ADD engineering

SOLID CARBIDE END MILLS

35°/38°

Better performance > More than 30% longer tool life

Germany | India | Russia

Germany | India | Russia

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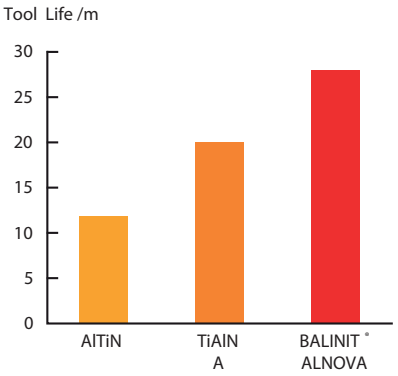
BALINIT® ALNOVA Coatings Provides Better Performance Solid Carbide End Mill 35°/38°

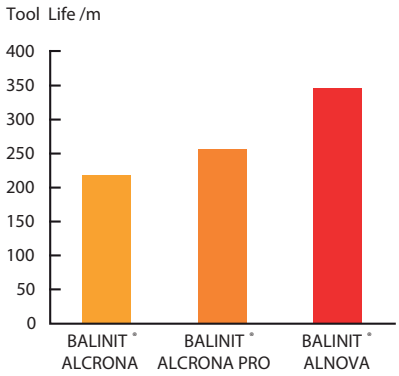
Test Results

Roughing/Coolant



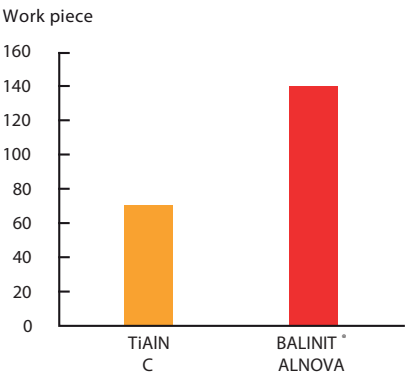
Tool : Solid Carbide end mill, Ø 10 mm
Work piece : DIN 1.2344 (X40CrMoV5-1)
1200 N/mm²
Cutting Speed: v_c = 150 m/min

Finishing/dry



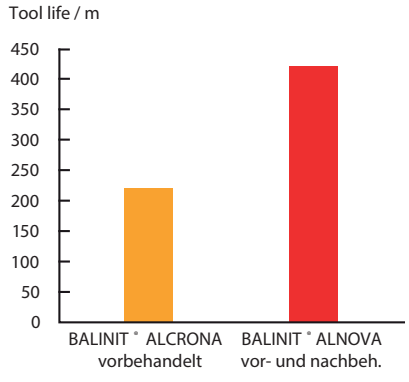
Tool : Solid Carbide end mill, Ø 10 mm
Work piece : DIN 1.2344 (X40CrMoV5-1)
45 HRC
Cutting Speed : v_c = 250 m/min

Rough milling / Coolant



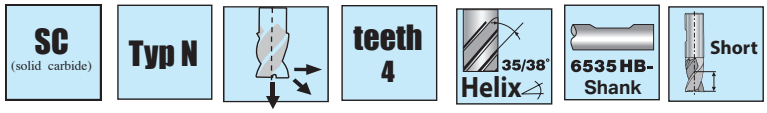
Tool : Solid Carbide end mill, Ø 10 mm
Work piece: DIN 1.7131 (16MnCr5)
Cutting data : v_c = 181 m/min
f_z = 0,03 mm
Emulsion 5%

Milling/Coolant



Tool: Solid Carbide end mill, Ø 20 mm
Work piece: Turbine blade
DIN 1.4021 (X20Cr13)
Cutting data : Cutting No.1
v_c = 300 m/min
Cutting No.2
v_c = 100 m/min
Emulsion (5-8%)

35380



d1 h10	d2 h6	Corner Chamber	l2	l1	Teeth	Part No
3,0	6	0,10x45°	6	54	4	030
4,0	6	0,13x45°	8	54	4	040
5,0	6	0,18x45°	9	54	4	050
6,0	6	0,20x45°	10	54	4	060
7,0	8	0,20x45°	12	58	4	070
8,0	8	0,20x45°	12	58	4	080
9,0	10	0,30x45°	14	66	4	090
10,0	10	0,30x45°	14	66	4	100
11,0	12	0,30x45°	16	73	4	110
12,0	12	0,30x45°	16	73	4	120
13,0	14	0,30x45°	18	75	4	130
14,0	14	0,30x45°	18	75	4	140
16,0	16	0,40x45°	22	82	4	160
18,0	18	0,40x45°	24	84	4	180
20,0	20	0,50x45°	26	92	4	200

Solid carbide end mills
with different spiral 35°/38°
(BALZERS-ALCRONA Pro <53HRC)

Material designation	Material code	Tensile Streng-th / Hardness	Vc (m/min) Alcrona Finishing	Vc (m/min) Alcrona Roughing	fz (mm/ Tooth)
Construction Steel	1.0037 (St 37-2)	< 500 N/Mm²	300	230	01
Construction Steel	1.0050 (St 50-2)	500 - 850 N/Mm²	230	180	01
Free Cutting Steel	1.0718 (9 S Mnpb 28)	< 850 N/Mm²	230	180	01
Free Cutting Steel	1.0728 (60 S 20)	850 - 1000 N/Mm²	220	170	02
Unalloyed Head Treatable Steels	1.0501 (C 35)	< 700 N/Mm²	250	180	01
Unalloyed Head Treatable Steels	1.0503 (C 45)	700 - 850 N/Mm²	230	180	01
Unalloyed Head Treatable Steels	1.1221 (Ck 60)	850 - 1000 N/Mm²	220	180	02
Alloyed Heat Treatable Steels	1.7003 (38 Cr 2)	850 - 1000 N/Mm²	220	180	02
Alloyed Heat Treatable Steels	1.7225 (42 Crmo 4)	1000 - 1200 N/Mm²	180	150	03
Non-Alloy Hardened Steels	1.0401 (C 15)	< 750 N/Mm²	240	220	01
Alloyed Hardening Steels	1.7012 (13Cr2)	< 1000 N/Mm²	220	170	02
Alloyed Hardening Steels	1.7262 (15 Crmo 5)	> 1000 N/Mm²	180	150	03
Tool Steel	1.1730 (C 45 W)	< 850 N/Mm²	230	180	02
Tool Steel	1.2312 (40Crmnmos 8-6)	850 - 1100 N/Mm²	220	170	02
Tool Steel	1.2080 (X210cr12)	1100 - 1400 N/Mm²	210	110	03
Cast Iron	0.6020 (Gg 20)	< 180 Hb	190	150	04
Cast Iron	0.6035 (Gg 35)	> 180 Hb	140	130	04
Cast Iron (Ggg,Gt)	0.7060 (Ggg-60)	> 180 Hb	140	110	04
Cast Iron (Ggg,Gt)	0.7080 (Ggg-80)	> 260 Hb	110	90	04

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35380						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,030	0,040	0,050	0,060	0,080	0,100
02	0,025	0,035	0,045	0,050	0,065	0,090
03	0,020	0,030	0,040	0,050	0,060	0,075
04	0,040	0,050	0,065	0,080	0,095	0,115

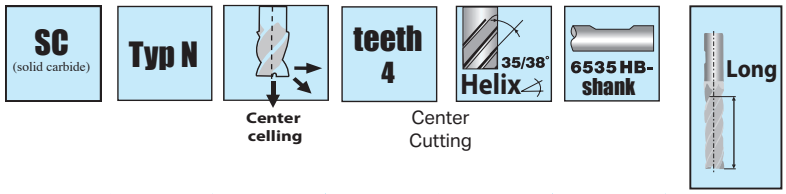
Contour Milling - 0,5xD and - 2xD

FEED RATE ROUGHING

Feed Rate Table fz (mm/Z) 35380						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,040	0,050	0,065	0,080	0,095	0,115
02	0,035	0,050	0,055	0,065	0,080	0,100
03	0,030	0,040	0,050	0,060	0,070	0,090
04	0,040	0,050	0,065	0,080	0,100	0,120

Solid Channel Milling - 1xd and - 1,5xD

35381



d1 h10	d2 h6	Corner Chamber	l2	l1	Teeth	Part No
3,0	6	0,15 x 45°	8	54	4	030
4,0	6	0,15 x 45°	11	57	4	040
5,0	6	0,15 x 45°	13	57	4	050
6,0	6	0,20 x 45°	13	57	4	060
7,0	8	0,20 x 45°	19	63	4	070
8,0	8	0,20 x 45°	19	63	4	080
9,0	10	0,20 x 45°	22	72	4	090
10,0	10	0,30 x 45°	22	72	4	100
11,0	12	0,30 x 45°	26	83	4	110
12,0	12	0,30 x 45°	26	83	4	120
13,0	14	0,30 x 45°	26	83	4	130
14,0	14	0,30 x 45°	26	83	4	140
16,0	16	0,40 x 45°	32	92	4	160
18,0	18	0,40 x 45°	32	92	4	180
20,0	20	0,50 x 45°	38	104	4	200

Solid carbide end mills
with different spiral 35°/38°
(BALZERS-ALCRONA Pro <53HRC)

Material designation	Material Code	Tensile Streng-th / Hardness	Vc (m/min) Alcrona Finishing	Vc (m/min) Alcrona Roughing	fz (mm/ Tooth)
Construction Steel	1.0037 (St 37-2)	< 500 N/mm²	300	230	01
Construction Steel	1.0050 (St 50-2)	500 - 850 N/mm²	230	180	01
Free Cutting Steel	1.0718 (9 S MnPb 28)	< 850 N/mm²	230	180	01
Free Cutting Steel	1.0728 (60 S 20)	850 - 1000 N/mm²	220	170	02
Unalloyed Head Treatable Steels	1.0501 (C 35)	< 700 N/mm²	250	180	01
Unalloyed Head Treatable Steels	1.0503 (C 45)	700 - 850 N/mm²	230	180	01
Unalloyed Head Treatable Steels	1.1221 (Ck 60)	850 - 1000 N/mm²	220	180	02
Alloyed Heat Treatable Steels	1.7003 (38 Cr 2)	850 - 1000 N/mm²	220	180	02
Alloyed Heat Treatable Steels	1.7225 (42 CrMo 4)	1000 - 1200 N/mm²	180	150	03
Non-Alloy Hardened Steels	1.0401 (C 15)	< 750 N/mm²	240	220	01
Alloyed Hardening Steels	1.7012 (13Cr2)	< 1000 N/mm²	220	170	02
Alloyed Hardening Steels	1.7262 (15 CrMo 5)	> 1000 N/mm²	180	150	03
Tool Steel	1.1730 (C 45 W)	< 850 N/mm²	230	180	02
Tool Steel	1.2312 (40CrMnMoS 8-6)	850 - 1100 N/mm²	220	170	02
Tool Steel	1.2080 (X210Cr12)	1100 - 1400 N/mm²	210	110	03
Cast Iron	0.6020 (GG 20)	< 180 HB	190	150	04
Cast Iron	0.6035 (GG 35)	> 180 HB	140	130	04
Cast Iron (Ggg,Gt)	0.7060 (GGG-60)	> 180 HB	140	110	04
Cast Iron (Ggg,Gt)	0.7080 (GGG-80)	> 260 HB	110	90	04

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35388						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,030	0,040	0,050	0,060	0,080	0,100
02	0,025	0,035	0,045	0,050	0,065	0,090
03	0,020	0,030	0,040	0,050	0,060	0,075
04	0,040	0,050	0,065	0,080	0,095	0,115

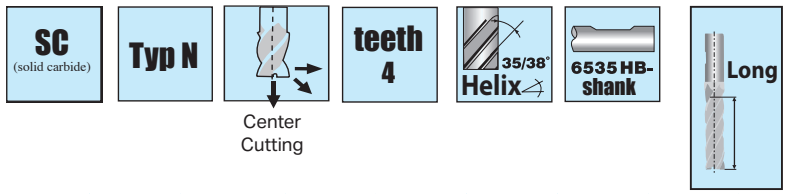
Contour Milling - 0,5xD and - 2xD

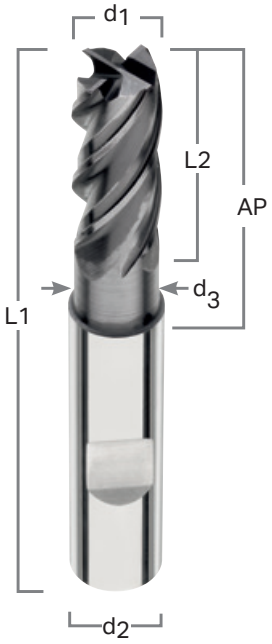
FEED RATE ROUGHING

Feed Rate Table fz (mm/Z) 35388						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,040	0,050	0,065	0,080	0,095	0,115
02	0,035	0,050	0,055	0,065	0,080	0,100
03	0,030	0,040	0,050	0,060	0,070	0,090
04	0,040	0,050	0,065	0,080	0,100	0,120

Solid Channel Milling - 1xd and - 1,5xD

35382





d1 h10	d2 h6	Corner Chamber	d3	AP	l2	l1	Teeth	Part No
3,0	6	0,13x45°	2,8	18	8	57	4	030
4,0	6	0,18x45°	3,6	21	11	57	4	040
5,0	6	0,20x45°	4,6	21	13	57	4	050
6,0	6	0,20x45°	5,5	21	13	57	4	060
7,0	8	0,20x45°	6,5	27	19	63	4	070
8,0	8	0,20x45°	7,5	27	19	63	4	080
9,0	10	0,30x45°	8,5	32	22	72	4	090
10,0	10	0,30x45°	9,5	32	22	72	4	100
11,0	12	0,30x45°	10,5	38	26	83	4	110
12,0	12	0,30x45°	11,5	38	26	83	4	120
13,0	14	0,30x45°	12,5	42	26	83	4	130
14,0	14	0,30x45°	13,5	42	26	83	4	140
16,0	16	0,40x45°	15,5	44	32	92	4	160
18,0	18	0,40x45°	17,5	50	32	92	4	180
20,0	20	0,50x45°	19,5	54	38	104	4	200

Solid carbide end mills
with different spiral 35°/38°
(BALZERS-ALCRONA Pro <53HRC)

Material designation	Material Code	Tensile Streng-th / Hardness	Vc (m/min) Alcrona Finishing	Vc (m/min) Alcrona Roughing	fz (mm/ Tooth)
Construction Steel	1.0037 (St 37-2)	< 500 N/mm²	300	230	01
Construction Steel	1.0050 (St 50-2)	500 - 850 N/mm²	230	180	01
Free Cutting Steel	1.0718 (9 S MnPb 28)	< 850 N/mm²	230	180	01
Free Cutting Steel	1.0728 (60 S 20)	850 - 1000 N/mm²	220	170	02
Unalloyed Head Treatable Steels	1.0501 (C 35)	< 700 N/mm²	250	180	01
Unalloyed Head Treatable Steels	1.0503 (C 45)	700 - 850 N/mm²	230	180	01
Unalloyed Head Treatable Steels	1.1221 (Ck 60)	850 - 1000 N/mm²	220	180	02
Alloyed Heat Treatable Steels	1.7003 (38 Cr 2)	850 - 1000 N/mm²	220	180	02
Alloyed Heat Treatable Steels	1.7225 (42 CrMo 4)	1000 - 1200 N/mm²	180	150	03
Non-Alloy Hardened Steels	1.0401 (C 15)	< 750 N/mm²	240	220	01
Alloyed Hardening Steels	1.7012 (13Cr2)	< 1000 N/mm²	220	170	02
Alloyed Hardening Steels	1.7262 (15 CrMo 5)	> 1000 N/mm²	180	150	03
Tool Steel	1.1730 (C 45 W)	< 850 N/mm²	230	180	02
Tool Steel	1.2312 (40CrMnMoS 8-6)	850 - 1100 N/mm²	220	170	02
Tool Steel	1.2080 (X210Cr12)	1100 - 1400 N/mm²	210	110	03
Cast Iron	0.6020 (GG 20)	< 180 HB	190	150	04
Cast Iron	0.6035 (GG 35)	> 180 HB	140	130	04
Cast Iron (Ggg,Gt)	0.7060 (GGG-60)	> 180 HB	140	110	04
Cast Iron (Ggg,Gt)	0.7080 (GGG-80)	> 260 HB	110	90	04

FEED RATE FINISHING

Feed Rate Table Fz (mm/Z) 35380	fz (mm/Z) 35380					
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,030	0,040	0,050	0,060	0,080	0,100
02	0,025	0,035	0,045	0,050	0,065	0,090
03	0,020	0,030	0,040	0,050	0,060	0,075
04	0,040	0,050	0,065	0,080	0,095	0,115

Contour Milling - 0,5xD and - 2xD

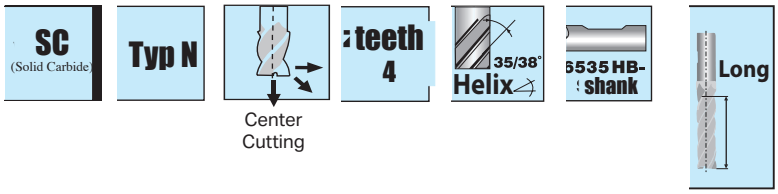
FEED RATE ROUGHING

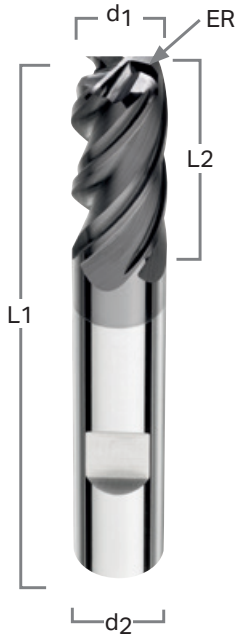
Feed Rate Table Fz (mm/Z) 35380	fz (mm/Z) 35380	fz (mm/Z) 35380			
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,040	0,050	0,065	0,080	0,095	0,115
02	0,035	0,050	0,055	0,065	0,080	0,100
03	0,030	0,040	0,050	0,060	0,070	0,090
04	0,040	0,050	0,065	0,080	0,100	0,120

Solid Channel Milling - 1xd and - 1,5xD

35384

With Corner Radius





d1 h10	d2 h6	ER +/- 0,02	l2	l1	Teeth	Part No
4,0	6	0,25	11	57	4	40025
4,0	6	0,50	11	57	4	4005
4,0	6	1,00	11	57	4	4010
5,0	6	0,50	13	57	4	5005
5,0	6	1,00	13	57	4	5010
5,0	6	1,50	13	57	4	5015
6,0	6	0,50	13	57	4	6005
6,0	6	1,00	13	57	4	6010
6,0	6	1,50	13	57	4	6015
6,0	6	2,00	13	57	4	6020
8,0	8	0,50	19	63	4	8005
8,0	8	1,00	19	63	4	8010
8,0	8	1,50	19	63	4	8015
8,0	8	2,00	19	63	4	8020
10,0	10	0,50	22	72	4	1005
10,0	10	1,00	22	72	4	1010
10,0	10	1,50	22	72	4	1015

d1 h10	d2 h6	ER +/- 0,02	l2	l1	Teeth	Part No
10,0	10	2,00	22	72	4	1020
12,0	12	0,50	26	83	4	1205
12,0	12	1,00	26	83	4	1210
12,0	12	1,50	26	83	4	1215
12,0	12	2,00	26	83	4	1220
14,0	14	1,00	26	83	4	1410
14,0	14	2,00	26	83	4	1420
16,0	16	1,00	32	92	4	1610
16,0	16	1,50	32	92	4	1615
16,0	16	2,00	32	92	4	1620
16,0	16	2,50	32	92	4	1625
18,0	18	1,50	32	92	4	1815
18,0	18	2,50	32	92	4	1825
20,0	20	1,00	38	104	4	2010
20,0	20	1,50	38	104	4	2015
20,0	20	2,00	38	104	4	2020
20,0	20	2,50	38	104	4	2025
20,0	20	3,00	38	104	4	2030
20,0	20	4,00	38	104	4	2040
20,0	20	5,00	38	104	4	2050

Solid carbide end mills
with different spiral 35°/38°
(BALZERS-ALCRONA Pro <53HRC)

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) Alcrona Finishing	Vc (m/min) Alcrona Roughing	fz (mm/ Tooth)
Construction Steel	1.0037 (St 37-2)	< 500 N/Mm²	300	230	01
Construction Steel	1.0050 (St 50-2)	500 - 850 N/Mm²	230	180	01
Free Cutting Steel	1.0718 (9 S Mnpb 28)	< 850 N/Mm²	230	180	01
Free Cutting Steel	1.0728 (60 S 20)	850 - 1000 N/Mm²	220	170	02
Unalloyed Head Treatable Steels	1.0501 (C 35)	< 700 N/Mm²	250	180	01
Unalloyed Head Treatable Steels	1.0503 (C 45)	700 - 850 N/Mm²	230	180	01
Unalloyed Head Treatable Steels	1.1221 (Ck 60)	850 - 1000 N/Mm²	220	180	02
Alloyed Heat Treatable Steels	1.7003 (38 Cr 2)	850 - 1000 N/Mm²	220	180	02
Alloyed Heat Treatable Steels	1.7225 (42 Crmo 4)	1000 - 1200 N/Mm²	180	150	03
Non-Alloy Hardened Steels	1.0401 (C 15)	< 750 N/Mm²	240	220	01
Alloyed Hardening Steels	1.7012 (13Cr2)	< 1000 N/Mm²	220	170	02
Alloyed Hardening Steels	1.7262 (15 Crmo 5)	> 1000 N/Mm²	180	150	03
Tool Steel	1.1730 (C 45 W)	< 850 N/Mm²	230	180	02
Tool Steel	1.2312 (40Crmnmos 8-6)	850 - 1100 N/Mm²	220	170	02
Tool Steel	1.2080 (X210cr12)	1100 - 1400 N/Mm²	210	110	03
Cast Iron	0.6020 (Gg 20)	< 180 Hb	190	150	04
Cast Iron	0.6035 (Gg 35)	> 180 Hb	140	130	04
Cast Iron (Ggg,Gt)	0.7060 (Ggg-60)	> 180 Hb	140	110	04
Cast Iron (Ggg,Gt)	0.7080 (Ggg-80)	> 260 Hb	110	90	04

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35380						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,030	0,040	0,050	0,060	0,080	0,100
02	0,025	0,035	0,045	0,050	0,065	0,090
03	0,020	0,030	0,040	0,050	0,060	0,075
04	0,040	0,050	0,065	0,080	0,095	0,115

Contour Milling - 0,5xD and - 2xD

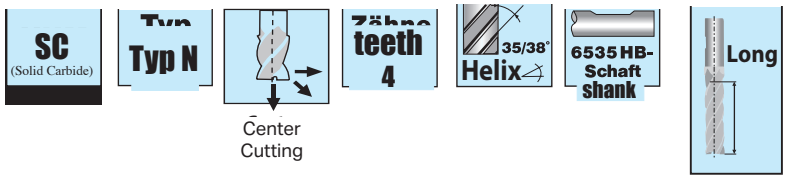
FEED RATE ROUGHING

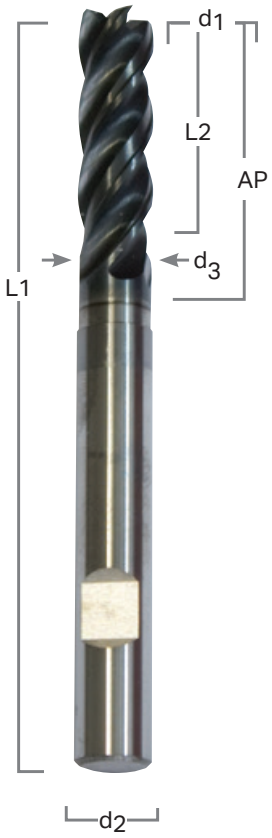
Feed Rate Table fz (mm/Z) 35380						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,040	0,050	0,065	0,080	0,095	0,115
02	0,035	0,050	0,055	0,065	0,080	0,100
03	0,030	0,040	0,050	0,060	0,070	0,090
04	0,040	0,050	0,065	0,080	0,100	0,120

Solid Channel Milling - 1xd and - 1,5xD

35388

With Corner Radius





Solid carbide end mills
with different spiral 35°/38°
(BALZERS ALCRONA Pro <53 HRC)

d1 h10	d2 h6	Corner Cham-ber	d3	AP	l2	l1	Teeth	Part No
5,0	6	0,18x45°	4,6	29	21	63	4	050
6,0	6	0,20x45°	5,5	30	22	63	4	060
7,0	8	0,20x45°	6,5	36	28	80	4	070
8,0	8	0,20x45°	7,5	36	28	80	4	080
9,0	10	0,30x45°	8,5	43	33	100	4	090
10,0	10	0,30x45°	9,5	43	33	100	4	100
11,0	12	0,30x45°	10,5	54	42	100	4	110
12,0	12	0,30x45°	11,5	54	42	100	4	120
13,0	14	0,30x45°	12,5	64	48	100	4	130
14,0	14	0,30x45°	13,5	64	48	100	4	140
16,0	16	0,40x45°	15,5	69	53	150	4	160
18,0	18	0,40x45°	17,5	71	55	150	4	180
20,0	20	0,50x45°	19,5	84	68	150	4	200

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) Alcrona Finishing	Vc (m/min) Alcrona Roughing	fz (mm/ Tooth)
Construction steel	1.0037 (St 37-2)	< 500 N/mm²	300	230	01
Construction steel	1.0050 (St 50-2)	500 - 850 N/mm²	230	180	01
Free cutting steel	1.0718 (9 S MnPb 28)	< 850 N/mm²	230	180	01
Free cutting steel	1.0728 (60 S 20)	850 - 1000 N/mm²	220	170	02
Unalloyed head treatable steels	1.0501 (C 35)	< 700 N/mm²	250	180	01
Unalloyed head treatable steels	1.0503 (C 45)	700 - 850 N/mm²	230	180	01
Unalloyed head treatable steels	1.1221 (Ck 60)	850 - 1000 N/mm²	220	180	02
Alloyed heat treatable steels	1.7003 (38 Cr 2)	850 - 1000 N/mm²	220	180	02
Alloyed heat treatable steels	1.7225 (42 CrMo 4)	1000 - 1200 N/mm²	180	150	03
Non-alloy hardened steels	1.0401 (C 15)	< 750 N/mm²	240	220	01
Alloyed hardening steels	1.7012 (13Cr2)	< 1000 N/mm²	220	170	02
Alloyed hardening steels	1.7262 (15 CrMo 5)	> 1000 N/mm²	180	150	03
Tool steel	1.1730 (C 45 W)	< 850 N/mm²	230	180	02
Tool steel	1.2312 (40CrMnMoS 8-6)	850 - 1100 N/mm²	220	170	02
Tool steel	1.2080 (X210Cr12)	1100 - 1400 N/mm²	210	110	03
Cast iron	0.6020 (GG 20)	< 180 HB	190	150	04
Cast iron	0.6035 (GG 35)	> 180 HB	140	130	04
Cast iron (GGG,GT)	0.7060 (GGG-60)	> 180 HB	140	110	04
Cast iron (GGG,GT)	0.7080 (GGG-80)	> 260 HB	110	90	04

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35388						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,030	0,040	0,050	0,060	0,080	0,100
02	0,025	0,035	0,045	0,050	0,065	0,090
03	0,020	0,030	0,040	0,050	0,060	0,075
04	0,040	0,050	0,065	0,080	0,095	0,115

Contour Milling - 0,5xD and - 2xD

FEED RATE ROUGHING

Feed Rate Table fz (mm/Z) 35388						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,040	0,050	0,065	0,080	0,095	0,115
02	0,035	0,050	0,055	0,065	0,080	0,100
03	0,030	0,040	0,050	0,060	0,070	0,090
04	0,040	0,050	0,065	0,080	0,100	0,120

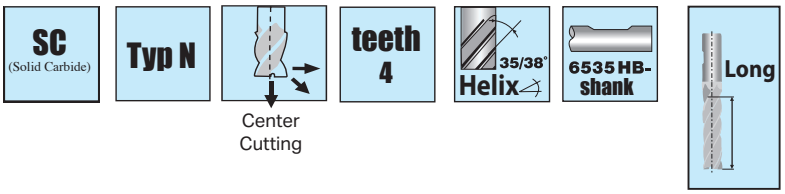
Solid Channel Milling - 1xd and - 1,5xD

SOLID CARBIDE END MILLS MCMILL 35° / 38° ALNOVA

ADD engineering

35386

INOX - Titanium



d1 h10	d2 h6	Corner Cham-ber	l2	l1	Teeth	Part No
3,0	6	0,10x45°	6	54	4	030
4,0	6	0,13x45°	8	54	4	040
5,0	6	0,18x45°	9	54	4	050
6,0	6	0,20x45°	10	54	4	060
7,0	8	0,20x45°	12	58	4	070
8,0	8	0,20x45°	12	58	4	080
9,0	10	0,30x45°	14	66	4	090
10,0	10	0,30x45°	14	66	4	100
11,0	12	0,30x45°	16	73	4	110
12,0	12	0,30x45°	16	73	4	120
13,0	14	0,30x45°	18	75	4	130
14,0	14	0,30x45°	18	75	4	140
16,0	16	0,40x45°	22	82	4	160
18,0	18	0,40x45°	24	84	4	180
20,0	20	0,50x45°	26	92	4	200

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) ALNOVA Finishing	Vc (m/min) ALNOVA Roughing	fz (mm/ Tooth)
Stainless Steel, Sulphuretted	1.4104 (X 14 Cr Mo S 17)	< 700 N/Mm²	140	120	01
Stainless Steel, Austenitic	1.4417 (X2crnimosi19 5 3)	< 700 N/Mm²	110	100	02
Stainless Steel, Austenitic	1.4541 (X 6 Crniti 18-10)	< 850 N/Mm²	100	90	01
Stainless Steel, Martensitic	1.4057 (X 17 Cr Ni 16-2)	< 1100 N/Mm²	100	90	02
Titanium, Titanium Alloy	3.7124 (Ti Cu 2)	> 850 N/Mm²	70	65	02
Titanium, Titanium Alloy	3.7164 (Ti Al 6 V 4)	850 - 1200 N/Mm²	60	55	01

Solid carbide end mills with different spiral 35°/38° (BALZERS ALNOVA)

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,025	0,035	0,045	0,050	0,065	0,090
02	0,020	0,030	0,040	0,050	0,060	0,075

Contour Milling - 0,5xD and - 2xD

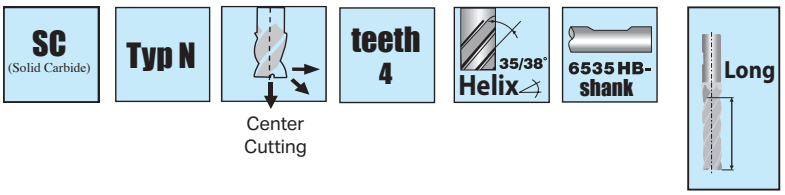
FEED RATE ROUGHING

Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,035	0,050	0,055	0,065	0,080	0,100
02	0,030	0,040	0,050	0,060	0,070	0,090

Solid Channel Milling - 1xD and 1,5xD

35383

INOX - Titanium



d1 h10	d2 h6	Corner Chamber	l2	l1	Teeth	Part No
4,0	6	0,13x45°	11	57	4	040
5,0	6	0,18x45°	13	57	4	050
6,0	6	0,20x45°	13	57	4	060
7,0	8	0,20x45°	19	63	4	070
8,0	8	0,20x45°	19	63	4	080
9,0	10	0,30x45°	22	72	4	090
10,0	10	0,30x45°	22	72v	4	100
11,0	12	0,30x45°	26	83	4	110
12,0	12	0,30x45°	26	83	4	120
14,0	14	0,30x45°	26	83	4	140
16,0	16	0,40x45°	32	92	4	160
18,0	18	0,40x45°	32	92	4	180
20,0	20	0,50x45°	38	104	4	200

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) ALNOVA Finishing	Vc (m/min) ALNOVA Roughing	fz (mm/ Tooth)
Stainless Steel, Sulphuretted	1.4104 (X 14 Cr Mo S 17)	< 700 N/Mm²	140	120	01
Stainless Steel, Austenitic	1.4417 (X2crnimosi19 5 3)	< 700 N/Mm²	110	100	02
Stainless Steel, Austenitic	1.4541 (X 6 Crniti 18-10)	< 850 N/Mm²	100	90	01
Stainless Steel, Martensitic	1.4057 (X 17 Cr Ni 16-2)	< 1100 N/Mm²	100	90	02
Titanium, Titanium Alloy	3.7124 (Ti Cu 2)	> 850 N/Mm²	70	65	02
Titanium, Titanium Alloy	3.7164 (Ti Al 6 V 4)	850 - 1200 N/Mm²	60	55	01

Solid carbide end mills with different spiral 35°/38° (BALZERS ALNOVA)

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,025	0,035	0,045	0,050	0,065	0,090
02	0,020	0,030	0,040	0,050	0,060	0,075

Contour Milling - 0,5xD and - 2xD

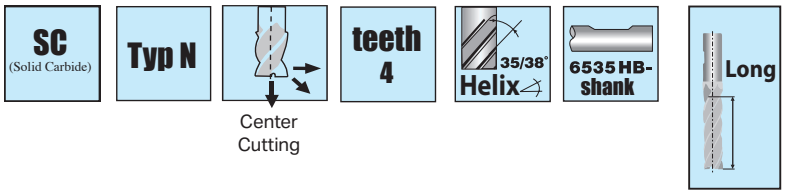
FEED RATE ROUGHING

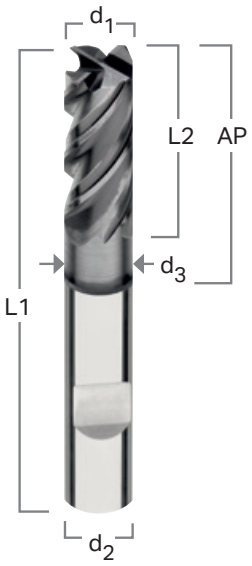
Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,035	0,050	0,055	0,065	0,080	0,100
02	0,030	0,040	0,050	0,060	0,070	0,090

Solid Channel Milling - 1xD and 1,5xD

35385

INOX - Titanium





d1 h10	d2 h6	Corner Cham-ber	d3	AP	l2	l1	Teeth	Part No
3,0	6	0,13x45°	2,8	18	8	57	4	030
4,0	6	0,18x45°	3,6	21	11	57	4	040
5,0	6	0,20x45°	4,6	21	13	57	4	050
6,0	6	0,20x45°	5,5	21	13	57	4	060
7,0	8	0,20x45°	6,5	27	19	63	4	070
8,0	8	0,20x45°	7,5	27	19	63	4	080
9,0	10	0,30x45°	8,5	32	22	72	4	090
10,0	10	0,30x45°	9,5	32	22	72	4	100
11,0	12	0,30x45°	10,5	38	26	83	4	110
12,0	12	0,30x45°	11,5	38	26	83	4	120
13,0	14	0,30x45°	12,5	42	26	83	4	130
14,0	14	0,30x45°	13,5	42	26	83	4	140
16,0	16	0,40x45°	15,5	44	32	92	4	160
18,0	18	0,40x45°	17,5	50	32	92	4	180
20,0	20	0,50x45°	19,5	54	38	104	4	200

Solid carbide end mills
with different spiral 35°/38°
(BALZERS ALNOVA)

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) ALNOVA Finishing	Vc (m/min) ALNOVA Roughing	fz (mm/ Tooth)
Stainless steel, sulphuretted	1.4104 (X 14 Cr Mo S 17)	< 700 N/mm²	140	120	01
Stainless steel, austenitic	1.4417 (X2CrNiMoSi19 5 3)	< 700 N/mm²	110	100	02
Stainless steel, austenitic	1.4541 (X 6 CrNiTi 18-10)	< 850 N/mm²	100	90	01
Stainless steel, martensitic	1.4057 (X 17 Cr Ni 16-2)	< 1100 N/mm²	100	90	02
Titanium, Titanium alloy	3.7124 (Ti Cu 2)	> 850 N/mm²	70	65	02
Titanium, Titanium alloy	3.7164 (Ti Al 6 V 4)	850 - 1200 N/mm²	60	55	01

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,025	0,035	0,045	0,050	0,065	0,090
02	0,020	0,030	0,040	0,050	0,060	0,075

Contour Milling - 0,5xD and - 2xD

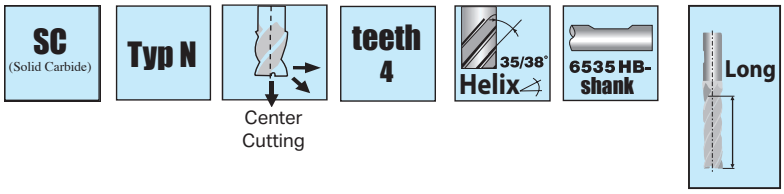
FEED RATE ROUGHING

Feed Rate Table fz (mm/Z) 35386						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
01	0,035	0,050	0,055	0,065	0,080	0,100
02	0,030	0,040	0,050	0,060	0,070	0,090

Solid Channel Milling - 1xD and 1,5xD

35389

Multi-Material Finishing



d1 h10	d2 h6	l2	l1	Teeth	Part No
6,0	6	13	57	3 / 6	060
8,0	8	19	63	3 / 6	080
10,0	10	22	72	3 / 6	100
12,0	12	26	83	3 / 6	120
16,0	16	32	92	3 / 6	160
20,0	20	38	104	3 / 6	200

Dedicated tooth pitch for better surface quality

Solid carbide end mills
with different spiral 35°/38°
different teeth 3/6, INOX + TITAN,
(BALZERS-ALNOVA)

Material designation	Material Code	Tensile Strength / Hardness	Vc (m/min) Roughing	fz (mm/ Tooth)
Structural steels	1.0037 (St 37-2)	< 500 N/mm²	170	01
Non-alloyed heat treatable steels	1.0503 (C 45)	700 - 850 N/mm²	160	02
Non-alloyed heat treatable steels	1.1221 (Ck 60)	850 - 1000 N/mm²	150	01
Alloyed heat treatable steels	1.7003 (38 Cr 2)	850 - 1000 N/mm²	150	02
Stainless steels, austensitic	1.4417 (X2CrNiMoSi19 5 3)	< 700 N/mm²	120	02
Cast iron	0.6020 (GG 20)	< 180 HB	130	01
Titanium, Titanium alloy		< 850 N/mm²	80	1

FEED RATE FINISHING

Feed Rate Table fz (mm/Z) 35389						
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
1	0,015	0,020	0,025	0,030	0,035	0,040
2	0,012	0,015	0,022	0,025	0,030	0,035

Contour Milling - 0,5xD and - 2xD

ADD engineering