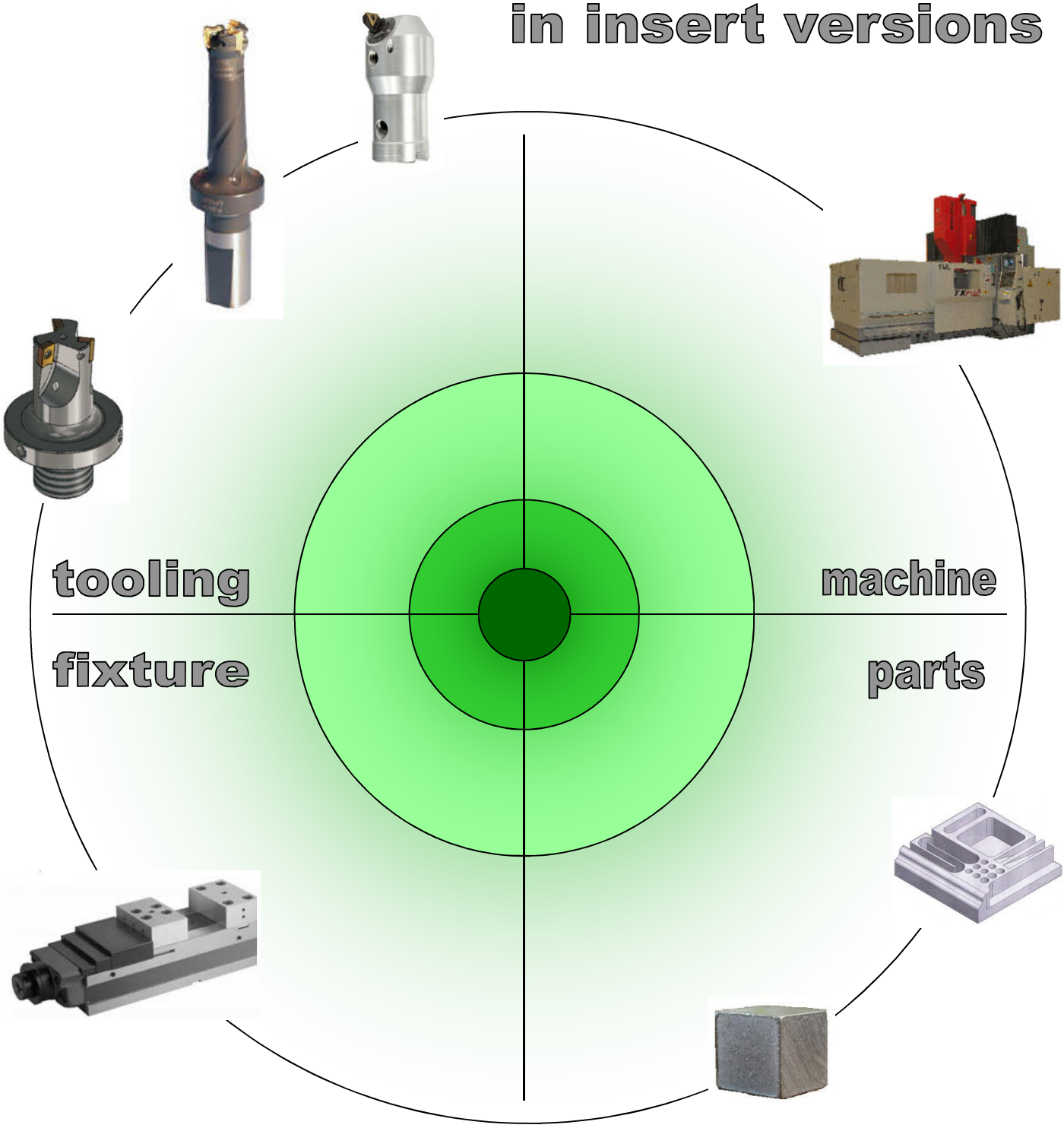
Rotative tooling in insert versions



NF Edition part 2 UK 2012

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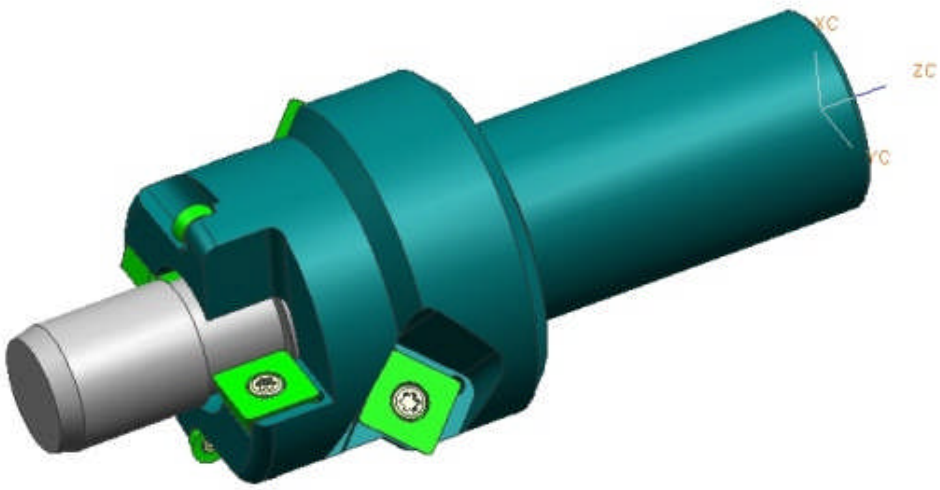


Workpiece materials

1 Aluminium wrought alloys Rm < 250 N/mm²

Workpiece material number	DIN description
3.0255	Al99.5
3.0280	Al99.8
3.0515	GAl995
3.3292	GDAlMg9
3.3315	AlMg1
3.3535	AlMg3
3.3547	AlMg4, 5Mn
3.3555	AlMg5

2 Aluminium wrought alloys Rm < 400 N/mm²

Workpiece material number	DIN description
3.0615	AlMgSiPb
3.1325	AlCuMg1
3.1355	AlCuMg2
3.1371	GAlCu4TiMg
3.1645	AlCuMgPb
3.1655	AlCuBiPb
3.1754	GAlCu5Ni1,5
3.2315	AlMgSi1
3.3206	AlMgSi0,5
3.3542	GAlMg3
3.3445	AlZnMgCu0,5

3 Aluminium casting alloys; low abrasive Si < 12% and Rm < 300N/mm²

Workpiece material number	DIN description
3.1841	GAlCu4Ti
3.2131	GAlSi5Cu1
3.2151	GAlSi6Cu4
3.2161	GAlSi8Cu3
3.2163	GDAlSi9Cu3
3.2211	GAlSi11
3.2341	GAlSi5Mg
3.2373	GAlSi9Mg
3.2381	GAlSi10Mg

Workpiece materials

3 Aluminium casting alloys; low abrasive Si < 12% and Rm < 300N/mm²

Workpiece material number	DIN description
3.2382	GDAlSi10Mg
3.2383	GAlSi10MgCu
3.2581	GAlSi12
3.2582	GDAlSi12
3.2583	GAlSi12Cu
3.2585	SAlSi12
3.2982	GDAlSi12Cu
3.3241	GAlMg3Si
3.3261	GAlMg5Si
3.3561	GAlMg5
3.5101	GMgZn4SE1Zr1
3.5102	GMgZn5Th2Zr1
3.5103	MgSE3Zn2Zr1
3.5105	GMgTh3Zn2Zr1
3.5106	GMgAg3SE2Zr1
3.5200	GMGAl8Zn1
3.5470	GDMgAl4Si1
3.5612	GDMgAl6Zn1
3.5662	GDMgAl6
3.5812	GMgAl8Zn1
3.5912	GMgAl9Zn1
2.1871	GAlCu4TiMg
3.2371	GAlSi7Mg

4 Aluminium casting alloys; high abrasive Si > 12% < 18% and Rm < 550N/mm²

Workpiece material number	DIN description
	GAlSi17Cu4
	GAlSi21CuNiMg

Workpiece materials

5 Copper free machining alloys; Pb > 1%

Workpiece material number	DIN description
2.0290	GCuZn33Pb
2.0330	CuZn36Pb1,5
2.0331	CuZn36Pb1,5
2.0340	GCuZn37Pb
2.0401	CuZn39Pb3
2.0402	CuZn39Pb2
2.1061	GCuSn12Pb
2.1090	GCuSn7ZnPb
2.1096	GCuSN5ZnPb
2.1098	GCuSn2ZnPb
2.1176	GCuPb10Sn
2.1182	GCuPb15Sn

6 Brass, copper alloys

Workpiece material number	DIN description
2.0220	CuZn5
2.0240	CuZn15
2.0265	CuZn30
2.0321	CuZn37
2.0380	CuZn39Pb2
2.0492	GCuZn15Si4
2.0510	CuZn37Al1
2.0550	CuZn40Al2
2.0561	CuZn40Al1
2.0590	GCuZn40Fe
2.0591	GKCuZn38Al
2.0592	GCuZn35Al1
2.0592	GKCuZn37Al1
2.0595	GCuZn34Al2
2.0596	GCuZn25Al5
2.1188	GCuPb20Sn
2.1292	GCuCrF35
2.1293	CuCrZr

Workpiece materials

7 Copper, copper without lead and electrolytic copper

Workpiece material number	DIN description
2.0040	OFCu
2.0060	ECu57
2.0065	ECu58
2.0070	SECu
2.0082	GCuL45
2.0085	GCuL50
2.0241	CuZn40MnPb
2.0460	CuZn20Al2
2.0872	CuNi10Fe1Mn
2.0882	CuNi30Mn1Fe
2.0936	CuAl10Fe3Mn2
2.0940	GCuAl10Fe
2.0966	CuAl10Ni5Fe4
2.0975	GCuAl10Ni
2.1050	GCuSn10
2.1052	GCuSn12
2.1060	GCuSn12Ni
2.1086	GCuSn10Zn
2.1093	GCuSn6ZnNi

8 Duro - and thermoplastics

Workpiece material number	DIN description
PC	Makralon, Nuclon and Plastocarbon
Pe	Baylon, Dekalen, Lupolen and Hostalen
PF	Alberit, Bakelit, Bulitol, Durax, Harex and Resinol
PFTE	Hostaflon
PP	Vestolen PP, Synalen PP, Novolen and Hostalen PP
PS	Hostyron, Lorkalen, Polystyrol and Styropor
PVC	Coroplast, Hostalit, Mipolam, Opalon, Solves and Vinoflex

9 Fibrous reïnforced plastics

Workpiece material number	DIN description
AFK	Keflar, Twaron
BFK/CFK/GFK/MFK en SFK	

Application area tool types

1 Aluminium wrought alloys Rm < 250 N/mm²

Drilling with solid carbide

812…	814…	818…	833…
835…	840…	851…	870…
881…	924…	950…	

Drilling with inserts

6010…	6015…	6020…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…			

Milling with solid carbide

241…	310…	311…	312…
313…	512…	514…	700…
722…	770…	800…	870…
890…	1100…	1101…	1102…

Milling with inserts

1010…	1012…	1014…	1016…
1018…	1030…	1035…	1040…
1045…	1055…	1060…	1064…
1070…	1072…	1075…	1095…
1105…	1110…	1122…	1132…
2060…	2110…	2112…	2114…
2116…	2118…	2130…	2132…
2134…	2136…	2138…	3012…
3016…			

Application area tool types

2 Aluminium wrought alloys Rm < 400 N/mm²

Drilling with solid carbide

812…	814…	818…	833…
835…	840…	851…	870…
881…	924…	950…	

Drilling with inserts

6010…	6015…	6020…	

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R3…	R2 2S…	990…
991…			

Milling with solid carbide

241…	310…	311…	312…
313…	354…	355…	356…
362…	363…	512…	514…
515…	516…	517…	518…
522…	524…	643…	700…
722…	770…	800…	870…
890…	1100…	1101…	1102…

Milling with inserts

1010…	1012…	1014…	1016…
1018…	1030…	1035…	1040…
1045…	1055…	1060…	1060…
1064…	1070…	1072…	1075…
1095…	1105…	1110…	1122…
1132…	2060…	2110…	2112…
2114…	2116…	2118…	2130…
2132…	2134…	2136…	2138…
3012/3016…	5010W/5040W…	5015T/5026T…	5045/5090…

Application area tool types

3 Aluminium casting alloys; low abrasive Si < 12% and Rm < 300 N/mm²

Drilling with solid carbide

812…	814…	818…	820…
832…	833…	834…	835…
851…	818…	924…	950…
960…	1025…		

Drilling with inserts

6010…	6015…	6020…	6025…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…	992…	993…	

Milling with solid carbide

241…	310…	311…	312…
313…	354…	354…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	518…	522…	524…
643…	700…	722…	770…
800…	870…	890…	1100…
1101…	1102…		

Milling with inserts

1010…	1012…	1014…	1016…
1018…	1030…	1035…	1040…
1045…	1055…	1060…	1064…
1070…	1072…	1075…	1095…
1105…	1110…	1122…	1132…
2060…	2110/2138…	3012/3016…	5010/5040…
5015T/5026T…	5045/5090…		

Application area tool types

4 Aluminium casting alloys; high abrasive Si > 12% < 18% and Rm < 550 N/mm²

Drilling with solid carbide

812…	814…	818…	820…
832…	833…	834…	835…
851…	881…	924…	950…
960…	1025…		

Drilling with inserts

6010…	6015…	6020…	6025…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…	992…	993…	

Milling with solid carbide

241…	310…	311…	312…
313…	354…	354…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	518…	522…	524…
643…	700…	722…	770…
800…	870…	890…	1100…
1101…	1102…		

Milling with inserts

1010…	1012…	1014…	1016…
1018…	1030…	1035…	1040…
1045…	1055…	1060…	1064…
1070…	1072…	1075…	1095…
1105…	1110…	1122…	1132…
2060…	2110/2138…	3012/3016…	5010/5040…
5015T/5026T…	5045/5090…		

Application area tool types

5 Copper free machining alloys; Pb > 1%

Drilling with solid carbide

812…	814…	818…	833…
835…	840…	851…	870…
881…	924…	950…	

Drilling with inserts

6010…	6015…	6020…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…			

Milling with solid carbide

241…	310…	311…	312…
313…	512…	514…	700…
722…	770…	800…	870…
890…	1100…	1101…	1102…

Milling with inserts

1030…	1035…	1040…	1045…
1055…	1060…	1064…	1070…
1072…	1075…	1095…	1105…
1110…	2110…	2112…	2114…
2116…	2118…	2130…	2132…
2134…	2136…	2138…	3012…
3016…			

Application area tool types

6 Brass and copper

Drilling with solid carbide

812…	814…	818…	820…
833…	834…	835…	840…
851…	881…	924…	950…
960…	970…	1025…	

Drilling with inserts

6010…	6015…	6020…	6025…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…	992…	993…	

Milling with solid carbide

241…	310…	311…	312…
313…	354…	355…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	522…	524…	643…
700…	722…	770…	800…
870…	890…	1100…	1101…
1102…			

Milling with inserts

1010…	1012…	1014…	1016…
1018…	1030…	1035…	1040…
1045…	1055…	1060…	1064…
1070…	1072…	1075…	1095…
1105…	1110…	1122…	1132…
2060…	2110/2138…	3012/3016…	5010/5040…
5015T/5026T…	5045/5090…		

Application area tool types

7 Copper, copper without lead and electrolytic copper

Drilling with solid carbide

812…	814…	833…	835…
840…	851…	870…	881…
924…	950…		

Drilling with inserts

6010…	6015…	6020…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…			

Milling with solid carbide

241…	310…	311…	312…
313…	354…	355…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	522…	524…	643…
700…	722…	770…	800…
870…	890…	1100…	1101…
1102…			

Milling with inserts

1030…	1035…	1040…	1045…
1055…	1060…	1064…	1070…
1072…	1075…	1095…	1122…
1132…	2110…	2112…	2114…
2116…	2118…	2130…	2132…
2134…	2136…	2138…	3012…
3016…			

Application area tool types

8 Duro - and thermoplastics

Drilling with solid carbide

812…	814…	832…	833…
834…	835…	840…	851…
870…	881…	924…	

Drilling with inserts

6010…	6015…	6020…	

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

R2…	R2 2S…	R3…	990…
991…	992…	993…	

Milling with solid carbide

241…	310…	311…	312…
313…	354…	355…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	522…	524…	643…
700…	722…	770…	800…
870…	890…	1100…	1101…
1102…			

Milling with inserts

1030…	1035…	1040…	1045…
1055…	1060…	1064…	1070…
1072…	1075…	1095…	1105…
1110…	1122…	1132…	2110…
2112…	2114…	2116…	2118…
2130…	2132….	2134…	2136…
2138…	3012…	3016…	5010/5040…

Application area tool types

9 Fabrous reïnforced plastics

Drilling with solid carbide

812…	832…	833…	834…
835…	840…	851…	870…
881…			

Drilling with inserts

…

Boring with inserts

TVA…	2TP…	1THF…	1TAF…

Reaming with solid carbide

…

Milling with solid carbide

241…	310…	311…	312…
313…	354…	355…	356…
358…	359…	362…	363…
512…	514…	515…	516…
517…	522…	524…	643…
700…	722…	770…	800…
870…	890…	1100…	1101…
1102…			

Milling with inserts

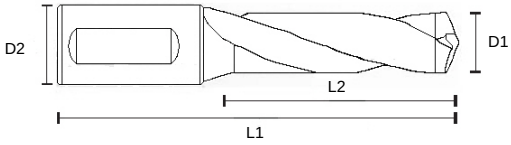
1030…	1035…	1040…	1045…
1055…	1060…	1064…	1070…
1072…	1075…	1095…	1105…
1110…	2110…	2112…	2114…
2116…	2118…	2130…	2132…
2134…	2136…	2138…	

• Drill operations

Insert tipped tool types; aluminium

Ø	10.0	-	33.9	3 x D	**6010…**	M-MA… ALU-TiAlN
	10.0	-	33.9	5 x D	**6015…**	M-MA… ALU-TiAlN
	10.0	-	33.9	7 x D	**6020…**	M-MA… ALU-TiAlN
	16.0	-	57.0	3 x D	**6025 3xD…**	WCGT….08 ALU KTE20
	16.0	-	57.0	5 x D	**6025 5xD…**	WCGT….08 ALU KTE20

• 6010 Series 3xD



6010 Series
Ø 10.0 - 33.9 mm
2 cutting edges / 1 insert TiAlN
140° attack angle
DIN 6535 HA shank [h6]
version; TiAlN coated

1 2 3 4 5 6 7 8

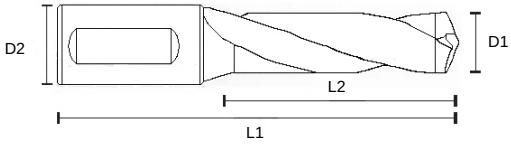
Article number	D1	D2	L1	L2	insert	key	clamp screw
6010 HD3 D10	10.0/10.9	12	90	45	M MA10.0/10.9	TX5	M M2.5
6010 HD3 D11	11.0/11.9	12	90	45	M MA11.0/11.9	TX5	M M2.5
6010 HD3 D12	12.0/12.9	16	105	57	M MA12.0/12.9	TX5	M M2.5
6010 HD3 D13	13.0/13.9	16	105	57	M MA13.0/13.9	TX5	M M2.5
6010 HD3 D14	14.0/14.9	16	115	65	M MA14.0/14.9	TX6	M M3
6010 HD3 D15	15.0/15.9	16	115	65	M MA15.0/15.9	TX6	M M3
6010 HD3 D16	16.0/16.9	20	130	80	M MA16.0/16.9	TX6	M M3
6010 HD3 D17	17.0/17.9	20	130	80	M MA17.0/17.9	TX6	M M3
6010 HD3 D18	18.0/18.9	20	140	90	M MA18.0/18.9	TX6	M M3
6010 HD3 D19	19.0/19.9	20	140	90	M MA19.0/19.9	TX6	M M3
6010 HD3 D20	20.0/20.9	25	150	95	M MA20.0/20.9	TX8	M M4
6010 HD3 D21	21.0/21.9	25	150	95	M MA21.0/21.9	TX8	M M4
6010 HD3 D22	22.0/22.9	25	160	105	M MA22.0/22.9	TX8	M M4
6010 HD3 D23	23.0/23.9	25	160	105	M MA23.0/23.9	TX8	M M4
6010 HD3 D24	24.0/24.9	32	170	110	M MA24.0/24.9	TX8	M M4
6010 HD3 D25	25.0/25.9	32	170	110	M MA25.0/25.9	TX8	M M4
6010 HD3 D26	26.0/26.9	32	170	110	M MA26.0/26.9	TX8	M M4
6010 HD3 D27	27.0/27.9	32	170	110	M MA27.0/27.9	TX10	M M5
6010 HD3 D28	28.0/28.9	32	190	130	M MA28.0/28.9	TX10	M M5
6010 HD3 D29	29.0/29.9	32	190	130	M MA29.0/29.9	TX10	M M5
6010 HD3 D30	30.0/30.9	32	200	140	M MA30.0/30.9	TX10	M M5
6010 HD3 D31	31.0/31.9	32	200	140	M MA31.0/31.9	TX10	M M5
6010 HD3 D32	32.0/32.9	32	210	150	M MA32.0/32.9	TX10	M M5
6010 HD3 D33	33.0/33.9	32	210	150	M MA33.0/33.9	TX10	M M5

Machining example

2

Material:	G AlCu5Ni1.5
Operation:	hole Ø 28.5 mm x 60 mm
CNC lathe:	horizontal
Adapter:	VDI 50 DIN 69880 to Ø 32mm adapter
coolant:	8% emulsion
Tool / insert:	6010 H3 D28 / M MA28.5 TiAlN
Cutting speed Vc / revolutions n:	Vc = 160.0 m/min / n = 1788 r.p.m.
Feed rate fn and Vf:	fn = 0.35 mm and Vf = 626 mm/min

• 6015 Series 5xD

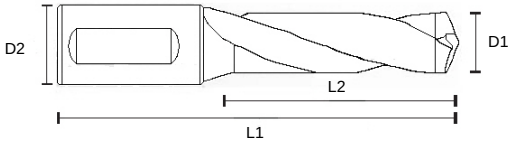


6015 Series
Ø 10.0 - 33.9 mm
2 cutting edges / 1 insert TiAlN
140° attack angle
DIN 6535 HA shank [h6]
version; TiAlN coated

1 2 3 4 5 6 7 8

Article number	D1	D2	L1	L2	insert	key	clamp screw
6015 HD5 D10	10.0/10.9	12	110	65	M MA10.0/10.9	TX5	M M2.5
6015 HD5 D11	11.0/11.9	12	110	65	M MA11.0/11.9	TX5	M M2.5
6015 HD5 D12	12.0/12.9	16	135	87	M MA12.0/12.9	TX5	M M2.5
6015 HD5 D13	13.0/13.9	16	135	87	M MA13.0/13.9	TX5	M M2.5
6015 HD5 D14	14.0/14.9	16	145	95	M MA14.0/14.9	TX6	M M3
6015 HD5 D15	15.0/15.9	16	145	95	M MA15.0/15.9	TX6	M M3
6015 HD5 D16	16.0/16.9	20	150	100	M MA16.0/16.9	TX6	M M3
6015 HD5 D17	17.0/17.9	20	150	100	M MA17.0/17.9	TX6	M M3
6015 HD5 D18	18.0/18.9	20	170	120	M MA18.0/18.9	TX6	M M3
6015 HD5 D19	19.0/19.9	20	170	120	M MA19.0/19.9	TX6	M M3
6015 HD5 D20	20.0/20.9	25	190	135	M MA20.0/20.9	TX8	M M4
6015 HD5 D21	21.0/21.9	25	190	135	M MA21.0/21.9	TX8	M M4
6015 HD5 D22	22.0/22.9	25	200	145	M MA22.0/22.9	TX8	M M4
6015 HD5 D23	23.0/23.9	25	200	145	M MA23.0/23.9	TX8	M M4
6015 HD5 D24	24.0/24.9	32	220	160	M MA24.0/24.9	TX8	M M4
6015 HD5 D25	25.0/25.9	32	220	160	M MA25.0/25.9	TX8	M M4
6015 HD5 D26	26.0/26.9	32	240	180	M MA26.0/26.9	TX8	M M4
6015 HD5 D27	27.0/27.9	32	240	180	M MA27.0/27.9	TX10	M M5
6015 HD5 D28	28.0/28.9	32	250	190	M MA28.0/28.9	TX10	M M5
6015 HD5 D29	29.0/29.9	32	250	190	M MA29.0/29.9	TX10	M M5
6015 HD5 D30	30.0/30.9	32	260	200	M MA30.0/30.9	TX10	M M5
6015 HD5 D31	31.0/31.9	32	260	200	M MA31.0/31.9	TX10	M M5
6015 HD5 D32	32.0/32.9	32	270	210	M MA32.0/32.9	TX10	M M5
6015 HD5 D33	33.0/33.9	32	270	210	M MA33.0/33.9	TX10	M M5

• 6020 Series 7xD

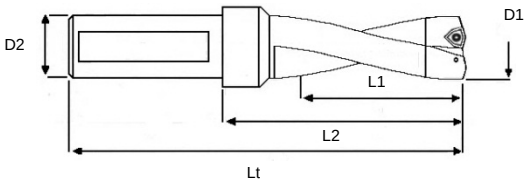


6015 Series
Ø 10.0 - 33.9 mm
2 cutting edges / 1 insert TiAlN
140° attack angle
DIN 6535 HA shank [h6]
version; TiAlN coated

1 2 3 4 5 6 7 8

Article number	D1	D2	L1	L2	insert	key	clamp screw
6020 HD7 D10	10.0/10.9	12	135	90	M MA10.0/10.9	TX5	M M2.5
6020 HD7 D11	11.0/11.9	12	135	90	M MA11.0/11.9	TX5	M M2.5
6020 HD7 D12	12.0/12.9	16	165	115	M MA12.0/12.9	TX5	M M2.5
6020 HD7 D13	13.0/13.9	16	165	115	M MA13.0/13.9	TX5	M M2.5
6020 HD7 D14	14.0/14.9	16	175	125	M MA14.0/14.9	TX6	M M3
6020 HD7 D15	15.0/15.9	16	175	125	M MA15.0/15.9	TX6	M M3
6020 HD7 D16	16.0/16.9	20	190	140	M MA16.0/16.9	TX6	M M3
6020 HD7 D17	17.0/17.9	20	190	140	M MA17.0/17.9	TX6	M M3
6020 HD7 D18	18.0/18.9	20	210	160	M MA18.0/18.9	TX6	M M3
6020 HD7 D19	19.0/19.9	20	210	160	M MA19.0/19.9	TX6	M M3
6020 HD7 D20	20.0/20.9	25	230	175	M MA20.0/20.9	TX8	M M4
6020 HD7 D21	21.0/21.9	25	230	175	M MA21.0/21.9	TX8	M M4
6020 HD7 D22	22.0/22.9	25	240	185	M MA22.0/22.9	TX8	M M4
6020 HD7 D23	23.0/23.9	25	240	185	M MA23.0/23.9	TX8	M M4
6020 HD7 D24	24.0/24.9	32	270	210	M MA24.0/24.9	TX8	M M4
6020 HD7 D25	25.0/25.9	32	270	210	M MA25.0/25.9	TX8	M M4
6020 HD7 D26	26.0/26.9	32	290	230	M MA26.0/26.9	TX8	M M4
6020 HD7 D27	27.0/27.9	32	290	230	M MA27.0/27.9	TX10	M M5
6020 HD7 D28	28.0/28.9	32	300	240	M MA28.0/28.9	TX10	M M5
6020 HD7 D29	29.0/29.9	32	300	240	M MA29.0/29.9	TX10	M M5
6020 HD7 D30	30.0/30.9	32	320	260	M MA30.0/30.9	TX10	M M5
6020 HD7 D31	31.0/31.9	32	320	260	M MA31.0/31.9	TX10	M M5
6020 HD7 D32	32.0/32.9	32	340	280	M MA32.0/32.9	TX10	M M5
6020 HD7 D33	33.0/33.9	32	340	280	M MA33.0/33.9	TX10	M M5

• 6025 30 R Series 3xD

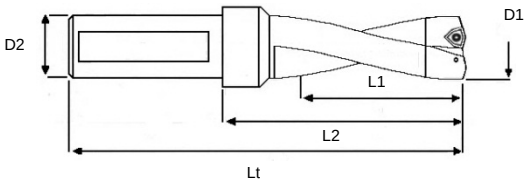


6025 30 R Series
Ø 16.0 - 57.0 mm
2 x 3 cutting edges / 2 inserts KTE20
DIN 6535 HA shank [h6]
version; TiAlN coated

3 4 6

Article number	D1	D2	Lt	L1	L2	insert	key	clamp screw
6025 TD 160 30 R	16	25	134	49	80	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 165 30 R	16.5	25	135.5	50.5	81.5	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 170 30 R	17	25	137	52	83	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 175 30 R	17.5	25	138.5	54.5	84.5	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 180 30 R	18	25	140	56	86	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 185 30 R	18.5	25	141.5	57.5	87.5	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 190 30 R	19	25	143	59	89	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 195 30 R	19.5	25	144.5	60.5	90.5	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 200 30 R	20	25	146	62	92	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 205 30 R	20.5	25	147.5	63.5	93.5	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 210 30 R	21	25	149	65	95	WCGT040208 ALU	M BT08	M VT25
6025 TD 215 30 R	21.5	25	150.5	66.5	96.5	WCGT040208 ALU	M BT08	M VT25
6025 TD 220 30 R	22	25	152	68	98	WCGT040208 ALU	M BT08	M VT25
6025 TD 225 30 R	22.5	25	153.5	69.5	99.5	WCGT040208 ALU	M BT08	M VT25
6025 TD 230 30 R	23	25	155	71	101	WCGT040208 ALU	M BT08	M VT25
6025 TD 235 30 R	23.5	25	156.5	72.5	102.5	WCGT040208 ALU	M BT08	M VT25
6025 TD 240 30 R	24	25	158	74	104	WCGT040208 ALU	M BT08	M VT25
6025 TD 245 30 R	24.5	25	159.5	75.5	105.5	WCGT040208 ALU	M BT08	M VT25
6025 TD 250 30 R	25	25	161	77	107	WCGT040208 ALU	M BT08	M VT25
6025 TD 255 30 R	25.5	25	162.5	78.5	108.5	WCGT040208 ALU	M BT08	M VT25
6025 TD 260 30 R	26	25	164	80	110	WCGT050308 ALU	M BT08	M VT30
6025 TD 265 30 R	26.5	25	165.5	81.5	111.5	WCGT050308 ALU	M BT08	M VT30
6025 TD 270 30 R	27	25	167	83	113	WCGT050308 ALU	M BT08	M VT30
6025 TD 280 30 R	28	25	179	86	116	WCGT050308 ALU	M BT08	M VT30
6025 TD 290 30 R	29	25	173	89	119	WCGT050308 ALU	M BT08	M VT30
6025 TD 300 30 R	30	32	180	92	122	WCGT050308 ALU	M BT08	M VT30
6025 TD 310 30 R	31	32	183	95	125	WCGT06T308 ALU	M BT15	M VT35
6025 TD 320 30 R	32	32	186	98	128	WCGT06T308 ALU	M BT15	M VT35
6025 TD 330 30 R	33	32	189	101	131	WCGT06T308 ALU	M BT15	M VT35
6025 TD 340 30 R	34	32	192	104	134	WCGT06T308 ALU	M BT15	M VT35
6025 TD 350 30 R	35	32	195	107	137	WCGT06T308 ALU	M BT15	M VT35
6025 TD 360 30 R	36	32	198	110	140	WCGT06T308 ALU	M BT15	M VT35
6025 TD 370 30 R	37	32	201	113	143	WCGT06T308 ALU	M BT15	M VT35
6025 TD 380 30 R	38	32	204	116	146	WCGT06T308 ALU	M BT15	M VT35

• 6025 30 R Series 3xD



6025 30 R Series
Ø 16.0 - 57.0 mm
2 x 3 cutting edges / 2 inserts KTE20
DIN 6535 HA shank [h6]
version; TiAlN coated

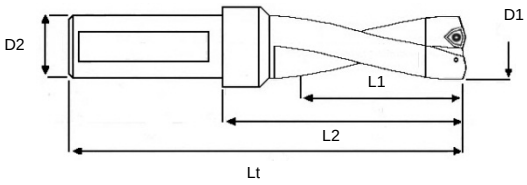
3 4 6

Article number	D1	D2	Lt	L1	L2	insert	key	clamp screw
6025 TD 390 30 R	39	32	207	119	149	WCGT06T308 ALU	M BT15	M VT35
6025 TD 400 30 R	40	32	210	122	152	WCGT06T308 ALU	M BT15	M VT35
6025 TD 410 30 R	41	32	213	125	155	WCGT06T308 ALU	M BT15	M VT35
6025 TD 420 30 R	42	32	216	128	158	WCGT080408 ALU	M BT15	M VT41
6025 TD 430 30 R	43	32	219	131	161	WCGT080408 ALU	M BT15	M VT41
6025 TD 440 30 R	44	32	222	134	164	WCGT080408 ALU	M BT15	M VT41
6025 TD 450 30 R	45	40	240	137	172	WCGT080408 ALU	M BT15	M VT41
6025 TD 460 30 R	46	40	243	140	175	WCGT080408 ALU	M BT15	M VT 41
6025 TD 470 30 R	47	40	246	143	178	WCGT080408 ALU	M BT15	M VT41
6025 TD 480 30 R	48	40	249	146	181	WCGT080408 ALU	M BT15	M VT41
6025 TD 490 30 R	49	40	252	149	184	WCGT080408 ALU	M BT15	M VT41
6025 TD 500 30 R	50	40	255	152	187	WCGT080408 ALU	M BT15	M VT41
6025 TD 510 30 R	51	40	258	155	190	WCGT080408 ALU	M BT15	M VT41
6025 TD 520 30 R	52	40	261	158	193	WCGT080408 ALU	M BT15	M VT41
6025 TD 530 30 R	53	40	264	161	196	WCGT080408 ALU	M BT15	M VT41
6025 TD 540 30 R	54	40	267	164	199	WCGT080408 ALU	M BT15	M VT41
6025 TD 550 30 R	55	40	270	167	202	WCGT080408 ALU	M BT15	M VT41
6025 TD 560 30 R	56	40	273	170	205	WCGT080408 ALU	M BT15	M VT41
6025 TD 570 30 R	57	40	276	173	208	WCGT080408 ALU	M BT15	M VT41

Machinng example

Workpiece:	electronical housing	3
Material:	G AlSi11	
Operation:	hole Ø 42.0 x 110 mm	
Machining center:	horizontal	
Adapter:	SK40 DIN 69871 A to drill chuck Ø 32	
Coolant:	8% emulsion	
Tool:	6025 TD 420 30 R / WCGT 080408 ALU KTE20	
Cutting speed Vc / revolutions n:	Vc = 320.0 m/min / n = 2426 r.p.m.	
Feed rate fn and Vf:	fn = 0.22 mm and Vf = 534 mm/min	

• 6025 50 R Series 5xD

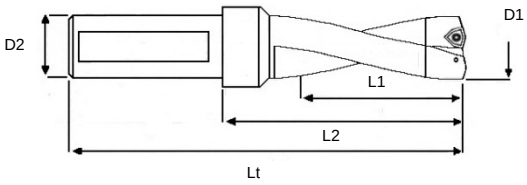


6025 50 R Series
Ø 16.0 - 57.0 mm
2 x 3 cutting edges / 2 inserts KTE20
DIN 6535 HA shank [h6]
version; TiAlN coated

3 4 6

Article number	D1	D2	Lt	L1	L2	insert	key	clamp screw
6025 TD 160 50 R	16	25	164	80	110	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 170 50 R	17	25	170	85	116	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 180 50 R	18	25	174	90	120	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 190 50 R	19	25	179	95	125	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 200 50 R	20	25	184	100	130	WCGT030208 ALU	M BT08	M VT25 2
6025 TD 210 50 R	21	25	189	105	135	WCGT040208 ALU	M BT08	M VT25
6025 TD 220 50 R	22	25	194	110	140	WCGT040208 ALU	M BT08	M VT25
6025 TD 230 50 R	23	25	199	115	145	WCGT040208 ALU	M BT08	M VT25
6025 TD 240 50 R	24	25	204	120	150	WCGT040208 ALU	M BT08	M VT25
6025 TD 250 50 R	25	25	209	125	155	WCGT040208 ALU	M BT08	M VT25
6025 TD 260 50 R	26	25	214	130	160	WCGT050208 ALU	M BT08	M VT30
6025 TD 270 50 R	27	25	219	135	165	WCGT050208 ALU	M BT08	M VT30
6025 TD 280 50 R	28	25	224	140	170	WCGT050208 ALU	M BT08	M VT30
6025 TD 290 50 R	29	25	229	145	175	WCGT050208 ALU	M BT08	M VT30
6025 TD 300 50 R	30	32	238	150	180	WCGT050208 ALU	M BT08	M VT30
6025 TD 310 50 R	31	32	243	155	185	WCGT06T308 ALU	M BT15	M VT35
6025 TD 320 50 R	32	32	248	160	190	WCGT06T308 ALU	M BT15	M VT35
6025 TD 330 50 R	33	32	253	165	195	WCGT06T308 ALU	M BT15	M VT35
6025 TD 340 50 R	34	32	258	170	200	WCGT06T308 ALU	M BT15	M VT35
6025 TD 350 50 R	35	32	263	175	205	WCGT06T308 ALU	M BT15	M VT35
6025 TD 360 50 R	36	32	268	180	210	WCGT06T308 ALU	M BT15	M VT35
6025 TD 370 50 R	37	32	273	185	215	WCGT06T308 ALU	M BT15	M VT35
6025 TD 380 50 R	38	32	278	190	220	WCGT06T308 ALU	M BT15	M VT35
6025 TD 390 50 R	39	32	283	195	225	WCGT06T308 ALU	M BT15	M VT35
6025 TD 400 50 R	40	32	288	200	230	WCGT06T308 ALU	M BT15	M VT35
6025 TD 410 50 R	41	32	293	205	235	WCGT06T308 ALU	M BT15	M VT35
6025 TD 420 50 R	42	32	298	210	240	WCGT080408 ALU	M BT15	M VT41
6025 TD 430 50 R	43	32	303	215	245	WCGT080408 ALU	M BT15	M VT41
6025 TD 440 50 R	44	32	308	225	250	WCGT080408 ALU	M BT15	M VT41
6025 TD 450 50 R	45	40	328	230	255	WCGT080408 ALU	M BT15	M VT41
6025 TD 460 50 R	46	40	333	235	260	WCGT080408 ALU	M BT15	M VT41
6025 TD 470 50 R	47	40	338	240	265	WCGT080408 ALU	M BT15	M VT41
6025 TD 480 50 R	48	40	343	245	270	WCGT080408 ALU	M BT15	M VT41
6025 TD 490 50 R	49	40	348	250	275	WCGT080408 ALU	M BT15	M VT41

• 6025 50 R Series 5xD



6025 50 R Series
Ø 16.0 - 57.0 mm
2 x 3 cutting edges / 2 inserts KTE20
DIN 6535 HA shank [h6]
version; TiAlN coated

3 4 6

Article number	D1	D2	Lt	L1	L2	insert	key	clamp screw
6025 TD 500 50 R	50	40	353	250	285	WCGT080408 ALU	M BT15	M VT41
6025 TD 510 50 R	51	40	358	255	290	WCGT080408 ALU	M BT15	M VT41
6025 TD 520 50 R	52	40	363	260	295	WCGT080408 ALU	M BT15	M VT41
6025 TD 530 50 R	53	40	368	265	300	WCGT080408 ALU	M BT15	M VT41
6025 TD 540 50 R	54	40	373	270	305	WCGT080408 ALU	M BT15	M VT41
6025 TD 550 50 R	55	40	378	275	310	WCGT080408 ALU	M BT15	M VT41
6025 TD 560 50 R	56	40	383	280	315	WCGT080408 ALU	M BT15	M VT41
6025 TD 570 50 R	57	40	388	285	320	WCGT080408 ALU	M BT15	M VT41

Machining example

Workpiece:	guide
Material:	G CuZn15Si4 **6**
Operation:	hole Ø 32.0 x 140 mm
Machining center:	horizontal
Adapter:	SK40 DIN 69871 A to drill chuck Ø 32
Coolant:	8% emulsion
Tool:	6025 TD 320 50 R / WCGT06T308 ALU KTE20
Cutting speed Vc / revolutions n:	Vc = 160.0 m/min / n = 1592 r.p.m.
Feed rate fn and Vf:	fn = 0.18 mm and Vf = 286 mm/min

Vc / fn • Initial cutting values insert tipped drills

1

Vc = 160 - 200 m/min for insert M MA

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25-34
0.10	0.15	0.20	0.25	0.30
0.20	0.25	0.35	0.40	0.45

2

Vc = 180 - 140 m/min for insert M MA

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 34
0.10	0.15	0.20	0.25	0.30
0.20	0.25	0.35	0.40	0.45

3

Vc = 100 - 140 m/min for insert M MA

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 34
0.12	0.17	0.22	0.27	0.32
0.22	0.27	0.38	0.43	0.48

Vc = 250 - 400 m/min for insert WCGT

fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 35	fn for D 35 - 45	fn for D > 45
0.05	0.08	0.10	0.10	0.12
0.12	0.18	0.22	0.28	0.32

4

Vc = 60 - 100 m/min for insert M MA

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 34
0.12	0.17	0.22	0.27	0.32
0.22	0.27	0.38	0.43	0.48

Vc = 100 - 140 m/min for insert WCGT

fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 35	fn for D 35 - 45	fn for D > 45
0.05	0.08	0.10	0.12	0.14
0.14	0.20	0.24	0.28	0.34

Vc / fn • Initial cutting values insert tipped drills

5

Vc = 100 - 140 m/min for insert M MA 

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 34
0.10	0.15	0.20	0.25	0.30
0.20	0.25	0.35	0.40	0.45

6

Vc = 80 - 120 m/min for insert M MA 

fn for D 10 - 12	fn for D 12 - 16	fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 34
0.12	0.17	0.22	0.27	0.32
0.22	0.27	0.38	0.43	0.48

Vc = 200 - 250 m/min for insert WCGT 

fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 35	fn for D 35 - 45	fn for D > 45
0.05	0.08	0.10	0.12	0.14
0.14	0.20	0.24	0.28	0.34

7

Vc = 120 - 160 m/min for insert M MA 

fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 35	fn for D 35 - 45	fn for D > 45
0.08	0.12	0.16	0.22	0.26
0.16	0.22	0.30	0.36	0.40

8

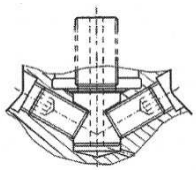
Vc = 60 - 80 m/min for insert M MA 

fn for D 16 - 20	fn for D 20 - 25	fn for D 25 - 35	fn for D 35 - 45	fn for D > 45
0.005	0.01	0.015	0.02	0.03
0.04	0.05	0.06	0.07	0.08

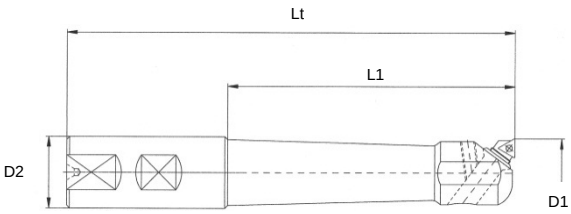
• Boring operations

Insert tipped tool types; aluminium

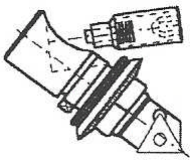
Ø 20.00 - 40.00	z = 1	**TVA...**	VAL…	TCMT 06T1.. KF H13A
35.0 - 620.0	z = 2	**2TP…**	2LC…	CCGT…… ALU KTE 20
35.00 - 158.00	z = 1	**1THF…**	VAL/VNL…	TCGT…… ALU KTE 20
70.00 -1120.00	z = 1	**1TAF…**	1LVA/VNL…	TCGT…… ALU KTE 20



• TVA Series



TVA Series
Ø 20.0 - 40.0 mm
1 cutting edge fine adjustable IT6
DIN 6535 HB shank [h5]



1	2	3	4	5	6	7	8	9

Article number	D1	D2	Lt	L1	cassette	insert
TVA 20 20	20.00 - 24.00	20	120	70	VALX83 90TC06	TC..06T1..
TVA 20 25	20.00 - 24.00	25	156	100	VALX83 90TC06	TC..06T1..
TVA 24 25	24.00 - 28.00	25	156	100	VAL083 90TC06	TC..06T1..
TVA 28 25	28.00 - 32.00	25	156	100	VAL083 90TC06	TC..06T1..
TVA 32 32	32.00 - 36.00	32	160	100	VAL083 90TC06	TC..06T1..
TVA 36 32	36.00 - 40.00	32	160	100	VAL083 90TC06	TC..06T1..

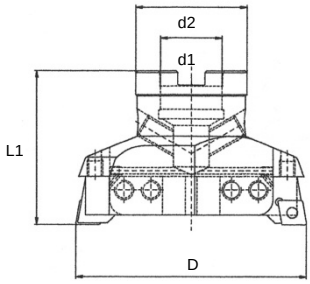
• TC..06T1..

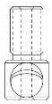
TCMT 06T102 KF H13A
TCMT 06T104 KF H13A
TCMT 06T108 KF H13A

Machining example

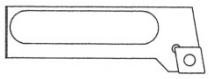
Workpiece:	reduced hole
Material:	AlMgSiPb **2**
Operation:	hole Ø 30K6 x 18 mm [IT6]
Machining center:	vertical
Adapter:	SK40 DIN 69871 A to DIN 1835 B
	G320 40 x 25 x 100
Coolant:	8% emulsion; 20 bar; internal coolant
Tool:	TVA 28 25
	VAL083 90TC06
	TCMT 06T102 KF H13A
Cutting speed Vc / revolutions n:	Vc = 300.0 m/min / n = 3413 r.p.m.
Feed rate fn and Vf:	fn = 0.05 mm and Vf = 85 mm/min
D.O.C. / Ap:	0.2 mm
Surface roughness:	0.5 µm [measured]

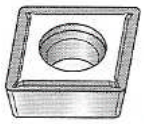
• 2TP Series





2TP Series
Ø 35.0 - 620.0 mm
2 cutting edges adjustable IT9
DIN 6357 and 6358 adapter





1	2	3	4	5	6	7	8	9

Article number	D	d1	d2	L1	cassette	insert
2TP 035	35.0 - 45.0	16	32	58	2LC03590	CCGT06.. ALU KTE20
2TP 045	45.0 - 58.0	16	32	58	2LC04590	CCGT09.. ALU KTE20
2TP 058	58.0 - 70.0	22	40	66	2LC05890	CCGT09.. ALU KTE20
2TP 070	70.0 - 90.0	27	48	66	2LC07090	CCGT09.. ALU KTE20
2TP 090	90.0 - 120.0	32	58	70	2LC09090	CCGT09.. ALU KTE20
2TP 120	120.0 - 180.0	32	58	75	2LC12090	CCGT12.. ALU KTE20
2TP 175	175.0 - 260.0	40	88	85	2LC17590	CCGT12.. ALU KTE20
2TP 260	260.0 - 380.0	40	88	87	2LC26090	CCGT12.. ALU KTE20
2TP 380	380.0 - 500.0	40	88	87	2LC26090	CCGT12.. ALU KTE20
2TP 450	450.0 - 570.0	40	88	80	2LC26090	CCGT12.. ALU KTE20
2TP 500	500.0 - 620.0	40	88	80	2LC26090	CCGT12.. ALU KTE20

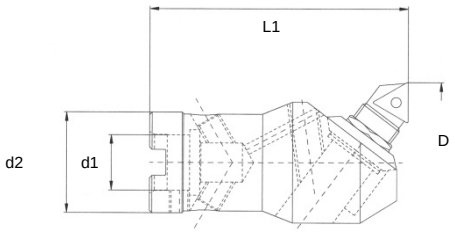
• CCGT…... ALU KTE20

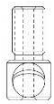
CCGT 060202 ALU KTE20
CCGT 060204 ALU KTE20
CCGT 09T302 ALU KTE20
CCGT 09T304 ALU KTE20
CCGT 09T308 ALU KTE20
CCGT 120402 ALU KTE20
CCGT 120404 ALU KTE20
CCGT 120408 ALU KTE20

Machining example

Workpiece:	support flange
Material:	G AlSi7Mg **3**
Operation:	hole Ø 69.6 x 160 mm [IT9]
Machining center:	vertical
Adapter:	SK40 MAS-BT/JIS to DIN 6357
	G442 40 x 27 x 100
Coolant:	8% emulsion; 20 bar; external coolant
Tool:	2TP 070
	2LC07090 [2x]
	CCGT 09T308 ALU KTE20
Cutting speed Vc / revolutions n:	Vc = 160.0 m/min / n = 728 r.p.m.
Feed rate fn and Vf:	fn = 0.4 mm and Vf = 291 mm/min
D.O.C. / Ap:	3.0 mm
Chip removal rate Q:	0.873 cm³/min
Specific cutting force kc:	1000 N/mm²
Power requirement Pc:	16.16 kW
Torque Mc:	1.75 Nm

• 1THF Series



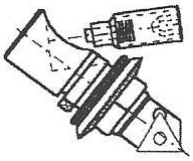


1THF Series

Ø 35.0 - 158.0 mm [steel or aluminium carrier]

1 cutting edge adjustable IT6

DIN 6358 adapter



1	2	3	4	5	6	7	8	9

Article number	D	d1	d2	L1	cassette	insert
Steel carrier						
1THF 036	35.00 - 39.00	16	32	80	VNL10390TC11	TCGT11.. ALU KTE20
1THF 040	39.00 - 43.00	16	32	80	VNL10390TC11	TCGT11.. ALU KTE20
1THF 043	43.00 - 50.00	22	40	100	VNL12390TC11	TCGT11.. ALU KTE20
1THF 050	50.00 - 57.00	22	40	100	VNL12390TC11	TCGT11.. ALU KTE20
1THF 057	57.00 - 64.00	22	40	100	VNL12390TC11	TCGT11.. ALU KTE20
1THF 064	64.00 - 71.00	22	40	100	VNL12390TC11	TCGT11.. ALU KTE20
Aluminium carrier						
1THF 056	56.00 - 70.00	22	40	100	VNL18390TC16	TCGT16.. ALU KTE20
1THF 070	70.00 - 84.00	27	48	100	VNL18390TC16	TCGT16.. ALU KTE20
1THF 084	84.00 - 98.00	27	48	100	VNL18390TC16	TCGT16.. ALU KTE20
1THF 098	98.00 - 128.00	32	58	100	VNL18390TC16	TCGT16.. ALU KTE20
1THF 128	128.00 - 158.00	32	58	100	VNL18390TC16	TCGT16.. ALU KTE20

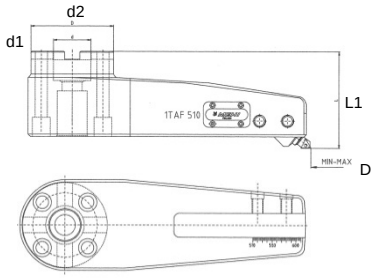
• TCGT…... ALU KTE20

TCGT 110202 ALU KTE20
TCGT 110204 ALU KTE20
TCGT 16T302 ALU KTE20
TCGT 16T304 ALU KTE20
TCGT 16T308 ALU KTE20

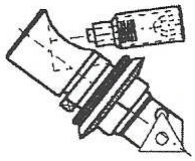
Machining example

Workpiece:	guide flange **3**
Material:	G AlSi7Mg
Operation:	hole Ø 70H7 x 160 mm [IT7]
Machining center:	vertical
Adapter:	SK40 MAS-BT/JIS to DIN 6357
	G442 40 x 27 x 100
Coolant:	8% emulsion; 20 bar; internal coolant
Tool:	1THF 056
	VNL18390TC16
	TCGT 16T302 ALU KTE20
Cutting speed Vc / revolutions n:	Vc = 220.0 m/min / n = 728 r.p.m.
Feed rate fn and Vf:	fn = 0.05 mm and Vf = 36 mm/min
D.O.C. / Ap:	0.2 mm

• 1TAF Series



1TAF Series
Ø 70.0 - 1120.0 mm [aluminium carrier]
1 cutting edge adjustable IT7
DIN 6357 and 6358 adapter



1	2	3	4	5	6	7	8	9

Article number	D	d1	d2	L1	cassette	toolholders
1TAF 070A	70.00 - 100.00	27	48	100	VNL12390TC11	1 LVA 070
1TAF 100A	100.00 - 150.00	32	58	100	VNL12390TC11	1 LVA 100
1TAF 150A	150.00 - 240.00	40	70	100	VNL12390TC11	1 LVA 230
1TAF 230A	230.00 - 330.00	40	88	100	VNL12390TC11/16	1 LVA 2318
1TAF 310A	310.00 - 420.00	40	88	100	VNL12390TC11/16	1 LVA 2318
1TAF 410A	410.00 - 520.00	40	88	100	VNL12390TC11/16	1 LVA 2318
1TAF 510A	510.00 - 620.00	40	88	100	VNL18390TC11/16	1 LVA 2318
1TAF XXXA	710.00 - 1120.00	40	88	100	VNL18390TC11/16	1 LVA 2318

• TCGT…... ALU KTE20

TCGT 110202 ALU KTE20
TCGT 110204 ALU KTE20
TCGT 16T302 ALU KTE20
TCGT 16T304 ALU KTE20
TCGT 16T308 ALU KTE20

Machining example

Workpiece:	bearing cap **6**
Material:	G CuZn34Al2
Operation:	hole Ø 520K6 x 120 mm [IT6]
Machining center:	vertical
Adapter:	SK50 DIN 69871 to DIN 6357
	G142 50 x 40 x 33
Coolant:	8% emulsion; 20 bar; external coolant
Tool:	1TAF 510A
	VNL12390TC16
	TCMT 16T308 WM PTT20
Cutting speed Vc / revolutions n:	Vc = 180.0 m/min / n = 110 r.p.m.
Feed rate fn and Vf:	fn = 0.12 mm and Vf = 13.2 mm/min
D.O.C. / Ap:	0.25 mm

Vc / fz / Ap • Initial cutting values insert tipped boring tools

1

Vc = 150 - 350 m/min for TVA

TCMT060102KF H13A fz : 0.05 - 0.075 Ap :0.05 - 0.40	TCMT060102KF H13A fz : 0.05 - 0.075 Ap :0.05 - 0.40	TCMT060102KF H13A fz : 0.05 - 0.075 Ap :0.05 - 0.40

Vc = 200 - 450 m/min for 2TP

CCGT060202/04 ALU KTE 20 fz : 0.05 - 0.125 Ap :0.05 - 0.80	CCGT09T302/04/08 ALU KTE20 fz : 0.05 - 0.15 Ap :0.05 - 1.60	CCG120402/04/08 ALU KTE20 fz : 0.05 - 0.15 Ap :0.05 - 3.20

Vc = 200 - 450 m/min for 1THF / 1 TAF

TCGT110202/04 ALU KTE 20 fz : 0.05 - 0.125 Ap :0.05 - 0.60	TCGT16T302/04/08 ALU KTE 20 fz : 0.05 - 0.15 Ap :0.05 - 1.20

2

Vc = 150 - 300 m/min for TVA

Vc = 200 - 400 m/min for 2TP

Vc = 200 - 400 m/min for 1THF / 1 TAF

Ap and fz as under 1

3

Vc = 120 - 200 m/min for TVA

Vc = 160 - 350 m/min for 2TP

Vc = 160 - 350 m/min for 1THF / 1 TAF

Ap and fz as under 1

4

Vc = 120 - 200 m/min for TVA

Vc = 160 - 350 m/min for 2TP

Vc = 160 - 350 m/min for 1THF / 1 TAF

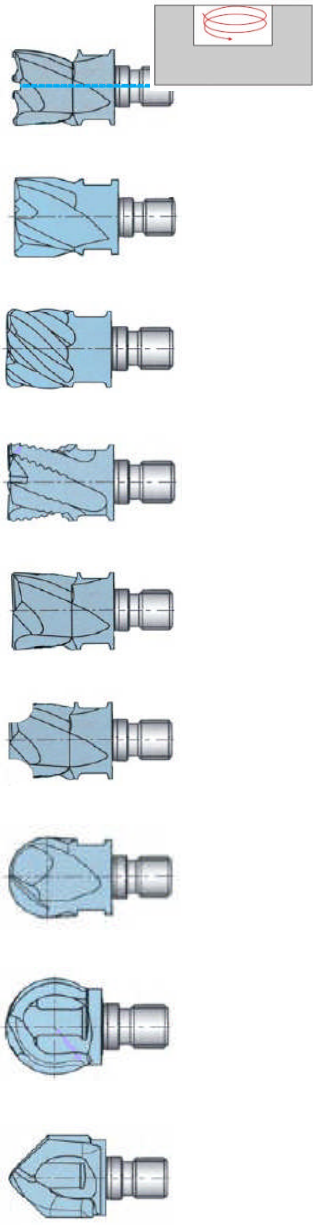
Ap and fz as under 1

Vc / fz / Ap • Initial cutting values insert tipped boring tools

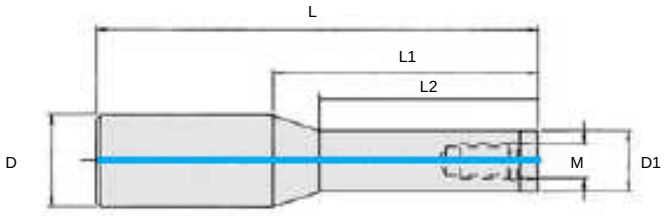
5	Vc = 150 - 350 m/min for TVA 	Ap and fz as under 1
	Vc = 200 - 450 m/min for 2TP 	
	Vc = 200 - 450 m/min for 1THF / 1 TAF 	
6	Vc = 120 - 200 m/min for TVA 	Ap and fz as under 1
	Vc = 160 - 350 m/min for 2TP 	
	Vc = 160 - 350 m/min for 1THF / 1 TAF 	
7	Vc = 170 - 370 m/min for TVA 	Ap and fz as under 1
	Vc = 220 - 450 m/min for 2TP 	
	Vc = 220 - 450 m/min for 1THF / 1 TAF 	
8	Vc = 60 - 80 m/min for TVA 	Ap and fz as under 1
	Vc = 80 - 100 m/min for 2TP 	
	Vc = 80 - 100 m/min for 1THF / 1 TAF 	
9	Vc = 60 - 80 m/min for TVA 	Ap and fz as under 1
	Vc = 80 - 100 m/min for 2TP 	
	Vc = 80 - 100 m/min voor 1THF / 1 TAF 	

• Mill operations — Insert tipped tool types; modular, universal

Ø	8.0	-	10.0	h8 / z = 3	**5045 KTE30**	5112 extensions
	8.0	-	20.0	h8 / z = 4	**5050 KTE30**	5112 extensions
	8.0	-	16.0	h8 / z = 6	**5055 KTE30**	5112 extensions
	8.0	-	16.0	h8 / z = 4	**5060 KTE30**	5112 extensions
	8.0	-	16.0	h8 / z = 2	**5065 KTE30**	5112 extensions
	8.0	-	20.0	h8 / z = 4	**5070 KTE30**	5112 extensions
	8.0	-	20.0	h8 / z = 4	**5075 KTE30**	5112 extensions
	8.0	-	20.0	h8 / z = 2	**5080 KTE30**	5112 extensions
	8.0	-	12.0	h8 / z = 2	**5085 KTE30**	5112 extensions
	12.0			h8 / z = 2	**5090 KTE30**	5112 extensions

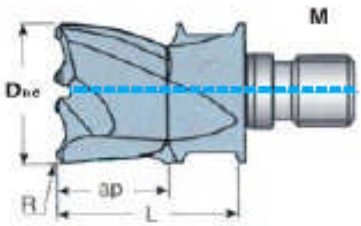


• 5112 Series damped extensions



Article number	D	D1	L	L1	L2	M
5112 16 025S M5	16	8	75	25	20	M5
5112 16 050L M5	16	8	100	50	45	M5
5112 16 025S M6	16	10	80	30	25	M6
5112 16 070L M6	16	10	125	75	70	M6
5112 16 025S M8	16	13	80	30	25	M8
5112 16 070L M8	16	13	125	75	70	M8
5112 20 045S 16 M10	20	16	100	50	45	M10
5112 20 075L 16 M10	20	16	130	80	75	M10

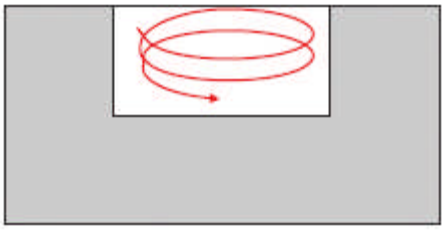
• 5045 Series 3D operations



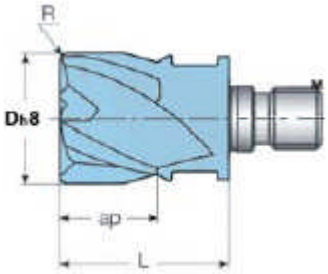
5045 Series
Ø 8.0 - 10.0 mm
3 cutting edges
20° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Dmin/max	Ap	L	R	M
5045 MHN 08 3 M5	8	10 - 15	9	15	0.25	M5
5045 MHN 10 3 M6	10	12 - 18	10	17	0.25	M6



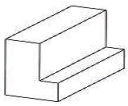
• 5050 Series



5050 Series
Ø 8.0 - 20.0 mm
4 cutting edges
45° helix angle
version; TiAlN coated

2 3 4 6

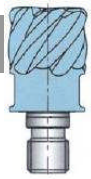
Article number TiAlN coated	Dh8	Ap	L	R	M
5050 MM 08 4 R 0.0 M5	8	9	15	0.0	M5
5050 MM 08 4 R 0.5 M5	8	9	15	0.5	M5
5050 MM 10 4 R 0.0 M6	10	10	17	0.0	M6
5050 MM 10 4 R 0.5 M6	10	10	17	0.5	M6
5050 MM 13 4 R 0.0 M8	13	12	18	0.0	M8
5050 MM 13 4 R 0.5 M8	13	12	18	0.5	M8
5050 MM 13 4 R 1.0 M8	13	12	18	1.0	M8
5050 MM 16 4 R 0.0 M10	16	15	21	0.0	M10
5050 MM 16 4 R 0.5 M10	16	15	21	0.5	M10
5050 MM 16 4 R 1.0 M10	16	15	21	1.0	M10
5050 MM 20 4 R 0.0 M10	20	19	25	0.0	M10
5050 MM 20 4 R 0.5 M10	20	19	25	0.5	M10
5050 MM 20 4 R 1.0 M10	20	19	25	1.0	M10

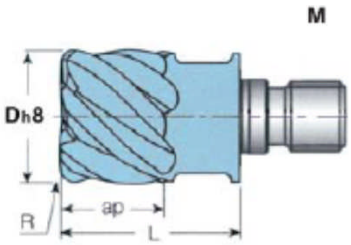


Machining example

Material:	G AlSi17Cu4 **4**
Operation:	side milling
Machining center:	horizontal
Adapter:	HSK 63 A to shrink fit chuck Ø 20 mm
Coolant:	8% emulsion
Tool:	5112 20 045S 16M10 and 5050 MM 16 4 R 0.5 M10
D.O.C. / Ap:	8 mm
W.O.C. / Ae:	1.0 mm
Cutting speed Vc / revolutions n:	Vc = 90.0 m/min / n = 1792 r.p.m.
Feed rate fn and Vf:	fz = 0.16 mm and Vf = 1147 mm/min

• 5055 Series



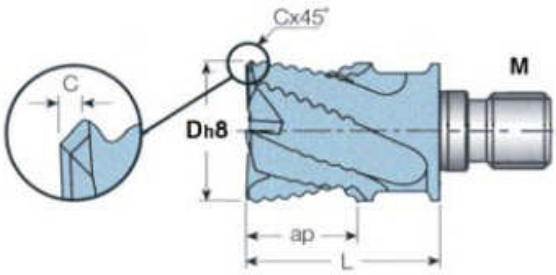


5055 Series
Ø 8.0 - 16.0 mm
6 cutting edges
45° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Ap	L	R	M
5055 MF 08 6 R 0.0 M5	8	9	15	0.0	M5
5055 MF 08 6 R 0.5 M5	8	9	15	0.5	M5
5055 MF 10 6 R 0.0 M6	10	10	17	0.0	M6
5055 MF 10 6 R 0.5 M6	10	10	17	0.5	M6
5055 MF 10 6 R 1.0 M6	10	10	17	1.0	M6
5055 MF 10 6 R 1.5 M6	10	10	17	1.5	M6
5055 MF 13 6 R 0.0 M8	13	12	18	0.0	M8
5055 MF 13 6 R 0.5 M8	13	12	18	0.5	M8
5055 MF 13 6 R 1.0 M8	13	12	18	1.0	M8
5055 MF 13 6 R 1.5 M8	13	12	18	1.5	M8
5055 MF 16 6 R 0.0 M10	16	15	21	0.0	M10
5055 MF 16 6 R 1.0 M10	16	15	21	1.0	M10

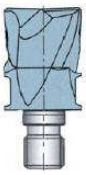
• 5060 Series



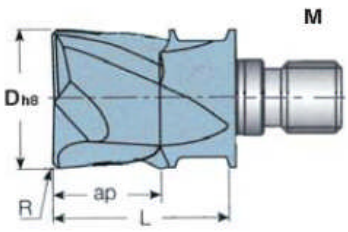
5060 Series
Ø 8.0 - 16.0 mm
4 cutting edges
25° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Ap	L	C	M
5060 MHR 08 4 M5	8	9	15	0.3	M5
5060 MHR 10 4 M6	10	10	17	0.3	M6
5060 MHR 13 4 M8	13	12	18	0.3	M8
5060 MHR 16 4 M10	16	15	21	0.3	M10



• 5065 Series

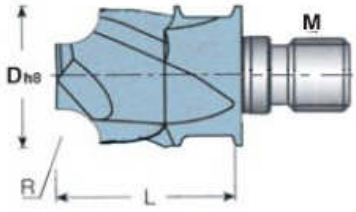


5065 Series
Ø 8.0 - 16.0 mm
2 snijkanten
45° spiraalhoek
uitvoering; TiAlN gecoat

2 3 4 6

Artikelnummer TiAlN gecoat	Dh8	Ap	L	R	M
5065 MA 08 2 M5	8	9	15	0.3	M5
5065 MA 10 2 M6	10	10	17	0.3	M6
5065 MA 13 2 M8	13	12	18	0.3	M8
5065 MA 16 2 M10	16	15	21	0.3	M10

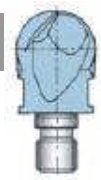
• 5070 Series



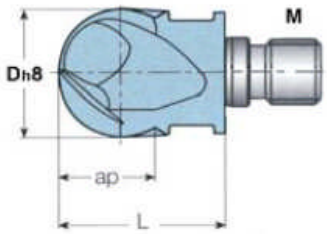
5070 Series
radius 0.5 - 6.0 mm
4 cutting edges
0° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	R	Dh8	L	M
5070 MR 08 4 R 0.5 M5	0.5	8	15	M5
5070 MR 08 4 R 1.0 M5	1.0	8	15	M5
5070 MR 10 4 R 1.5 M6	1.5	10	17	M6
5070 MR 10 4 R 2.0 M6	2.0	10	17	M6
5070 MR 13 4 R 2.5 M8	2.5	13	18	M8
5070 MR 13 4 R 3.0 M8	3.0	13	18	M8
5070 MR 16 4 R 3.5 M10	3.5	16	21	M10
5070 MR 16 4 R 4.0 M10	4.0	16	21	M10
5070 MR 16 4 R 4.5 M10	4.5	16	21	M10
5070 MR 20 4 R 5.0 M10	5.0	20	25	M10
5070 MR 20 4 R 6.0 M10	6.0	20	25	M10



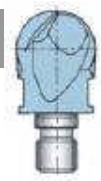
• 5075 Series



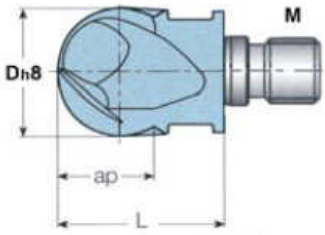
5075 Series
Ø 8.0 - 20.0 mm
4 cuting edges
25° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Ap	L	R	M
5075 MKR 08 4 M5	8	9	15	4.0	M5
5075 MKR 10 4 M6	10	10	17	5.0	M6
5075 MKR 13 4 M8	13	12	18	6.5	M8
5075 MKR 16 4 M10	16	15	21	8.0	M10
5075 MKR 20 4 M10	20	19	25	10.0	M10



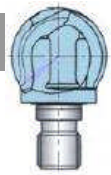
• 5080 Series



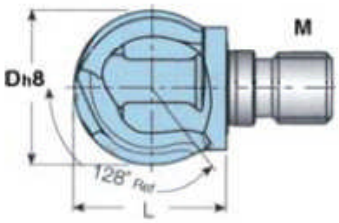
5080 Series
Ø 8.0 - 20.0 mm
2 cutting edges
0° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Ap	L	R	M
5080 MKH 08 2 M5	8	9	15	4.0	M5
5080 MKH 10 2 M6	10	10	17	5.0	M6
5080 MKH 13 2 M8	13	12	18	6.5	M8
5080 MKH 16 2 M10	16	15	21	8.0	M10
5080 MKH 20 2 M10	20	19	25	10.0	M10



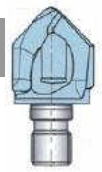
• 5085 Series



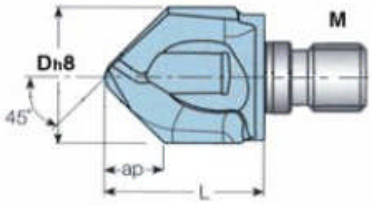
5085 Series
Ø 8.0 - 12.0 mm
2 cutting edges
0° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	L	R	M
5085 MKU 08 2 M5	8	15	4.0	M5
5085 MKU 10 2 M6	10	17	5.0	M6
5085 MKU 12 2 M6	12	17	6.0	M6



• 5090 Series



5090 Series
Ø 12.0 mm
2 cutting edges
0° helix angle
version; TiAlN coated

2 3 4 6

Article number TiAlN coated	Dh8	Ap	L	M
5090 MFZ 12 2 M6	12	6	17	M6

Vc / fz / Ap / Ae • Initial cutting values solid carbide modular end mills

2

Vc = 120 - 350 m/min

D = 8	D = 10	D = 13	D = 16	D = 20
Fz: 0.04 - 0.07	Fz: 0.06 - 0.09	Fz: 0.07 - 0.10	Fz: 0.08 - 0.11	Fz: 0.10 - 0.12
Ap:0.1 - 0.3xD	Ap:0.1 - 0.3xD	Ap:0.1 - 0.3xD	Ap:0.1 - 0.3xD	Ap:0.1 - 0.3xD
Ae: 0.05 - 0.25xD	Ae: 0.05 - 0.25xD	Ae: 0.05 - 0.25xD	Ae: 0.05 - 0.25xD	Ae: 0.05 - 0.25xD

3

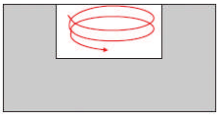
Vc = 100 - 280 m/min — **Fz/Ap/Ae** as 2

4

Vc = 70 - 140 m/min — **Fz/Ap/Ae** as 2

6

Vc = 110 - 280 m/min — **Fz/Ap/Ae** as 2



• Initial value factor k in mm/rev. [z - axis movement/rev. in mm]

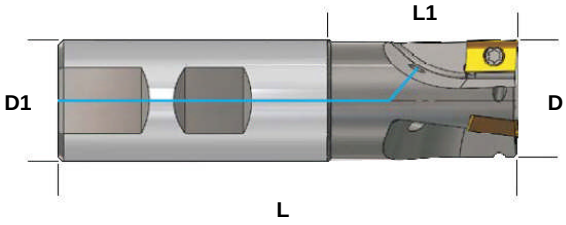
D = 8	D = 10
k: 0.5 - 0.75	k: 0.5 - 0.10

• Mill operations

Insert tipped tool types; 90° angle, aluminium

Ø	16 - 32	shank	**2110…**	XPHX11T3.. FR ALU…
	40 - 100	hole adapter	**2112…**	XPHX11T3.. FR ALU…
	16 - 40	modular	**2114…**	XPHX11T3.. FR ALU…
	16 - 40	shank	**2116 damped**	XPHX11T3.. FR ALU…
	16 - 63	modular	**2118…**	XPHX11T3.. FR ALU…
	25 - 32	shank	**2130…**	XPHX1705.. FR ALU…
	40 - 125	hole adapter	**2132…**	XPHX1705.. FR ALU…
	25 - 40	modular	**2134…**	XPHX1705.. FR ALU…
	25 - 40	shank	**2136 damped**	XPHX1705.. FR ALU…
	25 - 63	modular	**2138…**	XPHX1705.. FR ALU…

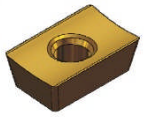
• 2110 Series



2110 Series

Ø 16.0 - 32.0 mm

Weldon DIN 6359 shank [h6]



XPHX11T3..FR ALU...

Article number	D	D1	L	L1	z
2110 W W D16	16	16	80	40	2
2110 W W L D16	16	16	150	40	2
2110 W W D18	18	20	80	40	2
2110 W W L D18	18	20	150	40	2
2110 W W D19	19	20	85	40	2
2110 W W L D19	19	20	150	40	2
2110 W W D20	20	20	90	40	2
2110 W W L D20	20	20	150	40	2
2110 W W D22	22	25	95	40	2
2110 W W L D22	22	25	150	40	2
2110 W W D25	25	25	95	40	2
2110 W W L D25	25	25	150	40	2
2110 W W D25 3	25	25	95	40	3
2110 W W L D25 3	25	25	150	40	3
2110 W W D32	32	32	95	40	3
2110 W W L D32	32	32	150	40	3

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX11T3..FR ALU...

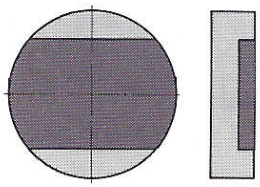
XPHX 11T304 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 11T308 FR ALU KTE20

XPHX 11T312 FR ALU KTE20

XPHX 11T316 FR ALU KTE20

XPHX 11T320 FR ALU KTE20

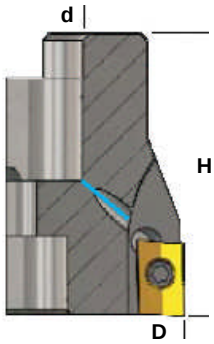


Machining example

4

Material:	G AlSi21CuNiMg
Operation:	full slot machining
Machining center:	horizontal
Adapter:	HSK 100 A to Weldon chuck Ø 32 mm
Coolant:	8% emulsion; 40 bar presure
Tool:	2110 W W D32 / XPHX11T304 FR ALU DiaX
D.O.C. / Ap:	2 x 6.0 mm
W.O.C. / Ae:	32.0 mm
Cutting speed Vc / revolutions n:	Vc = 280.0 m/min / n = 2787 r.p.m.
Feed rate fn and Vf:	fz = 0.18 mm and Vf = 1505 mm/min

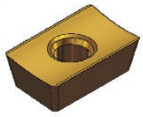
• 2112 Series



2112 Series

Ø 40.0 - 100.0 mm

DIN 6357 / 6358 hole adapter



XPHX11T3..FR ALU…

Article number	D	d	H	z
2112 M W D40	40	16	40	4
2112 M W D50	50	22	40	4
2112 M W D63	63	22	40	5
2112 M W D80	80	27	50	5
2112 M W D100	100	32	50	5

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX11T3..FR ALU…

XPHX 11T304 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 11T308 FR ALU KTE20

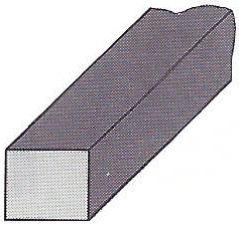
XPHX 11T312 FR ALU KTE20

XPHX 11T316 FR ALU KTE20

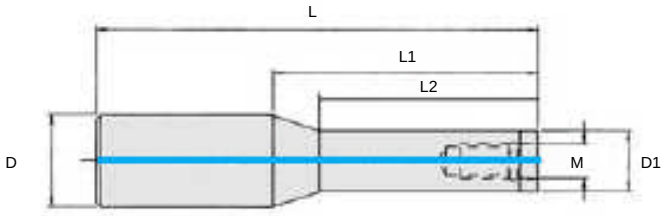
XPHX 11T320 FR ALU KTE20

Machining example

Material:	AlMgSiPb	1
Operation:	face milling	
Machining center:	vertical	
Adapter:	SK 40 DIN 69871 A to shell mill adapter Ø 22 mm	
Coolant:	8% emulsion; 20 bar presure	
Tool:	2112 M W D63 / XPHX11T312 FR ALU KTE20	
D.O.C. / Ap:	3.0 mm	
W.O.C. / Ae:	35.0 mm	
Cutting speed Vc / revolutions n:	Vc = 400.0 m/min / n = 2022 r.p.m.	
Feed rate fn and Vf:	fz = 0.25 mm and Vf = 2528 mm/min	

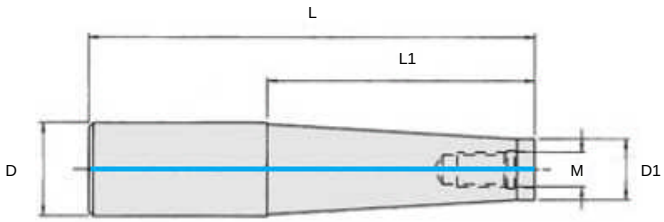


• 5112 Series damped extension for 2114 / 2134



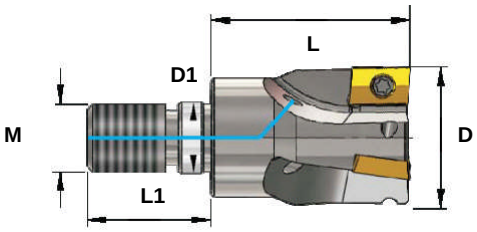
Article number	D	D1	L	L1	L2	M
5112 16 025S M8	16	13	80	30	25	M8
5112 16 070L M8	16	13	125	75	70	M8
5112 20 045S 16 M10	20	16	100	50	45	M10
5112 20 075L 16 M10	20	16	130	80	75	M10
5112 20 045S M10	20	18	100	50	45	M10
5112 20 075L M10	20	18	130	80	75	M10
5112 25 045S M12	25	21	105	50	45	M12
5112 25 075L M12	25	21	135	80	75	M12

• 5108 Series damped vextension for 2114 / 2134



Article number	D	D1	L	L1	M
5108 16 080 M8	16	13	135	80	M8
5108 16 100 M8	16	13	155	100	M8
5108 16 120 M8	16	13	175	120	M8
5108 20 100 16 M10	20	16	160	100	M10
5108 20 140 16 M10	20	16	200	140	M10
5108 20 100 M10	20	18	160	100	M10
5108 20 140 M10	20	18	200	140	M10
5108 25 100 M12	25	21	165	100	M12
5108 25 150 M12	25	21	215	150	M12
5108 32 100 M16	32	29	170	100	M16
5108 32 150 M16	32	29	220	150	M16

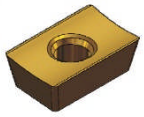
• 2114 Series



2114 Series

Ø 16.0 - 40.0 mm

modular screw connection



XPHX11T3..FR ALU…

Article number	D	D1	L	L1	M	z
2114 E W D16	16	8.5	25	17.5	M8	2
2114 E W D18	18	8.5	25	17.5	M8	2
2114 E W D20 2	20	10.5	30	20	M10	2
2114 E W D20 3	20	10.5	30	20	M10	3
2114 E W D25 3	25	12.5	35	22	M12	3
2114 E W D25 4	25	12.5	35	22	M12	4
2114 E W D32 3	32	17.0	43	24	M16	3
2114 E W D32 5	32	17.0	43	24	M16	5
2114 E W D40	40	17.0	43	24	M16	3

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX11T3..FR ALU…

XPHX 11T304 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 11T308 FR ALU KTE20

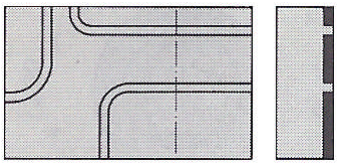
XPHX 11T312 FR ALU KTE20

XPHX 11T316 FR ALU KTE20

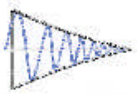
XPHX 11T320 FR ALU KTE20

Machining example

Material:	G DAlSi9Cu3 **3**
Operation:	cavaty - and contour milling
Machining center:	vertical
Adapter:	SK 40 DIN 69871 A to hydraulic chuck Ø 20 mm
Coolant:	8% emulsion; 20 bar presure
Tool:	2114 E W D20 3 / XPHX11T312 FR ALU KTE20
Extension:	5112 20 045S M10
D.O.C. / Ap:	3.0 mm
W.O.C. / Ae:	2.0 tot 20.0 mm
Cutting speed Vc / revolutions n:	Vc = 120.0 m/min / n = 1911 r.p.m.
Feed rate fn and Vf:	fz = 0.08 mm and Vf = 458 mm/min

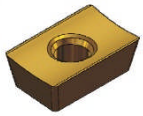


• 2116 Series



2116 Series

Ø 16.0 - 40.0 mm



XPHX11T3..FR ALU...

Article number	D	d	L	L1	z
2116 W WVXL D16	16	16	200	145	2
2116 W WVXL D18	18	16	200	145	2
2116 W WVXL D20 2	20	20	230	170	2
2116 W WVXL D20 3	20	20	230	170	3
2116 W WVXL D25 3	25	25	250	185	3
2116 W WVXL D25 4	25	25	250	185	4
2116 W WVXL D32 3	32	32	263	193	3
2116 W WVXL D32 5	32	32	263	193	5
2116 W WVXL D40	40	32	263	193	3

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX11T3..FR ALU…

XPHX 11T304 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 11T308 FR ALU KTE20

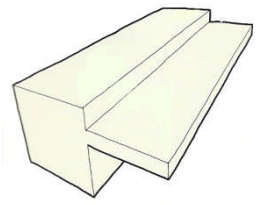
XPHX 11T312 FR ALU KTE20

XPHX 11T316 FR ALU KTE20

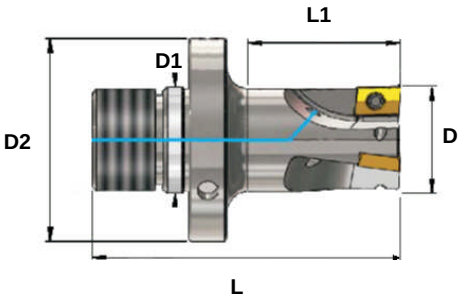
XPHX 11T320 FR ALU KTE20

Machining example

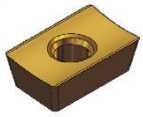
Material:	AlCuMgPb 2
Operation:	face - and side milling
Machining center:	vertical
Adapter:	HSK 63 A to shrink fit chuck Ø 32 mm
Coolant:	8% emulsion; 20 bar presure
Tool:	2116 E W D32 5 / XPHX11T312 FR ALU KTE20
D.O.C. / Ap:	1.0 mm
W.O.C. / Ae:	to 20.0 mm
Cutting speed Vc / revolutions n:	Vc = 140.0 m/min / n = 1393 r.p.m.
Feed rate fn and Vf:	fz = 0.11 mm and Vf = 766 mm/min



• 2118 Series



2118 Series
Ø 16.0 - 63.0 mm
modular screw connection
M24 x 1.5



XPHX11T3..FR ALU…

Article number	D	D1	D2	L	L1	z
2118 E W D16	16	25	48	73	36	2
2118 E W D18	18	25	48	73	36	2
2118 E W D19	19	25	48	73	36	2
2118 E W D20	20	25	48	73	36	2
2118 E W D22	22	25	48	73	36	2
2118 E W D25	25	25	48	73	36	2
2118 E W D25 3	25	25	48	73	36	3
2118 E W D32	32	25	48	73	36	3
2118 E W D40	40	25	48	73	36	4
2118 E W D50	50	25	48	73		5
2118 E W D63	63	25	48	73		5

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

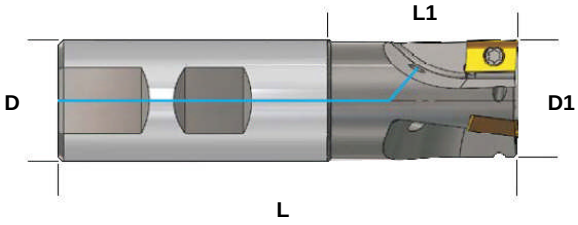
• XPHX11T3..FR ALU…

XPHX 11T304 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX
XPHX 11T308 FR ALU KTE20
XPHX 11T312 FR ALU KTE20
XPHX 11T316 FR ALU KTE20
XPHX 11T320 FR ALU KTE20

• Tool adapters for 2118 / 2138

Spindel lay-out	Overhang	Connection	Order number
SK40 DIN 69871 AD + B	35 mm	M24 x 1.5	LFA11
SK50 DIN 69871 AD + B	35 mm	M24 x 1.5	LFA12
SK40 MAS BT/JIS	25 mm	M24 x 1.5	LFA13
SK50 MAS BT/JIS	35 mm	M24 x 1.5	LFA14
HSK A 50 DIN 69893	65 mm	M24 x 1.5	LFHSK11
HSK A 63 DIN 69893	65 mm	M24 x 1.5	LFHSK12
HSK A 100 DIN 69893	65 mm	M24 x 1.5	LFHSK13

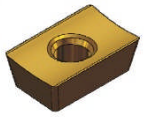
• 2130 Series



2130 Series

Ø 25.0 - 32.0 mm

Weldon DIN 6359 shank [h6]



XPHX1705..FR ALU...

Article number	D	D1	L	L1	z
2130 W W D25 2	25	25	100	50	2
2130 W W L D25 2	25	25	200	70	2
2130 W W D32 2	25	25	110	50	2
2130 W W L D32 2	25	25	200	70	2
2130 W W D32 3	32	32	110	50	3
2130 W W L D32 3	32	32	200	70	3

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX1705..FR ALU...

XPHX 170508 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

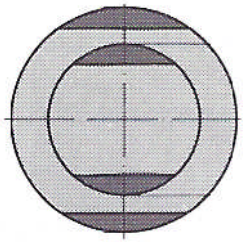
XPHX 170512 FR ALU KTE20

XPHX 170516 FR ALU KTE20

XPHX 170524 FR ALU KTE20

XPHX 170530 FR ALU KTE20

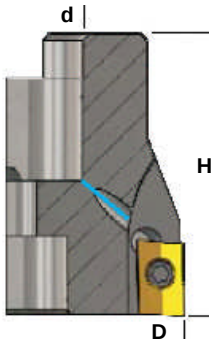
XPHX 170540 FR ALU KTE20



Machining example

Material:	G AlSi7Mg **3**
Operation:	arbor flat milling
Machining center:	vertical
Adapter:	SK40 DIN 69871 A to Weldon chuck Ø 32 mm
Coolant:	8% emulsion; 20 bar presure
Tool:	2130 W W D32 / XPHX170512 FR ALU KTE20
D.O.C. / Ap:	3.0 mm
W.O.C. / Ae:	20.0 mm
Cutting speed Vc / revolutions n:	Vc = 320.0 m/min / n = 3185 r.p.m.
Feed rate fn and Vf:	fz = 0.15 mm and Vf = 1433 mm/min

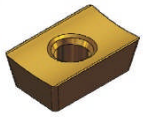
• 2132 Series



2132 Series

Ø 40.0 - 125.0 mm

DIN 6357 / 6358 hole adapter



XPHX1705..FR ALU...

Article number	D	d	H	z
2132 M W D40	40	16	40	3
2132 M W D50	50	22	40	4
2132 M W D63 4	63	22	40	4
2132 M W D63 5	63	22	40	5
2132 M W D80 4	80	27	50	4
2132 M W D80 5	80	27	50	5
2132 M W D100 4	100	32	50	4
2132 M W D100 5	100	32	50	5
2132 M W D125 5	125	40	63	5
2132 M W D125 6	125	40	63	6

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX1705..FR ALU...

XPHX 170508 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 170512 FR ALU KTE20

XPHX 170516 FR ALU KTE20

XPHX 170524 FR ALU KTE20

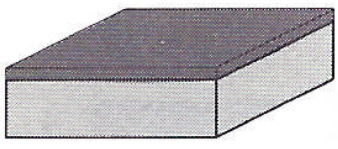
XPHX 170530 FR ALU KTE20

XPHX 170540 FR ALU KTE20

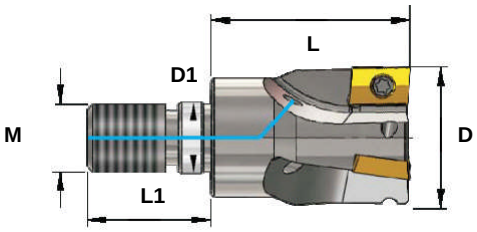
Machining example

2

Material:	AlMgSi1
Operation:	face milling
Machining center:	vertical
Adapter:	SK 40 MAS BT/JIS to shell mill adapter Ø 32 mm
Coolant:	8% emulsion
Tool:	2132 M W D100 5 / XPHX170540 FR ALU KTE20
D.O.C. / Ap:	2.5 mm
W.O.C. / Ae:	80.0 mm
Cutting speed Vc / revolutions n:	Vc = 450.0 m/min / n = 1433 r.p.m.
Feed rate fn and Vf:	fz = 0.25 mm and Vf = 1791 mm/min



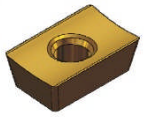
• 2134 Series



2134 Series

Ø 25.0 - 40.0 mm

modular screw connection

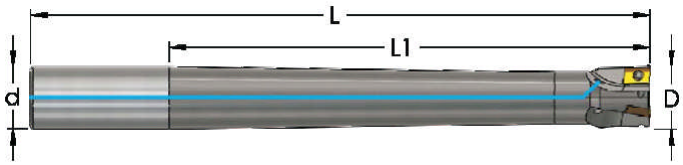


XPHX1705..FR ALU...

Article number	D	D1	L	L1	M	z
2134 E W D25	25	12.5	45	22	M12	2
2134 E W D32	32	17.0	52	24	M16	3
2134 E W D40	40	17.0	52	24	M16	3

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

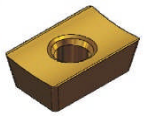
• 2136 Series



Article number	D	d	L	L1	z
2136 W WVXL D25	25	25	250	185	2
2136 W WVXL D32	32	32	263	193	3
2136 W WVXL D40	40	32	263	193	3

2136 Series

Ø 25.0 - 40.0 mm



XPHX1705..FR ALU...

• XPHX1705..FR ALU...

XPHX 170508 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX

XPHX 170512 FR ALU KTE20

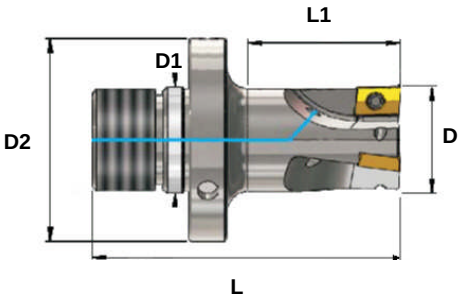
XPHX 170516 FR ALU KTE20

XPHX 170524 FR ALU KTE20

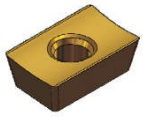
XPHX 170530 FR ALU KTE20

XPHX 170540 FR ALU KTE20

• 2138 Series



2138 Series
Ø 25.0 - 63.0 mm
modular screw connection
M24 x 1.5



XPHX1705..FR ALU…

Article number	D	D1	D2	L	L1	z
2138 E W D25	25	25	48	73	36	2
2138 E W D32	32	25	48	73	36	3
2138 E W D40	40	25	48	73	36	3
2138 E W D50	50	25	48	73		4
2138 E W D63 4	63	25	48	73		4
2138 E W D63 5	63	25	48	73		5

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20 / KTS20 / KZN20
4	KTE20 / KTS20 / KZN20 / DiaX
5	K10 / KTE20
6	K10 / KTE20 / KTS20 / KZN20
7	K10 / KTE20 / KTS20 / KZN20
8	K10 / KTE20 / DiaX
9	K10 / DiaX

• XPHX1705..FR ALU…

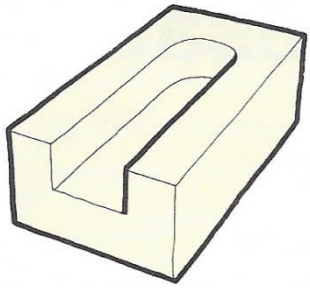
XPHX 170508 FR ALU K10 / KTS20 / KZN20 / KTE20 / DiaX
XPHX 170512 FR ALU KTE20
XPHX 170516 FR ALU KTE20
XPHX 170524 FR ALU KTE20
XPHX 170530 FR ALU KTE20
XPHX 170540 FR ALU KTE20

• Tool adapters

see 2118

Machining example

Material:	AlMgSi1 **6**
Operation:	full slot milling
Machining center:	vertical
Coolant:	SK 50 MAS BT/JIS to modular connection M 24 x 1.5
Coolant:	8% emulsion; 20 bar presure
Tool:	2138 E W D63 5 / XPHX170504 FR ALU KTS20
D.O.C. / Ap:	10.0 mm
W.O.C. / Ae:	63.0 mm
Cutting speed Vc / revolution n:	Vc = 140.0 m/min / n = 708 r.p.m.
Feed rate fn and Vf:	fz = 0.16 mm and Vf = 566 mm/min



Vc / fz / Ap • Initial cutting values insert tipped mills

1 **Vc = 120 - 500 m/min for K10 / KTE20**

XPHX 11T3.. FR ALU K10 Vc : 120 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 220 - 500 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 220 - 500 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

2 **Vc = 120 - 450 m/min for K10 / KTE20**

XPHX 11T3.. FR ALU K10 Vc : 120 - 300 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 300 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 220 - 450 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 220 - 450 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

3 **Vc = 120 - 350 m/min for K10 / KTE20 / KTS20 / KZN20**

XPHX 11T3.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KZN20 Vc : 200 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KZN20 Vc : 200 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

Vc / fz / Ap • Initial cutting values insert tipped mills

4 **Vc = 80 - 280 m/min for KTE20 / KTS20 / KZN20 / DiaX**

XPHX 11T3.. FR ALU KTE20 Vc : 100 - 120 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 100 - 120 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTS20 Vc : 80 - 100 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTS20 Vc : 80 - 100 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KZN20 Vc : 90 - 120 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KZN20 Vc : 90 - 120 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU DiaX Vc : 140 - 280 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU DiaX Vc : 140 - 280 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

5 **Vc = 120 - 400 m/min for K10 / KTE20**

XPHX 11T3.. FR ALU K10 Vc : 120 - 300 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 300 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 220 - 400 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 220 - 400 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

6

Vc = 120 - 350 m/min for K10 / KTE20 / KTS20 / KZN20

XPHX 11T3.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KZN20 Vc : 200 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KZN20 Vc : 200 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

7

Vc = 120 - 320 m/min for K10 / KTE20 / KTS20 / KZN20

XPHX 11T3.. FR ALU K10 Vc : 120 - 260 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 120 - 260 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 190 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 190 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTS20 Vc : 160 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KZN20 Vc : 200 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KZN20 Vc : 200 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

Vc / fz / Ap • Initial cutting values insert tipped mills

8 **Vc = 60 - 400 m/min for K10 / KTE20 / DiaX**

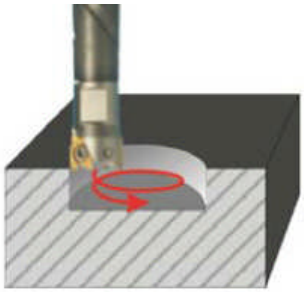
XPHX 11T3.. FR ALU K10 Vc : 60 - 140 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 60 - 140 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 70 - 160 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 70 - 160 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU DiaX Vc : 200 - 400 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU DiaX Vc : 200 - 400 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

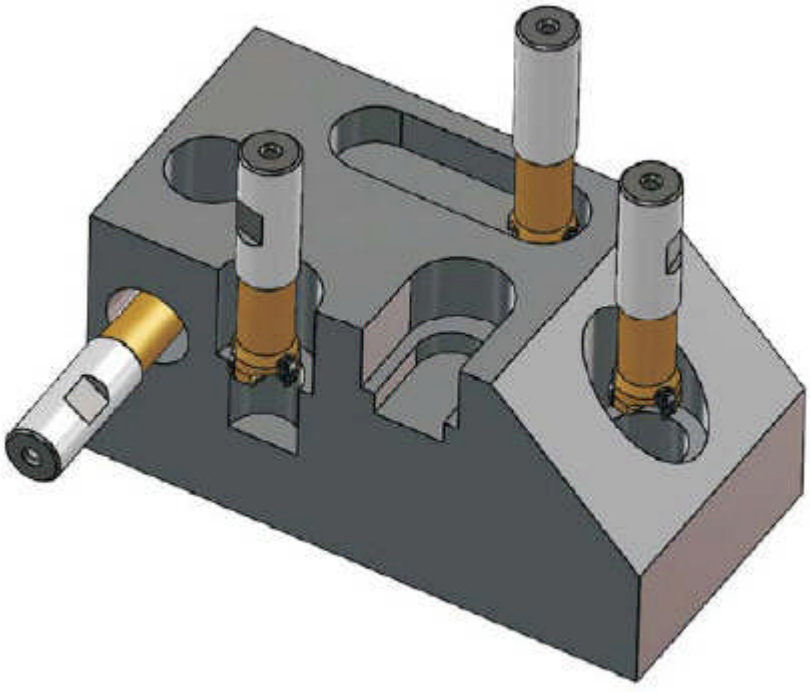
9 **Vc = 60 - 200 m/min for K10 / DiaX**

XPHX 11T3.. FR ALU K10 Vc : 60 - 90 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU K10 Vc : 60 - 90 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm
XPHX 11T3.. FR ALU DiaA Vc : 140 - 200 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 9.0 mm	XPHX 1705.. FR ALU DiaX Vc : 140 - 200 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 15.0 mm

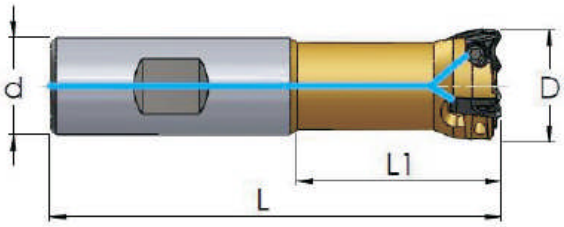
• Mill operations — Insert tipped tool types; 3D simultaneous, universal

Ø	16	-	30	shank	**5015-T…**	AC.X0607 en AC.X0910 K10 / KTE20
	14	-	38	modular	**5020-T…**	AC.X0607 en AC.X0910 K10 / KTE20
	35	-	50	hole adapter	**5025-T…**	AC.X0607 en AC.X0910 K10 / KTE20
	14	-	66	modular	**5026-T gedempt**	AC.X0607 en AC.X0910 K10 / KTE20





• 5015T Series



5015T Series

Ø 16.0 - 30.0 mm

Weldon DIN 6359 shank [h6]

ACHX 0607…

ACHX 0910…

Article number	D	d	Dmin/max	L	L1	z	Insert
5015T MHN 16 2 WW	16	16	20 / 30	90	45	2	ACHX0607
5015T MHN 23 3 WW	23	20	30 / 46	95	45	3	ACHX0910
5015T MHN 30 3 WW	30	25	44 / 60	100	50	3	ACHX0910

2	K10 / KTE20
3	K10 / KTE20
4	KTE20
6	K10 / KTE20

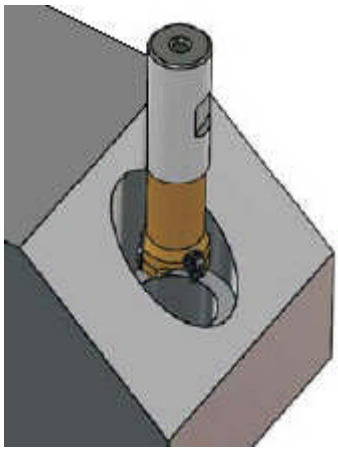
• ACHX 0607 / 0910…

ACHX 0607 K10

ACHX 0607 KTE20

ACHX 0910 K10

ACHX 0910 KTE20



Machining example

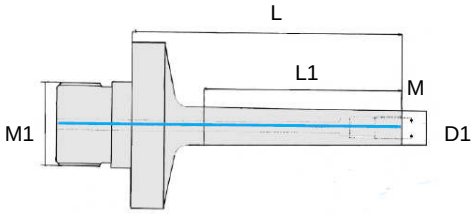
3

Material:	G AlSi5Cu4
Operation:	helicoil hole milling [Ø 40 mm]; inclined surface
Machining center:	vertical
Adapter:	SK40 MAS BT / JIS to Weldon chuck Ø 20 mm
Coolant:	8% emulsion; 15 bar presure
Tool:	5015T MHN 23 3 WW / ACHX 0910 KTE20
W.O.C. / Ae:	4.0 mm
Cutting speed Vc / revolutions n:	Vc = 320.0 m/min / n = 3185 r.p.m.
Feed rate fn and Vf:	fz = 0.15 mm and Vf = 1433 mm/min
Feed rate in z-axis:	factor k = 2.0 mm/rev.

• Tool adapters for 5118

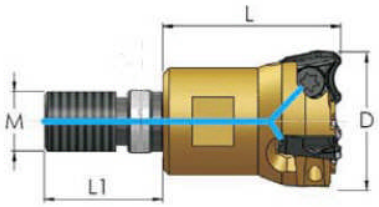
Spindel lay-out	Overhang	Connection	Order n°
SK40 DIN 69871 AD + B	35 mm	M24 x 1.5	LFA11
SK50 DIN 69871 AD + B	35 mm	M24 x 1.5	LFA12
SK40 MAS BT/JIS	25 mm	M24 x 1.5	LFA13
SK50 MAS BT/JIS	35 mm	M24 x 1.5	LFA14
HSK A 50 DIN 69893	65 mm	M24 x 1.5	LFHSK11
HSK A 63 DIN 69893	65 mm	M24 x 1.5	LFHSK12
HSK A 100 DI 69893	65 mm	M24 x 1.5	LFHSK13

• 5108 Series damped extension for 2114 / 2134



Article number	D1	M	M1	L	L1
5118 12 030 M6	10	M6	M24 x 1.5	52	30
5118 12 060 M6	10	M6	M24 x 1.5	82	60
5118 12 080 M6	10	M6	M24 x 1.5	102	80
5118 12 100 M6	10	M6	M24 x 1.5	122	100
5118 16 030 M8	13	M8	M24 x 1.5	52	30
5118 16 060 M8	13	M8	M24 x 1.5	82	60
5118 16 080 M8	13	M8	M24 x 1.5	102	80
5118 16 100 M8	13	M8	M24 x 1.5	122	100
5118 16 120 M8	13	M8	M24 x 1.5	142	120
5118 20 040 16 M10	16	M10	M24 x 1.5	62	40
5118 20 060 16 M10	16	M10	M24 x 1.5	82	60
5118 20 100 16 M10	16	M10	M24 x 1.5	122	100
5118 20 140 16 M10	16	M10	M24 x 1.5	162	140
5118 20 030 M10	18	M10	M24 x 1.5	52	30
5118 20 060 M10	18	M10	M24 x 1.5	82	60
5118 20 100 M10	18	M10	M24 x 1.5	122	100
5118 20 140 M10	18	M10	M24 x 1.5	162	140
5118 25 040 M12	21	M12	M24 x 1.5	62	40
5118 25 080 M12	21	M12	M24 x 1.5	102	80
5118 25 100 M12	21	M12	M24 x 1.5	122	100
5118 25 150 M12	21	M12	M24 x 1.5	172	150
5118 32 040 M16	29	M16	M24 x 1.5	62	40
5118 32 080 M16	29	M16	M24 x 1.5	102	80
5118 32 100 M16	29	M16	M24 x 1.5	122	100
5118 32 150 M16	29	M16	M24 x 1.5	172	150

• 5020T Series



5020T Series

Ø 14.0 - 38.0 mm

modular screw connection

ACHX 0607…

ACHX 0910…

Article number	D	M	Dmin/max	L	L1	z	Insert
5020T MHN 14 2 EW	14	M6	16 / 25	25	14.5	2	ACHX 0607
5020T MHN 16 3 EW	16	M8	20 / 30	25	17.0	2	ACHX 0607
5020T MHN 23 3 EW	23	M10	30 / 46	30	20.0	3	ACHX 0910
5020T MHN 30 3 EW	30	M12	44 / 60	35	22.0	3	ACHX 0910
5020T MHN 38 4 EW	38	M16	60 / 76	43	24.0	4	ACHX 0910

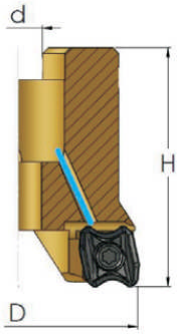
2 K10 / KTE20

3 K10 / KTE20

4 KTE20

6 K10 / KTE20

• 5020T Series



5025T Series

Ø 35.0 - 50.0 mm

DIN 6357 / 6358 hole adapter

ACHX 0910…

Article number	D	Dmin/max	d	H	z	Insert
5025T MHN 35 3 MW	35	54 / 70	16	40	3	ACHX 0910
5025T MHN 42 4 MW	42	68 / 84	16	40	4	ACHX 0910
5025T MHN 50 5 MW	50	84 / 100	22	40	5	ACHX 0910

• ACHX 0607 / 0910…

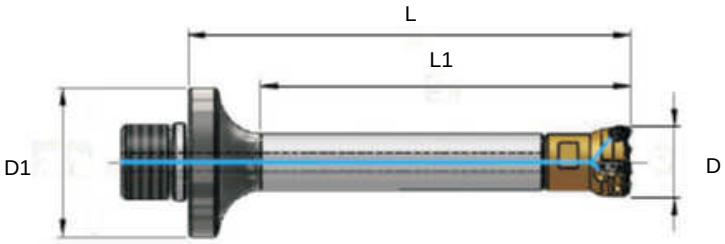
ACHX 0607 K10

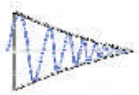
ACHX 0607 KTE20

ACHX 0910 K10

ACHX 0910 KTE20

• 5026T Series





5020T Series

Ø 14.0 - 38.0 mm

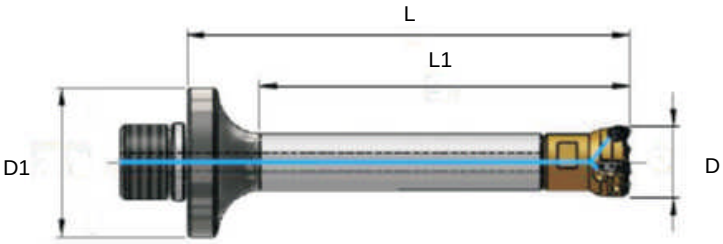
modular screw connection

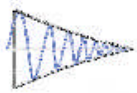
ACHX 0607… [Ø 14 – 18 mm]

ACHX 0910… [Ø 23 – 66 mm]

Article number	D	Dmin/max	D1	System	L	L1	SA	z
5026T MHN 14 2 1	14	16/25	48	D24	77	55	SK	2
5026T MHN 14 2 2	14	16/25	48	D24	107	85	SK	2
5026T MHN 14 2 3	14	16/25	48	D24	127	105	HK	2
5026T MHN 14 2 4	14	16/25	48	D24	147	125	HK	2
5026T MHN 16 2 1	14	20/30	48	D24	77	55	SK	2
5026T MHN 16 2 2	14	20/30	48	D24	107	85	SK	2
5026T MHN 16 2 3	14	20/30	48	D24	127	105	HK	2
5026T MHN 16 2 4	14	20/30	48	D24	147	125	HK	2
5026T MHN 18 3 1	18	24/34	48	D24	77	55	SK	3
5026T MHN 18 3 2	18	24/34	48	D24	107	85	SK	3
5026T MHN 18 3 3	18	24/34	48	D24	127	105	HK	3
5026T MHN 18 3 4	18	24/34	48	D24	147	125	HK	3
5026T MHN 23 3 1	23	30/46	48	D24	82	60	SK	3
5026T MHN 23 3 2	23	30/46	48	D24	112	90	SK	3
5026T MHN 23 3 3	23	30/46	48	D24	152	130	HK	3
5026T MHN 23 3 4	23	30/46	48	D24	192	170	HK	3
5026T MHN 30 3 1	30	44/60	48	D24	97	75	SK	3
5026T MHN 30 3 2	30	44/60	48	D24	137	115	SK	3
5026T MHN 30 3 3	30	44/60	48	D24	157	135	HK	3
5026T MHN 30 3 4	30	44/60	48	D24	207	185	HK	3
5026T MHN 38 4 1	38	60/76	48	D24	105	83	SK	4
5026T MHN 38 4 2	38	60/76	48	D24	145	123	SK	4
5026T MHN 38 4 3	38	60/76	48	D24	165	143	HK	4
5026T MHN 38 4 4	38	60/76	48	D24	215	193	HK	4
5026T MHN 44 5 1	44	72/88	48	D24	102	80	SK	5
5026T MHN 44 5 2	44	72/88	48	D24	145	120	SK	5
5026T MHN 44 5 3	44	72/88	48	D24	202	180	HK	5
5026T MHN 44 5 4	44	72/88	48	D24	242	220	HK	5
5026T MHN 50 6 1	50	84/100	48	D24	97	75	SK	6
5026T MHN 50 6 2	50	84/100	48	D24	147	125	SK	6
5026T MHN 50 6 3	50	84/100	48	D24	202	180	HK	6
5026T MHN 50 6 4	50	84/100	48	D24	272	250	HK	6

• 5026T Series





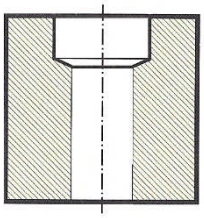
5020T Series
Ø 14.0 - 38.0 mm
modular screw connection

ACHX 0607… [Ø 14 – 18 mm]
ACHX 0910… [Ø 23 – 66 mm]

Article number	D	Dmin/max	D1	System	L	L1	SA	z
5026T MHN 58 6 1	58	100/116	48	D24	97	75	SK	6
5026T MHN 58 6 2	58	100/116	48	D24	147	125	SK	6
5026T MHN 58 6 3	58	100/116	48	D24	202	180	HK	6
5026T MHN 58 6 4	58	100/116	48	D24	272	250	HK	6
5026T MHN 66 8 2	66	116/132	75	D42	147	132	SK	8
5026T MHN 66 8 3	66	116/132	75	D42	202	198	HK	8
5026T MHN 66 8 4	66	116/132	75	D42	272	264	HK	8

• ACHX 0607 / 0910…

ACHX 0607 K10
ACHX 0607 KTE20
ACHX 0910 K10
ACHX 0910 KTE20



2	K10 / KTE20
3	K10 / KTE20
4	KTE20
6	K10 / KTE20

Machining example

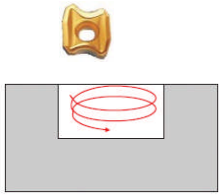
Material:	G AlSi10Mg 3
Operation:	hole milling [Ø 32 to Ø 42 x 50 deep mm] into solid material
Machining center:	vertical
Adapter:	HSK 63 A DIN 69893 to modular screw connection M24 x 1.5
Coolant:	8% emulsion; 40 bar presure
Tool:	5026T MHN 23 3 1/ ACHX 0910 KTE20
W.O.C. / Ae:	to 23.0 mm
Cutting speed Vc / revolutions n:	Vc = 220.0 m/min / n = 3046 r.p.m.
Feed rate fn and Vf:	fz = 0.15 mm and Vf = 1371 mm/min
Feed rate in z-axis:	factor k = 1.0 mm/rev.

Vc / fz • Initial cutting values insert tipped modular end mills

2

Vc = 120 - 250 m/min [AC.X... K10] | **Vc = 200 - 450 [AC.X... KTE20]**

D = 14 Fz: 0.06 - 0.15	**D = 16** Fz: 0.08 - 0.15	**D = 18** Fz: 0.10 - 0.17	**D = 23** Fz: 0.10 - 0.17	**D = 30** Fz: 0.10 - 0.20
D = 35 Fz: 0.10 - 0.22	**D = 38** Fz: 0.12 - 0.24	**D = 42** Fz: 0.12 - 0.24	**D = 44** Fz: 0.12 - 0.26	**D = 50** Fz: 0.12 - 0.30
D = 58 Fz: 0.12 - 0.32	**D = 66** Fz: 0.12 - 0.36			



• Initial values factor k in mm/rev. [z - axis movement/rev. in mm]

D = 14 k: 0.5 - 1.0	**D = 16** k: 0.5 - 1.0	**D = 18** k: 0.5 - 1.0	**D = 23** k: 0.5 - 1.25	**D = 30** k: 0.5 - 1.25
D = 35 k: 0.75 -1.5	**D = 38** k: 0.75 - 1.5	**D = 42** k: 1.0 - 1.75	**D = 44** k: 1.0 - 1.75	**D = 50** k: 1.0 - 1.75
D = 58 k: 1.0 -2.0	**D = 66** k: 1.0 - 2.0			

3 — **Fz / k as under 2**

Vc = 100 - 220 m/min [AC.X... K10] | **Vc = 180 - 340 [AC.X... KTE20]**

4 — **Fz / k as under 2**

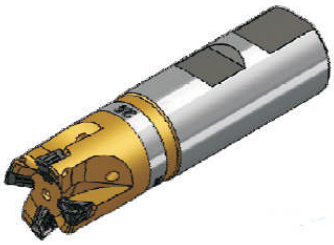
Vc = 70 - 100 m/min [AC.X... K10] | **Vc = 90 - 140 [AC.X... KTE20]**

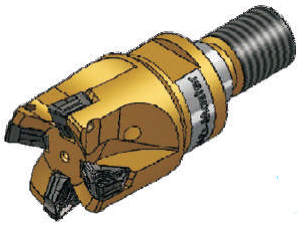
6 — **Fz / k as under 2**

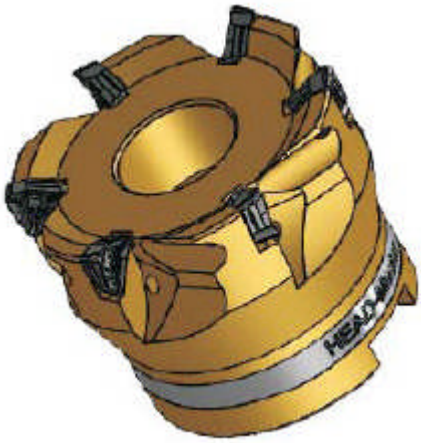
Vc = 100 - 220 m/min [AC.X... K10] | **Vc = 160 - 320 [AC.X... KTE20]**

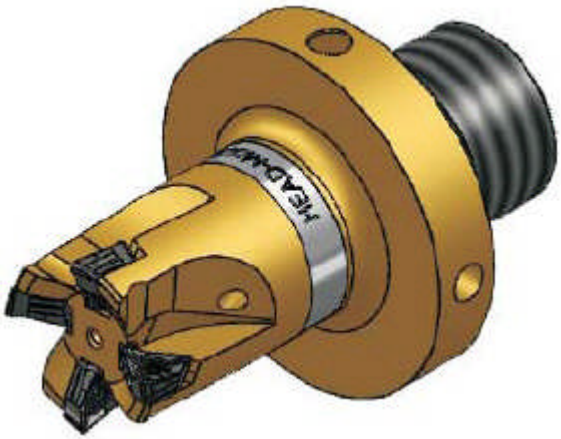
• Mill operations — Insert tipped tool types; 90° angle, mini, universal

Ø	18	-	40	shank	**1010TH…**	TPKT0803.. PDSR KTE20
	32	-	80	hole adapter	**1012TH…**	TPKT0803.. PDSR KTE20
	18	-	42	modular	**1014TH…**	TPKT0803.. PDSR KTE20
	18	-	42	shank	**1016TH damped**	TPKT0803.. PDSR KTE20
	18	-	63	modular	**1018TH…**	TPKT0803.. PDSR KTE20

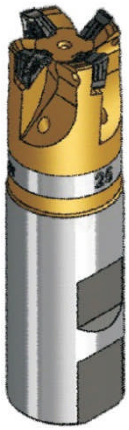


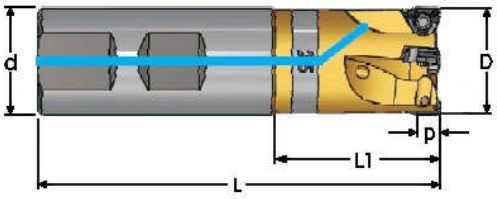






• 1010 TH Series





1010 TH Series

Ø 18.0 - 40.0 mm

Weldon DIN 6359 shank [h6]

TPKT0803… [Apmax = 4.0 mm]

Article number	D	d	L	L1	z		
1010TH W W D18	18	20	90	40	2	1	KTE20
1010TH W W L D18	18	20	150	40	2	2	KTE20
1010TH W W D20	20	20	90	40	3	3	KTE20
1010TH W W L D20	20	20	150	40	3	4	KTE20
1010TH W W D25	25	25	95	40	4	6	KTE20
1010TH W W L D25	25	25	150	40	4		
1010TH W W D32	32	25	95	40	5		
1010TH W W L D32	32	25	150	40	5		
1010 THW W D40	40	32	110	40	6		

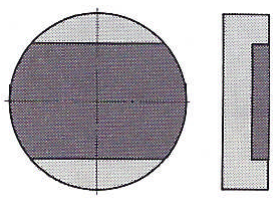
• TPKT0803…

TPKT 0803 PDSR KTE20

TPKT 080312 PDSR KTE20

TPKT 080316 PDSR KTE20

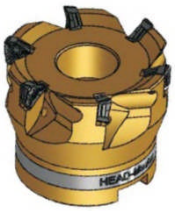
TPKT 080320 PDSR KTE20



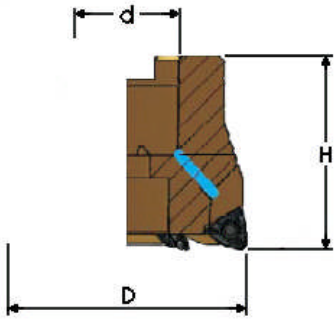
Machining example

4

Material:	G AlSi17Cu4
Operation:	full slot milling
Machining center:	horizontal
Adapter:	HSK 100 A to Weldon chuck Ø 32 mm
Coolant:	8% emulsion; 40 bar presure
Tool:	1010TH W W D40 / TPKT080312 PDSR KTE20
D.O.C. / Ap:	2 x 2.5 mm
W.O.C. / Ae:	40.0 mm
Cutting speed Vc / revolutions n:	Vc = 100.0 m/min / n = 796 r.p.m.
Feed rate fn and Vf:	fz = 0.2 mm and Vf = 955 mm/min



• 1012TH Series



1012 TH Series

Ø 32.0 - 80.0 mm

DIN 6357 / 6358 hole adapter

TPKT0803… [Apmax = 4.0 mm]

Article number	D	d	H	z
1012TH M W D32	32	16	40	5
1012TH M W D40	40	22	40	6
1012TH M W D50	50	22	40	6
1012TH M W D63	63	22	40	8
1012TH M W D80	80	27	50	10

1	KTE20
2	KTE20
3	KTE20
4	KTE20
6	KTE20

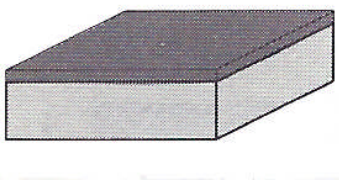
• TPKT0803…

TPKT 0803 PDSR KTE20

TPKT 080312 PDSR KTE20

TPKT 080316 PDSR KTE20

TPKT 080320 PDSR KTE20

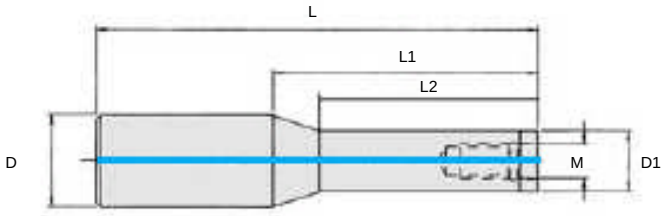


Machining example

6

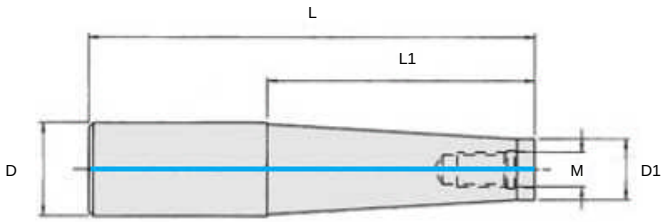
Material:	CuZn39Pb2
Operation:	face milling
Machining center:	vertical
Adapter:	HSK 63 A to DIN 6357
Coolant:	8% emulsion; 20 bar presure
Tool:	1012TH M W D80 / TPKT080320 PDSR KTE20
D.O.C. / Ap:	2.0 mm
W.O.C. / Ae:	50.0 mm
Cutting speed Vc / revolutions n:	Vc = 280.0 m/min / n = 1115 r.p.m.
Feed rate fn and Vf:	fz = 0.25 mm and Vf = 2788 mm/min

• 5112 Series damped extentions for 1014 TH



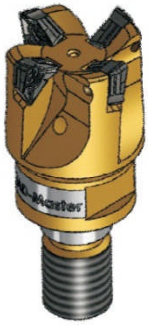
Article number	D	D1	L	L1	L2	M
5112 16 025S M8	16	13	80	30	25	M8
5112 16 070L M8	16	13	125	75	70	M8
5112 20 045S 16 M10	20	16	100	50	45	M10
5112 20 075L 16 M10	20	16	130	80	75	M10
5112 20 045S M10	20	18	100	50	45	M10
5112 20 075L M10	20	18	130	80	75	M10
5112 25 045S M12	25	21	105	50	45	M12
5112 25 075L M12	25	21	135	80	75	M12

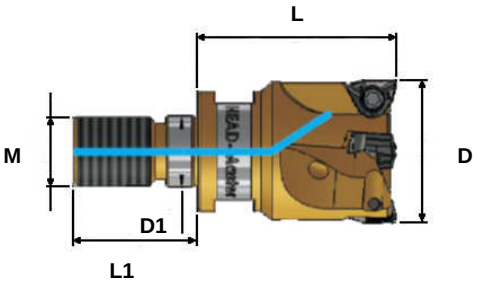
• 5108 Series damped extensions for 1014 TH



Article number	D	D1	L	L1	M
5108 16 080 M8	16	13	135	80	M8
5108 16 100 M8	16	13	155	100	M8
5108 16 120 M8	16	13	175	120	M8
5108 20 100 16 M10	20	16	160	100	M10
5108 20 140 16 M10	20	16	200	140	M10
5108 20 100 M10	20	18	160	100	M10
5108 20 140 M10	20	18	200	140	M10
5108 25 100 M12	25	21	165	100	M12
5108 25 150 M12	25	21	215	150	M12
5108 32 100 M16	32	29	170	100	M16
5108 32 150 M16	32	29	220	150	M16

• 1014 TH Series





1014 TH Series

Ø 18.0 - 42.0 mm

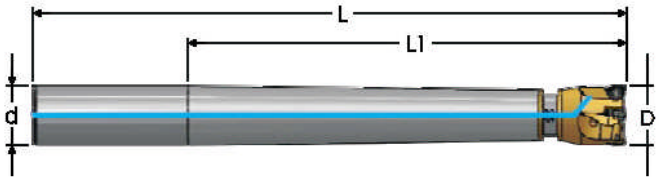
modular screw connection

TPKT 0803… [Apmax = 4.0 mm]

Article number	D	D1	L	L1	M	z
1014 E W D18	18	8.5	30	20	M8	2
1014 E W D20	20	10.5	30	20	M10	3
1014 E W D25	25	12.5	35	22	M12	4
1014 E W D32	32	17.0	43	24	M16	5
1014 E W D42	42	17.0	68	24	M16	6

1	KTE20
2	KTE20
3	KTE20
4	KTE20
6	KTE20

• 1016 TH Series



1016 TH Series

Ø 18.0 - 42.0 mm

TPKT 0803… [Apmax = 4.0 mm]

Article number	D	d	L	L1	z
1016 TH W WXL D18	18	16	195	140	2
1016 TH W WXL D20	20	20	230	170	3
1016 TH W WXL D25	25	25	250	185	4
1016 TH W WXL D32	32	32	265	195	5
1016 TH W WXL D42	42	32	288	218	6

• TPKT0803…

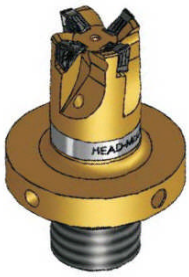
TPKT 0803 PDSR KTE20

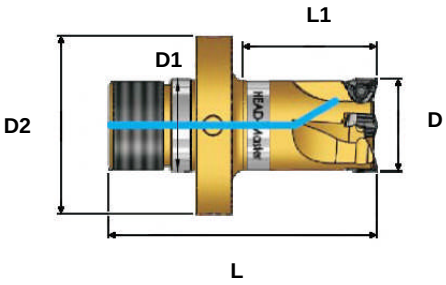
TPKT 080312 PDSR KTE20

TPKT 080316 PDSR KTE20

TPKT 080320 PDSR KTE20

• 1018 TH Series





1018 TH Series
Ø 18.0 - 63.0 mm
modular screw connection
M24 x 1.5

TPKT 0803… [Apmax = 4.0 mm]

Article number	D	D1	D2	L	L1	z		
1018 TH E W D18	18	25	48	73	23	2	2	KTE20
1018 TH E W D20	20	25	48	73	23	3		
1018 TH E W D25	25	25	48	73	23	4	3	KTE20
1018 TH E W D32	32	25	48	73	23	5		
1018 TH E W D40	40	25	48	73	23	6	4	KTE20
1018 TH E W D50	50	25	48	73	23	6	6	KTE20
1018 TH E W D63	63	25	48	73	23	8		

• TPKT0803…

TPKT 0803 PDSR KTE20
TPKT 080312 PDSR KTE20
TPKT 080316 PDSR KTE20
TPKT 080320 PDSR KTE20

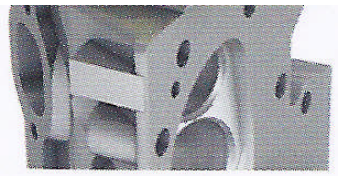
• Tool adapters

see 2118

Machining example

4

Material:	G AlSi17Cu4
Operation:	face milling
Machining center:	horizontal
Adapter:	HSK 63 A to modular screw connection M 24 x 1.5
Coolant:	8% emulsion; 40 bar presure
Tool:	1018 TH E W D63 / TPKT 080320 PDSR ALU KTE20
D.O.C. / Ap:	2.5 to 3.0 mm
W.O.C. / Ae:	to 63.0 mm
Cutting speed Vc / revolutions n:	Vc = 120.0 m/min / n = 606 r.p.m.
Feed rate fn and Vf:	fz = 0.16 mm and Vf = 776 mm/min



Vc / fz / Ap • Initial cutting values insert tipped mini end mills

1	Vc = 120 - 500 m/min	
	TPKT 0803.. PDSR KTE20 fz : 0.08 - 0.14 mm/t Ap :0.25 - 4.0 mm 	
2	Vc = 120 - 450 m/min	Ap / fz as under 1
3	Vc = 120 - 350 m/min	Ap / fz as under 1
4	Vc = 80 - 140 m/min	Ap / fz as under 1
6	Vc = 120 - 350 m/min	Ap / fz as under 1

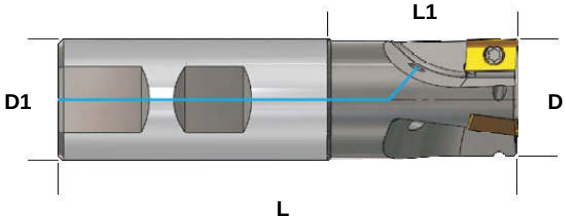
• Mill operations

Insert tipped tool types; 90° angle

aluminium

Ø	9,7	- 40	shank	**1030…**	APHX1003.. ALU K10 / KTE20
	32	- 100	hole adapter	**1035…**	APHX1003.. ALU K10 / KTE20
	20	- 40	rough end mill	**1095WW…**	APHX1003.. ALU K10 / KTE20
	40		hole adapter	**1095MW…**	APHX1003.. ALU K10 / KTE20
	9,7	- 32	modular	**1040EW…**	APHX1003.. ALU K10 / KTE20
	9,7	- 32	shank	**1045WW…**	APHX1003.. ALU K10 / KTE20
	22	- 40	shank	**1055…**	APHX1604.. FR ALU K10 / KTE20
	40	- 160	hole adapter	**1060…**	APHX1604.. FR ALU K10 / KTE20
	25	- 40	rough end mill	**1105WW…**	APHX1604.. FR ALU K10 / KTE20
	50	- 100	hole adapter	**1110MW…**	APHX1604.. FR ALU K10 / KTE20

• 1030 Series



1030 Series

Ø 9.7 - 40.0 mm

Weldon DIN 6359 schank [h6]

APHX 1003.. ALU…

Article number	D	D1	L	L1	z
1030 W W D9.7	9.7	16	80	24	1
1030 W W D10	10	16	80	24	1
1030 W W L D10	10	16	150	24	1
1030 W W D11.7	11.7	16	80	24	1
1030 W W D12	12	16	80	24	1
1030 W W L D12	12	16	150	24	1
1030 W W D14	14	16	80	24	1
1030 W W D15.7	15.7	16	80	25	2
1030 W W D16	16	16	80	25	2
1030 W W L D16	16	16	150	25	2
1030 W W D18	18	20	80	25	2
1030 W W D19.7	19.7	20	90	25	3
1030 W W D20	20	20	90	25	3
1030 W W L D20	20	20	150	25	3
1030 W W D22	22	25	95	25	3
1030 W W D24.7	24.7	25	95	25	4
1030 W W D25	25	25	95	25	4
1030 W W L D25	25	25	150	25	4
1030 W W D28	28	25	95	25	4
1030 W W D30	30	25	95	25	4
1030 W W D31.7	31.7	25	95	26	5
1030 W W D32	32	25	95	26	5
1030 W W L D32	32	25	150	26	5
1030 W W D40	40	32	110	26	6

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10

• APHX 1003.. ALU…

APHX 100304 ALU K10 / KTE20

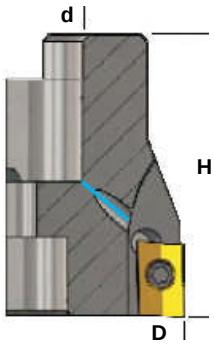
APHX 100308 ALU KTE20

APHX 100312 ALU KTE20

APHX 100316 ALU KTE20

APHX 100320 ALU KTE20

• 1035 Series



1035 Series

Ø 32.0 - 100.0 mm

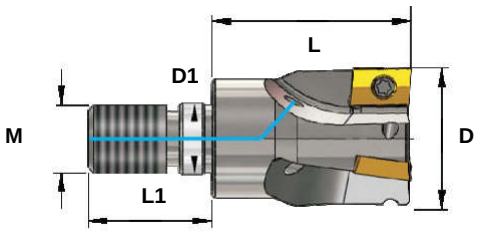
DIN 6357 / 6358 hole adapter

APHX 1003.. ALU…

Article number	D	d	H	z
1035 M W D32	32	16	40	5
1035 M W D40	40	22	40	6
1035 M W D50	50	22	40	7
1035 M W D63	63	22	40	8
1035 M W D80	80	27	50	11
1035 M W D100	100	32	50	13

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10

• 1040 Series



1040 Series

Ø 9.7.0 - 32.0 mm

modular screw connection

APHX 1003.. ALU…

Article number	D	D1	M	L	L1	z
1040 E W D9.7 1	9.7	6.5	M6	20	14.5	1
1040 E W D10 1	10	6.5	M6	20	14.5	1
1040 E W D11.7 1	11.7	6.5	M6	20	14.5	1
1040 E W D12 1	12	6.5	M6	20	14.5	1
1040 E W D15.7 2	15.7	8.5	M8	25	17.5	2
1040 E W D16 2	16	8.5	M8	25	17.5	2
1040 E W D19.7 3	19.7	10.5	M10	30	20	3
1040 E W D20 3	20	10.5	M10	30	20	3
1040 E W D24.7 4	24.7	12.5	M12	35	22	4
1040 E W D25 4	25	12.5	M12	35	22	4
1040 E W 31.7 5	31.7	17.0	M16	43	24	5
1040 E W D32 5	32	17.0	M16	43	24	5

• APHX 1003.. ALU…

APHX 100304 ALU K10 / KTE20

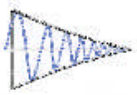
APHX 100308 ALU KTE20

APHX 100312 ALU KTE20

APHX 100316 ALU KTE20

APHX 100320 ALU KTE20

• 1045 Series



1045 Series

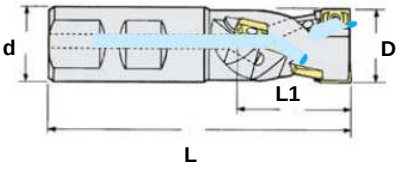
Ø 9.7 - 32.0 mm

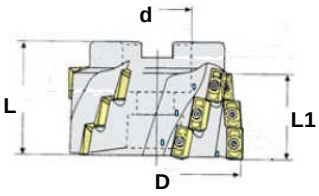
APHX 1003 ALU…

Article number	D	d	L	L1	z
1045 W WXL D9.7 1	9.7	10	155	80	1
1045 W WXL D10 1	10	10	155	80	1
1045 W WXL D11.7 1	11.7	12	175	120	1
1045 W WXL D12 1	12	12	175	120	1
1045 W WXL D15.7 2	15.7	16	200	145	2
1045 W WXL D16 2	16	16	200	145	2
1045 W WXL D19.7 3	19.7	20	230	170	3
1045 W WXL D20 3	20	20	230	170	3
1045 W WXL D24.7 4	24.7	25	250	185	4
1045 W WXL D25 4	25	25	250	185	4
1045 W WXL D31.7 5	31.7	32	265	195	5
1045 W WXL D32 5	32	32	265	195	5

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10

• 1095 WW / MW Series





1095 WW / MW Series

Ø 20.0 - 40.0 mm

Weldon DIN 6359 chuck [h6]

DIN 6357 / 6358 hole adapter

APHX 1003.. ALU…

Article number	D	d	L	L1	zeff
1095 W W D20	20	20	86	28	1
1095 W W D25	25	25	100	36	2
1095 W W D32	32	32	120	45	3
1095 W W D40	40	32	130	54	3
1095 M W D40	40	16	52	38	3

• APHX 1003.. ALU…

APHX 100304 ALU K10 / KTE20

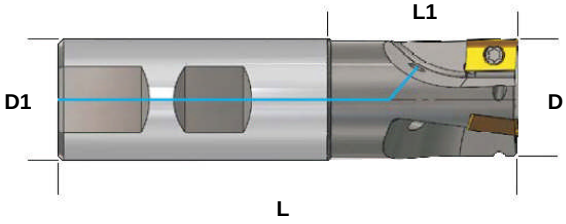
APHX 100308 ALU KTE20

APHX 100312 ALU KTE20

APHX 100316 ALU KTE20

APHX 100320 ALU KTE20

• 1055 Series



1055 Series

Ø22.0 - 40.0 mm

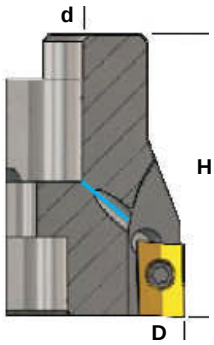
Weldon DIN 6359 shank [h6]

APHX 1604 FR ALU…

Article number	D	D1	L	L1	z
1055 W WL D22	22	20	200	60	2
1055 W W D25	25	25	100	44	2
1055 W WL D25	25	25	200	60	2
1055 W W D30	30	25	110	50	3
1055 W W D32	32	32	110	50	3
1055 W WL D32	32	32	200	60	3
1055 W W D40	40	32	115	45	4

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10

• 1060 Series



1060 Series

Ø 40.0 - 160.0 mm

DIN 6357 / 6358 hole adapter

APHX 1604.. FR ALU…

Article number	D	d	H	z
1060 M W D40	40	16	40	4
1060 M W D50	50	22	40	5
1060 M W D63	63	22	40	6
1060 M W D80	80	27	50	7
1060 M W D100	100	32	50	8
1060 M W D125	125	40	63	9
1060 M W D160	160	40	63	10

• APHX 1604FR ALU…

APHX 1604 FR ALU K10 / KTE20

APHX 160412 FR ALU KTE20

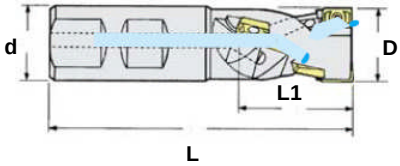
APHX 160416 FR ALU KTE20

APHX 160424 FR ALU KTE20

APHX 160430 FR ALU KTE20

APHX 160440 FR ALU KTE20

• 1105 Series



1105 Series

Ø 25.0 - 40.0 mm

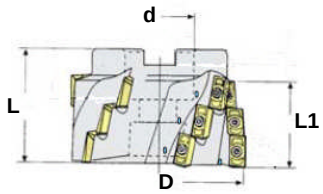
Weldon DIN 6359 chuck [h6]

APHX 1604.. FR ALU…

Article number	D	d	L	L1	z
1105 W W D25	25	25	105	29	1
1105 W W D32	32	32	115	44	2
1105 W W D40	40	32	130	58	2

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10

• 1110 Series



1110 WW / MW Series

Ø 50.0 - 100.0 mm

DIN 6357 / 6358 hole adapter

APHX 1604..FR ALU…

Article number	D	d	L	L1	zeff
1110 M W D50	50	22	50	30	2
1110 M W D63	63	27	60	44	3
1110 M W D80	80	32	60	44	3
1110 M W D100	100	40	60	44	3

• APHX 1604FR ALU…

APHX 1604 FR ALU K10 / KTE20

APHX 160412 FR ALU KTE20

APHX 160416 FR ALU KTE20

APHX 160424 FR ALU KTE20

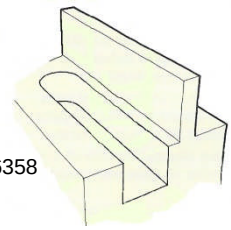
APHX 160430 FR ALU KTE20

APHX 160440 FR ALU KTE20

Machining example

4

Material:	G AlSi21CuNiMg
Operation:	side - and full slot milling
Machining center:	horizontal
Adapter:	HSK 100 A to shell mill adapter DIN 6358
Coolant:	8% emulsion; 40 bar presure
Tool:	1110 M W D63 / APHX 1604 FR ALU KTE20
D.O.C. / Ap:	20.0 [into solid material] to 32 mm [side]
W.O.C. / Ae:	4.0 [into solid material] to 63 mm [side]
Cutting speed Vc / revolutions n:	Vc = 90.0 m/min / n = 455 r.p.m.
Feed rate fn and Vf:	fz = 0.14 mm and Vf = 191 mm/min



Vc / fz / Ap • Initial cutting values insert tipped end mills

1 **Vc = 120 - 500 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 220 - 500 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 220 - 500 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

2 **Vc = 120 - 450 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 300 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 300 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 220 - 450 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 220 - 450 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

3 **Vc = 120 - 350 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 250 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 220 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

4 **Vc = 60 - 120 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 60 - 80 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 60 - 80 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 80 - 120 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 80 - 120 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

Vc / fz / Ap • Initial cutting values insert tipped end mills

5 **Vc = 120 - 350 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 250 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 220 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

6 **Vc = 120 - 350 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 250 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 250 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 220 - 350 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 220 - 350 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

7 **Vc = 120 - 320 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 120 - 260 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 120 - 260 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
XPHX 11T3.. FR ALU KTE20 Vc : 190 - 320 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	XPHX 1705.. FR ALU KTE20 Vc : 190 - 320 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

8 **Vc = 60 - 160 m/min for K10 / KTE20**

APHX 1003.. ALU K10 Vc : 60 - 140 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 60 - 140 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 70 - 160 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU KTE20 Vc : 70 - 160 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

9

Vc = 40 - 90 m/min for K10 / KTE20

APHX 1003.. ALU K10 Vc : 40 - 70 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1604.. FR ALU K10 Vc : 40 - 70 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm
APHX 1003.. ALU KTE20 Vc : 60 - 90 m/min fz : 0.08 - 0.20 mm/t Ap :0.25 - 8.0 mm	APHX 1605.. FR ALU KTE20 Vc : 60 - 90 m/min fz : 0.10 - 0.24 mm/t Ap :0.50 - 14.0 mm

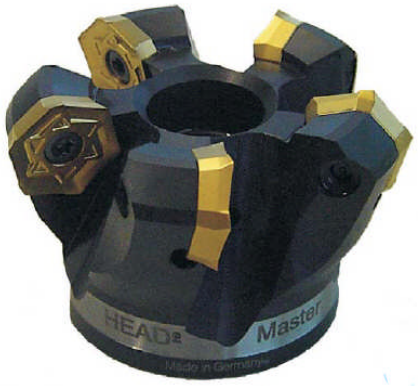
• Mill operations

Insert tipped tool types; face mill 43° universal

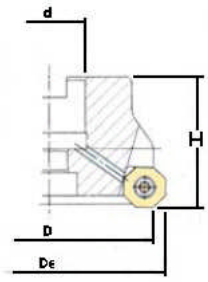
Ø	32	- 125	hole adapter	**1064…**	OFMT 05T305 PTE35

Insert tipped tool types; face mill 45°, aluminium

Ø	40	- 315	hole adapter	**2060…**	HPKT0704 AZR SM K10 / KTE20
	40	- 200	hole adapter	**1070…**	SEHT 1204 AF ALU K10 / KTE20
	32	- 100	hole adapter	**1072…**	SDHT 09T3 FR ALU K10 / KTE20
	50	- 200	hole adapter	**1075…**	SDHT 1204 FR ALU K10 / KTE20



• 1064 Series



1064 Series

Ø 32.0 - 125.0 mm

DIN 6357 / 6358 hole adapter

OFMT 05T305 …

Article number	D	De	d	H	z
1064 M W D32	32	39	16	40	3
1064 M W D40	40	47	16	40	3
1064 M W D50	50	57	22	40	4
1064 M W D63	63	70	22	40	5
1064 M W D80	80	87	27	50	6
1064 M W D100	100	107	32	50	7
1064 M W D125	125	132	40	63	8

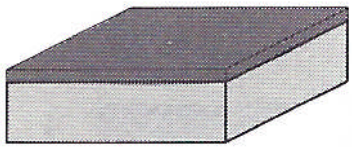
1	PTE35
2	PTE35
3	PTE35
4	PTE35
5	PTE35
6	PTE35
7	PTE35
8	PTE35
9	PTE35

• OFMT 05T305 …

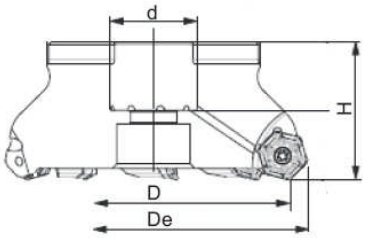
OFMT 05T305 PTE35

Machining example

Material:	G CuSn6ZnNi 7
Operation:	face milling
Machining center:	vertical
Adapter:	SK 40 MAS BT/JIS to shell mill adapter Ø 32 mm
Coolant:	8% emulsion
Tool:	1064 M W D100 / OFMT 05T305 PTE35
D.O.C. / Ap:	2.0 mm
W.O.C. / Ae:	60.0 mm
Cutting speed Vc / revolutions n:	Vc = 160.0 m/min / n = 510 r.p.m.
Feed rate fn and Vf:	fz = 0.22 mm and Vf = 785 mm/min



• 2060 Series



2060 Series

Ø 40.0 - 160.0 mm

DIN 6357 / 6358 hole adapter

HPKT 0704 AZR SM …

Article number	D	De	d	H	z
2060 M W D40	40	55	16	45	4
2060 M W D50	50	65	22	45	5
2060 M W D63	63	78	22	45	6
2060 M W D80	80	95	27	50	7
2060 M W D100	100	115	32	50	8
2060 M W D125	125	140	40	63	10
2060 M W D160	160	175	40	63	12

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	K10 / KTE20
6	K10 / KTE20

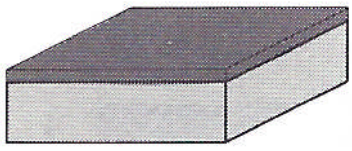
• HPKT 0704 AZR SM …

HPKT 0704 AZR SM K10 / KTE20

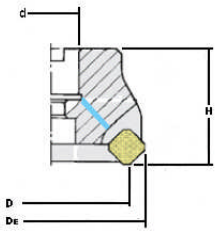
Machining example

2

Material:	G AlMg3
Operation:	face milling
Mchining center:	vertical
Adapter:	SK 50 MAS BT/JIS to shell mill adapter Ø 40 mm
Coolant:	8% emulsion
Tool:	2060 M W D160 / HPKT 0704 AZR SM KTE20
D.O.C. / Ap:	2.0 mm
W.O.C. / Ae:	90.0 mm
Cutting speed Vc / revolutions n:	Vc = 450.0 m/min / n = 896 r.p.m.
Feed rate fn and Vf:	fz = 0.3 mm and Vf = 3226 mm/min



• 1072 Series



1072 Series

Ø 32.0 - 100.0 mm

DIN 6357 / 6358 hole adapter

SDHT 09T3 FR ALU …

Article number	D	De	d	H	z
1072 M W D32	32	40.5	16	40	4
1072 M W D40	40	48.5	16	40	6
1072 M W D50	50	58.5	22	40	8
1072 M W D63	63	71.5	22	40	8
1072 M W D80	80	88.5	27	50	10
1072 M W D100	100	108.5	32	50	12

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	K10 / KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10 / KTE20

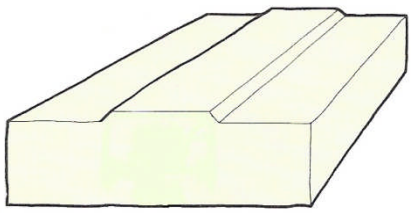
• SDHT 09T3 FR ALU …

SDHT 09T3 FR ALU K10 / KTE20

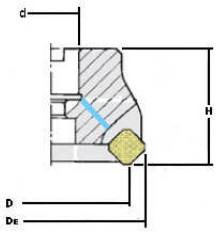
Machining example

3

Material:	G AlSi12Cu
Operation:	face milling
Machining center:	vertical
Adapter:	HSK 63 A to shell mill adapter Ø 32 mm
Coolant:	8% emulsion
Tool:	1072 M W D100 / SDHT 09T3 FR ALU KTE20
D.O.C. / Ap:	1.5 mm
W.O.C. / Ae:	75.0 mm
Cutting speed Vc / revolutions n:	Vc = 280.0 m/min / n = 892 r.p.m.
Feed rate fn and Vf:	fz = 0.2 mm and Vf = 2141 mm/min



• 1075 Series



1075 Series

Ø 50.0 - 200.0 mm

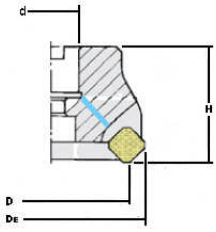
DIN 6357 / 6358 hole adapter

SDHT 1204 FR ALU …

Article number	D	De	d	H	z
1075 M W D50	50	63	22	48	4
1075 M W D63	63	76	22	48	5
1075 M W D80	80	93	27	50	6
1075 M W D100	100	113	32	50	6
1075 M W D125	125	138	40	63	7
1075 M W D160	160	173	40	63	8
1075 M W D200	200	213	60	63	12

1	K10 / KTE20
2	K10 / KTE20
3	K10 / KTE20
4	K10 / KTE20
5	K10 / KTE20
6	K10 / KTE20
7	K10 / KTE20
8	K10 / KTE20
9	K10 / KTE20

• 1070 Series



Article number	D	De	d	H	z
1070 M W D40	40	53	16	40	3
1070 M W D50	50	63	22	48	4
1070 M W D63	63	76	22	48	5
1070 M W D80	80	93	27	50	6
1070 M W D100	100	113	32	50	6
1070 M W D125	125	138	40	63	7
1070 M W D160	160	173	40	63	8
1070 M W D200	200	213	60	63	12

1070 Series

Ø 40.0 - 200.0 mm

DIN 6357 / 6358 hole adapter

SEHT 1204 AF ALU …

• SDHT 12T3 FR ALU … en

SEHT 1204 AF ALU …

SDHT 12T3 FR ALU K10 / KTE20 en SEHT 1204 AF ALU K10 / KTE20

Vc / fz / Ap • Initial cutting values insert tipped face mills

1 **Vc = 120 - 500 m/min for K10 / KTE20 / PTE35**

OFMT 05T305 PTE35 Vc : 200 - 400 fz : 0.12 - 0.25 Ap :0.2 - 3.0 	HPKT 0704 AZR SM K10 Vc : 120 - 350 fz : 0.10 - 0.25 Ap :0.2 - 4.0 	HPKT 0704 AZR SM KTE20 Vc : 200 - 500 fz : 0.12 - 0.25 Ap :0.4 - 4.0 
SEHT 1204 AF ALU K10 Vc : 120 - 350 fz : 0.10 - 0.25 Ap :0.2 - 5.0 	SEHT 1204 AF ALU KTE20 Vc : 200 - 500 fz : 0.12 - 0.25 Ap :0.4 - 5.0 	SDHT 09T3 FR ALU K10 Vc : 120 - 350 fz : 0.10 - 0.25 Ap :0.2 - 3.0 
SDHT 09T3 FR ALU KTE20 Vc : 200 - 500 fz : 0.12 - 0.25 Ap :0.4 - 3.0 	SDHT 1204 FR ALU K10 Vc : 120 - 350 fz : 0.10 - 0.25 Ap :0.2 - 5.0 	SDHT 1204 FR ALU K10 Vc : 200 - 500 fz : 0.12 - 0.25 Ap :0.4 - 5.0 

2	**Vc = 120 - 300 m/min for K10** **Vc = 180 - 350 m/min for PTE35** **Vc = 180 - 450 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**
3	**Vc = 100 - 250 m/min for K10** **Vc = 160 - 300 m/min for PTE35** **Vc = 160 - 400 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**
4	**Vc = 60 - 90 m/min for K10** **Vc = 70 - 110 m/min for PTE35** **Vc = 70 - 120 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**
5	**Vc = 120 - 260 m/min for K10** **Vc = 140 - 320 for PTE35** **Vc = 140 - 350 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**
6	**Vc = 100 - 220 m/min for K10** **Vc = 120 - 300 for PTE35** **Vc = 120 - 320 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**
7	**Vc = 120 - 180 m/min for K10** **Vc = 140 - 300 for PTE35** **Vc = 140 - 320 m/min for KTE20**	**Ap and fz** **as under 1** **per insert type**

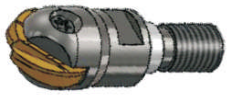
Vc / fz / Ap • Initial cutting values insert tipped face mills

8	Vc = 60 - 90 m/min for K10 Vc = 80 - 140 m/min for PTE35 Vc = 80 - 160 m/min for KTE20	Ap and fz as under 1 per insert type
9	Vc = 40 - 50 m/min for K10 Vc = 50 - 80 m/min for PTE35 Vc = 50 - 90 m/min for KTE20	Ap and fz as under 1 per insert type

• Mill operations

Insert tipped tool types; 3D simultaneous miscellaneous

Ø 52	-	80	hole adapter	**5010MW…**	TOKX 160440 KTE20
25	-	35	shank	**5012WW…**	SDLX 10T3.. / 1304.. SM KTE20
25	-	35	modular	**5013EW…**	SDLX 10T3.. / 1304.. SM KTE20
32	-	100	hole adapter	**5014MW…**	SDLX 10T3.. / 1304.. SM KTE20
8	-	32	shank damped	**5026WW…**	M-RD / M-RK / M-RH KTE20
8	-	32	shank damped	**5027WW…**	M-RD / M-RK / M-RH KTE20
8	-	32	modular	**5028EW…**	M-RD / M-RK / M-RH KTE20
10	-	35	modular	**5030EW…**	RDHX / RDLT …. MOT / MOS K10/KTE20
35	-	160	hole adapter	**5035MW…**	RDHX / RDLT …. MOT / MOS K10/KTE20
10	-	25	shank	**5040WW…**	RDHX / RDLT …. MOT / MOS K10/KTE20



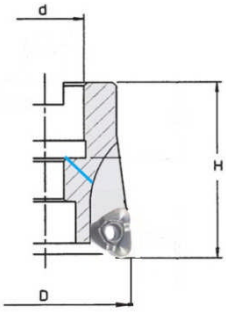








• 5010 Series [fz high feed rate]



5010 Series

Ø 52.0 - 80.0 mm

DIN 6357 / 6358 hole adapter

TOKX 160440 …

Article number	D	d	H	z
2060 M W D40	40	55	16	45
2060 M W D50	50	65	22	45
2060 M W D63	63	78	22	45
2060 M W D80	80	95	27	50
2060 M W D100	100	115	32	50
2060 M W D125	125	140	40	63
2060 M W D160	160	175	40	63

2 KTE20

3 KTE20

4 KTE20

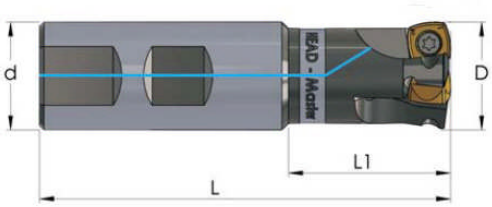
6 KTE20

8 KTE20

• TOKX 160440 …

TOKX 160440 KTE20

• 5012 Series [fz = high feed rate]



5012 Series

Ø 25.0 - 35.0 mm

Weldon DIN 6359 chuck

SDLX 10T308 SM [Apmax = 1]

SDLX 130410 SM [Apmax = 2]

Article number	D	d	L	L1	z	insert
5012 W W D25 2	25	25	225	50	2	SDLX 10…
5012 W W D25 3	25	25	225	50	3	SDLX 10…
5012 W W D32 2	32	32	250	63	2	SDLX 10…
5012 W W D32 3	32	32	250	63	3	SDLX 13…
5012 W W D35 3	35	32	250	63	3	SDLX 13…

2 KTE20

3 KTE20

4 KTE20

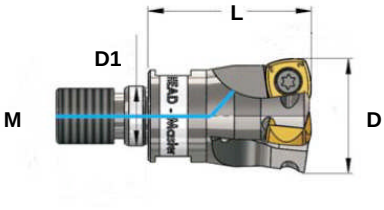
6 KTE20

8 KTE20

• SDLX 10T308 / 130410 SM …

SDLX 10T308 SM KTE20 en SDLX 130410 SM KTE20

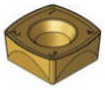
• 5013 Series [fz = high feed rate]



5010 Series

Ø 25.0 - 35.0 mm

modular screw connection



SDLX 10T308 SM [Apmax = 1]

SDLX 130410 SM [Apmax = 2]

Article number	D	D1	L	M	z	insert
5013 E W D25 2	25	12.5	35	M12	2	SDLX 10…
5013 E W D25 3	25	12.5	35	M12	3	SDLX 10…
5013 E W D32 2	32	17.0	35	M16	2	SDLX 10…
5013 E W D32 3	32	17.0	35	M16	3	SDLX 13…
5013 E W D35 3	35	17.0	35	M16	3	SDLX 13…

2 KTE20

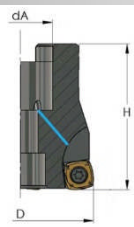
3 KTE20

4 KTE20

6 KTE20

8 KTE20

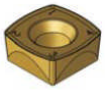
• 5014 Series [fz = high feed rate]



5014 Series

Ø 32.0 - 100.0 mm

DIN 6357 / 6358 hole adapter



SDLX 10T308 SM [Apmax = 1]

SDLX 130410 SM [Apmax = 2]

Article number	D	dA	H	z	insert
5014 M W D32 3	32	16	40	3	SDLX 10…
5014 M W D35 4	35	16	40	4	SDLX 10…
5014 M W D40 4	40	16	40	4	SDLX 10…
5014 M W D42 5	42	16	40	5	SDLX 10…
5014 M W D50 5	50	22	40	5	SDLX 10…
5014 M W D52 6	52	22	40	6	SDLX 10…
5014 M W D63 6	63	22	40	6	SDLX 10…
5014 M W D66 7	66	22	40	7	SDLX 10…
5014 M W D40 3	40	16	40	3	SDLX 13…
5014 M W D42 4	42	16	40	4	SDLX 13…
5014 M W D50 4	50	22	40	4	SDLX 13…
5014 M W D52 5	52	22	40	5	SDLX 13…
5014 M W D63 5	63	22	40	5	SDLX 13…
5014 M W D66 6	66	22	40	6	SDLX 13…
5014 M W D80 7	80	27	50	7	SDLX 13…
5014 M W D100 8	100	32	50	8	SDLX 13…

2 KTE20

3 KTE20

4 KTE20

6 KTE20

8 KTE20

• SDLX 10T308 / 130410 SM …

SDLX 10T308 SM KTE20 en SDLX 130410 SM KTE20

• 5026 Series

Fig. 1

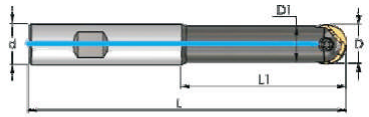
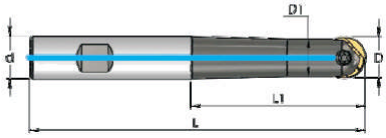
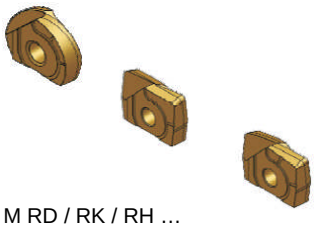


Fig. 2



5026 Series

Ø 8.0 - 32.0 mm [zeff = 2]



M RD / RK / RH ...

Weldon DIN 6359 chuck [h6]

Article number	D	d	D1	L	L1	Pic.	insert
5026 W W 12 080 035	8.0	12	7.2	91	35	1	...080...
5026 W W 12 080 055	8.0	12	7.2	111	55	1	...080...
5026 W W 12 080 075	8.0	12	7.2	131	75	1	...080...
5026 W W 12 100 035	10.0	12	9.0	91	35	1	...100...
5026 W W 12 100 055	10.0	12	9.0	111	55	1	...100...
5026 W W 12 100 075	10.0	12	9.0	131	35	1	...100...
5026 W W 12 120 035	12.0	12	10.4	91	35	2 conical	...120...
5026 W W 12 120 055	12.0	12	10.4	111	55	1	...120...
5026 W W 12 120 085	12.0	12	10.4	145	85	1	...120...
5026 W W 16 160 035	16.0	16	14.0	95	35	2 conical	...160...
5026 W W 16 160 065	16.0	16	14.0	125	65	1	...160...
5026 W W 16 160 100	16.0	16	14.0	170	100	1	...160...
5026 W W 20 200 040	20.0	20	17.5	110	40	2 conical	...200...
5026 W W 20 200 075	20.0	20	17.5	145	75	1	...200...
5026 W W 20 200 115	20.0	20	17.5	195	115	1	...200...
5026 W W 25 250 045	25.0	25	22.0	125	45	2 conical	...250...
5026 W W 25 250 090	25.0	25	22.0	170	90	1	...250...
5026 W W 25 250 135	25.0	25	22.0	225	135	1	...250...
5026 W W 32 300 055	30.0	32	27.0	145	55	2 conical	...300...
5026 W W 32 300 105	30.0	32	27.0	195	105	1	...300...
5026 W W 32 300 160	30.0	32	27.0	250	160	1	...300...
5026 W W 32 320 055	32.0	32	29.0	145	55	2 conical	...320...
5026 W W 32 320 105	32.0	32	29.0	195	105	1	...320...
5026 W W 32 320 160	32.0	32	29.0	250	160	1	...320...

2 KTE20

3 KTE20

4 KTE20

6 KTE20

8 KTE20

• M RD / M RH / M RK ...

	Ø
M **RD** 080 KTE20	8.0
M **RD** 100 KTE20	10.0
M **RD** 120 KTE20	12.0
M **RD** 160 KTE20	16.0
M **RD** 200 KTE20	20.0
M **RD** 250 KTE20	25.0
M **RD** 300 KTE20	30.0
M **RD** 320 KTE20	32.0

	radius
M **RH** 100 KTE20	1.5
M **RH** 120 KTE20	1.5
M **RH** 160 KTE20	1.5
M **RH** 200 KTE20	2.0
M **RH** 250 KTE20	2.0
M **RH** 300 KTE20	2.0
M **RH** 320 KTE20	2.0

	radius
M **RK** 100 R05 KTE20	0.5
M **RK** 100 R10 KTE20	1.0
M **RK** 100 R20 KTE20	2.0
M **RK** 120 R05 KTE20	0.5
M **RK** 120 R10 KTE20	1.0
M **RK** 120 R20 KTE20	2.0
M **RK** 160 R05 KTE20	0.5
M **RK** 160 R10 KTE20	1.0
M **RK** 160 R20 KTE20	2.0
M **RK** 160 R30 KTE20	3.0
M **RK** 200 R05 KTE20	0.5
M **RK** 200 R10 KTE20	1.0
M **RK** 200 R20 KTE20	2.0
M **RK** 200 R30 KTE20	3.0
M **RK** 250 R05 KTE20	0.5
M **RK** 250 R10 KTE20	1.0
M **RK** 250 R20 KTE20	2.0
M **RK** 250 R30 KTE20	3.0
M **RK** 300 R10 KTE20	1.0
M **RK** 300 R20 KTE20	2.0
M **RK** 300 R30 KTE20	3.0
M **RK** 320 R10 KTE20	1.0
M **RK** 320 R20 KTE20	2.0
M **RK** 320 R30 KTE20	3.0

• 5027 Series

Fig. 1

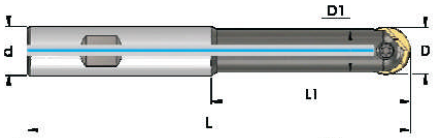
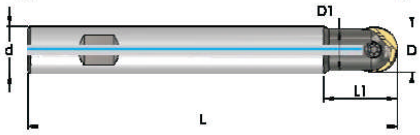
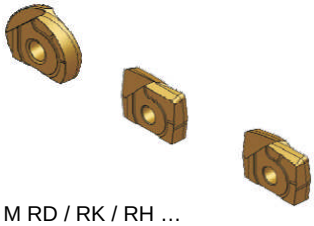


Fig. 2



5027 Series

Ø 8.0 - 32.0 mm [zeff = 2]



M RD / RK / RH ...

Weldon DIN 6359 chuck [h6]

Article number	D	d	D1	L	L1	Pic.	insert
5027 W W 08 080 080	8.0	8	7.2	136	80	1	...080...
5027 W W 08 080 100	8.0	8	7.2	156	100	1	...080...
5027 W W 08 080 020 130	8.0	8	7.2	130	20	2	...080...
5027 W W 08 080 020 150	8.0	8	7.2	150	20	2	...080...
5027 W W 10 100 080	10.0	10	9.0	136	80	1	...100...
5027 W W 10 100 120	10.0	10	9.0	176	120	1	...100...
5027 W W 10 100 023 130	10.0	10	9.0	130	23	2	...100...
5027 W W 10 100 023 170	10.0	10	9.0	170	23	2	...100...
5027 W W 12 120 100	12.0	12	10.4	156	100	1	...120...
5027 W W 12 120 150	12.0	12	10.4	206	150	1	...120...
5027 W W 12 120 025 150	12.0	12	10.4	150	25	2	...120...
5027 W W 12 120 025 200	12.0	12	10.4	200	25	2	...120...
5027 W W 16 160 120	16.0	16	14.0	160	120	1	...160...
5027 W W 16 160 170	16.0	16	14.0	210	170	1	...160...
5027 W W 16 160 030 160	16.0	16	14.0	160	30	2	...160...
5027 W W 16 160 030 210	16.0	16	14.0	210	30	2	...160...
5027 W W 20 200 140	20.0	20	17.5	190	140	1	...200...
5027 W W 20 200 170	20.0	20	17.5	240	170	1	...200...
5027 W W 20 200 035 190	20.0	20	17.5	190	35	2	...200...
5027 W W 20 200 035 240	20.0	20	17.5	240	35	2	...200...
5027 W W 25 250 140	25.0	25	22.0	220	140	1	...250...
5027 W W 25 250 170	25.0	25	22.0	250	170	1	...250...
5027 W W 25 250 040 220	25.0	25	22.0	220	40	2	...250...
5027 W W 25 250 040 250	25.0	25	22.0	250	40	2	...250...
5027 W W 32 300 140	30.0	32	27.0	230	140	1	...300...
5027 W W 32 300 170	30.0	32	27.0	260	170	1	...300...
5027 W W 32 300 050 230	30.0	32	27.0	230	50	2	...300...
5027 W W 32 300 050 260	30.0	32	27.0	260	50	2	...300...
5027 W W 32 320 140	32.0	32	29.0	230	140	1	...320...
5027 W W 32 320 170	32.0	32	29.0	260	170	1	...320...
5027 W W 32 320 050 230	32.0	32	29.0	230	50	2	...320...
5027 W W 32 320 050 260	32.0	32	29.0	260	50	2	...320...

2	KTE20
3	KTE20
4	KTE20
6	KTE20
8	KTE20

• 5027 Series

Fig. 1

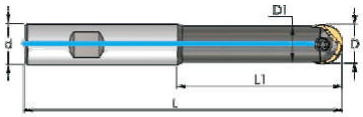
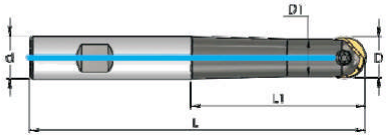
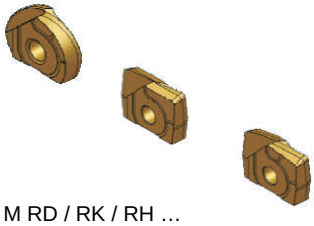


Fig. 2



5027 Series

Ø 8.0 - 32.0 mm [zeff = 2]



M RD / RK / RH …

Weldon DIN 6359 chuck [h6]

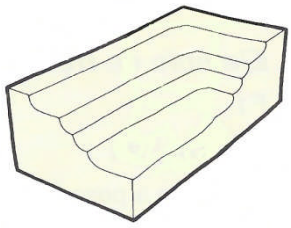
2	KTE20
3	KTE20
4	KTE20
6	KTE20
8	KTE20

• M RD / M RH / M RK …

	Ø
M **RD** 080 KTE20	8.0
M **RD** 100 KTE20	10.0
M **RD** 120 KTE20	12.0
M **RD** 160 KTE20	16.0
M **RD** 200 KTE20	20.0
M **RD** 250 KTE20	25.0
M **RD** 300 KTE20	30.0
M **RD** 320 KTE20	32.0

	radius
M **RH** 100 KTE20	1.5
M **RH** 120 KTE20	1.5
M **RH** 160 KTE20	1.5
M **RH** 200 KTE20	2.0
M **RH** 250 KTE20	2.0
M **RH** 300 KTE20	2.0
M **RH** 320 KTE20	2.0

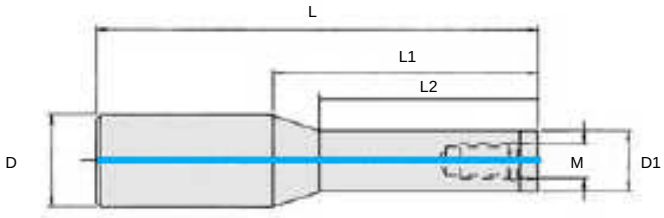
	radius
M **RK** 100 R05 KTE20	0.5
M **RK** 100 R10 KTE20	1.0
M **RK** 100 R20 KTE20	2.0
M **RK** 120 R05 KTE20	0.5
M **RK** 120 R10 KTE20	1.0
M **RK** 120 R20 KTE20	2.0
M **RK** 160 R05 KTE20	0.5
M **RK** 160 R10 KTE20	1.0
M **RK** 160 R20 KTE20	2.0
M **RK** 160 R30 KTE20	3.0
M **RK** 200 R05 KTE20	0.5
M **RK** 200 R10 KTE20	1.0
M **RK** 200 R20 KTE20	2.0
M **RK** 200 R30 KTE20	3.0
M **RK** 250 R05 KTE20	0.5
M **RK** 250 R10 KTE20	1.0
M **RK** 250 R20 KTE20	2.0
M **RK** 250 R30 KTE20	3.0
M **RK** 300 R10 KTE20	1.0
M **RK** 300 R20 KTE20	2.0
M **RK** 300 R30 KTE20	3.0
M **RK** 320 R10 KTE20	1.0
M **RK** 320 R20 KTE20	2.0
M **RK** 320 R30 KTE20	3.0



Machining example

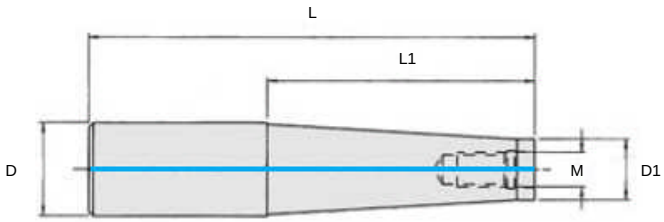
Material:	G AlSi12Cu	3
Operation:	complex surface milling; 3D simultaneous	
Machining center:	vertical	
Adapter:	HSK 63 A to Weldon chuck Ø 20 mm	
Coolant:	8% emulsion	
Tool:	5027 W W 20 200 140 / M RD 200 KTE20	
D.O.C. / Ap:	1.2 mm	
W.O.C. / Ae:	0.8 mm	
Cutting speed Vc / revolutions n:	Vc = 280.0 m/min / n = 4459 r.p.m.	
Feed rate fn and Vf:	fz = 0.16 mm and Vf = 1427 mm/min	

• 5112 Series damped extensions for 5028

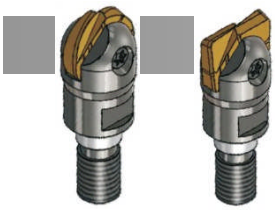


Article number	D	D1	L	L1	L2	M
5112 16 025S M5	16	8	75	25	20	M5
5112 16 050L M5	16	8	100	50	45	M5
5112 16 025S M6	16	10	80	30	25	M6
5112 16 070L M6	16	10	125	75	70	M
5112 16 025S M8	16	13	80	30	25	M8
5112 16 070L M8	16	13	125	75	70	M8
5112 20 045S 16 M10	20	16	100	50	45	M10
5112 20 075L 16 M10	20	16	130	80	75	M10
5112 20 045S M10	20	18	100	50	45	M10
5112 20 075L M10	20	18	130	80	75	M10
5112 25 045S M12	25	21	105	50	45	M12
5112 25 075L M12	25	21	135	80	75	M12

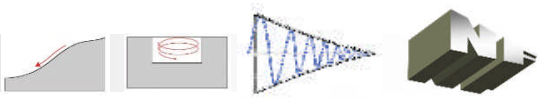
• 5108 Series damped extensions for 5028

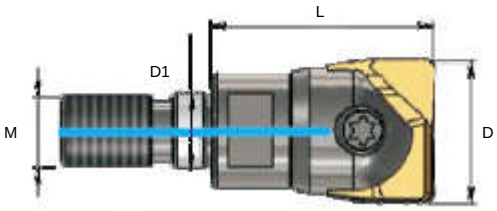


Article number	D	D1	L	L1	M
5108 10 040 M6	10	9	115	40	M6
5108 10 060 M6	10	9	135	60	M6
5108 12 060 M6	12	10	115	60	M6
5108 12 080 M6	12	10	135	80	M6
5108 12 100 M6	12	10	155	100	M6
5108 16 080 M8	16	13	135	80	M8
5108 16 100 M8	16	13	155	100	M8
5108 16 120 M8	16	13	175	120	M8
5108 20 100 16 M10	20	16	160	100	M10
5108 20 140 16 M10	20	16	200	140	M10
5108 20 100 M10	20	18	160	100	M10
5108 20 140 M10	20	18	200	140	M10
5108 25 100 M12	25	21	165	100	M12
5108 25 150 M12	25	21	215	150	M12
5108 32 100 M16	32	29	170	100	M16
5108 32 150 M16	32	29	220	150	M16



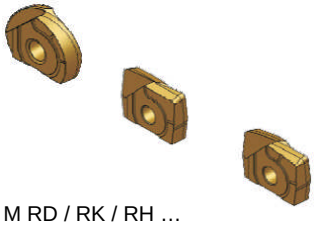
• 5028 Series





5028 Series

Ø 8.0 - 32.0 mm [zeff = 2]

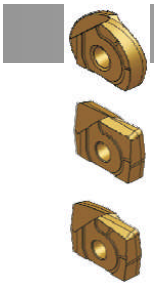


Article number	D	D1	L	M	insert
5028 E W D080 M5	8.0	5.5	15	M5	…080…
5028 E W D100 M6	10.0	6.5	25	M6	…100…
5028 E W D120 M6	12.0	6.5	25	M6	…120…
5028 E W D160 M8	16.0	8.5	30	M8	…160…
5028 E W D200 M10	20.0	10.5	35	M10	…200…
5028 E W D250 M12	25.0	12.5	45	M12	…250…
5028 E W D300 M16	30.0	17.0	50	M16	…300…
5028 E W D320 M16	32.0	17.0	50	M16	…320…

M RD / RK / RH …

modular screw connection

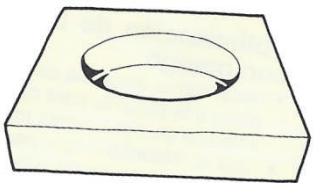
2	KTE20
3	KTE20
4	KTE20
6	KTE20
8	KTE20



• M RD / M RH / M RK …

	Ø
M **RD** 080 KTE20	8.0
M **RD** 100 KTE20	10.0
M **RD** 120 KTE20	12.0
M **RD** 160 KTE20	16.0
M **RD** 200 KTE20	20.0
M **RD** 250 KTE20	25.0
M **RD** 300 KTE20	30.0
M **RD** 320 KTE20	32.0

	radius
M **RH** 100 KTE20	1.5
M **RH** 120 KTE20	1.5
M **RH** 160 KTE20	1.5
M **RH** 200 KTE20	2.0
M **RH** 250 KTE20	2.0
M **RH** 300 KTE20	2.0
M **RH** 320 KTE20	2.0



	radius
M **RK** 100 R05 KTE20	0.5
M **RK** 100 R10 KTE20	1.0
M **RK** 100 R20 KTE20	2.0
M **RK** 120 R05 KTE20	0.5
M **RK** 120 R10 KTE20	1.0
M **RK** 120 R20 KTE20	2.0
M **RK** 160 R05 KTE20	0.5
M **RK** 160 R10 KTE20	1.0
M **RK** 160 R20 KTE20	2.0
M **RK** 160 R30 KTE20	3.0
M **RK** 200 R05 KTE20	0.5
M **RK** 200 R10 KTE20	1.0
M **RK** 200 R20 KTE20	2.0
M **RK** 200 R30 KTE20	3.0
M **RK** 250 R05 KTE20	0.5
M **RK** 250 R10 KTE20	1.0
M **RK** 250 R20 KTE20	2.0
M **RK** 250 R30 KTE20	3.0
M **RK** 300 R10 KTE20	1.0
M **RK** 300 R20 KTE20	2.0
M **RK** 300 R30 KTE20	3.0
M **RK** 320 R10 KTE20	1.0
M **RK** 320 R20 KTE20	2.0
M **RK** 320 R30 KTE20	3.0

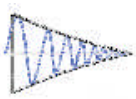
Machining example

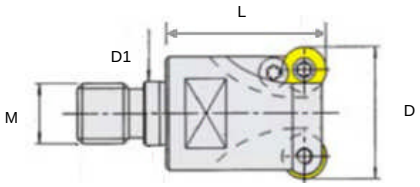
6

Material:	CuZn30
Operation:	helicoil hole milling Ø 24 mm; 3D simultaneous
Machining center:	vertical
Adapter:	SK40 DIN 60871 A to hydraulic chuck Ø 16 mm
Coolant:	8% emulsion
Tool:	5028 E W D160 M8 / M RK R30 KTE20
W.O.C. / Ae:	to 16.0 mm
Cutting speed Vc / revolutions n:	Vc = 180.0 m/min / n = 3583 r.p.m.
Feed rate fn and Vf:	fz = 0.1 mm and Vf = 717 mm/min
Feed rate in z-axis:	factor k = 0.5 mm/rev.

• 5030 Series





5030 Series

Ø 10.0 - 35.0 mm


RDHX..MOT.. / RDLT..MOS..

modular screw connection

Article number	D	D1	L	M	z	insert
5030 E W D10 2	10	6.5	18	M6	2	…0501…
5030 E W D20 5	20	10.5	30	M10	5	…0501…
5030 E W D12 2	12	6.5	18	M6	2	…07T1…
5030 E W D15 2	15	8.5	23	M8	2	…0702…
5030 E W D15 3	15	8.5	23	M8	3	…0702…
5030 E W D16 3	16	10.5	30	M10	3	…0702…
5030 E W D20 4	20	10.5	30	M10	4	…0702…
5030 E W D25 5	25	12.5	35	M12	5	…0702…
5030 E W D30 5	30	17.0	43	M16	5	…0702…
5030 E W D20 2	20	10.5	30	M10	2	…1003…
5030 E W D25 2	25	12.5	35	M12	2	…1003…
5030 E W D25 3	25	12.5	35	M12	3	…1003…
5030 E W D30 3	30	17.0	43	M16	3	…1003…
5030 E W D30 4	30	17.0	43	M16	4	…1003…
5030 E W D35 4	35	17.0	43	M16	4	…1003…
5030 E W D35 5	35	17.0	43	M16	5	…1003…
5030 E W D42 5	42	17.0	43	M16	5	…1003…
5030 E W D24 2	24	12.5	35	M12	2	…12T3…
5030 E W D32 3	32	17.0	43	M16	3	…12T3…
5030 E W D35 3 / 12	35	17.0	43	M16	3	…12T3…
5030 E W D42 4	42	17.0	43	M16	4	…12T3…
5030 E W D32 2	32	17.0	43	M16	2	…1604…
5030 E W D35 3 / 16	35	17.0	43	M16	3	…1604…

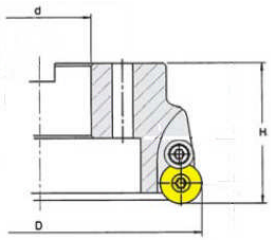
2	K10 / KTE20
3	K10 / KTE20
4	K10 / KTE20
6	K10 / KTE20
8	K10 / KTE20

• RDHX..MOT.. en RDLT..MOS..

RDHX 0501 MOT K10 / KTE20
RDHX 07T1 MOT K10 / KTE20
RDHX 0702 MOT K10 / KTE20
RDHX 1003 MOT K10 / KTE20
RDHX 12T3 MOT K10 / KTE20
RDHX 1604 MOT K10 / KTE20

RDLT 1003 MOS K10 / KTE20
RDLT 12T3 MOS K10 / KTE20
RDLT 1604 MOS K10 / KTE20

• 5035 Series



5035 Series

Ø 35.0 - 160.0 mm

RDHX..MOT.. / RDLT..MOS..

DIN 6357 / 6358 hole adapter

Article number	D	d	H	z	insert
5035 M W 03510 3	35	16	44	3	...1003...
5035 M W 03510 5	35	16	44	5	...1003...
5035 M W 04210	42	16	44	6	...1003...
5035 M W 05210	52	22	50	7	...1003...
5035 M W 05212	52	22	50	5	...12T3...
5035 M W 05216	52	22	50	4	...1604...
5035 M W 06612	66	27	50	6	...12T3...
5035 M W 06616	66	27	50	5	...1604...
5035 M W 08012	80	27	50	7	...12T3...
5035 M W 08016	80	27	50	6	...1604...
5035 M W 10016	100	32	55	7	...1604...
5035 M W 12516	125	40	55	8	...1604...
5035 M W 16016	160	40	55	9	...1604...

2 K10 / KTE20

3 K10 / KTE20

4 K10 / KTE20

6 K10 / KTE20

8 K10 / KTE20

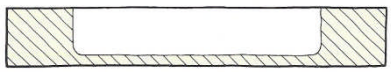
• RDHX..MOT.. en RDLT..MOS..

RDHX 0501 MOT K10 / KTE20
RDHX 07T1 MOT K10 / KTE20
RDHX 0702 MOT K10 / KTE20
RDHX 1003 MOT K10 / KTE20
RDHX 12T3 MOT K10 / KTE20
RDHX 1604 MOT K10 / KTE20

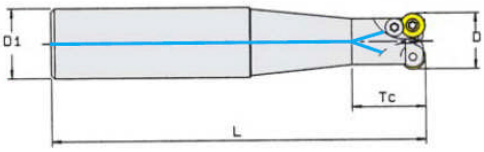
RDLT 1003 MOS K10 / KTE20
RDLT 12T3 MOS K10 / KTE20
RDLT 1604 MOS K10 / KTE20

Machining example

Material:	G AlSi17Cu4 **4**
Operation:	helicoil cavaty milling Ø 100 mm; 3D simultaneous
Machining center:	horizontal
Adapter:	SK40 DIN 60871 A to DIN 6357 Ø 27 mm
Coolant:	8% emulsion; 40 bar presure
Tool:	5035 M W 06612 / RDHX 12T3 MOT KTE20
W.O.C. Ae:	to 66.0 mm
Cutting speed Vc / revolutions n:	Vc = 140.0 m/min / n = 446 r.p.m.
Feed rate fn and Vf:	fz = 0.24 mm and Vf = 642 mm/min
Feed rate in z-axis:	factor k = 1.0 mm/rev.



• 5040 Series



5040 Series

Ø 10.0 - 25.0 mm [z = 2]

RDHX..MOT.. / RDLT..MOS..

cilindrical shank [h6]

Article number	D	D1	L	Tc	insert
5040 W W 10 16 040	10	16	140	20	...0501...
5040 W W 10 16 060	10	16	160	20	...0501...
5040 W W 12 16 040	12	16	140	20	...07T1...
5040 W W 12 16 060	12	16	160	20	...07T1...
5040 W W 12 16 080	12	16	180	20	...07T1...
5040 W W 15 16 040	15	16	140	40	...0702...
5040 W W 15 16 060	15	16	160	40	...0702...
5040 W W 15 20 080	15	20	180	40	...0702...
5040 W W 15 20 100	15	20	200	40	...0702...
5040 W W 15 25 120	15	25	220	40	...0702...
5040 W W 20 20 040	20	20	140	40	...1003...
5040 W W 20 20 060	20	20	160	60	...1003...
5040 W W 20 25 080	20	25	180	60	...1003...
5040 W W 20 25 100	20	25	200	60	...1003...
5040 W W 20 25 120	20	25	220	60	...1003...
5040 W W 25 25 100	25	25	200	80	...12T3...
5040 W W 25 25 120	25	25	220	80	...12T3...
5040 W W 25 25 150	25	25	250	80	...12T3...
5040 W W 25 32 110	25	32	210	80	...12T3...
5040 W W 25 32 130	25	32	230	80	...12T3...
5040 W W 25 32 160	25	32	260	80	...12T3...

2	K10 / KTE20
3	K10 / KTE20
4	K10 / KTE20
6	K10 / KTE20
8	K10 / KTE20

• RDHX..MOT.. en RDLT..MOS..

RDHX 0501 MOT K10 / KTE20
RDHX 07T1 MOT K10 / KTE20
RDHX 0702 MOT K10 / KTE20
RDHX 1003 MOT K10 / KTE20
RDHX 12T3 MOT K10 / KTE20
RDHX 1604 MOT K10 / KTE20

RDLT 1003 MOS K10 / KTE20
RDLT 12T3 MOS K10 / KTE20
RDLT 1604 MOS K10 / KTE20

2 — **Vc = 120 - 500 m/min for K10 / KTE20**

TOKX 160440 KTE20
Vc : 200 - 350
fz : 0.25 - 2.5
Ap :0.5 - 2.5

SDLX 10T308 SM KTE20
Vc : 200 - 500
fz : 0.10 -1.5
Ap :0.1 - 1.0

SDLX 130410 SM KTE20
Vc : 200 - 500
fz : 0.10 -2.0
Ap :0.1 - 2.0

M RD 080 / 320 KTE20
Vc : 200 - 400
fz : 0.15 - 0.40
Ap :0.15 x D
Ae : 0.15 x D

M RK 100 / 320 R.. KTE20
Vc : 200 - 400
fz : 0.10 - 0.30
Ap :0.10 x D
Ae : 0.10 x D

M MRK 100 / 320 KTE20
Vc : 200 - 400
fz : 0.15 - 0.40
Ap :0.15 x D
Ae : 0.15 x D

RDHX 0501 / 1604 MOT K10
Vc : 120 - 250
fz : 0.06 - 0.30
Ap : 0.05 - 0.3 x D
Ae : 0.05 – 0.4 x D

RDHX 0501 / 1604 MOT KTE20
Vc : 200 - 400
fz : 0.06 - 0.30
Ap : 0.05 - 0.3 x D
Ae : 0.05 – 0.4 x D

RDLT 1003 / 1604 MOS K10
Vc : 120 - 250
fz : 0.12 - 0.30
Ap : 0.05 - 0.3 x D
Ae : 0.05 - 0.3 x D

RDLT 1003 / 1604 MOS KTE20
Vc : 200 - 400
fz : 0.12 - 0.30
Ap : 0.05 - 0.3 x D
Ae : 0.05 - 0.3 x D

3 — **Vc = 100 - 200 m/min for K10**
Vc = 160 - 300 m/min for KTE20
Ap and fz as under 2 per insert type

4 — **Vc = 60 - 90 m/min for K10**
Vc = 70 - 120 m/min for KTE20
Ap and fz as under 2 per insert type

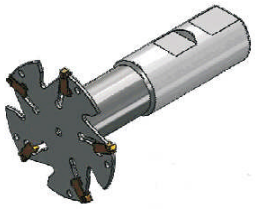
6 — **Vc = 100 - 180 m/min for K10**
Vc = 160 - 280 m/min for KTE20
Ap and fz as under 2 per insert type

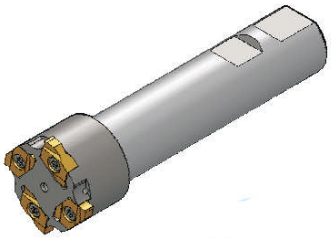
8 — **Vc = 60 - 90 m/min for K10**
Vc = 80 - 160 m/min for KTE20
Ap and fz as under 2 per insert type

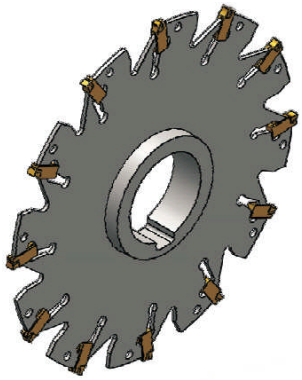
• Mill operation

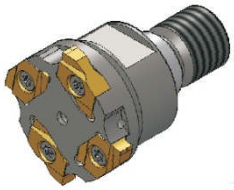
Insert tipped tool types; grooving universal

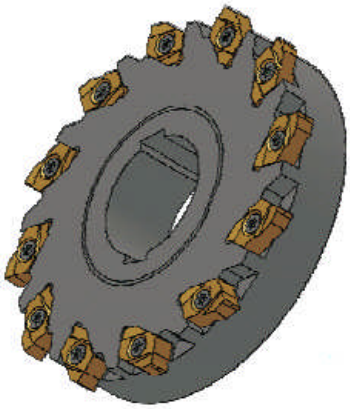
Ø 63	- 160	hole adapter	**1122M…**	X10N ..00S-0..0T KTE20
63	- 100	shank	**1122W…**	X10N ..00S-0..0T KTE20
63	- 160	hole adapter	**1122…**	X10N ..00S-0..0T KTE20
34	- 44	shank	**1132WW…**	MN12… KTE20
34	- 44	modular	**1132EW…**	MN12… KTE20
49	- 80	hole adapter	**1132MW…**	MN12… KTE20
63	- 100	hole adapter	**1132SW…**	MN12… KTE20

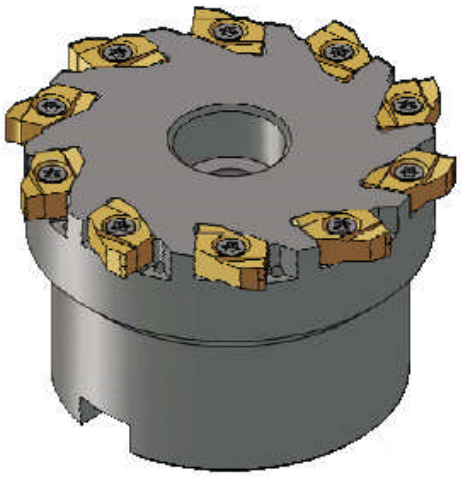




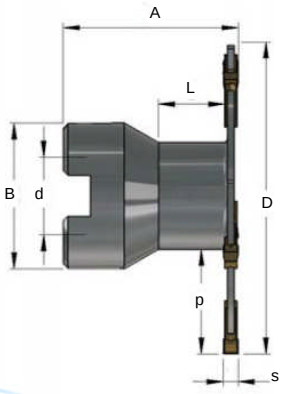








• 1122 M Series



1122 M Series

Ø 63.0 - 160.0 mm

X10N..00S 0..0T…

DIN 6357 / 6358 hole adapter

Article number	D	d	s	A	L	B	p	z	insert	key	
1122 M 63 02	63	16	2	35	13.5	30	16.5	5	…2.00S 0.20…	M HK 32	2 KTE20
1122 M 63 02.5	63	16	2.5	35	13.5	30	16.5	5	…2.50S 0.20…	M HK 32	
1122 M 63 03	63	16	3	35	13.5	30	16.5	5	…3.00S 0.30…	M HK 32	3 KTE20
1122 M 63 04	63	16	4	35	13.5	30	16.5	5	…4.00S 0.40…	M HK 32	
1122 M 63 05	63	16	5	35	13.5	30	16.5	5	…5.00S 0.40…	M HK 32	4 KTE20
1122 M 80 02	80	22	2	50		40	20	7	…2.00S 0.20…	M HK 32	
1122 M 80 02.5	80	22	2.5	50		40	20	7	…2.50S 0.20…	M HK 32	6 KTE20
1122 M 80 03	80	22	3	50		40	20	7	…3.00S 0.30…	M HK 32	
1122 M 80 04	80	22	4	50		40	20	7	…4.00S 0.40…	M HK 32	7 KTE20
1122 M 80 05	80	22	5	50		40	20	7	…5.00S 0.40…	M HK 32	
1122 M 100 02	100	27	2	50		48	26	9	…2.00S 0.20…	M HK 32	8 KTE20
1122 M 100 02.5	100	27	2.5	50		48	26	9	…2.50S 0.20…	M HK 32	
1122 M 100 03	100	27	3	50		48	26	9	…3.00S 0.30…	M HK 32	
1122 M 100 04	100	27	4	50		48	20	9	…4.00S 0.40…	M HK 32	
1122 M 100 05	100	27	5	50		48	20	9	…5.00S 0.40…	M HK 32	
1122 M 125 02	125	40	2	50		70	27.5	12	…2.00S 0.20…	M HK 32	
1122 M 125 02.5	125	40	2.5	50		70	27.5	12	…2.50S 0.20…	M HK 32	
1122 M 125 03	125	40	3	50		70	27.5	12	…3.00S 0.30…	M HK 32	
1122 M 125 04	125	40	4	50		70	27.5	12	…4.00S 0.40…	M HK 32	
1122 M 125 05	125	40	5	50		70	27.5	12	…5.00S 0.40…	M HK 32	
1122 M 160 02	160	40	2	50		70	45	16	…2.00S 0.20…	M HK 32	
1122 M 160 02.5	160	40	2.5	50		70	45	16	…2.50S 0.20…	M HK 32	
1122 M 160 03	160	40	3	50		70	45	16	…3.00S 0.30…	M HK 32	
1122 M 160 04	160	40	4	50		70	45	16	…4.00S 0.40…	M HK 32	
1122 M 160 05	160	40	5	50		70	45	16	…5.00S 0.40…	M HK 32	

• X10N..00S.0..T..

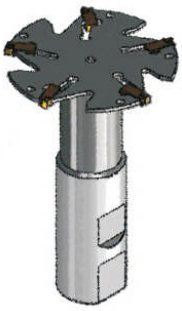
X10N 2.00S 0.20T KTE20

X10N 2.50S 0.20T KTE20

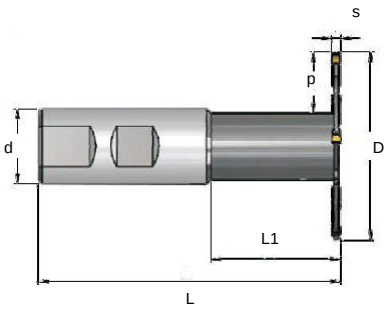
X10N 3.00S 0.30T KTE20

X10N 4.00S 0.40T KTE20

X10N 5.00S 0.40T KTE20



• 1122 W Series



1122 W Series

Ø 63.0 - 100.0 mm

X10N..00S 0..0T…

Weldon DIN 6359 chuck [h6]

Article number	D	d	s	L	L1	p	z	insert	key
1122 W 63 02	63	25	2	100	44	20	5	…2.00S 0.20…	M HK 32
1122 W 63 02.5	63	25	2.5	100	44	20	5	…2.50S 0.20…	M HK 32
1122 W 63 03	63	25	3	100	44	20	5	…3.00S 0.30…	M HK 32
1122 W 63 04	63	25	4	100	44	20	5	…4.00S 0.40…	M HK 32
1122 W 63 05	63	25	5	100	44	20	5	…5.00S 0.40…	M HK 32
1122 W 80 02	80	25	2	100	44	28.5	7	…2.00S 0.20…	M HK 32
1122 W 80 02.5	80	25	2.5	100	44	28.5	7	…2.50S 0.20…	M HK 32
1122 W 80 03	80	25	3	100	44	28.5	7	…3.00S 0.30…	M HK 32
1122 W 80 04	80	25	4	100	44	28.5	7	…4.00S 0.40…	M HK 32
1122 W 80 05	80	25	5	100	44	28.5	7	…5.00S 0.40…	M HK 32
1122 W100 02	100	25	2	100	44	38.5	9	…2.00S 0.20…	M HK 32
1122 W 100 02.5	100	25	2.5	100	44	38.5	9	…2.50S 0.20…	M HK 32
1122 W 100 03	100	25	3	100	44	38.5	9	…3.00S 0.30…	M HK 32
1122 W 100 04	100	25	4	100	44	38.5	9	…4.00S 0.40…	M HK 32
1122 W 100 05	100	25	5	100	44	38.5	9	…5.00S 0.40…	M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32
									M HK 32

2	KTE20
3	KTE20
4	KTE20
6	KTE20
7	KTE20
8	KTE20

• X10N..00S.0..T..

X10N 2.00S 0.20T KTE20

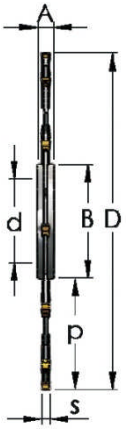
X10N 2.50S 0.20T KTE20

X10N 3.00S 0.30T KTE20

X10N 4.00S 0.40T KTE20

X10N 5.00S 0.40T KTE20

• 1122 Series



1122 Series

Ø 63.0 - 160.0 mm

X10N..00S 0..0T…

Hola adapter with wedge

Article number	D	d	s	A	B	p	z	insert	key		
1122 63 02	63	22	2	8	34	14	5	…2.00S 0.20…	M HK 32	2	KTE20
1122 63 02.5	63	22	2.5	8	34	14	5	…2.50S 0.20…	M HK 32		
1122 63 03	63	22	3	8	34	14	5	…3.00S 0.30…	M HK 32	3	KTE20
1122 63 04	63	22	4	8	34	14	5	…4.00S 0.40…	M HK 32		
1122 63 05	63	22	5	8	34	14	5	…5.00S 0.40…	M HK 32	4	KTE20
1122 80 02	80	22	2	8	34	22	7	…2.00S 0.20…	M HK 32		
1122 80 02.5	80	22	2.5	8	34	22	7	…2.50S 0.20…	M HK 32	6	KTE20
1122 80 03	80	22	3	8	34	22	7	…3.00S 0.30…	M HK 32		
1122 80 04	80	22	4	8	34	22	7	…4.00S 0.40…	M HK 32	7	KTE20
1122 80 05	80	22	5	8	34	22	7	…5.00S 0.40…	M HK 32		
1122 100 02	100	27	2	8	45	27	9	…2.00S 0.20…	M HK 32	8	KTE20
1122 100 02.5	100	27	2.5	8	45	27	9	…2.50S 0.20…	M HK 32		
1122 100 03	100	27	3	8	45	27	9	…3.00S 0.30…	M HK 32		
1122 100 04	100	27	4	8	45	27	9	…4.00S 0.40…	M HK 32		
1122 100 05	100	27	5	8	45	27	9	…5.00S 0.40…	M HK 32		
1122 125 02	125	32	2	8	58	33	12	…2.00S 0.20…	M HK 32		
1122 125 02.5	125	32	2.5	8	58	33	12	…2.50S 0.20…	M HK 32		
1122 125 03	125	32	3	8	58	33	12	…3.00S 0.30…	M HK 32		
1122 125 04	125	32	4	8	58	33	12	…4.00S 0.40…	M HK 32		
1122 125 05	125	32	5	8	58	33	12	…5.00S 0.40…	M HK 32		
1122 160 02	160	40	2	8	68	45	16	…2.00S 0.20…	M HK 32		
1122 160 02.5	160	40	2.5	8	68	45	16	…2.50S 0.20…	M HK 32		
1122 160 03	160	40	3	8	68	45	16	…3.00S 0.30…	M HK 32		
1122 160 04	160	40	4	8	68	45	16	…4.00S 0.40…	M HK 32		
1122 160 05	160	40	5	8	68	45	16	…5.00S 0.40…	M HK 32		

• X10N..00S.0..T..

X10N 2.00S 0.20T KTE20

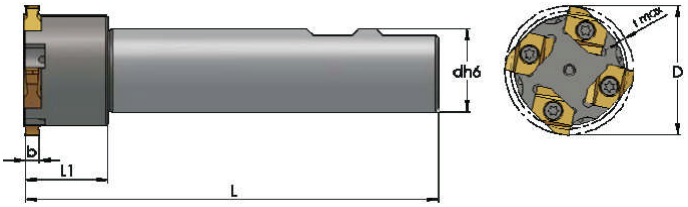
X10N 2.50S 0.20T KTE20

X10N 3.00S 0.30T KTE20

X10N 4.00S 0.40T KTE20

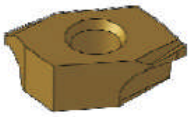
X10N 5.00S 0.40T KTE20

• 1132 W Series



1132 W Series

Ø 34.0 - 44.0 mm



MN12 …

Weldon DIN 6359 chuck [h6]

Article number	D	b tot	L	L1	dh6	tmax	z	insert
1132 034 W W	34	1.71	125	25	25	1.75	2	MN12…L
1132 034 W WVL	34	1.71	200	25	25	1.75	2	MN12…L
1132 039 W W	39	2.26	125	25	25	2.5	3	MN12…L
1132 039 W WVL	39	2.26	200	25	25	2.5	3	MN12…L
1132 044 W W	44	3.26	125	25	32	3	4	MN12…L
1132 044 W WVL	44	3.26	200	25	32	3	4	MN12…L

3 KTE20

4 KTE20

6 KTE20

7 KTE20

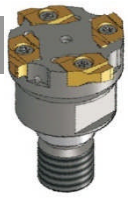
8 KTE20

• MN12...

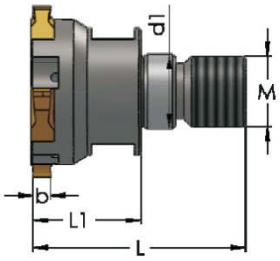
MN12 110 050 R/L KTE20
MN12 130 070 R/L KTE20
MN12 130 085 R/L KTE20
MN12 160 085 R/L KTE20
MN12 160 100 R/L KTE20
MN12 185 125 R/L KTE20
MN12 215 150 R/L KTE20
MN12 265 150 R/L KTE20
MN12 265 175 R/L KTE20
MN12 315 175 R/L KTE20
MN12 415 200 R/L KTE20
MN12 415 250 R/L KTE20
MN12 515 300 R/L KTE20

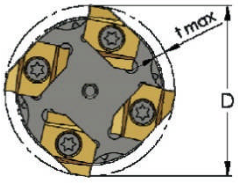
Machining example

Material:	G AlSi17Cu4 **4**
Operation:	circular groove milling Ø 72 mm
Machining center:	horizontal
Adapter:	HSK 63 A to Weldon Ø 32 mm
Coolant:	8% emulsion; 40 bar presure
Tool:	1132 044 W W / MN12 265 150 L KTE20
W.O.C. / Ae:	2.76 mm
D.O.C. / Ap:	1.30 mm
Cutting speed Vc / revolutions n:	Vc = 160.0 m/min / n = 1158 r.p.m
Feed rate fn and Vf:	fz = 0.12 mm and Vf = 642 mm/min



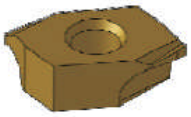
• 1132 E Series





1132 E Series

Ø 34.0 - 44.0 mm



MN12 …

modular screw connection M16

Article number	D	b	L	L1	tmax	z	insert
		tot					
1132 034 E W	34	1.71	67	43	1.75	2	MN12…L
1132 039 E W	39	2.26	67	43	2.5	3	MN12…L
1132 044 E W	44	3.26	67	43	3	4	MN12…L

3 KTE20

4 KTE20

6 KTE20

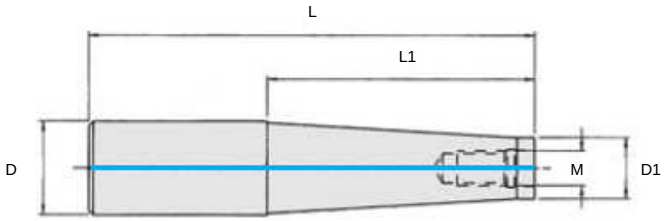
7 KTE20

8 KTE20

• MN12...

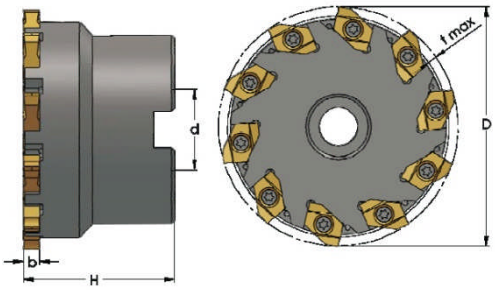
MN12 110 050 R/L KTE20
MN12 130 070 R/L KTE20
MN12 130 085 R/L KTE20
MN12 160 085 R/L KTE20
MN12 160 100 R/L KTE20
MN12 185 125 R/L KTE20
MN12 215 150 R/L KTE20
MN12 265 150 R/L KTE20
MN12 265 175 R/L KTE20
MN12 315 175 R/L KTE20
MN12 415 200 R/L KTE20
MN12 415 250 R/L KTE20
MN12 515 300 R/L KTE20

• 5108 Series damped extensions for 1132 E



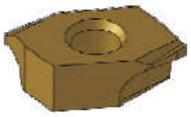
Article number	D	D1	L	L1	M
5108 32 100 M16	32	29	170	100	M16
5108 32 150 M16	32	29	220	150	M16

• 1132 M Series



1132 M Series

Ø 49.0 - 80.0 mm



MN12 …

DIN 6357 / 6358 hole adapter

Article number	D	b	H	d	tmax	z	insert
		tot					
1132 049 M W	49	4.26	40	43	1.75	2	MN12…L
1132 063 M W	63	5.26	50	43	2.5	3	MN12…L
1132 080 M W	80	5.26	50	43	3	4	MN12…L

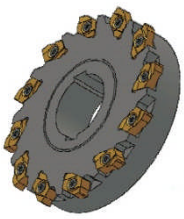
3 KTE20

4 KTE20

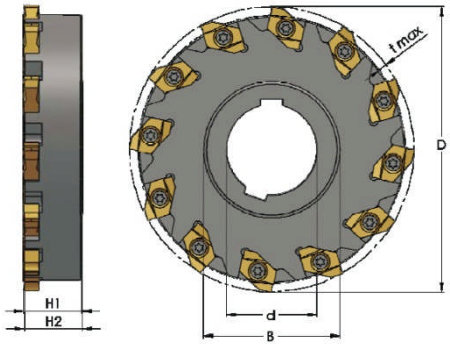
6 KTE20

7 KTE20

8 KTE20



• 1132 S Series



1132 S Series

Ø 63.0 - 100.0 mm

MN12 …

Hole adapter with wedge

Article number	D	B	H	H2	d	tmax	z	insert
		tot						
1132 063 S W R/L	63	5.26	14.2	14	22	3.00	7	MN12…L/R
1132 080 S W R/L	80	5.26	16.2	16	27	3.00	9	MN12…L/R
1132 100 S W R/L	100	5.26	20.2	20	32	3.00	11	MN12…L/R

• MN12...

MN12 110 050 R/L KTE20
MN12 130 070 R/L KTE20
MN12 130 085 R/L KTE20
MN12 160 085 R/L KTE20
MN12 160 100 R/L KTE20
MN12 185 125 R/L KTE20
MN12 215 150 R/L KTE20
MN12 265 150 R/L KTE20
MN12 265 175 R/L KTE20
MN12 315 175 R/L KTE20
MN12 415 200 R/L KTE20
MN12 415 250 R/L KTE20
MN12 515 300 R/L KTE20

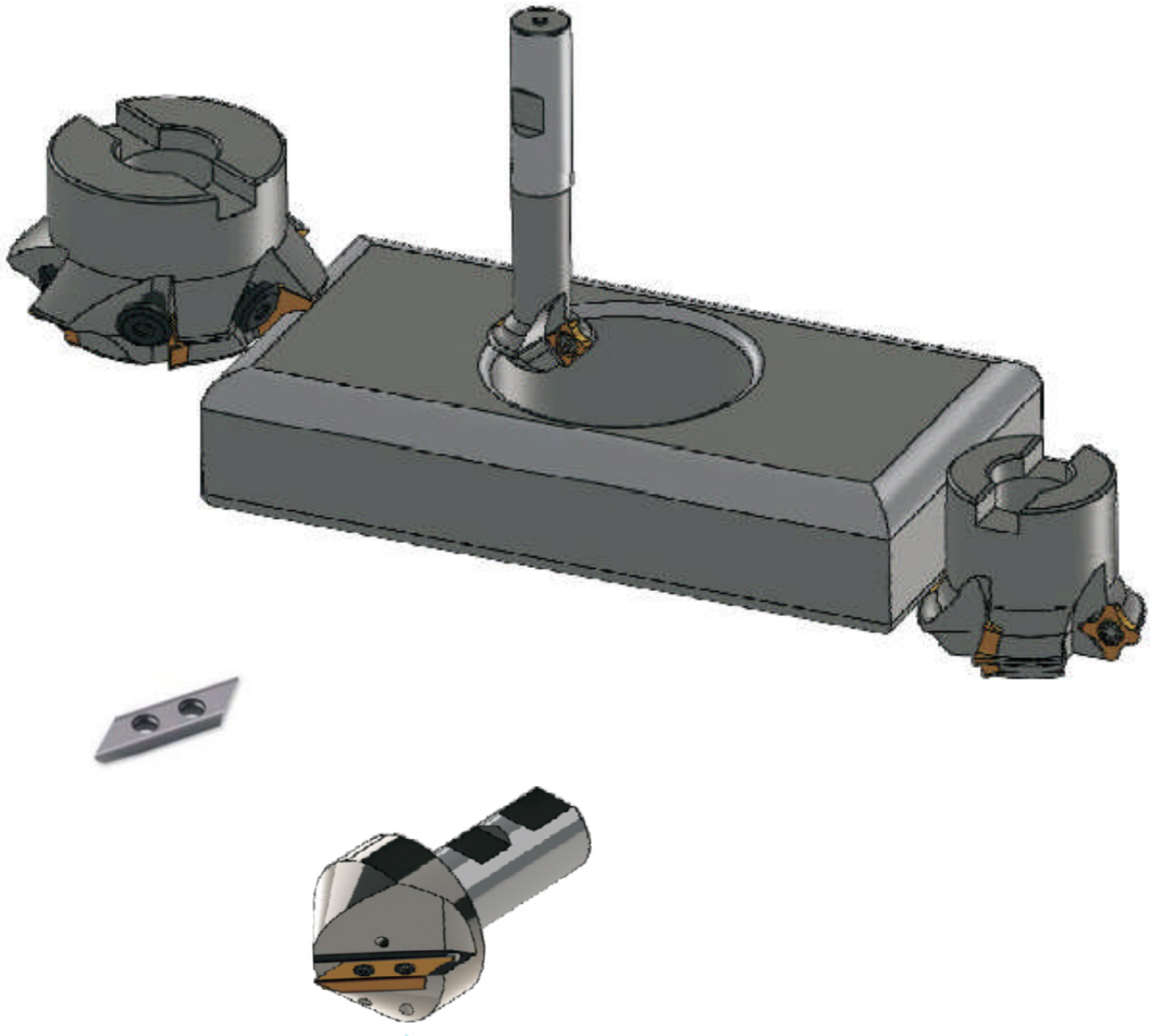
Vc / hm / Ae / fz • Initial cutting values insert tipped disc mills

2	**Vc = 200 - 400 m/min for 1122 series with X10N … KTE20**	
	X10N 2.00 / 5.00 … KTE20 **hm** : ≤0.10 [at Ae ≈ 10% of D] **hm** : ≤0.09 [at Ae ≈ 15% of D] **hm** : ≤0.08 [at Ae ≈ 20% of D] **hm** : ≤0.07 [at Ae ≈ 25% of D] 	
	hm **Calculation feed rate per tooth fz: = ----------** **√ [Ae : D]** **D = diameter disc mill in mm** **Ae = depth of groove in mm** **hm = average chip thickness as a constant value in mm**	
2	**Vc = 200 - 450 m/min for 1132 series with MN12 … KTE20**	
	MN12 110 050 / 515 300 R / L KTE20 **fz** : 0.03 - 0.06 	
3	**Vc = 160 - 300 m/min for 1122 series with X10N … KTE20** **Vc = 160 - 350 m/min for 1132 series with MN12 … KTE20**	**D / Ae / hm => fz** **as under 2**
4	**Vc = 70 - 100 m/min for 1122 series with X10N … KTE20** **Vc = 70 - 120 m/min for 1132 series with MN12 … KTE20**	**D / Ae / hm => fz** **as under 2**
6	**Vc = 140 - 220 m/min for 1122 series with X10N … KTE20** **Vc = 160 - 260 m/min for 1132 series with MN12 … KTE20**	**D / Ae / hm => fz** **as under 2**
7	**Vc = 140 - 280 m/min for 1122 series with X10N … KTE20** **Vc = 140 - 300 m/min for 1132 series with MN12 … KTE20**	**D / Ae / hm => fz** **as under 2**
8	**Vc = 80 - 140 m/min for 1122 series with X10N … KTE20** **Vc = 80 - 160 m/min for 1132 series with MN12 … KTE20**	**D / Ae / hm => fz** **as under 2**

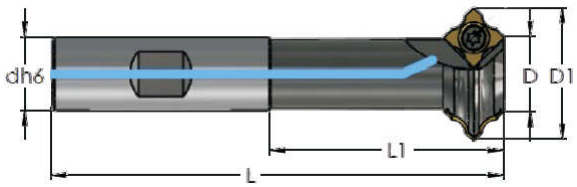
• Mill operations

Insert tipped tool types; chamfer universal

Ø 12	-	32	shank	**3016WW…**	SCXT 09T3 R KTE20
					SEXT 1204 R KTE20
32	-	63	hole adapter	**3016MW…**	SEXT 1204 R KTE20
					XPKN 2204 R KTE20
5	-	57	shank	**3012WW 30°**	LCEX 310404 PTV28
5	-	48	shank	**3012WW 45°**	LCEX 310404 PTV28
5	-	35	shank	**3012WW 60°**	LCEX 310404 PTV28



• 3016 W Series



3016 W Series

Ø 12.0 - 32.0 mm

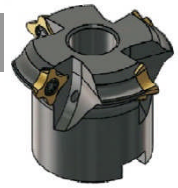
SCXT 09T3 R.. [radius = 1 - 3]

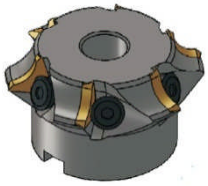
SEXT 1204 R.. [radius = 1 - 5]

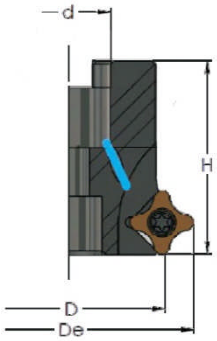
Weldon DIN 6359 chuck [h6]

Article number	D	D1	L	L1	dh6	z	insert		
3016 012 W W	12	23.7	100	50	16	1	SCXT 09T3 R..	1	KTE20
3016 012 W L	12	23.7	200	50	16	1	SCXT 09T3 R..	2	KTE20
3016 016 W W	16	28.8	100	50	16	2	SCXT 09T3 R..	3	KTE20
3016 016 W L	16	28.8	200	50	16	2	SCXT 09T3 R..	4	KTE20
3016 025 W W	28	40.3	100	45	25	3	SCXT 09T3 R..	5	KTE20
3016 025 W L	28	40.3	200	45	25	3	SCXT 09T3 R..	6	KTE20
3016 025 W W 12	28	40.5	100	45	25	3	SEXT 1204 R..	7	KTE20
3016 025 W L 12	28	40.5	200	45	25	3	SEXT 1204 R..	8	KTE20
3016 032 W W	32	45.0	100	45	25	3	SEXT 1204 R..		
3016 032 W L	32	45.0	200	45	25	3	SEXT 1204 R..		

• 3016 M Series







3016 M Series

Ø 32.0 - 63.0 mm

SEXT 1204 R.. [radius = 1 - 5]

XPKN 2204 R.. [radius = 6 - 10]

DIN 6357 / 6358 hole adapter

Article number	D	De	d	H	z	insert
3016 M W D32	32	45	16	40	3	SEXT 1204 R..
3016 M W D40	40	53	16	40	4	SEXT 1204 R..
3016 M W D50	50	63	22	48	5	SEXT 1204 R..
3016 M W D63	63	92.5	22	48	6	XPKN 2204 R..

• SCXT09T3 R.. / SEXT 1204 R.. / XPKN 2204 R..

SCXT 09T3 R1 KTE20
SCXT 09T3 R2 KTE20
SCXT 09T3 R3 KTE20

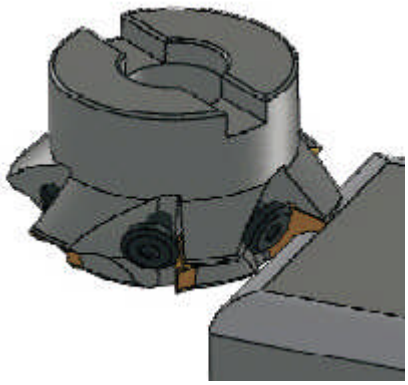
SEXT 1204 R1 KTE20
SEXT 1204 R2 KTE20
SEXT 1204 R3 KTE20
SEXT 1204 R4 KTE20
SEXT 1204 R5 KTE20

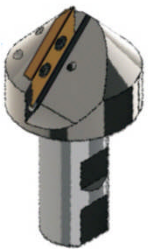
XPKN 2204 R6 KTE20
XPKN 2204 R7 KTE20
XPKN 2204 R8 KTE20
XPKN 2204 R10 KTE20

1	KTE20
2	KTE20
3	KTE20
4	KTE20
5	KTE20
6	KTE20
7	KTE20
8	KTE20

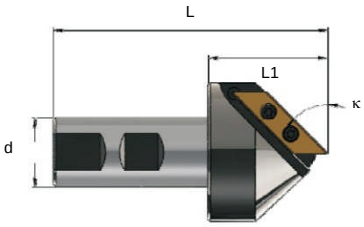
Machining example

Material:	G AlSi17Cu4 **4**
Operation:	edge milling radius 10 mm
Machining center:	vertical
Adapter:	SK50 DIN 69871 A to shell mill adapter Ø 22 mm
Coolant:	8% emulsion
Tool:	3016 M W D63 / XPKN 2204 R10 KTE20
W.O.C. Ae:	10.0 mm
D.O.C. Ap:	10.0 mm
Cutting speed Vc / revolutions n:	Vc = 220.0 m/min / n = 1112 r.p.m.
Feed rate fn and Vf:	fz = 0.2 mm and Vf = 1334 mm/min





• 3012 Series



3012 Series

Ø 5 - 35.0 / 5 - 57.0 mm

LCEX 310404 ..

Weldon DIN 6359 chuck [h6]

Article number	L	L1	dh6	κ°	Dmin/max	z	insert
3012 W W 30°	120	50	25	30	5 - 57	2	LCEX 310404..
3012 W W 45°	120	50	25	45	5 - 48	2	LCEX 310404..
3012 W W 60°	120	50	25	60	5 - 35	1	LCEX 310404..

1 PTV28
2 PTV28
3 PTV28
4 PTV28
5 PTV28
6 PTV28
7 PTV28
8 PTV28
9 PTV28

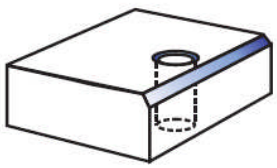
• LCEX 310404 ..

LCEX 310404 WF KTE20

LCEX 310404 WM KTE20

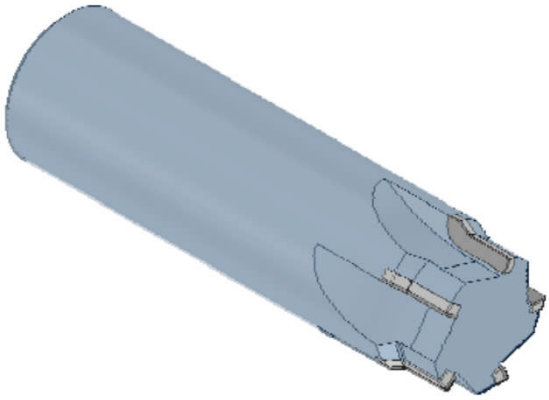
Machining example

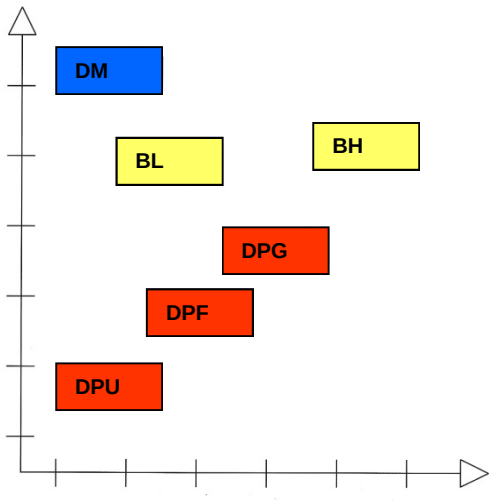
Material:	G AlSi8Cu3 **3**
Operation:	edge milling T land 30° and hole Ø 25 mm
Machining center:	vertical
Adapter:	SK40 DIN 69871 A to Weldon Ø 25 mm
Coolant:	8% emulsion
Tool:	3012 W W 30° / LCEX 310404 WF KTE20
W.O.C. / Ae:	3.0 mm
D.O.C. / Ap:	4.0 mm
Cutting speed Vc / revolutions n:	Vcmax = 280.0 m/min / n = 1565 r.p.m.
Feed rate fn and Vf:	fz = 0.12 mm and Vf = 376 mm/min



Vc / fz • Initial cutting values insert tipped edge mills

1	**Vc = 200 - 500 m/min for KTE20 / PTV28**	
	SCXT 09T3 R. KTE20 fz : 0.06 - 0.20 	SEXT 1204 R. KTE20 fz : 0.10 - 0.24 
	XPKN 2204 R. KTE20 fz : 0.12 - 0.26 	
	LCEX 310404 .. PTV28 fz : 0.08 - 0.20 	
2	**Vc = 180 - 450 m/min for KTE20 / PTV28**	**fz as under 1**
3	**Vc = 160 - 400 m/min for KTE20 / PTV28**	**fz as under 1**
4	**Vc = 70 - 120 m/min for KTE20 / PTV28**	**fz as under 1**
5	**Vc = 140 - 350 m/min for KTE20 / PTV28**	**fz as under 1**
6	**Vc = 120 - 320 m/min for KTE20 / PTV28**	**fz as under 1**
7	**Vc = 140 - 320 m/min for KTE20 / PTV28**	**fz as under 1**
8	**Vc = 80 - 160 m/min for KTE20 / PTV28**	**fz as under 1**
9	**Vc = 50 - 90 m/min for PTV28**	**fz as under 1**





Grade	Description	Workpiece material and features
PCD-DPF	Polycristaline diamond with carbide base, fine grain, scharp cutting edges and low cutting forces at tight tolerances. High wear resistance and thoughness.	Finishing of all NF metal and NF workpiece materials with a small content on abrasive particles.
PCD-DPG	Polycristaline diamond with carbide base, corse grain, scharp cutting edges and low cutting forces at tight tolerances. High wear resistance and thoughness.	Roughing, finishing and milling of all high abrasive NF metal and NF workpiece materials.
PCD-DPU	Polycristaline diamond with carbide base, micro grain, scharp cutting edges and very low cutting forces at tight tolerances. Excellent wear resistance and thoughness.	Fine finishing and milling of all NF metal and NF workpiece materials with a very small content on abrasive particles.
CBN-BHF -BHT	Solide polycristaline CBN grade with high CBN content, middle grain size, high wear resistance, warm hardness, presure resistance and thoughness of all CBN grades for machining cast iron, hard castings, Ni-Hard and sintered steels. BHF = scharp cutting edge BHT = T land on cutting edge	Rough finishing from sintered steels, cast iron, hard castings, Ni-Hard and super alloys.
CBN-BLF -BLT	Solide polycristaline CBN grade with low CBN content. Micro grain, very high wear resistance, presure resistance and thoughness. BLF = scharp cutting edge BLT = T land on cutting edge	Hard machining, dry and with coolant emulsion. High feed rates and small D.O.C. during smooth cutting and middle interrupted cut.
MCD-MD	Solide monocristaline diamond without structure. Absolute scharp cutting edges without cracks, therefore almost no cutting forces [burr free] and garanteed tight tolerances. Absolute wear resistance and highest heat conduct, low thoughness.	Ultra fine finishing of all NF metal and NF workpiece materials without abrasive particles.

Vc / fz / Ap • Inicial cutting values advanced cutting materials

1 **Vc = 500 - 2000 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 1000 - 1500	Vc = 500 - 1000	Vc = 750 - 2000
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

2 **Vc = 400 - 1800 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 500 - 1200	Vc = 400 - 1000	Vc = 450 - 1800
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

3 **Vc = 320 - 1500 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 350 - 1000	Vc = 320 - 900	Vc = 350 - 1500
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

4 **Vc = 200 - 900 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 250 - 800	Vc = 200 - 750	Vc = 250 - 900
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

5 **Vc = 400 - 1800 m/min**

DPF	DPG	DM
Universal and finishing	Universal and finishing	Universal machining
Vc = 500 - 1200	Vc = 400 - 1000	Vc = 450 - 1800
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

6 **Vc = 320 - 1500 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 350 - 1000	Vc = 320 - 900	Vc = 350 - 1500
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

7 **Vc = 320 - 1500 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 350 - 1000	Vc = 320 - 900	Vc = 350 - 1500
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

8 **Vc = 200 - 900 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 250 - 800	Vc = 200 - 750	Vc = 250 - 900
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

9 **Vc = 50 - 200 m/min**

DPF	DPG	DM
Universal and finishing	Universal and roughing	Universal machining
Vc = 70 - 150	Vc = 50 - 120	Vc = 60 - 200
fz = 0.05 - 0.20	fz = 0.1 - 0.25	fz = 0.03 - 0.2
Ap = 0.05 - 2.0	Ap = 0.1 - 4.0	Ap = 0.03 - 1.0

Rake angle: positive
Geometry: radius

DPF	DPG	DM
CCMT060201	CCMT060201	CCMT060201
CCMT060202	CCMT060202	CCMT060202
CCMT060204		CCMT060204
CCMT060208		CCMT060208
CCMT09T302	CCMT09T302	
CCMT09T304		
CCMT09T308		
CCMT120404	CCMT120404	
CCMT120408		

Rake angle: positive
Geometry: wiper

DPF	DPG	DM
CCMT060201 W	CCMT060201 W	CCMT060201 W
CCMT060202 W	CCMT060202 W	CCMT060202 W
CCMT060204 W		CCMT060204 W
CCMT09T301 W	CCMT09T301 W	CCMT09T301 W
CCMT09T302 W	CCMT09T302 W	CCMT09T302 W
CCMT09T304 W		CCMT09T304 W
CCMT120402 W	CCMT120402 W	
CCMT120404 W	CCMT120404 W	

Rake angle: positief
Geometry: long cutt.e.

DPG	DPG	DM
	CCMT060201 R/L GS	
	CCMT060202 R/L GS	
	CCMT09T301 R/L GS	
	CCMT09T302 R/L GS	
	CCMT120402 R/L GS	
	CCMT120404 R/L GS	

Rake angle: neutral
Geometry: radius

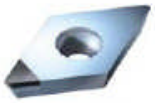
DPF	DPG	DM
CCMW060202	CCMW060202	CCMW060202
CCMW060204	CCMW060204	CCMW060204
CCMW060208		CCMW060208
CCMW09T302	CCMW09T302	
CCMW09T304	CCMW09T304	CCMW09T304
CCMW09T308		CCMW09T308
CCMW120404	CCMW120404	CCMW120404
CCMW120408		

Rake angle: neutral
Geometry: wiper

DPF	DPG	DM
CCMT060201 W	CCMT060201 W	CCMT060201 W
CCMT060202 W	CCMT060202 W	CCMT060202 W
CCMT060204 W		CCMT060204 W
CCMT09T301 W	CCMT09T301 W	CCMT09T301 W
CCMT09T302 W	CCMT09T302 W	CCMT09T302 W
CCMT09T304 W		CCMT09T304 W
CCMT09T308 W	CCMT09T308 W	CCMT09T308 W
CCMT120402 W	CCMT120402 W	CCMT120402 W

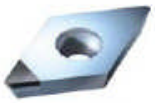
Rake angle: neutral
Geometry: long cutt.e.

DPF	DPG	DM
CCMW060204R/LGS		
CCMW060208R/LGS		
CCMW09T312R/LGS		
CCMW120408R/LGS		



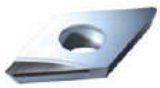
Rake angle: positive
Geometry: radius

DPF	DPG	DM
DCMT070202	DCMT070201	DCMT070202
DCMT070204	DCMT070202	DCMT070204
DCMT070208		DCMT070208
DCMT11T302	DCMT11T301	DCMT11T302
DCMT11T304	DCMT11T302	DCMT11T304
DCMT11T308		DCMT11T308
DCMT11T312		



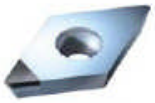
Rake angle: positive
Geometry: wiper

DPF	DPG	DM
DCMT070204R/L W	DCMT070201R/L W	DCMT070201R/L W
DCMT11T304R/L W	DCMT070202R/L W	DCMT070202R/L W
	DCMT11T301R/L W	DCMT070204R/L W
	DCMT11T302R/L W	DCMT11T301R/L W
		DCMT11T302R/L W
		DCMT11T304R/L W



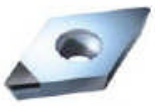
Rake angle: positive
Geometry: cutt.e. R/L

DPF	DPG	DM
DCMT070204R/L	DCMT070204R/L	DCMT070204R/L
DCMT070408R/L	DCMT070208R/L	
DCMT11T304R/L	DCMT11T304R/L	
DCMT11T308R/L	DCMT11T308R/L	
DCMT11T312R/L	DCMT11T312R/L	



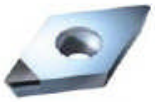
Rake angle: neutral
Geometry: radius

DPF	DPG	DM
DCMW070202	DCMW070201	DCMW070201
DCMW070204	DCMW070202	DCMW070202
DCMW070208	DCMW070204	DCMW070204
DCMW11T301	DCMW070208	DCMW070208
DCMW11T304	DCMW11T302	DCMW11T301
DCMW11T308	DCMW11T304	DCMW11T302
DCMW11T312	DCMW11T308	DCMW11T304
DCMW150404	DCMW11T312	DCMW11T308
DCMW150408		DCMW11T312



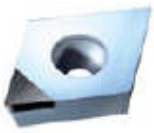
Rake angle: neutral
Geometry: wiper

DPF	DPG	DM
	DCMW070201R/L W	DCMW070201R/L W
	DCMW070202R/L W	DCMW070202R/L W
	DCMW070204R/L W	DCMW070204R/L W
	DCMW11T301R/L W	DCMW11T301R/L W
	DCMW11T302R/L W	DCMW11T302R/L W
	DCMW11T304R/L W	DCMW11T304R/L W



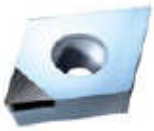
Rake angle: neutral
Geometry: radius

DPF	DPG	DM
DPMW070202		
DPMW070204		
DPMW070208		
DPMW11T302		
DPMW11T304		
DPMW11T308		



Rake angle: positive
Geometry: radius

DPF	DPG	DM
EPMT040202		
EPMT040204		
EPMT050202		
EPMT050204		
EPMT060202		
EPMT060204		
EPMT080302		
EPMT080304		
EPMT080308		



Rake angle: neutral
Geometry: radius

DPF	DPG	DM
EPMW040202		
EPMW040204		
EPMW050202		
EPMW050204		
EPMW060202		
EPMW060204		
EPMW080302		
EPMW080304		
EPMW080308		

Rake angle: neutral
Geometry: full face

DPF	DPG	DM
RCMW0602MO VM	RCMW0602MO VM	
RCMW0803MO VM	RCMW0803MO VM	
RCMW1003MO VM		
RCMW10T3MO VM		
RCMW1204MO VM		

Rake angle: neutral
Geometry: full face

DPF	DPG	DM
RPMW0802MO VM		
RPMW1003MO VM		
RPMW1204MO VM		
RPMW120400 VM		

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	SCMT09T304	
	SCMT09T308	
	SCMT09T312	
	SCMT120408	
	SCMT120412	

Rake angle: positive
Geometry: long cutt.e.

DPF	DPG	DM
	SCMT09T308 GS	
	SCMT09T312 GS	
	SCMT120408 GS	
	SCMT120412 GS	

Rake angle: neutral
Geometry: radius

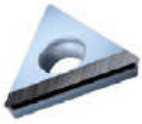
DPF	DPG	DM
SCMW09T304	SCMW09T304	
SCMW09T308		SCMW09T308
SCMW09T312		SCMW09T312
SCMW120404	SCMW120404	
SCMW120408		SCMW120408
SCMW120412		SCMW120412

Rake angle: neutral
Geometry: long cutt.e.

DPF	DPG	DM
SCMW09T304 GS		
SCMW09T308 GS		
SCMW09T312 GS		
SCMW120404 GS		
SCMW120408 GS		
SCMW120412 GS		

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	TCMT090202	TCMT090202
	TCMT090204	TCMT090204
		TCMT090208
	TCMT110202	TCMT110202
	TCMT110204	TCMT110204
		TCMT110208
TCMT16T304	TCMT16T304	
TCMT16T308		



Rake angle: positive
Geometry: long cutt.e.

DPF	DPG	DM
	TCMT090204 GS	
	TCMT090208 GS	
	TCMT110204 GS	
	TCMT110208 GS	
	TCMT110212 GS	
	TCMT16T304 GS	
	TCMT16T308 GS	
	TCMT16T312 GS	

Rake angle: neutral
Geometry: radius

DPF	DPG	DM
TCMW090202	TCMW090202	TCMW090202
TCMW090204	TCMW090204	TCMW090204
TCMW090208		TCMW090208
TCMW110202	TCMW110202	TCMW110202
TCMW110204	TCMW110204	TCMW110204
TCMW110208		TCMW110208
TCMW16T304	TCMW16T304	TCMW16T304
TCMW16T308	TCMW16T308	TCMW16T308
TCMW16T312	TCMW16T312	TCMW16T312

Rake angle: neutral
Geometry: long cutt.e.

DPF	DPG	DM
	TCMW090204 GS	
	TCMW090208 GS	
	TCMW110204 GS	
	TCMW110208 GS	
	TCMW110212 GS	
	TCMW16T304 GS	
	TCMW16T308 GS	
	TCMW16T312 GS	

Rake angle: neutral
Geometry: Full face

DPF	DPG	DM
TCMW110202 VM	TCMW110202 VM	
TCMW110204 VM	TCMW110204 VM	
TCMW110208 VM	TCMW110208 VM	

Rake angle: positive Geometry: radius	DPF	DPG	DM
	VBMT110202	VBMT110201	VBMT110202
	VBMT110204	VBMT110202	VBMT110204
	VBMT110208	VBMT110204	
	VBMT160402	VBMT160402	
	VBMT160404	VBMT160404	TCMW160404
	VBMT160408		

Rake angle: positive Geometry: cutt.e. R/L	DPF	DPG	DM
	VBMT110204 R/L	VBMT110204 R/L	
	VBMT110208 R/L	VBMT110208 R/L	
	VBMT160404 R/L	VBMT160404 R/L	
	VBMT160408 R/L	VBMT160408 R/L	
	VBMT160412 R/L	VBMT160412 R/L	

Rake angle: neutral Geometry: radius	DPF	DPG	DM
	VBMW110202	VBMW110202	
	VBMW110204		VBMW110204
	VBMW110208		
	VBMW160402	VBMW160402	
	VBMW160404		VBMW160404
	VBMW160408		
	VBMW160412		

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	VCMT070201	
VCMT070202	VCMT070202	VCMT070202
VCMT070204	VCMT070204	VCMT070204
VCMT110301	VCMT110301	
VCMT110302	VCMT110302	VCMT110302
VCMT110304	VCMT110304	VCMT110304
VCMT110308		VCMT110308
VCMT130302	VCMT130302	
VCMT130304		
VCMT160401	VCMT160401	
VCMT160402	VCMT160402	VCMT160402
VCMT160404	VCMT160404	VCMT160404
VCMT160408		VCMT160408
VCMT160412		

Rake angle: positive
Geometry: cutt.e. R/L

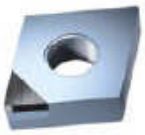
DPF	DPG	DM
VCMT110204 R/L	VCMT110204 R/L	
VCMT110208 R/L	VCMT110208 R/L	
VCMT160404 R/L	VCMT160404 R/L	
VCMT160408 R/L	VCMT160408 R/L	
VCMT160412 R/L	VCMT160412 R/L	

Rake angle: neutral
Geometry: radius

DPF	DPG	DM
	VCMW070201	
VCMW070202	VCMW070202	VCMW070202
VCMW070204	VCMW070204	VCMW070204
	VCMW110301	
VCMW110302	VCMW110302	VCMW110302
VCMW110304	VCMW110304	VCMW110304
VCMW110308		VCMW110308
VCMW130302	VCMW130302	
VCMW130304		
	VCMW160401	
VCMW160402	VCMW160402	VCMW160402
VCMW160404	VCMW160404	VCMW160404
VCMW160408	VCMW160408	VCMW160408
VCMW160412	VCMW160412	VCMW160412
VCMW160416		

Rake angle: negative
Geometry: radius

DPF	DPG	DM
	CNMN120404 MW	
	CNMN120408 MW	
	CNMN120412 MW	



Rake angle: negative
Geometry: radius

DPF	DPG	DM
CNMA120404 MW	CNMA120404 MW	
CNMA120408 MW	CNMA120408 MW	
CNMA120412 MW	CNMA120412 MW	

Rake angle: neutral
Geometry: radius

DPF	DPG	DM
	CNMM120404 MW	
	CNMM120408 MW	
	CNMM120412 MW	

Rake angle: negative
Geometry: radius

DPF	DPG	DM
DNMA150404 MW	DNMA150404 MW	
DNMA150408 MW	DNMA150408 MW	
DNMA150412 MW	DNMA150412 MW	
DNMA150604 MW	DNMA150604 MW	
DNMA150608 MW	DNMA150608 MW	
DNMA150612 MW	DNMA150612 MW	

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	DNMM150404 MW	
	DNMM150408 MW	
	DNMM150412 MW	
	DNMM150604 MW	
	DNMM150608 MW	
	DNMM150612 MW	

Rake angle: negative
Geometry: radius

DPF	DPG	DM
SNMN120404 MW	SNMN120404 MW	
SNMN120408 MW	SNMN120408 MW	
SNMN120412 MW	SNMN120412 MW	

Rake angle: negative
Geometry: radius

DPF	DPG	DM
SNMA120404 MW	SNMA120404 MW	
SNMA120408 MW	SNMA120408 MW	
SNMA120412 MW	SNMA120412 MW	

Rake angle: positive
Geometry: long cutt.e.

DPF	DPG	DM
	TNMR160408 GS	
	TNMR160412 GS	

Rake angle: nagative
Geometry: radius

DPF	DPG	DM
TNMA160404 MW	TNMA160404 MW	
TNMA160408 MW	TNMA160408 MW	
TNMA160412 MW	TNMA160412 MW	
TNMA220408 MW	TNMA220408 MW	
TNMA220412 MW	TNMA220412 MW	

Rake angle: positive
Geometry: long cutt.e.

DPF	DPG	DM
	TNMM160404 GS	
	TNMM160408 GS	
	TNMM160412 GS	
	TNMM220408 GS	
	TNMM220412 GS	

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	TNMM160404 MW	
	TNMM160408 MW	
	TNMM160412 MW	
	TNMM220408 MW	
	TNMM220412 MW	

Rake angle: negative
Geometry: radius

DPF	DPG	DM
VNMA160404 MW	VNMA160404 MW	
VNMA160408 MW	VNMA160408 MW	
VNMA160412 MW	VNMA160412 MW	

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	VNMM160404 MW	
	VNMM160408 MW	
	VNMM160412 MW	

Rake angle: negative
Geometry: radius

DPF	DPG	DM
WNMA080404 MW	WNMA080404 MW	
WNMA080408 MW	WNMA080408 MW	
WNMA080412 MW	WNMA080412 MW	

Rake angle: positive
Geometry: radius

DPF	DPG	DM
	WNMM080404 MW WNMM080408 MW WNMM080412 MW	

Rake angle: neutral
Geometry: Full face

DPF	DPG	DM
	RDHX0501MO RDHX0702MO RDHX1003MO RDHX12T3MO	

Rake angle: neutral
Geometry: long cutt.e.

DPF	DPG	DM
	SDHW1204 AE N4 SDHW1204 AE N6	

Rake angle: neutral
Geometry: Long cutt.e.

DPF	DPG	DM
	SEHW1204 AE N4 SEHW1204 AE N6	

Rake angle: neutral
Geometry: long cutt.e.

DPF	DPG	DM
	SEKN1203 AE N4 SEKN1203 AE N6	

Rake angle: neutral
Geometry: radius

DPF	DPG	DM
	APKT100305	

Rake angle: neutral
Geometry: full face

DPF	DPG	DM
M10N 2 00S 0 20 T M10N 2 50S 0 20 T M10N 3 00S 0 30 T		M10N 2 00S 0 20 T M10N 2 50S 0 20 T M10N 3 00S 0 30 T

Rake angle: neutral
Geometry: full face

DPF	DPG	DM
M10N 3 00S 1 50 R		M10N 3 00S 1 50 R

Rake angle: neutral
Geometry: 1 cutt.e.

DPF	DPG	DM
MD22N 2 00S 0 20 T		MD22N 2 00S 0 20 T
MD22N 2 50S 0 20 T		MD22N 2 50S 0 20 T
MD22N 3 00S 0 30 T		MD22N 3 00S 0 30 T
MD24N 4 00S 0 40 T		MD24N 4 00S 0 40 T
MD24N 5 00S 0 40 T		MD24N 5 00S 0 40 T
MD24N 6 00S 0 40 T		MD24N 6 00S 0 40 T

Rake angle: neutral
Geometry: 1 cutt.e.

DPF	DPG	DM
MD22N 3 00S 1 50 R		MD22N 3 00S 1 50 R
MD24N 4 00S 2 00 R		MD24N 4 00S 2 00 R
MD24N 6 00S 3 00 R		MD24N 6 00S 3 00 R

Formulas and calculations [general drilling operations]

$$\text{Cutting speed } Vc = \frac{D \times \pi \times n}{1000} \text{ in m/min}$$

Vc: cutting speed in m/min
D: tool diameter in mm
π: value pí; ≈ 3.14
n: r.p.m.

$$\text{Revs. } n = \frac{Vc \times 1000}{D \times \pi} \text{ in r.p.m.}$$

n: r.p.m.
D: tool diameter in mm
π: value pí; ≈ 3.14
Vc: cutting speed in m/min

$$\text{Table feed } Vf = fn \times n \text{ in mm/min}$$

Vf: table feed in mm/min
fn: feed/rev. in mm
n: r.p.m.

$$\text{Feed/rev. } fn = \frac{Vf}{n} \text{ in mm}$$

fn: feed/rev. in mm
Vf: table feed in mm/min
n: r.p.m.

$$\text{Chip removal } Q = \frac{D \times fn \times Vc}{4} \text{ in cm}^3\text{/min}$$

Q: chip removal in cm³/min
D: diameter tool in mm
fn: feed/rev. in mm
Vc: cutting speed in m/min

$$\text{Power } Pc = \frac{[fn \times Vc \times D \times kc]}{240 \times 10^3 \times \eta} \text{ in kW}$$

Pc: power requirement in kW
Vc: cutting speed m/mm
D: diameter tool in mm
Kc: specific cutting force
η: spindel efficiency [factor 0.85]

$$\text{Torque } Mc = \frac{Pc \times 30 \times 10^3}{\pi \times n} \text{ in Nm}$$

Mc: torque in Nm
Pc: power requirement in kW
n: r.p.m.
π: value pí ≈ 3.14

Formulas and calculations
[general drilling operations]

Specific cutting force kc in N/mm²

$$kc = kc1 \times [fz \times \sin Kr]^{-mc} \times [1 - \gamma : 100]$$

Feed force Ff in N

$$Ff = 0.5 \times kc \times \frac{D}{2} \times fn \times \sin Kr$$

kc: specific cutting force in N/mm²

kc1: value cutting force in N/mm²

γ: helix angle SC drills/rake angle insert in °

Kr: attack angle in °

fz: feed/tooth in mm

- **fz = fn for effective 1 cutting edge**
- **fz = fn : 2 for effective 2 cutting edges**
- **fz = fn : 3 voor effectieve 3 cutting edges**

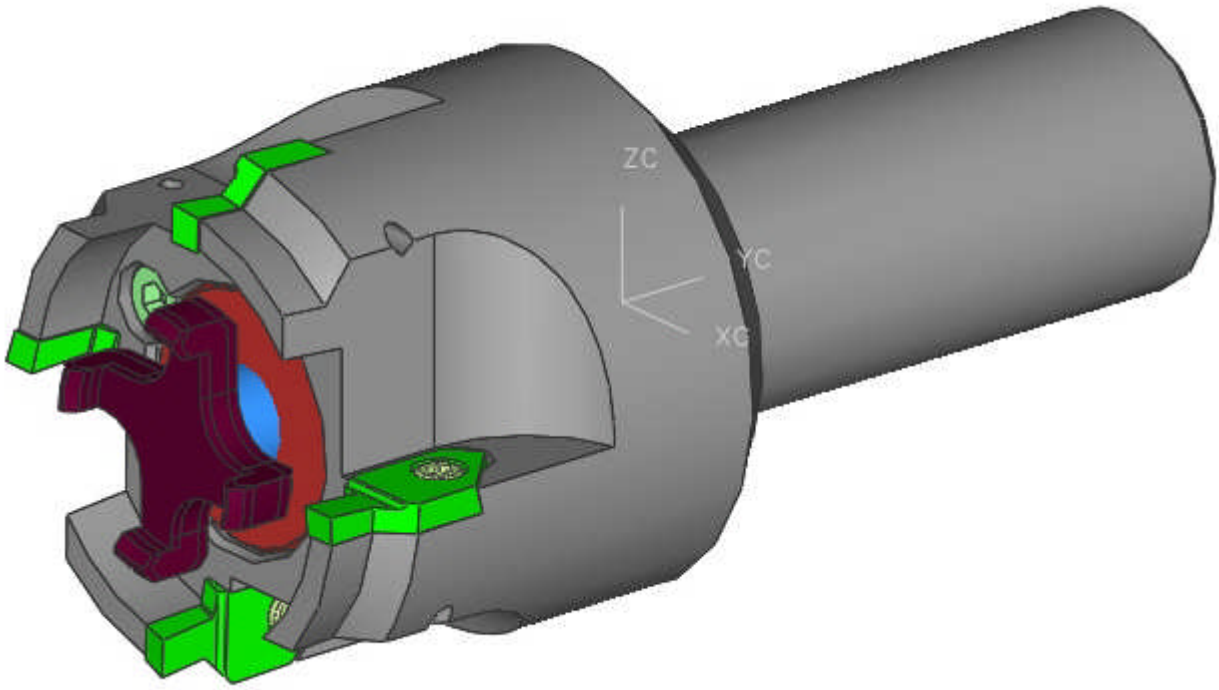
Ff: feed force in N

D: tool diameter in mm

kc: specific cutting force in N/mm²

Kr: attack angle in °

fn: feed/revs. in mm



Initial values specific cutting forces

Material group 1										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1554	1490	1325	1189	1129	1073	1029	963	915	821

Material group 2										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1554	1490	1325	1189	1129	1073	1029	963	915	821

Material group 3										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1653	1585	1410	1265	1202	1142	1025	1095	973	874

Material group 4										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1653	1585	1410	1265	1202	1142	1025	1095	973	874

Material group 5										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1753	1681	1494	1341	1274	1210	1161	1086	1032	926

Material group 6										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	1554	1490	1325	1189	1129	1073	1029	936	915	821

Material group 7										
fz	0.05	0.06	0.10	0.16	0.20	0.25	0.30	0.4	0.5	0.8
kc	2072	1980	1743	1550	1465	1386	1324	1232	1165	1036

Formulas and calculations [general boring operations]

$$\text{Cutting speed } Vc = \frac{D \times \pi \times n}{1000} \text{ in m/min}$$

Vc: cutting speed in m/min
D: tool diameter in mm
π: value pí; ≈ 3.14
n: r.p.m.

$$\text{Revs. } n = \frac{Vc \times 1000}{D \times \pi} \text{ in r.p.m.}$$

n: r.p.m.
D: tool diameter in mm
π: value pí; ≈ 3.14
Vc: cutting speed in m/min

Table feed $Vf = fz \times z \times n$ in mm/min
$fn = fz \times z$ [2 of 3 eff.]

Vf: table feed in mm/min
fz: feed/teeth in mm
fn: feed/rev. in mm
z: number of teeth
n: r.p.m.

$$\text{Feed/tooth } fz = \frac{Vf}{z \times n} \text{ in mm}$$

fz: feed/teeth in mm
Vf: table feed in mm/min
z: number of teeth
n: r.p.m.

$$Pc = \frac{Ap \times fn \times kc \times Vc}{60000 \times 10^3 \times \eta} \times [1 - Ap : D] \text{ in kW}$$

Pc: power requirement in kW
Ap: D.O.C. in mm
fn: feed/rev. in mm
Kc: specific cutting force in N/mm²
Vc: cutting speed in m/min
D: tool diameter in mm
η: spindel efficiency [factor 0.85]

Feed force Ff

$Ff \approx 0.5 \times Ap \times fn \times kc \times \sin Kr$ in Nm

Ff: feed force in Nm
Ap: D.O.C. in mm
fn: feed/rev. in mm
Kc: specific cutting force in N/mm²
Kr: attack angle in °

$$Q = \frac{Ap \times Vf}{1000} \text{ in cm}^3\text{/min}$$

Q: chip removal in cm³/min
Vf: table feed in mm/min
Ap: D.O.C. in mm

$$\text{Surface roughness } Rth = \frac{125 \times fn^2}{r}$$

Rth: theoretical surface roughness µm
fn: feed in mm/rev.
r: radius cutting edge

Formulas and calculations [general milling operations]

$$\text{Cutting speed } Vc = \frac{D \times \pi \times n}{1000} \text{ in m/min}$$

Vc: cutting speed in m/min
D: tool diameter in mm
π: value pí; ≈ 3.14
n: r.p.m.

$$\text{Revs. } n = \frac{Vc \times 1000}{D \times \pi} \text{ in r.p.m.}$$

n: r.p.m.
D: tool diameter in mm
π: value pí; ≈ 3.14
Vc: cutting speed in m/min

Table feed Vf = fz x z x n in mm/min

Vf: table feed in mm/min
fz: feed/tooth in mm
z: number of teeth
n: r.p.m.

$$\text{Feed/tooth } fz = \frac{Vf}{z \times n} \text{ in mm}$$

fz: feed/tooth in mm
Vf: table feed in mm/min
z: number of teeth
n: r.p.m.

$$\text{Chip removal } Q = \frac{Ap \times Ae \times Vf}{1000} \text{ in cm}^3\text{/min}$$

Q: verspaand volume in cm³/min
Ap: snedediepte in mm
Ae: snedebreedte in mm
Vf: tafelvoeding in mm/min

$$\text{Surf. roughness } Rth = [D : 2] - \frac{\sqrt{[D^2 - Ae^2]}}{4} \text{ in } \mu m$$

Rth: theoretical surface roughness in μm
D: tool diameter in mm
Ae: W.O.C. in mm

$$\text{Power } Pc = \frac{[Ap \times Ae \times Vf \times kc]}{60000 \times 10^3 \times \eta} \text{ in kW}$$

Pc: power requirement in kW
Ap: D.O.C. in mm
Ae: W.O.C. in mm
Kc: specific cutting force
η: spindel efficiency [factor 0.85]

$$\text{Torque } Mc = \frac{[D : 2] \times fz \times z \times kc}{8000} \text{ in Nm}$$

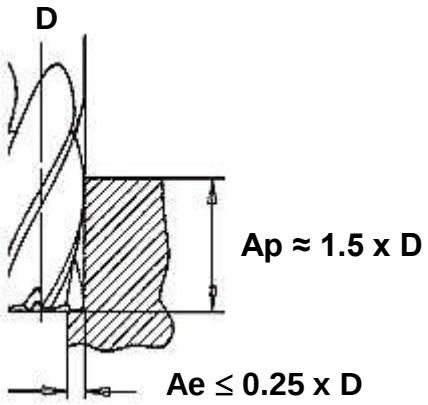
Mc: torque in Nm
D: tool diameter in mm
fz: feed/tooth in mm
z: number of teeth
Kc: specific cutting force in N/mm²

Formulas and calculations
[shoulder end mill operations]

When Ae ≤ 0.25 x D

Average chip thickness hm = fz x √ [Ae : D]

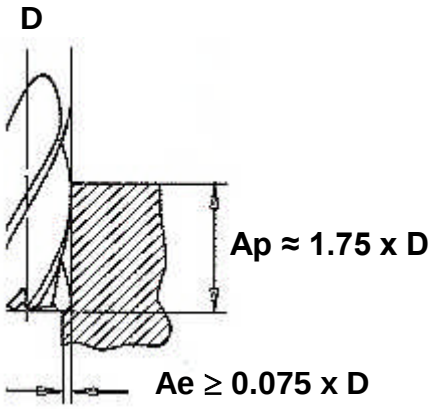
hm: average chip thickness in mm
D: tool diameter in mm
Ae: W.O.C. in mm
fz: feed/tooth in mm



When Ae ≤ 0.25 x D

$$\text{Chip thickn. compensation factor fh} = \frac{fz}{hm}$$

hm: average chip thickness in mm
fz: feed/tooth in mm
fh: value chip thickness factor



When Ae ≤ 0.25 x D

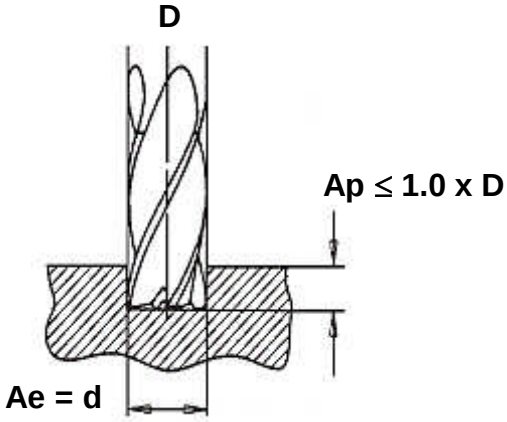
fzmax = fz x fh [=> hm compensation]

hm: average chip thickness in mm
fzmax: maximum feed/tooth in mm
fz: feed/tooth in mm
fh: value chip thickness factor

When Ae = D

fz = hm

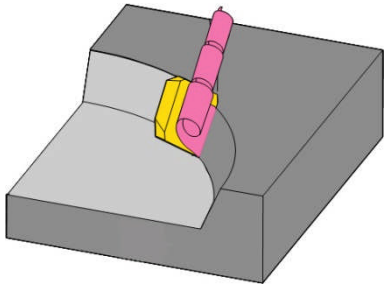
hm: average chip thickness in mm
fz: feed/tooth in mm



Formulas and calculations
[face mill operations]

Max. cutting diameter at a determined D.O.C.

$$Dmax = D + \frac{2 \times Ap}{\tan Kr}$$



Dmax: maximum tool diameter in cut in mm

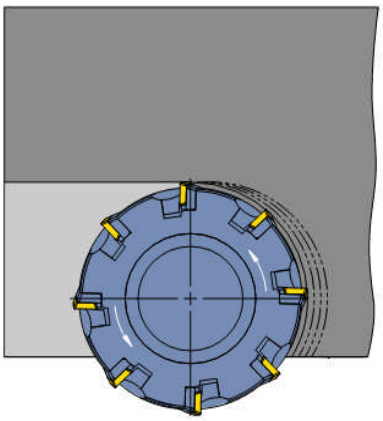
D: tool diameter in mm

Ap: D.O.C. in mm

Kr: inclination angle face mill

Center line mill in cut on the workpiece

$$Av.\ Chip\ thickn.\ hm = \frac{180 \times \sin Kr \times Ae \times fz}{\pi \times Dmax \times \arcsin [Ae : Dmax]}$$



hm: average chip thickness in mm

Dmax: maximum tool diameter in mm

Ae: W.O.C. in mm

fz: feed/tooth in mm

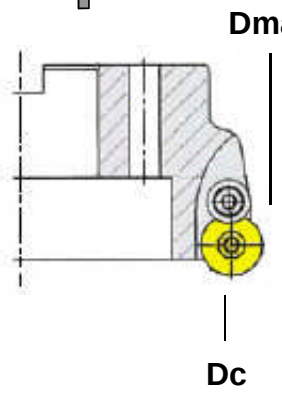
π: value pí; ≈ 3.14

Kr: inclination angle face mill

Formulas and calculations
[face mill operations with round inserts]

Max. cutting diameter at a determined D.O.C.

Dmax = Dc + √ Dwpl² - [Dwpl – 2 x Ap]²



Dmax: maximum tool diameter in cut in mm

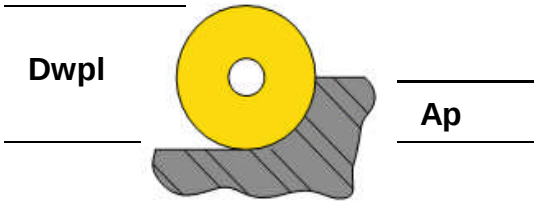
Dwpl: diameter of the inserts in mm

Dc: smallest cutting diameter of the end mill in mm

Ap: D.O.C. in mm

Centerline mill cutting on the workpiece

$$\text{Av. Chip thickn. } hm = \frac{180 \times \sin Kr \times Ae \times fz}{\pi \times Dmax \times \arcsin [Ae : Dmax]}$$



hm: average chip thickness in mm

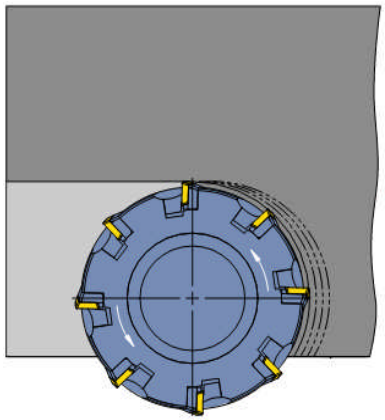
Dmax: maximum tool diameter in mm

Ae: W.O.C. in mm

fz: feed/tooth in mm

π: value pí; ≈ 3.14

Kr: inclination angle face mill [tangent to cirkel]



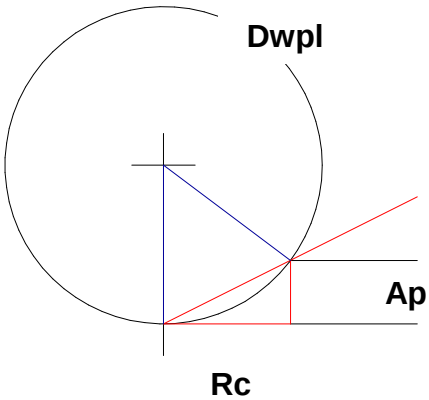
Radius in contact Rc at a determined D.O.C.

$$\text{Radius in contact } Rc = \frac{\sqrt{Dwpl^2 - [Dwpl - 2 \times Ap]^2}}{2}$$

Rc: radius in contact at a determined D.O.C. in mm

Dwpl: insert diameter in mm

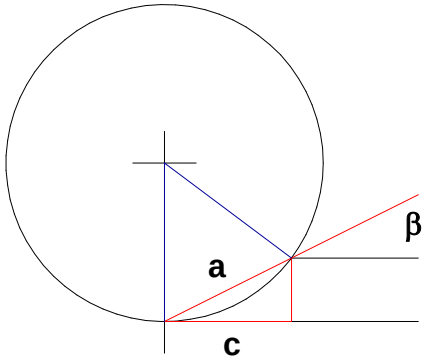
Ap: D.O.C. in mm



Formulas and calculations
[face mill operations with round inserts]

Inclination angle Kr radius insert at a determined D.O.C.

$$\text{Inclination angle Kr} = [\cos \beta = \frac{c}{a}] \text{ in degrees}$$



Kr: incl. ∠ radius insert at a determined D.O.C. in degrees
Ap: D.O.C. in mm
c: side adjacent to the angle in mm
a: hypotenuse in mm
cos β : angle in degrees

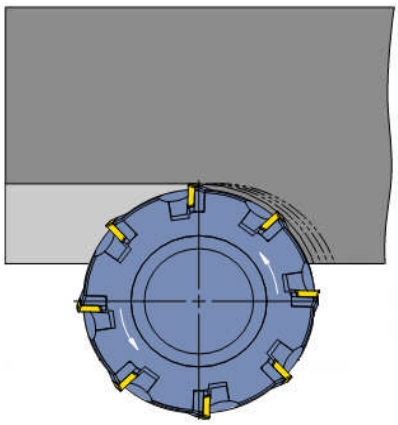
When Ae ≤ 0.25 x D

Average chip thickness $hm = fz \times \sqrt{[Ae : D]}$

hm: average chip thickness in mm
D: tool diameter in mm
Ae: W.O.C. in mm
fz: feed/tooth in mm

When Ae ≤ 0.25 x D

$$\text{Chip thickness compensation factor } fh = \frac{fz}{hm}$$



hm: average chip thickness in mm
fz: feed/tooth in mm
fh: value chip thickness factor

When Ae ≤ 0.25 x D

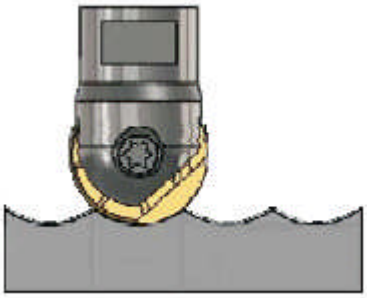
fzmax = fz x fh [=> hm compensation]

hm: average chip thickness in mm
fzmax: maximum feed/tooth in mm
fz: feed/tooth in mm
fh: value chip thickness factor

Formulas and calculations [radius end mill operations]

Max. cutting diameter at a determined D.O.C.

$D_{max} = \sqrt{D - [D - 2 \times Ap]^2}$



Dmax: maximum tool diameter in cut in mm
D: tool diameter in mm
Ap: D.O.C. in mm

Center line mill in cut on the workpiece

$$\text{Feed/tooth } fz = \frac{D \times hm \text{ [see face mill operations]}}{D_{max}}$$

D: tool diameter in mm
hm: average chip thickness in mm
Dmax: maximum tool diameter in mm
fz: feed/tooth in mm

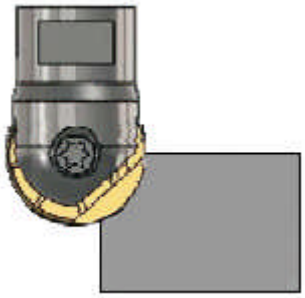
When $Ae \leq 0.25 \times D$

Average chip thickness $hm = fz \times \sqrt{[Ae : D]}$

hm: average chip thickness in mm
D: tool diameter in mm
Ae: W.O.C. in mm
fz: feed/tooth in mm

$Ae \leq 0.25 \times D$ on the workpiece

$$\text{Feed/tooth } fz = \frac{D \times hm}{\sqrt{D_{max}^2 - [D_{max} - 2 \times Ae]^2}}$$



D: tool diameter in mm
hm: average chip thickness in mm
Dmax: maximum tool diameter in mm
fz: feed/tooth in mm
Ae: W.O.C. in mm

Formulas and calculations
[ID - and OD circular machining]

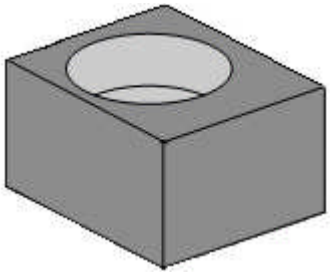
Real table feed

Vf = n x fz x z

Vf: table feed in mm/min
n: r.p.m.
fz: feed/tooth in mm
z: number of teeth

Programmed table feed ID machining on the center line of the tool

$$Vfprog = \frac{Vf \times [Dmach - D]}{Dmach}$$



Vf: table feed in mm/min
Vfprog: table feed on the center line of the tool in mm/min
Dmach: diameter of the machined hole in mm
D: diameter of the tool in mm

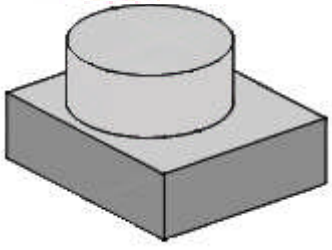
Real table feed

Vf = n x fz x z

Vf: table feed in mm/min
n: r.p.m.
fz: feed/tooth in mm
z: number of teeth

Programmed tafelvoeding OD machining on the center line of the tool

$$Vfprog = \frac{Vf \times [Dmach + D]}{Dmach}$$



Vf: table feed in mm/min
Vfprog: table feed on the center line of the tool in mm/min
Dmach: diameter of the machined hole in mm
D: diameter of the tool in mm

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