100U
11,10	12,00	71	118	56	4I05.1110U
11,20	12,00	71	118	56	4I05.1120U
11,30	12,00	71	118	56	4I05.1130U
11,40	12,00	71	118	56	4I05.1140U
11,50	12,00	71	118	56	4I05.1150U
11,60	12,00	71	118	56	4I05.1160U
11,70	12,00	71	118	56	4I05.1170U
11,80	12,00	71	118	56	4I05.1180U
11,90	12,00	71	118	56	4I05.1190U
12,00	12,00	71	118	56	4I05.1200U
12,20	14,00	77	124	60	4I05.1220U
12,30	14,00	77	124	60	4I05.1230U
12,50	14,00	77	124	60	4I05.1250U
12,80	14,00	77	124	60	4I05.1280U
13,00	14,00	77	124	60	4I05.1300U
13,50	14,00	77	124	60	4I05.1350U
13,80	14,00	77	124	60	4I05.1380U
14,00	14,00	77	124	60	4I05.1400U
14,50	16,00	83	133	63	4I05.1450U
14,80	16,00	83	133	63	4I05.1480U
15,00	16,00	83	133	63	4I05.1500U
15,50	16,00	83	133	63	4I05.1550U
15,80	16,00	83	133	63	4I05.1580U
16,00	16,00	83	133	63	4I05.1600U

UNIVERSAL

Series 4I05

Solid carbide drills 5xD,
4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
16,50	18,00	93	143	71	4I05.1650U
16,80	18,00	93	143	71	4I05.1680U
17,00	18,00	93	143	71	4I05.1700U
17,50	18,00	93	143	71	4I05.1750U
17,80	18,00	93	143	71	4I05.1780U
18,00	18,00	93	143	71	4I05.1800U
18,50	20,00	101	153	77	4I05.1850U
19,00	20,00	101	153	77	4I05.1900U
19,50	20,00	101	153	77	4I05.1950U
20,00	20,00	101	153	77	4I05.2000U

UNIVERSAL

Series 4108

Solid carbide drills 8xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
1,0	3	11	55	9,0	4108.0100U
1,1	3	17	55	13,5	4108.0110U
1,2	3	17	55	13,5	4108.0120U
1,3	3	17	55	13,5	4108.0130U
1,4	3	17	55	13,5	4108.0140U
1,5	3	22	65	17,5	4108.0150U
1,6	3	22	65	17,5	4108.0160U
1,7	3	22	65	17,5	4108.0170U
1,8	3	22	65	17,5	4108.0180U
1,9	3	22	65	17,5	4108.0190U
2,0	3	28	74	22,5	4108.0200U
2,1	3	28	74	22,5	4108.0210U
2,2	3	28	74	22,5	4108.0220U
2,3	3	28	74	22,5	4108.0230U
2,4	3	28	74	22,5	4108.0240U
2,5	3	32	81	22,5	4108.0250U
2,6	3	32	81	22,5	4108.0260U
2,7	3	32	81	22,5	4108.0270U
2,8	3	32	81	22,5	4108.0280U
2,9	3	32	81	22,5	4108.0290U
3,0	6	34	72	27,0	4108.0300U
3,1	6	34	72	27,0	4108.0310U
3,2	6	34	72	27,0	4108.0320U
3,3	6	34	72	27,0	4108.0330U
3,4	6	34	72	27,0	4108.0340U
3,5	6	34	72	27,0	4108.0350U
3,6	6	34	72	27,0	4108.0360U
3,7	6	34	72	27,0	4108.0370U
3,8	6	43	81	35,0	4108.0380U
3,9	6	43	81	35,0	4108.0390U
4,0	6	43	81	35,0	4108.0400U
4,1	6	43	81	35,0	4108.0410U
4,2	6	43	81	35,0	4108.0420U
4,3	6	43	81	35,0	4108.0430U
4,4	6	43	81	35,0	4108.0440U
4,5	6	43	81	35,0	4108.0450U
4,6	6	43	81	35,0	4108.0460U
4,7	6	57	95	35,0	4108.0470U
4,8	6	57	95	45,0	4108.0480U
4,9	6	57	95	45,0	4108.0490U

UNIVERSAL

Series 4I08

Solid carbide drills 8xD,
4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
5,0	6	57	95	45,0	4I08.0500U
5,1	6	57	95	45,0	4I08.0510U
5,2	6	57	95	45,0	4I08.0520U
5,3	6	57	95	45,0	4I08.0530U
5,4	6	57	95	45,0	4I08.0540U
5,5	6	57	95	45,0	4I08.0550U
5,6	6	57	95	45,0	4I08.0560U
5,7	6	57	95	45,0	4I08.0570U
5,8	6	57	95	45,0	4I08.0580U
5,9	6	57	95	45,0	4I08.0590U
6,0	6	57	95	45,0	4I08.0600U
6,1	8	76	114	52,0	4I08.0610U
6,2	8	76	114	52,0	4I08.0620U
6,3	8	76	114	52,0	4I08.0630U
6,4	8	76	114	52,0	4I08.0640U
6,5	8	76	114	52,0	4I08.0650U
6,6	8	76	114	52,0	4I08.0660U
6,7	8	76	114	52,0	4I08.0670U
6,8	8	76	114	52,0	4I08.0680U
6,9	8	76	114	52,0	4I08.0690U
7,0	8	76	114	60,0	4I08.0700U
7,1	8	76	114	60,0	4I08.0710U
7,2	8	76	114	60,0	4I08.0720U
7,3	8	76	114	60,0	4I08.0730U
7,4	8	76	114	60,0	4I08.0740U
7,5	8	76	114	60,0	4I08.0750U
7,6	8	76	114	60,0	4I08.0760U
7,7	8	76	114	60,0	4I08.0770U
7,8	8	76	114	60,0	4I08.0780U
7,9	8	76	114	60,0	4I08.0790U
8,0	8	76	114	60,0	4I08.0800U
8,1	10	95	142	68,0	4I08.0810U
8,2	10	95	142	68,0	4I08.0820U
8,3	10	95	142	68,0	4I08.0830U
8,4	10	95	142	68,0	4I08.0840U
8,5	10	95	142	68,0	4I08.0850U
8,6	10	95	142	68,0	4I08.0860U
8,7	10	95	142	68,0	4I08.0870U
8,8	10	95	142	68,0	4I08.0880U
8,9	10	95	142	68,0	4I08.0890U

UNIVERSAL

Series 4I08

Solid carbide drills 8xD,
4 margins

Ø d1	Ø d2	l2	l1		
9,0	10	95	142	68,0	4I08.0900U
9,1	10	95	142	76,0	4I08.0910U
9,2	10	95	142	76,0	4I08.0920U
9,3	10	95	142	76,0	4I08.0930U
9,4	10	95	142	76,0	4I08.0940U
9,5	10	95	142	76,0	4I08.0950U
9,6	10	95	142	76,0	4I08.0960U
9,7	10	95	142	76,0	4I08.0970U
9,8	10	95	142	76,0	4I08.0980U
9,9	10	95	142	76,0	4I08.0990U
10,0	10	95	142	76,0	4I08.1000U
10,1	12	114	162	90,0	4I08.1010U
10,2	12	114	162	90,0	4I08.1020U
10,3	12	114	162	90,0	4I08.1030U
10,4	12	114	162	90,0	4I08.1040U
10,5	12	114	162	90,0	4I08.1050U
10,6	12	114	162	90,0	4I08.1060U
10,7	12	114	162	90,0	4I08.1070U
10,8	12	114	162	90,0	4I08.1080U
10,9	12	114	162	90,0	4I08.1090U
11,0	12	114	162	90,0	4I08.1100U
11,1	12	114	162	90,0	4I08.1110U
11,2	12	114	162	90,0	4I08.1120U
11,3	12	114	162	90,0	4I08.1130U
11,4	12	114	162	90,0	4I08.1140U
11,5	12	114	162	90,0	4I08.1150U
11,6	12	114	162	90,0	4I08.1160U
11,7	12	114	162	90,0	4I08.1170U
11,8	12	114	162	90,0	4I08.1180U
11,9	12	114	162	90,0	4I08.1190U
12,0	12	114	162	90,0	4I08.1200U
12,5	14	133	178	106,0	4I08.1250U
12,8	14	133	178	106,0	4I08.1280U
13,0	14	133	178	106,0	4I08.1300U
13,5	14	133	178	106,0	4I08.1350U
14,0	14	133	178	106,0	4I08.1400U
14,5	16	152	203	122,0	4I08.1450U
15,0	16	152	203	122,0	4I08.1500U
15,5	16	152	203	122,0	4I08.1550U
16,0	16	152	203	122,0	4I08.1600U

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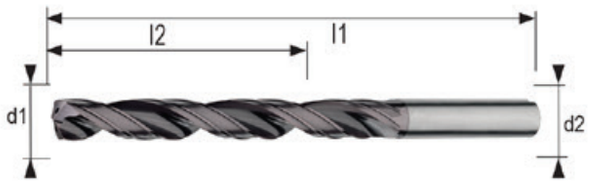
Series 4I12

Solid carbide drills 12xD,
4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
1,0	3	15	55	12,0	4I12.0100U
1,1	3	23	55	18,5	4I12.0110U
1,2	3	23	55	18,5	4I12.0120U
1,3	3	23	55	18,5	4I12.0130U
1,4	3	23	55	18,5	4I12.0140U
1,5	3	23	65	18,5	4I12.0150U
1,6	3	30	65	24,0	4I12.0160U
1,7	3	30	65	24,0	4I12.0170U
1,8	3	30	65	24,0	4I12.0180U
1,9	3	30	65	24,0	4I12.0190U
2,0	3	30	74	24,0	4I12.0200U
2,1	3	38	74	30,5	4I12.0210U
2,2	3	38	74	30,5	4I12.0220U
2,3	3	38	74	30,5	4I12.0230U
2,4	3	38	74	30,5	4I12.0240U
2,5	3	38	81	30,5	4I12.0250U
2,6	3	44	81	30,5	4I12.0260U
2,7	3	44	81	35,0	4I12.0270U
2,8	3	44	81	35,0	4I12.0280U
2,9	3	44	81	35,0	4I12.0290U
3,0	6	54	92	48,0	4I12.0300U
3,3	6	54	92	48,0	4I12.0330U
3,4	6	54	92	48,0	4I12.0340U
3,5	6	54	92	48,0	4I12.0350U
3,6	6	54	92	48,0	4I12.0360U
3,7	6	54	92	48,0	4I12.0370U
3,8	6	64	102	58,0	4I12.0380U
3,9	6	64	102	58,0	4I12.0390U
4,0	6	64	102	58,0	4I12.0400U
4,1	6	64	102	58,0	4I12.0410U
4,2	6	64	102	58,0	4I12.0420U
4,3	6	64	102	58,0	4I12.0430U
4,4	6	64	102	58,0	4I12.0440U
4,5	6	64	102	58,0	4I12.0450U
4,6	6	64	102	58,0	4I12.0460U
4,7	6	64	102	58,0	4I12.0470U
4,8	6	78	116	70,0	4I12.0480U
4,9	6	78	116	70,0	4I12.0490U
5,0	6	78	116	70,0	4I12.0500U

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Series 4I12

Solid carbide drills 12xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
5,1	6	78	118	70,0	4I12.0510U
5,2	6	78	118	70,0	4I12.0520U
5,3	6	78	118	70,0	4I12.0530U
5,4	6	78	118	70,0	4I12.0540U
5,5	6	78	118	70,0	4I12.0550U
5,6	6	78	118	70,0	4I12.0560U
5,7	6	78	118	70,0	4I12.0570U
5,8	6	78	118	70,0	4I12.0580U
5,9	6	78	118	70,0	4I12.0590U
6,0	6	78	118	70,0	4I12.0600U
6,1	8	78	146	94,0	4I12.0610U
6,2	8	78	146	94,0	4I12.0620U
6,3	8	78	146	94,0	4I12.0630U
6,4	8	78	146	94,0	4I12.0640U
6,5	8	78	146	94,0	4I12.0650U
6,6	8	78	146	94,0	4I12.0660U
6,7	8	78	146	94,0	4I12.0670U
6,8	8	78	146	94,0	4I12.0680U
6,9	8	78	146	94,0	4I12.0690U
7,0	8	78	146	94,0	4I12.0700U
7,1	8	78	146	94,0	4I12.0710U
7,2	8	78	146	94,0	4I12.0720U
7,3	8	78	146	94,0	4I12.0730U
7,4	8	78	146	94,0	4I12.0740U
7,5	8	78	146	94,0	4I12.0750U
7,6	8	78	146	94,0	4I12.0760U
7,7	8	78	146	94,0	4I12.0770U
7,8	8	78	146	94,0	4I12.0780U
7,9	8	78	146	94,0	4I12.0790U
8,0	8	78	146	94,0	4I12.0800U
8,1	10	120	162	110,0	4I12.0810U
8,2	10	120	162	110,0	4I12.0820U
8,3	10	120	162	110,0	4I12.0830U
8,4	10	120	162	110,0	4I12.0840U
8,5	10	120	162	110,0	4I12.0850U
8,6	10	120	162	110,0	4I12.0860U
8,7	10	120	162	110,0	4I12.0870U
8,8	10	120	162	110,0	4I12.0880U
8,9	10	120	162	110,0	4I12.0890U
9,0	10	120	162	110,0	4I12.0900U

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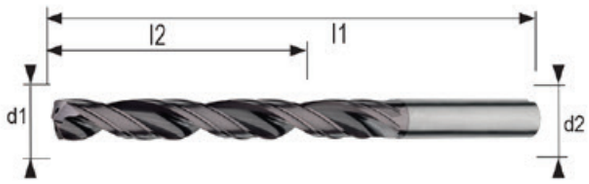
Series 4I12

Solid carbide drills 12xD,
4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
9,1	10	120	162	110,0	4I12.0910U
9,2	10	120	162	110,0	4I12.0920U
9,3	10	120	162	110,0	4I12.0930U
9,4	10	120	162	110,0	4I12.0940U
9,5	10	120	162	110,0	4I12.0950U
9,6	10	120	162	110,0	4I12.0960U
9,7	10	120	162	110,0	4I12.0970U
9,8	10	120	162	110,0	4I12.0980U
9,9	10	120	162	110,0	4I12.0990U
10,0	10	120	162	110,0	4I12.1000U
10,1	12	156	204	142,0	4I12.1010U
10,2	12	156	204	142,0	4I12.1020U
10,3	12	156	204	142,0	4I12.1030U
10,4	12	156	204	142,0	4I12.1040U
10,5	12	156	204	142,0	4I12.1050U
10,6	12	156	204	142,0	4I12.1060U
10,7	12	156	204	142,0	4I12.1070U
10,8	12	156	204	142,0	4I12.1080U
10,9	12	156	204	142,0	4I12.1090U
11,0	12	156	204	142,0	4I12.1100U
11,1	12	156	204	142,0	4I12.1110U
11,2	12	156	204	142,0	4I12.1120U
11,3	12	156	204	142,0	4I12.1130U
11,4	12	156	204	142,0	4I12.1140U
11,5	12	156	204	142,0	4I12.1150U
11,6	12	156	204	142,0	4I12.1160U
11,7	12	156	204	142,0	4I12.1170U
11,8	12	156	204	142,0	4I12.1180U
11,9	12	156	204	142,0	4I12.1190U
12,0	12	156	204	142,0	4I12.1200U
12,5	14	182	230	166,0	4I12.1250U
12,8	14	182	230	166,0	4I12.1280U
13,0	14	182	230	166,0	4I12.1300U
13,5	14	182	230	166,0	4I12.1350U
13,8	14	182	230	166,0	4I12.1380U
14,0	14	182	230	166,0	4I12.1400U
14,5	16	208	260	192,0	4I12.1450U
14,8	16	208	260	192,0	4I12.1480U
15,0	16	208	260	192,0	4I12.1500U

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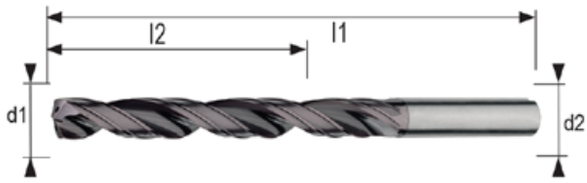
Series 4l12

Solid carbide drills 12xD, 4 margins



Ø d1	Ø d2	l2	l1	Max. depth of drilling	
15,5	16	208	260	192,0	4I12.1550U
15,8	16	208	260	192,0	4I12.1580U
16,0	16	208	260	192,0	4I12.1600U
16,5	18	234	285	216,0	4I12.1650U
16,8	18	234	285	216,0	4I12.1680U
17,0	18	234	285	216,0	4I12.1700U
17,5	18	234	285	216,0	4I12.1750U
17,8	18	234	285	216,0	4I12.1780U
18,0	18	234	285	216,0	4I12.1800U
18,5	20	258	310	238,0	4I12.1850U
18,8	20	258	310	238,0	4I12.1880U
19,0	20	258	310	238,0	4I12.1900U
19,5	20	258	310	238,0	4I12.1950U
19,8	20	258	310	238,0	4I12.1980U
20,0	20	258	310	238,0	4I12.2000U

UNIVERSAL

Series 4I15

Solid carbide drills 15xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
1,00	3,0	20	60	15	4I15.0100U
1,10	3,0	22	60	17	4I15.0110U
1,20	3,0	24	60	18	4I15.0120U
1,30	3,0	25	60	21	4I15.0130U
1,40	3,0	27	60	21	4I15.0140U
1,50	3,0	27	60	23	4I15.0150U
1,60	3,0	32	65	24	4I15.0160U
1,70	3,0	32	65	26	4I15.0170U
1,80	3,0	35	65	27	4I15.0180U
1,90	3,0	35	65	29	4I15.0190U
2,00	3,0	35	65	30	4I15.0200U
2,10	3,0	40	75	32	4I15.0210U
2,20	3,0	40	75	33	4I15.0220U
2,30	3,0	40	75	35	4I15.0230U
2,40	3,0	45	75	36	4I15.0240U
2,50	3,0	45	75	38	4I15.0250U
2,60	3,0	48	80	39	4I15.0260U
2,70	3,0	48	80	41	4I15.0270U
2,80	3,0	50	80	42	4I15.0280U
2,90	3,0	50	80	44	4I15.0290U
3,00	6,0	60	100	45	4I15.0300U
3,10	6,0	60	100	47	4I15.0310U
3,20	6,0	60	100	48	4I15.0320U
3,30	6,0	60	100	50	4I15.0330U
3,40	6,0	60	100	51	4I15.0340U
3,50	6,0	60	100	53	4I15.0350U
3,60	6,0	68	115	54	4I15.0360U
3,70	6,0	68	115	56	4I15.0370U
3,80	6,0	68	115	57	4I15.0380U
3,90	6,0	68	115	59	4I15.0390U
4,00	6,0	68	115	60	4I15.0400U
4,10	6,0	78	115	62	4I15.0410U
4,20	6,0	78	115	63	4I15.0420U
4,30	6,0	78	115	65	4I15.0430U
4,40	6,0	78	115	66	4I15.0440U
4,50	6,0	78	115	68	4I15.0450U
4,60	6,0	84	130	69	4I15.0460U
4,70	6,0	84	130	71	4I15.0470U
4,80	6,0	84	130	72	4I15.0480U
4,90	6,0	84	130	74	4I15.0490U

UNIVERSAL

Series 4I15

Solid carbide drills 15xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
5,0	6	92	130	75	4I15.0500U
5,1	6	92	130	77	4I15.0510U
5,2	6	92	130	78	4I15.0520U
5,3	6	92	130	80	4I15.0530U
5,4	6	92	130	81	4I15.0540U
5,5	6	100	145	83	4I15.0550U
5,6	6	100	145	84	4I15.0560U
5,7	6	100	145	86	4I15.0570U
5,8	6	100	145	87	4I15.0580U
5,9	6	100	145	90	4I15.0590U
6,0	6	100	145	90	4I15.0600U
6,1	8	108	145	92	4I15.0610U
6,2	8	108	145	93	4I15.0620U
6,3	8	108	145	96	4I15.0630U
6,4	8	108	145	96	4I15.0640U
6,5	8	130	170	97	4I15.0650U
6,6	8	130	170	99	4I15.0660U
6,7	8	130	170	101	4I15.0670U
6,8	8	130	170	102	4I15.0680U
6,9	8	130	170	102	4I15.0690U
7,0	8	130	170	105	4I15.0700U
7,5	8	130	170	115	4I15.0750U
7,8	8	130	170	117	4I15.0780U
8,0	8	130	170	120	4I15.0800U
8,5	10	163	208	128	4I15.0850U
8,8	10	163	208	132	4I15.0880U
9,0	10	163	208	135	4I15.0900U
9,5	10	163	208	143	4I15.0950U
9,8	10	163	208	147	4I15.0980U
10,0	10	163	245	150	4I15.1000U
10,2	12	195	245	153	4I15.1020U
10,5	12	195	245	158	4I15.1050U
10,8	12	195	245	162	4I15.1080U
11,0	12	195	245	165	4I15.1100U
11,2	12	195	245	168	4I15.1120U
11,5	12	195	245	173	4I15.1150U
11,8	12	195	245	177	4I15.1180U
12,0	12	195	245	180	4I15.1200U
12,5	14	230	280	188	4I15.1250U
13,0	14	230	280	195	4I15.1300U

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Series 4l15

Solid carbide drills 15xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
13,8	14	230	280	207	4l15.1380U
14,0	14	230	280	210	4l15.1400U
14,8	16	260	260	222	4l15.1480U
15,0	16	260	260	225	4l15.1500U
15,8	16	260	260	237	4l15.1580U
16,0	16	260	260	240	4l15.1600U

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Series 4I20

Solid carbide drills 20xD, 4 margins

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
2,0	4	50	92	50	4I20.0200U
2,2	4	50	92	50	4I20.0220U
2,3	4	50	92	50	4I20.0230U
2,4	4	70	112	70	4I20.0240U
2,5	4	70	112	70	4I20.0250U
2,7	4	70	112	70	4I20.0270U
2,8	4	70	112	70	4I20.0280U
3,0	6	80	120	80	4I20.0300U
3,2	6	80	120	80	4I20.0320U
3,3	6	80	120	80	4I20.0330U
3,5	6	80	120	80	4I20.0350U
3,8	6	90	130	90	4I20.0380U
4,0	6	90	130	90	4I20.0400U
4,2	6	110	160	110	4I20.0420U
4,5	6	110	160	110	4I20.0450U
4,8	6	120	160	120	4I20.0480U
5,0	6	120	160	120	4I20.0500U
5,5	6	140	185	140	4I20.0550U
5,8	6	140	185	140	4I20.0580U
6,0	6	140	185	140	4I20.0600U
6,5	8	155	210	155	4I20.0650U
6,8	8	160	210	160	4I20.0680U
7,0	8	160	210	160	4I20.0700U
7,5	8	180	230	180	4I20.0750U
7,8	8	180	230	180	4I20.0780U
8,0	8	180	230	180	4I20.0800U
8,5	10	195	260	195	4I20.0850U
8,8	10	230	290	230	4I20.0880U
9,0	10	230	290	230	4I20.0900U
9,8	10	230	290	230	4I20.0980U
10,0	10	230	290	230	4I20.1000U
10,2	12	270	315	270	4I20.1020U
10,8	12	270	315	270	4I20.1080U
11,8	12	270	315	270	4I20.1180U
12,0	12	270	315	270	4I20.1200U

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Series PI05

Solid carbide drills 15xD, pilot

Ø d1	Ø d2	l2	l1	Max. depth of drilling	
2,02	3	16	57	16	PI05.0202U
2,22	3	21	57	21	PI05.0222U
2,32	3	21	57	21	PI05.0232U
2,42	3	21	57	21	PI05.0242U
2,52	3	21	57	21	PI05.0252U
2,72	3	21	57	21	PI05.0272U
2,82	3	21	57	21	PI05.0282U
3,02	6	28	66	28	PI05.0302U
3,22	6	28	66	28	PI05.0322U
3,32	6	28	66	28	PI05.0332U
3,52	6	28	66	28	PI05.0352U
3,82	6	36	74	36	PI05.0382U
4,02	6	36	74	36	PI05.0402U
4,22	6	36	74	36	PI05.0422U
4,52	6	36	74	36	PI05.0452U
4,82	6	44	82	44	PI05.0482U
5,02	6	44	82	44	PI05.0502U
5,52	6	44	82	44	PI05.0552U
5,82	6	44	82	44	PI05.0582U
6,02	6	44	82	44	PI05.0602U
6,52	8	53	91	53	PI05.0652U
6,82	8	53	91	53	PI05.0682U
7,02	8	53	91	53	PI05.0702U
7,52	8	53	91	53	PI05.0752U
7,82	8	53	91	53	PI05.0782U
8,02	8	53	91	53	PI05.0802U
8,52	10	61	103	61	PI05.0852U
8,82	10	61	103	61	PI05.0882U
9,02	10	61	103	61	PI05.0902U
9,82	10	61	103	61	PI05.0982U
10,02	10	61	103	61	PI05.1002U
10,22	12	71	118	71	PI05.1022U
10,82	12	71	118	71	PI05.1082U
11,82	12	71	118	71	PI05.1182U
12,02	12	71	118	71	PI05.1202U

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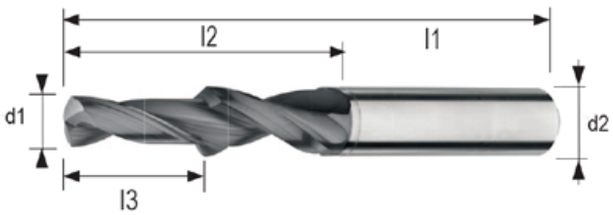
Series E03S

Solid carbide step drills



Ø d1	Ø d2	l2	l1	l3	
2,5/6,0	6	28	66	8,8	E03S.0250.0600U
3,3/6,0	6	28	66	11,4	E03S.0330.0600U
4,2/6,0	6	28	66	13,6	E03S.0420.0600U
5,0/8,0	8	41	79	16,5	E03S.0500.0800U
6,8/10,0	10	47	89	21,0	E03S.0680.1000U
8,5/12,0	12	55	102	25,5	E03S.1020.1400U
10,2/14,0	14	60	107	30	E03S.1020.1400U

Material	Vc	ø1-2	ø 2-3	ø 3-5	ø 5-8	ø 8-12	ø 12 - 16	ø 16 - 20
unalloyed steels, steel castings	60-100	0,03-0,05	0,05-0,08	0,1-0,18	0,16-0,24	0,2-0,3	0,2-0,33	0,25-0,4
alloyed steels	50-80	0,02-0,04	0,05-0,08	0,08-0,15	0,10-0,18	0,12-0,22	0,15-0,28	0,2-0,35
	40-80	0,02-0,04	0,05-0,08	0,08-0,15	0,10-0,18	0,12-0,22	0,15-0,28	0,2-0,35
inox	30-50	0,01-0,03	0,03-0,06	0,06-0,10	0,08-0,15	0,12-0,20	0,1-0,2	0,16-0,28
corrosion- and acid-proof steels (CrNi-alloyed)	25-35	0,01-0,03	0,03-0,06	0,05-0,10	0,08-0,15	0,12-0,20	0,1-0,2	0,16-0,28
grey cast iron, alloyed grey cast iron	50-130			0,15-0,30	0,12-0,30	0,2-0,4	0,25-0,40	0,4-0,5
	70-90			0,15-0,30	0,12-0,30	0,2-0,4	0,25-0,40	0,4-0,5
spheroidal graphite	70-90		0,05-0,10	0,1-0,2	0,1-0,2	0,2-0,4	0,35-0,45	0,4-0,6
	60-80			0,08-0,12	0,1-0,18	0,16-0,28	0,22-0,33	0,3-0,5
Alu forgeable alby	50-350	0,04-0,07	0,01-0,15	0,15-0,25	0,2-0,3	0,25-0,40	0,35-0,5	0,4-0,6
cast alu alloy < 10% Si	100-250		0,05-0,12	0,15-0,25	0,2-0,3	0,25-0,40	0,35-0,5	0,4-0,6
cast alu alloy > 10% Si	100-200	0,6-0,8	0,6-0,10	0,12-0,20	0,18-0,22	0,20-0,28	0,26-0,3	0,25-0,32
copper, bronze, brass, short-chipping	60-200	0,05-0,08	0,08-0,15	0,07-0,15	0,10-0,20	0,20-0,30	0,25-0,40	0,35-0,50
titanium alloys	20-40	0,01-0,03	0,03-0,06	0,02-0,06	0,05-0,08	0,08-0,14	0,10-0,16	0,10-0,20
hardened materials	25-35	0,01-0,02	0,02-0,03	0,06-0,08	0,07-0,09	0,1-0,13	0,12-0,15	
	20-25	0,01-0,02	0,02-0,03	0,03-0,05	0,04-0,06	0,08-0,1	0,12-0,15	
	15-20	0,01-0,02	0,02-0,03	0,03-0,05	0,04-0,06	0,08-0,1	0,1-0,12	
	10-15	0,01-0,02	0,02-0,03	0,03-0,05	0,04-0,06	0,08-0,1	0,1-0,12	

Drill depth	Factor of correction
1xd	1,3
3xd	1,0
5xd	0,8
8xd	0,7
12xd	0,6
15xd	0,5

ADD engineering