

vb tools

**Counterboring, Countersinking, Core drilling
Boring, Deburring, Chamfering**

1



Contents

vb tools

Cuttingtools, indexable

4-11



vb tools

Excentric collars

12



vb tools

Boring Tools, solid carbide with through coolant

14-17



vb tools

Quick change collets for turret lathes

18-19



Countersinks
Piloted countersinks
Front and rear countersinks
Chamfer milling

20-29



ISO reference codes for inserts

30

Chip breakers and cutting edge conditioning

31

Carbide and Cermet Grades

32

Inserts

Carbide, Cermet, Keramik

33-35



Recommendations

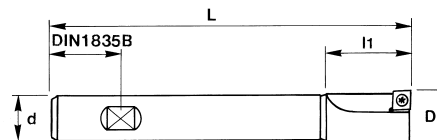
36-39

vb tools

Boring Tool

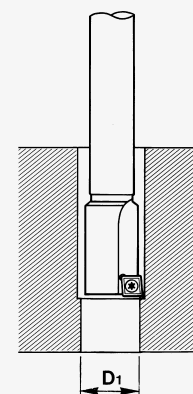
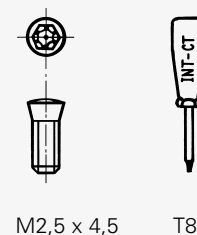
with steel shank

For boring pre-drilled and precast holes

49030


Tolerance of bore without adjustment with
excentric clamping collar 49035 (see page 12)
+ 0,05 / - 0,1 mm

D	Possible diameter with 49035	D1 min.	L	l1	Z	dh6
9,8	9,5 – 10,3	9,3	85	20	1	8
10,8	10,5 – 11,3	10,3	95	20	1	10
11,8	11,5 – 12,3	11,3	100	25	1	10
12,8	12,5 – 13,3	12,3	105	30	1	10
13,8	13,5 – 14,3	13,3	110	35	1	10
14,8	14,5 – 15,3	14,3	120	30	1	12
15,8	15,5 – 16,3	15,3	125	35	1	12
16,8	16,5 – 17,3	15,8	133	30	1	16
17,8	17,4 – 18,3	16,8	138	35	1	16
18,8	18,4 – 19,3	17,8	143	40	1	16
19,8	19,4 – 20,3	18,8	148	45	1	16
20,8	20,4 – 21,3	19,8	153	50	1	16
21,8	21,4 – 22,3	20,8	158	55	1	16
22,8	22,4 – 23,3	21	165	41	1	20
23,8	23,4 – 24,3	22	170	46	1	20
24,8	24,4 – 25,3	23	175	51	1	20
25,8	25,4 – 26,3	24	180	56	1	20
26,8	26,4 – 27,3	25	185	41	1	20
27,8	27,4 – 28,3	26	190	46	1	20
28,8	28,4 – 29,3	27	195	51	1	20
29,8	29,4 – 30,3	28	195	51	1	20
30,8	30,4 – 31,3	29	195	51	1	20
31,8	31,4 – 32,3	30	195	51	1	20

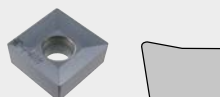


For inserts see page 33

Cutting datas see page 36-37

MPHT 060202.N12
Grades


for steel + Inox

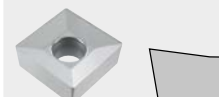
DX6
PMK92
MPHT 060202.N14
Grades


for steel + Inox

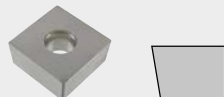
DX6
PMK92
MPHX 060202.L16
Sorte


for long chipping materials

Cermet

CT50
CT53
MPHT 060202.N13
Grades


for light alloys

CH1
KM22
MPHW 060202.N15
Grades

 Cast iron + short chipping
materials

Cermet

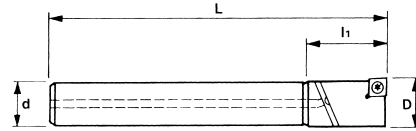
CT50
CT53

Boring Tool

with solid carbide shank, through coolant

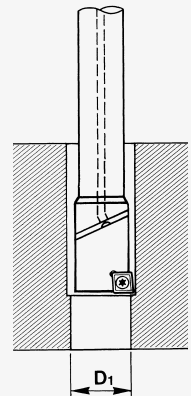
For boring pre-drilled and precast holes

49031



Tolerance of bore without adjustment with
excentric clamping collar 49035 (see page 12)
+ 0,05 / - 0,1 mm

D	Possible diameter with 49035	D1 min.	L	l1	Z	dh6			
6,8	6,5 – 7,3	6,3	105	15	1	6	CPGX . .	M2x3,3	T6
7,8	7,5 – 8,3	7,3	105	15	1	6			
8,8	8,7 – 9,3	8,3	105	15	1	6			
9,8	9,5 – 10,3	9,3	105	20	1	8			
10,8	10,5 – 11,3	10,3	105	20	1	8	MPHT . . MPHW . . MPHX . .	M2,5x4,5	T8
11,8	11,5 – 12,3	11,3	125	20	1	10			
12,8	12,5 – 13,3	12,3	125	20	1	10			
13,8	13,5 – 14,3	13,3	125	20	1	10			
14,8	14,5 – 15,3	14,3	140	20	1	12			
15,8	15,5 – 16,3	15,3	140	20	1	12			
16,8	16,5 – 17,3	15,8	150	30	1	12			
16,8	16,5 – 17,3	15,8	150	30	1	12			
17,8	17,4 – 18,3	16,8	160	40	1	16			
19,8	19,4 – 20,3	18,8	180	40	1	16			
20,8	20,4 – 21,3	19,8	180	40	1	16			
21,8	21,4 – 22,3	20,8	180	40	1	16			
22,8	22,4 – 23,3	21	195	40	1	20			
23,8	23,4 – 24,3	22	195	40	1	20			
24,8	24,4 – 25,3	23	210	40	1	20			
25,8	25,4 – 26,3	24	210	40	1	20			
26,8	26,4 – 27,3	25	225	40	1	20			
27,8	27,4 – 28,3	26	225	40	1	20			
28,8	28,4 – 29,3	27	225	40	1	20			
29,8	29,4 – 30,3	28	225	40	1	20			
30,8	30,4 – 31,3	29	225	40	1	20			
31,8	31,4 – 32,3	30	225	40	1	20			



For inserts see page 33

Cutting datas see page 36-37

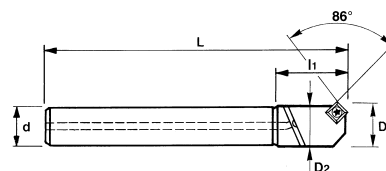
CPGX 04T102.L52 Cast iron+short chipping materi.	Grades KM22	CPGX 04T102.L54 for light alloys	Grades CH1	MPHT 060202.N13 for light alloys	Sorte KM22	MPHW 060202.N15 Cast iron+short chipping materi.	Grades Cermet CT50 CT53
CPGX 04T102.L53 for steel + Inox	Grades PMK32	MPHT 060202.N12 for steel + Inox	Grades DX6 PMK92	MPHT 060202.N14 for steel + Inox	Sorte DX6 PMK92	MPHX 060202.L16 for long chipping materials	Grades Cermet CT50 CT53

Boring Tool

with solid carbide shank, through coolant

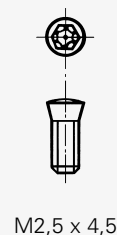
For boring and chamfering pre-drilled and precast holes

49032



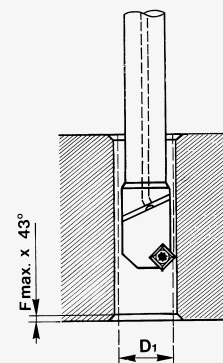
Tolerance of bore without adjustment with
excentric clamping collar 49035 (see page 12)
+ 0,05 / - 0,1 mm

D	Possible diameter with 49035	D1 min.	L	l1	Z	Fmax x43°	dh6
9,8	9,5 – 10,3	9,3	105	20	1	0,6	8
10,8	10,5 – 11,3	10,3	105	20	1	1,1	8
11,8	11,5 – 12,3	11,3	125	20	1	0,6	10
12,8	12,5 – 13,3	12,3	125	20	1	1,1	10
13,8	13,5 – 14,3	13,3	125	20	1	1,6	10
14,8	14,5 – 15,3	14,3	140	20	1	1,1	12
15,8	15,5 – 16,3	15,3	140	20	1	1,6	12
16,8	16,5 – 17,3	15,8	150	30	1	2,1	12
17,8	17,4 – 18,3	16,8	160	40	1	0,6	16
18,8	18,4 – 19,3	17,8	160	40	1	1,1	16
19,8	19,4 – 20,3	18,8	180	40	1	1,6	16
20,8	20,4 – 21,3	19,8	180	40	1	2,1	16
21,8	21,4 – 22,3	20,8	180	40	1	2,1	16
22,8	22,4 – 23,3	21	195	40	1	1,1	20
23,8	23,4 – 24,3	22	195	40	1	1,6	20
24,8	24,4 – 25,3	23	210	40	1	2,1	20
25,8	25,4 – 26,3	24	210	40	1	2,1	20
26,8	26,4 – 27,3	25	225	40	1	2,1	20
27,8	27,4 – 28,3	26	225	40	1	2,1	20
28,8	28,4 – 29,3	27	225	40	1	2,1	20
29,8	29,4 – 30,3	28	225	40	1	2,1	20
30,8	30,4 – 31,3	29	225	40	1	2,1	20
31,8	31,4 – 32,3	30	225	40	1	2,1	20



M2,5 x 4,5

T8



For inserts see page 33

Cutting datas see page 36-37

MPHT 060202.N12

Grades



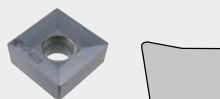
for steel + Inox

DX6

PMK92

MPHT 060202.N14

Grades



for steel + Inox

DX6

PMK92

MPHX 060202.L16

Grades



for long chipping materials

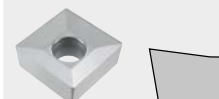
Cermet

CT50

CT53

MPHT 060202.N13

Grades



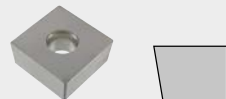
for light alloys

CH1

KM22

MPHW 060202.N15

Grades



Cast iron + short chipping
materials

Cermet

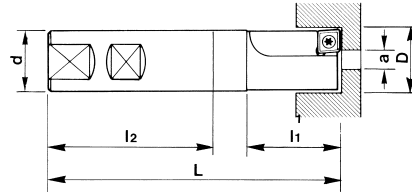
CT50

CT53

Counterbore «mono»

to produce counterbores for Cap screws, Hex Screwheads, Ejectors, spot facing, Gasket-seats etc..
straight shank with «Weldon» flats, to DIN 1835B

49037



D	a min	L	l1	l2	dh6			
8	4	80	23	45	12	MPHT 060202.N12 MPHT 060202.N13 MPHT 060202.N14 MPHW 060202.N15 MPHX 060202.L16 MPMT 060204.N12	M2,5 x 4,5	T8
9	4	80	23	45	12			
10	4	80	23	45	12			
11	4	80	23	45	12			
12	4	80	26	45	12			
13	5	80	26	45	12			
14	5	80	26	45	12			
15	5	80	26	45	12			
16	5	90	31	48	16			
17	6	90	31	48	16			
18	8	90	31	48	16			
19	8	90	31	48	16	MCHT 09T304.N12 MCHT 09T304.N13 MCHT 09T304.N14 MCHW 09T304.N15 MCHX 09T304.L16 MCMT 09T308.N12	M4 x 7,5	T15
20	5	100	36	50	20			
21	5	100	36	50	20			
22	6	100	36	50	20			
23	6	100	36	50	20			
24	8	100	36	50	20			
25	8	120	43	56	25			
26	10	120	43	56	25			

For inserts see page 33
Cutting datas see page 36-37

49087



Standard Sets with

1 off Torx key, T8 und T15

Counterbore CT-mono 49037

1 off Ø 10, 11, 13, 15, 18, 20, 24, 26, 30, 33 incl. screws

Inserts

10 off MPMT 060204.N12 PMK92
MCMT 09T0308.N12 PMK92

wooden storage block

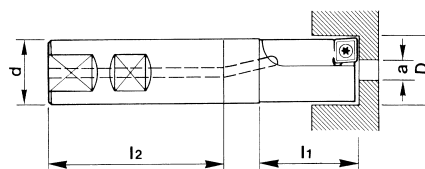
49087, PMK92

Counterbore «mono»

with through coolant

to produce counterbores for Cap screws, Hex Screwheads, Ejectors, spot facing, Gasket-seats etc.
straight shank with «Weldon» flats, to DIN 1835B

49038



D	a min	L	l1	l2	dh6			
10	4	80	23	45	12	MPHT 060202.N12 MPHT 060202.N13 MPHT 060202.N14 MPHW 060202.N15 MPHX 060202.L16 MPMT 060204.N12	M2,5 x 4,5	T8
11	4	80	23	45	12			
12	4	80	26	45	12			
13	5	80	26	45	12			
14	5	80	26	45	12			
15	5	80	26	45	12			
16	5	90	31	48	16			
17	6	90	31	48	16			
18	8	90	31	48	16			
19	8	90	31	48	16			
20	5	100	36	50	20	MCHT 09T304.N12 MCHT 09T304.N13 MCHT 09T304.N14 MCHW 09T304.N15 MCHX 09T304.L16 MCMT 09T308.N12	M4 x 7,5	T15
21	5	100	36	50	20			
22	6	100	36	50	20			
23	6	100	36	50	20			
24	8	100	36	50	20			
25	8	120	43	56	25			
26	10	120	43	56	25			
27	10	120	43	56	25			
28	12	120	43	56	25			
29	12	120	43	56	25			
30	14	120	43	56	25			
31	14	120	43	56	25			
32	16	120	43	56	25			
33	16	120	43	56	25			

For inserts see page 33

Cutting datas see page 36-37

49088



Standard Sets with

1 off Torx key, T8 und T15

Counterbore CT-mono 49038

1 off Ø 10, 11, 13, 15, 18, 20, 24, 26, 30, 33 incl. screws

Inserts

10 off MPMT 060204.N12 PMK92
MCMT 09T308.N12 PMK92

wooden storage block

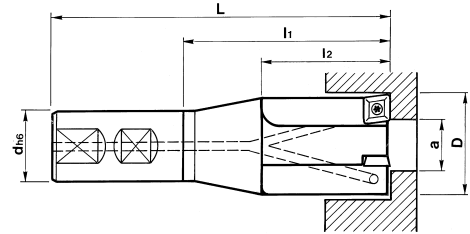
49088, PMK92

Counterbore«multi»

with through coolant

to produce counterbores for Cap screws, Hex Screwheads, Ejectors, spot facing, Gasket-seats etc.
straight shank with «Weldon» flats, to DIN 1835B

49039



D	a _{min}	L	l1	l2	Z	dh6		MPHT 060202.N12	MCHT 09T304.N12	MBHT 120404.N12
15	4	100	40	30	2	20		MPHT 060202.N13	MCHT 09T304.N13	MBHT 120404.N13
18	6	100	40	30	2	20		MPHT 060202.N14	MCHT 09T304.N14	MBHT 120404.N14
20	8	100	40	30	2	20		MPHW 060202.N15	MCHW 09T304.N15	MBHW 120404.N15
22	10	100	40	30	2	20		MPHX 060202.L16	MCHX 09T304.L16	MBHX 120404.L16
24	6	136	68	50	2	25		MPMT 060204.N12	MCMT 09T308.N12	MBMT 120408.N12
26	8	136	68	50	2	25				
28	10	136	68	50	2	25				
30	12	136	66	50	3	32				
33	15	136	66	50	3	32				
36	18	136	66	50	2	32				
40	16	136	66	50	3	32				
43	19	136	66	50	3	32				
48	24	146	81	60	3	32				
53	29	146	81	60	3	32				
57	33	146	81	60	3	32				

For inserts see page 33
Cutting datas see page 36-37

Counterbores «multi»

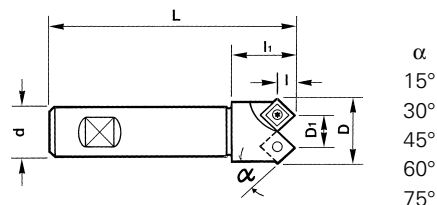
for counterbores from 15 to 57 mm are a development based on the popular «mono»- counterbores using the same inserts.

The increased number of teeth and the through coolant ensure high performance and excellent finish as well as security of operation.

Chamfer and Face Milling Tool

for chamfering, countersinking, facing etc.
straight shank with «Weldon» flats, to DIN 1835B

49100



α
15°
30°
45°
60°
75°

D	α	D1	L	l	l1	Z	d					
19	15°	16	90	6	19	2	16	M2,5 x 4,5	T8	MPHT 060202.N12	MCHT 09T304.N12	MBHT 120404.N12
40	15°	34	120	10	36	2	25	M4 x 9,5	T15	MPHT 060202.N13	MCHT 09T304.N13	MBHT 120404.N13
19	30°	13	90	5,5	18	2	16	M2,5 x 4,5	T8	MPHT 060202.N14	MCHT 09T304.N14	MBHT 120404.N14
40	30°	28	120	10,5	38	2	25	M4 x 9,5	T15	MPHW 060202.N15	MCHW 09T304.N15	MBHW 120404.N15
13	45°	6	80	4	16	1	10	M2,5 x 4,5	T8	MPMT 060204.N12	MCMT 09T308.N12	MBMT 120408.N12
19	45°	11	90	4	18	2	16	M2,5 x 4,5	T8			
26	45°	15	100	6	26	2	20	M4 x 7,5	T15			
40	45°	25	120	8	38	2	25	M4 x 9,5	T15			
32	60°	17,5	100	4	30	2	20	M4 x 7,5	T15			
32	75°	15,5	100	2	30	2	20	M4 x 7,5	T15			

For inserts see page 33
Cutting datas see page 36-37

49101



Standard Sets with

1 off Torx key, T8 und T15

Chamfer and Face Milling Tool incl. screws

1 off **49100 15°** D19 mm und D40 mm
49100 30° D19 mm und D40 mm
49100 45° D13 mm, D19 mm, D26 mm und D40 mm

Inserts

10 off MPMT 060204.N12 PMK92
 MCMT 09T308.N12 PMK92
 MBMT 120408.N12 PMK92

on wooden storage

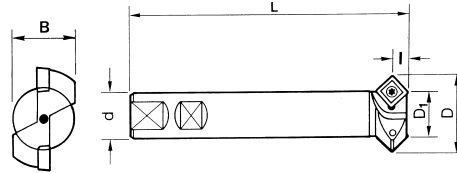
49101, PMK92



2 Edge Chamfer Tool 2 x 45°

For chamfering internally and externally, top and bottom of bores, profiles, faces etc.
straight shank with «Weldon» flats, to DIN 1835B

49190



D	a _{min}	L	I	Z	dh6	B			
22	16	120	5	2	16	16	M3,5 x 9,5	T15	SDHT 09T3AG.N17
30	20	120	5	2	20	20			SDHW 09T3AG.N18
40	30	150	5	2	25	25			SDLT 09T3AG.N19

For inserts see page 33

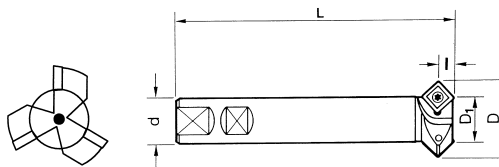
Cutting datas see page 36-37



2 Edge Chamfer Tool 3 x 45°

For chamfering internally and externally, top and bottom of bores, profiles, faces etc.
straight shank with «Weldon» flats, to DIN 1835B

49193



D	a _{min}	L	I	Z	dh6			
30	20	180	5	3	20	M3,5 x 9,5	T15	SDHT 09T3AG.N17
40	30	210	5	3	25			SDHW 09T3AG.N18
								SDLT 09T3AG.N19

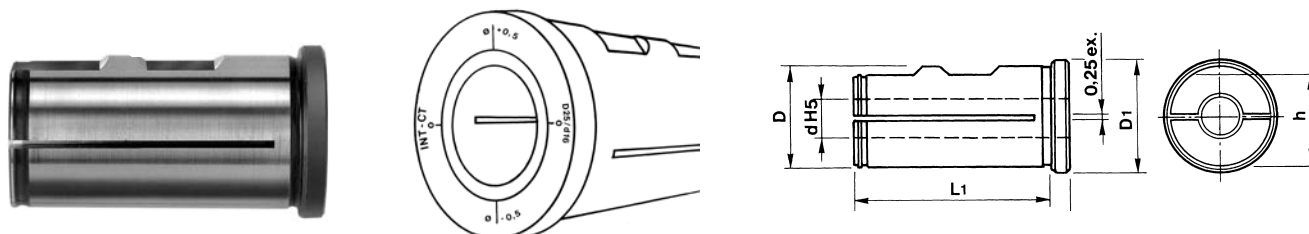
For inserts see page 33

Cutting datas see page 36-37

Excentric Clamping Collars

with screw flats to DIN 1835B

49035



d 6–12 mm one screw flate

d 16–25 mm two screw flats

D	d	L	L1	D1	h _{h13}	Code		
25	6	61	56	29	23	49035	D25	6 mm
25	8	61	56	29	23	49035	D25	8 mm
25	10	61	56	29	23	49035	D25	10 mm
25	12	61	56	29	23	49035	D25	12 mm
25	16	61	56	29	23	49035	D25	16 mm
32	6	65	60	36	30	49035	D32	6 mm
32	8	65	60	36	30	49035	D32	8 mm
32	10	65	60	36	30	49035	D32	10 mm
32	12	65	60	36	30	49035	D32	12 mm
32	16	65	60	36	30	49035	D32	16 mm
32	20	65	60	36	30	49035	D32	20 mm
32	25	65	60	36	30	49035	D32	25 mm

single point tools can be adjusted to the exact cutting diameter within + 0,5 mm to - 0,5 mm to the nominal tool size.

i.e: Boring tool
Ord. No. **49030, 49031 and 49032**
Counterbore «mono»
Ord. No. **49037 and 49038**

49035 A

standard set with 1 collar each

49035 D25 Ø 8/10/12/16 mm

49035 B

standard set with 1 collar each

49035 D32 Ø 8/10/12/16/20 mm

49035A

49035B



vb SWISS *centro 76*

SWISS  MADE

Center vice for 5-axis machining of raw parts

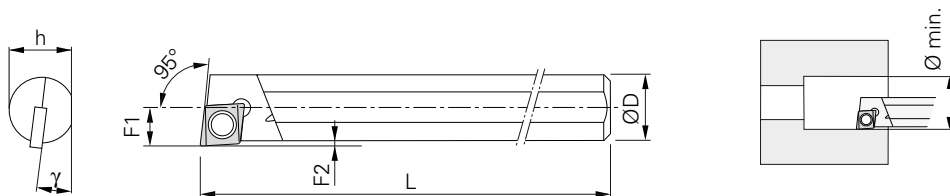


vb tools

Boring Bars in carbide

with through coolant

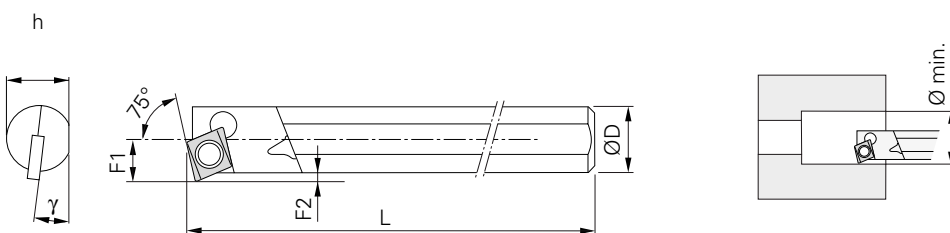
SCLP 95° / SCLC 95°



Type	Ø D	L	F1	F2	γ	h	Ø min.	CPGX	CCMX	CCMT		
E06J SCLP R/L04	6	110	3,5	0,5	13°	5,5	7	CPGX 04T1 ...			FTNA0203	T6F
E08K SCLP R/L04	8	125	4,5	0,5	7°	7,5	9	CPGX 04T1 ...			FTNA0203	T6F
E10M SCLC R/L06	10	150	5,5	0,5	10°	9,5	11	CCMX / CCMT 0602 ...			FTKA02555	T7F
E12M SCLC R/L06	12	150	6,5	0,5	10°	11,5	13	CCMX / CCMT 0602 ...			FTKA02565	T7F
E16R SCLC R/L09	16	200	9	1	10°	15,5	18	CCMX / CCMT 09T3 ...			FTGA03508	T15F
E20S SCLC R/L09 *	20	250	11	1	7°	19,5	22	CCMX / CCMT 09T3 ...			M4x7.5	T15F

For inserts see page 34-35

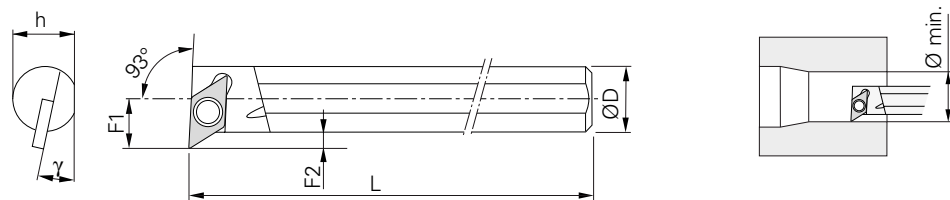
SCKP 75° / SCKC 75°



Type	Ø D	L	F1	F2	γ	h	Ø min.	CPGX	CCMX	CCMT		
E08K SCKP R/L04 *	8	125	4,5	0,5	7°	7,5	9	CPGX 04T1 ...			M2x3.3	T6F
E10M SCKC R/L06	10	150	5,5	0,5	7°	9,5	11	CCMX / CCMT 0602 ...			M2.5X4.5	T8F
E12M SCKC R/L06	12	150	6,5	0,5	7°	11,5	13	CCMX / CCMT 0602 ...			M2.5X4.5	T8F

For inserts see page 34-35

SDUC 93°



Type	Ø D	L	F1	F2	γ	h	Ø min.	DCGT	DCMT			
E08K SDUC R/L07	8	125	7	3	15°	7,5	13	DCGT / DCMT 0702 ...			FTKA02565	T7F
E10M SDUC R/L07	10	150	8,5	3,5	13°	9,5	14,5	DCGT / DCMT 0702 ...			FTKA02565	T7F
E12M SDUC R/L07	12	150	9	3	10°	11	16	DCGT / DCMT 0702 ...			FTKA02565	T7F
E16R SDUC R/L07	16	200	11	3	10°	15,5	20	DCGT / DCMT 0702 ...			FTKA02565	T7F

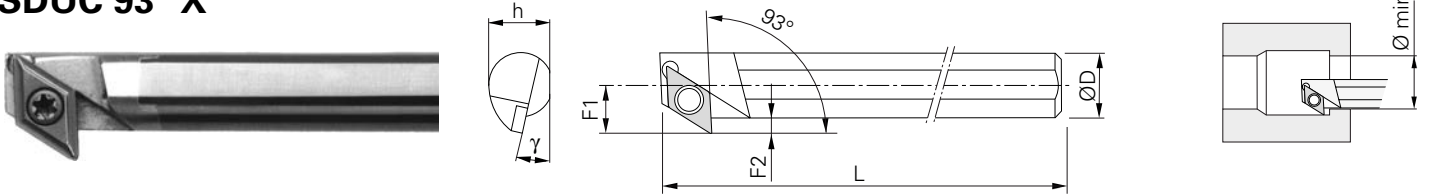
For inserts see page 34-35

* discontinued as long as stock lasts

Boring Bars in carbide

with through coolant

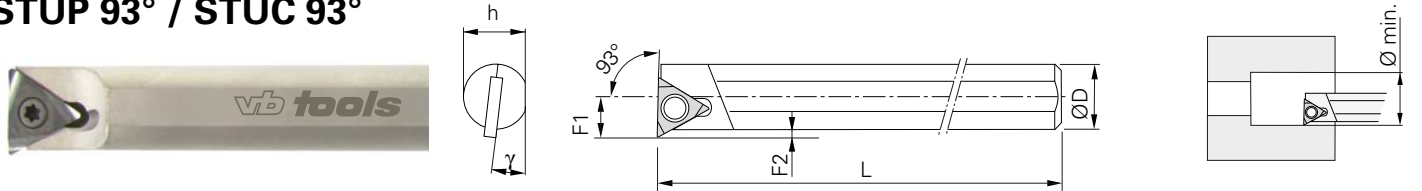
SDUC 93° X



Type	Ø D	L	F1	F2	γ	h	Ø min.	DCGT	DCMT		
E08K SDUC R/L07X	8	125	7	3	15°	7,5	15	DCGT / DCMT 0702 ...	M2.5x4.5	T8F	
E10M SDUC R/L07X	10	150	8,5	3,5	13°	9,5	17	DCGT / DCMT 0702 ...	M2.5x4.5	T8F	
E12M SDUC R/L07X	12	150	9	3	10°	11	19	DCGT / DCMT 0702 ...	M2.5x4.5	T8F	
E16R SDUC R/L07X *	16	200	11	3	10°	15,5	23	DCGT / DCMT 0702 ...	M2.5x4.5	T8F	

For inserts see page 34-35

STUP 93° / STUC 93°



Type	Ø D	L	F1	F2	γ	h	Ø min.	TPGX	TCGX	TCMT		
E06J STUP R/L07	6	110	3,8	0,8	5°	5,5	7,2	TPGX 07T1 ...			FTNA02033	T6F
E08K STUP R/L07	8	125	4,6	0,6	7°	7,5	9,2	TPGX 07T1 ...			FTNA0204	T6F
E10M STUC R/L11	10	150	5,5	0,5	7°	9,5	11,2	TCGX / TCMT 1102 ...			FTKA02565	T7F
E12M STUC R/L11	12	150	6,5	0,5	7°	11,5	13,2	TCGX / TCMT 1102 ...			FTKA02565	T7F
E16R STUC R/L11	16	200	8,5	0,5	7°	15,5	17,2	TCGX / TCMT 1102 ...			FTKA02565	T7F

For inserts see page 34-35

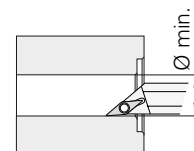
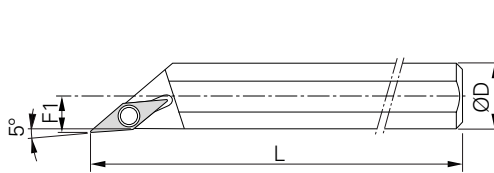
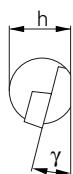
* discontinued as long as stock lasts

vb tools

Boring Bars in carbide

with through coolant

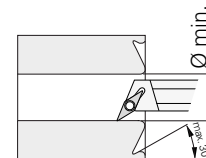
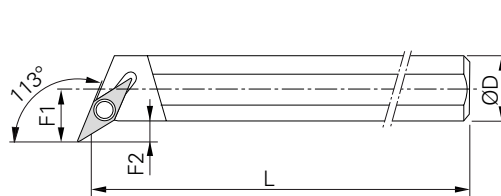
SVOC 5°



Type	Ø D	L	F1	γ	h	Ø min.			
E08K SVOC R/L07	8	125	4,5	15°	7,5	9	VCGT 0702 ...	FTNA0204	T6F
E10M SVOC R/L07	10	150	5,5	10°	9,5	11	VCGT 0702 ...	FTNA0204	T6F
E12M SVOC R/L07	12	150	6,5	8°	11,5	13	VCGT 0702 ...	FTNA0204	T6F

For inserts see page 34-35

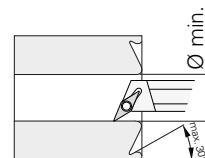
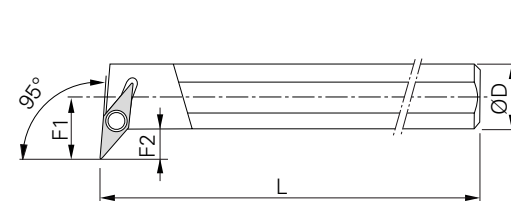
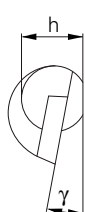
SVXC 113°



Type	Ø D	L	F1	F2	γ	h	Ø min.			
E08K SVXC R/L07	8	125	7	3	10°	7,5	11,5	VCGT 0702 ...	FTNA0204	T6F
E10M SVXC R/L07	10	150	8	3	8°	9,5	13,5	VCGT 0702 ...	FTNA0204	T6F
E12M SVXC R/L07	12	150	9	3	6°	11,5	15,5	VCGT 0702 ...	FTNA0204	T6F

For inserts see page 34-35

SVLC 95°



Type	Ø D	L	F1	F2	γ	h	Ø min.			
E10M SVLC R/L07	10	150	9,5	4,5	8°	9,5	15	VCGT 0702 ...	M2x4.5	T6F
E12M SVLC R/L07	12	150	10,5	4,5	6°	11,5	17	VCGT 0702 ...	M2x4.5	T6F

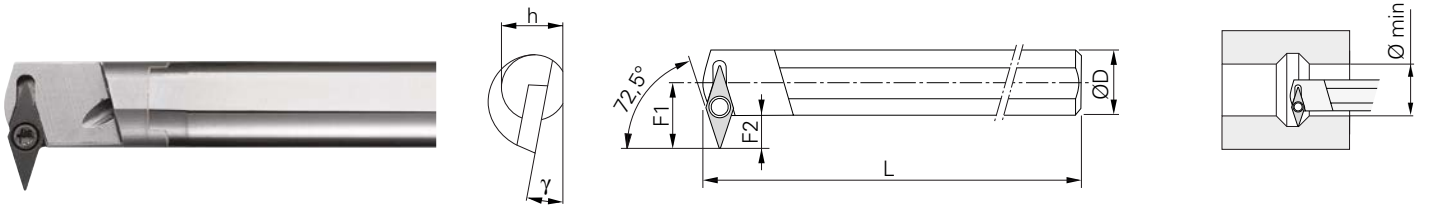
For inserts see page 34-35

* discontinued as long as stock lasts

Boring Bars in carbide

with through coolant

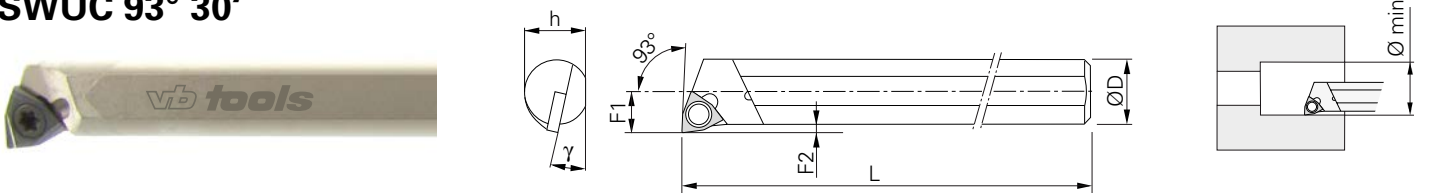
SVVC 72,5°



Type	Ø D	L	F1	F2	γ	h	Ø min.			
E08K SVVC R/L07	8	125	9	5	10°	7,5	13,5	VCGT 0702 ...	M2x4.5	T6F
E12M SVVC R/L07	12	150	11	5	6°	11,5	17,5	VCGT 0702 ...	M2x4.5	T6F

For inserts see page 34-35

SWUC 93° 30'



Type	Ø D	L	F1	F2	γ	h	Ø min.			
E06J SWUC R/L02	6	110	3,9	0,9	17°	5,5	7,8	WCGX 0201 ...	FTNA0203	T6F
E08K SWUC R/L02	8	125	4,9	0,9	12°	7,5	9,8	WCGX 0201 ...	FTNA0203	T6F
E10M SWUC R/L02 *	10	150	5,9	0,9	12°	9,5	11,8	WCGX 0201 ...	FTNA0203	T6F

For inserts see page 34-35

* discontinued as long as stock lasts



Quick change collets for turret lathes



- Perfect coolant supply
- Optionally directly on the tool shank or through coolant hole
- Very short tool change times without mounting any copper tubes
- Holder with clamping surface



Quick change collets for turret lathes



Fig. 1

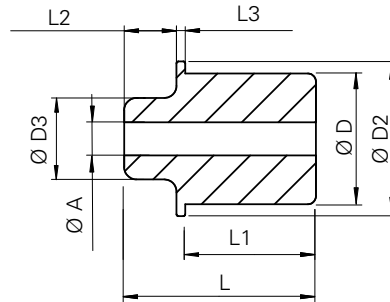
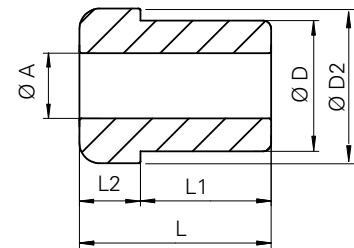


Fig. 2

with locking screw for through coolant



WZA 25

Type.	Ø A	Ø D	L	L1	L2	L3	Ø D2	Ø D3	Fig.
WZA.025 4mm	4	25	47	32	12,5	2,5	29,5	20	1
WZA.025 5mm	5								
WZA.025 6mm	6								
WZA.025 7mm	7								
WZA.025 8mm	8	25	47	32	15	–	31.5	–	2
WZA.025 10mm	10								
WZA.025 12mm	12								
WZA.025 16mm	16								
WZA.025 18mm*	18								
WZA.025 20mm*	20								

WZA 32

Type.	Ø A	Ø D	L	L1	L2	L3	Ø D2	Ø D3	Fig.
WZA.032 3mm	3	32	47	32	12,5	2,5	39	20	1
WZA.032 4mm	4								
WZA.032 5mm	5								
WZA.032 6mm	6								
WZA.032 7mm	7								
WZA.032 8mm	8	32	47	32	15	–	39	–	2
WZA.032 10mm	10								
WZA.032 12mm	12								
WZA.032 14mm	14								
WZA.032 16mm	16								
WZA.032 18mm	18								
WZA.032 20mm	20								
WZA.032 25mm*	25								

WZA 40

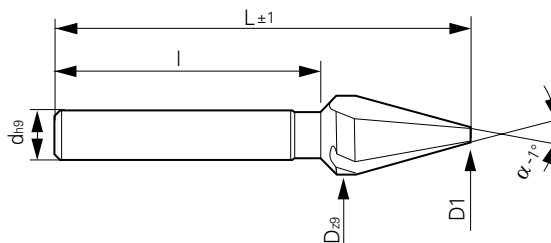
Type.	Ø A	Ø D	L	L1	L2	L3	Ø D2	Ø D3	Fig.
WZA.040 8mm	8	40	70	32	17	3	49	30	1
WZA.040 10mm	10								
WZA.040 12mm	12								
WZA.040 16mm	16	40	70	50	20	–	49	–	2
WZA.040 18mm	18								
WZA.040 20mm	20								
WZA.040 25mm	25								
WZA.040 32mm	32								

* without through coolant

Countersinks 30°

straight shank
HSS-Co5

19030.0 / 19030.1



19030.0
bright

D	α	d	D1	l	L
6,3	30°	5	2	42	50
12,4	30°	8	3	52	65
16,5	30°	10	4	59	76
25,0	30°	10	6	62	90

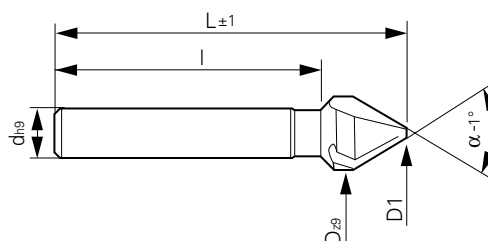
19030.1
TiN

D	α	d	D1	l	L
6,3	30°	5	2	42	50
12,4	30°	8	3	52	65
16,5	30°	10	4	59	76
25,0	30°	10	6	62	90

Countersinks 60°

straight shank
HSS-Co5

19060.0 / 19060.1



19060.0
bright

D	α	d	D1	l	L
6,3	60°	5	1,5	49	47
8,3	60°	6	2	42	52
10,4	60°	6	2,5	40	53
12,4	60°	6	3	46	60
16,5	60°	10	4	47	65
20,5	60°	10	4	46	69
25,0	60°	10	4	46	75

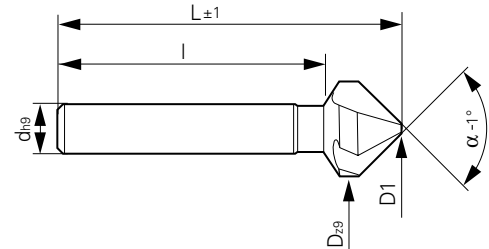
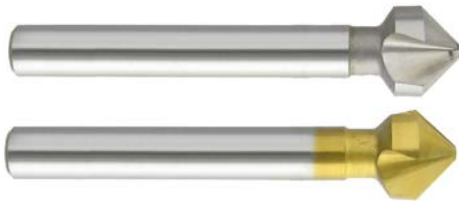
19060.1
TiN

D	α	d	D1	l	L
6,3	60°	5	1,5	49	47
8,3	60°	6	2	42	52
10,4	60°	6	2,5	40	53
12,4	60°	6	3	46	60
16,5	60°	10	4	47	65
20,5	60°	10	4	46	69
25,0	60°	10	4	46	75

Countersinks 90°

straight shank
HSS-Co5

19090.0 / 19090.1



19090.0 bright

D	α	d	D1	l	L
4,0	90°	4	1,2	33	40
4,3	90°	4	1,3	33	40
5,0	90°	4	1,5	34	40
5,3	90°	4	1,5	34	40
6,0	90°	5	1,5	38	45
6,3	90°	5	1,5	38	45
7,0	90°	6	1,8	43	50
7,3	90°	6	1,8	43	50
8,0	90°	6	2	42	50
8,3	90°	6	2	42	50
9,4	90°	6	2,2	41	50
10,0	90°	6	2,5	41	50
10,4	90°	6	2,5	40	50
11,5	90°	8	2,5	46	56
12,4	90°	8*	2,8	46	56
13,4	90°	8	2,8	44	56
14,4	90°	8	2,9	44	56
15,0	90°	10	3,2	34	60
16,5	90°	10*	3,2	41	60
19,0	90°	10	3,5	46	63
20,5	90°	10*	3,5	46	63
23,0	90°	10	3,8	46	67
25,0	90°	10*	3,8	46	67
26,0	90°	10	3,8	46	67
28,0	90°	12	4	47	71
30,0	90°	12	4,2	47	71
31,0	90°	12*	4,2	47	71
34,0	90°	16	4,5	82	107
37,0	90°	16*	4,5	84	111

19090.1 TiN

D	α	d	D1	l	L
5,3	90°	4	1,5	34	40
6,3	90°	5	1,5	38	45
7,3	90°	6	1,8	43	50
8,3	90°	6	2	42	50
10,4	90°	6	2,5	40	50
12,4	90°	8*	2,8	46	56
15,0	90°	10	3,2	34	60
16,5	90°	10*	3,2	41	60
20,5	90°	10*	3,5	46	63
25,0	90°	10*	3,8	46	67
31,0	90°	12*	4,2	47	71

Countersinks

standard sets in plastic box



19890.0 / 19890.1

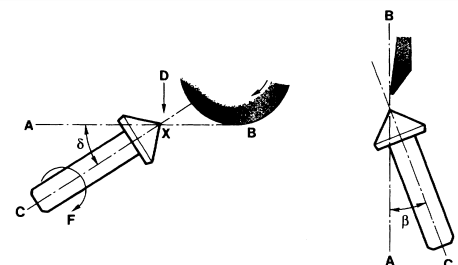
Ordering number	1 off Countersinks
19890.01 bright	Ø 6,3 / 8,3 / 10,4 / 12,4 / 16,5 / 20,5 / 25,0
19890.11 TiN	

*shank with 3 flats

Regrinding instructions

The grinding wheel has to move in the axis A–B. Put wheel into grinding position from direction D to point X. To grind cutting edge turn countersink clockwise F towards wheel. Do not feed wheel into the cutting edge!

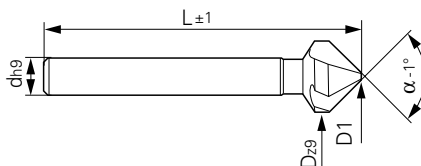
The angles δ and β have to be set according to the existing cutting edge.



Countersinks 90° long

straight shank
HSS-Co5

19092.0



19092.0 bright

D	α	d	D1	L
6,3	90°	6	1,3	84
8,3	90°	8	1,8	85
10,4	90°	10*	2,2	87
12,4	90°	10*	2,5	108

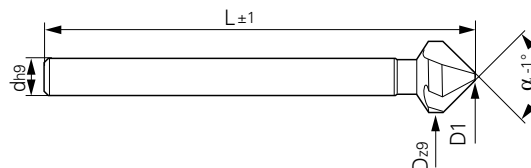
D	α	d	D1	L
16,5	90°	12*	2,8	112
20,5	90°	12*	3	115
25,0	90°	12	3,2	118

*shank with 3 flats

Countersinks 90° extra lang

straight shank
HSS-Co5

19095.0



19095.0 bright

D	α	d	D1	L
6,3	90°	6	1,3	154
8,3	90°	8	1,8	155
10,4	90°	10*	2,2	157
12,4	90°	10*	2,5	158

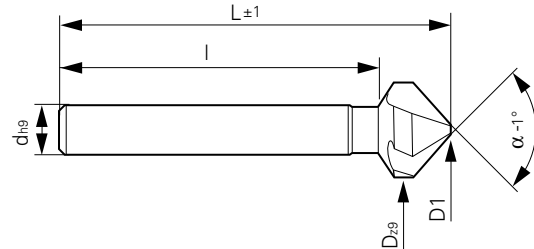
D	α	d	D1	L
15,0	90°	10	2,8	159
16,5	90°	10	2,8	161
20,5	90°	10	3	164
25,0	90°	10	3,2	168

*shank with 3 flats

Countersinks 100°

straight shank
HSS-Co5

19100.0 / 19100.1



19100.0
bright

D	α	d	D1	l	L
6,3	100°	5	1,5	33	44
8,3	100°	6	2	42	49
9,4	100°	6	2,2	41	49
10,4	100°	6	2,5	41	49
12,4	100°	8	2,8	46	56
13,4	100°	8	2,8	45	56
16,5	100°	10*	3,2	47	59
20,5	100°	10	3,5	46	62
25,0	100°	10	3,8	46	65

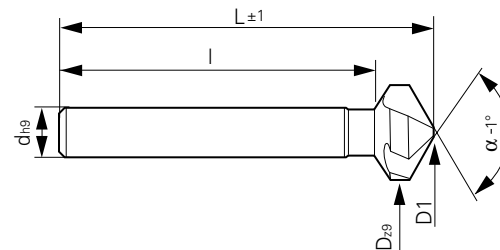
19100.1
TiN

D	α	d	D1	l	L
6,3	100°	5	1,5	33	44
8,3	100°	6	2	42	49
9,4	100°	6	2,2	41	49
10,4	100°	6	2,5	41	49
12,4	100°	8	2,8	46	56
13,4	100°	8	2,8	45	56
16,5	100°	10*	3,2	47	59
20,5	100°	10	3,5	46	62
25,0	100°	10	3,8	46	65

Countersinks 120°

straight shank
HSS-Co5

19120.0 / 19120.1



19120.0
bright

D	α	d	D1	l	L
6,3	120°	5	1,5	38	44
8,3	120°	6	2	42	48
10,4	120°	6	2,5	41	48
12,4	120°	8	2,5	46	54
16,5	120°	10	2,8	47	57
20,5	120°	10	3,5	46	59
25,0	120°	10	3,8	46	62

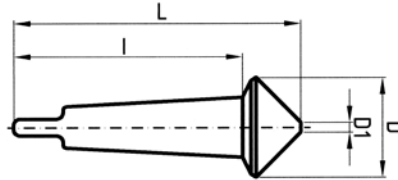
19120.1
TiN

D	α	d	D1	l	L
6,3	120°	5	1,5	38	44
8,3	120°	6	2	42	48
10,4	120°	6	2,5	41	48
12,4	120°	8	2,5	46	54
16,5	120°	10	2,8	47	57
20,5	120°	10	3,5	46	59
25,0	120°	10	3,8	46	62

Countersinks 90°

Morse Taper shank
HSS-Co5

19290.0 / 19290.1



19290.0
bright

D	α	MK/CM MT/CM	D1	l	L
25	90°	2	3,5	95	105
28	90°	2	3,5	108	131
30	90°	2	3,5	108	131
31	90°	2	3,5	107	131
34	90°	2	4,5	107	133
37	90°	2	4,5	118	145
45	90°	2	4,5	115	149
50	90°	2	5	115	153
53	90°	2	5	114	155
63	90°	2	10	120	167

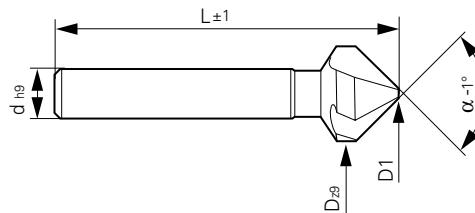
19290.1
TiN

D	α	MK/CM MT/CM	D1	l	L
25	90°	2	3,5	95	105
28	90°	2	3,5	108	131
30	90°	2	3,5	108	131
31	90°	2	3,5	107	131
34	90°	2	4,5	107	133
37	90°	2	4,5	118	145
45	90°	2	4,5	115	149
50	90°	2	5	115	153
53	90°	2	5	114	155
63	90°	2	10	120	167

Countersinks 90°

straight shank
solid carbide

19490.0 / 19490.3



19490.0
bright

D	α	d	D1	L
6,3	90°	5	1,3	45
8,3	90°	6	1,8	50
10,4	90°	6	2,2	50
12,4	90°	8*	2,5	56
16,5	90°	10*	2,8	60
20,5	90°	10*	3	63

19490.3
TiAlN coated

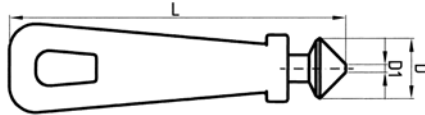
D	α	d	D1	L
6,3	90°	5	1,3	45
8,3	90°	6	1,8	50
10,4	90°	6	2,2	50
12,4	90°	8*	2,5	56
16,5	90°	10*	2,8	60
20,5	90°	10*	3	63

*shank with 3 flats

Countersinks 90°

Hand Deburring Tool
HSS-Co5

19790.0



19790.0
bright

D	α	D1	L
12,4	90°	2,8	130
16,5	90°	3,2	130

D	α	D1	L
20,5	90°	3,5	135
25,0	90°	3,8	150

Countersinks Cutting data

Vc m/min.

HSS-Co5, blank

Steels

≤ 60 kg/mm² 8–12

60 – 100 kg/mm² 5–10

≥ 100 kg/mm² – 5

stainless – 6

grey cast iron – 10

Aluminium – 35

Brass – 15

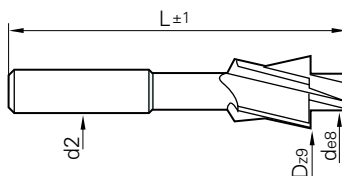
HSS-Co5, coated:

ca. 2–4-x above speeds

Piloted countersinks 180°

straight shank
HSS-E

1160.0 / 1160.1



1160.0 bright

D x d	Schraube	L	d2
2,2 x 1,1	M1	45	D
2,5 x 1,3	M1,2	45	D
2,8 x 1,5	M1,4	45	D
3,2 x 1,5	M1,5	45	D
3,3 x 1,7	M1,6	56	D
4,3 x 2,2	M2	56	D
5,0 x 2,7	M2,5	56	D
5,5 x 2,8	M2,6	71	D
6,0 x 3,2	M3	71	D
6,5 x 3,7	M3,5	71	D
8,0 x 4,3	M4	71	D
10,0 x 5,3	M5	80	D
11,0 x 6,4	M6	80	D
15,0 x 8,4	M8	100	12,5
18 x 10,5	M10	100	12,5
20 x 13	M12	100	12,5
24 x 15	M14	120	12,5
26 x 17	M16	130	12,5

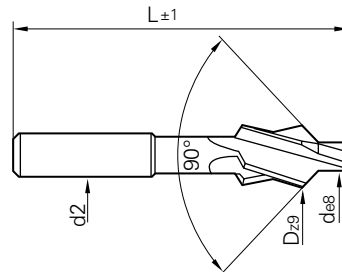
1160.1 TiN

D x d	Schraube	L	d2
2,2 x 1,1	M1	45	D
2,5 x 1,3	M1,2	45	D
2,8 x 1,5	M1,4	45	D
3,2 x 1,5	M1,5	45	D
3,3 x 1,7	M1,6	56	D
4,3 x 2,2	M2	56	D
5,0 x 2,7	M2,5	56	D
5,5 x 2,8	M2,6	71	D
6,0 x 3,2	M3	71	D
6,5 x 3,7	M3,5	71	D
8,0 x 4,3	M4	71	D
10,0 x 5,3	M5	80	D
11,0 x 6,4	M6	80	D
15,0 x 8,4	M8	100	12,5
18 x 10,5	M10	100	12,5
20 x 13	M12	100	12,5
24 x 15	M14	120	12,5
26 x 17	M16	130	12,5

Piloted countersinks 90°

straight shank
HSS-E

1161.0 / 1161.1



1161.0 bright

D x d	Schraube	L	d2
2,0 x 1,1	M1	45	D
2,5 x 1,3	M1,2	45	D
2,8 x 1,5	M1,4	45	D
3,3 x 1,7	M1,6	56	D
4,3 x 2,2	M2	56	D
5,0 x 2,7	M2,5	56	D
6,0 x 3,2	M3	71	D
7,0 x 3,7	M3,5	71	D
8,0 x 4,3	M4	71	D
10,0 x 5,3	M5	80	D
11,5 x 6,4	M6	80	D
15,0 x 8,4	M8	100	12,5
19,0 x 10,5	M10	100	12,5

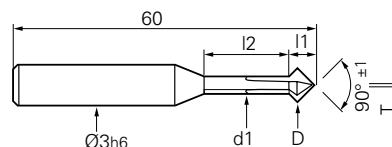
1161.1 TiN

D x d	Schraube	L	d2
2,0 x 1,1	M1	45	D
2,5 x 1,3	M1,2	45	D
2,8 x 1,5	M1,4	45	D
3,3 x 1,7	M1,6	56	D
4,3 x 2,2	M2	56	D
5,0 x 2,7	M2,5	56	D
6,0 x 3,2	M3	71	D
7,0 x 3,7	M3,5	71	D
8,0 x 4,3	M4	71	D
10,0 x 5,3	M5	80	D
11,5 x 6,4	M6	80	D
15,0 x 8,4	M8	100	12,5
19,0 x 10,5	M10	100	12,5

Front and back chamfering mini 90°

straight shank
solid carbide

4797.0 / 4797.4



4797.0 bright

D	α	d	D1	l	L
1,0	90°	0,7	0,30	0,50	5
1,5	90°	1,1	0,45	0,73	6
1,8	90°	1,5	0,60	0,75	8
2,0	90°	1,5	0,60	0,95	8
2,8	90°	2,1	0,90	1,30	10
3,0	90°	2,1	0,90	1,50	10

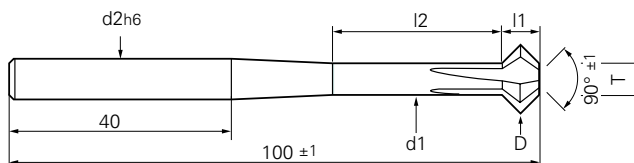
4797.4 Hard'X coated

D	α	d	D1	l	L
1,0	90°	0,7	0,30	0,50	5
1,5	90°	1,1	0,45	0,73	6
1,8	90°	1,5	0,60	0,75	8
2,0	90°	1,5	0,60	0,95	8
2,8	90°	2,1	0,90	1,30	10
3,0	90°	2,1	0,90	1,50	10

Front and back chamfering 90°

straight shank
solid carbide

4798.0 / 4798.4



4798.0

bright

D	α	d1	T	d2	l1	l2
2,8	90°	2,2	1,2	6	1,10	10
3,0	90°	2,2	1,2	6	1,30	10
3,8	90°	2,9	1,6	6	1,55	12
4,0	90°	2,9	1,6	6	1,75	12
4,8	90°	3,4	2	6	2,10	15
5,0	90°	3,4	2	6	2,30	15
5,8	90°	3,8	2,4	6	2,70	18
6,0	90°	3,8	2,4	6	2,90	18
7,8	90°	4,9	4,9	6	2,80	34
8,0	90°	4,9	4,9	6	3,10	34
9,8	90°	5,9	5,9	6	3,80	34
10,0	90°	5,9	5,9	6	4,10	34
11,8	90°	5,9	5,9	6	5,80	34
12,0	90°	5,9	5,9	6	6,10	34
15,8	90°	7,9	7,9	10	7,80	34
16,0	90°	7,9	7,9	10	8,10	34

4798.4

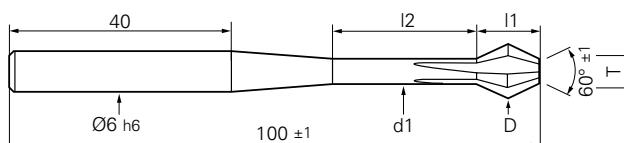
Hard'X coated

D	α	d1	T	d2	l1	l2
2,8	90°	2,2	1,2	6	1,10	10
3,0	90°	2,2	1,2	6	1,30	10
3,8	90°	2,9	1,6	6	1,55	12
4,0	90°	2,9	1,6	6	1,75	12
4,8	90°	3,4	2	6	2,10	15
5,0	90°	3,4	2	6	2,30	15
5,8	90°	3,8	2,4	6	2,70	18
6,0	90°	3,8	2,4	6	2,90	18
7,8	90°	4,9	4,9	6	2,80	34
8,0	90°	4,9	4,9	6	3,10	34
9,8	90°	5,9	5,9	6	3,80	34
10,0	90°	5,9	5,9	6	4,10	34
11,8	90°	5,9	5,9	6	5,80	34
12,0	90°	5,9	5,9	6	6,10	34
15,8	90°	7,9	7,9	10	7,80	34
16,0	90°	7,9	7,9	10	8,10	34

Front and back chamfering 60°

straight shank
solid carbide

4799.0 / 4799.4



4799.0

bright

D	α	d1	T	l1	l2
5,0	60°	3,4	3,4	2,8	15
8,0	60°	4,9	4,9	5,4	34
12,0	60°	5,9	5,9	10,6	34

4799.4

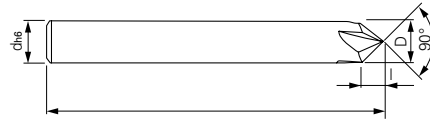
Hard'X coated

D	α	d1	T	l1	l2
5,0	60°	3,4	3,4	2,8	15
8,0	60°	4,9	4,9	5,4	34
12,0	60°	5,9	5,9	10,6	34

Chamfer mill 90°

straight shank
solid carbide

4795.3


4795.3

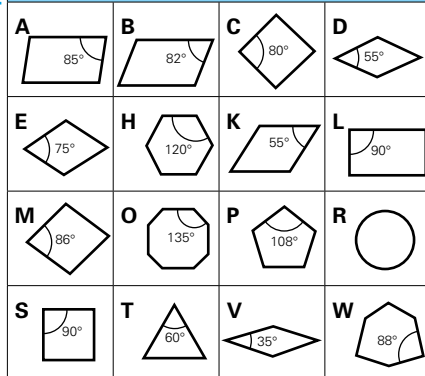
ALTiN coated

D	L	l	d	Z
3	51	1,4	3	4
4	51	1,8	4	4
6	64	2,8	6	4
8	64	3,8	8	4

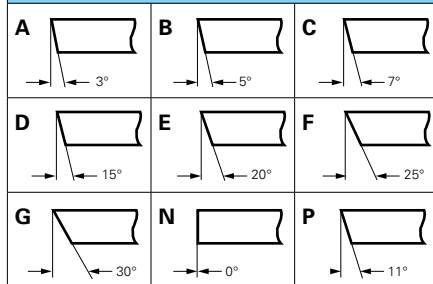
D	L	l	d	Z
10	73	4,8	10	6
12	84	5,8	12	6
16	93	7,8	16	6

ISO reference codes for inserts

1 Insert shape



2 Clearance angle

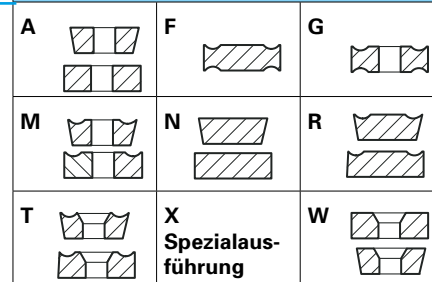


Sm	s	d
0,025	0,005	0,025
0,025	0,013	0,025
0,025	0,025	0,025
0,025	0,005	0,013
0,13	0,025	0,025
0,025	0,013	0,013
0,025	0,005	0,05–0,15*
0,025	0,013	0,05–0,15*
0,025	0,025	0,05–0,15*
0,08–0,20*	0,13	0,05–0,15*
0,13–0,38*	0,13	0,08–0,25*

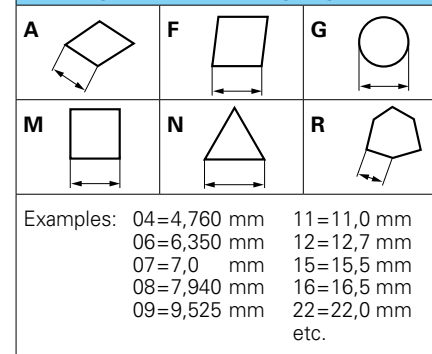
Inserts Tolerances +/-

d	Class M		Class U	
mm	m	d	m	d
6,35	0,08	0,05	0,13	0,08
9,52	0,08	0,05	0,13	0,08
12,70	0,13	0,08	0,20	0,13
15,88	0,15	0,10	0,27	0,18
19,05	0,15	0,10	0,27	0,18

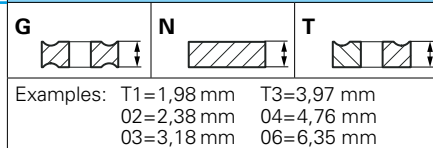
4 Fixing and geometry



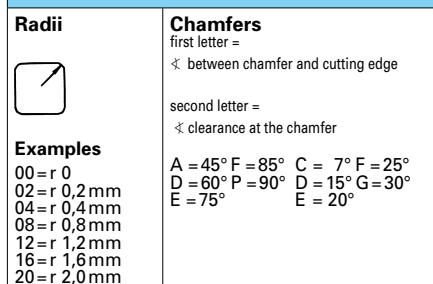
5 Length of main cutting edge


S
M
1
D
P
2
L
H
3
T
X
4
09
06
5
T3
02
6
AG
04
7
N
R
8
19
16
9

6 Insert thickness



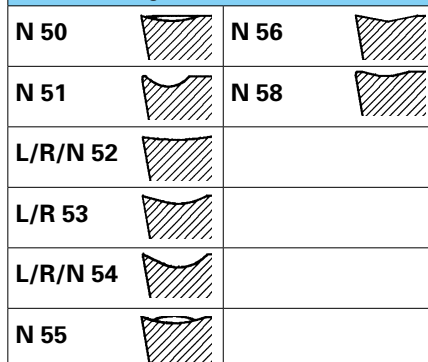
7 Corner radii



8 Direction of cut



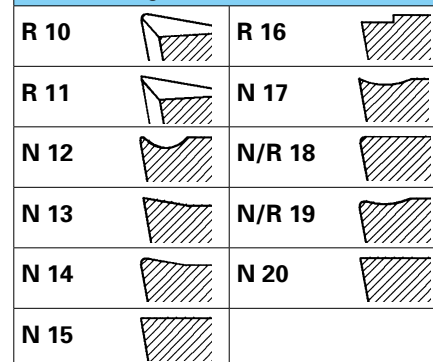
8+9 Turning



9 Chip breaker

Manufacturer specific

8+9 Milling



Inserts

Chip breakers and cutting edge conditioning

Boring

Chip-Breaker No.		Roughing	1/2 Roughing	1/2 Finishing	Finishing	Steel < 800 N/mm ²	Steel > 800 N/mm ²	Stainless/Titanium	Ni-Alloys	Cast Iron	Aluminium
N 40			●	●	●	●	●	●			
N 50					●	●	●	●			
N 51			●	●		●	●				
L/R/N 52				●	●				●	●	
L/R 53				●	●	●	●	●			
L/R/N 54				●	●					●	
N 55			●	●		●	●	●			
N 56			●	●				●	●		
N 58		●				●	●			●	

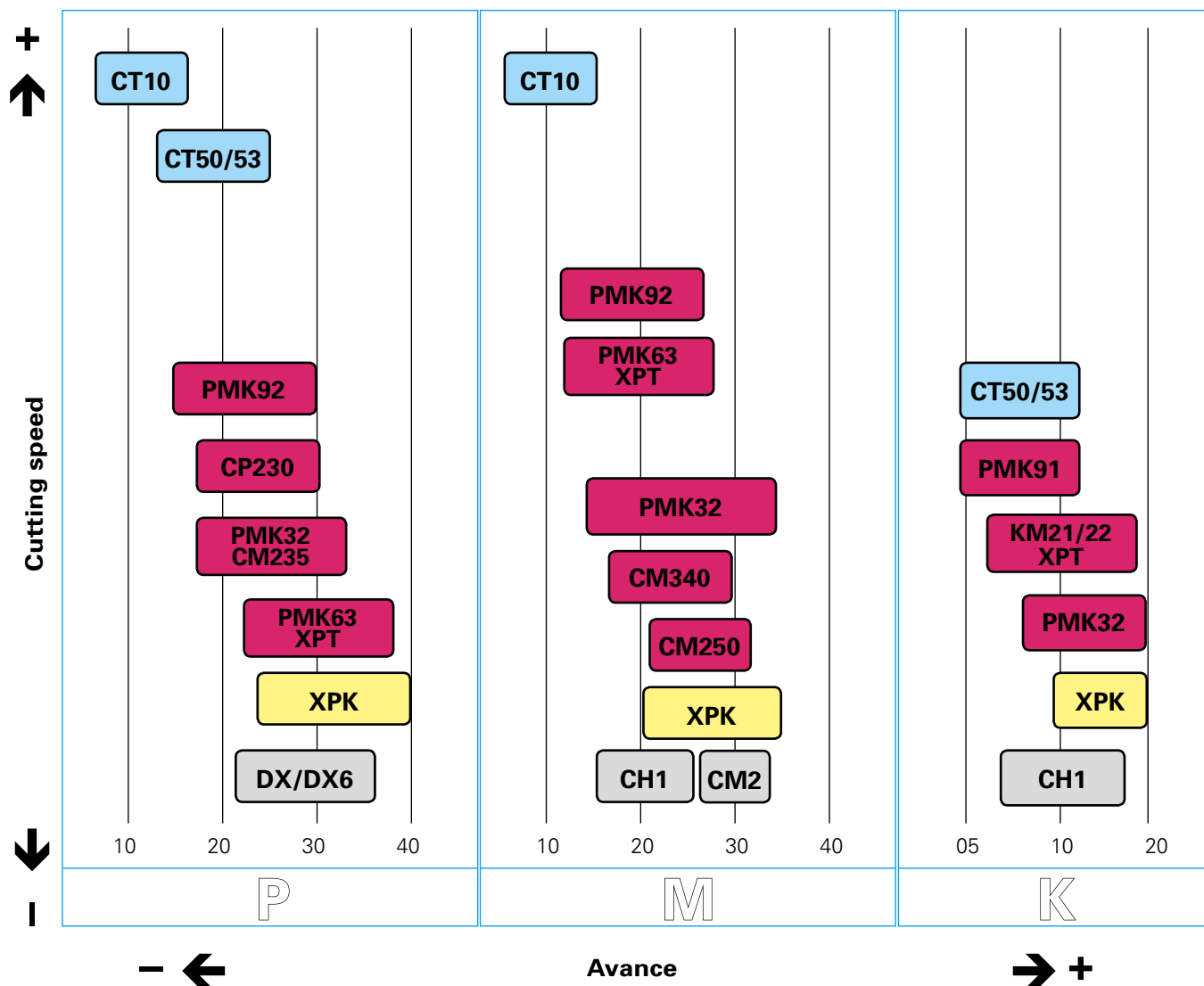
Milling, counterboring, bohring

Chip-Breaker No.		Milling	Counterboring	Boring	Steel < 800 N/mm ²	Steel > 800 N/mm ²	Stainless/Titanium	Ni-Alloys	Cast Iron	Aluminium
R 10		●			●	●	○		●	
R 11		●					○			●
N 12		●	●	●	●	●	○	○	●	
N 13		●	●	●			○			●
N 14		●	●	●	●	●	●		○	
N 15		●	○	○	●	●			●	
L 16			●	●	●	○	●			
N 17		●	●				○			●
R/N 18		●			●	●	●		●	
R/N 19		●	●		●	●	○			
N 20		●						○	○	●

● excellent
○ good

Inserts

Carbide and Cermet Grades



Grade	Carbide	Ceramic	CERMET	TiAlN	TiN	TiCN	Al ₂ O ₃	Steel <800	Steel >800	Inox Titan	Ni-Co Alloys	Cast Iron	Aluminium
DX	●							●					
DX6	●							●					
CM2	●									●	●		
CH1	●											●	●
XPK	●				●			○	●	●	●	○	
XPT	●			●	●			●	●	●	●	○	
CM250	●			●	●			●	●	●	●		
PMK63	●			●	●		●	●	●	●	○	○	
PMK32	●			●	●		●	●	●	●	○	○	
CP230	●			●	●		●	●	●	●	○		
CM340	●			●	●		●	●	●	●	○		
KM21	●			●	●		●	●	●	○	○	●	
KM22	●			●	●		●	●	●	●	○	●	
PMK92	●			●	●		●	●	●	○	○	○	
CT50			●	●	●		●	●	●	○		●	
CT53			●	●	●		●	●	●	○		●	
CT10			●	●	●		●	●	●	○		○	

Inserts

- Steels
- Stainless Steels
- Cast Iron
- Light alloys
- Superalloys
- Materials hardened

Type	Chip-Breaker	Carbure								Cermet			
		Steel		Aluminium		Cast Iron		Stainless Steels		Cast Iron		Steel	
		DX6	PMK92	CH1 blanc	KM21	CH1 blanc	KM22	DX6	PMK92	CT50	CT53	CT50	CT53
MPHT 060202.N12 MCHT 09T304.N12 MBHT 120404.N12		○	○	-	-	-	-	-	-	-	-	-	-
MPHT 060202.N13 MCHT 09T304.N13 MBHT 120404.N13		-	-	○	○	-	-	-	-	-	-	-	-
MPHT 060202.N14 MCHT 09T304.N14 MBHT 120404.N14		-	-	-	-	-	-	○	○	-	-	-	-
MBHW 060202.N15 MCHW 09T304.N15 MPHW 060202.N15		-	-	-	-	-	-	-	-	○	○	○	○
MBHX 060202.L16 MCHX 060202.L16 MPHX 060202.L16		-	-	-	-	-	-	-	-	○	○	-	-
MBMT 120408.N12 MPMT 060204.N12 MCMT 09T308.N12		○	○	-	-	○	○	-	-	-	-	-	-
CPGX 04T102.L52 CPGX 04T102.L53 CPGX 04T102.L54		-	-	-	-	-	-	-	-	-	-	-	-
SDHT 09T3AG.N17		-	-	○	○	-	-	-	-	-	-	-	-
SDHW 09T3AG.N18		○ XPK	-	-	-	-	-	○ XPK-S	-	-	-	-	-
SDLT 09T3AG.N19		○ PMK63	-	-	-	-	-	-	-	-	-	-	-

"R" bars use "L" inserts

"L" bars use "R" inserts

Inserts

- P Steels
- M Stainless Steels
- K Cast Iron
- N Light alloys
- S Superalloys
- H Materials hardened

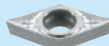
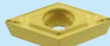
Type	Chip-Breaker	Carbure						Cermet
		Steel	Aluminium	Cast Iron	Cast Iron	Stainless Steels	Steel	Steel
		P	N	K	K	M	P	P
		PMK32	CH1 blank	CH1 blank	KM22	CM340	CP230	CT10 blank
CPGX 04T102.L52	   L/R52 L/R53 L/R54	-	-	-	○	-	-	-
CPGX 04T102.L53		○	-	-	-	-	-	-
CPGX 04T102.L54		-	○	-	-	-	-	-
CPGX 04T102.R52		-	-	-	○	-	-	-
CPGX 04T102.R53		○	-	-	-	-	-	-
CPGX 04T102.R54		-	○	-	-	-	-	-
CCMT 060202.N50	   N50 N51 N55	-	-	-	-	○	○	-
CCMT 060202.N51		○	-	-	-	-	-	-
CCMT 060204.N55		○	○	○	○	○	○	○
CCMT 060204.N50		-	-	-	-	○	○	-
CCMT 060204.N51		-	-	-	-	-	-	○
CCMT 060204.N51		○	-	-	-	-	-	-
CCMX 060202.L52	   L/R52 L/R53 L/R54	-	-	○	-	-	-	-
CCMX 060202.L53		○	-	-	-	-	-	-
CCMX 060202.L54		-	○	-	-	-	-	-
CCMX 060202.R52		-	○	○	-	-	-	-
CCMX 060202.R53		○	-	-	-	-	-	-
CCMX 060202.R54		-	○	-	-	-	-	-
CCMX 060204.L52		○	○	○	○	○	○	○
CCMX 060204.L53		○	-	-	-	-	-	-
CCMX 060204.L54		-	○	-	-	-	-	-
CCMX 060204.R53		○	-	-	-	-	-	-
CCMX 060204.R54		-	○	-	-	-	-	-
CCMT 09T304.N50	   N50 N51 N55	-	-	-	-	○	○	-
CCMT 09T304.N55		-	-	-	-	-	○	-
CCMT 09T304.N51		○	○	-	-	-	○	-
CCMT 09T308.N55		○	○	○	○	○	○	○
CCMT 09T308.N51		-	-	-	-	○	○	-
CCMT 09T308.N51		○	○	-	-	-	-	-
CCMX 09T304.L52	   L/R52 L/R53 L/R54	-	-	○	-	-	-	-
CCMX 09T304.L53		○	-	-	-	-	-	-
CCMX 09T304.L54		-	○	-	-	-	-	-
CCMX 09T304.R52		-	-	○	-	-	-	-
CCMX 09T304.R53		○	-	-	-	-	-	-
CCMX 09T304.R54		-	○	-	-	-	-	-
CCMX 09T308.L54		○	○	○	○	○	○	○
CCMX 09T308.R54		-	○	-	-	-	-	-
CCMX 09T308.R54		-	○	-	-	-	-	-
CCMX 09T308.R54		-	○	-	-	-	-	-
CCMX 09T308.R54		-	○	-	-	-	-	-
CCMX 09T308.R54		-	○	-	-	-	-	-

"R" bars use "L" inserts

"L" bars use "R" inserts

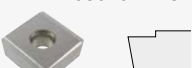
Inserts

- Steels
- Stainless Steels
- Cast Iron
- Light alloys
- Superalloys
- Materials hardened

		Carbure						Cermet
		P Steel	N Aluminium	K Cast Iron	K Cast Iron	M Stainless Steels	P Steel	P Steel
Type	Chip-Breaker	PMK32	CH1 blank	CH1 blank	KM22	CM340	CP230	CT10 blank
DCGT 070202.N50	   N50N54N55   	-	-	-	-	-	-	○
DCGT 070202.N54		-	○	-	○	-	-	-
DCGT 070204.N54		-	○	-	○	-	-	-
DCMT 070202.N50		-	-	-	-	○	○	-
DCMT 070204.N55		-	-	-	-	○	○	-
DCMT 070204.N50		-	-	-	-	-	○	-
DCMT 070208.N55		-	-	-	-	○	○	-
TPGX 07T102.L52	   L/R52L/R53L/R54   	○	-	-	-	-	-	-
TPGX 07T102.L53		○	-	-	-	-	-	-
TPGX 07T102.L54		-	○	-	-	-	-	-
TPGX 07T102.L52		○	-	-	-	-	-	-
TPGX 07T102.R53		○	-	-	-	-	-	-
TPGX 07T102.R54		○	-	-	-	-	-	-
TPGX 07T104.L52		○	○	○	○	○	○	○
TPGX 07T104.L53		○	-	-	-	-	-	-
TPGX 07T104.L54		-	○	-	-	-	-	-
TPGX 07T104.L52		○	-	-	-	-	-	-
TPGX 07T104.R53		○	-	-	-	-	-	-
TPGX 07T104.R54		-	○	-	-	-	-	-
TCGX 110204.L53	  L/R53L/R54  	○	-	-	-	-	-	-
TCGX 110204.L54		-	○	-	-	-	-	-
TCGX 110204.R53		○	-	-	-	-	-	-
TCGX 110204.R54		-	○	-	-	-	-	-
TCGX 110208.L53	  N50N55  	○	○	○	○	○	○	○
TCGX 110208.L54		-	○	-	-	-	-	-
TCGX 110208.R53		○	-	-	-	-	-	-
TCGX 110208.R54		-	○	-	-	-	-	-
TCMT 110204.N55	  N50N55  	○	○	○	○	○	○	○
TCMT 110204.N50		-	-	-	-	-	-	○
VCGT 070202.N50	  N50N54  	-	-	-	-	○	-	-
VCGT 070202.N54		-	○	-	-	-	-	-
WCGX 020102.L53	 L/R53 	-	-	-	-	-	-	○
WCGX 020102.R53		-	-	-	-	-	-	○

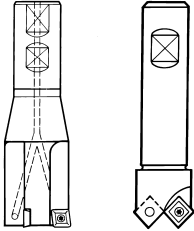
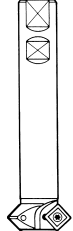
"R" bars use "L" inserts
 "L" bars use "R" inserts

Recommendations for 49030, 49031, 49032

49030 49031 49032	Projection				Indexable inserts	Grades
	7 x d	3 x d	6 x d	3 x d		
	Carbide shank $f_z \sim 0,1$	Carbide shank $f_z \sim 0,1$	Steel shank $f_z \sim 0,1$	Steel shank $f_z \sim 0,1$		
Working Material	Vc m/min.	Vc m/min.	Vc m/min.	Vc m/min.		
Free Cutting Steels General Purpose Steels Case hardening Steels unalloyed, C < 0,2%	100 - 140	200 - 300	50 - 60	150 - 250	 Cast iron+short chipping materials	Cermet CH1 KM22
Free Cutting Steels General Purpose Steels Tempering Steels alloyed, C < 0,45%	100 - 140	200 - 300	50 - 60	150 - 250	CPGX 04T102.L53  for steel + Inox	DX PMK32
Tempering Steels Tool Steels alloyed, C < 0,8%	100 - 140	150 - 250	50 - 60	150 - 200	CPGX 04T102.L54  for light alloys	CH1
Highly Alloyed Steels Tool Steels for Cold / Hot Forming C > 0,8%	100 - 140	150 - 250	50 - 60	150 - 200	MPHT 060202.N12  for steel + Inox	DX6 PMK92
Stainless Steels, martensitic Stainless Castings	100 - 140	150 - 250	50 - 60	150 - 200	MPHT 060202.N13  for light alloys	CH1 KM22
Stainless Steels, austenitic	100 - 140	150 - 250	50 - 60	150 - 200	MPHT 060202.N14  for steel + Inox	DX6 PMK92
High Temperature Alloys on Ni + Co Basis	40 - 90	40 - 90	40 - 60	40 - 90	MPHW 060202.N15  Cast iron+short chipping materials	Cermet CT50 CT53
Grey Cast Iron	100 - 140	150 - 280	50 - 60	150 - 200	MPHX 060202.L16  for long chipping materials	Cermet CT50 CT53
Malleable and Nodular Castings	100 - 140	150 - 280	50 - 60	150 - 200		
Aluminium	100 - 140	150 - 280	50 - 60	150 - 200		
Cooper / Brass Bronze	100 - 140	150 - 280	50 - 60	150 - 200		

Recommendations

For cutting speeds V_c m/min. and feeds per tooth f_z mm for Milling-, Boring- and Chamfering Tools with indexable carbide and Cermet Inserts

Tool:				
Type.:	49037 49038 49039	49100		49190 49193
Inserts	MPHT MPHW MPHX MPMT*	MCHT MCHW MCHX MCMT*	MBHT MBHW MBHX MBMT*	SDHW SDLT SDLW SDHT
Dimensions	060202 060204*	09T304 09T308*	120404 120408*	09T3 ...
f_z:	0,03–0,1 0,03–0,12*	0,05–0,15 0,05–0,25*	0,05–0,15 0,05–0,25*	0,03–0,3

Working Material	Sorte	DX6	PMK92	CH1	KM22	CT50 CT53	DX6	PMK93 PMK91	CH1	XPB KM21	CT50
		V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.	V_c m/min.
Free Cutting Steel General Purpose Steels Case hardening Steels unalloyed, $C < 0,2\%$	HB 150–200 < 600 mm ²	100–150	180–350	–	–	300–500	130–170	200–450	–	–	300–500
Free Cutting Steel General Purpose Steels Tempering Steels unalloyed, $C < 0,45\%$	HB 175–225 < 800 mm ²	90–140	160–300	–	–	250–400	120–160	200–350	–	–	250–400
Tempering Steels Tool Steels alloyed, $C < 0,8\%$	HB 200–300 < 1000 mm ²	80–130	140–220	–	–	200–350	110–160	180–250	–	–	200–350
"Highly Alloyed Steels Tool Steels for Cold / Hot Forming $C > 0,8\%$ "	HB 200–300 < 1000 mm ²	50–100	90–150	–	–	180–250	70–150	90–180	–	–	180–250
Stainless Steels, austenitic	HB 140–190 < 700 mm ²	–	–	100–180	150–300	150–300	–	–	100–180	150–300	150–300
Stainless Steels, martensitic Stainless Castings	HB 175–245 < 1000 mm ²	70–120	90–180	–	–	150–240	70–150	100–200	–	–	150–240
High Temperature Alloys on Ni + Cr Basis	HB 200–400 < 1200 mm ²	–	–	15–60	15–70	15–70	–	–	15–60	15–70	15–70
Titanium Alloys	HB 215–500 < 1000 mm ²	–	–	40–60	40–70	–	–	–	40–60	40–70	15–70
Grey Cast Iron	HB < 200	–	180–300	160–200	180–300	250–400	–	–	160–200	200–350	250–400
Malleable and Nodular Castings	HB > 200	–	170–280	150–190	170–280	250–400	–	–	150–190	200–300	250–400
Aluminum	HB < 160	–	–	300–1000	300–1000	–	–	–	300–1000	–	300–1000
Copper / Brass Bronze	HB < 120	–	–	180–200	180–270	–	–	–	190–240	200–280	200–300

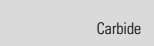
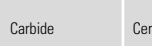
Inserts

Cutting datas

Caution: General safety regulations and directions of machine manufacturers must be observed at any time!

Caution: General safety regulations and directions of machine manufacturers must be observed at any time!																											Carbide					Cermet
					bright		coated					bright																				
Material		Tensile strength	Hardness	CPGX 04...	CCMT 060202		CCMT 060204			CCMT 09T304			CCMT 09T308		CCMX 060202	CCMX 060204	CCMX 09T304	CCMX 09T308	CH1	PMK32	KM22	CM340	CP230	CT10								
	Nr.	Rm (N/mm2)	HB	f (mm/U) *)																Vc (m/min)												
Low Carbon Steel		1.0035 1.0038 1.0401 1.0050	- 500	- 160	0.03 0.10	0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20		200-400				130-360	120-330							
Alloy Steel		1.0501 1.1141 1.5732 1.7225	500 - 700	140 - 200	0.03 0.10	0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20		140-330				120-270	110-270							
Tool Steel		1.1221 1.3505 1.7225 1.5141	900 - 1'100	170 - 275	0.03 0.10	0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20		120-260				110-240	100-210							
Alloy Tool Steel		1.1191 1.7225 1.2080 1.7220	700 - 900	250 - 325	0.03 0.10	0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20		130-300				120-280	110-250							
Alloy Cast Steel		1.6582 1.8159 1.2367 1.7361	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390	0.03 0.10	0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20		120-240				100-220	90-200							
Stainless Steel		1.4006 1.4057 1.4034 1.4005	- 800	- 250		0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40					140-240		120-220			110-200							
Stainless Steel - Austenitic, Martensitic		1.4300 1.4301 1.4435 1.4573	500 - 1100	200 - 325		0.10 0.20	0.05 0.10	0.03 0.15	0.08 0.15	0.10 0.20	0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40					110-200		100-180			90-150							
Grey Cast Iron		0.6010 0.6015 0.6020	- 250	- 200	0.03 0.10											0.03 0.10	0.05 0.15	0.05 0.20														
Cast Iron Malleable		0.6025 0.8135 0.8140 0.7050	250 - 350	200 - 250	0.03 0.10											0.03 0.10	0.05 0.15	0.05 0.20														
Copper Alloys		2.0331 2.0401 2.1030 2.0920	450 - 650	120 - 180	0.03 0.10						0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20	0.08 0.40													
Aluminium Alloys		3.2582.05 3.3541.01 3.2315 3.0205	250 - 350	200 - 300	0.03 0.10						0.10 0.20	0.08 0.15	0.15 0.35	0.15 0.30	0.20 0.40	0.03 0.10	0.05 0.15	0.05 0.20	0.08 0.40	200-500												

*) in function of stability of tool & workpiece

																											
DCGT 0702..		DCMT 702..		bright	coated			bright	TPGX 07T..	TCGX 110204	TCGX 110208	TCMT 11204		bright	coated			bright	VCGT 70202	WCGX 020102	bright	coated		bright			
N50	N54	N50	N55	CH1	KM22	CM340	CP230	CT10				N50	N55	CH1	PMK32	CM340	CP230	CT10	N50	N54		CH1	CM340	CP230	CT10		
f (mm/U) *)				Vc (m/min)					f (mm/U) *)						Vc (m/min)				f (mm/U) *)			Vc (m/min)					
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40				130-360	120-330	0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		200-400		130-360	120-330	0.05 0.50		0.02 0.10					120-330	
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40				130-360	120-330	0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		140-330		120-270	110-270			0.02 0.10					110-270	
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40				130-360	120-330	0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		120-260		110-240	100-210			0.02 0.10					100-210	
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40				130-360	120-330	0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		130-300		120-280	110-250			0.02 0.10					110-250	
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40				130-360	120-330	0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		120-240		100-220	90-200			0.02 0.10					90-200	
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40			120-220			0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		140-240	120-220		110-200		0.03 0.50			120-220				
0.10 0.25	0.25 0.40	0.10 0.25	0.25 0.40			100-180			0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40		110-200	100-180		90-150		0.03 0.50			100-180				
0.015 0.06	0.30 0.50			200-500					0.05 0.15	0.05 0.15	0.08 0.30	0.03 0.15	0.25 0.40	200-500							0.03 0.50		200-500				

*) in function of stability of tool & workpiece