

Milling cutters

MULTI-Cut – Roughing in new dimensions



Description

One tool – universal applications.

The flexible solution for milling in different materials.

Built in 3 lengths and designed to maximum stability, the MULTI-Cut end mills open the way to a new degree of flexibility in roughing. With this tool concept you can cut stainless materials as well as long- and short-chipping steels. Hardened steels up to 42 HRC, cast iron and other materials like copper and bronze can also be reliably machined.

Characteristics

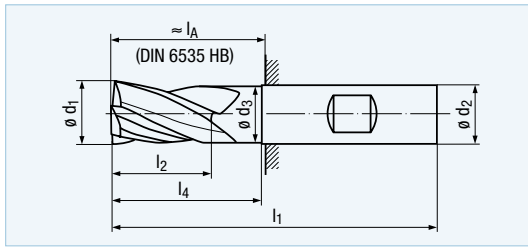
- maximum machining volumes due to a high-performance carbide substrate
- short, light-weight chips due to a special chip breaker profile
- extreme reliability due to a stabilized cutting edge
- dynamic spacing of cutting edges for smooth, low-vibration machining
- neutral rake angle for universal applications
- short chip contact due to special chip former
- extra long tool life due to optimized geometry
- optimum working depth of tools due to recessed neck

Application range

Material groups		Material examples		Tensile strength
1.1	Cold-extrusion steels, Magnetic soft iron	≤ 400 N/mm ²	Q-St37-3 R-Fe80	1.0123 1.1014
1.2	Free-cutting steels, General construction steels	≤ 600 N/mm ²	9SMnPb28 St37-2	1.0718 1.0037
1.3	Free-cutting steels, Construction steels, Alloyed steels, Steel castings	≤ 850 N/mm ²	St70-2 GS-25CrMo4	1.0070 1.7218
1.4	Cementation steels, Heat-treatable steels, Nitriding steels, Cold work steels	≤ 1100 N/mm ²	16MnCr5 Ck45 100Cr6	1.7131 1.1191 1.3505
1.5	Heat-treatable steels, Nitriding steels, Hot work steels, Hardened steels up to 44 HRC, Cold work steels	≤ 1400 N/mm ²	42CrMo4V X30WCrV5-3 X38CrMoV5-3 X155CrVMo12-1	1.7225 1.2567 1.2367 1.2379
1.10	Corrosion-proof steels, Acid-proof steels, Heat-resistant steels	≤ 850 N/mm ²	X10NiCrAlTi32-20 [INCOLOY800] X12CrNiTi18-9 X6CrNiMoTi17-12-2	1.4876 1.4878 1.4571
2.1	Cast iron		GG 20 GG 30	0.6020 0.6030
2.2	Cast iron with nodular graphite		GGG 40 GGG 70	0.7040 0.7070
2.3	Cast iron with vermicular graphite		GGV(80%perlite) GGV(100%perlite)	220 HB 230 HB
2.4	Malleable cast iron		GTW 40 GTS 65	0.8040 0.8165
3.1	Pure copper and low-alloyed copper	≤ 500 N/mm ²	E-Cu	2.0060
3.2	Copper-zinc alloys (brass, long-chipping)		CuZn40 [Ms60] CuZn37 [Ms63]	2.0360 2.0321
3.3	Copper-zinc alloys (brass, short-chipping)		CuZn39Pb2 [Ms58]	2.0380
3.4	Copper-alum. alloys (alubronze, long-chipping) Copper-tin alloys (bronze, long-chipping)		CuAl10Ni	2.0966
3.5	Copper-tin alloys (bronze, short-chipping)		GCuSn5ZnPb [Rg5] GCuSn7ZnPb [Rg7]	2.1096 2.1090
7.1	Pure titanium, Titanium alloys	≤ 900 N/mm ²	Ti3 [Ti99.4] TiAl6V4	3.7055 3.7164
7.2	Titanium alloys	900 - 1250 N/mm ²	TiAl4Mo4Sn2	3.7185

MULTI-Cut – Short design, for the roughing of slots

Internal standard

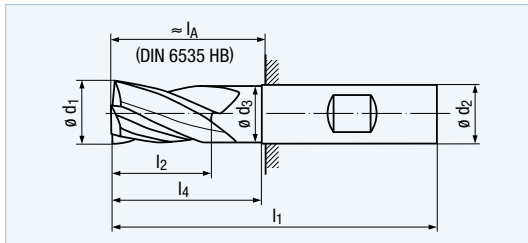


$\varnothing d_1$ h11	l_2	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$ h6	l_A	Z	Article no.
6	10	57	5.8	20	6	21	4	2869A.006
8	12	63	7.7	25	8	27	4	2869A.008
10	15	72	9.5	30	10	32	4	2869A.010
12	18	83	11.5	35	12	38	4	2869A.012
14	21	83	13.5	35	14	38	4	2869A.014
16	24	92	15.5	40	16	44	4	2869A.016
20	30	104	19.5	50	20	54	4	2869A.020

Material	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	Cooling	Lubrication
1.1 - 1.3	160 - 200	$0.005 \times d_1$	$1.5 \times d_1$	$1 \times d_1$	Compressed air / cold air	–
1.4 - 1.5	120 - 160	$0.004 \times d_1$	$1 \times d_1$	$1 \times d_1$	Compressed air / cold air	–
1.10	80 - 100	$0.004 \times d_1$	$1 \times d_1$	$1 \times d_1$	–	Emulsion
2.1 - 2.2	160 - 220	$0.006 \times d_1$	$1.5 \times d_1$	$1 \times d_1$	Compressed air / cold air	–
2.3 - 2.4	120 - 160	$0.005 \times d_1$	$1 \times d_1$	$1 \times d_1$	Compressed air / cold air	–
3.1 - 3.3	120 - 160	$0.004 \times d_1$	$1 \times d_1$	$1 \times d_1$	–	Emulsion
3.4 - 3.5	100 - 140	$0.004 \times d_1$	$1 \times d_1$	$1 \times d_1$	–	Emulsion
7.1 - 7.2	60 - 80	$0.003 \times d_1$	$1 \times d_1$	$1 \times d_1$	–	Emulsion

MULTI-Cut – Long design

DIN 6527 BL



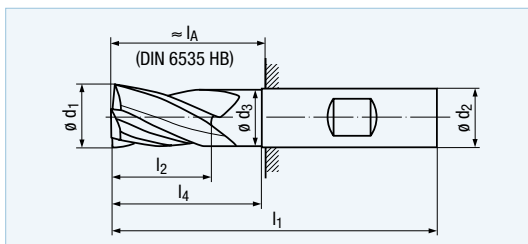
$\varnothing d_1$ h11	l_2	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$ h6	l_A	Z	Article no.
6	13	57	5.8	20	6	21	4	2873A.006
8	19	63	7.7	25	8	27	4	2873A.008
10	22	72	9.5	30	10	32	4	2873A.010
12	26	83	11.5	35	12	38	4	2873A.012
14	26	83	13.5	35	14	38	4	2873A.014
16	32	92	15.5	40	16	44	4	2873A.016
20	38	104	19.5	50	20	54	4	2873A.020

Material	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	Cooling	Lubrication
1.1 - 1.3	160 - 200	$0.006 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
1.4 - 1.5	120 - 160	$0.005 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
1.10	80 - 100	$0.0045 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	–	Emulsion
2.1 - 2.2	160 - 220	$0.007 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
2.3 - 2.4	120 - 160	$0.006 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
3.1 - 3.3	120 - 160	$0.005 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	–	Emulsion
3.4 - 3.5	100 - 140	$0.0045 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	–	Emulsion
7.1 - 7.2	70 - 90	$0.004 \times d_1$	$1.5 \times d_1$	$0.5 \times d_1$	–	Emulsion

Please note: For $1 \times d_1$ slotting applications, reduce cutting speed v_c by 50% and f_z by 30%!

MULTI-Cut – Long shank, short cutting edge

Internal standard



$\varnothing d_1$ h11	l_2	l_1	$\varnothing d_3$	l_4	$\varnothing d_2$ h6	l_A	Z	Article no.
6	10	62	5.8	25	6	26	4	2875A.006
8	12	68	7.7	30	8	32	4	2875A.008
10	15	80	9.5	35	10	40	4	2875A.010
12	18	93	11.5	45	12	47	4	2875A.012
14	21	99	13.5	50	14	54	4	2875A.014
16	24	108	15.5	55	16	60	4	2875A.016
20	30	126	19.5	70	20	76	4	2875A.020

Material	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	Cooling	Lubrication
1.1 - 1.3	120 - 160	$0.004 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
1.4 - 1.5	100 - 140	$0.0035 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
1.10	60 - 80	$0.003 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	–	Emulsion
2.1 - 2.2	140 - 200	$0.005 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
2.3 - 2.4	100 - 140	$0.004 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	Compressed air / cold air	–
3.1 - 3.3	100 - 140	$0.003 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	–	Emulsion
3.4 - 3.5	80 - 120	$0.003 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	–	Emulsion
7.1 - 7.2	40 - 60	$0.003 \times d_1$	$1 \times d_1$	$0.5 \times d_1$	–	Emulsion

Please note: For $1 \times d_1$ slotting applications, reduce cutting speed v_c by 50% and f_z by 30%!

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