ToolFactory
Cutting Tool Solutions

The new generation of
high performance end mills - 3540x series

Solid Carbide HPC End Mill

Series 35401, 35402, 35403 and 35404

- The renowed end mill of the 35402 series has been supplemented by further variants: **short version** with edge chamfer, standard length **with corner radius** or protective chamfer
- The high performance end mills of the series 354... are characterised by a cutting edge geometry with **unequal pitch**, dynamic helix angles, cutting edge preparation, large flutes in the front area and a **reinforced core**
- MnS1 coating, based on the latest coating technology for high resistance to thermal and abrasive wear
- Very smooth running
- **Maximum stability, service life and process reliability**

Application:

- Can be used with a wide range of materials
- For roughing and finishing up to 2.0xD into solid

Facts

Material	Solid carbide
Coating	MnS1
Diameter	3,0 - 20,0 mm
Milling depth a_p	to 2,0xD
Cutting width a_e	0,5xD
Areas of application	suitable for dry and wet processing
	Especially for series producers

Versions

35401	Short version with edge chamfer
35402	Standard length with edge chamfer
	Standard length with corner radius
35402...HA	Standard length with edge chamfer, HA shank
35403	Standard length with protective chamfer
35404	Long version with corner radius

4 cutting edges for high metal removal rate

Unequal pitch 35/38° for smooth running

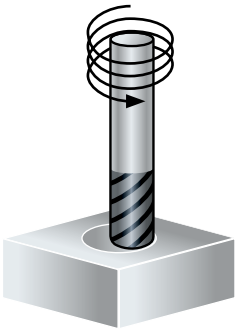
TOP performance in series production

Different versions as short version with corner chamfer, standard length with corner radius or protective chamfer

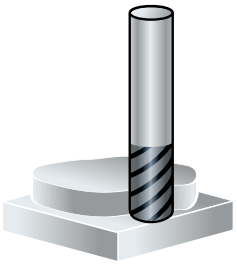
Suitability

Material Class	Suitable
Steel	P
INOX	M
Cast iron	K
Non-ferrous metals	
Special and Titanium alloys	
Hard materials	

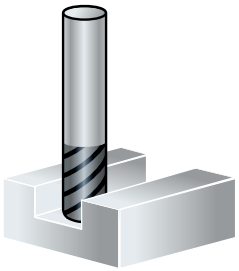
Scope of Application



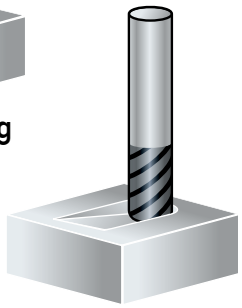
Helix milling



Trimming



Full slot milling



Ramping

35401

MnS1 | Z 4 | HB | ≠ | VHM | Type N | HPC | Manu-facturer standard

Solid Carbide HPC End Mill

Short version with edge chamfer

d_1 h10	d_2 h6

d_1 mm	d_2 mm	Corner chamfer	l_2 mm	l_1 mm	Z	coated Part No.	f_z Roughing mm/Z	f_z Finishing mm/Z
3.0	6	0.13	6	54	4	35401030	0.007 – 0.031	0.007 – 0.027
4.0	6	0.18	8	54	4	35401040	0.011 – 0.039	0.010 – 0.033
5.0	6	0.20	9	54	4	35401050	0.016 – 0.039	0.015 – 0.033
6.0	6	0.20	10	54	4	35401060	0.026 – 0.044	0.025 – 0.038
7.0	8	0.20	12	58	4	35401070	0.032 – 0.05	0.029 – 0.043
8.0	8	0.20	12	58	4	35401080	0.032 – 0.055	0.029 – 0.048
9.0	10	0.30	14	66	4	35401090	0.037 – 0.066	0.034 – 0.057
10.0	10	0.30	14	66	4	35401100	0.042 – 0.077	0.039 – 0.067
11.0	12	0.30	16	73	4	35401110	0.053 – 0.088	0.049 – 0.076
12.0	12	0.30	16	73	4	35401120	0.063 – 0.099	0.059 – 0.086
14.0	14	0.30	18	75	4	35401140	0.074 – 0.121	0.069 – 0.105
16.0	16	0.40	22	82	4	35401160	0.095 – 0.143	0.088 – 0.124
20.0	20	0.50	26	92	4	35401200	0.137 – 0.187	0.127 – 0.162

Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

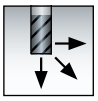
Full slot milling
a_p = 2.0xD

V_c (m/min)	General structured steels		Free machining steels	Non-alloy Q & T steels	Alloyed Q & T steels	Tool steels	Cast iron (GG)	Cast iron (GGG, GT)	Stainless austenitic
Tensile strength / Hardness / etc.	≤ 500 N/mm²	≤ 850 N/mm²	≤ 1.000 N/mm²	≤ 1.000 N/mm²	≤ 1.200 N/mm²	≤ 1.300 N/mm²	< 450 N/mm²	> 260 HB	1.4301
Full slot a_p=1xD	220	190	180	160	130	110	160	130	90
Trimming a_p = 0.2xD	310	280	250	220	190	160	220	190	110

Product family 159

35402




VHM

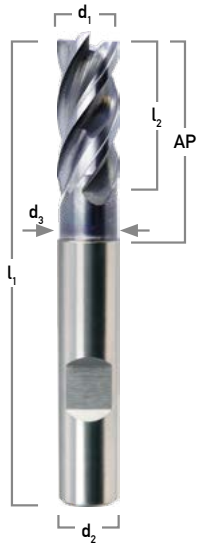
Type N

HPC

Manu-facturer standard

Solid Carbide HPC End Mill

With edge chamfer



d_1	d_2	Corner chamfer	l_2	l_1	d_3	AP		coaed (HA)	coated (HB)	f_z Roughing	f_z Finishing
mm	mm		mm	mm	mm	mm	Z	Part No.	Part No.	mm/Z	mm/Z
3.0	6	0.13	8	57	2.8	18	4	35402030HA	35402030	0.007 – 0.031	0.007 – 0.027
3.5	6	0.18	11	57	3.3	21	4	35402035HA	35402035	0.009 – 0.035	0.008 – 0.030
4.0	6	0.18	11	57	3.8	21	4	35402040HA	35402040	0.011 – 0.039	0.010 – 0.033
5.0	6	0.20	13	57	4.8	21	4	35402050HA	35402050	0.016 – 0.039	0.015 – 0.033
6.0	6	0.20	13	57	5.5	21	4	35402060HA	35402060	0.026 – 0.044	0.025 – 0.038
7.0	8	0.20	19	63	6.5	27	4	35402070HA	35402070	0.032 – 0.050	0.029 – 0.043
8.0	8	0.20	19	63	7.5	27	4	35402080HA	35402080	0.032 – 0.055	0.029 – 0.048
9.0	10	0.30	22	72	8.5	32	4	35402090JA	35402090	0.037 – 0.066	0.034 – 0.057
10.0	10	0.30	22	72	9.5	32	4	35402100HA	35402100	0.042 – 0.077	0.039 – 0.067
11.0	12	0.30	26	83	10.5	38	4	35402110HA	35402110	0.053 – 0.088	0.049 – 0.076
12.0	12	0.30	26	83	11.5	38	4	35402120HA	35402120	0.063 – 0.099	0.059 – 0.086
13.0	14	0.30	26	83	12.5	42	4	35402130HA	35402130	0.074 – 0.099	0.069 – 0.086
14.0	14	0.30	26	83	13.5	42	4	35402140HA	35402140	0.074 – 0.121	0.069 – 0.105
16.0	16	0.40	32	92	15.5	44	4	35402160HA	35402160	0.095 – 0.143	0.088 – 0.124
18.0	18	0.40	32	92	17.5	50	4	35402180HA	35402180	0.116 – 0.143	0.108 – 0.124
20.0	20	0.50	38	104	19.5	54	4	35402200HA	35402200	0.137 – 0.187	0.127 – 0.162

d_1	d_2
h10	h6

Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

Full slot milling
a_p = 1.5xD

The 35402 in action

On YouTube you can see our high-performance milling cutter in action machining steel grade 42CrMo4.

https://www.youtube.com/watch?v=mAI_gnptJe0

V_c (m/min)	General structured steels		Free machining steels	Non-alloy Q & T steels	Alloyed Q & T steels	Tool steels	Cast iron (GG)	Cast iron (GGG, GT)	Stainless austenitic
Tensile strength / Hardness / etc.	≤ 500 N/mm²	≤ 850 N/mm²	≤ 1.000 N/mm²	≤ 1.000 N/mm²	≤ 1.200 N/mm²	≤ 1.300 N/mm²	< 450 N/mm²	> 260 HB	1.4301
Full slot a_p=1xD	220	190	180	160	130	110	160	130	90
Trimming a_p = 0.2xD	310	280	250	220	190	160	220	190	110

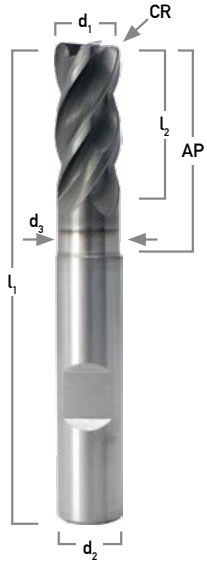
Product family 159

35402CR




Solid Carbide HPC End Mill

With corner radius



d_1	d_2
h10	h6

d_1	d_2	l_2	l_1	CR	d_3	AP		coated	f_z Roughing			f_z Finishing		
mm	mm	mm	mm	+/- 0.02	mm	mm	Z	Part No.	mm/Z			mm/Z		
4.0	6	11	57	0.25	3.8	21	4	3540204025	0.011	–	0.039	0.010	–	0.033
4.0	6	11	57	0.50	3.8	21	4	354020405	0.011	–	0.039	0.010	–	0.033
4.0	6	11	57	1.00	3.8	21	4	354020410	0.011	–	0.039	0.010	–	0.033
5.0	6	13	57	0.50	4.8	21	4	354020505	0.016	–	0.039	0.015	–	0.033
5.0	6	13	57	1.00	4.8	21	4	354020510	0.016	–	0.039	0.015	–	0.033
5.0	6	13	57	1.50	4.8	21	4	354020515	0.016	–	0.039	0.015	–	0.033
6.0	6	13	57	0.50	5.5	21	4	354020605	0.026	–	0.044	0.025	–	0.038
6.0	6	13	57	1.00	5.5	21	4	354020610	0.026	–	0.044	0.025	–	0.038
6.0	6	13	57	1.50	5.5	21	4	354020615	0.026	–	0.044	0.025	–	0.038
6.0	6	13	57	2.00	5.5	21	4	354020620	0.026	–	0.044	0.025	–	0.038
8.0	8	19	63	0.50	7.5	27	4	354020805	0.032	–	0.055	0.029	–	0.048
8.0	8	19	63	1.00	7.5	27	4	354020810	0.032	–	0.055	0.029	–	0.048
8.0	8	19	63	1.50	7.5	27	4	354020815	0.032	–	0.055	0.029	–	0.048
8.0	8	19	63	2.00	7.5	27	4	354020820	0.032	–	0.055	0.029	–	0.048
10.0	10	22	72	0.50	9.5	32	4	354021005	0.042	–	0.077	0.039	–	0.067
10.0	10	22	72	1.00	9.5	32	4	354021010	0.042	–	0.077	0.039	–	0.067
10.0	10	22	72	1.50	9.5	32	4	354021015	0.042	–	0.077	0.039	–	0.067
10.0	10	22	72	2.00	9.5	32	4	354021020	0.042	–	0.077	0.039	–	0.067
10.0	10	22	72	3.00	9.5	32	4	354021030	0.042	–	0.077	0.039	–	0.067
12.0	12	26	83	0.50	11.5	38	4	354021205	0.063	–	0.099	0.059	–	0.086
12.0	12	26	83	1.00	11.5	38	4	354021210	0.063	–	0.099	0.059	–	0.086
12.0	12	26	83	1.50	11.5	38	4	354021215	0.063	–	0.099	0.059	–	0.086
12.0	12	26	83	2.00	11.5	38	4	354021220	0.063	–	0.099	0.059	–	0.086
12.0	12	26	83	3.00	11.5	38	4	354021230	0.063	–	0.099	0.059	–	0.086
14.0	14	26	83	1.00	13.5	42	4	354021410	0.074	–	0.121	0.069	–	0.105
14.0	14	26	83	2.00	13.5	42	4	354021420	0.074	–	0.121	0.069	–	0.105
16.0	16	32	92	1.00	15.5	44	4	354021610	0.095	–	0.143	0.088	–	0.124
16.0	16	32	92	1.50	15.5	44	4	354021615	0.095	–	0.143	0.088	–	0.124
16.0	16	32	92	2.00	15.5	44	4	354021620	0.095	–	0.143	0.088	–	0.124
16.0	16	32	92	2.50	15.5	44	4	354021625	0.095	–	0.143	0.088	–	0.124
16.0	16	32	92	3.00	15.5	44	4	354021630	0.095	–	0.143	0.088	–	0.124
16.0	16	32	92	4.00	15.5	44	4	354021640	0.095	–	0.143	0.088	–	0.124
20.0	20	38	104	1.00	19.5	54	4	354022010	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	1.50	19.5	54	4	354022015	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	2.00	19.5	54	4	354022020	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	2.50	19.5	54	4	354022025	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	3.00	19.5	54	4	354022030	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	4.00	19.5	54	4	354022040	0.137	–	0.187	0.127	–	0.162
20.0	20	38	104	5.00	19.5	54	4	354022050	0.137	–	0.187	0.127	–	0.162

Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

Full slot milling
a_p = 2.0xD

V_c (m/min)	General structured steels		Free machining steels	Non-alloy Q & T steels	Alloyed Q & T steels	Tool steels	Cast iron (GG)	Cast iron (GGG, GT)	Stainless austenitic
Tensile strength / Hardness / etc.	≤ 500 N/mm²	≤ 850 N/mm²	≤ 1.000 N/mm²	≤ 1.000 N/mm²	≤ 1.200 N/mm²	≤ 1.300 N/mm²	< 450 N/mm²	> 260 HB	1.4301
Full slot a_e=1xD	220	190	180	160	130	110	160	130	90
Trimming a_e = 0,2xD	310	280	250	220	190	160	220	190	110

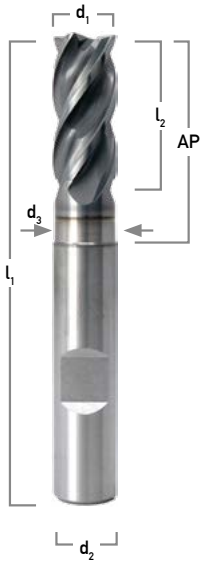
Product family 159

35403

MnS1 | Z 4 | HB | ≠ | VHM | Type N | HPC | Manu-facturer standard

Solid Carbide HPC End Mill

With protective chamfer



d_1 mm	d_2 mm	Protective chamfer	l_2 mm	l_1 mm	d_3 mm	AP mm	Z	coated Part No.	f_z Roughing mm/Z	f_z Finishing mm/Z
3.0	6	0.03	8	57	2.8	18	4	35403030	0.007 – 0.031	0.007 – 0.027
4.0	6	0.04	11	57	3.8	21	4	35403040	0.011 – 0.039	0.010 – 0.033
5.0	6	0.05	13	57	4.8	21	4	35403050	0.016 – 0.039	0.015 – 0.033
6.0	6	0.06	13	57	5.5	21	4	35403060	0.026 – 0.044	0.025 – 0.038
8.0	8	0.08	19	63	7.5	27	4	35403080	0.032 – 0.055	0.029 – 0.048
10.0	10	0.10	22	72	9.5	32	4	35403100	0.042 – 0.077	0.039 – 0.067
12.0	12	0.12	26	83	11.5	38	4	35403120	0.063 – 0.099	0.059 – 0.086
16.0	16	0.15	32	92	15.5	44	4	35403160	0.095 – 0.143	0.088 – 0.124
20.0	20	0.15	38	104	19.5	54	4	35403200	0.137 – 0.187	0.127 – 0.162

d_1 h10	d_2 h6

Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

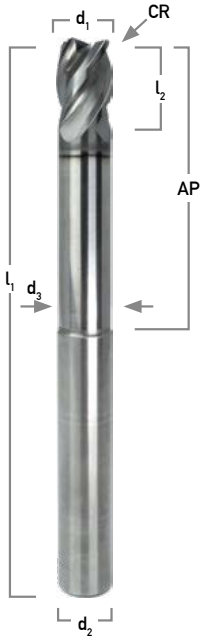
Full slot milling
a_p = 2.0xD

35404

MnS1 | Z 4 | HB | ≠ | VHM | Type N | HPC | Manu-facturer standard

Solid Carbide HPC End Mill

Long version with corner radius



d_1 mm	d_2 mm	l_2 mm	l_1 mm	CR +/- 0.02	d_3 mm	AP mm	Z	coated Part No.	f_z Roughing mm/Z	f_z Finishing mm/Z
6.0	6	7	75	0.50	5.5	32	4	354040605	0.023 – 0.04	0.023 – 0.034
6.0	6	7	75	1.00	5.5	32	4	354040610	0.023 – 0.04	0.023 – 0.034
6.0	6	7	75	1.50	5.5	32	4	354040615	0.023 – 0.04	0.023 – 0.034
6.0	6	7	75	2.00	5.5	32	4	354040620	0.023 – 0.04	0.023 – 0.034
8.0	8	9	85	0.50	7.5	42	4	354040805	0.029 – 0.05	0.026 – 0.043
8.0	8	9	85	1.00	7.5	42	4	354040810	0.029 – 0.05	0.026 – 0.043
8.0	8	9	85	1.50	7.5	42	4	354040815	0.029 – 0.05	0.026 – 0.043
8.0	8	9	85	2.00	7.5	42	4	354040820	0.029 – 0.05	0.026 – 0.043
10.0	10	11	100	0.50	9.5	52	4	354041005	0.038 – 0.069	0.035 – 0.06
10.0	10	11	100	1.00	9.5	52	4	354041010	0.038 – 0.069	0.035 – 0.06
10.0	10	11	100	1.50	9.5	52	4	354041015	0.038 – 0.069	0.035 – 0.06
10.0	10	11	100	2.00	9.5	52	4	354041020	0.038 – 0.069	0.035 – 0.06
12.0	12	12	110	0.50	11.5	62	4	354041205	0.057 – 0.089	0.045 – 0.077
12.0	12	12	110	1.00	11.5	62	4	354041210	0.057 – 0.089	0.045 – 0.077
12.0	12	12	110	1.50	11.5	62	4	354041215	0.057 – 0.089	0.045 – 0.077
12.0	12	12	110	2.00	11.5	62	4	354041220	0.057 – 0.089	0.045 – 0.077
16.0	16	16	140	0.50	15.5	82	4	354041605	0.086 – 0.129	0.079 – 0.112
16.0	16	16	140	1.00	15.5	82	4	354041610	0.086 – 0.129	0.079 – 0.112
16.0	16	16	140	1.50	15.5	82	4	354041615	0.086 – 0.129	0.079 – 0.112
16.0	16	16	140	2.00	15.5	82	4	354041620	0.086 – 0.129	0.079 – 0.112
16.0	16	16	140	2.50	15.5	82	4	354041625	0.086 – 0.129	0.079 – 0.112

d_1 h10	d_2 h6

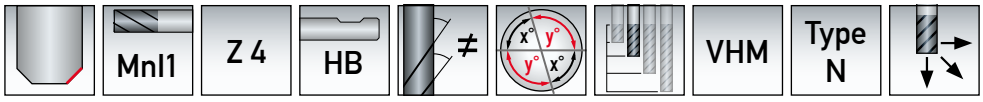
Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

Full slot milling
a_p = 2.0xD

V_c (m/min)	General structured steels		Free machining steels	Non-alloy Q & T steels	Alloyed Q & T steels	Tool steels	Cast iron (GG)	Cast iron (GGG, GT)	Stainless austenitic
Tensile strength / Hardness / etc.	≤ 500 N/mm²	≤ 850 N/mm²	≤ 1.000 N/mm²	≤ 1.000 N/mm²	≤ 1.200 N/mm²	≤ 1.300 N/mm²	< 450 N/mm²	> 260 HB	1.4301
Full slot a_p=1xD	220	190	180	160	130	110	160	130	90
Trimming a_p = 0,2xD	310	280	250	220	190	160	220	190	110

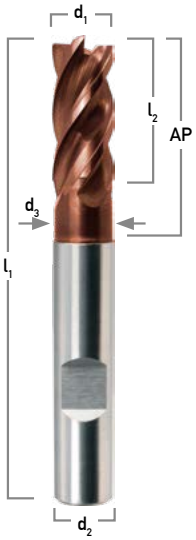
Product family 159

35405



Solid Carbide HPC End Mill INOX-Titanium

With edge chamfer



d_1 h10	d_2 h6

d_1 mm	d_2 mm	Corner chamfer	l_2 mm	l_1 mm	d_3 mm	AP mm	Z	coated Part No.	f_z Roughing mm/Z	f_z Finishing mm/Z
3.0	6	0.13	8	57	2.8	18	4	35405030	0.0105 – 0.0170	0.0098 – 0.0140
3.0	6	0.13	8	57	2.8	12	4	35405031	0.0105 – 0.0170	0.0098 – 0.0140
4.0	6	0.18	11	57	3.8	21	4	35405040	0.0147 – 0.0220	0.0137 – 0.0190
4.0	6	0.18	11	57	3.8	15	4	35405041	0.0147 – 0.0220	0.0137 – 0.0190
5.0	6	0.20	13	57	4.8	21	4	35405050	0.0189 – 0.0260	0.0176 – 0.0230
5.0	6	0.20	13	57	4.8	17	4	35405051	0.0189 – 0.0260	0.0176 – 0.0230
6.0	6	0.20	13	57	5.5	21	4	35405060	0.0210 – 0.0310	0.0196 – 0.0270
7.0	8	0.20	19	63	6.5	27	4	35405070	0.0315 – 0.0420	0.0294 – 0.0360
8.0	8	0.20	19	63	7.5	27	4	35405080	0.0315 – 0.0420	0.0294 – 0.0360
9.0	10	0.30	22	72	8.5	32	4	35405090	0.0420 – 0.0550	0.0392 – 0.0480
10.0	10	0.30	22	72	9.5	32	4	35405100	0.0420 – 0.0550	0.0392 – 0.0480
11.0	12	0.30	26	83	10.5	38	4	35405110	0.0473 – 0.0610	0.0441 – 0.0520
12.0	12	0.30	26	83	11.5	38	4	35405120	0.0473 – 0.0610	0.0441 – 0.0520
13.0	14	0.30	26	83	12.5	42	4	35405130	0.0525 – 0.0660	0.0490 – 0.0570
14.0	14	0.30	26	83	13.5	42	4	35405140	0.0525 – 0.0660	0.0490 – 0.0570
16.0	16	0.40	32	92	15.5	44	4	35405160	0.0735 – 0.0880	0.0686 – 0.0760
18.0	18	0.40	32	92	17.5	50	4	35405180	0.0735 – 0.0990	0.0686 – 0.0860
20.0	20	0.50	38	104	19.5	54	4	35405200	0.0735 – 0.0990	0.0686 – 0.0860

d_1 mm	d_2 mm	Corner chamfer	l_2 mm	l_1 mm	d_3 mm	AP mm	Z	coated Part No.	f_z Roughing mm/Z	f_z Finishing mm/Z
3.0	6	0.13	8	57	2.8	12	4	35405031	0.0105 – 0.0170	0.0098 – 0.0140
4.0	6	0.18	11	57	3.8	15	4	35405041	0.0147 – 0.0220	0.0137 – 0.0190
5.0	6	0.20	13	57	4.8	17	4	35405051	0.0189 – 0.0260	0.0176 – 0.0230

With shortened AP measure

Peripheral milling
a_e = 0.5xD
a_p = 2.0xD

Full slot milling
a_p = 1.5xD

V_c (m/min)	General structured steels	Alloyed Q & T steels	Cast iron (GGG,GT)	Stainless austenitic	Stainless acidresistant austenitic	Stainless ferritic-austenitic	Heat-resistant materials	Titanium alloy
Tensile strength / Hardness / etc.	≤ 850 N/mm²	≤ 1100 N/mm²	> 260 HB	1.4301	1.4571	Duplex	≤1200 N/mm²	≤850 N/mm²
Full slot a_e = 1xD	200	140	70	110	100	80	40	60
Trimming a_e = 0,2xD	300	200	100	150	130	100	60	80

Product family 159

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