Turning tools

HM monoblock turning tools

	Turning bars and turning tools	30-3

Monoblock carrier tools for internal and external machining

INFO	Overview of clamp mountings and boring bars	30-8
	Clamp mountings, negative	30-9
	Clamp mountings, positive	30-16
	DLOCK clamp mountings with and without internal cooling	30-21
	Negative boring bars	30-24
	Positive boring bars	30-28

Indexable cutting inserts

INFO	Overview of indexable cutting insert geometries	30-34
INFO	Overview of SARATURN turning types and chip breakers	30-35
	SARATURN ISO indexable cutting inserts Range expanded	30-46
	ISO indexable cutting inserts AluLine	30-85
	ISO indexable cutting inserts ATORN	30-86
	ISO indexable cutting inserts CBN, PKD and PDC (thick-film diamond)	30-97

Thread turning

INFO	Overview of thread production	30-110
	Thread cutting clamp mountings	30-111
	Thread cutting boring bars	30-112
	Threading inserts	30-114
	High-performance threading inserts	30-119
	Thread cutting sets Standard, Ultra and Mini	30-123
	Grooving inserts for thread cutter holders	30-126

Recess turning systems

INFO	Overview of D-Clamp system	30-128
	Carrier tools D-Clamp	30-129
	Cutting inserts D-Clamp	30-131
	Carrier tools D-Grip	30-134
	Cutting inserts D-Grip	30-135
	Carrier tools DED	30-136
	Indexable cutting inserts DED	30-139

INFO	Overview of A-Cut system	30-140
	Carrier tools A-CUT	30-141
	Cutting inserts A-CUT	30-143
	Clamping shafts for cutting edge holders	30-145
	Grooving and parting-off system SARA Mini	30-146
	MINI CUT internal turning system	30-150
	MINI CUT Flexo carrier tools	30-151
INFO	Overview of mini-børe	30-157
	mini-børe internal turning system	30-158

Grooves		
INFO	Overview of keyway slotting with system	30-165
	Keyway slotting Carrier tools and cutting inserts	30-166
Knurling		
INFO	Knurling tools	30-170
	Knurling carrier tools and knurling wheels	30-172
Technical information, usage recommendations		30-176



Summary of icons used for drilling tools

INFO

Cutting material	HM e.g.: carbide metal	CBN e.g.: cubic boron nitride	PKD e.g.: polycrystalline diamond
Coating	TiN Titanium-nitride coating	TiCN Titanium-carbo-nitride coating	TiAlN Titanium-aluminium-nitride coating
Standard	DIN 4951-4965 Complies with DIN 4951 - 4965		
Shank design	Corresponds to straight shank		
Thread	M e.g. metric thread	MF e.g. metric fine thread	BSW e.g. British Standard Whitworth
Thread angle	55° Thread angle is 60°		
Coolant design	With internal coolant supply		
Cutting data	Vc/fz Further information such as cutting data recommendations is available in the technical appendix		

Usage recommendations diagram (example)

- **Materials group**
- **Usage recommendation**: Depicted by ISO colour code. Full dot = very well suited, circle = well suited

material	● very well suited ○ well suited	steel			hardened steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	< 55 HRc	< 60 HRc	≥ 60 HRc	ferrit./martens.	austenitic	duplex	GG / GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.
		●	●	○	●	●	○	●	●	○	●	○	●	○	○	●	●	●	○



Toolbits

HSS-E

- **DIN 4964**
- Entire length hardened, tempered and ground true to size on all sides
- **Use:** Turning, boring, grooving etc. and for producing profile steels

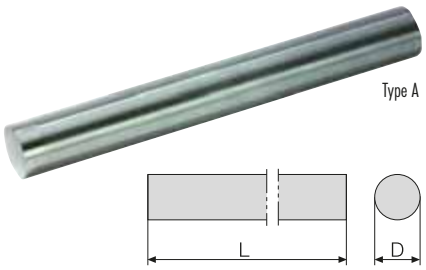
Type A, round, tolerance h8

D mm	L mm	art.no.	€
4	63	**300101** 0001	4,09
4	80	300101 0002	4,54
4	100	300101 0003	5,35
5	63	300101 0004	4,09
5	80	300101 0005	5,20
5	100	300101 0006	5,85
5	125	300101 0007	7,15
6	40	300101 0008	4,45
6	63	300101 0009	5,35
6	80	300101 0010	5,85
6	100	300101 0011	6,75
6	125	300101 0012	8,–
6	160	300101 0013	10,15
8	40	300101 0014	5,35
8	63	300101 0015	6,40
8	80	300101 0016	7,65
8	100	300101 0017	8,75
8	125	300101 0018	11,05
8	160	300101 0019	14,10
8	200	300101 0020	17,10
10	40	300101 0021	6,75

3101

D mm	L mm	art.no.	€
10	63	300101 0022	8,40
10	80	300101 0023	9,80
10	100	300101 0024	11,30
10	125	300101 0025	13,75
10	160	300101 0026	16,60
10	200	300101 0027	21,–
12	63	300101 0028	11,05
12	80	300101 0029	12,85
12	100	300101 0030	15,–
12	125	300101 0031	18,90
12	160	300101 0032	23,–
12	200	300101 0033	27,60
14	160	300101 0034	30,30
16	125	300101 0035	30,10
16	160	300101 0036	38,30
16	200	300101 0037	46,70
18	160	300101 0038	42,60
18	200	300101 0039	53,50
20	125	300101 0040	42,80
20	160	300101 0041	52,50
20	200	300101 0042	66,–

3101



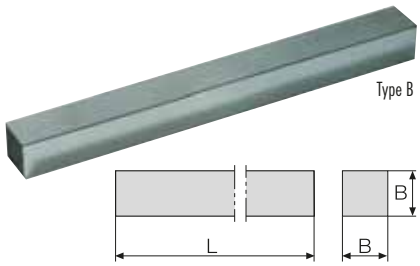
Type B, square, tolerance h13

B mm	L mm	art.no.	€
4	40	**300110** 0001	4,45
4	63	300110 0002	5,50
4	80	300110 0003	6,15
4	100	300110 0004	8,–
5	40	300110 0005	4,45
5	63	300110 0006	5,50
5	100	300110 0007	7,30
6	40	300110 0008	4,29
6	63	300110 0009	5,05
6	80	300110 0010	5,45
6	100	300110 0011	6,15
6	125	300110 0012	8,65
6	160	300110 0013	9,95
8	40	300110 0014	7,30
8	63	300110 0015	8,–
8	80	300110 0016	8,90
8	100	300110 0017	10,40
8	125	300110 0018	11,75
8	160	300110 0019	14,25
8	200	300110 0020	16,60
10	63	300110 0021	10,35
10	80	300110 0022	11,40
10	100	300110 0023	14,25
10	125	300110 0024	15,90

3101

B mm	L mm	art.no.	€
10	160	300110 0025	20,30
10	200	300110 0026	24,90
12	63	300110 0027	13,55
12	80	300110 0028	15,10
12	100	300110 0029	17,80
12	125	300110 0030	21,50
12	160	300110 0031	27,50
12	200	300110 0032	33,–
14	100	300110 0033	22,30
14	125	300110 0034	27,60
14	160	300110 0035	33,90
14	200	300110 0036	39,40
16	100	300110 0037	26,70
16	125	300110 0038	32,20
16	160	300110 0039	39,60
16	200	300110 0040	46,90
18	160	300110 0041	59,–
18	200	300110 0042	74,–
20	200	300110 0043	75,–
20	250	300110 0044	95,50
25	160	300110 0045	98,–
25	200	300110 0046	119,–
25	250	300110 0047	151,–

3101



Continued on next page >>>

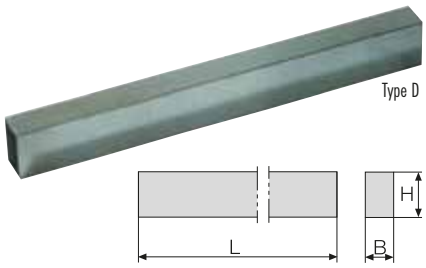
Type D, rectangular, tolerance h13

B mm	H mm	L mm	art.no.	€
4	16	100	**300120** 0001	14,80
4	16	160	300120 0002	21,–
5	10	100	300120 0003	10,35
5	10	160	300120 0004	16,80
5	10	200	300120 0005	20,70
5	20	100	300120 0006	17,80
5	20	160	300120 0007	25,80
5	20	200	300120 0008	32,10
6	10	100	300120 0009	11,05
6	10	160	300120 0010	17,10
6	10	200	300120 0011	21,40
6	12	100	300120 0012	11,60
6	12	160	300120 0013	16,90
6	25	160	300120 0014	35,80
6	25	200	300120 0015	44,50
8	12	100	300120 0016	12,45
8	12	160	300120 0017	19,60
8	12	200	300120 0018	24,40
8	16	100	300120 0019	21,40

3101

B mm	H mm	L mm	art.no.	€
8	16	160	300120 0020	26,70
8	16	200	300120 0021	33,90
8	32	200	300120 0022	65,–
10	16	100	300120 0023	19,60
10	16	160	300120 0024	32,10
10	16	200	300120 0025	39,20
10	20	100	300120 0026	27,80
10	20	160	300120 0027	44,20
10	20	200	300120 0028	55,–
10	40	160	300120 0029	100,–
10	40	200	300120 0030	125,–
12	20	160	300120 0031	51,50
12	20	200	300120 0032	64,–
12	25	200	300120 0033	64,–
12	25	250	300120 0034	88,–
16	25	160	300120 0035	75,–
16	25	200	300120 0036	92,50
16	32	200	300120 0037	96,–

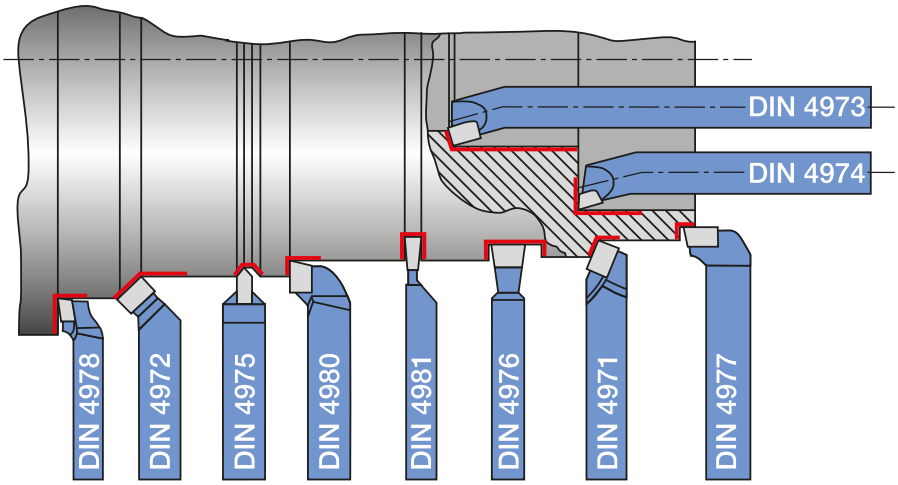
3101



Turning tool

HM

- Shanks made from non-alloy steel (700 - 800 N/mm² in strength)
- Finely ground face and flank surfaces
- Fitted with ISO solid carbide cutting inserts according to DIN 4950
- **P20**
  P25/P30 multi-range quality
  K10/K20 multi-range quality
- Unit prices when purchased in PU
- Other qualities can be found in our webshop



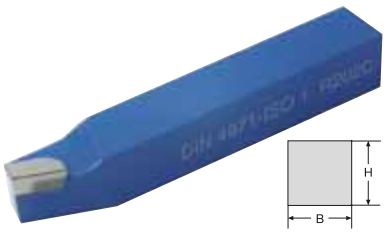
Figures show right-hand version

Straight turning tool, right-hand, DIN 4971 – ISO 1

- Left-hand version available on request

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.0	5	**302001** 0202	5,75	5	**302001** 0203	5,75	5	**302001** 0221	5,75
12	12	100	10.0	5	302001 0302	6,75	5	302001 0303	6,75	5	302001 0321	6,75
16	16	110	12.2	5	302001 0402	7,80	5	302001 0403	7,80	5	302001 0421	7,80
20	20	125	16.5	5	302001 0502	10,05	5	302001 0503	10,05	5	302001 0521	10,05
25	25	140	20.6	2	302001 0602	16,20	2	302001 0603	16,20	2	302001 0621	16,20
32	32	170	25.5				2	302001 0703	24,40	2	302001 0721	24,40

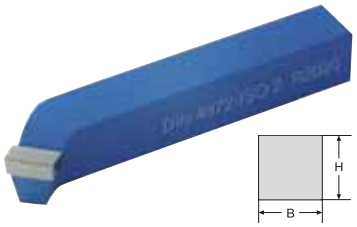
3103 3103 3103



Continued on next page >>>

Curved turning tool, right-hand, DIN 4972 – ISO 2

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	90	7.7	5	**302005** 0202	6,10	5	**302005** 0203	6,10	5	**302005** 0221	6,10
12	12	100	9.9	5	302005 0302	7,05	5	302005 0303	7,05	5	302005 0321	7,05
16	16	110	11.6	5	302005 0402	8,10	5	302005 0403	8,10	5	302005 0421	8,10
20	20	125	15.9	5	302005 0502	10,35	5	302005 0503	10,35	5	302005 0521	10,35
25	25	140	19.7	2	302005 0602	16,30	2	302005 0603	16,30	2	302005 0621	16,30
32	32	170	24.9	2	302005 0702	24,50	2	302005 0703	24,50	2	302005 0721	24,50
					3103			3103			3103	



Curved turning tool, left-hand, DIN 4972 – ISO 2

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	90	7.7	5	**302007** 0202	6,10	5	**302007** 0203	6,10	5	**302007** 0221	6,10
12	12	100	9.9	5	302007 0302	7,05	5	302007 0303	7,05	5	302007 0321	7,05
16	16	110	11.6	5	302007 0402	8,10	5	302007 0403	8,10	5	302007 0421	8,10
20	20	125	15.9	5	302007 0502	10,35	5	302007 0503	10,35	5	302007 0521	10,35
25	25	140	19.7	2	302007 0602	16,30	2	302007 0603	16,30	2	302007 0621	16,30
32	32	170	24.9	2	302007 0702	24,50	2	302007 0703	24,50	2	302007 0721	24,50
					3103			3103			3103	



Internal turning tool with square shank, DIN 4973 – ISO 8

- Available with round shank on request

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	8	125	5.0	5	**302010** 0102	6,–	5	**302010** 0103	6,–	5	**302010** 0121	6,–
10	10	150	6.0	5	302010 0202	6,65	5	302010 0203	6,65	5	302010 0221	6,65
12	12	180	8.2	5	302010 0302	8,25	5	302010 0303	8,25	5	302010 0321	8,25
16	16	210	10.3	5	302010 0402	10,05	5	302010 0403	10,05	5	302010 0421	10,05
20	20	250	12.0	5	302010 0502	12,20	5	302010 0503	12,20	5	302010 0521	12,20
25	25	300	15.5	2	302010 0602	18,80	2	302010 0603	18,80	2	302010 0621	18,80
32	32	355	20.0	2	302010 0702	28,20	2	302010 0703	28,20	2	302010 0721	28,20
					3103			3103			3103	



Internal corner turning tool with square shank, DIN 4974 – ISO 9

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	8	125	5.1	5	**302015** 0102	6,–	5	**302015** 0103	6,–	5	**302015** 0121	6,–
10	10	150	6.0	5	302015 0202	6,30	5	302015 0203	6,30	5	302015 0221	6,30
12	12	180	8.7	5	302015 0302	8,25	5	302015 0303	8,25	5	302015 0321	8,25
16	16	210	9.4	5	302015 0402	10,05	5	302015 0403	10,05	5	302015 0421	10,05
20	20	250	11.8	5	302015 0502	12,20	5	302015 0503	12,20	5	302015 0521	12,20
25	25	300	15.0	2	302015 0602	18,80	2	302015 0603	18,80	2	302015 0621	18,80
32	32	355	19.4	2	302015 0702	28,20	2	302015 0703	28,20	2	302015 0721	28,20
					3103			3103			3103	

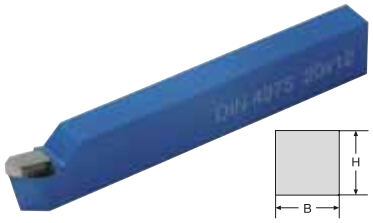
Internal corner turning tool with straight shank, DIN 4974 – ISO 9

D mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	125	5.1	5	**302017** 2202	6,–	5	**302017** 2203	6,–	5	**302017** 2221	6,–
10	150	6.0	5	302017 2302	6,30	5	302017 2303	6,30	5	302017 2321	6,30
12	180	8.7	5	302017 2402	7,90	5	302017 2403	7,90	5	302017 2421	7,90
16	210	9.4	5	302017 2502	9,95	5	302017 2503	9,95	5	302017 2521	9,95
20	250	11.8	5	302017 2602	11,35	5	302017 2603	11,35	5	302017 2621	11,35
25	300	15.0	2	302017 2702	17,80	2	302017 2703	17,80	2	302017 2721	17,80
				3103			3103			3103	



Pointed turning tool, DIN 4975

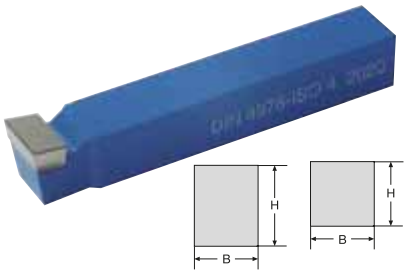
B mm	H mm	L mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	16	110	5	**302020** 1202	6,95	5	**302020** 1203	6,95	5	**302020** 1221	6,95
12	20	125	5	302020 1302	7,60	5	302020 1303	7,60	5	302020 1321	7,60
16	25	140	2	302020 1402	10,25	2	302020 1403	10,25	2	302020 1421	10,25
20	32	170	2	302020 1502	13,50	2	302020 1503	13,50	2	302020 1521	13,50
				3103			3103			3103	



Continued on next page >>>

Broad turning tool, DIN 4976 – ISO 4

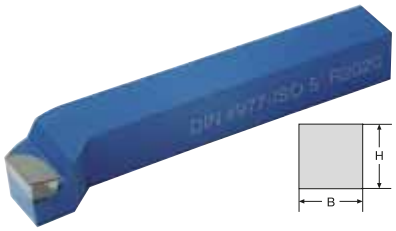
B mm	H mm	L mm	Cutting edge width mm	P20		P25 / P30		K10 / K20	
					art.no.	€		art.no.	€		art.no.	€
10	10	90	10.0	5	**302025** 0202	6,40	5	**302025** 0203	6,40	5	**302025** 0221	6,40
12	12	100	11.6	5	302025 0302	8,35	5	302025 0303	8,35	5	302025 0321	8,35
16	16	110	16.0	5	302025 0402	9,95	5	302025 0403	9,95	5	302025 0421	9,95
20	20	125	20.0	5	302025 0502	13,50	5	302025 0503	13,50	5	302025 0521	13,50
20	32	170	20.0	2	302025 1502	18,30	2	302025 1503	18,30	2	302025 1521	18,30
25	25	140	24.7	2	302025 0602	23,40	2	302025 0603	23,40	2	302025 0621	23,40
32	32	170	31.5	2	302025 0702	40,20	2	302025 0703	40,20	2	302025 0721	40,20
					3103			3103			3103	



Offset face turning tool, right-hand, DIN 4977 – ISO 5

- Left-hand version available on request

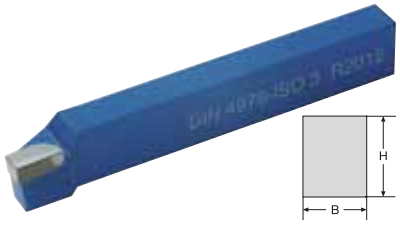
B mm	H mm	L mm	Cutting edge width mm	P20		P25 / P30		K10 / K20	
					art.no.	€		art.no.	€		art.no.	€
16	16	110	7.4	5	**302030** 0402	8,35	5	**302030** 0403	8,35	5	**302030** 0421	8,35
20	20	125	9.7	5	302030 0502	10,70	5	302030 0503	10,70	5	302030 0521	10,70
25	25	140	11.2	2	302030 0602	16,50	2	302030 0603	16,50	2	302030 0621	16,50
					3103			3103			3103	



Offset corner turning tool, right-hand, DIN 4978 – ISO 3

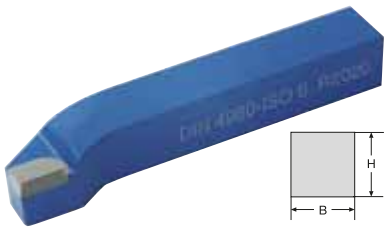
- Left-hand version available on request

B mm	H mm	L mm	Cutting edge width mm	P20		P25 / P30		K10 / K20	
					art.no.	€		art.no.	€		art.no.	€
10	16	110	8.0	5	**302035** 1202	7,40	5	**302035** 1203	7,40	5	**302035** 1221	7,40
12	20	125	10.0	5	302035 1302	8,35	5	302035 1303	8,35	5	302035 1321	8,35
16	25	140	12.2	2	302035 1402	10,25	2	302035 1403	10,25	2	302035 1421	10,25
					3103			3103			3103	



Offset side turning tool, right-hand, DIN 4980 – ISO 6

B mm	H mm	L mm	Cutting edge width mm	P20		P25 / P30		K10 / K20	
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.7	5	**302040** 0202	5,85	5	**302040** 0203	5,85	5	**302040** 0221	5,85
12	12	100	10.0	5	302040 0302	6,75	5	302040 0303	6,75	5	302040 0321	6,75
16	16	110	12.2	5	302040 0402	8,25	5	302040 0403	8,25	5	302040 0421	8,25
20	20	125	15.8	5	302040 0502	10,25	5	302040 0503	10,25	5	302040 0521	10,25
25	25	140	20.0	2	302040 0602	15,60	2	302040 0603	15,60	2	302040 0621	15,60
32	32	170	25.4	2	302040 0702	23,70	2	302040 0703	23,70	2	302040 0721	23,70
					3103			3103			3103	



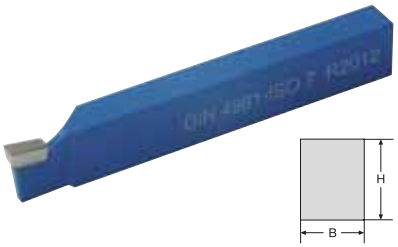
Offset side turning tool, left-hand, DIN 4980 – ISO 6

B mm	H mm	L mm	Cutting edge width mm	P20		P25 / P30		K10 / K20	
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.7	5	**302042** 0202	5,85	5	**302042** 0203	5,85	5	**302042** 0221	5,85
12	12	100	10.0	5	302042 0302	6,75	5	302042 0303	6,75	5	302042 0321	6,75
16	16	110	12.2	5	302042 0402	8,25	5	302042 0403	8,25	5	302042 0421	8,25
20	20	125	15.8	5	302042 0502	10,25	5	302042 0503	10,25	5	302042 0521	10,25
25	25	140	20.0	2	302042 0602	15,60	2	302042 0603	15,60	2	302042 0621	15,60
32	32	170	25.4	2	302042 0702	23,70	2	302042 0703	23,70	2	302042 0721	23,70
					3103			3103			3103	

Continued on next page >>>

Parting-off tool, right-hand, DIN 4981 – ISO 7

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	12	100	3.2	5	**302045** 1102	6,10	5	**302045** 1103	6,10	5	**302045** 1121	6,10
10	16	110	4.2	5	302045 1202	6,65	5	302045 1203	6,65	5	302045 1221	6,65
12	20	125	5.0	5	302045 1302	8,–	5	302045 1303	8,–	5	302045 1321	8,–
16	25	140	6.2	2	302045 1402	11,45	2	302045 1403	11,45	2	302045 1421	11,45
20	32	170	8.4	2	302045 1502	15,90	2	302045 1503	15,90	2	302045 1521	15,90
25	40	200	10.4	2	302045 1602	27,–	2	302045 1603	27,–	2	302045 1621	27,–
					3103			3103			3103	



Parting-off tool, left-hand, DIN 4981 – ISO 7

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	12	100	3.2	5	**302047** 1102	6,10	5	**302047** 1103	6,10	5	**302047** 1121	6,10
10	16	110	4.2	5	302047 1202	6,65	5	302047 1203	6,65	5	302047 1221	6,65
12	20	125	5.3	5	302047 1302	8,–	5	302047 1303	8,–	5	302047 1321	8,–
16	25	140	6.2	2	302047 1402	11,45	2	302047 1403	11,45	2	302047 1421	11,45
20	32	170	8.4	2	302047 1502	15,90	2	302047 1503	15,90	2	302047 1521	15,90
25	40	200	10.4	2	302047 1602	27,–	2	302047 1603	27,–	2	302047 1621	27,–
					3103			3103			3103	

Hooked turning tool, no. 263

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	140	3.0	5	**302050** 0202	15,80	5	**302050** 0203	15,80	5	**302050** 0221	15,80
12	12	160	4.0	5	302050 0302	17,40	5	302050 0303	17,40	5	302050 0321	17,40
16	16	180	5.0	5	302050 0402	20,50	5	302050 0403	20,50	5	302050 0421	20,50
20	20	210	6.0	5	302050 0502	22,90	5	302050 0503	22,90	5	302050 0521	22,90
25	25	250	8.0	2	302050 0602	29,10	2	302050 0603	29,10	2	302050 0621	29,10
32	32	300	10.0	2	302050 0702	40,60	2	302050 0703	40,60	2	302050 0721	40,60
					3103			3103			3103	



Internal thread turning tool, no. 283 – 60°

B mm	H mm	L mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	140	5	**302060** 0202	15,90	5	**302060** 0203	15,90	5	**302060** 0221	15,90
12	12	160	5	302060 0302	17,40	5	302060 0303	17,40	5	302060 0321	17,40
16	16	180	5	302060 0402	20,50	5	302060 0403	20,50	5	302060 0421	20,50
20	20	210	5	302060 0502	22,90	5	302060 0503	22,90	5	302060 0521	22,90
25	25	250	2	302060 0602	29,10	2	302060 0603	29,10	2	302060 0621	29,10
				3103			3103			3103	

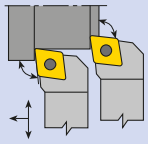


ISO designation codes in the INFO section

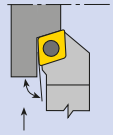
Overview of tool holders

INFO

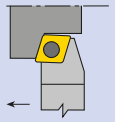
PCLN R/L 95° for CNM. Page 30-9



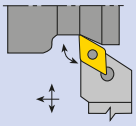
PCKN R/L 75° for CNM. Page 30-9



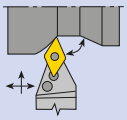
PCBN R/L 75° for CNM. Page 30-10



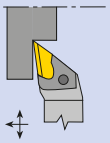
PDJN R/L 93° for DNM. Page 30-10



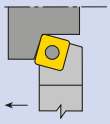
PDNNN 63° for DNM. Page 30-11



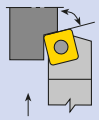
CKJN R/L 93° for KNUX Page 30-11



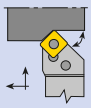
PSBN R/L 75° for SNM. Page 30-12



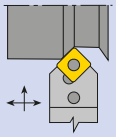
PSKN R/L 75° for SNM. Page 30-12



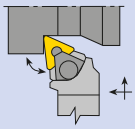
PSSN R/L 45° for SNM. Page 30-13



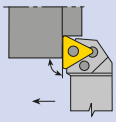
PSDNN 45° for SNM. Page 30-13



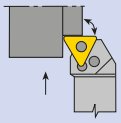
MTJN R/L 93° for TNM. Page 30-13



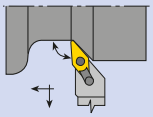
PTGN R/L 90° for TNM. Page 30-14



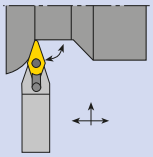
PTFN R/L 90° for TNM. Page 30-14



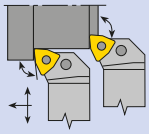
MVJN R/L 93° for VNM. Page 30-14



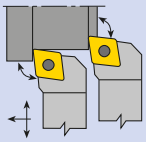
MVVNM 72.5° for VNM. Page 30-15



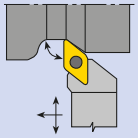
MWLN R/L 95° for WNM. Page 30-15



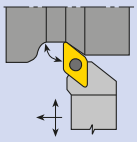
SCLC R/L 95° for CC.. Page 30-16



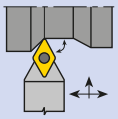
SDJC R/L 93° for DCM. Page 30-16



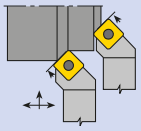
SDHC R/L 107,5° for DC.. Page 30-17



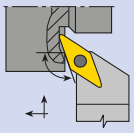
SDNCN 62,5° for DC.. Page 30-17



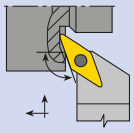
SSSC R/L 45° for SC.. Page 30-17



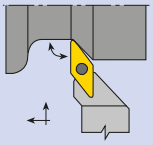
SVXC R/L 112° for VC.. Page 30-18



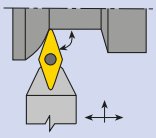
SVHC R/L 107,5° for VC.. Page 30-18



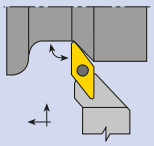
SVJC R/L 93° for VC.. Page 30-19



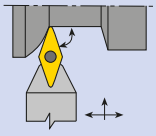
SVNCN 72,5° for VC.. Page 30-19



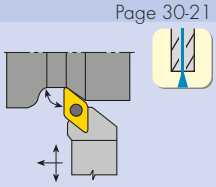
SVJB R/L 93° for VBM. Page 30-19



SVNBN 72,5° for VBM. Page 30-19



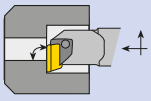
DLOCK with and without IC Page 30-21



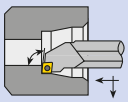
Overview of boring bars

INFO

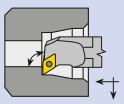
CKUN R/L 93° for KNUX Page 30-23



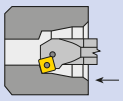
PCLN R/L 95° for CNM. Page 30-23



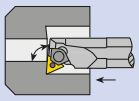
PDUN R/L 93° for DNM. Page 30-24



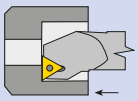
PSKN R/L 75° for SNM. Page 30-24



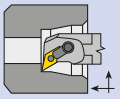
MTLN R/L 95° for TNM. Page 30-25



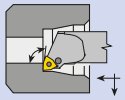
PTFN R/L 90° for TNM. Page 30-25



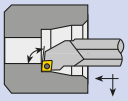
MVUN R/L 93° for VNM. Page 30-26



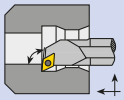
PWLN R/L 95° for WNM. Page 30-26



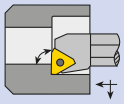
SCLC R/L 95° for CC.. from page Page 30-27



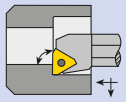
SDUC R/L 93° for DC.. from page Page 30-27



STFC R/L 90° for TCM. Page 30-31



STLC R 95° forTC.. Page 30-32



SVUC R/L 93° for VC.. Page 30-32

SVJC R/L 52° for VC.. Page 30-33

SVLBC R/L 95° for VC.. Page 30-33

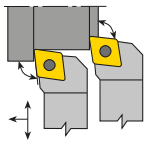
SVUB R/L 93° for VB.. Page 30-33

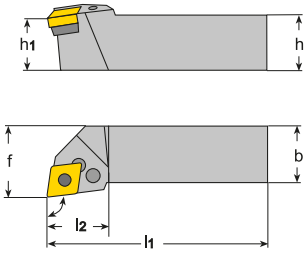
30

Tool holders, negative *PCLN*

- **PCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B4	C4	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PCLN..1616 H12	16	16	100	26	20	CN..1204..	A1	B4	C4	D1	E1	F1	**320140** 0001	72,50	**320141** 0001	72,50
PCLN..2020 K12	20	20	125	28	25	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0002	73,50	320141 0002	73,50
PCLN..2525 M12	25	25	150	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0003	77,50	320141 0003	77,50
PCLN..3225 P12	32	25	170	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0004	90,–	320141 0004	90,–
PCLN..3232 P12	32	32	170	28	40	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0005	107,–	320141 0005	107,–
PCLN..2525 M16	25	25	150	34	32	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0006	84,–	320141 0006	84,–
PCLN..3225 P16	32	25	170	34	32	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0007	90,–	320141 0007	90,–
PCLN..3232 P16	32	32	170	34	40	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0008	107,–	320141 0008	107,–
PCLN..4040 S16	40	40	250	34	50	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0009	141,–	320141 0009	141,–
PCLN..2525 M19	25	25	150	42	32	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0010	84,–	320141 0010	84,–
PCLN..3225 P19	32	25	170	42	32	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0011	90,–	320141 0011	90,–
PCLN..3232 P19	32	32	170	42	40	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0012	107,–	320141 0012	107,–
PCLN..4040 S19	40	40	250	45	50	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0013	141,–	320141 0013	141,–
													3104		3104	

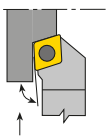
Spare parts

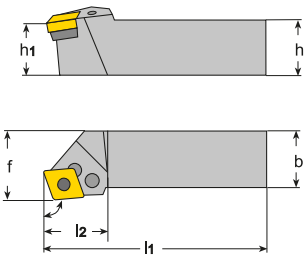
Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,50	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
A2	321601 0008	12,85	B2	321601 0103	10,90	C2	321601 0203	3,07	D2	321601 0303	1,10	E2	321601 0403	1,24	F2	703005 0040	0,40
A3	321601 0009	20,–	B3	321601 0104	16,50	C3	321601 0204	3,07	D3	321601 0304	1,50	E3	321601 0404	1,24			
			B4	321601 0108	10,70	C4	321601 0209	3,29									
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *PCKN*

- **PCKN R/L 75°**
- Setting angle 75°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PCKN..2020 K12	20	20	125	28	25	CN..1204..	A1	B1	C1	D1	E1	F1	**320135** 0001	79,50	**320136** 0001	79,50
PCKN..2525 M12	25	25	150	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320135 0002	84,–	320136 0002	84,–
PCKN..3225 P12	32	25	170	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320135 0003	90,–	320136 0003	90,–
													3104		3104	

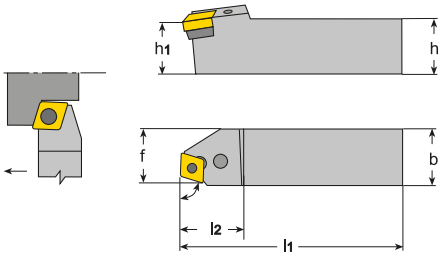
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,50	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *PCBN*

- **PCBN R/L 75°**
- Setting angle 75°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PCBN..2525 M12	25	25	150	28	22	CN..1204..	A1	B1	C1	D1	E1	F1	**320150** 0002	84,–	**320151** 0002	84,–
PCBN..2525 M16	25	25	150	34	22	CN..1606..	A2	B2	C2	D2	E2	F1	320150 0003	84,–	320151 0003	84,–
PCBN..3232 P19	32	32	170	42	27	CN..1906..	A3	B3	C3	D3	E3	F2	320150 0007	107,–	320151 0007	107,–
													3104		3104	

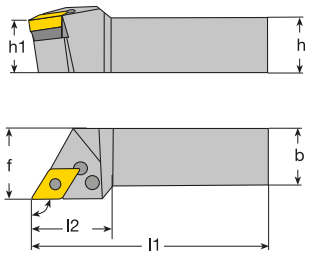
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,50	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
A2	321601 0008	12,85	B2	321601 0103	10,90	C2	321601 0203	3,07	D2	321601 0303	1,10	E2	321601 0403	1,24	F2	703005 0040	0,40
A3	321601 0009	20,–	B3	321601 0104	16,50	C3	321601 0204	3,07	D3	321601 0304	1,50	E3	321601 0404	1,24			
3106			3106			3106			3106			3106			7111		

PDJN tool holders, negative

- **PDJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PDJN..1616 H11	16	16	100	28	20	DN..1104..	A2	B1	C1	D1	E1	F1	**320155** 0010	72,50	**320156** 0010	72,50
PDJN..2020 K11	20	20	125	28	25	DN..1104..	A2	B1	C1	D1	E1	F1	320155 0011	79,50	320156 0011	79,50
PDJN..2525 M11	25	25	150	28	32	DN..1104..	A2	B1	C1	D1	E1	F1	320155 0012	84,50	320156 0012	84,50
PDJN..2020 K15	20	20	125	34	25	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0001	79,50	320156 0001	79,50
PDJN..2525 M15	25	25	150	34	32	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0002	80,–	320156 0002	80,–
PDJN..3225 P15	32	25	170	34	32	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0003	90,–	320156 0003	90,–
PDJN..3232 P15	32	32	170	34	40	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0004	107,–	320156 0004	107,–
													3104		3104	

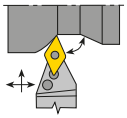
Spare parts

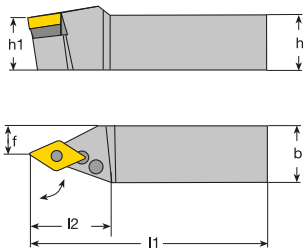
Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,25	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0301	0,84	E1	321601 0401	1,24	F1	703005 0025	0,32
A2	321601 0012	14,60	B2	321601 0107	12,20	C2	321601 0206	3,07	D2	321601 0302	1,10	E2	321601 0402	1,24	F2	703005 0030	0,34
3106			3106			3106			3106			3106			7111		

Tool holders, negative *PDNNN*

- **PDNNN 63°**
- Setting angle 63°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	neutral art.no.	€
PDNNN 2020 K15	20	20	125	34	10	DN..1506..	A1	B1	C1	D1	E1	F1	**320160** 0001	79,50
PDNNN 2525 M15	25	25	150	34	12.5	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0002	84,50
PDNNN 3232 P15	32	32	170	34	16	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0004	107,–
PDNNN 4025 S15	40	25	250	34	12.5	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0006	141,–
PDNNN 5032 S15	50	32	250	34	16	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0007	225,–
													3104	

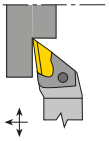
Spare parts

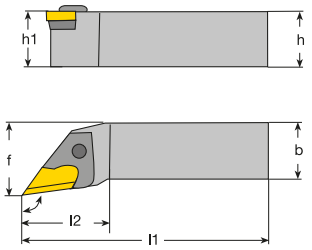
Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,25	B1	321601 0107	12,20	C1	321601 0206	3,07	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *CKJN*

- **CKJN R/L 93°**
- Setting angle 93°, for negative 0° KNUX indexable inserts, 55° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	G1	Right-hand art.no.	€	Left-hand art.no.	€
CKJNR 2020 K16	20	20	125	34	30	KNUX1604..	A1	B1	C1	D1	E1	F1	G1	**320179** 0001	134,–		
CKJNL 2020 K16	20	20	125	34	30	KNUX1604..	A2	B2	C1	D1	E1	F1	G1			**320181** 0001	134,–
CKJNR 2525 M16	25	25	150	34	32	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0002	134,–		
CKJNL 2525 M16	25	25	150	34	32	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0002	134,–
CKJNR 3225 P16	32	25	170	34	32	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0003	141,–		
CKJNL 3225 P16	32	25	170	34	32	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0003	141,–
CKJNR 3232 P16	32	32	170	34	40	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0004	153,–		
CKJNL 3232 P16	32	32	170	34	40	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0004	153,–
														3104		3104	

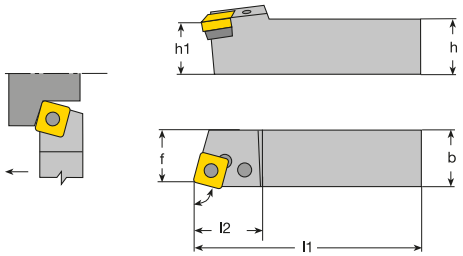
Spare parts

Support plate			Clamping lever			Screw			Pin			Spring			Spring pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0018	11,10	B1	321601 0114	13,10	C1	321601 0215	3,29	D1	321601 0408	1,32	E1	321601 0901	1,24	F1	321601 0902	2,85	G1	703005 0040	0,40
A2	321601 0019	11,10	B2	321601 0115	13,10										F2	321601 0903	2,85			
	3106			3106			3106			3106			3106			3106			7111	

Tool holders, negative *PSBN*

- **PSBN R/L 75°**
- Setting angle 75°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PSBN..2020 K12	20	20	125	28	17	SN..1204..	A1	B1	C1	D1	E1	F1	**320115** 0001	79,50	**320116** 0001	79,50
PSBN..2525 M12	25	25	150	28	22	SN..1204..	A1	B1	C1	D1	E1	F1	320115 0002	84,–	320116 0002	84,–
PSBN..3225 P12	32	25	170	28	22	SN..1204..	A1	B1	C1	D1	E1	F1	320115 0003	90,–	320116 0003	90,–
PSBN..3232 P19	32	32	170	42	27	SN..1906..	A2	B2	C2	D2	E2	F2	320115 0006	107,–	320116 0006	107,–
PSBN..4040 S25	40	40	250	45	35	SN..2507..	A3	B3	C3	D3	E3	F3	320115 0008	141,–	320116 0008	141,–
													3104		3104	

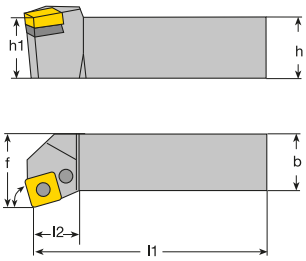
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,65	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
A2	321601 0005	16,30	B2	321601 0104	16,50	C2	321601 0204	3,07	D2	321601 0304	1,50	E2	321601 0404	1,24	F2	703005 0040	0,40
A3	321601 0006	38,80	B3	321601 0105	18,30	C3	321601 0205	4,35	D3	321601 0305	1,50	E3	321601 0405	2,05	F3	703005 0050	0,53
3106			3106			3106			3106			3106			7111		

Tool holders, negative *PSKN*

- **PSKN R/L 75°**
- Setting angle 75°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€
PSKN..2020 K12	20	20	125	28	25	SN..1204..	A1	B1	C1	D1	E1	F1	**320120** 0001	79,50
PSKN..2525 M12	25	25	150	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320120 0002	84,–
PSKN..3225 P12	32	25	170	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320120 0003	90,–
PSKN..3232 P19	32	32	170	42	40	SN..1906..	A2	B2	C2	D2	E2	F2	320120 0006	107,–
													3104	

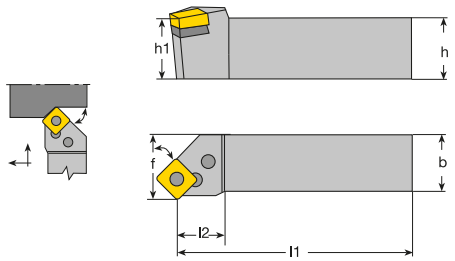
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,65	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
A2	321601 0005	16,30	B2	321601 0104	16,50	C2	321601 0204	3,07	D2	321601 0304	1,50	E2	321601 0404	1,24	F2	703005 0040	0,40
3106			3106			3106			3106			3106			7111		

Tool holders, negative *PSSN*

- **PSSN R/L 45°**
- Setting angle 45°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PSSN..2020 K12	20	20	125	28	25	SN..1204..	A1	B1	C1	D1	E1	F1	**320125** 0001	79,50	**320126** 0001	79,50
PSSN..2525 M12	25	25	150	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320125 0002	84,–	320126 0002	84,–
PSSN..3232 P19	32	32	170	42	40	SN..1906..	A2	B2	C2	D2	E2	F2	320125 0006	107,–	320126 0006	107,–
													3104		3104	

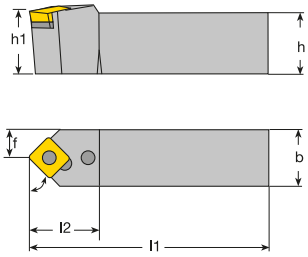
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,65	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
A2	321601 0005	16,30	B2	321601 0104	16,50	C2	321601 0204	3,07	D2	321601 0304	1,50	E2	321601 0404	1,24	F2	703005 0040	0,40
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *PSDNN*

- **PSDNN 45°**
- Setting angle 45°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and chamfering





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							neutral art.no.	€
PSDNN 2020 K12	20	20	125	28	10	SN..1204..	A1	B1	C1	D1	E1	F1	**320130** 0001	79,50
PSDNN 2525 M12	25	25	150	28	12.5	SN..1204..	A1	B1	C1	D1	E1	F1	320130 0002	84,–
PSDNN 3232 P12	32	32	170	28	16	SN..1204..	A1	B1	C1	D1	E1	F1	320130 0003	107,–
													3104	

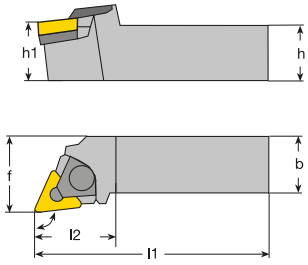
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,65	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *MTJN*

- **MTJN R/L 93°**
- Setting angle 93°, for negative 0° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts						Right-hand art.no.	€	Left-hand art.no.	€
MTJN..2020K16	20	20	125	35	25	TN..1604..	A1	B1	C1	D1	E1	**320253** 2020	85,–	**320524** 2020	85,–
MTJN..2525M16	25	25	150	32	32	TN..1604..	A1	B1	C1	D1	E1	320253 2525	91,50	320524 2525	91,50
												3134		3134	

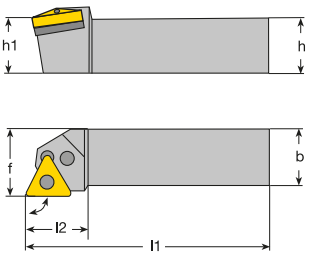
Spare parts

Wedge			Support plate			Clamping pin			Stud			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	320901 0150	30,90	B1	320901 0151	11,65	C1	320901 0152	15,50	D1	320901 0153	5,75	E1	703005 0025	0,32
	3106			3106			3106			3106			7111	

Tool holders, negative *PTGN*

- **PTGN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PTGN..1616 H16	16	16	100	22	20	TN..1604..	A1	B1	C1	D1	E1	F1	**320101** 0001	72,50	**320102** 0001	72,50
PTGN..2020 K16	20	20	125	22	25	TN..1604..	A1	B1	C1	D1	E1	F1	320101 0002	79,50	320102 0002	79,50
PTGN..2525 M16	25	25	150	22	32	TN..1604..	A1	B1	C1	D1	E1	F1	320101 0003	84,–	320102 0003	84,–
PTGN..2525 M22	25	25	150	28	32	TN..2204..	A2	B2	C2	D2	E2	F2	320101 0005	84,–	320102 0005	84,–
PTGN..3232 P22	32	32	170	28	40	TN..2204..	A2	B2	C2	D2	E2	F2	320101 0007	90,–	320102 0007	90,–
													3104		3104	

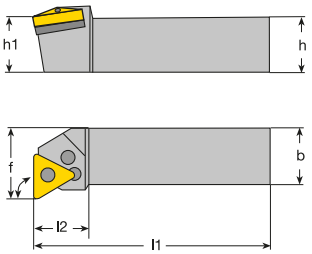
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0001	7,45	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0301	0,84	E1	321601 0401	1,24	F1	703005 0025	0,32
A2	321601 0002	10,05	B2	321601 0102	11,35	C2	321601 0202	3,29	D2	321601 0302	1,10	E2	321601 0402	1,24	F2	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *PTFN*

- **PTFN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 60° point angle
- **Use:** Facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PTFN..1616 H16	16	16	100	22	20	TN..1604..	A1	B1	C1	D1	E1	F1	**320105** 0001	72,50	**320106** 0001	72,50
PTFN..2020 K16	20	20	125	22	25	TN..1604..	A1	B1	C1	D1	E1	F1	320105 0002	79,50	320106 0002	79,50
PTFN..2525 M16	25	25	150	22	32	TN..1604..	A1	B1	C1	D1	E1	F1	320105 0003	84,–	320106 0003	84,–
													3104		3104	

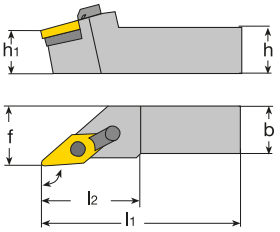
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0001	7,45	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0301	0,84	E1	321601 0401	1,24	F1	703005 0025	0,32
	3106			3106			3106			3106			3106			7111	

Tool holders, negative *MVJN*

- **MVJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E2	Right-hand art.no.	€	Left-hand art.no.	€
MVJN..2020 K16	20	20	125	37	25	VN..1604..	A1	B1	C1	D1	E2	**320175** 0020	86,50	**320176** 0020	86,50
MVJN..2525 M16	25	25	150	37	32	VN..1604..	A1	B1	C1	D1	E2	320175 0025	93,–	320176 0025	93,–
MVJN..3225 P16	32	25	170	37	32	VN..1604..	A1	B1	C1	D1	E2	320175 0032	99,50	320176 0032	99,50
												3104		3104	

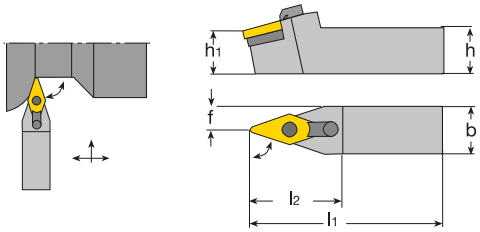
Spare parts

Support plate			Clamping jaw			Screw			Clamping pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0017	14,60	B1	321601 0111	12,60	C1	321601 0212	3,73	D1	321601 0407	10,70	E1	703005 0020	0,30
												E2	703005 0030	0,34
	3106			3106			3106			3106			7111	

Tool holders, negative *MVVNN*

- **MVVNN 72.5°**
- Setting angle 72.5°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	neutral art.no.	€
MVVNN 2020 K16	20	20	125	43	10	VN..1604..	A1	B1	C1	D1	E1	**320177** 0001	86,50
MVVNN 2525 M16	25	25	150	43	12.5	VN..1604..	A1	B1	C1	D1	E1	320177 0002	93,–
												3104	

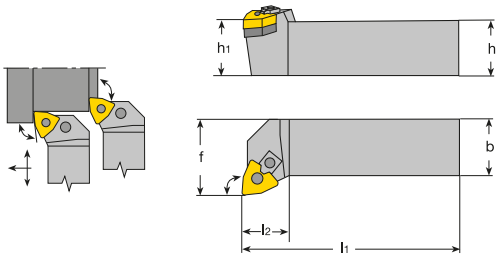
Spare parts

Support plate art.no.	€	Clamping jaw art.no.	€	Screw art.no.	€	Clamping pin art.no.	€	Offset screwdriver, nickel-plated art.no.	€
A1 321601 0017	14,60	B1 321601 0111	12,60	C1 321601 0212	3,73	D1 321601 0407	10,70	E1 703005 0030	0,34
3106		3106		3106		3106		7111	

MWLN tool holders, negative

- **MWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A2	B2	C2	D2	E1	Right-hand art.no.	€	Left-hand art.no.	€
MWLN..2020 K06	20	20	125	25	25	WN..0604..	A2	B2	C2	D2	E1	**320170** 0620	79,50	**320171** 0620	79,50
MWLN..2525 M06	25	25	150	25	32	WN..0604..	A2	B2	C2	D2	E1	320170 0625	84,50	320171 0625	84,50
MWLN..2020 K08	20	20	125	34	25	WN..0804..	A1	B1	C1	D1	E2	320170 0001	79,50	320171 0001	79,50
MWLN..2525 M08	25	25	150	34	32	WN..0804..	A1	B1	C1	D1	E2	320170 0002	84,50	320171 0002	84,50
MWLN..3232 P08	32	32	170	34	40	WN..0804..	A1	B1	C1	D1	E2	320170 0003	107,–	320171 0003	107,–
												3104		3104	

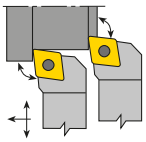
Spare parts

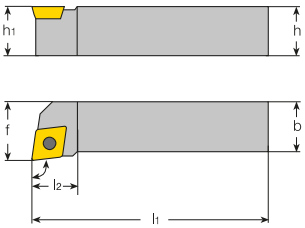
Support plate art.no.	€	Screw art.no.	€	Clamping pin art.no.	€	Clamping jaw art.no.	€	Offset screwdriver, nickel-plated art.no.	€
A1 321601 0015	8,65	B1 321601 0024	1,72	C1 321601 0410	3,29	D1 321601 0503	13,95	E1 703005 0030	0,34
A2 321601 0025	9,35	B2 321601 0026	1,72	C2 321601 0414	3,48	D2 321601 0504	14,40	E2 703005 0050	0,53
3106		3106		3106		3106		7111	

Tool holders, positive *SCLC*

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SCLC..1010 E06	10	10	70	9	12	CC..0602..		B1		D1	**320163** 0000	75,–	**320164** 0000	75,–
SCLC..1212 F09	12	12	80	15	16	CC..09T3..		B2		D2	320163 0001	75,–	320164 0001	75,–
SCLC..1616 H09	16	16	100	17	20	CC..09T3..		B2		D2	320163 0002	68,50	320164 0002	68,50
SCLC..2020 K09	20	20	125	17	25	CC..09T3..		B2		D2	320163 0005	78,–	320164 0005	78,–
SCLC..2525 M09	25	25	150	17	32	CC..09T3..		B2		D2	320163 0006	85,–	320164 0006	85,–
SCLC..1616 H12	16	16	100	20	20	CC..1204..	A1	B3	C1	D2	320163 0007	76,–	320164 0007	76,–
SCLC..2020 K12	20	20	125	20	25	CC..1204..	A1	B3	C1	D2	320163 0003	73,50	320164 0003	73,50
SCLC..2525 M12	25	25	150	20	32	CC..1204..	A1	B3	C1	D2	320163 0004	87,–	320164 0004	87,–
											3104		3104	

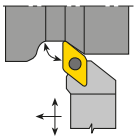
Spare parts

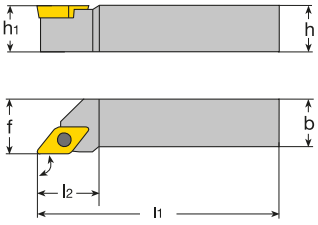
	Support plate art.no.	€		Screw art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0029	5,40	B1	321601 0210	3,07	C1	321601 0221	6,95	D1	703053 0070	3,09
			B2	321601 0216	3,33				D2	703053 0150	3,35
			B3	321601 0220	3,29						
	3106			3106			3106			7114	

Tool holders, positive *SDJC*

- **SDJC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SDJC..1010 E07	10	10	70	14	12	DC..0702..					**320165** 0001	62,–	**320166** 0001	62,–
SDJC..1212 F07	12	12	80	14	16	DC..0702..		B1		D1	320165 0002	66,50	320166 0002	66,50
SDJC..1212 F11	12	12	80	21	16	DC..11T3..		B2		D2	320165 0006	75,–	320166 0006	75,–
SDJC..1616 H11	16	16	100	22	20	DC..11T3..	A1	B2	C1	D2	320165 0003	68,50	320166 0003	68,50
SDJC..2020 K11	20	20	125	23	25	DC..11T3..	A1	B3	C1	D2	320165 0004	73,50	320166 0004	73,50
SDJC..2525 M11	25	25	150	27	32	DC..11T3..	A1	B3	C1	D2	320165 0005	80,–	320166 0005	80,–
											3104		3104	

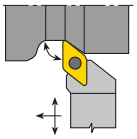
Spare parts

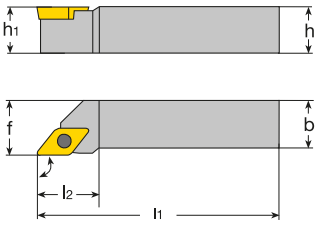
	Support plate art.no.	€		Screw art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0022	14,60	B1	321601 0210	3,07	C1	321611 0013	10,85	D1	703053 0070	3,09
			B2	321601 0222	3,33				D2	703053 0150	3,35
			B3	321601 0754	3,29						
	3106			3106			3106			7114	

Tool holders, positive *SDHC*

- **SDHC R/L 107.5°**
- Setting angle 107.5°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SDHC..1616 H11	16	16	100	11.6	20	DC..11T3..	A1	B1	C1	D1	**320168** 1616	75,50	**320169** 1616	75,50
SDHC..2020 K11	20	20	125	16.7	25	DC..11T3..	A1	B1	C1	D1	320168 2020	75,50	320169 2020	75,50
SDHC..2525 M11	25	25	150	21	32	DC..11T3..	A1	B1	C1	D1	320168 2525	82,50	320169 2525	82,50
											3134		3134	

Spare parts

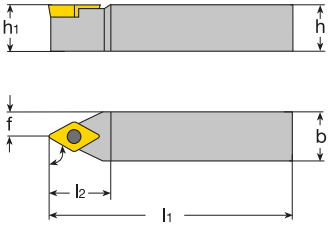
	Support plate art.no.	€		Screw art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321611 0003	19,50	B1	321611 0011	7,15	C1	321611 0013	10,85	D1	703053 0150	3,35
	3106			3106			3106			7114	

Tool holders, positive *SDNCN*

- **SDNCN 62.5°**
- Setting angle 62.5°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







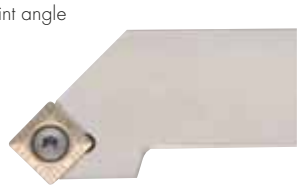
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SDNCN 0808 D07	8	8	60	9	4	DC..0702..			C1	D1	**320167** 0001	62,–
SDNCN 1010 E07	10	10	70	11	5	DC..0702..			C1	D1	320167 0002	62,–
SDNCN 1616 H11	16	16	100	16	8	DC..11T3..	A1	B1	C2	D2	320167 0004	68,50
SDNCN 2020 K11	20	20	125	20	10	DC..11T3..	A1	B1	C2	D2	320167 0005	73,50
SDNCN 2525 M11	25	25	150	25	12.5	DC..11T3..	A1	B1	C2	D2	320167 0006	80,–
											3104	

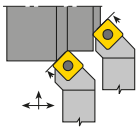
Spare parts

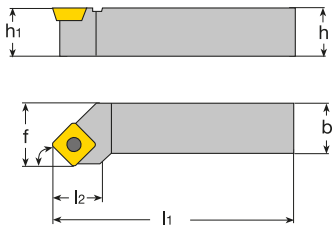
	Screw art.no.	€		Support plate art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0021	4,72	B1	321601 0022	14,60	C1	321601 0210	3,07	D1	703053 0070	3,09
						C2	321601 0754	3,29	D2	703053 0150	3,35
	3106			3106			3106			7114	

Tool holders, positive *SSSC*

- **SSSC R/L 45°**
- Setting angle 45°, for positive 7° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and facing, chamfering







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SSSC..1212 F09	12	12	80	11	16	SC..09T3..		B1		D1	**320184** 0001	66,50	**320185** 0001	66,50
SSSC..1616 H09	16	16	100	22	20	SC..09T3..		B1		D1	320184 0002	68,50	320185 0002	68,50
SSSC..2020 K12	20	20	125	22	25	SC..1204..	A1	B2	C1	D1	320184 0003	73,50	320185 0003	73,50
SSSC..2525 M12	25	25	150	22	32	SC..1204..	A1	B2	C1	D1	320184 0004	80,–	320185 0004	80,–
											3104		3104	

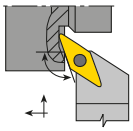
Spare parts

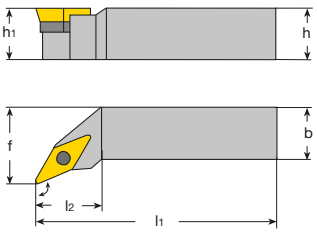
	Support plate art.no.	€		Screw art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0030	8,50	B1	321601 0216	3,33	C1	321601 0221	6,95	D1	703053 0150	3,35
			B2	321601 0220	3,29						
	3106			3106			3106			7114	

Tool holders, positive *SVXC*

- **SVXC R/L 112°**
- Setting angle 112°, for positive 7° rhombic indexable insert, 35° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts						Right-hand art.no.	€	Left-hand art.no.	€
SVXC..2020 K16-D	20	20	125	25	25	VC..1604..	A1	B1	C1	D1	E1	**320243** 1620	147,–	**320244** 1620	147,–
SVXC..2525 M16-D	25	25	150	30	32	VC..1604..	A1	B1	C1	D1	E1	320243 1625	159,–	320244 1625	159,–
												3104		3104	

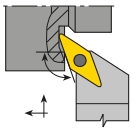
Spare parts

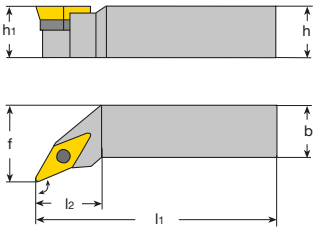
Screw			Screw			Support plate			Offset screwdriver, nickel-plated			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	320901 0081	5,05	B1	320901 0089	20,90	C1	320901 0126	8,80	D1	703005 0025	0,32	E1	703053 0150	3,35
	3106			3106			3106			7111			7114	

Tool holders, positive *SVHC*

- **SVHC R/L 107.5°**
- Setting angle 107.5°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVHC..2020 K11	20	20	125	16.6	25	VC..1103..	A1	B1	**320193** 2020	96,50	**320194** 2020	96,50
SVHC..2525 M11	25	25	150	22.9	32	VC..1103..	A1	B1	320193 2525	111,–	320194 2525	111,–
									3134		3134	

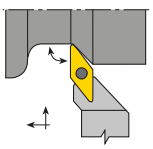
Spare parts

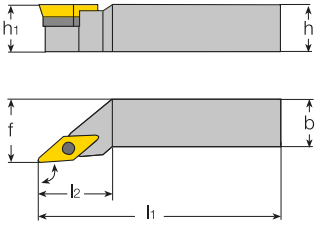
Screw			TORX		
	art.no.	€		art.no.	€
A1	321701 0102	9,80	B1	703053 0080	3,15
	3106			7114	

Tool holders, positive *SVJC*

- **SVJC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SVJC..1616 H11	16	16	100	24	20	VC..1103..			C1	D1	**320188** 1616	81,–	**320189** 1616	81,–
SVJC..2020 K11	20	20	125	23	25	VC..1103..			C1	D1	320188 2020	91,–	320189 2020	91,–
SVJC..2525 M11	25	25	150	27	32	VC..1103..			C1	D1	320188 2525	97,50	320189 2525	97,50
SVJC..2020 K16	20	20	125	30	25	VC..1604..	A1	B1	C2	D2	320188 0001	86,50	320189 0001	86,50
SVJC..2525 M16	25	25	150	33	32	VC..1604..	A1	B1	C2	D2	320188 0002	92,–	320189 0002	92,–
											3104		3104	

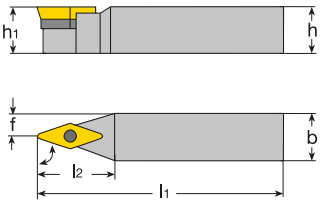
Spare parts

Screw			Support plate			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,72	B1	321601 0027	9,90	C1	321601 0210	3,07	D1	703053 0070	3,09
						C2	321601 0754	3,29	D2	703053 0150	3,35
	3106			3106			3106			7114	

SVNC tool holders, positive

- **SVNC 72.5°**
- Setting angle 72.5°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SVNC 2020 K16	20	20	125	37	10.6	VC..1604..	A1	B1	C1	D1	**320192** 0001	86,50
SVNC 2525 M16	25	25	150	37	13.1	VC..1604..	A1	B1	C1	D1	320192 0002	92,–
											3104	

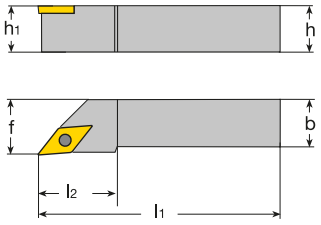
Spare parts

	Screw art.no.	€		Support plate art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0021	4,72	B1	321601 0027	9,90	C1	321601 0754	3,29	D1	703053 0150	3,35
	3106			3106			3106			7114	

Tool holders, positive SVJB

- **SVJB R/L 93°**
- Setting angle 93°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SVJB..2020 K16	20	20	125	37	25	VB..1604..	A1	B1	C1	D1	**320190** 1620	86,–	**320191** 1620	86,–
SVJB..2525 M16	25	25	150	37	32	VB..1604..	A1	B1	C1	D1	320190 1625	92,–	320191 1625	92,–
											3104		3104	

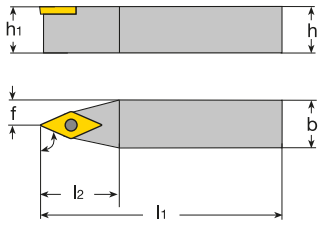
Spare parts

	Screw art.no.	€		Support plate art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0021	4,72	B1	321601 0027	9,90	C1	321601 0754	3,29	D1	703053 0150	3,35
	3106			3106			3106			7114	

SVNB tool holders, positive

- **SVNB 72.5°**
- Setting angle 72.5°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SVNB 2020 K16	20	20	125	37	10.0	VB..1604..	A1	B1	C1	D1	**320195** 1620	86,–
SVNB 2525 M16	25	25	150	37	12.5	VB..1604..	A1	B1	C1	D1	320195 1625	92,–
											3104	

Spare parts

	Screw art.no.	€		Support plate art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0021	4,72	B1	321601 0027	9,90	C1	321601 0754	3,29	D1	703053 0150	3,35
	3106			3106			3106			7114	

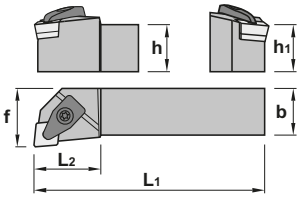
SARA® DLOCK tool holder with D clamping, DCLN for negative turning inserts



- **DCLN R/L 95°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- Use: Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300



ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DCLN.. 2020 K12 A	20	125	28	25	20	CN..12	**324003** 0001	136,–	**324004** 0001	136,–
DCLN.. 2020 K16 A	20	125	28	25	20	CN..16	324003 0002	136,–	324004 0002	136,–
DCLN.. 2525 M12 A	25	150	28	32	25	CN..12	324003 0003	163,–	324004 0003	163,–
DCLN.. 2525 M16 A	25	150	34	32	25	CN..16	324003 0004	163,–	324004 0004	163,–
DCLN.. 3232 P19 A	32	170	42	40	32	CN..19	324003 0005	220,–	324004 0005	220,–
							3133		3133	

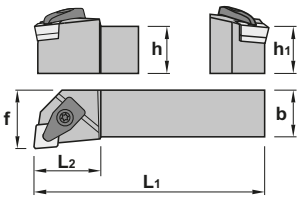


SARA® DLOCK tool holder with D clamping, DCLN for negative turning inserts

- **DCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- Use: Longitudinal turning and facing



ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DCLN.. 2020 K12	20	125	28	25	20	CN..12	**324001** 0001	81,–	**324002** 0001	81,–
DCLN.. 2525 M12	25	150	28	25	25	CN..12	324001 0002	81,–	324002 0002	81,–
DCLN.. 2525 M16	25	150	34	32	25	CN..16	324001 0003	73,50	324002 0003	73,50
DCLN.. 3232 P19	32	170	42	40	32	CN..19	324001 0004	108,–	324002 0005	108,–
							3132		3132	



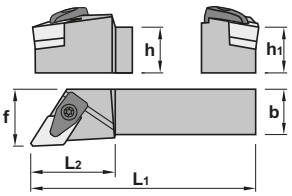
SARA® DLOCK tool holder with D clamping, DDJN for negative turning inserts



- **DDJN R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 55° point angle
- Use: Copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300



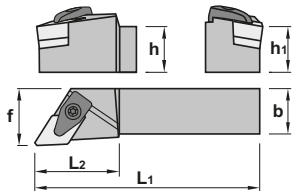
ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DDJN.. 2020 K11 A	20	125	28	25	20	DN..11	**324007** 0001	136,–	**324008** 0001	136,–
DDJN.. 2020 K15 A	20	125	34	25	20	DN..15	324007 0002	136,–	324008 0002	136,–
DDJN.. 2525 M15 A	32	150	42	40	25	DN..15	324007 0003	163,–	324008 0003	163,–
							3133		3133	



SARA® DLOCK tool holder with D clamping, DDJN for negative turning inserts

- **DDJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- Use: Copy turning





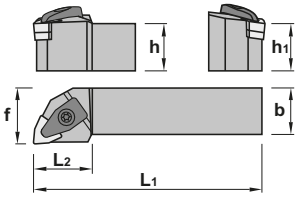
ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DDJN.. 2020 K11	20	125	34	25	20	DN..11	**324005** 0001	81,–	**324006** 0001	81,–
DDJN.. 2020 K15	20	125	34	25	20	DN..15	324005 0002	81,–	324006 0002	81,–
DDJN.. 2525 M15	25	150	34	32	25	DN..15	324005 0003	81,–	324006 0003	81,–
							3132		3132	

SARA® DLOCK tool holder with D clamping, DWLN for negative turning inserts



- **DWLN R/L 95°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- Use: Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300



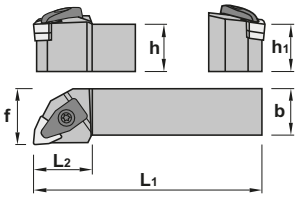


ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DWLN.. 2020 K06 A	20	125	34	25	20	WN..06	**324011** 0001	136,–	**324012** 0001	136,–
DWLN.. 2020 K08 A	20	125	34	25	20	WN..08	324011 0002	136,–	324012 0002	136,–
DWLN.. 2525 M08 A	25	150	34	32	25	WN..08	324011 0003	163,–	324012 0003	163,–
							3133		3133	

SARA® DLOCK tool holder with D clamping, DWLN for negative turning inserts

- **DWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- Use: Longitudinal turning and facing



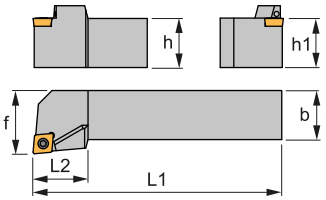


ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
DWLN.. 2020 K06	20	125	34	25	20	WN..06	**324009** 0001	69,50	**324010** 0001	69,50
DWLN.. 2020 K08	20	125	34	25	20	WN..08	324009 0002	81,–	324010 0002	81,–
DWLN.. 2525 M08	25	150	34	32	25	WN..08	324009 0003	81,–	324010 0003	81,–
							3132		3132	

SARA® DLOCK tool holder with S clamping, SCLC for positive turning inserts



- **SCLC R/L 95°**
- **With 1/8" GAS** internal cooling connection
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- Use: Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300

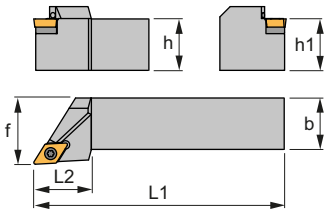


ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
SCLC.. 1616 H09 A	16	100	18	20	16	CC..09	**324013** 0001	130,–	**324014** 0001	130,–
SCLC.. 2020 K09 A	20	125	22	25	20	CC..09	324013 0002	136,–	324014 0002	136,–
SCLC.. 2525 M09 A	25	125	25	25	25	CC..09	324013 0003	163,–	324014 0003	163,–
							3133		3133	

SARA® DLOCK tool holder with S clamping, SDJC for positive turning inserts



- **SDJC R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for rhombic indexable inserts positive 7°, 55° point angle
- Use: Copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300

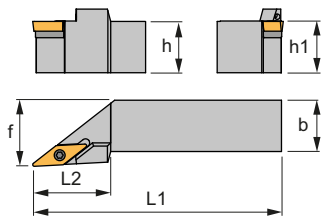


ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
SDJC.. 2020 K11 A	20	125	22	25	20	DC..11	**324015** 0001	136,–	**324016** 0001	136,–
SDJC.. 2525 M11 A	25	150	22	32	25	DC..11	324015 0002	163,–	324016 0002	163,–
							3133		3133	

SARA® DLOCK tool holder with S clamping, SVJC for positive turning inserts



- **SVJC R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- Use: Longitudinal turning and copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300



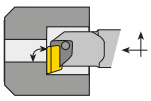
ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
SVJC.. 2020 K11 A	20	125	25	25	20	VC..11	**324017** 0001	136,–	**324018** 0001	136,–
SVJC.. 2020 M16 A	20	150	37	25	20	VC..16	324017 0002	136,–	324018 0002	136,–
							3133		3133	

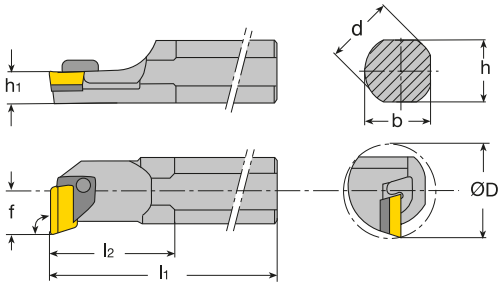
Boring bar, negative *CKUN*

- **CKUN R/L 93°**
- Setting angle 93°, for negative 0° KNUX indexable inserts
- **Use:** Longitudinal turning
- Note: right-hand boring bar = left-hand indexable insert, left-hand boring bar = right-hand indexable insert



Figure shows right-hand boring bar, left-hand boring bar is mirror image





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts								Right-hand art.no.	€	Left-hand art.no.	€
S25T CKUNL 16	25	23	11.5	300	50	20.5	37	KNUX 1604..		B1	C1		E1	F2	G1			**321504** 0025	152,–
S25T CKUNR 16	25	23	11.5	300	50	20.5	37	KNUX 1604..		B2	C1		E1	F2	G1	**321503** 0025	152,–		
S32U CKUNL 16	32	30	15	350	54	22	39	KNUX 1604..	A2	B1	C1	D1	E1	F3	G1			321504 0032	220,–
S32U CKUNR 16	32	30	15	350	54	22	39	KNUX 1604..	A1	B2	C1	D1	E1	F3	G1	321503 0032	220,–		
S40V CKUNL 16	40	37	18.5	400	60	27	48	KNUX 1604..	A2	B2	C1	D1	E1	F1	G1			321504 0040	260,–
S40V CKUNR 16	40	37	18.5	400	60	27	48	KNUX 1604..	A1	B2	C1	D1	E1	F1	G1	321503 0040	260,–		
																3105		3105	

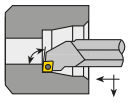
Spare parts

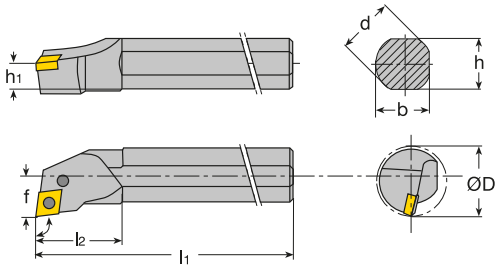
Support plate			Clamping lever			Screw			Pin			Spring			Spring pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0018	11,10	B1	321601 0114	13,10	C1	321601 0215	3,29	D1	321601 0408	1,32	E1	321601 0901	1,24	F1	321601 0903	2,85	G1	703005 0040	0,40
A2	321601 0019	11,10	B2	321601 0115	13,10										F2	321601 0904	2,85			
															F3	321601 0905	2,85			
	3106			3106			3106			3106			3106			3106			7111	

Boring bar, negative *PCLN*

- **PCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S25T PCLN..12	25	23	11.5	300	40	17	31	CN..1204..		B4	C4			F1	**321515** 0025	167,–	**321516** 0025	167,–
S32U PCLN..12	32	30	15	350	50	22	39	CN..1204..	A1	B3	C3	D1	E1	F2	321515 0032	230,–	321516 0032	230,–
S40V PCLN..12	40	37	18.5	400	60	27	48	CN..1204..	A1	B1	C1	D1	E1	F2	321515 0040	260,–	321516 0040	260,–
S50W PCLN..16	50	47	23.5	450	65	35	61	CN..1606..	A2	B2	C2	D2	E2	F2	321515 0050	320,–	321516 0050	320,–
															3105		3105	

With internal cooling

(one clamping surface from above)

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PCLN..12	25	23	11.5	200	40	17	32	CN..1204..		B4	C4			F1	**321515** 0125	215,–	**321516** 0125	215,–
A32S PCLN..12	32	30	15	250	50	22	40	CN..1204..	A1	B3	C3	D1	E1	F2	321515 0132	300,–	321516 0132	300,–
															3105		3105	

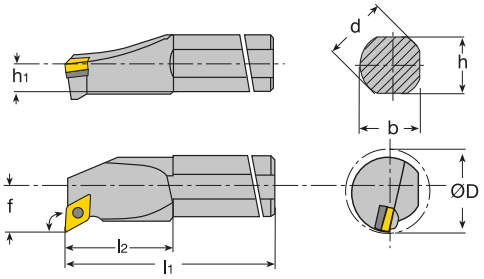
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,50	B1	321601 0102	11,35	C1	321601 0202	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0025	0,32
A2	321601 0008	12,85	B2	321601 0103	10,90	C2	321601 0203	3,07	D2	321601 0303	1,10	E2	321601 0403	1,24	F2	703005 0030	0,34
			B3	321601 0108	10,70	C3	321601 0209	3,29									
			B4	321601 0112	11,35	C4	321601 0217	3,29									
	3106			3106			3106			3106			3106			7111	

Boring bar, negative *PDUN*

- **PDUN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S20S PDUN..11	20	18	9	250	29	13	25	DN..1104..	A2	B1	C4	D1	E1	F1	**321501** 0020	245,–	**321502** 0020	245,–
S25T PDUN..11	25	23	11.5	300	40	17	32	DN..1104..	A2	B1	C1	D1	E1	F1	321501 0025	245,–	321502 0025	245,–
S32U PDUN..15	32	30	15	350	50	22	39	DN..1506..	A1	B2	C3	D2	E2	F2	321501 0032	230,–	321502 0032	230,–
S40V PDUN..15	40	37	18.5	400	60	27	48	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0040	260,–	321502 0040	260,–
S50W PDUN..15	50	47	23.5	450	65	35	61	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0050	320,–	321502 0050	320,–
															3105		3105	

With internal cooling

(one clamping surface from above)

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PDUN..11	25	23	11.5	200	40	17	32	DN..1104..	A2	B1	C1	D1	E1	F1	**321501** 0125	215,–	**321502** 0125	215,–
A32S PDUN..15	32	30	15	250	50	22	40	DN..1506..	A1	B2	C3	D2	E2	F2	321501 0132	300,–	321502 0132	300,–
A40T PDUN..15	40	37	18.5	300	60	27	50	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0140	340,–	321502 0140	340,–
															3105		3105	

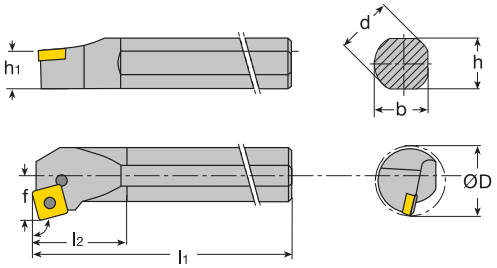
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,25	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0301	0,84	E1	321601 0401	1,24	F1	703005 0025	0,32
A2	321601 0012	14,60	B2	321601 0107	12,20	C2	321601 0206	3,07	D2	321601 0302	1,10	E2	321601 0402	1,24	F2	703005 0030	0,34
						C3	321601 0209	3,29									
						C4	321601 0213	3,29									
	3106			3106			3106			3106			3106			7111	

Boring bar, negative *PSKN*

- **PSKN R/L 75°**
- Setting angle 75°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€
S25T PSKN..12	25	23	11.5	300	40	17	31	SN..1204..		B2	C2			F1	**321505** 0025	167,–
S32U PSKN..12	32	30	15	350	50	22	39	SN..1204..	A1	B1	C1	D1	E1	F2	321505 0032	230,–
															3105	

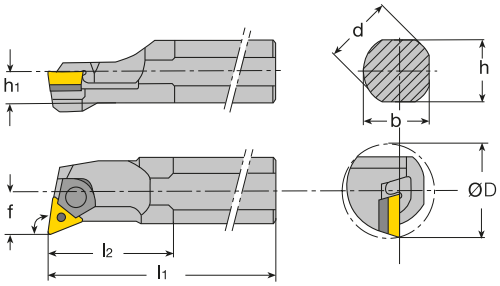
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,65	B1	321601 0108	10,70	C1	321601 0209	3,29	D1	321601 0302	1,10	E1	321601 0402	1,24	F1	703005 0025	0,32
			B2	321601 0112	11,35	C2	321601 0217	3,29							F2	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Boring bar, negative *MTLN*

- **MTLN R/L 95°**
- Setting angle 95°, for negative 0° triangular indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts						Right-hand art.no.	€
S25S MTLN..16W-D	25	23	12.2	250	40	17	35	TN..1604..	A1	B1	C2	D1	E2	**322101** 1625	310,–
S32T MTLN..16W-D	32	29	14.5	300	48	22	40	TN..1604..	A1	B1	C2	D1	E2	322101 1632	320,–
														3105	

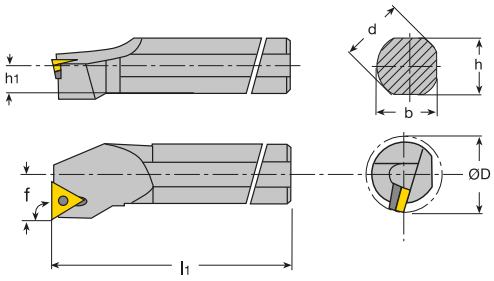
Spare parts

	Wedge art.no.	€		Stud art.no.	€		Support plate art.no.	€		Clamping pin art.no.	€		Offset screwdriver, nickel-plated art.no.	€
A1	320901 0019	34,10	B1	320901 0055	13,85	C1	320901 0122	5,55	D1	320901 0132	13,85	E1	703005 0020	0,30
						C2	320901 0123	5,55				E2	703005 0025	0,32
	3106			3106			3106			3106			7111	

Boring bar, negative *PTFN*

- **PTFN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S25T PTFN..16	25	23	11.5	300	40	17	31	TN..1604..		B3	C3			F1	**321510** 0025	167,–	**321511** 0025	167,–
S32U PTFN..16	32	30	15	350	50	22	39	TN..1604..	A1	B1	C1	D2	E1	F2	321510 0032	230,–	321511 0032	230,–
S40V PTFN..22	40	37	18.5	400	60	27	48	TN..2204..	A2	B2	C2	D1	E2	F3	321510 0040	260,–	321511 0040	260,–
S50W PTFN..22	50	47	23.5	450	65	35	61	TN..2204..	A2	B2	C2	D1	E2	F3	321510 0050	320,–	321511 0050	320,–
															3105		3105	

With internal cooling

(one clamping surface from above)

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PTFN..16	25	23	11.5	200	40	17	32	TN..1604..		B3	C3			F1	**321510** 0125	215,–	**321511** 0125	215,–
A32S PTFN..16	32	30	15	250	50	22	40	TN..1604..	A1	B1	C1	D2	E1	F2	321510 0132	300,–	321511 0132	300,–
															3105		3105	

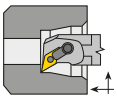
Spare parts

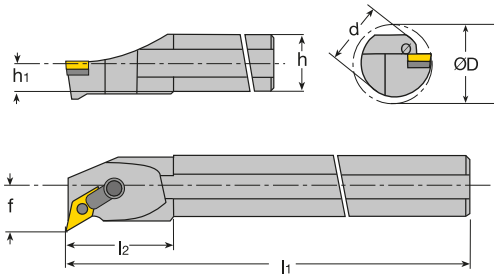
	Support plate art.no.	€		Clamping lever art.no.	€		Screw art.no.	€		Hollow pin art.no.	€		Pin art.no.	€		Offset screwdriver, nickel-plated art.no.	€
A1	321601 0001	7,45	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0302	1,10	E1	321601 0401	1,24	F1	703005 0020	0,30
A2	321601 0002	10,05	B2	321601 0102	11,35	C2	321601 0202	3,29	D2	321601 0308	0,84	E2	321601 0402	1,24	F2	703005 0025	0,32
			B3	321601 0113	10,90	C3	321601 0213	3,29							F3	703005 0030	0,34
	3106			3106			3106			3106			3106			7111	

Boring bar, negative *MVUN*

- **MVUN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	A1	B1	C2	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
S25T MVUN..16	25	23	11.5	300	40	17	31	VN..1604..	A1	B1	C2	D1	E1	**321520** 1625	183,–	**321521** 1625	183,–
S32U MVUN..16	32	30	15	350	50	22	39	VN..1604..	A1	B1	C1	D1	E1	321520 1632	255,–	321521 1632	255,–
S40V MVUN..16	40	37	18.5	400	60	27	48	VN..1604..	A1	B1	C1	D1	E1	321520 1640	285,–	321521 1640	285,–
														3105		3105	

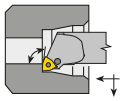
Spare parts

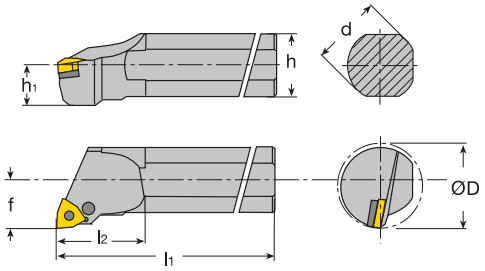
Support plate			Clamping lever			Screw			Clamping pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0017	14,60	B1	321601 0118	12,60	C1	321601 0212	3,73	D1	321601 0407	10,70	E1	703005 0020	0,30
						C2	321601 0219	3,73						
	3106			3106			3106			3106			7111	

Boring bar, negative *PWLN*

- **PWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	A2	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	E1	E2	F1	F2	Right-hand art.no.	€	Left-hand art.no.	€
S16R PWLN..06	16	14	7	200	24	11	20	WN..0604..					B4		C4							F1		**321531** 0616	156,–	**321532** 0616	156,–
S20S PWLN..06	20	18	9	250	36	13	27	WN..0604..					B4		C4							F1		321531 0620	165,–	321532 0620	165,–
S25T PWLN..06	25	23	11.5	300	40	17	31	WN..0604..	A2				B1		C1			D1		E1		F1		321531 0625	177,–	321532 0625	177,–
S25T PWLN..08	25	23	11.5	300	40	17	31	WN..0804..					B3		C3							F2		321531 0825	177,–	321532 0825	177,–
S32U PWLN..08	32	30	15	350	50	22	39	WN..0804..	A1				B2		C2			D2		E2		F2		321531 0832	245,–	321532 0832	245,–
S40V PWLN..08	40	37	18.5	400	60	27	48	WN..0804..	A1				B2		C2			D2		E2		F2		321531 0840	280,–	321532 0840	280,–
																								3105		3105	

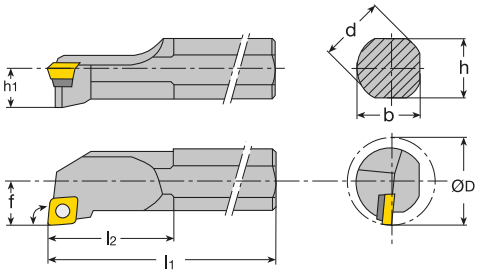
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Offset screwdriver, nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0016	9,10	B1	321601 0101	10,90	C1	321601 0201	3,29	D1	321601 0301	0,84	E1	321601 0401	1,24	F1	703005 0025	0,32
A2	321601 0031	9,35	B2	321601 0102	11,35	C2	321601 0202	3,29	D2	321601 0302	1,10	E2	321601 0402	1,24	F2	703005 0030	0,34
			B3	321601 0108	10,70	C3	321601 0209	3,29									
			B4	321601 0113	10,90	C4	321601 0213	3,29									
	3106			3106			3106			3106			3106			7111	

ATORN® Boring bar, positive SCLC

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning





Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
A08H SCLC..06	8	7	3.5	100	17.8	6	10	CC..0602..	A1			D1	**321001** 0108	87,50	**321002** 0108	87,50
A10K SCLC..06	10	9	4.5	125	17.7	7	12	CC..0602..	A1			D1	321001 0110	87,50	321002 0110	87,50
A12L SCLC..06	12	11	5.5	140	24.2	9	16	CC..0602..	A1			D1	321001 0112	87,50	321002 0112	87,50
A16Q SCLC..09	16	14	7.5	180	26.7	11	20	CC..09T3..	A2			D2	321001 0116	95,50	321002 0116	95,50
A20R SCLC..09	20	18	9.0	200	36.7	13	25	CC..09T3..	A2			D2	321001 0120	101,50	321002 0120	101,50
A25R SCLC..12	25	23	11.5	200	40.5	17	32	CC..1204..	A4	B1	C1	D3	321001 0126	133,–	321002 0126	133,–
A32S SCLC..12	32	30	15.0	250	30	22	40	CC..1204..	A3	B1	C1	D2	321001 0132	161,–	321002 0132	161,–
A40T SCLC..12	40	38	38.5	300	31	27	49	CC..1204..	A3	B1	C1	D2	321001 0140	231,–	321002 0140	231,–
													3134		3134	

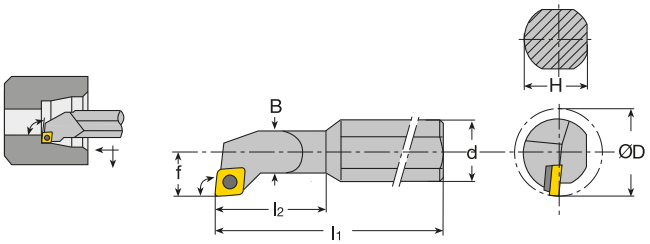
Spare parts

Screw			Support plate			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	320901 2513	10,50	B1	321611 0001	29,40	C1	321611 0012	10,85	D1	703053 0080	3,15
A2	320901 2516	8,75							D2	703053 0150	3,35
A3	321611 0010	7,15							D3	703053 0200	3,40
A4	321701 0108	8,75									
	3106			3106			3106			7114	

ATORN® Boring bar, positive SCLC

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, **very well suited to machining tight bores**





Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	B mm	D min. mm	for indexable inserts	Right-hand art.no.	€	Left-hand art.no.	€
A0608H SCLC..06	8	7	100	21.5	4	6	8	CC.. 0602..	**321003** 0008	64,–	**321004** 0008	64,–
A0810J SCLC..06	10	9	110	27	6	8	11	CC.. 0602..	321003 0010	64,–	321004 0010	64,–
A1012K SCLC..06	12	11	125	32.5	7	10	13	CC.. 0602..	321003 0012	72,–	321004 0012	72,–
A1216M SCLC..06	16	15	150	42	9	12	16	CC.. 0602..	321003 0016	72,–	321004 0016	72,–
									3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
A0608H SCLCR/L 06; A0810J SCLCR/L 06; A1012K SCLCR/L 06; A1216M SCLCR/L 06 (1 of each)	A1	B1	**321003** 1004	205,–	**321004** 1004	205,–
			3134		3134	

Spare parts

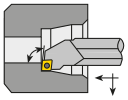
Screw			TORX		
	art.no.	€		art.no.	€
A1	320901 2513	10,50	B1	703053 0080	3,15
	3106			7114	

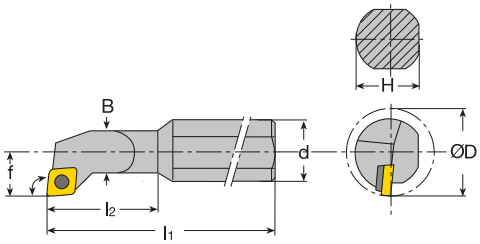
ATORN® Boring bar, positive SCLC



Figure shows right-hand boring bar, left-hand boring bar is mirror image

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- Use: longitudinal turning, **very well suited to small bores**
- **With internal cooling, C04 and C05 without internal coolant supply**
- **D min from 5.00 mm**
- Note: right-hand boring bar = left-hand indexable insert, left-hand boring bar = right-hand indexable insert





HSS version

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
AH 0410H SCLC..03	10	100	24	2.5	5	CCGT 0301..	A1	B1	**321103** 0004	157,50	**321104** 0004	157,50
AH 0610H SCLC..03	10	100	24	2.5	7	CCGT 0301..	A1	B1	321103 0006	160,50	321104 0006	160,50
									3134		3134	

Solid carbide version

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
C 04G SCLC..03	4	90	10	2.5	5	CCGT 0301..	A1	B1	**321101** 0104	194,–	**321102** 0104	194,–
C 05H SCLC..03	5	100	10	3.0	6	CCGT 0301..	A1	B1	321101 0105	194,–	321102 0105	194,–
E 06J SCLC..03	6	110	10	3.5	7	CCGT 0301..	A1	B1	321101 0106	205,–	321102 0106	205,–
									3134		3134	

Suitable ISO P/K indexable inserts

ISO designation	ISO P K Right-hand			ISO P K Left-hand		
		art.no.	€		art.no.	€
CCGT 030102 L-F HC 4625				10	**321265** 0165	14,40
CCGT 030102 R-F HC 4625	10	**321266** 0165	14,40			
		3110			3110	

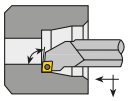


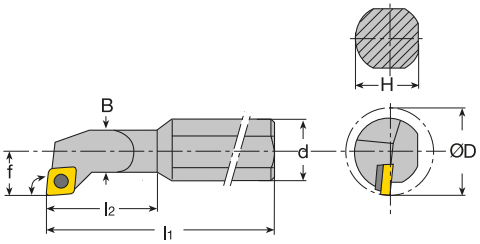
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	262551 0016	10,25	B1	703053 0060	3,09
	3106			7114	

ATORN® SCLC HSS boring bars

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, very well suited to machining tight bores
- Low-vibration boring bars
- Indexable inserts with longer service life
- HSS boring bars with longer service life
- Note: right-hand boring bar = left-hand indexable insert, left-hand boring bar = right-hand indexable insert







Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	B mm	D min. mm	for indexable inserts	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
AH0608H SCLC..06	8	7	100	25	4	6	8.5	CC..0602..	A1	B1	**321103** 0008	101,50	**321104** 0008	101,50
AH0810J SCLC..06	10	9	110	32	6	8	12	CC..0602..	A1	B1	321103 0010	106,–	321104 0010	106,–
AH1012K SCLC..06	12	11	125	38	7	10	14	CC..0602..	A1	B1	321103 0012	112,–	321104 0012	112,–
AH1216M SCLC..06	16	15	150	50	9	12	18	CC..0602..	A1	B1	321103 0016	143,–	321104 0016	143,–
											3134		3134	

Set

Contents	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
AH0608H SCLCR/L 06; AH0810J SCLCR/L 06; AH1012K SCLCR/L 06; AH1216M SCLCR/L 06 (1 of each)	A1	B1	**321103** 1004	335,–	**321104** 1004	335,–
			3134		3134	

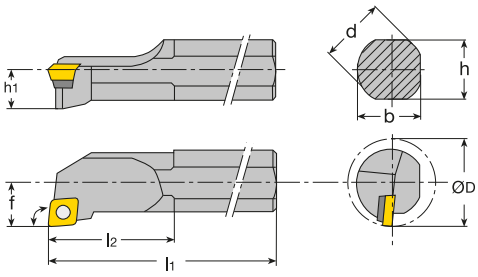
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	320901 2513	10,50	B1	703053 0080	3,15
	3106			7114	

ATORN® SCLC solid carbide boring bars

- **SCLC R/L 95°**
- 95° setting angle
- For rhombic indexable inserts, 7° positive, 80° point angle
- **Internal coolant supply**
- Low-vibration
- **Use:** Longitudinal turning





Boring bar, individual

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
E08K SCLC..06	8	7	3.5	125	10	5	10	CC..0602..	A1			D1	**321101** 0108	176,–	**321102** 0108	176,–
E10K SCLC..06	10	9	4.5	125	10	6	12	CC..0602..	A1			D1	321101 0110	176,–	321102 0110	176,–
E12M SCLC..06	12	11	5.5	150	10	8	14	CC..0602..	A1			D1	321101 0112	203,–	321102 0112	203,–
E16R SCLC..09	16	15	7.0	200	16	10	18	CC..09T3..	A2			D2	321101 0116	349,–	321102 0116	349,–
E20S SCLC..09	20	18	9.0	250	16	12	23	CC..09T3..	A2			D2	321101 0120	619,–	321102 0120	619,–
E25S SCLC..12	25	23	11.5	250	16	15	30	CC..1204..	A3	B1	C1	D3	321101 0125	1.219,–	321102 0125	1.219,–
													3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
E08K SCLCR/L 06; E10K SCLCR/L 06; E12M SCLCR/L 06 (1 of each)	A1	D1	**321101** 0003	429,–	**321102** 0003	429,–
			3134		3134	



Spare parts

	Screw art.no.	€
A1	320901 2513	10,50
A2	320901 2516	8,75
A3	321701 0108	8,75
	3106	

	Support plate art.no.	€
B1	321611 0001	29,40
	3106	

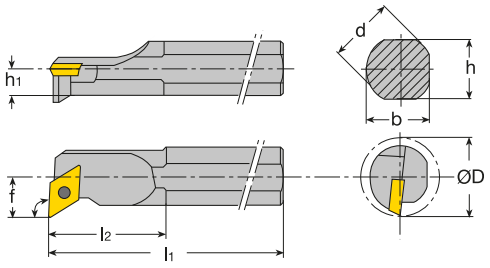
	Screw art.no.	€
C1	321611 0012	10,85
	3106	

	TORX art.no.	€
D1	703053 0080	3,15
D2	703053 0150	3,35
D3	703053 0200	3,40
	7114	

ATORN® Boring bar, positive SDUC

- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal turning





Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A10H SDUC..07	10	9.5	4.5	100	15	7	13.5	DC..0702..	A1	B1	**321008** 0110	90,–	**321009** 0110	90,–
A12L SDUC..07	12	11	5.5	140	20	9	16	DC..0702..	A1	B1	321008 0112	93,–	321009 0112	93,–
A16Q SDUC..07	16	14	7	180	27	11	20	DC..0702..	A1	B1	321008 0116	99,50	321009 0116	99,50
A20R SDUC..11	20	18	9	200	33.8	13	25	DC..11T3..	A2	B2	321008 0120	104,–	321009 0120	104,–
A25R SDUC..11	25	23	11.5	200	35.8	17	32	DC..11T3..	A2	B2	321008 0125	126,–	321009 0125	126,–
											3134		3134	

Spare parts

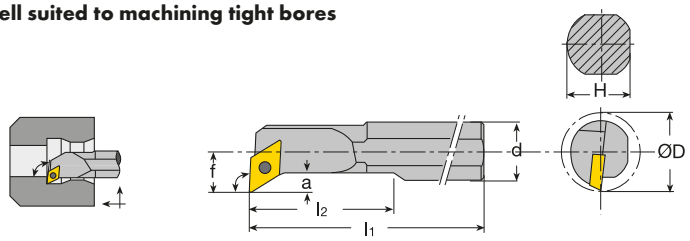
	Screw art.no.	€
A1	320901 2513	10,50
A2	320901 2516	8,75
	3106	

	TORX art.no.	€
B1	703053 0080	3,15
B2	703053 0150	3,35
	7114	

ATORN® Boring bars, positive SDUC



- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, **very well suited to machining tight bores**



Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	a mm	D min. mm	for indexable inserts	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
A0810H SDUC..07	10	9	100	22.5	7	5	12.5	DC.. 0702..	A1	B1	**321013** 0010	93,50	**321014** 0010	93,50
A1012K SDUC..07	12	11	125	27.5	9	5	15.5	DC.. 0702..	A1	B1	321013 0012	93,50	321014 0012	93,50
A1216M SDUC..07	16	15	150	40.5	11	5	18	DC.. 0702..	A1	B1	321013 0016	93,50	321014 0016	93,50
											3134		3134	

Set

Contents	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
A0810H SDUCR/L 07 ; A1012K SDUCR/L 07 ; A1216M SDUCR/L 07 (1 of each)	A1	B1	**321013** 1003	205,–	**321014** 1003	205,–
			3134		3134	

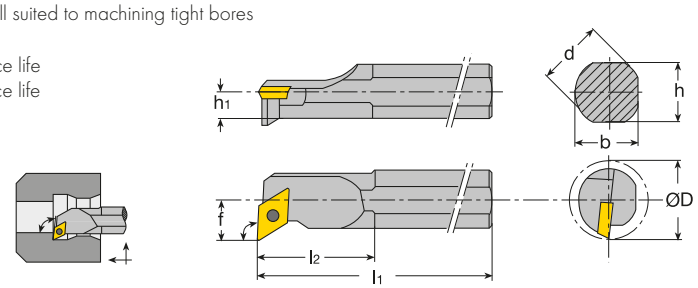
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	320901 2513	10,50	B1	703053 0080	3,15
	3106			7114	

ATORN® SDUC HSS boring bars, positive



- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, very well suited to machining tight bores
- Low-vibration boring bars
- Indexable inserts with longer service life
- HSS boring bars with longer service life



Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	a mm	D min. mm	for indexable inserts	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
AH0810H SDUC..07	10	9	100	22	7	5	12.5	DC..0702..	A1	B1	**321113** 0010	118,50	**321114** 0010	118,50
AH1012K SDUC..07	12	11	125	28	9	5	15.5	DC..0702..	A1	B1	321113 0012	130,50	321114 0012	130,50
AH1216M SDUC..07	16	15	150	36	11	5	19.5	DC..0702..	A1	B1	321113 0016	148,50	321114 0016	148,50
											3134		3134	

Set

Contents	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
AH0810H SDUCR/L 07 ; AH1012K SDUCR/L 07 ; AH1216M SDUCR/L 07 (1 of each)	A1	B1	**321113** 1003	279,–	**321114** 1003	279,–
			3134		3134	

Spare parts

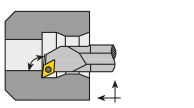
	Screw art.no.	€		TORX art.no.	€
A1	320901 2513	10,50	B1	703053 0080	3,15
	3106			7114	

ATORN® SDUC solid carbide boring bars



- **SDUC R/L 93°**
- 93° setting angle
- For rhombic indexable inserts, 7° positive, 55° point angle
- **Internal coolant supply**
- Low-vibration
- **Use:** Longitudinal turning





Boring bar, individual

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	Right-hand art.no.	Right-hand €	Left-hand art.no.	Left-hand €
E08K SDUC..07	8	7	3.5	125	10.0	7.5	12.5	DC..0702..	**321108** 0108	180,–	**321109** 0108	180,–
E10K SDUC..07	10	9	4.5	125	10.0	7	12.5	DC..0702..	321108 0110	185,–	321109 0110	185,–
E12M SDUC..07	12	11	5.7	150	12.5	9	15	DC..0702..	321108 0112	200,–	321109 0112	200,–
E16R SDUC..07	16	15	7.0	200	16.5	11	19	DC..0702..	321108 0116	360,–	321109 0116	360,–
E20S SDUC..11	20	18	9.0	250	20.5	14	23.5	DC..11T3..	321108 0120	740,–	321109 0120	740,–
E25S SDUC..11	25	23	11.5	250	26.0	16	32	DC..11T3..	321108 0125	999,–	321109 0125	999,–
									3134		3134	

Set

Contents			Right-hand art.no.	Right-hand €	Left-hand art.no.	Left-hand €
E10K SDUCR/L 07; E12M SDUCR/L 07 (1 of each)	A1	B1	**321108** 0002	350,–	**321109** 0002	350,–
			3134		3134	



Spare parts

	Screw art.no.	Screw €
A1	320901 2513	10,50
A2	320901 2516	8,75
	3106	

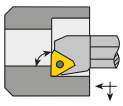
	TORX art.no.	TORX €
B1	703053 0080	3,15
B2	703053 0150	3,35
	7114	

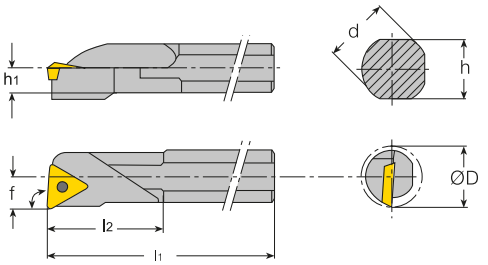
ATORN® Boring bar, positive STFC



- **STFC R/L 90°**
- Setting angle 90°, for positive 7° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning







Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts				Right-hand art.no.	Right-hand €	Left-hand art.no.	Left-hand €
A10K STFC..11	10	9	4.5	125	16	7	14	TC..1102..	A1			D1	**321005** 0110	80,50	**321006** 0110	80,50
A12L STFC..11	12	11	5.5	140	20	9	18	TC..1102..	A1			D1	321005 0112	87,50	321006 0112	87,50
A16Q STFC..11	16	14	7	180	25	11	22	TC..1102..	A1			D1	321005 0116	96,50	321006 0116	96,50
A20R STFC..16	20	18	9	200	32	13	26	TC..16T3..	A2			D2	321005 0120	116,–	321006 0120	116,–
A25R STFC..16	25	23	11.5	200	40	17	34	TC..16T3..	A2			D2	321005 0125	123,50	321006 0125	123,50
A32S STFC..16	32	31	16	250	21	22	40	TC..16T3..	A3	B1	C1	D2	321005 0132	161,–	321006 0132	161,–
A40T STFC..16	40	38.5	20	300	21	27	49	TC..16T3..	A3	B1	C1	D2	321005 0140	230,–	321006 0140	230,–
													3134		3134	

Spare parts

	Screw art.no.	Screw €
A1	320901 2513	10,50
A2	320901 2516	8,75
A3	321611 0011	7,15
	3106	

	Support plate art.no.	Support plate €
B1	321611 0004	19,50
	3106	

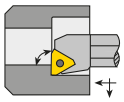
	Screw art.no.	Screw €
C1	321611 0013	10,85
	3106	

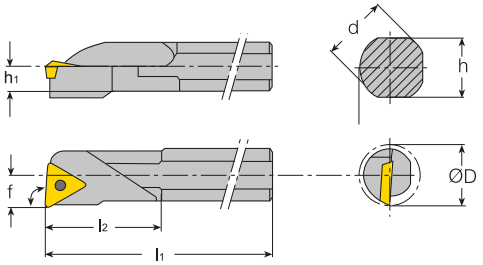
	TORX art.no.	TORX €
D1	703053 0080	3,15
D2	703053 0150	3,35
	7114	

Boring bar, positive *STLC*

- **STLC R 95°**
- Setting angle 95°, for positive 7° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€
S16Q-STLCR 11-D	16	15	7.5	180	45	11	20	TC..1102..	A1	B1	**322203** 1116	139,–
S20R-STLCR 16-D	20	18	9	200	50	13	25	TC..16T3..	A2	B2	322203 1620	170,–
											3105	

Spare parts

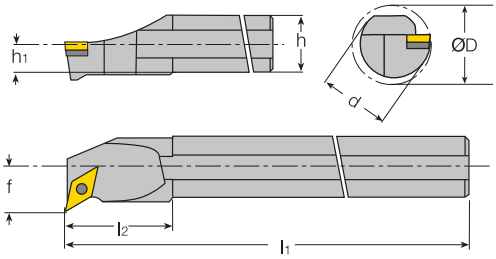
	Screw art.no.	€		TORX art.no.	€
A1	320901 0078	7,05	B1	703053 0070	3,09
A2	320901 0080	5,05	B2	703053 0150	3,35
	3106			7114	

ATORN® Boring bar, positive *SVUC*



- **SVUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- **Internal coolant supply**
- **Use:** Longitudinal and copy turning
- Solid carbide version available on request





ISO designation	d mm	h mm	l1 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A20R-SVUC..11	20	19	200	13	25	VC..1103..	A2	B1	**321527** 0120	128,–	**321528** 0120	128,–
A25R-SVUC..16	25	24	200	17	31.5	VC..1604..	A1	B2	321527 0125	152,–	321528 0125	152,–
									3134		3134	

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321701 0101	5,35	B1	703053 0080	3,15
A2	321701 0102	9,80	B2	703053 0150	3,35
	3106			7114	

PSC polygonal holders

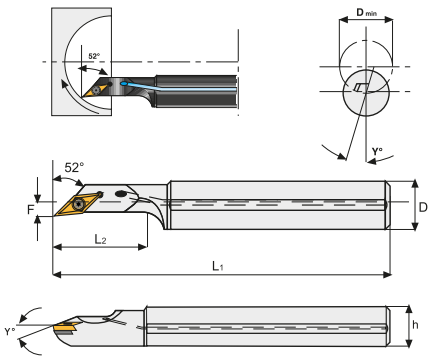
Available on request



ATORN® Boring bar, positive SVJC

- **SVJC R/L 52°**
- Setting angle 52°, for positive 7° rhombic indexable inserts, 35° point angle
- **Internal coolant supply**
- **Use:** Longitudinal and copy turning, ball turning





ISO designation	D mm	h mm	Y mm	L1 mm	L2 mm	F mm	D min. mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A 16M SVJC..11	16	15	6	150	30	4.6	22	VC..1103...	A1	B1	**321529** 1116	140,–	**321530** 1116	140,–
A 20Q SVJC..11	20	19	5	180	38	4.6	25	VC..1103...	A1	B1	321529 1120	148,–	321530 1120	148,–
A 25R SVJC..16	25	24	4	200	44	4.6	28	VC..1604...	A2	B2	321529 1625	173,–	321530 1625	173,–
											3134		3134	

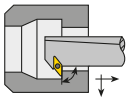
Spare parts

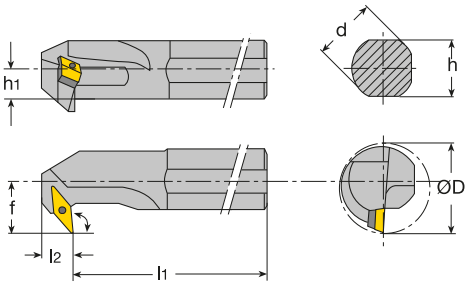
Screw			TORX		
	art.no.	€		art.no.	€
A1	320901 2513	10,50	B1	703053 0080	3,15
A2	320901 2516	8,75	B2	703053 0150	3,35
	3106			7114	

Boring bar, positive SVLBC

- **SVLBC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning, reverse turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts						Right-hand art.no.	€	Left-hand art.no.	€
S32T-SVLBC..16-D	32	29	14.5	300	20	22	44	VB..1604..	A1	B1	C1	D1	E1	**322213** 1632	295,–	**322214** 1632	295,–
														3105		3105	

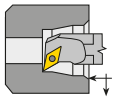
Spare parts

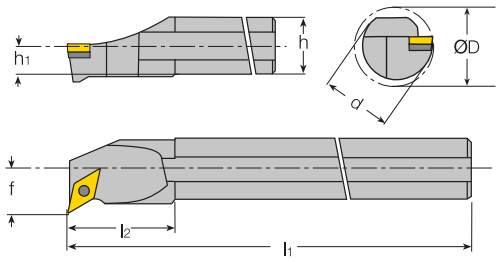
Screw			Screw			Support plate			Offset screwdriver, nickel-plated			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	320901 0081	5,05	B1	320901 0090	20,90	C1	320901 0127	9,85	D1	703005 0040	0,40	E1	703053 0150	3,35
	3106			3106			3106			7111			7114	

Boring bar, positive SVUB

- **SVUB R/L 93°**
- Setting angle 93°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
S25T-SVUB..16	25	23	11.5	300	40	17	31	VBM.1604..	A1	B1	C1	D1	**321525** 1625	142,–	**321526** 1625	142,–
S32U-SVUB..16	32	30	15	350	50	22	39	VBM.1604..	A1	B1	C1	D1	321525 1632	183,–	321526 1632	183,–
S40V-SVUB..16	40	37	18.5	400	60	27	48	VBM.1604..	A1	B1	C1	D1	321525 1640	245,–	321526 1640	245,–
													3105		3105	

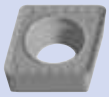
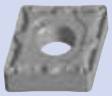
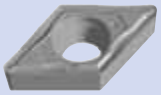
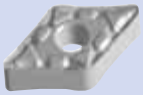
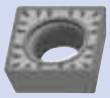
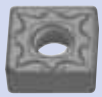
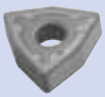
Spare parts

Screw			Support plate			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,72	B1	321601 0027	9,90	C1	321601 0754	3,29	D1	703053 0150	3,35
	3106			3106			3106			7114	

Overview of geometries of indexable cutting inserts

ISO designation codes in the INFO section

INFO

	CC...	ATORN	from page 30-86
		SARATURN	from page 30-46
	CN...	ATORN	from page 30-87
		SARATURN	from page 30-49
	DC...	ATORN	from page 30-89
		SARATURN	from page 30-55
	DN...	ATORN	from page 30-90
		SARATURN	from page 30-58
	SC...	ATORN	from page 30-91
		SARATURN	from page 30-65
	SN...	ATORN	from page 30-92
		SARATURN	from page 30-66
	TC...	ATORN	from page 30-92
		SARATURN	from page 30-70
	TN...	ATORN	from page 30-93
		SARATURN	from page 30-72
	VB...	ATORN	from page 30-102
		SARATURN	from page 30-74
	VC...	ATORN	from page 30-93
		SARATURN	from page 30-75
	VN...	SARATURN	from page 30-78
	WC...	SARATURN	from page 30-80
	WN...	ATORN	from page 30-95
		SARATURN	from page 30-81
Machining aluminium		ALULine	from page 30-85
CBN and PKD			from page 30-97



SARATURN Type descriptions

INFO

ISO P

In the ISO-P range, general structural steel and unalloyed steel have up to 110 HB (Brinell hardness) and a carbon content of up to 0.55%. There is also low-alloy steel up to 180 HB and high-alloy steel from 200 HB – 400 HB and materials with a hardness of up to max. 48 HRc (Rockwell hardness).
The new turning grades with multilayer CVD layers are particularly suitable for cutting ISO-P materials.

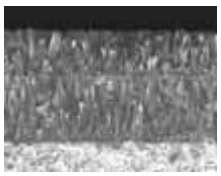
The **SC25PT** type is most suitable for entry-level machining. Thanks to its balance between toughness and wear resistance, which are both in the mid-range, it is the first choice for machining light to medium cuts at medium cutting speeds.
The **SC15PT** type is highly wear-resistant. It is only suitable for smooth cuts and is less tough. With significantly interrupted cuts or heavy roughing cuts, the tough **SC35PT** type should be used.

The **SC20UT** and **SC40UT** types have a thinner CVD coating and therefore a precisely defined cutting edge. They are therefore very well suited to use on conventional machines.

The cutting materials are complemented in the ISO-P area by the **ST10UT** CERMET type. They are especially suitable for long-chipping steel materials (usually low carbon content < 0.25%) with a tendency to difficult chip breaking properties.

SC15PT

- HC-P15
  HC-M10
  HC-K25
- Wear-resistant type highly efficient and productive



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 5.8%, composite carbides 6.4% WC balance

Grain size
1 – 2 µm

Hardness
HV 1550

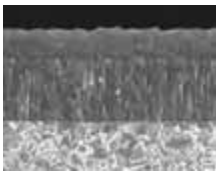
Coating
CVD, Ti(Cn)+Al_2O_3 18.5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SC25PT

- HC-P25
  HC-M20
  HC-K30
- Universal steel type efficient and productive



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 7.0%, composite carbides 8.0% WC balance

Grain size
1 – 2 µm

Hardness
HV 1450

Coating
CVD, Ti(Cn)+Al_2O_3 15 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

SC35PT

- HC-P35
  HC-M30
  HC-K35
- Very tough type, for difficult conditions of use



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 9.6%, composite carbides 6.8% WC rest

Grain size
1 – 2 µm

Hardness
HV 1460

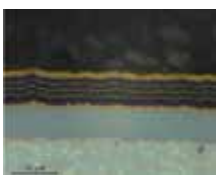
Coating
CVD, Ti(Cn)+Al_2O_3 13 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

SC20UT

- HC-P20
  HC-M20
  HC-K30



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 7.0%, composite carbides 8.0% WC balance

Grain size
1 – 2 µm

Hardness
HV 1450

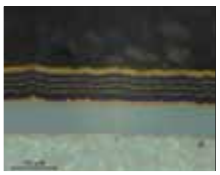
Coating
CVD, Ti(Cn)+Al_2O_3 13 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SC40UT

- HC-P40
  HC-M35



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 5.8%, composite carbides 6.4% WC balance

Grain size
1 - 2 µm

Hardness
HV 1300

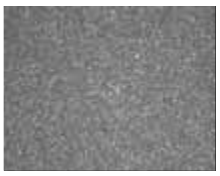
Coating
CVD, Ti(Cn)+Al_2O_3 13.0 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

ST10UT

- HT-P15
  HT-M10
  HT-K10
- **CERMET**



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co/Ni 12.2%, WC 15%,
TaNbC 10.0%, TiCn balance

Hardness
HV 1620

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

ISO M

Indexable cutting inserts in the ISO-M area are mainly used in machining ferritic and martensitic stainless steel and austenitic stainless, usually acid-resistant steel (Ni content of over 20%). So-called duplex steel has a two-phase structure and consists of ferrite and austenite. Higher-alloyed duplex materials are also called super-duplex or hyper-duplex.

The new PVD-coated SP20MT, SP25MT and SP35MT turning types are ideal for ISO-M materials.

The **SP25MT** type is the universal type for stainless steel machining. With its extremely smooth PVD layer, the adhesion tendency when machining Cr-Ni steel is reduced massively.
In the secondary application, low-alloy structural steel can be cut with this type at moderate cutting speeds. The good toughness of the substrate rounds off this type.

The **SP20MT** type is used in finishing. It has a slightly more heat-resistant substrate, which allows higher cutting speeds than with the SP25MT.
The toughness is reduced as a result.

The **SP35MT** type complements the new turning types available for ISO-M materials with selected geometries. It tends to be used in machining processes with lower cutting speeds or difficult cutting conditions.

SP20MT

- HC-M20
  HC-K20
- Special substrate for stainless steel



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 10.0%, composite carbides 2.0% WC balance

Grain size
1 µm

Hardness
HV 1560

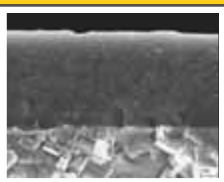
Coating
PVD, TiAlN, 2 - 5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

SP25MT

- HC-P35
  HC-M25
- for high cutting speeds, high process reliability



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 9.6%, composite carbides 7.8%, others,
WC balance

Grain size
1 - 2 µm

Hardness
HV 1460

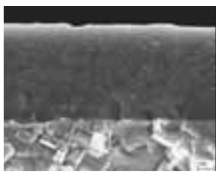
Coating
PVD, TiN / TiAlN, 6 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SP35MT

- HC-P35
  HC-M35
- Universal substrate for stainless steel in difficult conditions of use



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 8.0%, composite carbides 4.2% WC balance

Grain size
1.5 - 3 µm

Hardness
HV 1330

Coating
PVD, TiN / TiAlN, 6 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

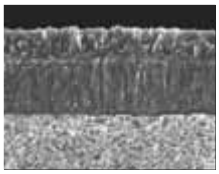
ISO K

Indexable cutting inserts for the ISO-K area are mainly used for cast iron that can be forged (GG) and spheroidal graphite iron (GGG), as well as for cast iron with vermicular graphite and bainitic cast iron with spheroidal graphite iron.

The new **SC20KT** turning type with its multilayer CVD layer was specially designed for machining cast iron materials. It has very good wear resistance with medium toughness.

SC20KT

- HC-P10
  HC-K20
- Heat-resistant universal type for cast iron machining



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, TaC 2.0% WC balance

Grain size
1 µm

Hardness
HV 1630

Coating
CVD, $Ti(C,N)+Al_2O_3$, 15.5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

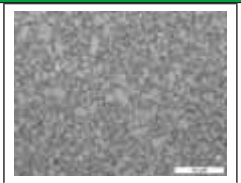
ISO N

Indexable cutting inserts for the ISO-N area are mainly used in machining aluminium and aluminium alloys (cast and forgeable alloys) with an Si content <13%.

Non-metallic materials such as thermosets and fibre-reinforced plastics can also be machined with this turning type. The new SW16NT and SP16NT SARATURN types have their main areas of application here.
The **SW16NT** type is an uncoated carbide type with polished cutting surfaces and is ideally suited for use with ISO-N materials because of the carbide composition.
The **SP16NT** type has a special PVD coating. This guarantees additional protection and higher wear resistance in the case of ISO-N materials with abrasive fillers. Because of the coating, it is very well suited for use with austenitic quenched ISO-M material.

SW16NT

- HW-K15
- Designed for machining aluminium, high heat-resistance, low adhesion tendency



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
1 µm

Hardness
HV 1630

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

SP16NT

- HW-K15
- Designed for machining aluminium, high heat-resistance, low adhesion tendency



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
1 µm

Hardness
HV 1630

Coating
PVD, TiN/TiAlN, 6 µm

Applications

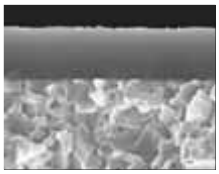
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

ISO S

Indexable cutting inserts for the ISO-S area are mainly used in machining highly heat-resistant alloys based on nickel-iron and cobalt. Titanium in its pure form or in alpha and beta alloys complete this ISO-S area. These materials which are extremely difficult to machine require a machining strategy adapted to the component which also depends on the machine.
The new **SP10ST** and **SP15ST** turning types with their PVD coating have been designed for use in these areas. The main application areas are light to medium cuts with a maximum of slight interruptions.
These are supplemented with the new **SP40ST** type. This is characterised by an extremely tough basic substrate and a specially-developed multi-layer CVD coating for strong interrupted cutting.

SP10ST

- HC-M15
  HC-S15
- Especially for chrome-nickel steel, suitable for titanium machining



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 6.0%, WC balance

Grain size
8 µm

Hardness
HV 1820

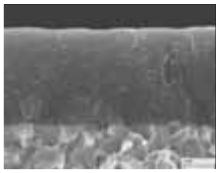
Coating
PVD (Ti, Al) N, 4 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SP15ST

- HC-M15
  HC-S15
- Especially for chrome-nickel steel, suitable for titanium machining



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 6.0%, WC balance

Grain size
8 µm

Hardness
HV 1820

Coating
PVD TiN + (Ti, Al) N + TiN, 4 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SP40ST

- HC-M40
  HC-S30
- Especially for chrome-nickel steel, suitable for titanium machining



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
10 % binder, otherwise WC

Grain size
2 µm

Hardness
HV 1330

Coating
CVD TiN-TiB_2 Multilayer

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

SARATURN Overview of positive chip breakers

INFO

The new chip breakers from the SARATURN range for positive indexable cutting inserts (5° and 7°)

The newly calculated chip breakers for individual use have been adapted to users' needs. Guaranteeing optimal chip breaking properties in daily use was the priority here.

Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

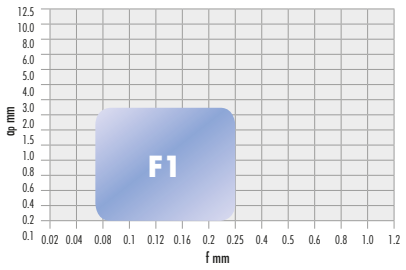
The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for positive geometries.
The best possible chip control even with small cutting depths and feeds, very good chip breaking properties, even with exotic materials with a significantly reduced tendency to form burs and the best possible surface quality are provided by the new SARATURN.

Chip breaker F1

ap	f
0.1 - 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping





ISO P positive chip breaker

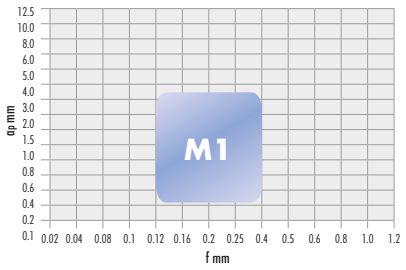
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker M1

ap	f
0.25 - 3.5 mm	0.12 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P positive chip breaker

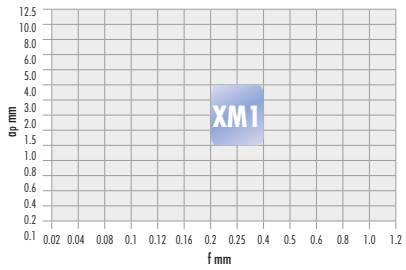
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker XM1

ap	f
1.0 - 4.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P positive chip breaker

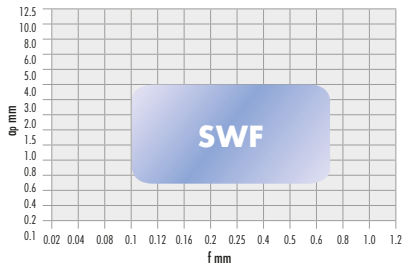
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker SWF

ap	f
0.5 - 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials





ISO P positive/negative chip breaker

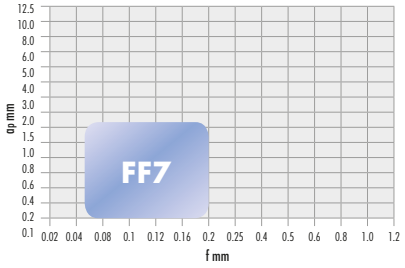
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker FF7, CERMET design

ap	f
0.1 – 1.65 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





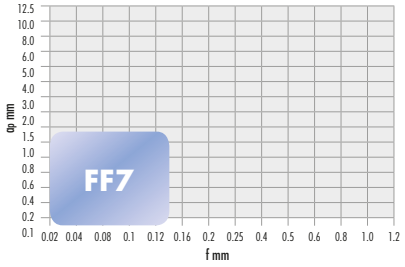
ISO P positive chip breaker / ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker FF7, stainless steel design

ap	f
0.05 – 1.35 mm	0.02 - 0.14 mm/rev

- Special chip breaker for chrome-nickel steel and titanium machining
- "Sharp" chip breaker
- Soft chipping
- Extremely good chip control





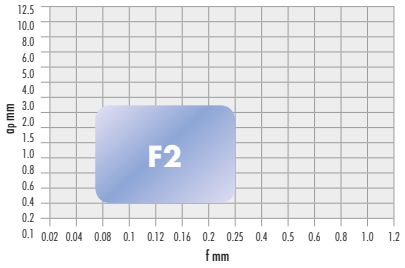
ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker F2

ap	f
0.2 – 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control in stainless steel
- Soft chipping





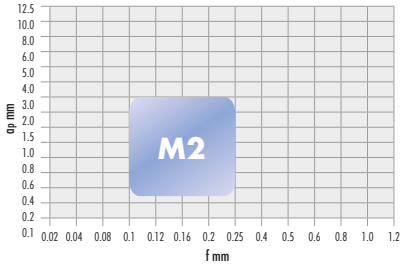
ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker M2

ap	f
0.3 – 3.0 mm	0.1 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





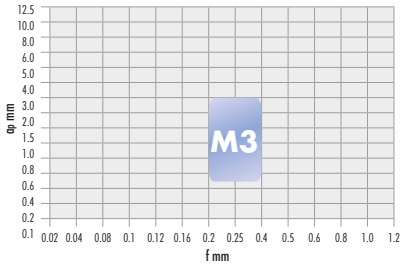
ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker M3

ap	f
0.5 – 3.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





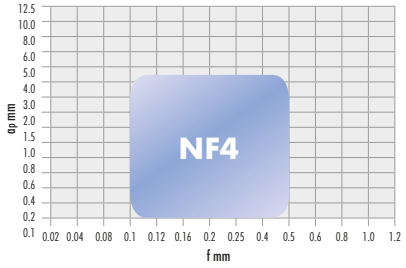
ISO K positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker NF4

ap	f
0.1 – 4.5 mm	0.1 - 0.5 mm/rev

- Chip breaker for aluminium machining
- Also suitable for plastics and non-ferrous metals
- High rake angle
- Also suitable for austenitic quenched steel up to a chip depth of 0.4 mm





ISO N positive chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

SARATURN Overview of negative chip breakers

INFO

The new chip breakers from the SARATURN range for negative indexable cutting inserts (0°)

The newly calculated chip breakers for individual use have been adapted to users' needs. The guarantee of optimised chip breaking properties in daily use was the priority here.

Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

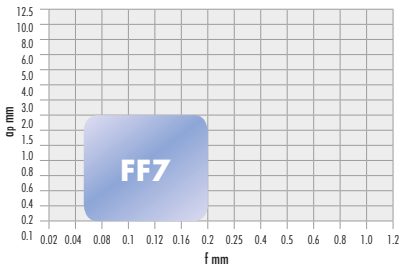
The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for negative geometries.
The best possible chip control even with small cutting depths and feeds, very good chip breaking properties, even with exotic materials with a significantly reduced tendency to form burs and the best possible surface quality are provided by the new SARATURN.

Chip breaker FF7, CERMET design

ap	f
0.1 – 2.0 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





ISO P negative chip breaker

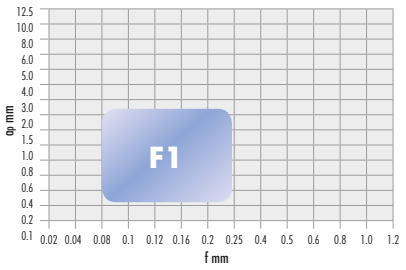
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker F1

ap	f
0.25 – 2.4 mm	0.08 - 0.24 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping





ISO P negative chip breaker

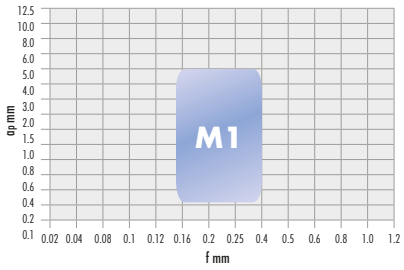
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker M1

ap	f
0.25 - 5 mm	0.15 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P negative chip breaker

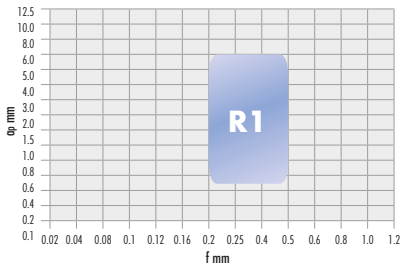
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker R1

ap	f
0.5 - 6 mm	0.2 - 0.5 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact
- Stabilised contact surfaces





ISO P negative chip breaker

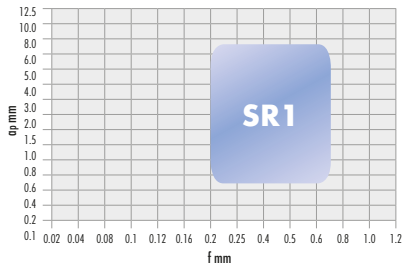
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker SR1

ap	f
0.5 - 7.5 mm	0.2 - 0.7 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact





ISO P negative chip breaker

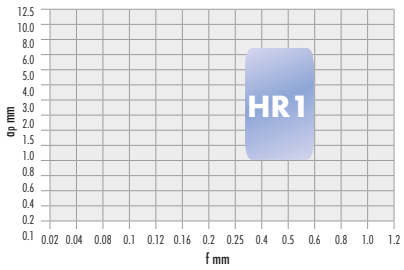
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker HR1

ap	f
0.8 - 7.0 mm	0.3 - 0.6 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





ISO P negative chip breaker

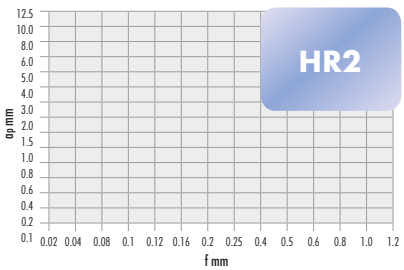
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR 2

ap	f
2.5 - 13 mm	0.4 - 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





ISO P negative chip breaker

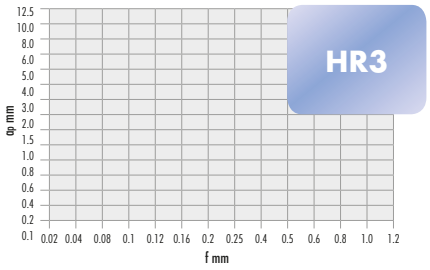
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR3

ap	f
2.0 - 13 mm	0.5 - 1.5 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





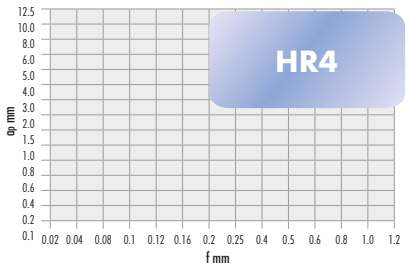
ISO P negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR4

ap	f
2.5 - 12 mm	0.2 - 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Reduced cutting force, temperature and vibration tendency





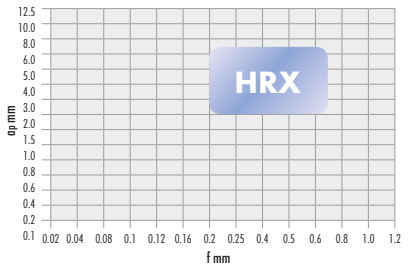
ISO P negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HRX

ap	f
2.0 - 7.0 mm	0.2 - 0.7 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Increased cutting force, temperature and vibration tendency





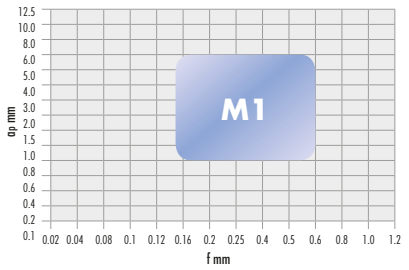
ISO P negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker M1

ap	f
0.8 - 6 mm	0.15 - 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





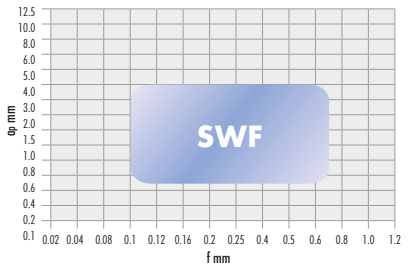
ISO P negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

Chip breaker SWF

ap	f
0.5 - 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials





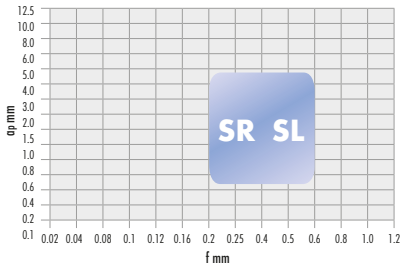
ISO P positive/negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker SR and SL

ap	f
0.5 – 4.8 mm	0.2 – 0.6 mm/rev

- Soft chipping
- "Sharp" cutting edge
- Universal application
- Established chip level





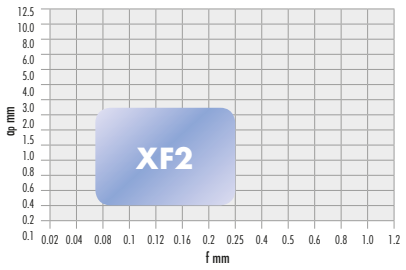
ISO P negative chip breaker / ISO M negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker XF2

ap	f
0.2 – 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





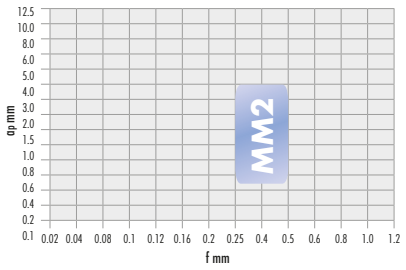
ISO M negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker MM2

ap	f
0.5 – 4.0 mm	0.25 – 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities





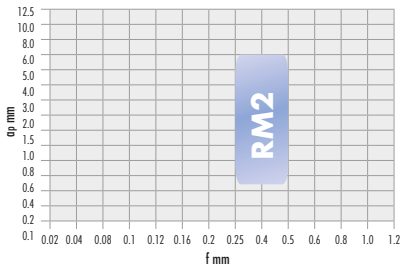
ISO M negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker RM2

ap	f
0.5 – 6.0 mm	0.25 – 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities
- For light to medium roughing





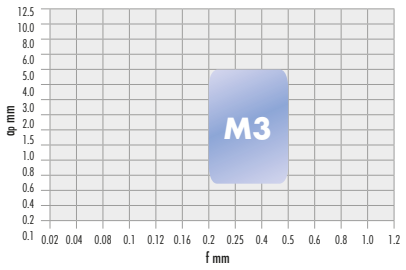
ISO M negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker M3

ap	f
0.5 – 5.0 mm	0.2 - 0.5 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





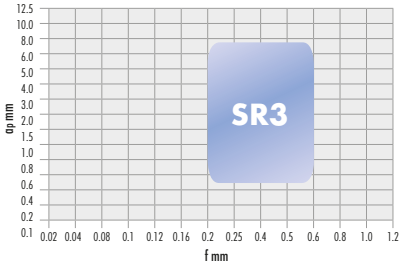
ISO K negative chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker SR3

ap	f
0.5 – 7.5 mm	0.2 – 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Light to medium roughing work





ISO K negative chip breaker

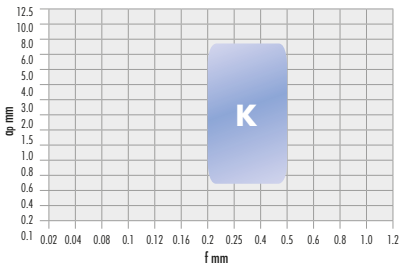
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker K

ap	f
0.5 – 7.5 mm	0.2 - 0.5 mm/rev

- Prevents crack formation and is temperature-resistant
- Universal application





ISO K negative chip breaker

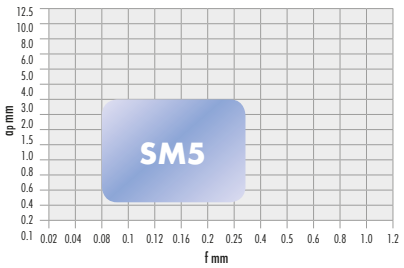
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker SM5

ap	f
0.25 – 3.0 mm	0.08 – 0.3 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- "Sharp" cutting edge





ISO S negative chip breaker

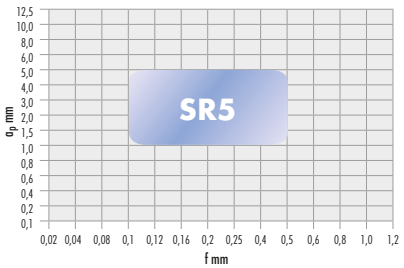
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker SM5

ap	f
0.25 – 3.0 mm	0.08 – 0.3 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- "Sharp" cutting edge
- Roughing/medium machining





ISO S negative chip breaker

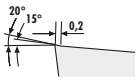
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

CCGT ISO indexable cutting inserts, ground

- **80° rhombic, positive 7°, ground peripherally**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- **for stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium Rm 440 Vc 60-120 m/min**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**, if the radius changes, the cutting data must be adjusted

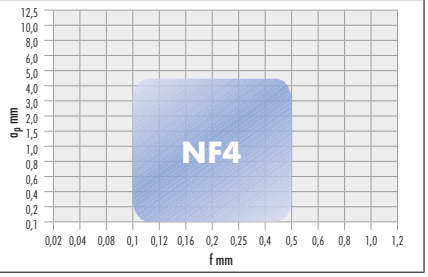
Especially for machining aluminium

Chip breaker NF4

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○											
 Universal application 	CCGT 060201-NF4				○	●	○			SW 16 NT	10	**366601** 0116	7,65
	CCGT 060202-NF4				○	●	○			SW 16 NT	10	366601 0216	7,65
				○	○	●	○			SP 16 NT	10	366601 0417	9,50
	CCGT 060204-NF4				○	●	○			SW 16 NT	10	366601 0316	7,65
				○	○	●	○			SP 16 NT	10	366601 0517	9,50
	CCGT 09T302-NF4				○	●	○			SW 16 NT	10	366601 0616	8,10
				○	○	●	○			SP 16 NT	10	366601 0717	9,90
	CCGT 09T304-NF4				○	●	○			SW 16 NT	10	366601 0816	8,10
				○	○	●	○			SP 16 NT	10	366601 0917	9,90
	CCGT 09T308-NF4				○	●	○			SW 16 NT	10	366601 1016	8,10
				○	○	●	○			SP 16 NT	10	366601 1117	9,90
	CCGT 120404-NF4				○	●	○			SW 16 NT	10	366601 1216	9,50
				○	○	●	○			SP 16 NT	10	366601 1317	11,35
	CCGT 120408-NF4				○	●	○			SW 16 NT	10	366601 1416	9,50
				○	○	●	○			SP 16 NT	10	366601 1517	11,35

3135

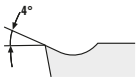
ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 45	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	



CCMT - CCGT ISO indexable cutting inserts

- **80° rhombic, positive 7°**
- One-sided chip breaker design
- Chip breaker **FF7 stainless steel design SP20MT** for **titanium** hardness Rm* 400, Vc up to 140 m/min possible
- **CCGT** ground peripherally
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

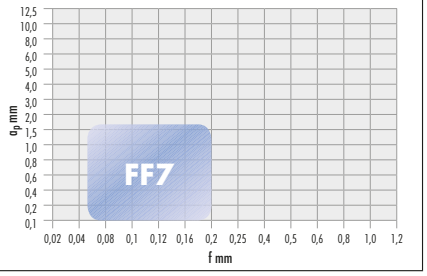
Chip breaker FF7, CERMET design

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing machining 	CCMT 060204-FF7			●	○	○				ST 10 UT	10	**366603** 0140	5,50
	CCMT 09T304-FF7			●	○	○				ST 10 UT	10	366603 0240	6,20

3135

Continued on next page >>>

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

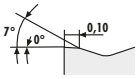


Chip breaker F1

F finishing	M medium	R roughing
●	○	-



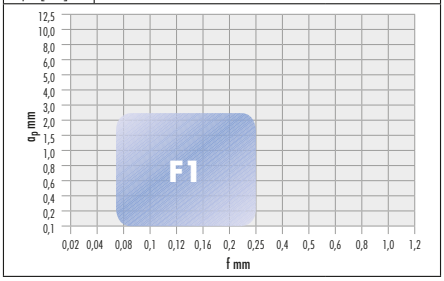
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060202-F1	●	○	○				SC 25 PT	10	**366604** 0125	5,50
CCMT 060204-F1	●		○				SC 15 PT	10	366604 0215	5,50
	●	○	○				SC 25 PT	10	366604 0325	5,50
CCMT 09T302-F1	●	○	○				SC 25 PT	10	366604 0425	6,90
CCMT 09T304-F1	●		○				SC 15 PT	10	366604 0515	6,90
	●	○	○				SC 25 PT	10	366604 0625	6,90
CCMT 09T308-F1	●		○				SC 15 PT	10	366604 0715	6,90
	●	○	○				SC 25 PT	10	366604 0825	6,90
	●	○					SC 35 PT	10	366604 0915	6,90
CCMT 120404-F1	●		○				SC 15 PT	10	366604 1015	9,15

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 190
ISO M stainless steel		Vc = 70 - 200	Vc = 55 - 180
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.1 - 2.5		

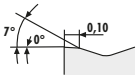


Chip breaker F2

F finishing	M medium	R roughing
●	○	-



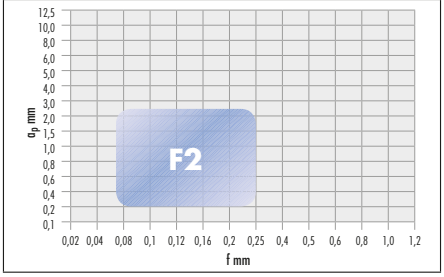
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060202-F2	○	●					SP 25 MT	10	**366605** 0121	5,50
CCMT 060204-F2	○	●					SP 25 MT	10	366605 0221	5,50
CCMT 09T302-F2	○	●					SP 25 MT	10	366605 0321	6,90
CCMT 09T304-F2	○	●					SP 25 MT	10	366605 0421	6,90
CCMT 09T308-F2	○	●					SP 25 MT	10	366605 0521	6,90

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 60 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

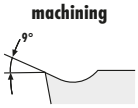


Chip breaker FF7, stainless steel design

F finishing	M medium	R roughing
●	-	-



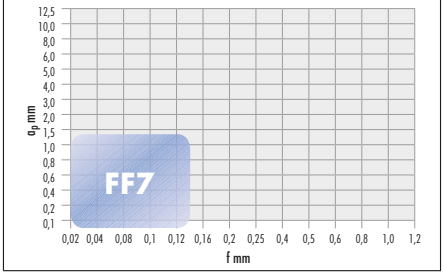
Micro finishing machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCGT 060200-FF7		●	○	○	○		SP 20 MT	10	**366602** 0120	9,50
CCGT 060201-FF7		●	○	○	○		SP 20 MT	10	366602 0220	9,50
CCGT 09T300-FF7		●	○	○	○		SP 20 MT	10	366602 0320	9,90
CCGT 09T301-FF7		●	○	○	○		SP 20 MT	10	366602 0420	9,90

3135

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35



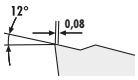
Continued on next page >>>

Chip breaker M1

F finishing	M medium	R roughing
-	●	○



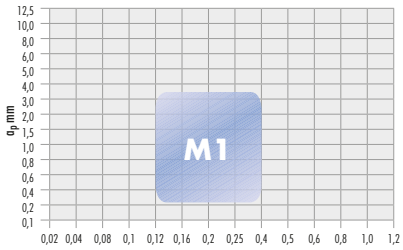
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-M1	●		○				**SC 15 PT**	10	**366606** 0115	5,50
	●	○	○				**SC 25 PT**	10	366606 0225	5,50
	●	○					**SC 35 PT**	10	366606 0335	5,50
CCMT 060208-M1	●	○	○				**SC 15 PT**	10	366606 0415	5,50
	●	○	○				**SC 25 PT**	10	366606 0525	5,50
CCMT 09T304-M1	●		○				**SC 15 PT**	10	366606 0615	6,90
	●	○	○				**SC 25 PT**	10	366606 0725	6,90
	●	○					**SC 35 PT**	10	366606 0835	6,90
CCMT 09T308-M1	●		○				**SC 15 PT**	10	366606 0915	6,90
	●	○	○				**SC 25 PT**	10	366606 1025	6,90
	●	○					**SC 35 PT**	10	366606 1135	6,90
CCMT 120404-M1	●	○	○				**SC 25 PT**	10	366606 1225	9,15
CCMT 120408-M1	●	○	○				**SC 25 PT**	10	366606 1325	9,15
CCMT 120412-M1	●	○	○				**SC 25 PT**	10	366606 1425	9,15

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		

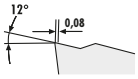


Chip breaker M2

F finishing	M medium	R roughing
-	●	○



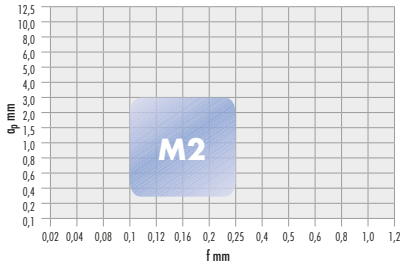
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-M2	○	●					**SP 25 MT**	10	**366607** 0121	5,50
CCMT 060208-M2	○	●					**SP 25 MT**	10	366607 0221	5,50
CCMT 09T304-M2	○	●					**SP 25 MT**	10	366607 0321	6,90
	○	●					**SP 35 MT**	10	366607 0422	6,90
CCMT 09T308-M2	○	●					**SP 25 MT**	10	366607 0521	6,90
	○	●					**SP 35 MT**	10	366607 0622	6,90
CCMT 120404-M2	○	●					**SP 25 MT**	10	366607 0721	9,15
CCMT 120408-M2	○	●					**SP 25 MT**	10	366607 0821	9,15
CCMT 120412-M2	○	●					**SP 25 MT**	10	366607 0921	9,15

3135

ISO	SP 25 MT	SP 35 MT
ISO P steel	Vc = 80 - 250	Vc = 90 - 200
ISO M stainless steel	Vc = 40 - 250	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5	

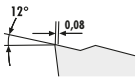


Chip breaker M3

F finishing	M medium	R roughing
-	●	○



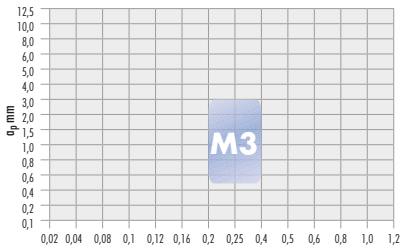
Universal application



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-M3	○		●				**SC 20 KT**	10	**366608** 0130	5,50
CCMT 09T304-M3	○		●				**SC 20 KT**	10	366608 0230	6,90
CCMT 09T308-M3	○		●				**SC 20 KT**	10	366608 0330	6,90
CCMT 120408-M3	○		●				**SC 20 KT**	10	366608 0430	9,15

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 0.5 - 3.0



CCMX ISO indexable cutting inserts

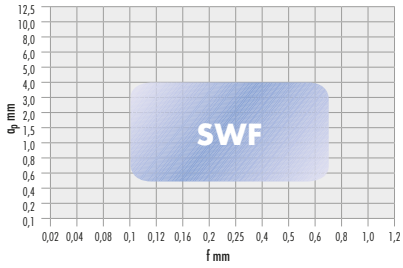
- **80° rhombic, positive 7°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Special finishing geometry with smoothing effect when used at an angle of 93°
- Double feed achievable at the same Ra value as with conventional geometries
- When using the **SWF**, profile distortions may occur if long tapers and large balls are turned
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker SWF positive

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing			CCMX 09T304-SWF	●	○	○				SC 25 PT	10	**366708** 0125	8,95
				○	●					SP 35 MT	10	366708 0135	8,95
			CCMX 09T308-SWF	●	○	○				SC 25 PT	10	366708 0225	8,95
				○	●					SP 35 MT	10	366708 0235	8,95

3135

ISO	SC 25 PT	SP 35 MT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.4 ap = 0.3 - 3.0	



CNGP - CNMA ISO indexable cutting inserts

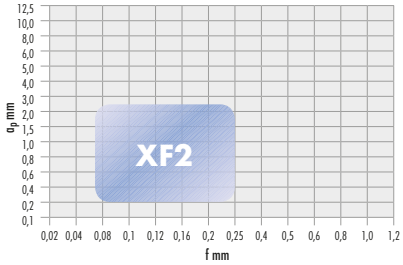
- **80° rhombic, negative 0°**
- Bilateral chip breaker design
- Chip breaker **XF2** for extreme finishing
- **SP20MT** range in **titanium** Vc max 140 m/min for Rm 440
- Minimum ap feed always 63% of the corner radius "r"
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker XF2 specially for stainless steel

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing machining 			CNGP 120402-XF2		●	○	○	○		SP 20 MT	10	**366609** 0120	12,75
			CNGP 120404-XF2		●	○	○	○		SP 20 MT	10	366609 0220	12,75
			CNGP 120408-XF2		●	○	○	○		SP 20 MT	10	366609 0320	12,75
			CNGP 120412-XF2		●	○	○	○		SP 20 MT	10	366609 0420	12,75

3135

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.2 - 2.5



Continued on next page >>>

K smooth chip breaker

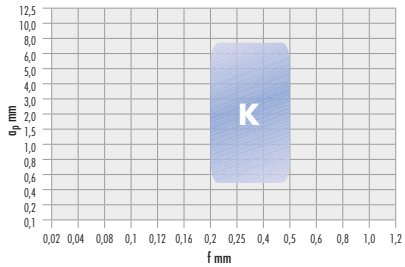
F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	CNMA 120408-K	○		●				SC 20 KT	10	**366610** 0130	7,10



Roughing/medium machining

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.5



CNMG ISO indexable cutting inserts

- **80° rhombic, negative 0°**
- Bilateral chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**, for **CNMG 16**... for a corner radius **r = 0.8 mm**, for **CNMG 19**.... for a corner radius **r = 1.2 mm**

Chip breaker FF7, CERMET negative design

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	●	CNMG 120404-FF7	●	○	○				ST 10 UT	10	**366612** 0140	7,10
			CNMG 120408-FF7	●	○	○				ST 10 UT	10	366612 0240	7,10

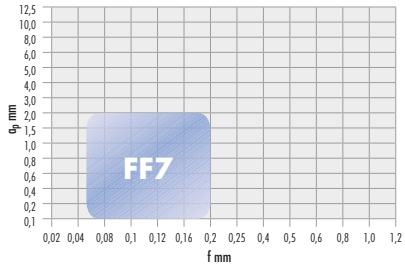


Finishing / medium machining



3135

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 2.0

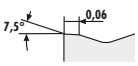


Chip breaker F1 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	CNMG 090304-F1	●		○				SC 15 PT	10	**366704** 0015	5,70
			CNMG 120404-F1	●		○				SC 15 PT	10	366704 0115	7,80
				●	○	○				SC 25 PT	10	366704 0225	7,80
			CNMG 120408-F1	●		○				SC 15 PT	10	366704 0315	7,80
				●	○	○				SC 25 PT	10	366704 0425	7,80

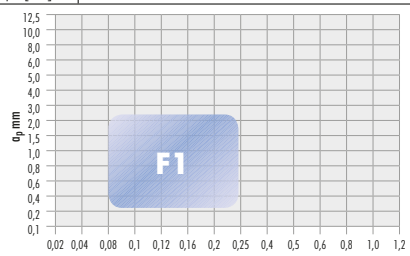


Finishing



3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.25 - 2.5	



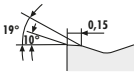
Continued on next page >>>

Chip breaker M1 negative

F finishing	M medium	R roughing
○	●	○



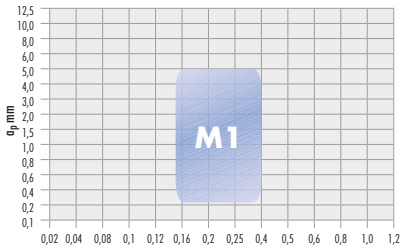
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-M1	●		○				SC 15 PT	10	**366613** 0115	7,10
	●	○	○				SC 25 PT	10	366613 0225	7,10
CNMG 120408-M1	●		○				SC 15 PT	10	366613 0315	7,10
	●	○	○				SC 25 PT	10	366613 0425	7,10
	●	○					SC 35 PT	10	366613 0535	7,10
CNMG 120412-M1	●		○				SC 15 PT	10	366613 0615	7,10
	●	○	○				SC 25 PT	10	366613 0725	7,10
	●	○					SC 35 PT	10	366613 0835	7,10

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.4 ap = 0.25 - 5.0		



Chip breaker MM2 negative

F finishing	M medium	R roughing
-	●	○



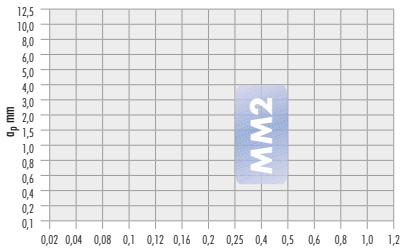
Roughing/medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 090304-MM2	○	●					SP 25 MT	10	**366615** 0021	5,70
CNMG 120408-MM2	○	●					SP 25 MT	10	366615 0121	7,10

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.25 - 0.5 ap = 0.5 - 4.0



Chip breaker SM5 negative, especially for ISO-S

F finishing	M medium	R roughing
●	○	-



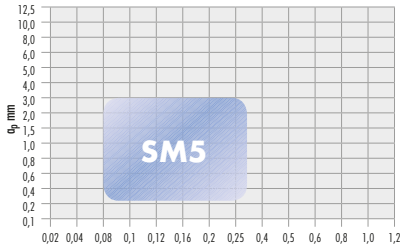
Finishing / medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-SM5		○			●		SP 10 ST	10	**366611** 0232	7,10
		○			●		SP 15 ST	10	366611 0131	7,10
CNMG 120408-SM5		○			●		SP 10 ST	10	366611 0332	7,10
		○			●		SP 15 ST	10	366611 0231	7,10

3135

ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.3 ap = 0.25 - 3.0	

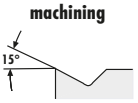


Chip breaker SR5 negative, specially for roughing ISO-S

F finishiF finishing	M medium	R roughing
-	○	●



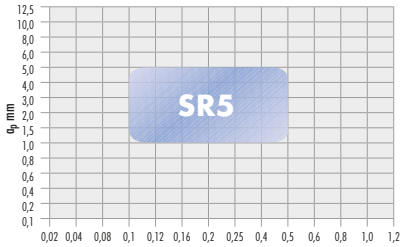
Roughing/medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120408-SR5		●			●		SP 40 ST	10	**366716** 0140	9,40
CNMG 120412-SR5		●			●		SP 40 ST	10	366716 0240	9,40
CNMG 160612-SR5		●			●		SP 40 ST	10	366716 0540	17,50

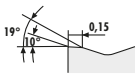
3135

ISO	SP 40 ST
ISO M stainless steel	Vc = 80 - 200
ISO S superalloys	Vc = 60 - 160
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 1.0 - 5.0



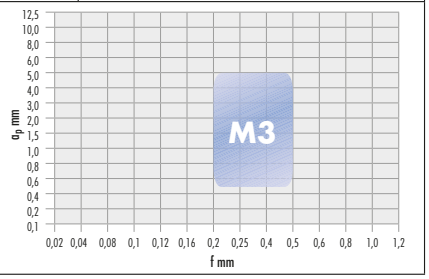
Continued on next page >>>

Chip breaker M3 negative ISO K

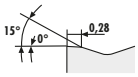
F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 120408-M3			○		●				SC 20 KT	10	**366617** 0130	7,10
	CNMG 120412-M3			○		●				SC 20 KT	10	366617 0230	7,10

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 5.0

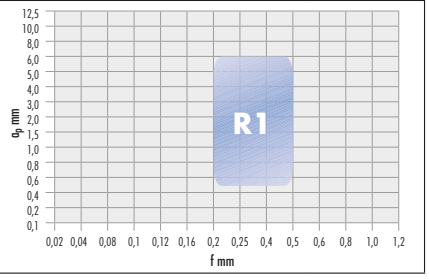


Chip breaker R1 negative

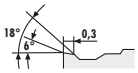
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-R1			●		○				SC 15 PT	10	**366618** 0115	7,10
				●	○	○				SC 25 PT	10	366618 0225	7,10
	CNMG 120412-R1			●		○				SC 15 PT	10	366618 0215	7,10
				●	○	○				SC 25 PT	10	366618 0325	7,10
				●	○					SC 35 PT	10	366618 0235	7,10

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0		

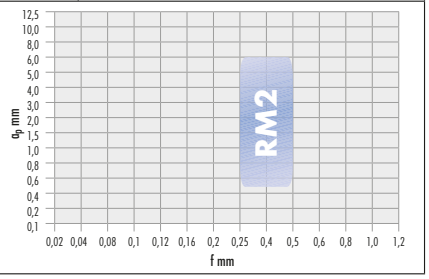


Chip breaker RM2 negative

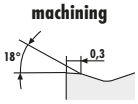
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 120408-RM2			○	●					SP 25 MT	10	**366616** 0121	7,10
	CNMG 120412-RM2			○	●					SP 25 MT	10	366616 0221	7,10
	CNMG 160612-RM2			○	●					SP 25 MT	10	366616 0421	13,20

3135

ISO	SP 25 MT
ISO P steel	Vc = 80 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

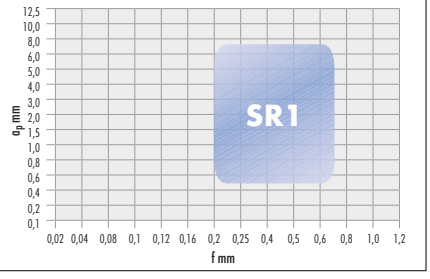


Chip breaker SR1 negative

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 160608-SR1			●	○					SC 35 PT	10	**366620** 0335	13,20
	CNMG 160612-SR1			●	○	○				SC 25 PT	10	366620 0525	13,20
				●	○					SC 35 PT	10	366620 0635	13,20
	CNMG 160616-SR1			●	○	○				SC 25 PT	10	366620 0625	13,20
				●	○					SC 35 PT	10	366620 0735	13,20
	CNMG 190612-SR1			●	○	○				SC 25 PT	10	366620 0825	18,30
				●	○					SC 35 PT	10	366620 0935	18,30
	CNMG 190616-SR1			●	○	○				SC 25 PT	10	366620 1125	18,30
				●	○					SC 35 PT	10	366620 1235	18,30

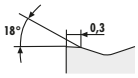
3135

ISO	SC 25 PT	SC 35 PT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 0.5 - 7.5	



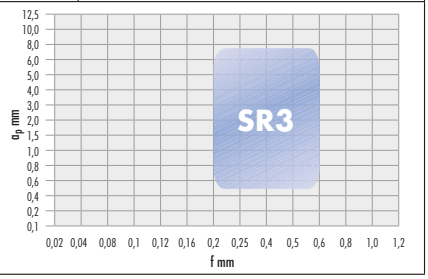
Continued on next page >>>

Chip breaker SR3 negative for ISO K

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 120408-SR3		○		●					SC 20 KT	10	**366614** 0130	7,10
	CNMG 120412-SR3		○		●					SC 20 KT	10	366614 0230	7,10
	CNMG 160608-SR3		○		●					SC 20 KT	10	366614 0330	13,20
	CNMG 160612-SR3		○		●					SC 20 KT	10	366614 0430	13,20
	CNMG 190612-SR3		○		●					SC 20 KT	10	366614 0530	18,30

3135

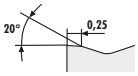
ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 7.5



CNMM ISO indexable cutting inserts

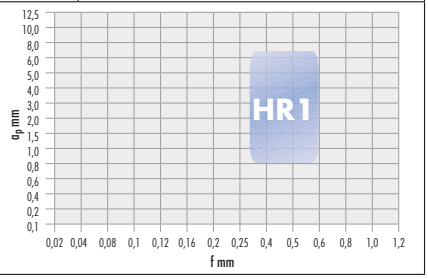
- **80° rhombic, negative 0°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.8 mm**

Chip breaker HR1

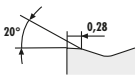
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMM 120408-HR1		●		○					SC 15 PT	10	**366703** 0115	7,10
			●	○	○					SC 25 PT	10	366703 0225	7,10
			●	○						SC 35 PT	10	366703 0335	7,10
			○	●				○		SP 25 MT	10	366703 0121	7,10
	CNMM 120412-HR1		●		○					SC 15 PT	10	366703 0415	7,10
			●	○	○					SC 25 PT	10	366703 0525	7,10
			●	○						SC 35 PT	10	366703 0635	7,10
			○	●				○		SP 25 MT	10	366703 0221	7,10

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT	SP 25 MT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200	Vc = 60 - 250
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200	Vc = 40 - 250
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	Vc = 120 - 250	
ISO S superalloys				Vc = 20 - 80
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.6 ap = 0.8 - 7.0			

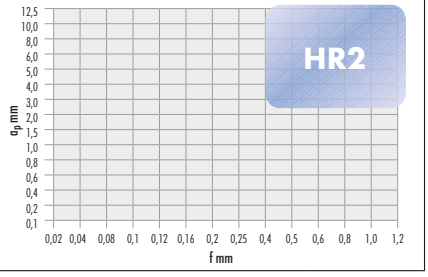


Chip breaker HR2 negative up to 16 mm

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMM 120412-HR2		●		○					SC 15 PT	10	**366619** 0415	7,10
			●	○	○					SC 25 PT	10	366619 0525	7,10
			●	○						SC 35 PT	10	366619 0635	7,10
	CNMM 120416-HR2		●	○	○					SC 25 PT	10	366619 0825	7,10
			●	○						SC 35 PT	10	366619 0935	7,10
	CNMM 160612-HR2		●		○					SC 15 PT	10	366619 1315	12,45
			●	○	○					SC 25 PT	10	366619 1425	12,45
			●	○						SC 35 PT	10	366619 1535	12,45

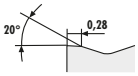
3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.7 ap = 1.5 - 8.0		



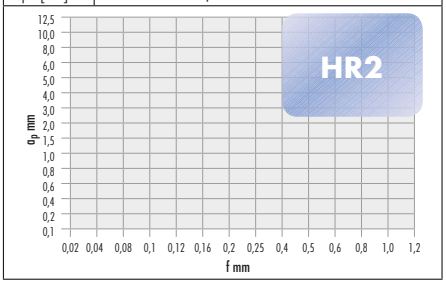
Continued on next page >>>

Chip breaker HR2 negative from 19 mm

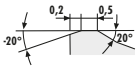
F finishing -	M medium -	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMM 190612-HR2			●		○				SC 15 PT	10	**366621** 0115	18,30
				●	○	○				SC 25 PT	10	366621 0225	18,30
	CNMM 190616-HR2			●	○	○				SC 25 PT	10	366621 0525	18,30
	CNMM 250924-HR2			●	○	○				SC 25 PT	5	366621 1125	35,60

3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.4 - 1.1 ap = 1.2 - 13.0	

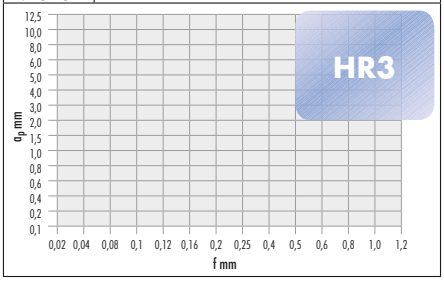


Chip breaker HR3 negative from 19 mm

F finishing -	M medium -	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMM 190616-HR3			●	○	○				SC 25 PT	10	**366622** 0125	18,30
	CNMM 190624-HR3			●	○	○				SC 25 PT	10	366622 0225	18,30
	CNMM 250924-HR3			●	○	○				SC 25 PT	5	366622 0325	35,60
	CNMM 250932-HR2			●	○	○				SC 25 PT	5	366622 0425	35,60

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.5 - 1.5 ap = 2.0 - 13.0



CNMX ISO indexable cutting inserts

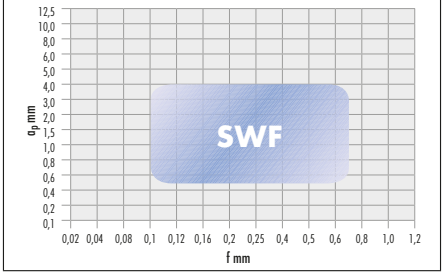
- **80° rhombic, negative 0°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Special finishing geometry with smoothing effect when used at an angle of 93°
- When using the **SWF**, profile distortions may occur if long tapers and large balls are turned
- Double feed achievable at the same Ra value as with conventional geometries
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker SWF negative

F finishing ●	M medium ○	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing	CNMX 120404-SWF			●		○				SC 15 PT	10	**366705** 0115	7,80
	CNMX 120408-SWF			●		○				SC 15 PT	10	366705 0215	7,80

3135

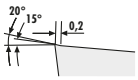
ISO	SC 15 PT
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.6 ap = 0.5 - 4.0



DCGT ISO indexable cutting inserts, ground

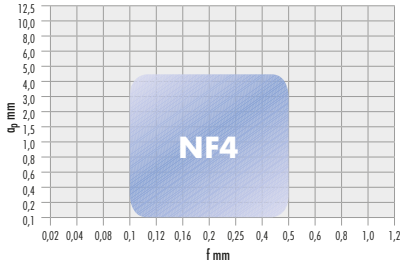
- **55° rhombic, positive 7°, ground peripherally**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- for **stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium** Rm* 440 **Vc 60-120 m/min**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker NF4

F finishing ○	M medium ○	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 	DCGT 070201-NF4				○	●	○			SW 16 NT	10	**366623** 0116	7,65
	DCGT 070202-NF4				○	●	○			SW 16 NT	10	366623 0216	7,65
				○	○	●	○			SP 16 NT	10	366623 0317	9,15
	DCGT 070204-NF4				○	●	○			SW 16 NT	10	366623 0416	7,65
				○	○	●	○			SP 16 NT	10	366623 0517	9,15
	DCGT 070208-NF4				○	●	○			SW 16 NT	10	366623 0616	7,65
	DCGT 11T302-NF4				○	●	○			SW 16 NT	10	366623 0716	9,15
				○	○	●	○			SP 16 NT	10	366623 0817	10,40
	DCGT 11T304-NF4				○	●	○			SW 16 NT	10	366623 0916	9,15
				○	○	●	○			SP 16 NT	10	366623 1017	10,40
	DCGT 11T308-NF4				○	●	○			SW 16 NT	10	366623 1116	9,15
				○	○	●	○			SP 16 NT	10	366623 1217	10,40

3135

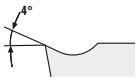
ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	



DCGT - DCMT ISO indexable cutting inserts

- **55° rhombic, positive 7°**
- One-sided chip breaker design
- Chip breaker **FF7 stainless steel design SP20MT** for **titanium** hardness Rm* 400, Vc up to 140 m/min possible
- **WCGT** ground peripherally
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

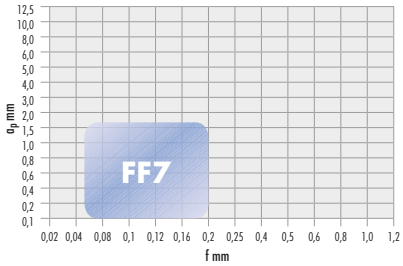
Chip breaker FF7, CERMET design

F finishing ●	M medium -	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Micro finishing machining 	DCMT 070204-FF7			●	○	○				ST 10 UT	10	**366627** 0140	5,80
	DCMT 11T304-FF7			●	○	○				ST 10 UT	10	366627 0240	7,60

3135

Continued on next page >>>

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

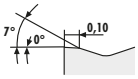


Chip breaker F1

F finishing	M medium	R roughing
●	○	-



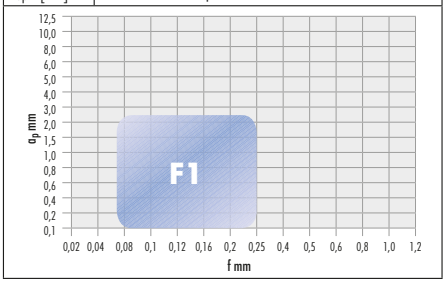
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-F1	●		○				**SC 15 PT**	10	**366625** 0015	5,80
	●	○	○				**SC 25 PT**	10	366625 0125	5,80
DCMT 070204-F1	●		○				**SC 15 PT**	10	366625 0415	5,80
	●	○	○				**SC 25 PT**	10	366625 0225	5,80
DCMT 11T302-F1	●		○				**SC 15 PT**	10	366625 0715	7,60
	●	○	○				**SC 25 PT**	10	366625 0725	7,60
DCMT 11T304-F1	●	○	○				**SC 15 PT**	10	366625 1015	7,60
	●	○	○				**SC 25 PT**	10	366625 1025	7,60
DCMT 11T308-F1	●	○	○				**SC 25 PT**	10	366625 1325	7,60

3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.5 - 2.5	

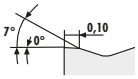


Chip breaker F2

F finishing	M medium	R roughing
●	○	-



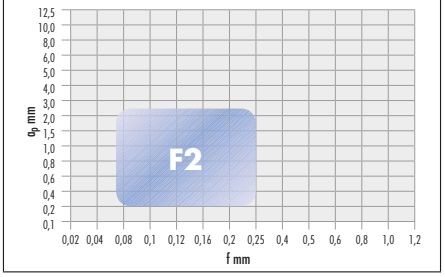
Finishing / medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-F2	○	●					**SP 25 MT**	10	**366626** 0125	5,80
DCMT 070204-F2	○	●					**SP 25 MT**	10	366626 0225	5,80
DCMT 11T302-F2	○	●					**SP 25 MT**	10	366626 0325	7,60
DCMT 11T304-F2	○	●					**SP 25 MT**	10	366626 0425	7,60
DCMT 11T308-F2	○	●					**SP 25 MT**	10	366626 0525	7,60

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

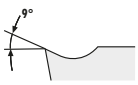


Chip breaker FF7, stainless steel design

F finishing	M medium	R roughing
●	-	-



Micro finishing machining

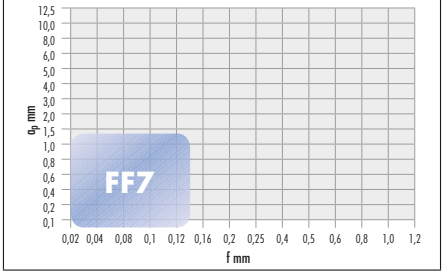


SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCGT 070200-FF7		●	○	○	○		**SP 20 MT**	10	**366624** 0120	12,45
DCGT 070201-FF7		●	○	○	○		**SP 20 MT**	10	366624 0220	12,45
DCGT 11T300-FF7		●	○	○	○		**SP 20 MT**	10	366624 0320	12,45
DCGT 11T301-FF7		●	○	○	○		**SP 20 MT**	10	366624 0420	12,45

3135

Continued on next page >>>

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35

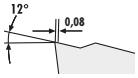


Chip breaker M1

F finishing	M medium	R roughing
○	●	-



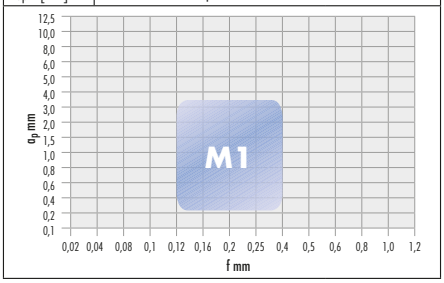
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-M1	●	○	○				SC 25 PT	10	**366630** 0125	5,80
	●	○					SC 35 PT	10	366630 0235	5,80
DCMT 070208-M1	●	○	○				SC 25 PT	10	366630 0325	5,80
	●	○					SC 35 PT	10	366630 0435	5,80
DCMT 11T304-M1	●		○				SC 15 PT	10	366630 0515	7,60
	●	○	○				SC 25 PT	10	366630 0625	7,60
	●	○					SC 35 PT	10	366630 0735	7,60
DCMT 11T308-M1	●		○				SC 15 PT	10	366630 0815	7,60
	●	○	○				SC 25 PT	10	366630 0925	7,60
	●	○					SC 35 PT	10	366630 1035	7,60

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		

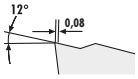


Chip breaker M2

F finishing	M medium	R roughing
○	●	-



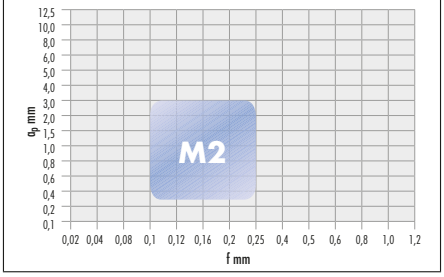
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-M2	○	●					SP 25 MT	10	**366629** 0121	5,80
DCMT 070208-M2	○	●					SP 25 MT	10	366629 0221	5,80
DCMT 11T304-M2	○	●					SP 25 MT	10	366629 0321	7,60
DCMT 11T308-M2	○	●					SP 25 MT	10	366629 0521	7,60

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5

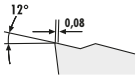


Chip breaker M3

F finishing	M medium	R roughing
○	●	-



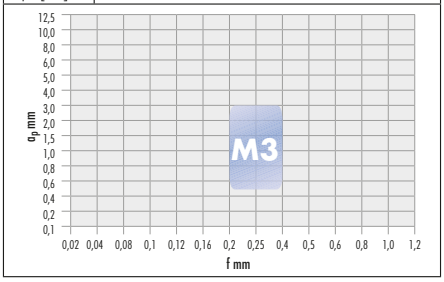
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-M3	○		●				SC 20 KT	10	**366628** 0130	5,80
DCMT 11T304-M3	○		●				SC 20 KT	10	366628 0230	7,60

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 0.5 - 3.5



DCMX ISO indexable cutting inserts

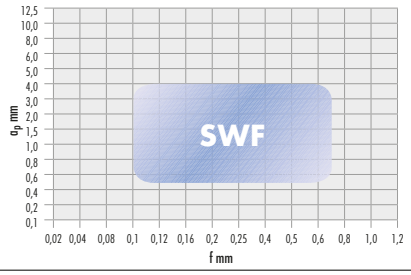
- **55° rhombic, positive 7°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Special finishing geometry with smoothing effect when used at an angle of 93°
- When using the **SWF**, profile distortions may occur if long tapers and large balls are turned
- Double feed achievable at the same Ra value as with conventional geometries
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker SWF, positive

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing			DCMX 070204-SWF	●	○	○				SC 25 PT	10	**366709** 0125	6,50
			DCMX 11T304-SWF	○	●					SP 35 MT	10	366709 0135	8,35
				●	○	○				SC 25 PT	10	366709 0225	8,35
			DCMX 11T308-SWF	●	○	○				SC 25 PT	10	366709 0325	8,35

3135

ISO	SC 25 PT	SP 35 MT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 3.0	



DNMG - DNGP ISO indexable cutting inserts

- **55° rhombic, negative 0°**
- Bilateral chip breaker design
- **DNGP** are suitable for **ISO tool holders** for **DNMG ...**
- **Note:** Standard thickness of DNMG/DNGP is 15**06**... When using a DNMG/DNGP 15**04.., the** spacer must be replaced.
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

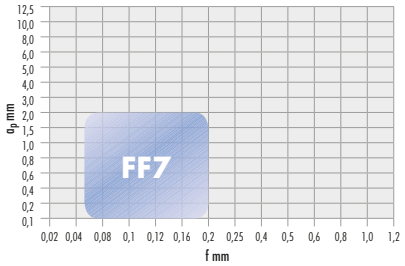
Chip breaker FF7, CERMET negative design

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing machining 			DNMG 110404-FF7	●	○	○				ST 10 UT	10	**366635** 0140	7,90
			DNMG 150604-FF7	●	○	○				ST 10 UT	10	366635 0240	11,40

3135

Continued on next page >>>

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 2.0

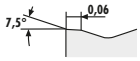


Chip breaker F1 negative

F finishing	M medium	R roughing
●	○	-



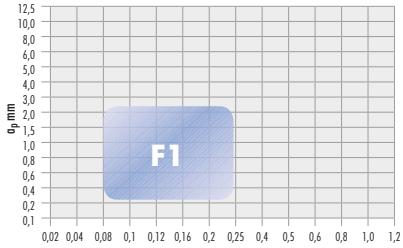
Micro finishing machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNMG 110404-F1	●		○				SC 15 PT	10	**366633** 0115	7,90
	●	○	○				SC 25 PT	10	366633 0225	7,90
DNMG 150604-F1	●		○				SC 15 PT	10	366633 0315	11,40
DNMG 150608-F1	●		○				SC 15 PT	10	366633 0415	11,40

3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.25 - 2.5	



Chip breaker XF2 negative, especially for stainless steel

F finishing	M medium	R roughing
●	-	-



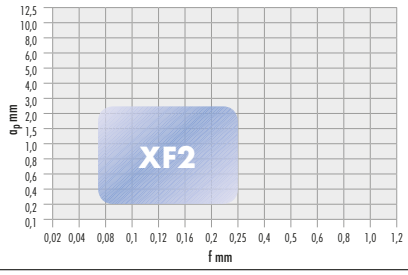
Micro finishing machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNGP 150602-XF2		●	○	○	○		SP 20 MT	10	**366631** 0220	14,55
DNGP 150404-XF2		●	○	○	○		SP 20 MT	10	366631 0120	14,15
DNGP 150604-XF2		●	○	○	○		SP 20 MT	10	366631 0320	14,55
DNGP 150608-XF2		●	○	○	○		SP 20 MT	10	366631 0420	14,55

3135

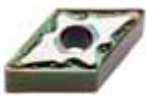
ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 15 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5



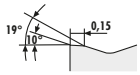
Chip breaker M1 negative

- **Note:** for DNMG 1104.. Reduction of max. feed ap = 3.0 mm, f = 0.1-0.35 mm/rev

F finishing	M medium	R roughing
○	●	-



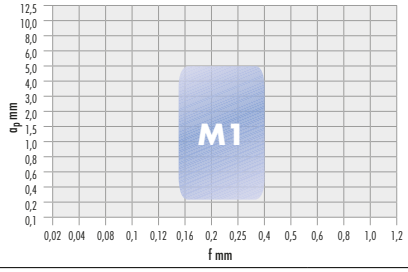
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNMG 110404-M1	●		○				SC 15 PT	10	**366637** 1215	7,90
	●	○	○				SC 25 PT	10	366637 1225	7,90
DNMG 110408-M1	●		○				SC 15 PT	10	366637 0115	7,90
	●	○	○				SC 25 PT	10	366637 0225	7,90
	●	○					SC 35 PT	10	366637 0335	7,90
DNMG 150404-M1	●	○	○				SC 25 PT	10	366637 1325	11,15
DNMG 150408-M1	●	○	○				SC 25 PT	10	366637 1425	11,15
DNMG 150604-M1	●		○				SC 15 PT	10	366637 0415	11,40
	●	○	○				SC 25 PT	10	366637 0525	11,40
DNMG 150608-M1	●		○				SC 15 PT	10	366637 0615	11,40
	●	○	○				SC 25 PT	10	366637 0725	11,40
	●	○					SC 35 PT	10	366637 0835	11,40
DNMG 150612-M1	●		○				SC 15 PT	10	366637 0915	11,40
	●	○	○				SC 25 PT	10	366637 1025	11,40
	●	○					SC 35 PT	10	366637 1135	11,40

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.5 - 5.0		



Continued on next page >>>

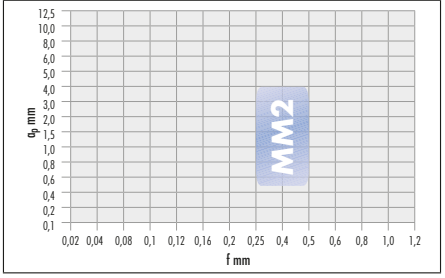
Chip breaker MM2 negative, especially for stainless steel

• **Note:** for DNMG 1104.. Reduction of max. feed ap = 3.0 mm, f = 0.1-0.35 mm/rev

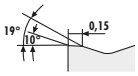
F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	DNMG 110404-MM2	○	●							SP 25 MT	10	**366634** 0121	7,90
	DNMG 110408-MM2	○	●							SP 25 MT	10	366634 0221	7,90
	DNMG 150604-MM2	○	●							SP 25 MT	10	366634 0321	11,40
	DNMG 150608-MM2	○	●							SP 25 MT	10	366634 0421	11,40

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.4 ap = 0.25 - 4.0

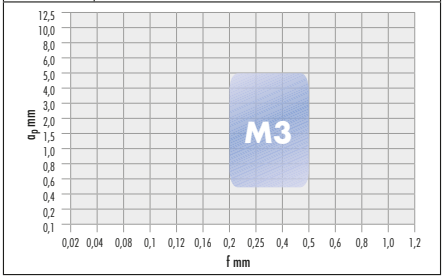


Chip breaker M3 negative

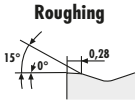
F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	DNMG 150608-M3	○		●						SC 20 KT	10	**366632** 0130	11,40
	DNMG 150612-M3	○		●						SC 20 KT	10	366632 0230	11,40

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 5.0

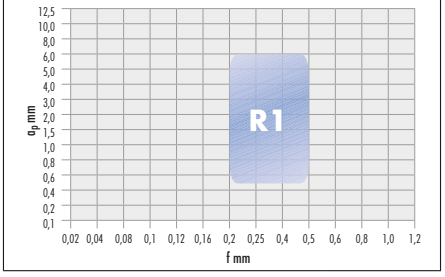


Chip breaker R1 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●											
 Roughing 	DNMG 150608-R1	●		○						SC 15 PT	10	**366641** 0115	11,40
		●	○	○						SC 25 PT	10	366641 0225	11,40
		●	○							SC 35 PT	10	366641 0335	11,40
	DNMG 150612-R1	●		○						SC 15 PT	10	366641 0415	11,40
		●	○	○						SC 25 PT	10	366641 0525	11,40
		●	○							SC 35 PT	10	366641 0635	11,40

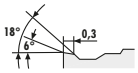
3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.5 ap = 0.5 - 6.0		



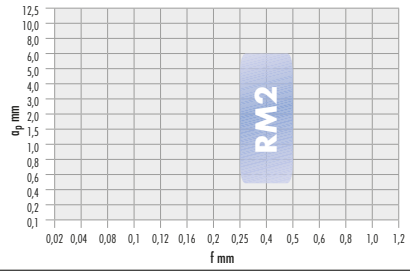
Continued on next page >>>

Chip breaker RM2 negative, especially for stainless steel

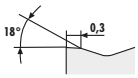
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMG 150608-RM2		○	●						SP 25 MT	10	**366640** 0121	11,40
	DNMG 150612-RM2		○	●						SP 25 MT	10	366640 0221	11,40

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.25 - 0.5 ap = 0.5 - 6.0

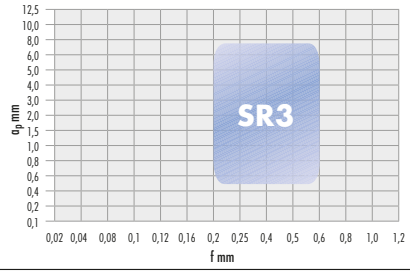


Chip breaker SR3 negative

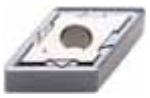
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMG 150608-SR3		○		●					SC 20 KT	10	**366638** 0130	11,40

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 1.0 - 6.0

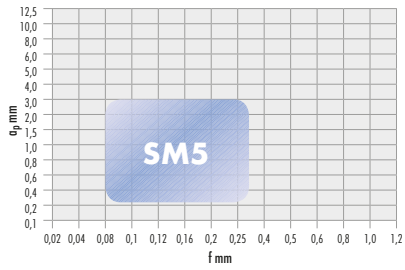


Chip breaker SM5 negative, especially for Cr-Ni alloys

F finishing ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DNMG 150608-SM5		○		●					SP 10 ST	10	**366639** 0132	11,40
			○		●					SP 15 ST	10	366639 0231	11,40

3135

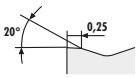
ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.4 - 3.0	



DNMM ISO indexable cutting inserts

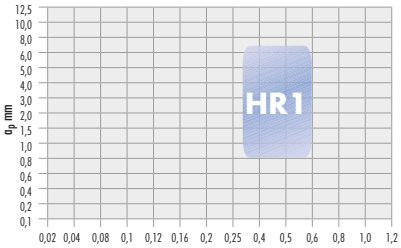
- **55° rhombic, negative 0°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- The cutting data recommendations apply for a corner radius **r = 0.8 mm**

Chip breaker HR1 negative

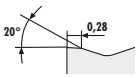
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMM 150608-HR1	●	○	○				SC 15 PT	10	**366642** 0115	11,40
		●	○	○				SC 25 PT	10	366642 0225	11,40
		●	○					SC 35 PT	10	366642 0335	11,40

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.7 ap = 0.5 - 7.0		

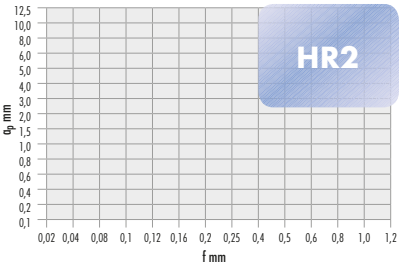


Chip breaker HR2 negative

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMM 150612-HR2	●	○	○				SC 15 PT	10	**366643** 0115	11,40
		●	○	○				SC 25 PT	10	366643 0225	11,40
		●	○					SC 35 PT	10	366643 0335	11,40

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.8 ap = 1.5 - 8.0		



DNMX ISO indexable cutting inserts

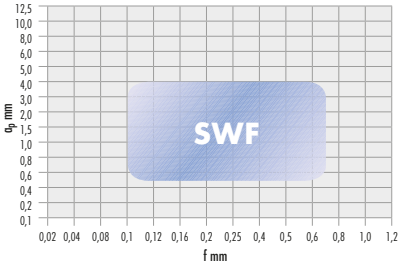
- **55° rhombic, negative 0°**
- Bilateral chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Special finishing geometry with smoothing effect when used at an angle of 93°
- When using the **SWF**, profile distortions may occur if long tapers and large balls are turned
- Double feed achievable at the same Ra value as with conventional geometries
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker SWF negative

F finishing ●	M medium -	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing	DNMG 150604-SWF	●		○				SC 15 PT	10	**366706** 0115	12,55
	DNMG 150608-SWF	●		○				SC 15 PT	10	366706 0225	12,55

3135

ISO	SC 15 PT
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.5 - 4.0



KNUX ISO indexable cutting inserts

- **55° rhombic, negative**
- Secondary applications in ISO **K** and ISO **S**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Easy-action operating principle of chip breaker
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

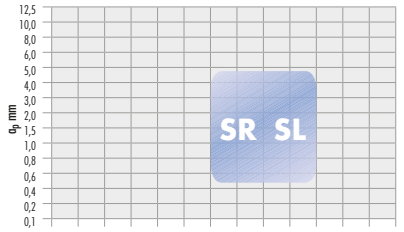
Chip breaker SR right-hand version

- **Note:**
- **RH** insert = **right-hand** tool holder or **left-hand** boring bar
- **LH** insert = **left-hand** tool holder or **right-hand** boring bar

F finishing ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			KNUX 160405-SR	●	○	○				SC 25 PT	10	**366645** 0125	10,40
			KNUX 160410-SR	●	○	○				SC 25 PT	10	366645 0225	10,40
			KNUX 160405-SR	●	○					SC 20 UT	10	366645 0350	10,40
				●	○					SC 40 UT	10	366645 0455	10,40

3135

ISO	SC 20 UT	SC 25 PT	SC 40 UT
ISO P steel	Vc = 90 - 200	Vc = 100 - 240	Vc = 90 - 180
ISO M stainless steel	Vc = 90 - 180	Vc = 70 - 210	Vc = 50 - 160
ISO K cast iron		Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 4.8		



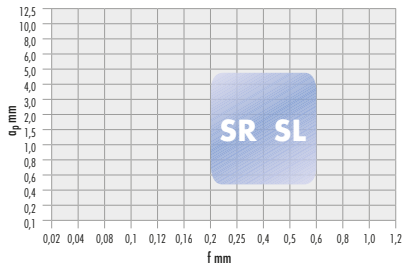
Chip breaker SL left-hand version

- **Note:**
- **RH** insert = **right-hand** tool holder or **left-hand** boring bar
- **LH** insert = **left-hand** external tool holder or **right-hand** boring bar

F finishing ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			KNUX 160405-SL	●	○	○				SC 25 PT	10	**366644** 0125	10,40
			KNUX 160410-SL	●	○	○				SC 25 PT	10	366644 0225	10,40
			KNUX 160405-SL	●	○					SC 20 UT	10	366644 0350	10,40
				●	○					SC 40 UT	10	366644 0455	10,40

3135

ISO	SC 20 UT	SC 25 PT	SC 40 UT
ISO P steel	Vc = 90 - 200	Vc = 100 - 240	Vc = 90 - 180
ISO M stainless steel	Vc = 90 - 180	Vc = 70 - 210	Vc = 50 - 160
ISO K cast iron		Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 4.8		





… with safety

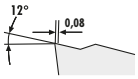
ATORN®
High quality for great performance

RCMT ISO indexable cutting inserts

- **360° round, positive 7°**
- 2 chip breakers available **M1** and **HRX**
- One-sided chip breaker design
- Maximum ap feed is 50% of the indexable cutting insert diameter

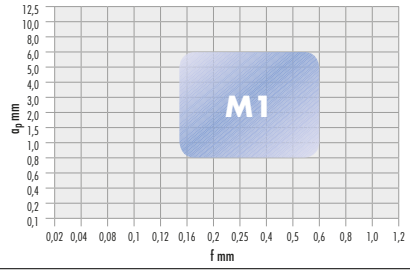
Chip breaker M1

- For RCMT 08.. ap max. = 4.0 mm
- For RCMT 10.. ap max. = 5.0 mm

F finishing -	M medium ○	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	RCMT 0803MO-M1			●	○					SC 35 PT	10	**366646** 0135	5,–
	RCMT 1003MO-M1			●	○					SC 35 PT	10	366646 0235	5,80
	RCMT 1204MO-M1			●	○					SC 35 PT	10	366646 0335	8,15

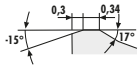
3135

ISO	SC 35 PT
ISO P steel	Vc = 90 - 200
ISO M stainless steel	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.6 ap = 0.8 - 6.0



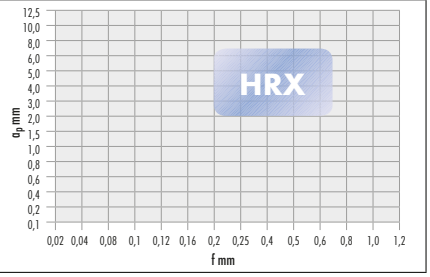
Chip breaker HRX

- With RCMT 2006MO.. ap up to 9.5 mm possible

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	RCMT 1604MO-HRX			●	○	○				SC 25 PT	10	**366647** 0125	14,20
	RCMT 2006MO-HRX			●	○	○				SC 25 PT	10	366647 0225	19,50
	RCMT 1604MO-HRX			●	○					SC 35 PT	10	366647 0335	14,20
	RCMT 2006MO-HRX			●	○					SC 35 PT	10	366647 0435	19,50

3135

ISO	SC 25 PT	SC 35 PT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 2.0 - 7.0	



Safety in the workplace

Please protect your eyes, ears and respiratory system!

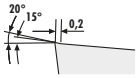


ISO indexable cutting inserts *SCGT*, ground

- **90° square positive 7°, ground peripherally**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT**coated, also suitable for finishing **stainless steel** (**austenitic, quenched**) for **stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium Rm 440*** Vc 60-120 m/min
- Minimum ap feed always 63% of the corner radius "r"
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

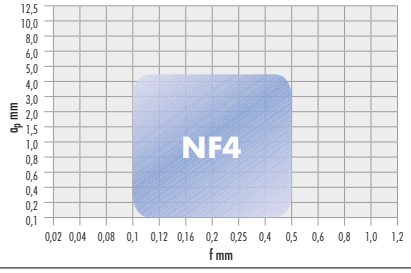
Especially for machining aluminium

Chip breaker NF4

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○											
 Universal application 			SCGT 09T304-NF4			○	●	○		SW 16 NT	10	**366648** 0116	8,65
					○	○	●	○		SP 16 NT	10	366648 0217	10,80
			SCGT 09T308-NF4			○	●	○		SW 16 NT	10	366648 0316	8,65
					○	○	●	○		SP 16 NT	10	366648 0417	10,80
			SCGT 120408-NF4		○	○	●	○		SP 16 NT	10	366648 0617	10,80

3135

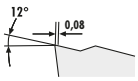
ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 48
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.25 - 6.0	



SCMT ISO indexable cutting inserts

- **90° square positive 7°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

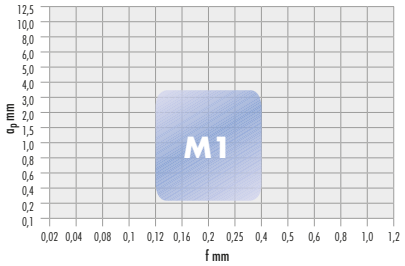
Chip breaker M1

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Medium machining 			SCMT 09T304-M1	●	○	○				SC 25 PT	10	**366649** 0125	8,15
			SCMT 09T308-M1	●	○	○				SC 25 PT	10	366649 0225	8,15
				●	○					SC 35 PT	10	366649 0335	8,15
			SCMT 120404-M1	●		○				SC 15 PT	10	366649 0415	9,45
				●	○	○				SC 25 PT	10	366649 0525	9,45
			SCMT 120408-M1	●	○	○				SC 25 PT	10	366649 0625	9,45
				●	○					SC 35 PT	10	366649 0735	9,45
			SCMT 120412-M1	●	○	○				SC 25 PT	10	366649 0825	9,45
				●	○					SC 35 PT	10	366649 0935	9,45

3135

Continued on next page >>>

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 190
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

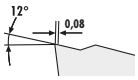


Chip breaker M2, especially for stainless steel

F finishing	M medium	R roughing
-	●	○



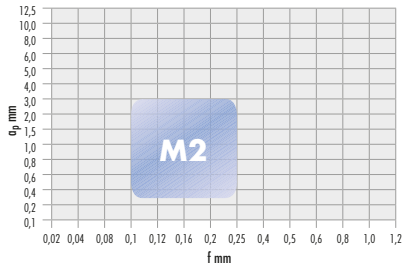
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T304-M2	○	●					**SP 25 MT**	10	**366650** 0121	8,15
SCMT 09T308-M2	○	●					**SP 25 MT**	10	366650 0221	8,15
SCMT 120404-M2	○	●					**SP 25 MT**	10	366650 0321	9,45
SCMT 120408-M2	○	●					**SP 25 MT**	10	366650 0421	9,45
SCMT 120412-M2	○	●					**SP 25 MT**	10	366650 0521	9,45

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

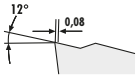


Chip breaker M3

F finishing	M medium	R roughing
-	●	○



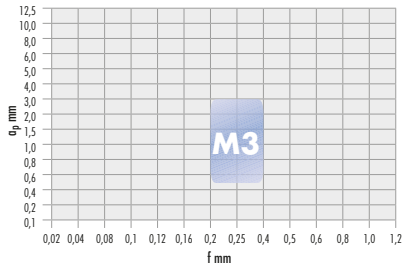
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T308-M3	○		●				**SC 20 KT**	10	**366651** 0130	8,15
SCMT 120408-M3	○		●				**SC 20 KT**	10	366651 0230	9,45

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.5 ap = 0.5 - 5.0



SNMA - SNMG ISO indexable cutting inserts

- **90° square negative 0°**
- Bilateral chip breaker design **SNMG**
- Without chip breaker **SNMA**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker K negative

F finishing	M medium	R roughing
-	○	●

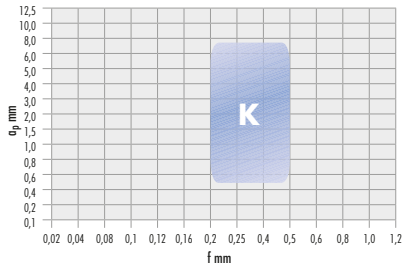


Roughing

SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SNMA 120408-K	○		●				**SC 20 KT**	10	**366652** 0130	8,25

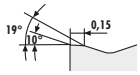
3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.0



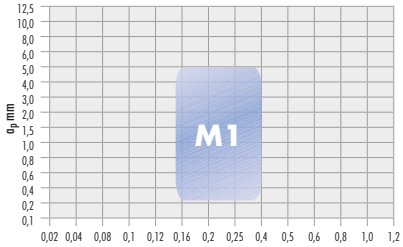
Continued on next page >>>

Chip breaker M1 negative

F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SNMG 120408-M1			●		○				SC 15 PT	10	**366655** 0435	8,25
				●	○	○				SC 25 PT	10	366655 0225	8,25
				●	○					SC 35 PT	10	366655 0235	8,25
	SNMG 120412-M1			●		○				SC 15 PT	10	366655 0115	8,25
				●	○	○				SC 25 PT	10	366655 0325	8,25
				●	○					SC 35 PT	10	366655 0535	8,25

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0		

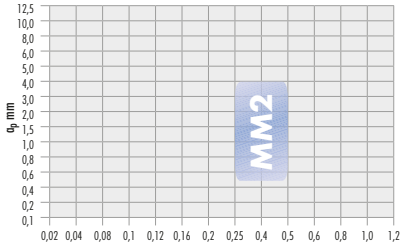


Chip breaker MM2 negative, especially for stainless steel

F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SNMG 120408-MM2			○	●					SP 25 MT	10	**366656** 0121	8,25

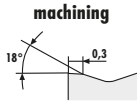
3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0



Chip breaker SR1 negative

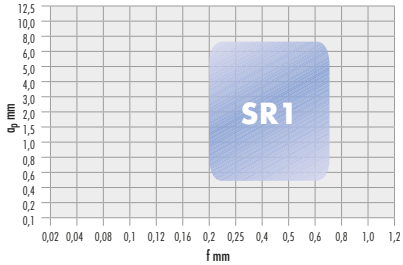
- ap up to 11 mm possible for SNMG 1906..

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	SNMG 150612-SR1			●	○	○				SC 25 PT	10	**366658** 0125	13,10
				●	○					SC 35 PT	10	366658 0235	13,10
	SNMG 190612-SR1			●	○	○				SC 25 PT	10	366658 0325	18,30
				●	○					SC 35 PT	10	366658 0435	18,30

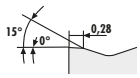
3135

Continued on next page >>>

ISO	SC 25 PT	SC 35 PT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 1.0 - 7.5	

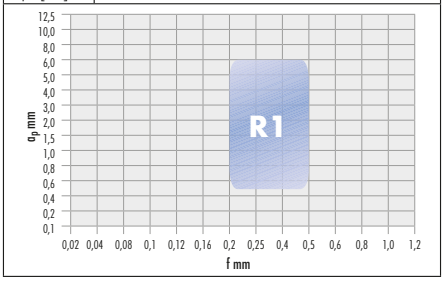


Chip breaker R1 negative

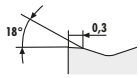
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	SNMG 120408-R1			●	○	○				SC 25 PT	10 **366657** 0125	8,25

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

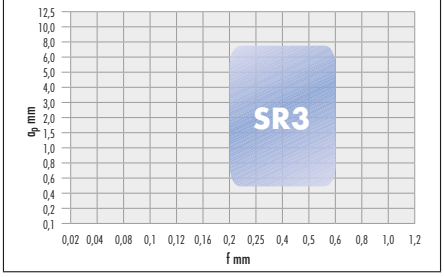


Chip breaker SR3 negative

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	SNMG 120408-SR3			○		●				SC 20 KT	10 **366653** 0130	8,25

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 7.5

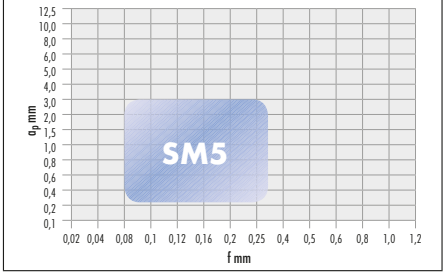


Chip breaker SM5 negative, especially for ISO S

F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Medium machining 	SNMG 120408-SM5				○			●		SP 10 ST	10 **366654** 0132	8,25
					○			●		SP 15 ST	10 366654 0231	8,25

3135

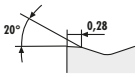
ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.5 - 3.0	



SNMM ISO indexable cutting inserts

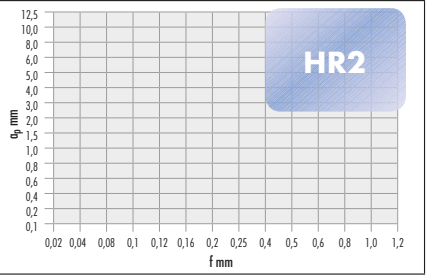
- **90° square negative 0°**
- One-sided chip breaker design, starting values in the diagram for SNMM 1906..
- For **HR2** f = 0.3-1.2 mm/rev. ap = 1.5-16.00 mm for SNMM 2509...
- For **HR3** f = 0.5-1.5 mm/rev. ap = 2.5-18.00 mm for SNMM 2509...
- For **HR4** f = 0.2-1.3 mm/rev. ap = 2.5-12.00 mm for SNMM 1906 For SNMM 2509 ap up to 19.00 possible..

Chip breaker HR2 negative

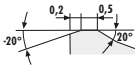
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190612-HR2	●	○	○				SC 25 PT	10	**366659** 0125	18,30
	SNMM 190616-HR2	●	○	○				SC 25 PT	10	366659 0225	18,30
	SNMM 250724-HR2	●	○	○				SC 25 PT	5	366659 0325	35,60
	SNMM 250924-HR2	●	○	○				SC 25 PT	5	366659 0425	39,30

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.8 ap = 1.5 - 10.5

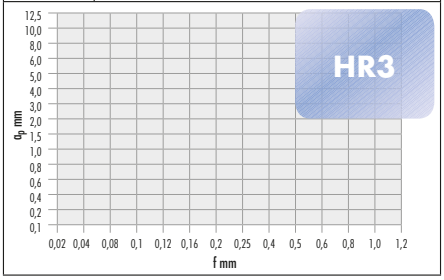


Chip breaker HR3 negative

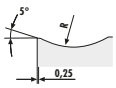
F finishing -	M medium -	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190616-HR3	●	○	○				SC 25 PT	10	**366660** 0125	18,30
	SNMM 190624-HR3	●	○	○				SC 25 PT	10	366660 0225	18,30
	SNMM 250924-HR3	●	○	○				SC 25 PT	5	366660 0325	39,30
	SNMM 250932-HR3	●	○	○				SC 25 PT	5	366660 0425	39,30

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 1.4 ap = 2.5 - 13.0

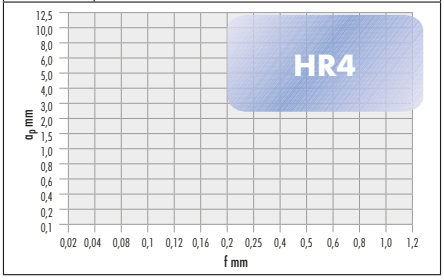


Chip breaker HR4 negative

F finishing -	M medium -	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190616-HR4	●	○	○				SC 25 PT	10	**366661** 0125	18,30
	SNMM 250924-HR4	●	○	○				SC 25 PT	5	366661 0225	39,30

3135

ISO	SC 25 PT
ISO P steel	Vc = 70 - 210
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 1.2 ap = 2.5 - 12.0



TCGT ISO indexable cutting inserts, ground

- **60° triangular, positive 7°, ground peripherally**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT uncoated**
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- for **stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium** Rm 440* Vc 60 - 120 m/min
- Minimum ap feed always 63% of the corner radius "r"
- Maximum feed is 40% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Especially for machining aluminium

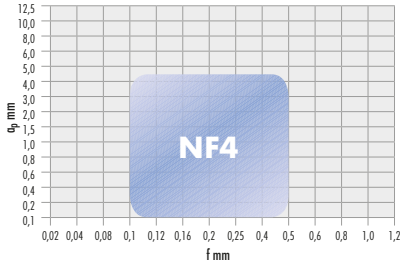
Chip breaker NF4

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○	TCGT 110204-NF4			○	●	○		SW 16 NT	10	**366662** 0116	8,10
					○	○	●	○		SP 16 NT	10	366662 0217	10,60
			TCGT 16T304-NF4			○	●	○		SW 16 NT	10	366662 0316	9,80
			TCGT 16T308-NF4			○	●	○		SW 16 NT	10	366662 0416	9,80



3135

ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S superalloys	Vc = 60 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.4 ap = 0.1 - 4.5	



TCMT ISO indexable cutting inserts

- **60° triangular, positive 7°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 40% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

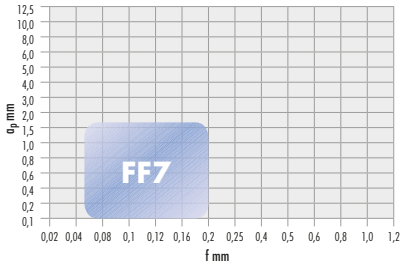
Chip breaker FF7, CERMET design

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	TCMT 110202-FF7	●	○	○				ST 10 UT	10	**366666** 0140	9,45
			TCMT 110204-FF7	●	○	○				ST 10 UT	10	366666 0240	5,80



3135

ISO	ST 10 UT
ISO P steel	Vc = 160 - 300
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65



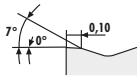
Continued on next page >>>

Chip breaker F2

F finishing	M medium	R roughing
●	○	-



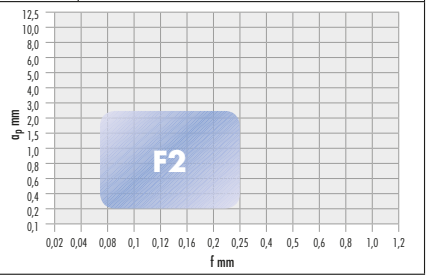
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 110204-F2	○	●					SP 25 MT	10	**366667** 0121	5,80

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.25 - 3.0

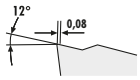


Chip breaker M1

F finishing	M medium	R roughing
-	●	○



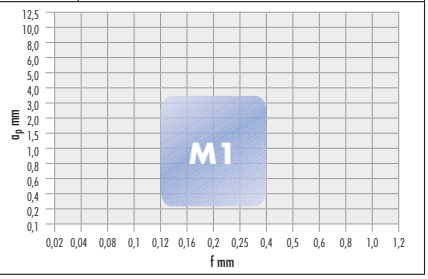
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 090204-M1	●	○	○				SC 25 PT	10	**366665** 0025	5,80
TCMT 110204-M1	●		○				SC 15 PT	10	366665 0115	5,80
	●	○	○				SC 25 PT	10	366665 0225	5,80
	●	○					SC 35 PT	10	366665 0325	5,80
TCMT 110208-M1	●	○	○				SC 25 PT	10	366665 0425	5,80
	●	○					SC 35 PT	10	366665 0535	5,80
TCMT 16T304-M1	●	○	○				SC 25 PT	10	366665 0625	7,35
	●	○					SC 35 PT	10	366665 0735	7,35
TCMT 16T308-M1	●	○	○				SC 25 PT	10	366665 0825	7,35
	●	○					SC 35 PT	10	366665 0935	7,35
TCMT 16T312-M1	●	○	○				SC 25 PT	10	366665 1025	7,35

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

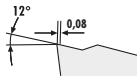


Chip breaker M2

F finishing	M medium	R roughing
-	●	○



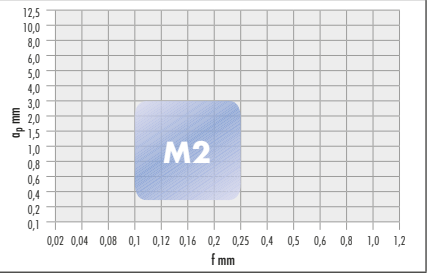
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 090204-M2	○	●					SP 25 MT	10	**366664** 0121	5,80
TCMT 110204-M2	○	●					SP 25 MT	10	366664 0122	5,80
	○	●					SP 35 MT	10	366664 0222	5,80
TCMT 110208-M2	○	●					SP 25 MT	10	366664 0321	5,80
	○	●					SP 35 MT	10	366664 0322	5,80
TCMT 16T304-M2	○	●					SP 25 MT	10	366664 0421	7,35
TCMT 16T308-M2	○	●					SP 25 MT	10	366664 0621	7,35
TCMT 16T312-M2	○	●					SP 25 MT	10	366664 0721	7,35

3135

ISO	SP 25 MT	SP 35 MT
ISO P steel	Vc = 60 - 250	Vc = 90 - 200
ISO M stainless steel	Vc = 40 - 250	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.0	

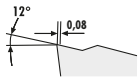


Chip breaker M3

F finishing	M medium	R roughing
-	●	○



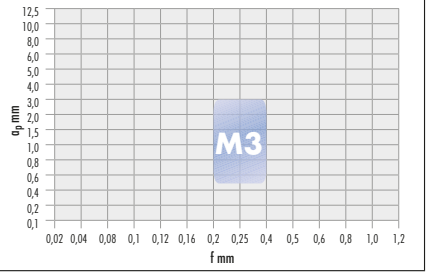
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 090204-M3	○		●				SC 20 KT	10	**366663** 0130	5,80
TCMT 110204-M3	○		●				SC 20 KT	10	366663 0230	5,80
TCMT 110208-M3	○		●				SC 20 KT	10	366663 0330	5,80
TCMT 16T304-M3	○		●				SC 20 KT	10	366663 0430	7,35
TCMT 16T308-M3	○		●				SC 20 KT	10	366663 0530	7,35

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 350
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.25 - 4.0



TNMA ISO indexable cutting inserts

- **60° triangular, negative 0°**
- Without chip breaker version
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

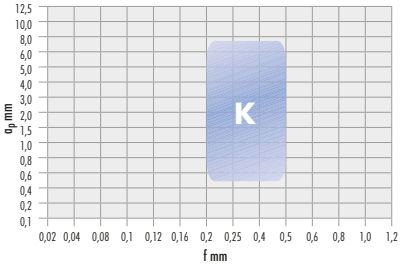
Chip breaker K

- **60° triangular, negative 0°**
- **Without chip breaker version**

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing			TNMA 160408-K	○		●				**SC 20 KT**	10	**366668** 0130	8,15

3135

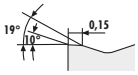
ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.0



TNMG ISO indexable cutting inserts

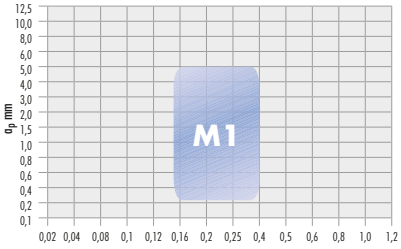
- **60° triangular, negative 0°**
- Bilateral chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 50% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker M1 negative

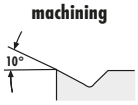
F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 			TNMG 160404-M1	●		○				**SC 15 PT**	10	**366670** 0115	8,15
				●	○	○				**SC 25 PT**	10	366670 0225	8,15
			TNMG 160408-M1	●		○				**SC 15 PT**	10	366670 0415	8,15
				●	○	○				**SC 25 PT**	10	366670 0525	8,15
				●	○					**SC 35 PT**	10	366670 0635	8,15
			TNMG 160412-M1	●		○				**SC 15 PT**	10	366670 0715	8,15
				●	○	○				**SC 25 PT**	10	366670 0825	8,15
			TNMG 220404-M1	●	○	○				**SC 25 PT**	10	366670 0925	11,20
			TNMG 220408-M1	●	○	○				**SC 25 PT**	10	366670 1025	11,20

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

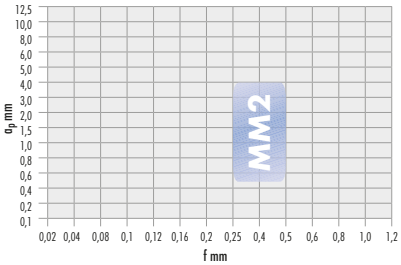


Chip breaker MM2 negative

F finishing -	M medium ●	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 			TNMG 160404-MM2	○	●					**SP 25 MT**	10	**366669** 0121	8,15
			TNMG 160408-MM2	○	●					**SP 25 MT**	10	366669 0221	8,15

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0



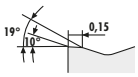
Continued on next page >>>

Chip breaker M3 negative

F finishing	M medium	R roughing
-	●	○



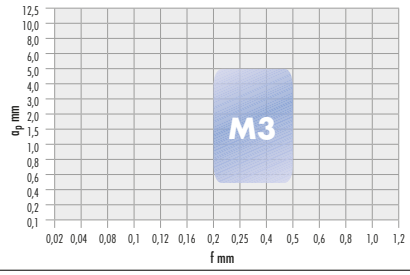
Roughing/medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 160408-M3	○		●				SC 20 KT	10 **366673** 0130	8,15
TNMG 160612-M3	○		●				SC 20 KT	10 366673 0230	8,15
TNMG 220408-M3	○		●				SC 20 KT	10 366673 0330	11,20

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 4.0

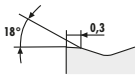


Chip breaker SR1 negative

F finishing	M medium	R roughing
-	○	●



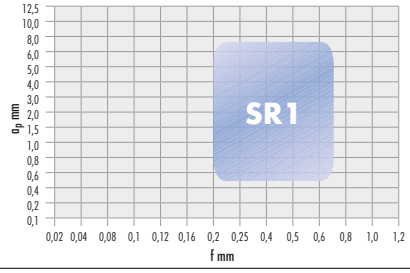
Roughing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 220408-SR1	●	○	○				SC 25 PT	10 **366676** 0125	11,20

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 130 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.5 - 5.0

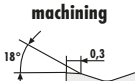


Chip breaker SR3 negative

F finishing	M medium	R roughing
-	○	●



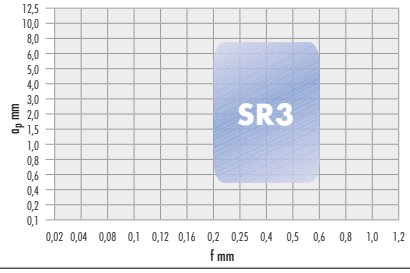
Roughing/medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 160408-SR3	○		●				SC 20 KT	10 **366671** 0130	8,15

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.5 - 6.0

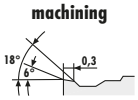


Chip breaker RM2 negative

F finishing	M medium	R roughing
-	○	●



Roughing/medium machining

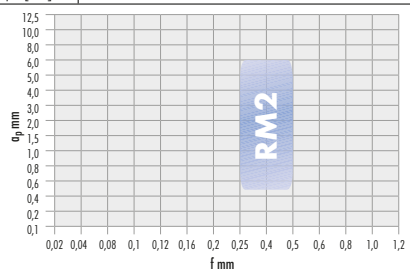


SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 160408-RM2	○	●					SP 25 MT	10 **366675** 0221	8,15
TNMG 160412-RM2	○	●					SP 25 MT	10 366675 0121	8,15

3135

Continued on next page >>>

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 6.0



Chip breaker SM5 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	TNMG 160408-SM5		○			●		**SP 10 ST**	10	**366672** 0132	8,15
					○			●		**SP 15 ST**	10	366672 0231	8,15

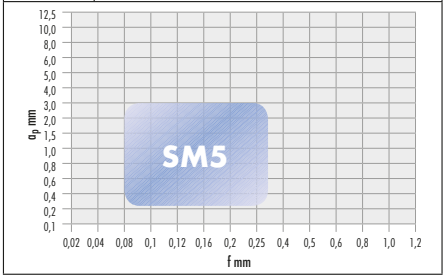


Finishing / medium machining



3135

ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.5 - 3.0	

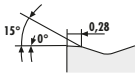


Chip breaker R1 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	TNMG 160408-R1	●	○	○				**SC 25 PT**	10	**366674** 0125	8,15
			TNMG 160412-R1	●	○	○				**SC 25 PT**	10	366674 0325	8,15

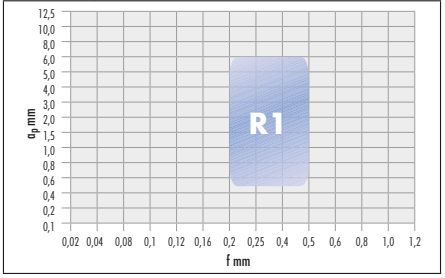


Roughing



3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0



VBMT ISO indexable cutting inserts

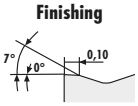
- **55° rhombic, positive 5°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 30% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker F1

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	VBMT 160404-F1	●		○				**SC 15 PT**	10	**366711** 0115	11,50
				●	○					**SC 25 PT**	10	366711 0125	11,50
				●	○					**SC 35 PT**	10	366711 0135	11,50
			VBMT 160408-F1	●		○				**SC 15 PT**	10	366711 0215	11,50
				●	○	○				**SC 25 PT**	10	366711 0225	11,50
				●	○					**SC 35 PT**	10	366711 0235	11,50

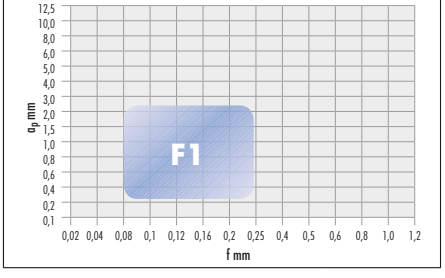


Finishing



3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5		



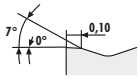
Continued on next page >>>

Chip breaker F2

F finishing	M medium	R roughing
●	○	-



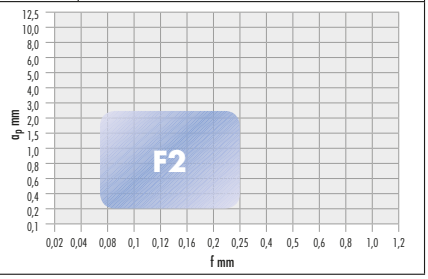
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-F2	○	●					SP 25 MT	10	**366714** 0121	11,50
VBMT 160408-F2	○	●					SP 25 MT	10	366714 0221	11,50

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

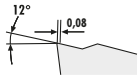


Chip breaker M1

F finishing	M medium	R roughing
-	●	-



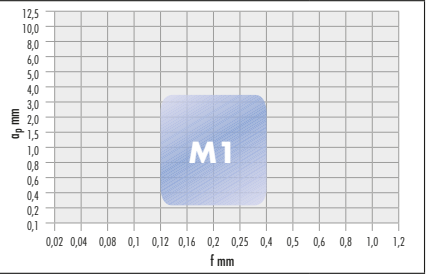
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-M1	●		○				SC 15 PT	10	**366712** 0115	11,50
	●	○	○				SC 25 PT	10	366712 0125	11,50
	●	○					SC 35 PT	10	366712 0135	11,50
VBMT 160408-M1	●		○				SC 15 PT	10	366712 0215	11,50
	●	○	○				SC 25 PT	10	366712 0225	11,50
	●	○					SC 35 PT	10	366712 0235	11,50

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5		

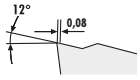


Chip breaker M2

F finishing	M medium	R roughing
○	●	-



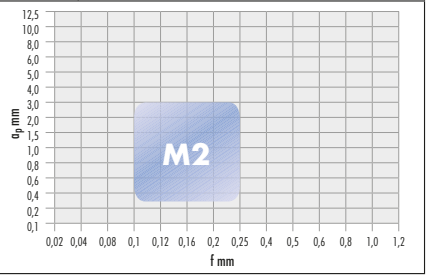
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-M2	○	●					SP 25 MT	10	**366713** 0121	11,50
VBMT 160408-M2	○	●					SP 25 MT	10	366713 0221	11,50

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5

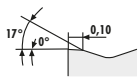


Chip breaker XM1 universal

F finishing	M medium	R roughing
-	●	○



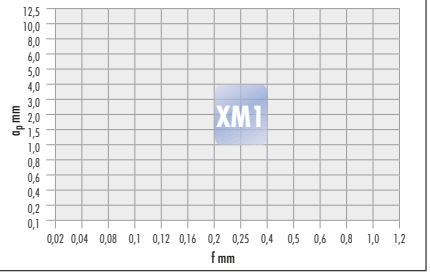
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-XM1	●		○				SC 15 PT	10	**366677** 0115	10,70
	●	○	○				SC 25 PT	10	366677 0125	10,70
VBMT 160408-XM1	●		○				SC 15 PT	10	366677 0215	10,70
	●	○	○				SC 25 PT	10	366677 0225	10,70

3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 1.0 - 4.0	

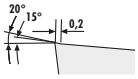


VCGT ISO indexable cutting inserts, ground

- **55° rhombic, positive 7°**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- for **stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium** Rm* 440 Vc 60 - 120 m/min
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 35% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

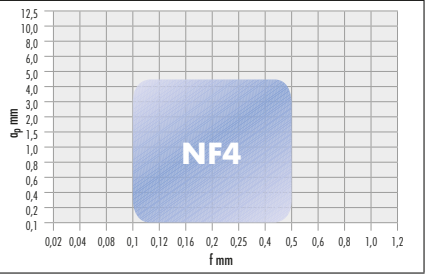
Especially for machining aluminium

Chip breaker NF4

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○											
 Universal application 			VCGT 110302-NF4			○	●	○		SW 16 NT	10	**366680** 0116	10,50
					○	○	●	○		SP 16 NT	10	366680 0317	12,35
			VCGT 110304-NF4		○	○	●	○		SP 16 NT	10	366680 0417	12,35
						○	●	○		SW 16 NT	10	366680 0216	10,50
			VCGT 130302-NF4			○	●	○		SW 16 NT	10	366680 0616	10,80
			VCGT 130304-NF4			○	●	○		SW 16 NT	10	366680 0516	10,80
			VCGT 160404-NF4			○	●	○		SW 16 NT	10	366680 0717	12,75
					○	○	●	○		SP 16 NT	10	366680 0917	14,40
			VCGT 160408-NF4			○	●	○		SW 16 NT	10	366680 1017	12,75
					○	○	●	○		SP 16 NT	10	366680 1217	14,40
			VCGT 160412-NF4		○	○	●	○		SP 16 NT	10	366680 1317	14,40
			VCGT 220530-NF4		○	○	●	○		SP 16 NT	10	366680 1417	17,30

3135

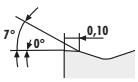
ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	



VCGT - VCMT ISO indexable cutting inserts

- **35° rhombic, positive 7°**
- One-sided chip breaker design
- For **FF7** corner radius r = 00 and r = 01 for extreme finishing
- Minimum ap always 63 % of the corner radius "r"
- Maximum ap is 30 % of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

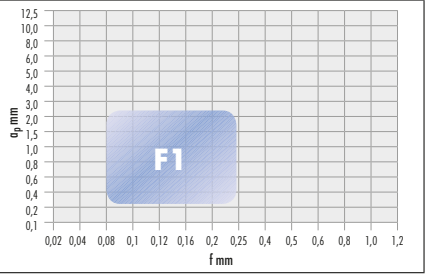
Chip breaker F1

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-											
 Finishing 			VCMT 110302-F1	●		○				SC 15 PT	10	**366679** 0115	9,40
				●	○	○				SC 25 PT	10	366679 0125	9,40
			VCMT 110304-F1	●		○				SC 15 PT	10	366679 0215	9,40
				●	○	○				SC 25 PT	10	366679 0225	9,40
			VCMT 160408-F1	●	○	○				SC 25 PT	10	366679 0425	12,60
			VCMT 160404-F1	●		○				SC 15 PT	10	366679 0315	11,75
				●	○	○				SC 25 PT	10	366679 0325	11,75

3135

Continued on next page >>>

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5	f = 0.07 - 0.25 ap = 0.2 - 2.5

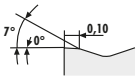


Chip breaker F2

F finishing	M medium	R roughing
●	○	-



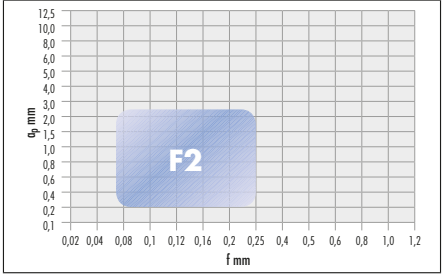
Finishing



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110302-F2	○	●					SP 25 MT	10 **366681** 0121	9,40
VCMT 110304-F2	○	●					SP 25 MT	10 366681 0221	9,40
VCMT 160604-F2	○	●					SP 25 MT	10 366681 0321	11,75

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

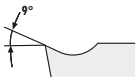


Chip breaker FF7, stainless steel design

F finishing	M medium	R roughing
●	-	-



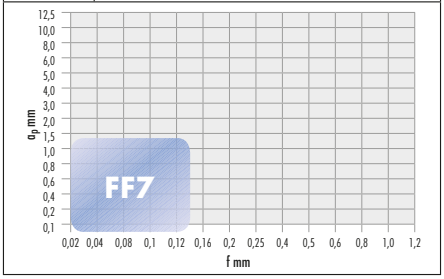
Micro finishing machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCGT 110300-FF7		●	○	○	○		SP 20 MT	10 **366678** 0120	12,35
VCGT 110301-FF7		●	○	○	○		SP 20 MT	10 366678 0220	12,35
VCGT 160400-FF7		●	○	○	○		SP 20 MT	10 366678 0320	15,40
VCGT 160401-FF7		●	○	○	○		SP 20 MT	10 366678 0420	15,40

3135

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 15 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35

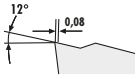


Chip breaker M1

F finishing	M medium	R roughing
-	●	-



Medium machining

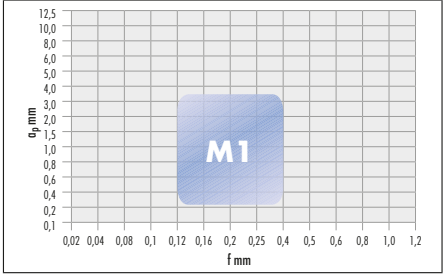


SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110304-M1	●	○	○				SC 25 PT	10 **366682** 0125	9,40
	●	○					SC 35 PT	10 366682 0235	9,40
VCMT 110308-M1	●	○	○				SC 25 PT	10 366682 0325	9,40
	●	○					SC 35 PT	10 366682 0435	9,40
VCMT 160404-M1	●	○	○				SC 25 PT	10 366682 0525	11,75
	●	○					SC 35 PT	10 366682 0635	11,75
VCMT 160408-M1	●	○	○				SC 25 PT	10 366682 0725	11,75
	●	○					SC 35 PT	10 366682 0835	11,75

3135

Continued on next page >>>

ISO	SC 25 PT	SC 35 PT
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	

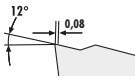


Chip breaker M2

F finishing	M medium	R roughing
-	●	-



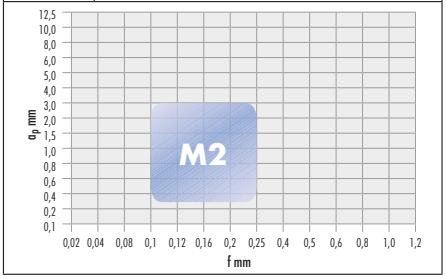
Medium machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCMT 110304-M2	○	●					SP 25 MT	10	**366683** 0121	9,40
	○	●					SP 35 MT	10	366683 0222	9,40
VCMT 110308-M2	○	●					SP 25 MT	10	366683 0321	9,40
	○	●					SP 35 MT	10	366683 0422	9,40
VCMT 160404-M2	○	●					SP 25 MT	10	366683 0521	11,75
VCMT 160408-M2	○	●					SP 25 MT	10	366683 0621	11,75

3135

ISO	SP 25 MT	SP 35 MT
ISO P steel	Vc = 60 - 250	Vc = 90 - 200
ISO M stainless steel	Vc = 40 - 250	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	



VNGP ISO indexable cutting inserts

- **35° rhombic, negative 0°**
- Bilateral chip breaker design
- **VNGP** are suitable for **ISO tool holder** for **VNMG....**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 30% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker XF2 negative

F finishing	M medium	R roughing
●	-	-



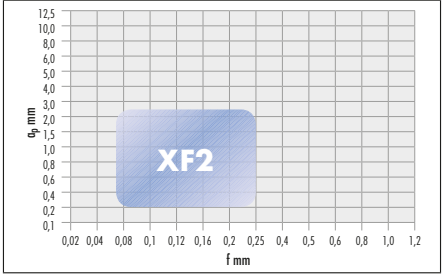
Micro finishing machining



SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VNGP 160402-XF2		●	○	○	○		SP 20 MT	10	**366684** 0120	19,30
VNGP 160404-XF2		●	○	○	○		SP 20 MT	10	366684 0220	19,30

3135

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5





… for special measurement tasks

ATORN®
High quality for great performance

VNMG ISO indexable cutting inserts

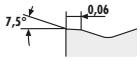
- **35° rhombic, negative 0°**
- Bilateral chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 30% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker F1 negative

F finishing ●	M medium ○	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			VNMG 160404-F1	●		○				**SC 15 PT**	10	**366686** 0115	12,60

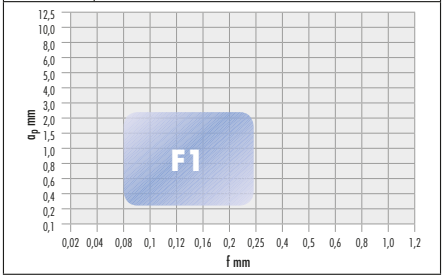


Finishing



3135

ISO	SC 15 PT
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

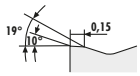


Chip breaker M1 negative

F finishing ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			VNMG 160404-M1	●		○				**SC 15 PT**	10	**366685** 0115	12,60
			VNMG 160408-M1	●		○				**SC 15 PT**	10	366685 0415	12,60
			VNMG 160404-M1	●	○	○				**SC 25 PT**	10	366685 0225	12,60
			VNMG 160408-M1	●	○	○				**SC 25 PT**	10	366685 0525	12,60

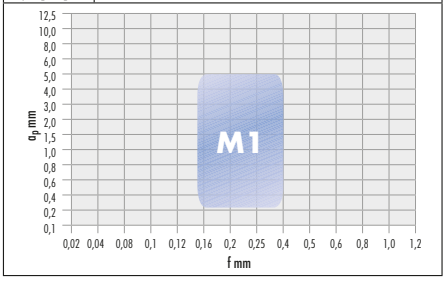


Medium machining



3135

ISO	SC 15 PT	SC 25 PT
ISO P steel	Vc = 180 - 400	Vc = 180 - 400
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 130 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	



Chip breaker MM2 negative

F finishing ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			VNMG 160408-MM2	○	●					**SP 25 MT**	10	**366688** 0121	12,60



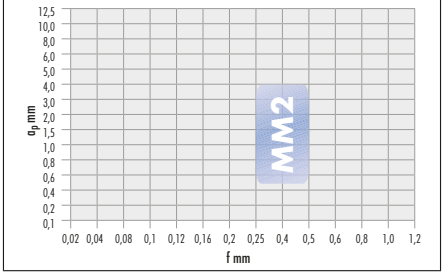
Medium machining



3135

Continued on next page >>>

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.4 ap = 0.25 - 4.0



Chip breaker SM5 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160408-SM5		○			●		SP 10 ST	10	**366687** 0132	12,60
					○			●		SP 15 ST	10	366687 0231	12,60

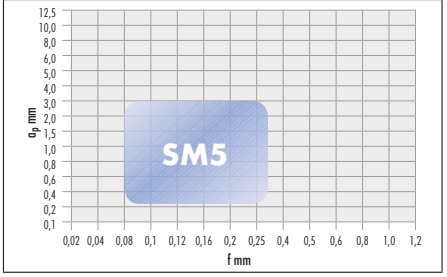


Medium machining



3135

ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 60 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.4 - 3.0	



WCGT - WCMT ISO indexable cutting inserts

- **80° trigonometric, positive 7°**
- One-sided chip breaker design
- **WCGT** ground peripherally
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker FF7, CERMET design

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	WCGT 040204-FF7	●	○	○				ST 10 UT	10	**366689** 0140	11,20

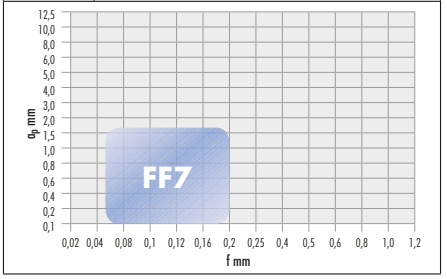


Micro finishing machining



3135

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

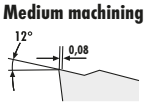


Chip breaker M1

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	WCMT 040204-M1	●	○	○				SC 25 PT	10	**366690** 0125	7,–
			WCMT 040208-M1	●	○	○				SC 25 PT	10	366690 0225	7,–
			WCMT 06T304-M1	●	○	○				SC 25 PT	10	366690 0325	8,40
			WCMT 06T308-M1	●	○	○				SC 25 PT	10	366690 0425	8,40
			WCMT 080404-M1	●	○	○				SC 25 PT	10	366690 0525	9,85
			WCMT 080408-M1	●	○	○				SC 25 PT	10	366690 0625	9,85
			WCMT 080412-M1	●	○	○				SC 25 PT	10	366690 0725	9,85



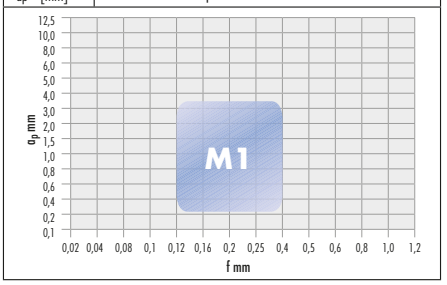
Medium machining



3135

Continued on next page >>>

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

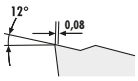


Chip breaker M2

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	WCMT 040204-M2	○	●					SP 25 MT	10	**366691** 0121	7,–
			WCMT 040208-M2	○	●					SP 25 MT	10	366691 0221	7,–
			WCMT 06T304-M2	○	●					SP 25 MT	10	366691 0321	8,40
			WCMT 06T308-M2	○	●					SP 25 MT	10	366691 0421	8,40
			WCMT 080404-M2	○	●					SP 25 MT	10	366691 0521	9,85
			WCMT 080408-M2	○	●					SP 25 MT	10	366691 0621	9,85
			WCMT 080412-M2	○	●					SP 25 MT	10	366691 0721	9,85

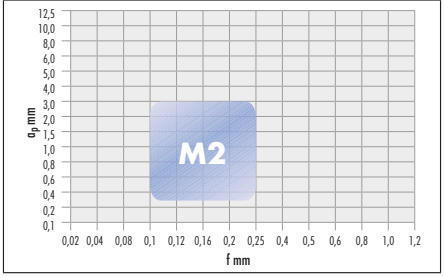


Medium machining



3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5



WNMA - WNGP ISO indexable cutting inserts

- **80° trigonometric, negative 0°**
- Bilateral chip breaker design **WNGP**
- Without chip breaker design **WNMA**
- **WNGP** and **WNMA** are suitable for **ISO tool holder** for **WNMG....**
- Chip breaker **XF2** especially for **stainless steel**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum feed from is 63% of the cutting edge length for **WNMA**
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker XF2 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	WNGP 080404-XF2		●	○	○	○		SP 20 MT	10	**366692** 0120	12,35
			WNGP 080408-XF2		●	○	○	○		SP 20 MT	10	366692 0220	12,35

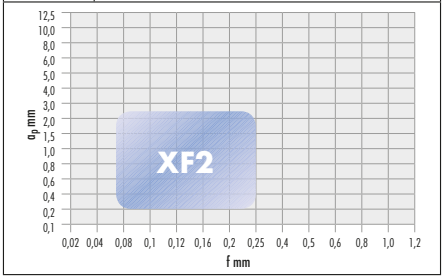


Micro finishing machining



3135

ISO	SP 20 MT
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5



Chip breaker K negative

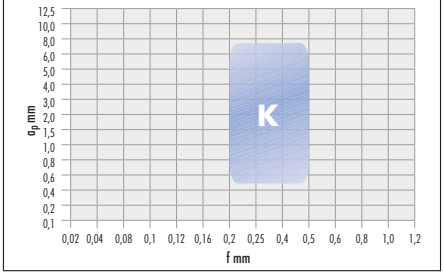
F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	WNMA 080408-K	○		●				SC 20 KT	10	**366693** 0130	8,95



Roughing/medium machining

3135

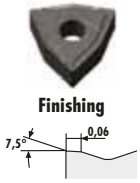
ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.25 - 5.5



WNMG ISO indexable cutting inserts

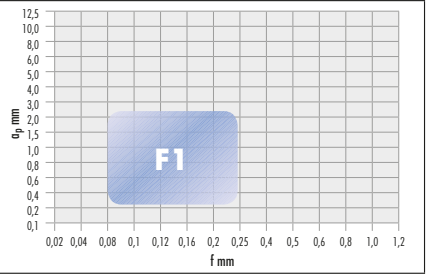
- **80° trigonometric, negative 0°**
- Bilateral chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Chip breaker F1 negative

F finishing ●	M medium ○	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing			WNMG 060404-F1	●		○				SC 15 PT	10	**366696** 0115	7,35
			WNMG 080404-F1	●		○				SC 15 PT	10	366696 0215	8,95

3135

ISO	SC 15 PT
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.25 - 2.5

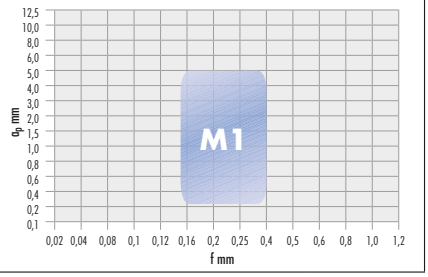


Chip breaker M1 negative

F finishing -	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining			WNMG 060404-M1	●		○				SC 15 PT	10	**366695** 0115	7,35
				●	○	○				SC 25 PT	10	366695 0225	7,35
			WNMG 060408-M1	●		○				SC 15 PT	10	366695 0415	7,35
				●	○	○				SC 25 PT	10	366695 0525	7,35
			WNMG 080404-M1	●		○				SC 15 PT	10	366695 0715	8,95
				●	○	○				SC 25 PT	10	366695 0825	8,95
			WNMG 080408-M1	●		○				SC 15 PT	10	366695 1015	8,95
				●	○	○				SC 25 PT	10	366695 1125	8,95
				●	○					SC 35 PT	10	366695 1235	8,95
			WNMG 080412-M1	●		○				SC 15 PT	10	366695 1315	8,95
				●	○	○				SC 25 PT	10	366695 1425	8,95
				●	○					SC 35 PT	10	366695 1535	8,95

3135

ISO	SC 15 PT	SC 25 PT	SC 35 PT
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		



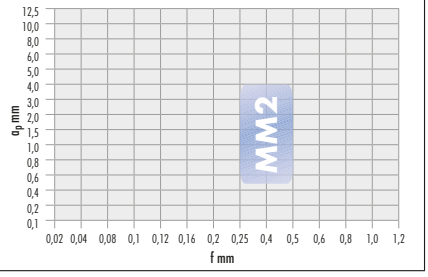
Chip breaker MM2 negative

F finishing -	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining			WNMG 060404-MM2	○	●					SP 25 MT	10	**366694** 0121	7,35
			WNMG 060408-MM2	○	●					SP 25 MT	10	366694 0221	7,35
			WNMG 080404-MM2	○	●					SP 25 MT	10	366694 0321	8,95
			WNMG 080408-MM2	○	●					SP 25 MT	10	366694 0421	8,95
			WNMG 080412-MM2	○	●					SP 25 MT	10	366694 0521	8,95

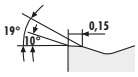
3135

Continued on next page >>>

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

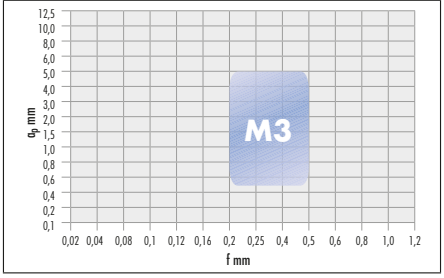


Chip breaker M3 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	WNMG 080408-M1		○		●					SC 20 KT	10	**366701** 0130	8,95
	WNMG 080412-M1		○		●					SC 20 KT	10	366701 0230	8,95

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 5.0

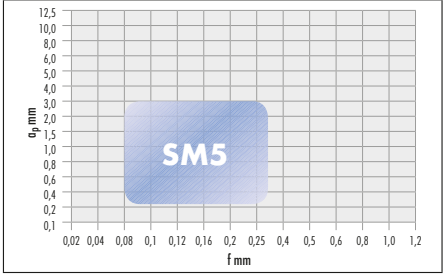


Chip breaker SM5 negative

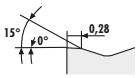
F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	WNMG 080408-SM5			○				●		SP 10 ST	10	**366698** 0132	8,95
				○				●		SP 15 ST	10	366698 0231	8,95

3135

ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 60 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.3 ap = 0.25 - 3.0	



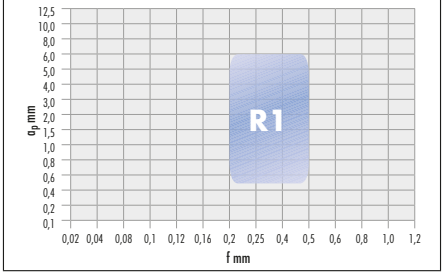
Chip breaker R1 negative

F finishing	M medium	R roughing	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●											
 Roughing/medium machining 	WNMG 080408-R1		●		○					SC 25 PT	10	**366702** 0125	8,95
	WNMG 080412-R1		●		○					SC 25 PT	10	366702 0225	8,95

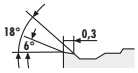
3135

Continued on next page >>>

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

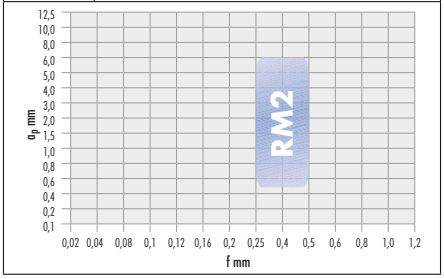


Chip breaker RM2 negative

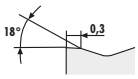
F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	WNMG 080408-RM2			○	●					SP 25 MT	10	**366699** 0121	8,95
	WNMG 080412-RM2			○	●					SP 25 MT	10	366699 0321	8,95

3135

ISO	SP 25 MT
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

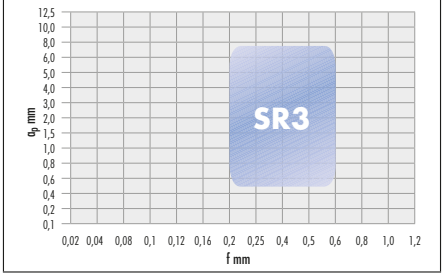


Chip breaker SR3 negative

F finishing -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	WNMG080408-SR3			○		●				SC 20 KT	10	**366697** 0130	8,95

3135

ISO	SC 20 KT
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 5.0



WNMX ISO indexable cutting inserts

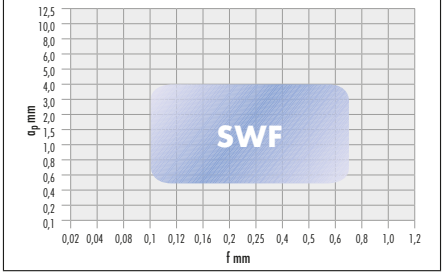
- **80° trigonometric, negative 0°**
- One-sided chip breaker design
- Minimum ap feed always 63% of the corner radius "r"
- Special finishing geometry with smoothing effect when used at an angle of 93°
- When using the **SWF**, profile distortions may occur if long tapers and large balls are turned
- Double feed achievable at the same Ra value as with conventional geometries
- Cutting data recommendations apply for a corner radius r = 1.2 mm

Chip breaker SWF negative

F finishing ●	M medium ○	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing	WNMX 080404-SWF			●		○				SC 15 PT	10	**366707** 0115	9,85
	WNMX 080408-SWF			●		○				SC 15 PT	10	366707 0215	9,85

3135

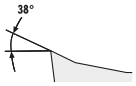
ISO	SC 15 PT
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.8 ap = 0.5 - 5.0



AluLine ISO indexable cutting inserts

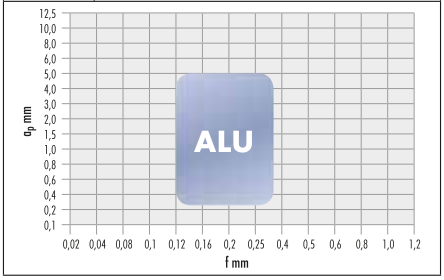
- Excellent chip control and surfaces even with low silicon content
- Excellent toughness and wear characteristics
- **Twice as many cutting edges** per indexable insert compared to positive indexable inserts
- Can be used up to a cutting depth of approx. 5 mm
- Can be used in standard ISO tool holders
- Unit prices when purchased in packs = 10 units per size and quality

CNGG 80° rhombic, negative

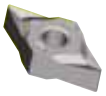
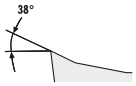
F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
			CNGG 120404-ALU				●			LT 05	10	**340001** 0101	10,60
Finishing / medium machining			CNGG 120408-ALU				●			LT 05	10	340001 0201	10,60
													

3107

ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.25 - 5.0

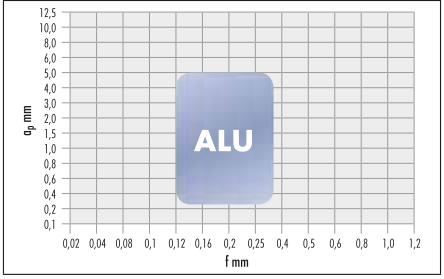


DNGG 55° rhombic, negative

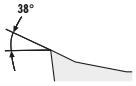
F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
			DNGG 110404-ALU				●			LT 05	10	**340002** 0101	10,60
Finishing / medium machining			DNGG 110408-ALU				●			LT 05	10	340002 0201	10,60
													

3107

ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.30 ap = 0.25 - 5.0

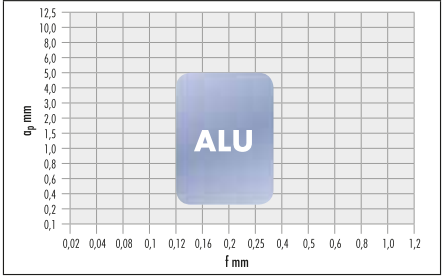


TNGG 60° triangular, negative

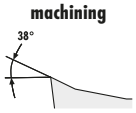
F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
			TNGG 160404-ALU				●			LT 05	10	**340003** 0101	11,–
Finishing / medium machining													
													

3107

ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.30 ap = 0.25 - 5.0

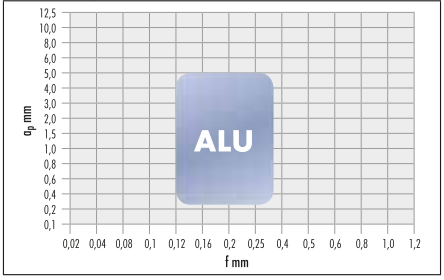


VNGG 35° rhombic, negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
			VNGG 160404-ALU				●			LT 05	10	**340004** 0101	12,10
Finishing / medium machining			VNGG 160408-ALU				●			LT 05	10	340004 0201	12,10
													

3107

ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.30 ap = 0.25 - 5.0

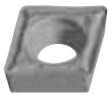


CCMT ISO indexable cutting inserts

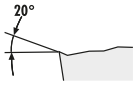
- 80° rhombic, positive 7°

Chip breaker type FP

F finishing	M medium	R roughing
●	-	-



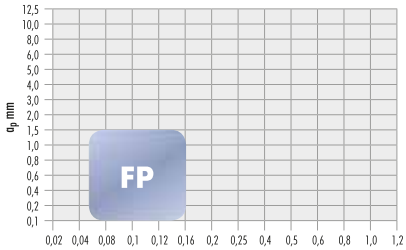
Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060202-FP	●		○				HC 7610	10	**311101** 0111	6,35
	●		○				HC 7620	10	311101 0112	6,35
CCMT 060204-FP	●		○				HC 7610	10	311101 0211	6,35
	●		○				HC 7620	10	311101 0212	6,35
CCMT 09T302-FP	●		○				HC 7610	10	311101 1111	7,95
	●		○				HC 7620	10	311101 1112	7,95
CCMT 09T304-FP	●		○				HC 7610	10	311101 1211	7,95
	●		○				HC 7620	10	311101 1212	7,95
CCMT 09T308-FP	●		○				HC 7610	10	311101 1311	7,95
	●		○				HC 7620	10	311101 1312	7,95
CCMT 120404-FP	●		○				HC 7610	10	311101 2611	11,25
	●		○				HC 7620	10	311101 2612	11,25
CCMT 120408-FP	●		○				HC 7610	10	311101 2711	11,25
	●		○				HC 7620	10	311101 2712	11,25

3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 200 - 380	Vc = 140 - 320
ISO K cast iron	Vc = 180 - 280	Vc = 160 - 260
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5	

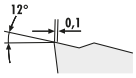


Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



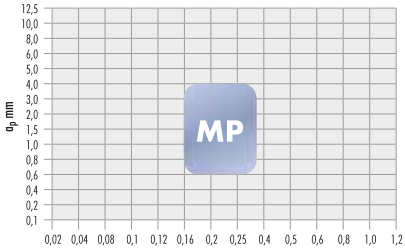
Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-MP	●		○				HC 7610	10	**311103** 0211	6,35
	●		○				HC 7620	10	311103 0212	6,35
	●						HC 7630	10	311103 0213	6,35
CCMT 09T304-MP	●		○				HC 7610	10	311103 1211	7,95
	●		○				HC 7620	10	311103 1212	7,95
	●						HC 7630	10	311103 1213	7,95
CCMT 09T308-MP	●		○				HC 7610	10	311103 1311	7,95
	●		○				HC 7620	10	311103 1312	7,95
	●						HC 7630	10	311103 1313	7,95
CCMT 120404-MP	●		○				HC 7610	10	311103 2611	11,25
	●		○				HC 7620	10	311103 2612	11,25
	●						HC 7630	10	311103 2613	11,25
CCMT 120408-MP	●		○				HC 7610	10	311103 2711	11,25
	●		○				HC 7620	10	311103 2712	11,25
	●						HC 7630	10	311103 2713	11,25

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.35 ap = 0.6 - 4.0		

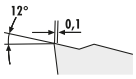


Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



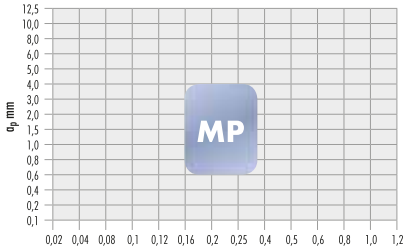
Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-MP		●			○		HC 7520	10	**310103** 0225	6,45
		●			○		HC 7530	10	310103 0226	6,45
CCMT 09T304-MP		●			○		HC 7520	10	310103 1225	7,65
		●			○		HC 7530	10	310103 1226	7,65
CCMT 09T308-MP		●			○		HC 7520	10	310103 1325	7,65
		●			○		HC 7530	10	310103 1326	7,65

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.35 ap = 0.6 - 4.0	



CNMG ISO indexable cutting inserts

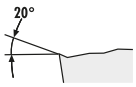
- 80° rhombic, negative 0°

Chip breaker type FP

F finishing	M medium	R roughing
●	-	-



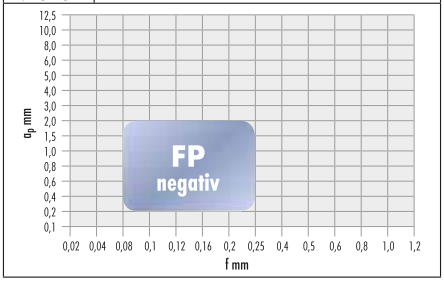
Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-FP	●		○				**HC 7620**	10	**311151** 2612	9,65
CNMG 120408-FP	●		○				**HC 7620**	10	311151 2712	9,65

3108

ISO	HC 7620
ISO P steel	Vc = 150 - 350
ISO K cast iron	Vc = 170 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.2 - 2.0



Chip breaker type FM

F finishing	M medium	R roughing
●	-	-



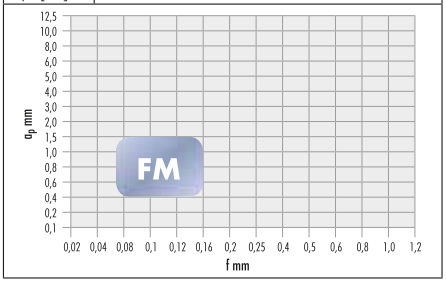
Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-FM	○	●					**HC 7510**	10	**310153** 2624	9,65
		●			○		**HC 7520**	10	310153 2625	9,65
CNMG 120408-FM	○	●					**HC 7510**	10	310153 2724	9,65
		●			○		**HC 7520**	10	310153 2725	9,65

3108

ISO	HC 7510	HC 7520
ISO P steel	Vc = 140 - 320	
ISO M stainless steel	Vc = 175 - 270	Vc = 170 - 260
ISO S superalloys		Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.16 ap = 0.4 - 1.5	

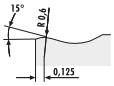


Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining

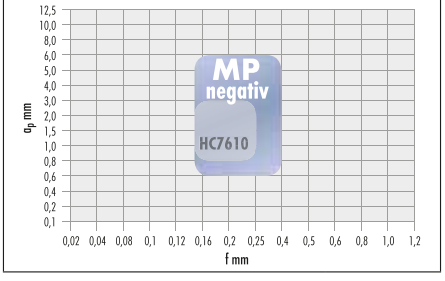


ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-MP	●		○				**HC 7620**	10	**311155** 2612	9,65
	●						**HC 7630**	10	311155 2613	9,65
CNMG 120408-MP	●		○				**HC 7610**	10	311155 2711	9,65
	●		○				**HC 7620**	10	311155 2712	9,65
	●						**HC 7630**	10	311155 2713	9,65
CNMG 120412-MP	●		○				**HC 7610**	10	311155 2811	9,65
	●		○				**HC 7620**	10	311155 2812	9,65
	●						**HC 7630**	10	311155 2813	9,65
CNMG 160608-MP	●		○				**HC 7620**	10	311155 4012	15,80
CNMG 160612-MP	●		○				**HC 7620**	10	311155 4112	15,80

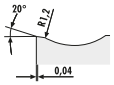
3108

Continued on next page >>>

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 130 - 290	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 150 - 260	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	f = 0.18 - 0.4 ap = 0.6 - 6.0	

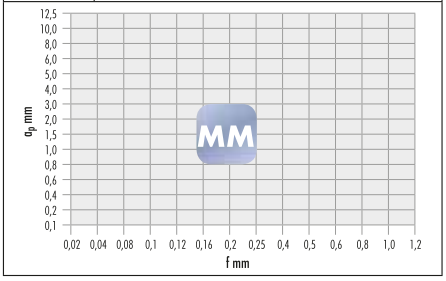


Chip breaker type MM

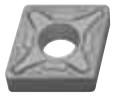
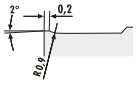
F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CNMG 120404-MM			○				HC 7520	10	**310157** 2625	9,65
				●				○		HC 7530	10	310157 2626	9,65
	CNMG 120408-MM			●				○		HC 7520	10	310157 2725	9,65
				●				○		HC 7530	10	310157 2726	9,65
	CNMG 120412-MM			●				○		HC 7520	10	310157 2825	9,65
				●				○		HC 7530	10	310157 2826	9,65

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	

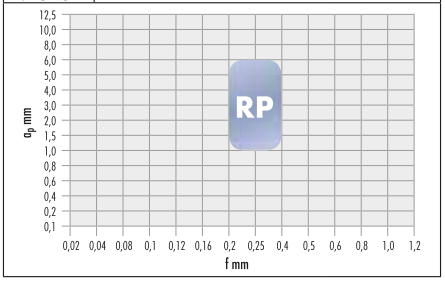


Chip breaker type RP

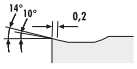
F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-RP			●		○				HC 7610	10	**311159** 2711	9,65
				●		○				HC 7620	10	311159 2712	9,65
				●						HC 7630	10	311159 2713	9,65
	CNMG 120412-RP			●		○				HC 7610	10	311159 2811	9,65
				●		○				HC 7620	10	311159 2812	9,65
				●						HC 7630	10	311159 2813	9,65

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 130 - 290	Vc = 80 - 230	Vc = 60 - 200
ISO K cast iron	Vc = 140 - 240	Vc = 100 - 210	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.20 - 0.40 ap = 1.0 - 6.0		

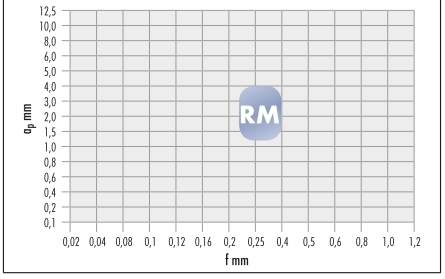


Chip breaker type RM (HC75..)

F finishing -	M medium -	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-RM			○				HC 7530	10	**310161** 2726	9,65
	CNMG 120412-RM			○				HC 7530	10	310161 2826	9,65

3108

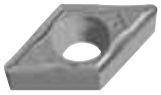
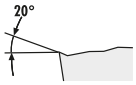
ISO	HC 7530
ISO M stainless steel	Vc = 90 - 160
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.22 - 0.40 ap = 1.2 - 4.0



DCMT ISO indexable cutting inserts

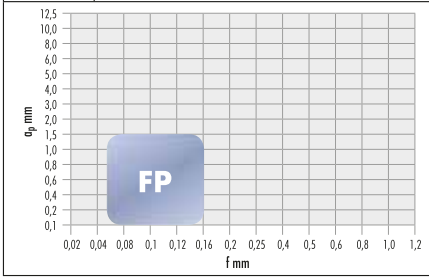
- **55° rhombic, positive 7°**

Chip breaker type FP

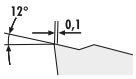
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing 	DCMT 070202-FP		●		○				HC 7610	10	**311201** 0511	6,35
			●		○				HC 7620	10	311201 0512	6,35
	DCMT 070204-FP		●		○				HC 7610	10	311201 0611	6,35
			●		○				HC 7620	10	311201 0612	6,35
	DCMT 11T302-FP		●		○				HC 7610	10	311201 1911	9,–
			●		○				HC 7620	10	311201 1912	9,–
	DCMT 11T304-FP		●		○				HC 7610	10	311201 2011	9,–
			●		○				HC 7620	10	311201 2012	9,–
	DCMT 11T308-FP		●		○				HC 7620	10	311201 2112	9,–

3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 200 - 380	Vc = 140 - 320
ISO K cast iron	Vc = 180 - 280	Vc = 160 - 260
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5	

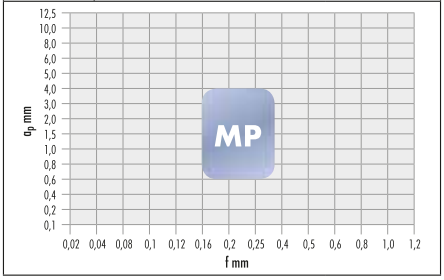


Chip breaker type MP

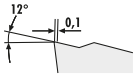
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	DCMT 070204-MP		●		○				HC 7610	10	**311203** 0611	6,35
			●		○				HC 7620	10	311203 0612	6,35
			●						HC 7630	10	311203 0613	6,35
	DCMT 070208-MP		●		○				HC 7610	10	311203 0711	6,35
			●		○				HC 7620	10	311203 0712	6,35
			●						HC 7630	10	311203 0713	6,35
	DCMT 11T304-MP		●		○				HC 7620	10	311203 2012	9,–
			●						HC 7630	10	311203 2013	9,–
	DCMT 11T308-MP		●		○				HC 7620	10	311203 2112	9,–
			●						HC 7630	10	311203 2113	9,–

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.30 ap = 0.6 - 4.0		

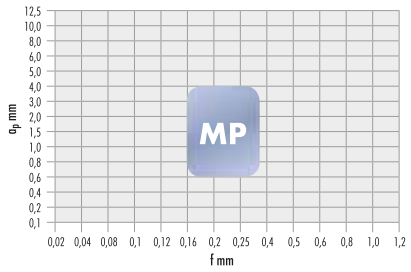


Chip breaker type MP, stainless steel

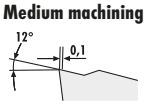
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	DCMT 070204-MP			●	○			HC 7530	10	**310203** 0626	6,45
	DCMT 11T304-MP			●	○			HC 7530	10	310203 2026	9,–
	DCMT 11T308-MP			●	○			HC 7530	10	310203 2126	9,–

3108

ISO	HC 7530
ISO M stainless steel	Vc = 90 - 160
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.30 ap = 0.6 - 4.0

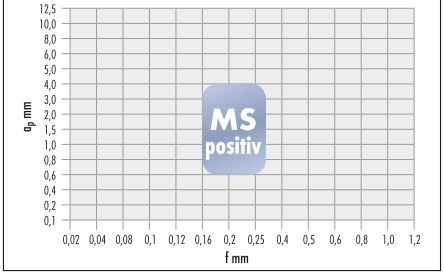


Chip breaker type MS

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	DCMT 070208-MS			●	○			HC 7220	10	**311203** 0714	6,75
	DCMT 11T308-MS			●	○			HC 7220	10	311203 2114	9,45

3108

ISO	HC 7220
ISO M stainless steel	Vc = 120 - 190
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.3 ap = 0.6 - 4.0



DNMG ISO indexable cutting inserts

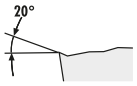
- 55° rhombic, negative 0°

Chip breaker type FP

F finishing	M medium	R roughing
●	-	-



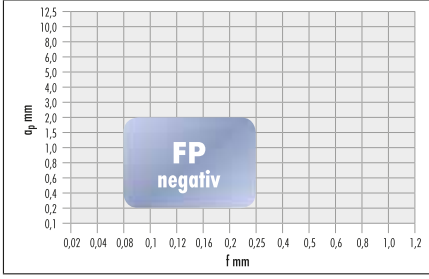
Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNMG 110404-FP	●		○				HC 7620	10	**311251** 2312	10,85
DNMG 110408-FP	●		○				HC 7610	10	311251 2411	10,85
	●		○				HC 7620	10	311251 2412	10,85
DNMG 150604-FP	●		○				HC 7610	10	311251 3011	14,20
	●		○				HC 7620	10	311251 3012	14,20
DNMG 150608-FP	●		○				HC 7620	10	311251 3112	14,20

3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 150 - 350	Vc = 170 - 290
ISO K cast iron	Vc = 140 - 340	Vc = 180 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.5	

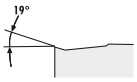


Chip breaker type FM (HC75..)

F finishing	M medium	R roughing
●	-	-



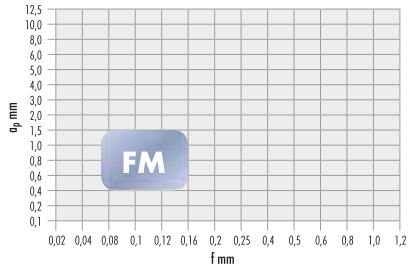
Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNMG 110404-FM	○	●			○		HC 7510	10	**310253** 2324	10,30
		●			○		HC 7520	10	310253 2325	10,30

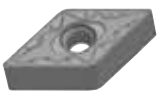
3108

ISO	HC 7510	HC 7520
ISO P steel	Vc = 140 - 320	
ISO M stainless steel	Vc = 175 - 270	Vc = 170 - 260
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.12 ap = 0.2 - 1.0	

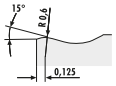


Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



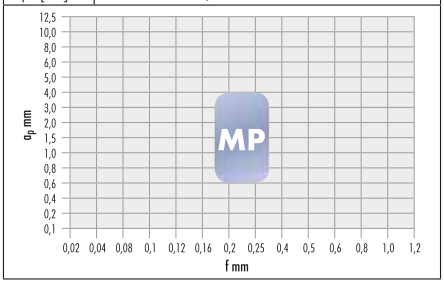
Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DNMG 110404-MP	●		○				HC 7620	10	**311255** 2312	10,85
	●						HC 7630	10	311255 2313	10,85
DNMG 110408-MP	●		○				HC 7610	10	311255 2411	10,85
	●		○				HC 7620	10	311255 2412	10,85
	●						HC 7630	10	311255 2413	10,85
DNMG 150604-MP	●		○				HC 7610	10	311255 3011	13,40
	●		○				HC 7620	10	311255 3012	13,40
	●						HC 7630	10	311255 3013	13,40
DNMG 150608-MP	●		○				HC 7610	10	311255 3111	13,40
	●		○				HC 7620	10	311255 3112	13,40
	●						HC 7630	10	311255 3113	13,40

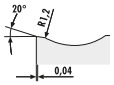
3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 140 - 340	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 180 - 290	Vc = 150 - 260	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 4.0		



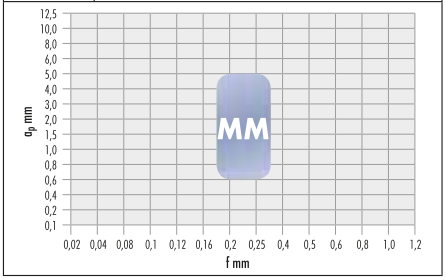
Continued on next page >>>

Chip breaker type MM (HC75..)

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DNMG 110404-MM			○			**HC 7530**	10	**310257** 2326	10,30
	DNMG 110408-MM			○			**HC 7520**	10	310257 2425	10,30
				○			**HC 7530**	10	310257 2426	10,30
	DNMG 150604-MM			○			**HC 7520**	10	310257 3025	13,40
				○			**HC 7530**	10	310257 3026	13,40
	DNMG 150608-MM			○			**HC 7520**	10	310257 3125	13,40

3108

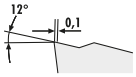
ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 5.0	



SCMT ISO indexable cutting inserts

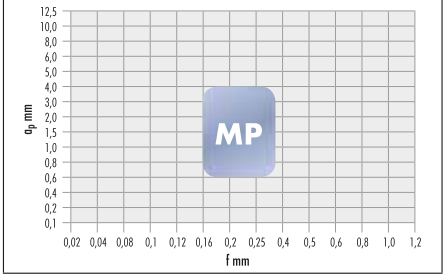
- **90° square positive 7°**

Chip breaker type MP

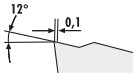
F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 09T304-MP	●		○						**HC 7620**	10	**311401** 1212	7,95
		●		○						**HC 7630**	10	311401 1213	7,95
	SCMT 09T308-MP	●		○						**HC 7620**	10	311401 1312	7,95
		●		○						**HC 7630**	10	311401 1313	7,95
	SCMT 120404-MP	●		○						**HC 7620**	10	311401 2612	11,25
	SCMT 120408-MP	●		○						**HC 7620**	10	311401 2712	11,25

3108

ISO	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.1 - 3.0	

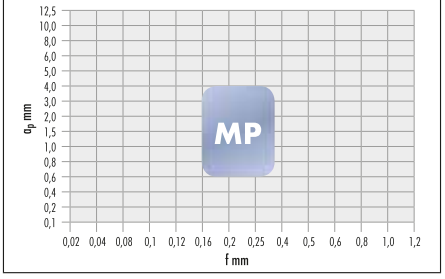


Chip breaker type MP, stainless steel

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 09T308-MP		●		○					**HC 7520**	10	**311401** 1322	8,25
	SCMT 120408-MP		●		○					**HC 7520**	10	311401 2722	11,70

3108

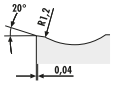
ISO	HC 7520
ISO M stainless steel	Vc = 80 - 220
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.32 ap = 0.5 - 2.5



SNMG ISO indexable cutting inserts

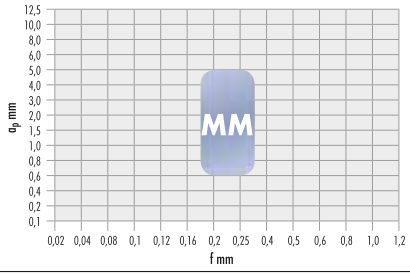
- **90° square negative 0°**

Chip breaker type MM

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SNMG 120408-MM		●		○			HC 7520	10	**310451** 2725	9,65
	SNMG 120412-MM		●		○			HC 7530	10	310451 2826	9,65

3108

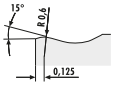
ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	



TCMT ISO indexable cutting inserts

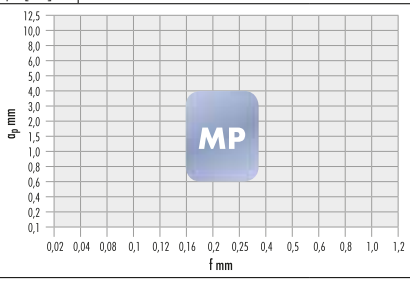
- **60° triangular, positive 7°**

Chip breaker type MP

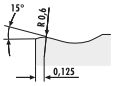
F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	TCMT 110204-MP		●		○			HC 7610	10	**311501** 1511	6,35
			●		○			HC 7620	10	311501 1512	6,35
			●					HC 7630	10	311501 1513	6,35
	TCMT 16T304-MP		●		○			HC 7610	10	311501 3411	9,25
			●		○			HC 7620	10	311501 3412	9,25
			●					HC 7630	10	311501 3413	9,25
	TCMT 16T308-MP		●		○			HC 7610	10	311501 3511	9,25
			●		○			HC 7620	10	311501 3512	9,25
			●					HC 7630	10	311501 3513	9,25

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 110 - 250	Vc = 110 - 250
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0		

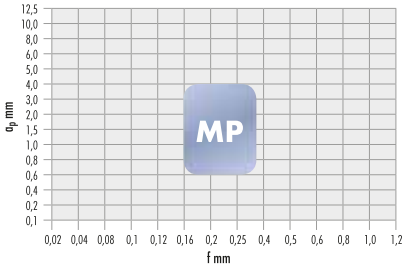


Chip breaker type MP, stainless steel

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	TCMT 110204-MP		●		○			HC 7520	10	**310501** 1525	6,45
			●		○			HC 7530	10	310501 1526	6,45
	TCMT 16T304-MP		●		○			HC 7520	10	310501 3425	9,25
	TCMT 16T308-MP		●		○			HC 7520	10	310501 3525	9,25
			●		○			HC 7530	10	310501 3526	9,25

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0	



TNMG ISO indexable cutting inserts

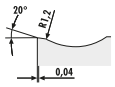
- **60° triangular, negative 0°**

Chip breaker type MM (HC75..)

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	TNMG 160408-MM		●			○		**HC 7520**	10	**310557** 3825	8,45
					●			○		**HC 7530**	10	310557 3826	8,45

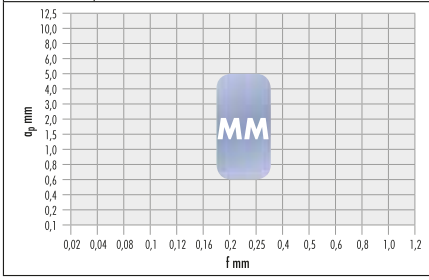


Medium machining



3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 4.0	



VBMT ISO indexable cutting inserts

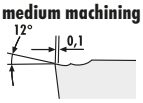
- **35° rhombic, positive 5°**
- Unit prices when purchased in packs = 10 units per size and quality

Chip breaker type SP

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-	VBMT 160404-SP	●		○				**HC 7610**	10	**311563** 3711	12,40
				●		○				**HC 7620**	10	311563 3712	12,40
			VBMT 160408-SP	●		○				**HC 7610**	10	311563 3811	12,40
				●		○				**HC 7620**	10	311563 3812	12,40
			VBMT 160412-SP	●		○				**HC 7620**	10	311563 3912	12,40

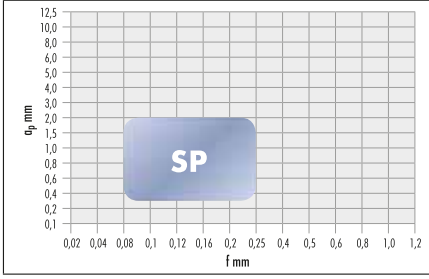


Finishing / medium machining



3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 200 - 380	Vc = 140 - 320
ISO K cast iron	Vc = 180 - 280	Vc = 160 - 260
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.3 - 2.0	



VCMT ISO indexable cutting inserts

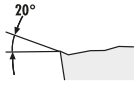
- **35° rhombic, positive 7°**
- Unit prices when purchased in packs = 10 units per size and quality

Chip breaker type FP

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	VCMT 110302-FP	●		○				**HC 7610**	10	**311601** 1611	10,70
				●		○				**HC 7620**	10	311601 1612	10,70
			VCMT 110304-FP	●		○				**HC 7610**	10	311601 1711	10,70
				●		○				**HC 7620**	10	311601 1712	10,70
			VCMT 160402-FP	●		○				**HC 7610**	10	311601 3611	12,40
				●		○				**HC 7620**	10	311601 3612	12,40
			VCMT 160404-FP	●		○				**HC 7610**	10	311601 3711	12,40
				●		○				**HC 7620**	10	311601 3712	12,40

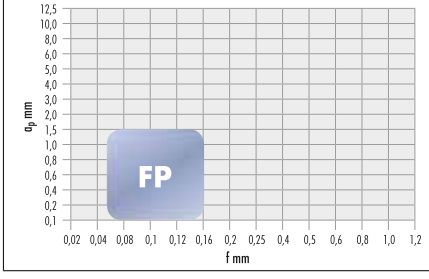


Finishing



3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 200 - 380	Vc = 140 - 320
ISO K cast iron	Vc = 180 - 280	Vc = 160 - 260
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.04 - 0.16 ap = 0.1 - 1.5	



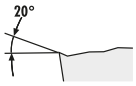
Continued on next page >>>

Chip breaker type FS

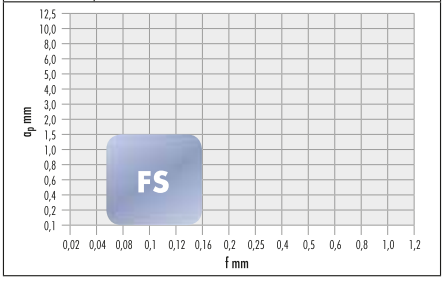
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	VCMT 160404-FS		●			○		**HC 7220**	10	**311601** 3714	12,80



Finishing



ISO	HC 7220
ISO M stainless steel	Vc = 120 - 190
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5



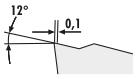
3108

Chip breaker type MP

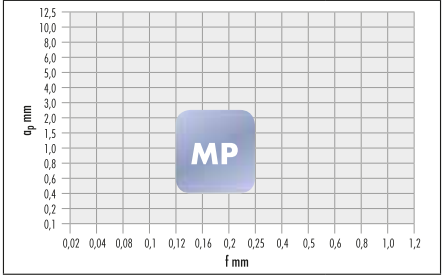
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	VCMT 110304-MP	●		○				**HC 7610**	10	**311603** 1711	10,70
				●		○				**HC 7620**	10	311603 1712	10,70
				●						**HC 7630**	10	311603 1713	10,70
			VCMT 110308-MP	●		○				**HC 7610**	10	311603 1811	10,70
				●		○				**HC 7620**	10	311603 1812	10,70
				●						**HC 7630**	10	311603 1813	10,70
			VCMT 160404-MP	●		○				**HC 7610**	10	311603 3711	12,40
				●		○				**HC 7620**	10	311603 3712	12,40
				●						**HC 7630**	10	311603 3713	12,40
			VCMT 160408-MP	●		○				**HC 7610**	10	311603 3811	12,40
				●		○				**HC 7620**	10	311603 3812	12,40
				●						**HC 7630**	10	311603 3813	12,40



Medium machining



ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 180 - 280	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 2.5		



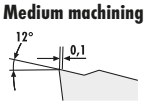
3108

Chip breaker type MP, stainless steel

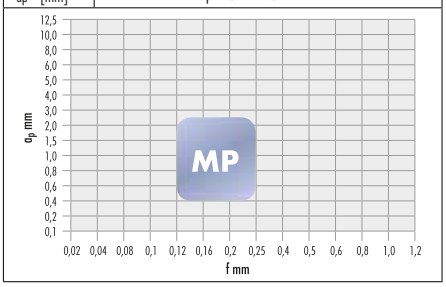
F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	VCMT 110304-MP		●			○		**HC 7520**	10	**310603** 1725	10,70
					●			○		**HC 7530**	10	310603 1726	10,70
			VCMT 110308-MP		●			○		**HC 7520**	10	310603 1825	10,70
			VCMT 160404-MP		●			○		**HC 7520**	10	310603 3725	12,55
					●			○		**HC 7530**	10	310603 3726	12,55
			VCMT 160408-MP		●			○		**HC 7520**	10	310603 3825	12,55
					●			○		**HC 7530**	10	310603 3826	12,55



Medium machining



ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 2.5	

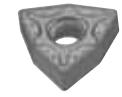
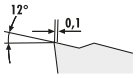


3108

WNMG ISO indexable cutting inserts

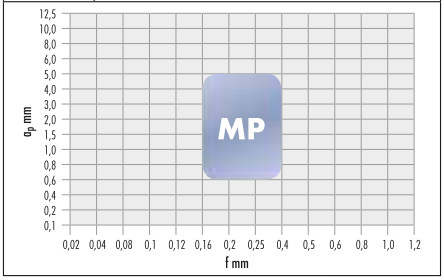
- **80° trigonometric, negative 0°**
- Unit prices when purchased in packs = 10 units per size and quality

Chip breaker type MP

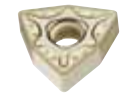
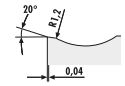
F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 			WNMG 060404-MP	●		○				**HC 7620**	10	**311755** 0312	8,50
			WNMG 060408-MP	●		○				**HC 7620**	10	311755 0412	8,50
			WNMG 080404-MP	●		○				**HC 7610**	10	311755 0811	10,70
				●		○				**HC 7620**	10	311755 0812	10,70
				●						**HC 7630**	10	311755 0813	10,70
			WNMG 080408-MP	●		○				**HC 7610**	10	311755 0911	10,70
				●		○				**HC 7620**	10	311755 0912	10,70
				●						**HC 7630**	10	311755 0913	10,70
			WNMG 080412-MP	●		○				**HC 7620**	10	311755 1012	10,70

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 350	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 170 - 290	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.6 - 5.0		

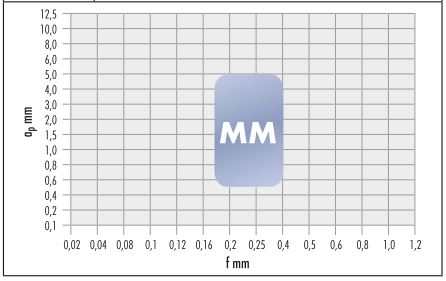


Chip breaker type MM (HC75..)

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 			WNMG 060404-MM		●			○		**HC 7530**	10	**310757** 0326	8,90
			WNMG 080408-MM		●			○		**HC 7520**	10	310757 0925	10,70
					●			○		**HC 7530**	10	310757 0926	10,70

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.40 ap = 0.5 - 5.0	



Compact Line

C-Line

The new Sartorius Compact Line series is an affordable yet high-quality series in the factory equipment range. From drawer cabinets to series and cabinet workbenches, we offer everything for your production processes. The Compact Line products are available in 11 different colours, with dual-colour painting at no extra cost. Due to the drawer load capacity of up to 80 kg (from a front panel height of 75 mm) and the cabinet housing load capacity of up to one tonne, the drawer cabinets are perfect for storing your tools. Sartorius also offers a multitude of matching drawer dividers.

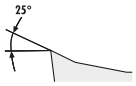


ISO indexable cutting inserts, chip breaker *MN*

- For machining aluminium, also suitable for plastics and non-ferrous metals
- **HW 6310** uncoated
- **HC 6310, TiN**-coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)

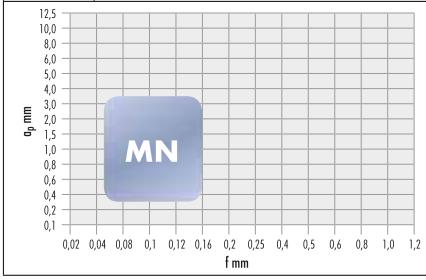
Especially for machining aluminium

CCGT 80° rhombic, positive 7°, chip breaker type MN

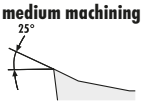
F finishing ●	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing/medium machining 			CCGT 060202-MN		○		●			**HC 6310**	10	**310901** 0141	10,60
			CCGT 060204-MN		○		●			**HC 6310**	10	310901 0241	10,60
			CCGT 09T302-MN		○		●			**HC 6310**	10	310901 1141	11,25
			CCGT 09T304-MN		○		●			**HC 6310**	10	310901 1241	11,25
			CCGT 09T308-MN		○		●			**HC 6310**	10	310901 1341	11,25
			CCGT 120402-MN		○		●			**HC 6310**	10	310901 2541	12,80
			CCGT 120404-MN		○		●			**HC 6310**	10	310901 2641	12,80
			CCGT 120408-MN		○		●			**HC 6310**	10	310901 2741	12,80

3108

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 2.0

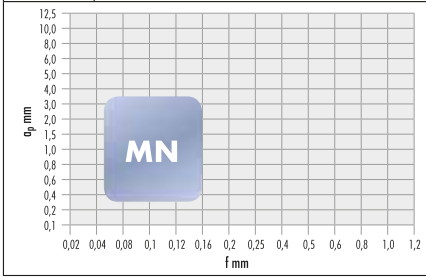


DCGT 55° rhombic, positive 7°, chip breaker type MN

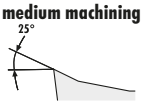
F finishing ●	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing/ medium machining 			DCGT 070202-MN		○		●			**HC 6310**	10	**310903** 0541	9,95
			DCGT 070204-MN		○		●			**HC 6310**	10	310903 0641	9,95
			DCGT 11T302-MN		○		●			**HC 6310**	10	310903 1941	12,–
			DCGT 11T304-MN		○		●			**HC 6310**	10	310903 2041	12,–
			DCGT 11T308-MN		○		●			**HC 6310**	10	310903 2141	12,–

3108

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 3.5

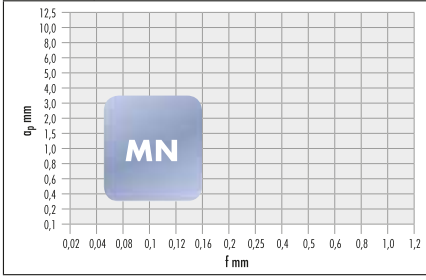


VCGT 35° rhombic, positive 7°, chip breaker type MN

F finishing ●	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing/ medium machining 			VCGT 110302-MN		○		●			**HC 6310**	10	**310909** 1641	14,30
			VCGT 110304-MN		○		●			**HC 6310**	10	310909 1741	14,30
			VCGT 160404-MN		○		●			**HC 6310**	10	310909 3741	15,90
			VCGT 160408-MN		○		●			**HC 6310**	10	310909 3841	15,90

3108

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 2.0



Comparison of diamond cutting materials

INFO





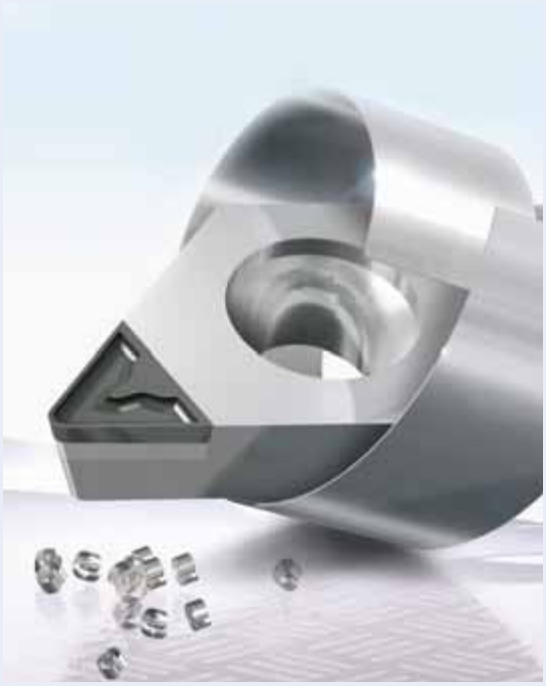
Becker designation	ISO designation	Properties	Materials
MDC	**DM**	Solid monocrystalline diamond without structure. Absolute cutting sharpness and nick-free cutting edges, therefore practically no cutting pressure (bur-free) and adherence to very narrow tolerances ± 0.001 mm. Absolute wear resistance and maximum thermal conductivity (HSC and HPC), low toughness.	Super-finishing of all non-ferrous metals and non-ferrous materials without abrasive fillers (HSC-High-Tech).
TFC	**PD**	Solid polycrystalline CVD diamond with no binder or carbide base. Perfect cutting edge sharpness and nick-free edges. No cutting pressure and adherence to the narrowest tolerances. Maximum wear resistance and very high thermal conductivity (HSC and HPC), increased toughness.	Super-finishing to semi-finishing of all non-ferrous metals and non-ferrous composites with high percentages of abrasive fillers. Maximum service life with GRP (80% glass) and CFP.
PDC	**DP Composite**	Polycrystalline diamond (composite cutting material) with carbide base, fine grain, good cutting edge sharpness and low cutting pressure with narrow tolerances. Lower wear resistance with increased toughness.	Fine finishing and finishing of all non-ferrous metals and non-ferrous materials with a low percentage of or no abrasive fillers.
PDC-S	**DP Composite**	Polycrystalline diamond (composite cutting material) with carbide base, coarse grain, good cutting edge sharpness and low cutting pressure with narrow tolerances, very well suited for milling tools. Lower wear resistance with increased toughness.	Fine finishing, finishing and milling of all non-ferrous metals and non-ferrous materials with low to high percentages of abrasive fillers.
PDC-CU-S	**DP Composite**	Solid polycrystalline diamond (composite cutting material) with carbide base, coarse grain, good cutting edge sharpness and low cutting pressure with narrow tolerances, very well suited for milling tools with high cutting depths. Very high wear resistance with increased toughness because of very high diamond volumes.	Fine finishing, finishing and milling of all non-ferrous metals and non-ferrous materials with very high percentages of abrasive fillers. Maximum material removal rates with CFP and GRP.

CB 1

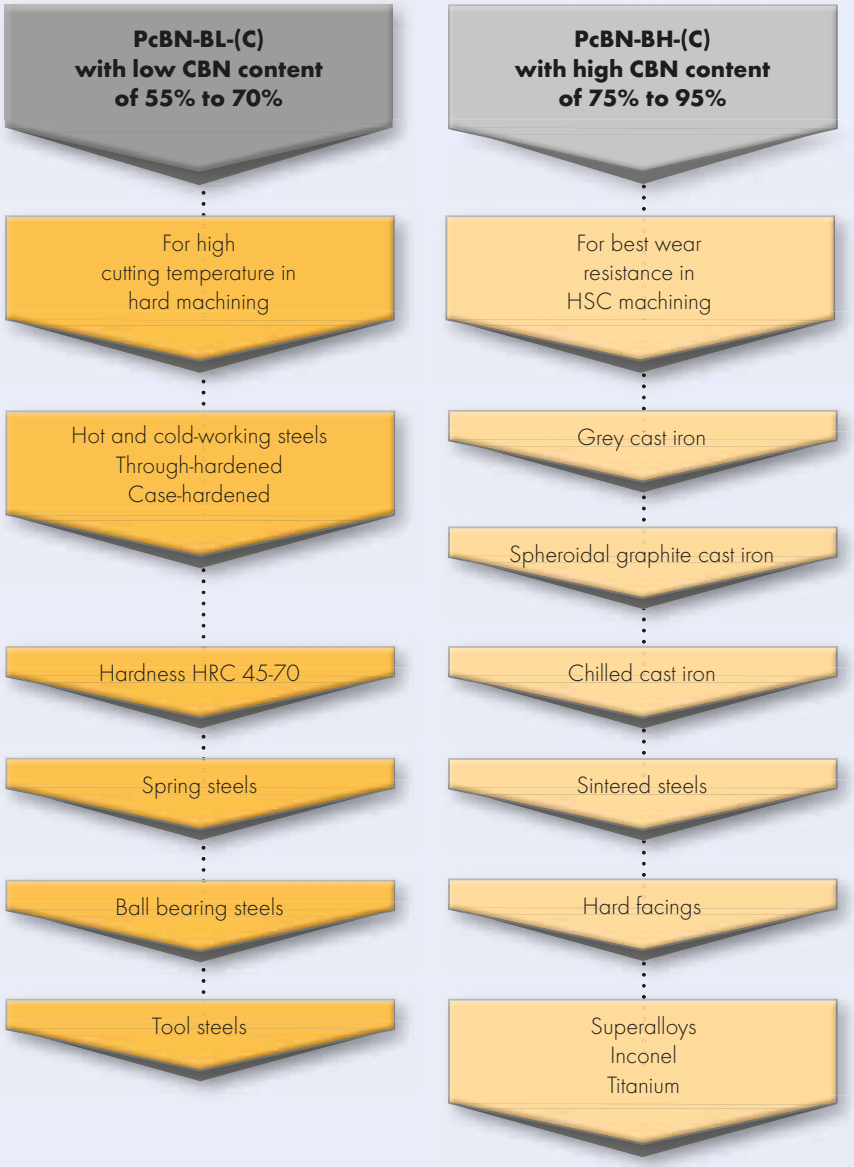
- Positive geometry for finish and super-finish machining
- ap from 0.05 mm to 1.5 mm Suitable for the narrowest tolerances with the lowest cutting pressure.
- For use with thin-walled and unstable workpieces.

CB 2

- Slightly negative geometry for semi-finishing, finishing and super-finishing machining
- ap from 0.5 mm to 2 mm. Increased cutting pressure ensures improved surface finish quality at the narrowest tolerances.
- For use with thick-walled and solid parts under stable conditions.



Overview of hard cutting materials









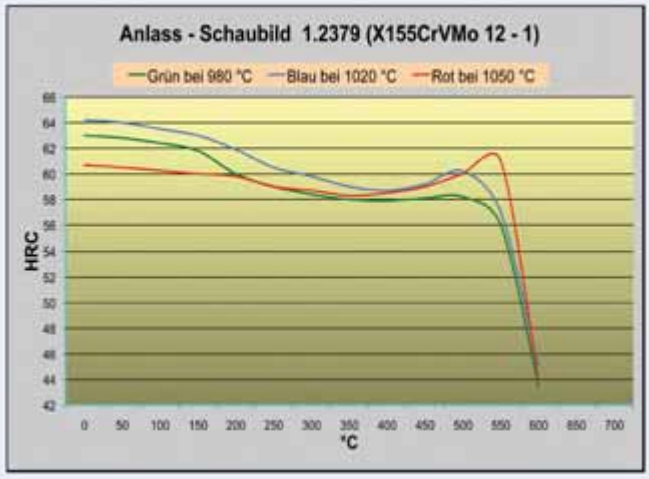
PBC-10S		PBC-26S		PBC-40S	
Maximum cutting speed when turning GG25		**Best surfaces with smooth cut, hardness 45-62 HRC**		**Maximum service life with interrupted cut, hardness 48-65 HRC**	
Example	Drive wheel GG25 diameter 480 mm	Example	Drive shaft HRC 60 substance 1.2332 - 47CrMo4	Example	Gear HRC 58 substance 1.2523 - 19Mn-cr5
Turning insert	DCGW11T308-D-10S-2MC	Turning insert	CNGA120408-E-25S-4SC	Turning insert	CNGA120408-G-40S-45C
Super-finish	v_c = 1430 m/min. a_p = 0.3 - 0.5 mm f = 0.20 mm	Super-finish	v_c = 180 m/min. a_p = 0.25 mm f = 0.08 mm	Super-finish	v_c = 230 m/min. a_p = 0.22 mm f = 0.16 mm
Service life	250 parts	Surface quality	R 0.18 µm	Surface quality	R 0.40 µm
For comparison	Coated HM turning insert, v_c = 300 m/min., 26 parts	Service life	Turning length = 3,218 m	Service life	Turning length = 4,280 m

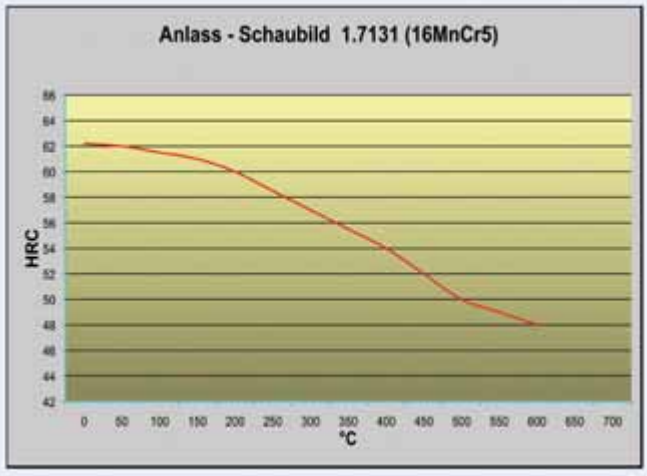
In order to use the extremely high capacity of various PcBN cutting materials effectively with various applications, the following explanations and notes are important:

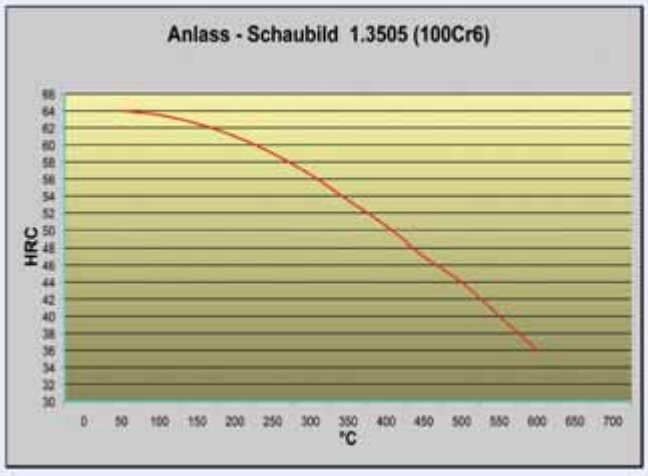
Hard machining with PcBN

The term hard cutting is generally used for cutting hardened steel. This cutting mechanism is a self-induced heat cutting process. A defined high temperature of approx. 550 to 750°C is required in the shear zone. This essential temperature is generated by converting the energy present into heat. This energy is available in the form of cutting speed Vc, feed f, cutting depth ap and chamfer geometries A-H of the PcBN blades. Cooling is not generally required.

The adjacent tempering diagrams show the decrease in hardness with increasing temperature. However, significant variations come about here.
In the case of self-induced heat cutting with PcBN varieties, the ideal hardness in the shear zone is 40 to 45 HRC. This means that different machining temperatures between 550 and 750°C are required.







At approx. 600°C, 1.2379 steel still has a hardness of approx. 58 HRC, for 1.7131 steel this is approx. 48 HRC, while1.3505 steel only achieves around 36 HRC, with an original hardness of about 62 HRC in each case.

In order to generate and maintain the ideal machining temperature in the shear zone, the peculiarities of self-induced heat cutting must be strictly observed:

- the shear conductivity of the variety of PcBN used (55%-65% CBN)
- the chamfer geometry A-H used or the positive machining geometry
- the tempering diagrams (hardness diagram with increasing temperature)

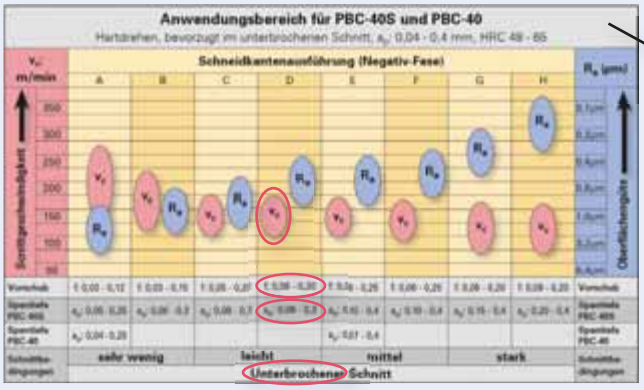
In selecting the cutting material for the intended application, a checklist must be drawn up that always covers the following points:

- Specification of the type of steel and its hardness in HRC
- Specification of the surface quality Ra required in µm and the cutting depth
- Differentiation between a smooth, slightly interrupted or very interrupted cut

The appropriate cutting material can then be selected using the type description.

Becker-Bezeichnung	ISO-Bezeichnung	Eigenschaften	Werkstoffe
PBC-25S	BL-C	Beschichtete PcBN-Sorte mit niedrigem CBN-Gehalt (65%) in Sandwich- und Normalausführung, Feinkorn (1-2 µm mit) Ideal für das Hartdrehen im glatten Schnitt	Hartzerspanung, trocken + nass HRC 48 - 62 a_p = 0,02 - 0,4 mm R_a = 0,2 - 3,2µm m
PBC-40S 1. Selection	BL-C	Beschichtete PcBN-Sorte mit niedrigem CBN-Gehalt (55%) in Sandwich- und Normalausführung, Superfeinkorn (0,7) µm mit Sorte für leichte bis stark unterbrochenen Schnitt	Hartzerspanung, trocken + nass HRC 45-65 a_p = 0,05 - 0,6 mm R_a = 0,1 - 3,2µm m

Using the diagrams on the following pages, the chamfer geometry appropriate for the surface quality required can be selected.



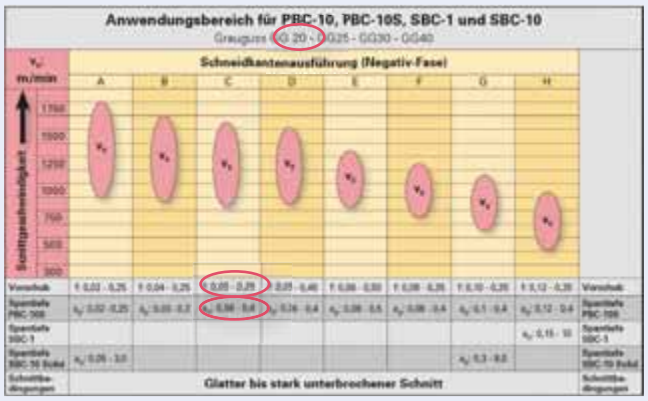
Example:

100Cr6 - HRC 62
ap = 0.25 mm, f = 0.1 mm/rev
Interrupted cut
Required Ra = 0.6 µm

PBC-40S cutting material
Chamfer "D" at vc 160 m/min
WSP=CNGA120408-D-40S-4SC

Soft machining with PcBN

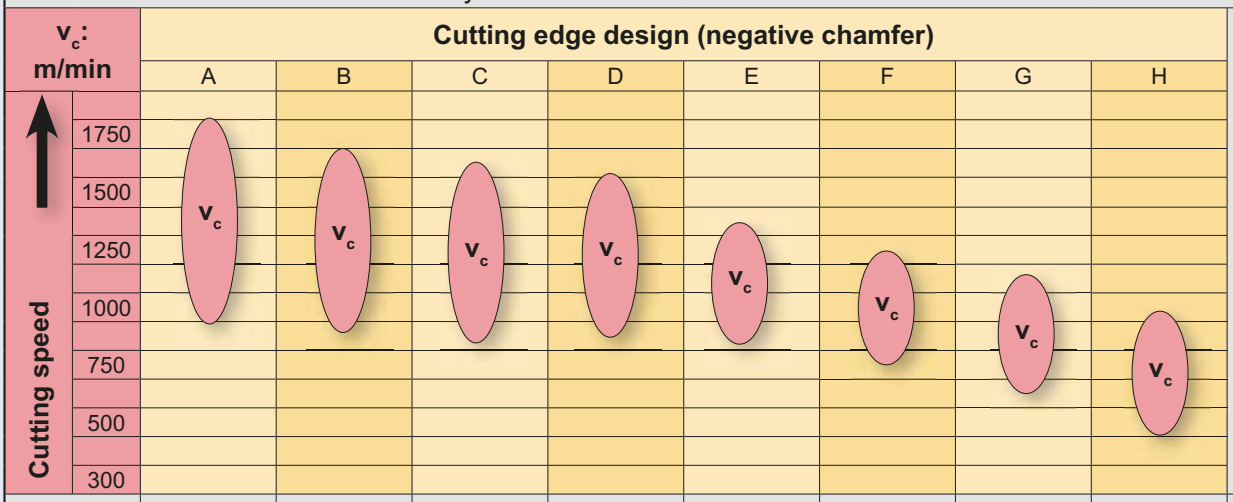
Soft machining is the term used for machining all materials in their original hardness, without using a hardening process or similar.
The result is that no structural transformation has taken place. Nevertheless, it is essential to consider that there are materials (e.g. superalloys, titanium) which require a very high cutting temperature of 700 to 1,110°C, which can only be generated with PcBN as the cutting material.



The following pages show various areas of application, each with a corresponding diagram. On the left are the recommended cutting speeds, and the respective feed rates and cutting depths are given on the bottom rows.

Area of application for PBC-10, PBC-10S, SBC-1 and SBC-10

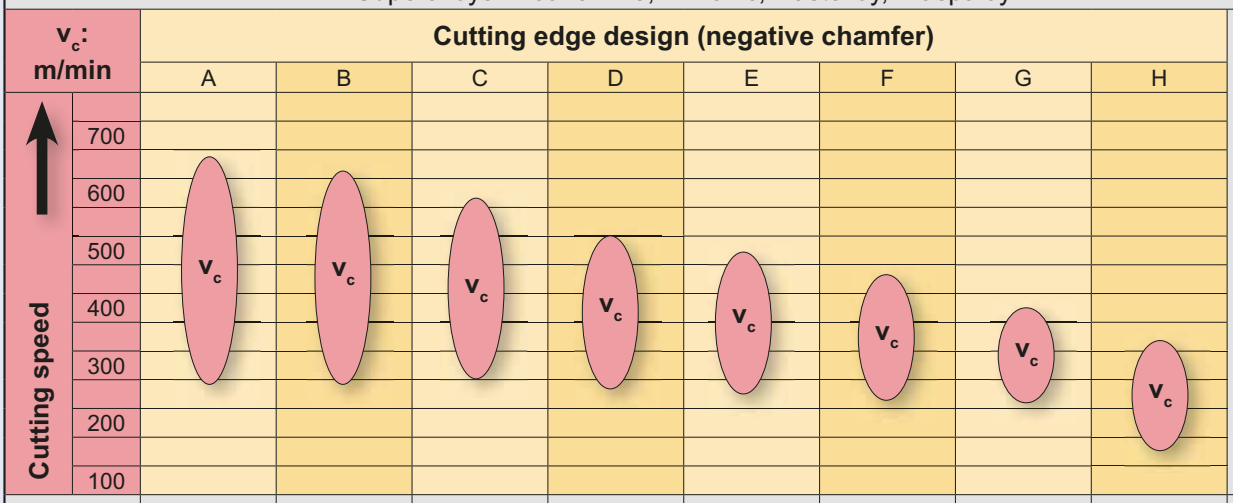
Grey cast iron GG20 - GG25 - GG30 - GG40



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.25	f: 0.04 - 0.25	f: 0.05 - 0.25	f: 0.05 - 0.40	f: 0.06 - 0.50	f: 0.08 - 0.35	f: 0.10 - 0.35	f: 0.12 - 0.35	Feed
Cutting depth PBC-10S	a_p: 0.02 - 0.25	a_p: 0.03 - 0.3	a_p: 0.06 - 0.4	a_p: 0.06 - 0.4	a_p: 0.08 - 0.5	a_p: 0.08 - 0.4	a_p: 0.1 - 0.4	a_p: 0.12 - 0.4	Cutting depth PBC-10S
Cutting depth SBC-1								a_p: 0.15 - 10	Cutting depth SBC-1
Cutting depth SBC-10 solid	a_p: 0.05 - 3.0						a_p: 0.3 - 8.0		Cutting depth SBC-10 solid
Cutting conditions	Smooth to significantly interrupted cut								Cutting conditions

Area of application for PBC-10, PBC-10S and SBC-10

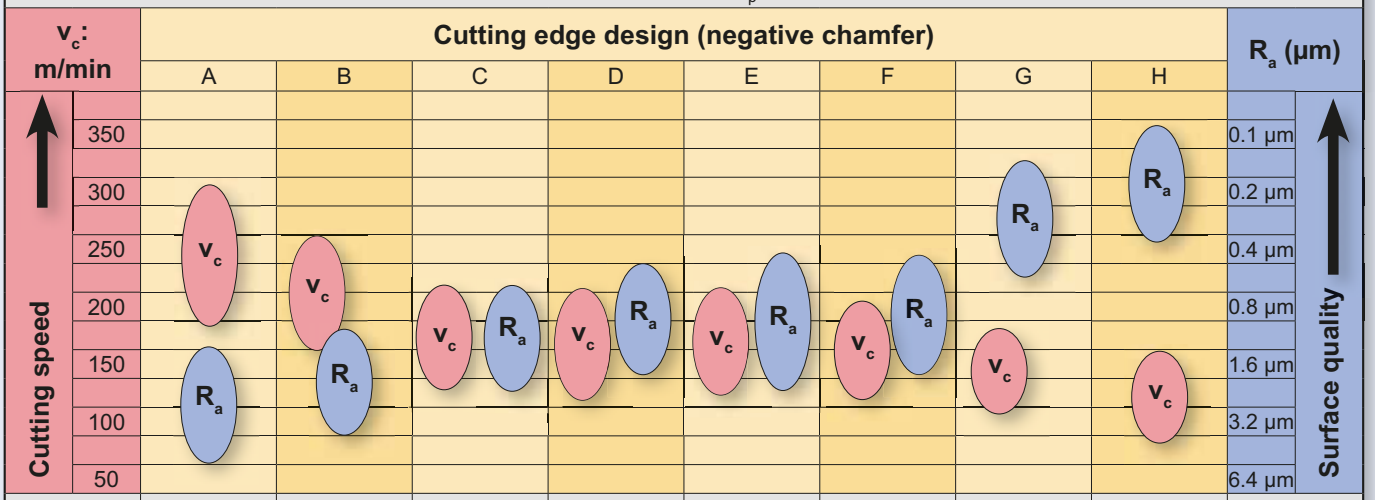
Superalloys: Inconel 718, Nimonic, Hastelloy, Waspaloy



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.25	f: 0.04 - 0.25	f: 0.05 - 0.25	f: 0.05 - 0.40	f: 0.06 - 0.50	f: 0.08 - 0.35	f: 0.10 - 0.35	f: 0.12 - 0.35	Feed
Cutting depth PBC-10S	a_p: 0.02 - 0.4	a_p: 0.03 - 0.4	a_p: 0.06 - 0.4	a_p: 0.06 - 0.4	a_p: 0.08 - 0.5	a_p: 0.08 - 0.4	a_p: 0.1 - 0.4	a_p: 0.12 - 0.4	Cutting depth PBC-10S
Cutting depth SBC-10	a_p: 0.02 - 0.3						a_p: 0.05 - 0.4		Cutting depth SBC-10
Cutting conditions	Smooth to moderately interrupted cut								Cutting conditions

Area of application for PBC-25S and PBC-25

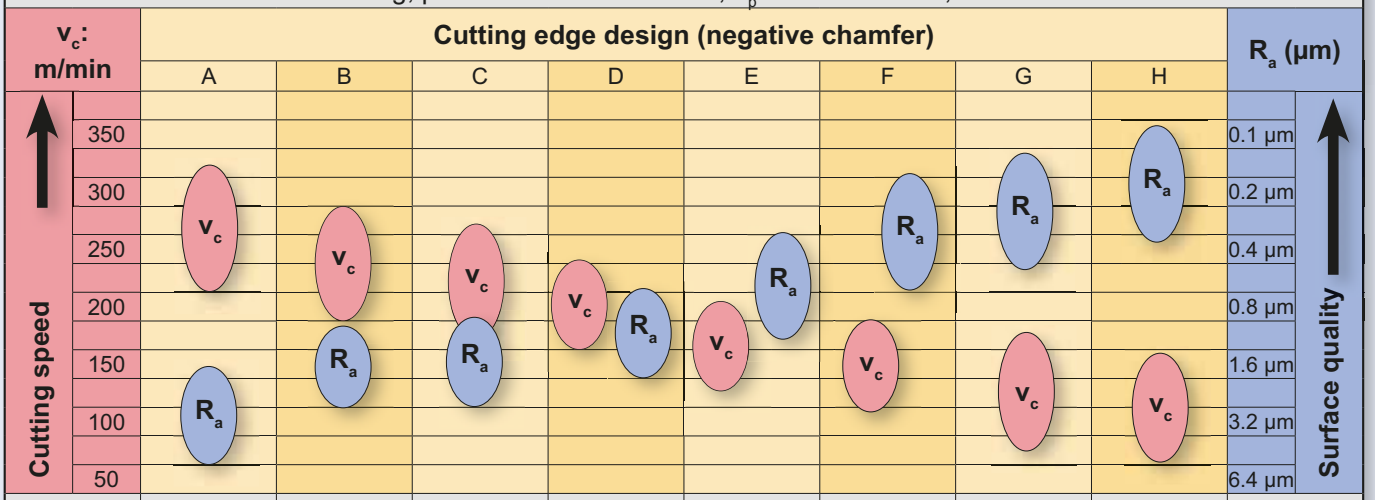
Hard turning, preferable for smooth cut, a_p= 0.02 - 0.4 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.15	f: 0.03 - 0.15	f: 0.04 - 0.20	f: 0.05 - 0.25	f: 0.06 - 0.25	f: 0.06 - 0.25	f: 0.06 - 0.20	f: 0.06 - 0.20	Feed
Cutting depth PBC-25S	a_p: 0.04 - 0.25	a_p: 0.04 - 0.3	a_p: 0.06 - 0.4	a_p: 0.06 - 0.4	a_p: 0.08 - 0.4	a_p: 0.08 - 0.4	a_p: 0.1 - 0.4	a_p: 0.12 - 0.4	Cutting depth PBC-25S
Cutting depth PBC-25	a_p: 0.02 - 0.25			a_p: 0.05 - 0.4					Cutting depth PBC-25
Cutting conditions	Smooth cut								Cutting conditions

Area of application for SBC-25C and SBC-25

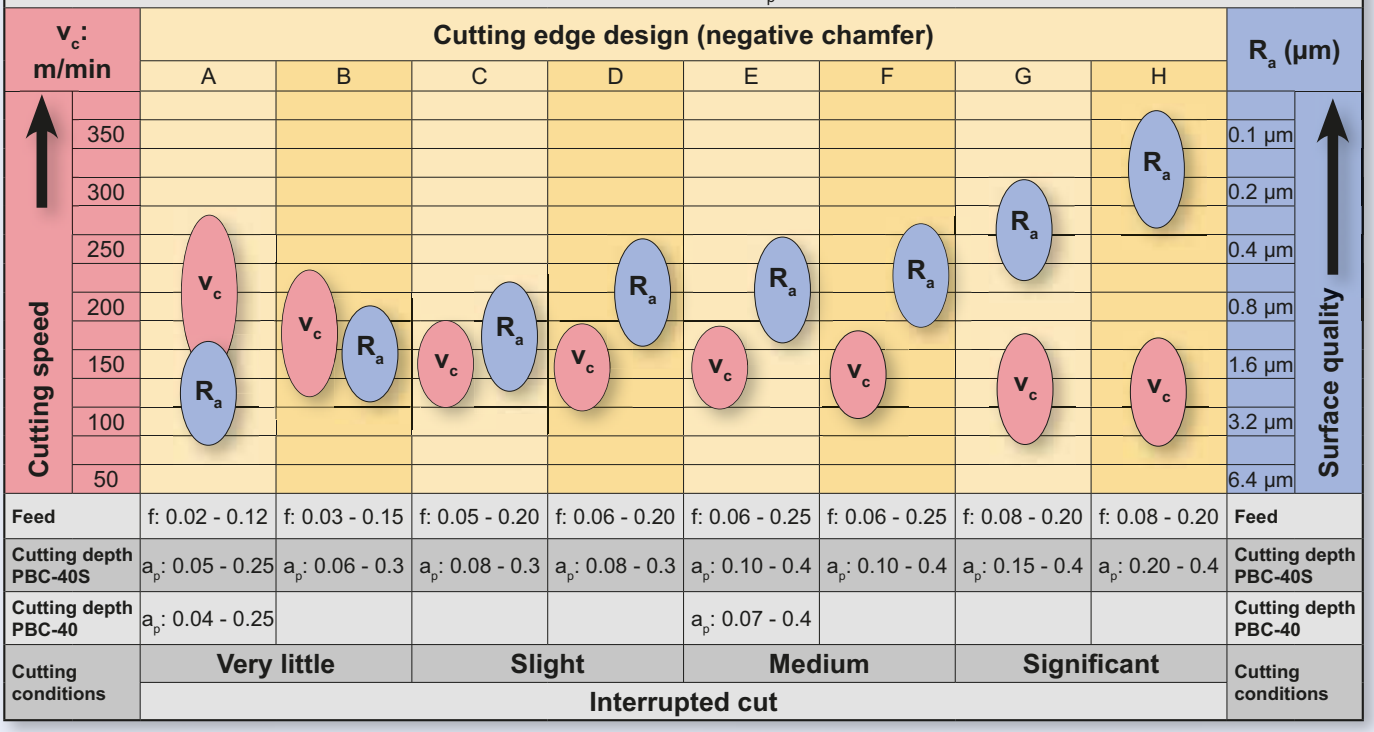
Hard turning, preferable for smooth cut, a_p= 0.04 - 6.0 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.20	f: 0.03 - 0.20	f: 0.03 - 0.20	f: 0.05 - 0.20	f: 0.06 - 0.25	f: 0.08 - 0.25	f: 0.08 - 0.25	f: 0.08 - 0.25	Feed
Cutting depth SBC-25C	a_p: 0.04 - 0.5	a_p: 0.05 - 0.5	a_p: 0.05 - 0.8	a_p: 0.08 - 0.8	a_p: 0.08 - 0.8	a_p: 0.12 - 0.8	a_p: 0.15 - 0.8	a_p: 0.2 - 0.8	Cutting depth SBC-25C
Cutting depth SBC-25	a_p: 0.04 - 2.0					a_p: 0.12 - 2.0			Cutting depth SBC-25
Cutting depth SBC-25 solid						a_p: 0.25 - 6.0			Cutting depth SBC-25 solid
Cutting conditions	Smooth cut								Cutting conditions

Area of application for PBC-40S and PBC-40

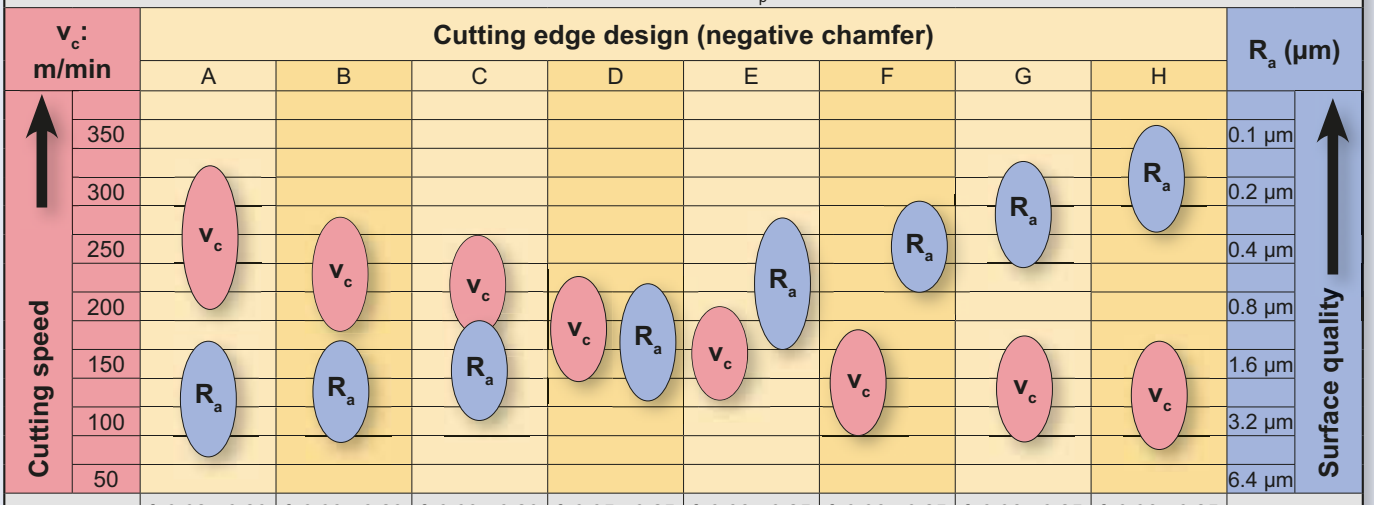
Hard turning, preferable in interrupted cut, a_p: 0.04 - 0.4 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.12	f: 0.03 - 0.15	f: 0.05 - 0.20	f: 0.06 - 0.20	f: 0.06 - 0.25	f: 0.06 - 0.25	f: 0.08 - 0.20	f: 0.08 - 0.20	Feed
Cutting depth PBC-40S	a_p: 0.05 - 0.25	a_p: 0.06 - 0.3	a_p: 0.08 - 0.3	a_p: 0.08 - 0.3	a_p: 0.10 - 0.4	a_p: 0.10 - 0.4	a_p: 0.15 - 0.4	a_p: 0.20 - 0.4	Cutting depth PBC-40S
Cutting depth PBC-40	a_p: 0.04 - 0.25				a_p: 0.07 - 0.4				Cutting depth PBC-40
Cutting conditions	Very little		Slight		Medium		Significant		Cutting conditions
	Interrupted cut								

Area of application for SBC-40C and SBC-40

Hard turning, preferable in interrupted cut, a_p = 0.05 - 6.0 mm, HRC 48 - 65



	A	B	C	D	E	F	G	H	
Feed	f: 0.02 - 0.20	f: 0.03 - 0.20	f: 0.03 - 0.20	f: 0.05 - 0.25	f: 0.06 - 0.25	f: 0.06 - 0.25	f: 0.06 - 0.25	f: 0.06 - 0.25	Feed
Cutting depth SBC-40C	a_p: 0.05 - 0.5	a_p: 0.05 - 0.5	a_p: 0.05 - 0.8	a_p: 0.08 - 0.8	a_p: 0.10 - 0.8	a_p: 0.12 - 0.8	a_p: 0.15 - 0.8	a_p: 0.20 - 0.8	Cutting depth SBC-40C
Cutting depth SBC-40	a_p: 0.05 - 2.0						a_p: 0.12 - 2.0		Cutting depth SBC-40
Cutting depth SBC-40 solid							a_p: 0.25 - 6.0		Cutting depth SBC-40 solid
Cutting conditions	Very little		Slight		Medium		Significant		Cutting conditions
	Interrupted cut								

CBN ISO indexable cutting inserts



30-101

- **Designation**: PBC-10S **ISO**: BH-C
  Properties: Coated PcBN-type with very high CBN content (95 %) in sandwich design. Fine grain, higher wear resistance and similar toughness to PBC-10 in the HSC range.
  Materials / machining: Grey cast iron (GG25), sintered steel, superalloys; wet and dry machining possible.
  Attention: No mixing conditions for cooling!
- **Designation**: SBC-25C **ISO**: BL-C
  Properties: coated PcBN-type with low CBN content (65 %). Fine grain with very high wear resistance, compressive strength and toughness in hard turning applications at cutting depths from 0.05 to 6.0 mm, wet and dry machining possible.
  Materials / machining: Hard turning, HRc 48 - 65 for Ra 0.2 to 3.2 with ap 0.05 - 0.8 mm.
  Attention: No mixing conditions for cooling!
- **Designation:** SBC-40C **ISO**: BL-C
  Properties: Coated PcBN-type with low CBN content (65 %). Superfine grain with extremely high wear resistance, compressive strength and toughness in hard turning applications at cutting depths from 0.05 to 0.8 mm with slightly to extremely interrupted cuts.
  Materials / machining: Hard turning, HRc 48 - 65 for Ra 0.1 to 3.2 with ap 0.05 - 0.8 mm.
  Attention: No mixing conditions for cooling!
- **Different cutting edge designs (micro cutting edge geometry)**

PBC-10S
Version B, sharp cutting edge only for smooth cut with high cutting data GG 25 Vc 900-1800 m/min sintered steel Vc 250-500 m/min
Version E, chamfered cutting edge for smooth to lightly interrupted cut GG 25 Vc 800-1300 m/min sintered steel Vc 220-500 m/min
Version G, chamfered cutting edge for lightly to heavily interrupted cut GG 25 Vc 400-900 m/min sintered steel Vc 140-500 m/min

SBC-25C
Version A, sharp cutting edge for smooth cut with highest cutting data Vc 200-320 m/min for Ra 2.0-6.0 µm
Version E, chamfered cutting edge for smooth to lightly interrupted cut Vc 140-200 m/min for Ra 0.8-1.6 µm
Version G, chamfered cutting edge for lightly to heavily interrupted cut Vc 100-190 m/min at Ra approx. 0.2-0.4 µm

SBC-40C
Version A, sharp cutting edge for extremely light interrupted cut with highest cutting data Vc 200-310 m/min for Ra 1.6-6.0 µm
Version D, chamfered cutting edge for slightly interrupted cut Vc 150-230 m/min at Ra 0.6-3.2 µm
Version F, chamfered cutting edge for medium to heavily interrupted cut Vc 100-180 m/min at Ra 0.2-0.6 µm

- All illustrations show the inserts in uncoated condition for enhanced representation!



CNGA-SC

ISO designation	PBC-10S B art.no.	€	PBC-10S E art.no.	€	PBC-10S G art.no.	€
CNGA 120404-2SC	**384001** 0001	35,90	**384002** 0001	35,90	**384003** 0001	35,90
CNGA 120408-2SC	384001 0002	35,90	384002 0002	35,90	384003 0002	35,90
CNGA 120412-2SC	384001 0003	35,90	384002 0003	35,90	384003 0003	35,90
	3128		3128		3128	



CNGA-MC/S

ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
CNGA 120404-2MC/S	**384004** 0001	60,–	**384005** 0001	60,–	**384006** 0001	60,–	**384007** 0001	60,–	**384008** 0001	60,–	**384009** 0001	60,–
CNGA 120408-2MC/S	384004 0002	60,–	384005 0002	60,–	384006 0002	60,–	384007 0002	60,–	384008 0002	60,–	384009 0002	60,–
	3128		3128		3128		3128		3128		3128	



CNGA-SC wiper

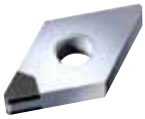
ISO designation	PBC-10S B art.no.	€	PBC-10S E art.no.	€	PBC-10S G art.no.	€
CNGA 120404-W-2SC	**384011** 0001	35,90	**384012** 0001	35,90	**384013** 0001	35,90
CNGA 120408-W-2SC	384011 0002	35,90	384012 0002	35,90	384013 0002	35,90
	3128		3128		3128	



CNGA-MC/S wiper

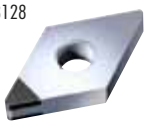
ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
CNGA 120404-W-2MC/S	**384014** 0001	60,–	**384015** 0001	60,–	**384016** 0001	60,–	**384017** 0001	60,–	**384018** 0001	60,–	**384019** 0001	60,–
CNGA 120408-W-2MC/S	384014 0002	60,–	384015 0002	60,–	384016 0002	60,–	384017 0002	60,–	384018 0002	60,–	384019 0002	60,–
	3128		3128		3128		3128		3128		3128	

Continued on next page >>>



DNGA SC

ISO designation	PBC-10S B art.no.	€	PBC-10S E art.no.	€	PBC-10S G art.no.	€
DNGA 150604-2SC	**384021** 0001	35,90	**384022** 0001	35,90	**384023** 0001	35,90
DNGA 150608-2SC	384021 0002	35,90	384022 0002	35,90	384023 0002	35,90
	3128		3128		3128	



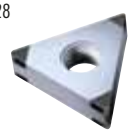
DNGA-MC/S

ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
DNGA 150604-2MC/S	**384024** 0001	60,–	**384025** 0001	60,–	**384026** 0001	60,–	**384027** 0001	60,–	**384028** 0001	60,–	**384029** 0001	60,–
DNGA 150608-2MC/S	384024 0002	60,–	384025 0002	60,–	384026 0002	60,–	384027 0002	60,–	384028 0002	60,–	384029 0002	60,–
	3128		3128		3128		3128		3128		3128	



TNGA-SC

ISO designation	PBC-10S B art.no.	€	PBC-10S E art.no.	€	PBC-10S G art.no.	€
TNGA 160404-6SC	**384031** 0001	94,50	**384032** 0001	94,50	**384033** 0001	94,50
TNGA 160408-6SC	384031 0002	94,50	384032 0002	94,50	384033 0002	94,50
	3128		3128		3128	



TNGA-MC/S

ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
TNGA 160404-6MC/S			**384035** 0001	142,–	**384036** 0001	142,–	**384037** 0001	142,–	**384038** 0001	142,–	**384039** 0001	142,–
TNGA 160408-6MC/S	**384034** 0002	142,–	384035 0002	142,–	384036 0002	142,–	384037 0002	142,–	384038 0002	142,–	384039 0002	142,–
	3128		3128		3128		3128		3128		3128	



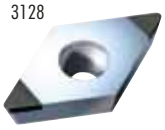
VNGA-SC

ISO designation	PBC-10S B art.no.	€	PBC-10S E art.no.	€	PBC-10S G art.no.	€
VNGA 160404-4SC	**384041** 0001	64,50	**384042** 0001	64,50	**384043** 0001	64,50
VNGA 160408-4SC	384041 0002	64,50	384042 0002	64,50	384043 0002	64,50
	3128		3128		3128	



CCGW-MC/S

ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
CCGW 060202-2MC/S	**384054** 0001	60,–	**384055** 0001	60,–	**384056** 0001	60,–	**384057** 0001	60,–	**384058** 0001	60,–	**384059** 0001	60,–
CCGW 060204-2MC/S	384054 0002	60,–	384055 0002	60,–	384056 0002	60,–	384057 0002	60,–	384058 0002	60,–	384059 0002	60,–
CCGW 09T302-2MC/S	384054 0003	60,–	384055 0003	60,–	384056 0003	60,–	384057 0003	60,–	384058 0003	60,–	384059 0003	60,–
CCGW 09T304-2MC/S	384054 0004	60,–	384055 0004	60,–	384056 0004	60,–	384057 0004	60,–	384058 0004	60,–	384059 0004	58,50
CCGW 09T308-2MC/S	384054 0005	60,–	384055 0005	60,–	384056 0005	60,–	384057 0005	60,–	384058 0005	60,–	384059 0005	60,–
	3128		3128		3128		3128		3128		3128	



DCGW-MC/S

ISO designation	SBC-25C A art.no.	€	SBC-25C E art.no.	€	SBC-25C G art.no.	€	SBC-40C A art.no.	€	SBC-40C D art.no.	€	SBC-40C F art.no.	€
DCGW 070202-2MC/S	**384064** 0001	60,–	**384065** 0001	60,–	**384066** 0001	60,–	**384067** 0001	60,–	**384068** 0001	60,–	**384069** 0001	60,–
DCGW 070204-2MC/S	384064 0002	60,–	384065 0002	60,–	384066 0002	60,–	384067 0002	60,–	384068 0002	60,–	384069 0002	60,–
DCGW 11T302-2MC/S	384064 0003	60,–	384065 0003	60,–	384066 0003	60,–	384067 0003	60,–	384068 0003	60,–	384069 0003	60,–
DCGW 11T304-2MC/S	384064 0004	60,–	384065 0004	60,–	384066 0004	60,–	384067 0004	60,–	384068 0004	60,–	384069 0004	60,–
DCGW 11T308-2MC/S	384064 0005	60,–	384065 0005	60,–	384066 0005	60,–	384067 0005	60,–	384068 0005	60,–	384069 0005	60,–
	3128		3128		3128		3128		3128		3128	

PDC ISO indexable cutting inserts

30-101

- **Polycrystalline diamond** (composite cutting material) with carbide base, good cutting edge sharpness and low cutting pressure with narrow tolerances.
  Lower wear resistance with increased toughness.

- **PDC CB1**, fine grain
  Fine finishing and finishing of all non-ferrous metals and non-ferrous materials with a low percentage of or no abrasive fillers.
  Positive geometry for finishing and superfinishing machining, ap from 0.05 mm to 1.5 mm. Suitable for the narrowest tolerances with the lowest cutting pressure.
  For use with thin-walled and unstable workpieces.

- **PDC-S CB2**, rough grain
  Finishing and fine finishing of all non-ferrous metals and non-ferrous materials with low to high percentages of abrasive fillers
  Slightly negative geometry for semi-finishing, finishing and super-finishing machining, ap from 0.5 mm to 2 mm.
  Increased cutting pressure ensures improved surface finish quality at the narrowest tolerances.
  For use with thick-walled and solid parts under stable conditions.

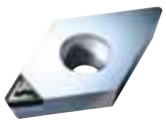
- Other geometries and versions available on request, also without chip breaker

CCGT



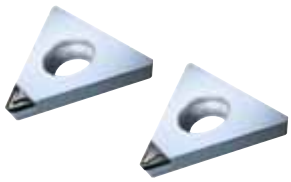
ISO designation	PDC CB1 art.no.	€	PDC-S CB2 art.no.	€
CCGT 060202	**385011** 0001	63,50	**385012** 0001	63,50
CCGT 060204	385011 0002	63,50	385012 0002	63,50
CCGT 060208	385011 0003	69,–	385012 0003	69,–
CCGT 09T302	385011 0004	65,–	385012 0004	65,–
CCGT 09T304	385011 0005	65,–	385012 0005	65,–
CCGT 09T308	385011 0006	70,50	385012 0006	70,50
CCGT 120404	385011 0007	66,50	385012 0007	66,50
CCGT 120408	385011 0008	72,–	385012 0008	72,–
	3111		3111	

DCGT



ISO designation	PDC CB1 art.no.	€	PDC-S CB2 art.no.	€
DCGT 070202	**385013** 0001	66,50	**385014** 0001	66,50
DCGT 070204	385013 0002	66,50	385014 0002	66,50
DCGT 070208	385013 0003	73,–	385014 0003	73,–
DCGT 11T302	385013 0004	70,50	385014 0004	70,50
DCGT 11T304	385013 0005	70,50	385014 0005	70,50
DCGT 11T308	385013 0006	78,50	385014 0006	78,50
	3111		3111	

TCGT



ISO designation	PDC CB1 art.no.	€	PDC-S CB2 art.no.	€
TCGT 090202	**385015** 0001	63,50	**385016** 0001	63,50
TCGT 090204	385015 0002	63,50	385016 0002	63,50
TCGT 110202	385015 0003	66,50	385016 0003	66,50
TCGT 110204	385015 0004	66,50	385016 0004	66,50
	3111		3111	

VCGT

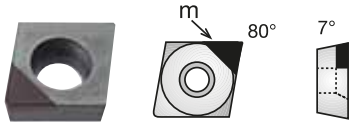


ISO designation	PDC CB1 art.no.	€	PDC-S CB2 art.no.	€
VCGT 110302	**385017** 0001	89,50	**385018** 0001	89,50
VCGT 110304	385017 0002	89,50	385018 0002	89,50
VCGT 160402	385017 0003	92,–	385018 0003	92,–
VCGT 160404	385017 0004	93,50	385018 0004	93,50
VCGT 160408	385017 0005	103,–	385018 0005	103,–
VCGT 160412	385017 0006	114,–	385018 0006	114,–
	3111		3111	

ATORN® PKD and CBN ISO indexable cutting inserts

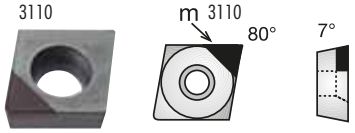
30-101

- **Ultra-hard cutting materials, single tip**
- **CBN, cubic boron nitride,** quality ABC10 (ISO K01-K25, S01-S15)
  Polycrystalline CBN type with a high CBN content and carbide base, fine grain, very high wear resistance in the HSC range with GG25 (super-finish), long service life in the case of superalloys
  Material: Grey cast iron (GG25), superalloys.
  Note: For the **chamfered** version, the type ABC10 includes the protective chamfer **„G"** as standard
- **CBN, cubic boron nitride,** quality ABC15 (ISO K01-K25, S01-S20)
  Polycrystalline CBN grade with high CBN content and a superfine grain carbide base, very high wear resistance in HSC applications with GGG-40 (super-finish), long service life with superalloys and sintered steel
  Material: Spheroidal graphite cast iron (GGG-40), sintered steels, superalloys
  Note: For the **chamfered** version, the type ABC15 includes the protective chamfer **„C"** as standard
- **CBN, cubic boron nitride,** quality ABC25 (ISO K05-K20, S05-S25, H01-H25)
  Polycrystalline CBN type with a low CBN content and carbide base, fine grain, very high wear resistance, pressure resistance and toughness in hard turning (HRc 52-65) in the smooth to medium interrupted vertical section.
  Material: Hard turning, dry, HRc 52 - 65
  Note: For the **chamfered** version, the type ABC25 includes the protective chamfer **„F"** as standard
- **PCD, polycrystalline diamond, quality** ADC (ISO N05-N40)
  Polycrystalline diamond with carbide base, fine grain, good cutting edge sharpness and low cutting pressure with narrow tolerances. High degree of wear resistance and toughness.
  Material: Finishing and fine finishing of all non-ferrous metals and non-ferrous materials with a low percentage of abrasive fillers
- Cutting edge length „m" depends on the cutting radius



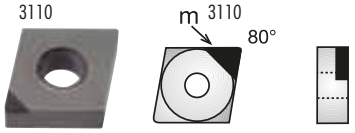
CCGW, sharp-edged (A)

ISO designation	ABC 10/A art.no.	€	ABC 15/F art.no.	€	ABC 25/A art.no.	€	ADC/F art.no.	€
CCGW 06 02 02	**390201** 1422	34,10	**390240** 1422	34,10	**390201** 1423	34,10	**390230** 1425	54,50
CCGW 06 02 04	390201 1432	34,10	390240 1432	34,10	390201 1433	34,10	390230 1435	54,50
CCGW 09 T3 04	390201 3432	34,10	390240 3432	34,10	390201 3433	34,10	390230 3435	54,50
CCGW 09 T3 08	390201 3442	34,10	390240 3442	34,10	390201 3443	34,10	390230 3445	54,50
CCGW 12 04 04	390201 5032	34,10	390240 5032	34,10	390201 5033	34,10	390230 5035	54,50
	3110		3110		3110			



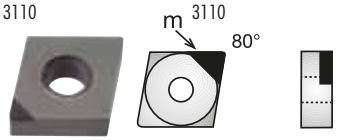
CCGW, chamfered

ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
CCGW 06 02 02	**390205** 1422	34,10	**390241** 1422	34,10	**390205** 1423	34,10
CCGW 06 02 04	390205 1432	34,10	390241 1432	34,10	390205 1433	34,10
CCGW 09 T3 04	390205 3432	34,10	390241 3432	34,10	390205 3433	34,10
CCGW 09 T3 08	390205 3442	34,10	390241 3442	34,10	390205 3443	34,10
CCGW 12 04 04	390205 5032	34,10	390241 5032	34,10	390205 5033	34,10
	3110		3110		3110	



CNGA, sharp-edged (A)

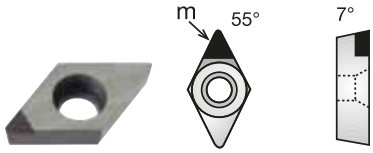
ISO designation	ABC 10/A art.no.	€	ABC 15/A art.no.	€	ABC 25/A art.no.	€	ADC/F art.no.	€
CNGA 12 04 04	**390401** 5032	34,10	**390242** 5032	34,10	**390401** 5033	34,10	**390430** 5035	54,50
CNGA 12 04 08	390401 5042	34,10	390242 5042	34,10	390401 5043	34,10	390430 5045	54,50
	3110		3110		3110			



CNGA, chamfered

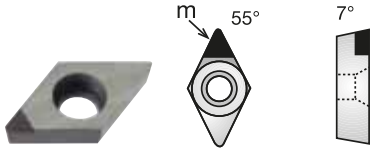
ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
CNGA 12 04 04	**390405** 5032	34,10	**390243** 5032	34,10	**390405** 5033	34,10
CNGA 12 04 08	390405 5042	34,10	390243 5042	34,10	390405 5043	34,10
	3110		3110		3110	

Continued on next page >>>



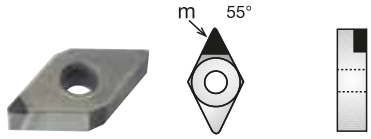
DCGW, sharp-edged (A)

ISO designation	ABC 10/A art.no.	€	ABC15/F art.no.	€	ABC25/F art.no.	€	ADC/F art.no.	€
DCGW 07 02 02	**391301** 2022	34,10	**390244** 2022	34,10	**391301** 2023	34,10	**391330** 2025	54,50
DCGW 07 02 04	391301 2032	34,10	390244 2032	34,10	391301 2033	34,10	391330 2035	54,50
DCGW 11 T3 02	391301 4622	34,10	390244 4622	34,10	391301 4623	34,10	391330 4625	54,50
DCGW 11 T3 04	391301 4632	34,10	390244 4632	34,10	391301 4633	34,10	391330 4635	54,50
DCGW 11 T3 08	391301 4642	34,10	390244 4642	34,10	391301 4643	34,10	391330 4645	54,50
	3110		3110		3110		3110	



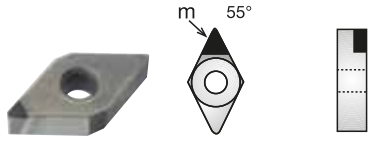
DCGW, chamfered

ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
DCGW 07 02 02	**391305** 2022	34,10	**390245** 2022	34,10	**391305** 2023	34,10
DCGW 07 02 04	391305 2032	34,10	390245 2032	34,10	391305 2033	34,10
DCGW 11 T3 02	391305 4622	34,10	390245 4622	34,10	391305 4623	34,10
DCGW 11 T3 04	391305 4632	34,10	390245 4632	34,10	391305 4633	34,10
DCGW 11 T3 08	391305 4642	34,10	390245 4642	34,10	391305 4643	34,10
	3110		3110		3110	



DNGA, sharp-edged (A)

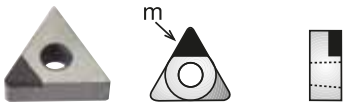
ISO designation	ABC 10/A art.no.	€	ABC 15/A art.no.	€	ABC 25/A art.no.	€	ADC/F art.no.	€
DNGA 15 06 04	**391401** 5832	34,10	**390246** 5832	34,10	**391401** 5833	34,10	**391430** 5835	54,50
DNGA 15 06 08	391401 5842	34,10	390246 5842	34,10	391401 5843	34,10	391430 5845	54,50
	3110		3110		3110		3110	



DNGA, chamfered

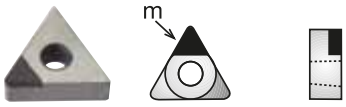
ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
DNGA 15 06 04	**391405** 5832	34,10	**390247** 5832	34,10	**391405** 5833	34,10
DNGA 15 06 08	391405 5842	34,10	390247 5842	34,10	391405 5843	34,10
	3110		3110		3110	

Continued on next page >>>



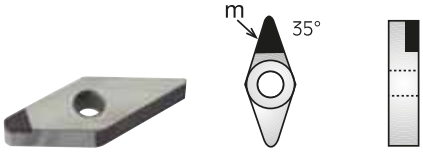
TNGA, sharp-edged (A)

ISO designation	ABC 10/A art.no.	€	ABC 25/A art.no.	€	ADC/F art.no.	€
TNGA 16 04 04	**395501** 6232	34,10	**395501** 6233	34,10	**395530** 6235	54,50
TNGA 16 04 08	395501 6242	34,10	395501 6243	34,10	395530 6245	54,50
	3110		3110		3110	



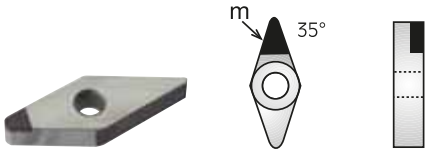
TNGA, chamfered

ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
TNGA 16 04 04	**395505** 6232	34,10			**395505** 6233	34,10
TNGA 16 04 08	395505 6242	34,10	**390249** 6242	34,10	395505 6243	34,10
	3110		3110		3110	



VNGA, sharp-edged (A)

ISO designation	ABC 10/A art.no.	€	ABC 15/A art.no.	€	ABC 25/A art.no.	€	ADC/A art.no.	€
VNGA 16 04 04	**396810** 6232	39,70	**390250** 6232	39,70	**396810** 6233	39,70	**396830** 6235	54,50
VNGA 16 04 08	396810 6242	39,70	390250 6242	39,70	396810 6243	39,70	396830 6245	54,50
	3110		3110		3110		3110	



VNGA, chamfered

ISO designation	ABC 10/T art.no.	€	ABC 15/T art.no.	€	ABC 25/T art.no.	€
VNGA 16 04 04	**396815** 6232	39,70	**390251** 6232	39,70	**396815** 6233	39,70
VNGA 16 04 08	396815 6242	39,70	390251 6242	39,70	396815 6243	39,70
	3110		3110		3110	

ATORN® Precision thread cutting

INFO

The threading inserts are clamped in the holder using Torx screws; you can use virtually all the tool holders available on the market.

Affordable thread turning for external and internal threads, especially on CNC processing machines.



Ground version

ATORN®

Version ground on all sides with **highly accurate profile geometry**

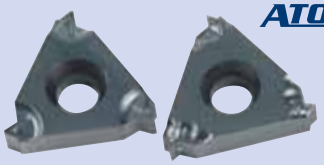
- Guaranteed quality due to complete control
- Maximum precision possible
- Chip breakers ground from solid material



Ground version with sintered chip breaker

ATORN®

- Controlled chip breaking
- Longer service life



Threading inserts product range

	ATORN®
Partial profiles, 60°	●
Partial profiles, 55°	●
ISO metric thread	●
UN full profile thread (Unified)	●
BSW British Standard Whitworth thread	●
NPT American standard taper pipe thread	●
Trapezoidal thread according to DIN 103	●
Round thread according to DIN 405	●
PG (DIN 40430) armoured pipe thread	●
Saw-tooth thread (DIN 513)	●
Type Z inserts, 4.1 mm, for Sandvik holders	●
Mini thread	●

Other threading inserts are available on request:

- ACME American trapezoidal thread
- Oil thread
  - API – round
  - API – V 0.040
  - API – V 0.038 R
  - API – V 0.050
- BSPT British tapered pipe thread
- NPTF
- STUB ACME
- UNJ
- Multiple thread ridge inserts

and thread based on drawings available on request

Multiple thread ridge inserts

available on request



Application areas of the available carbide qualities

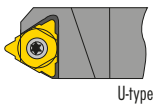
Quality	ISO	Application area
HC 5625 PVD TIN	P15-P35	For non-alloyed and alloyed steel at low to medium cutting speeds
HC 5615 PVD TIN	P10-P25 K10-K20	For machining non-alloyed, alloyed and stainless steels, super alloys, hardened steels, cast iron materials and non-ferrous metals at medium cutting speeds
HC 5630 PVD TIAlN	P20-P40 K20-K30	For machining non-alloyed, alloyed and stainless steels, super alloys, hardened steels and cast iron materials at medium to high cutting speeds
HC 5640 PVD TIN	P30-P50 K25-K40	For non-alloyed and alloyed steels at low cutting speeds, particularly suitable for stainless steels
HC 5620 PVD	M10-M20 K05-K20 N10-N20 S10-S20	For stainless steel, cast iron, titanium, non-ferrous metals and high-temperature alloys
HC 5110 PVD	H01-H20	For hardened steels, cast iron, super alloys up to 62 HRc

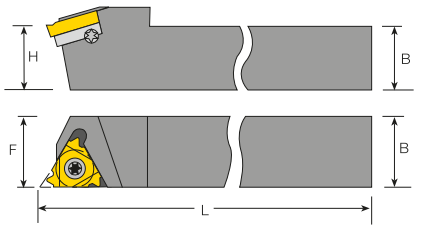
O partial profile, 60° and 55°	Page 30-114
DIN ISO full profile, metric	Page 30-115
DIN ISO partial profile, metric high-performance coating	Page 30-119
DIN ISO full profile UN, BSW	Page 30-120
DIN ISO round, trapezoidal	Page 30-121
DIN ISO NPT, PG saw-tooth	Page 30-122
DIN ISO mini thread	Page 30-123

ATORN® Tool holder

- **External thread**
- **Note:** All tool holders are manufactured with a pitch angle of 1.5°. Other pitch angles are specified in the pitch angle table in the technical part of the catalogue.
- * = tool holder without spacers
- ** = available with clamping claw on request







Standard type

External thread

Designation	B mm	L mm	F mm	Cutting edge length mm	H mm						Right-hand art.no.	€	Left-hand art.no.	€
SER 10 10 H11	10	100	11	11*	10	A1				E1	**340101** 0002	80,–		
SEL 10 10 H11	10	100	11	11*	10	A1				E1			**340110** 0002	80,–
SER 12 12 F16	12	80	16	16**	12	A2	B1	C1		E2	340101 0011	80,–		
SEL 12 12 F16	12	80	16	16**	12	A2	B1		D1	E2			340110 0011	80,–
SER 16 16 H16	16	100	16	16**	16	A2	B1	C1		E2	340101 0012	80,–		
SEL 16 16 H16	16	100	16	16**	16	A2	B1		D1	E2			340110 0012	80,–
SER 20 20 K16	20	125	20	16**	20	A2	B1	C1		E2	340101 0013	80,–		
SEL 20 20 K16	20	125	20	16**	20	A2	B1		D1	E2			340110 0013	80,–
SER 25 25 M16	25	150	25	16**	25	A2	B1	C1		E2	340101 0014	84,50		
SEL 25 25 M16	25	150	25	16**	25	A2	B1		D1	E2			340110 0014	84,50
SER 25 25 M22	25	150	25	22	25	A3	B2	C2		E3	340101 0021	91,–		
SEL 25 25 M22	25	150	25	22	25	A3	B2		D2	E3			340110 0021	91,–
SER 32 32 P22	32	170	32	22	32	A3	B2	C2		E3	340101 0022	126,–		
SEL 32 32 P22	32	170	32	22	32	A3	B2		D2	E3			340110 0022	126,–
SER 32 32 P22U	32	170	32	22U	32	A3	B2	C3		E3	340101 0031	130,–		
SEL 32 32 P22U	32	170	32	22U	32	A3	B2		D3	E3			340110 0031	130,–
SER 25 25 M27	25	150	32	27	25	A4	B3	C4		E4	340101 0041	115,–		
SEL 25 25 M27	25	150	32	27	25	A4	B3		D4	E4			340110 0041	115,–
SER 32 32 P27	32	170	32	27	32	A4	B3	C4		E4	340101 0042	153,–		
SEL 32 32 P27	32	170	32	27	32	A4	B3		D4	E4			340110 0042	153,–
SER 32 32 P27U	32	170	32	27U	32	A4	B3	C5		E4	340101 0051	153,–		
SEL 32 32 P27U	32	170	32	27U	32	A4	B3		D5	E4			340110 0051	153,–
											3112		3112	

Spare parts

	Screw art.no.	€
A1	341401 0001	1,87
A2	341401 0011	1,52
A3	341401 0021	2,62
A4	341401 0041	3,46
	3116	

	Spacer screw art.no.	€
B1	341410 0011	1,87
B2	341410 0021	2,62
B3	341410 0041	3,46
	3116	

	Spacer, external right-hand/internal left-hand art.no.	€
C1	341430 0011	8,05
C2	341430 0021	12,55
C3	341430 0031	12,55
C4	341430 0041	21,–
C5	341430 0051	21,–
	3116	

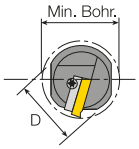
	Spacer, external left-hand/internal right-hand art.no.	€
D1	341430 0012	8,05
D2	341430 0022	12,55
D3	341430 0032	12,55
D4	341430 0042	21,–
D5	341430 0052	21,–
	3116	

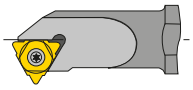
	TORX wrench art.no.	€
E1	705105 0008	4,94
E2	705105 0010	5,30
E3	705105 0020	5,60
E4	705105 0025	5,60
	7112	

ATORN® Boring bars

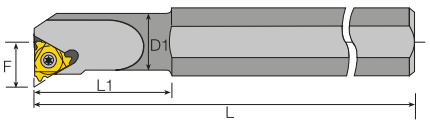
- **Female thread**
- **Note:** All boring bars are manufactured with a pitch angle of 1.5°. Other pitch angles are specified in the pitch angle table in the technical part of the catalogue
- * = boring bar without spacers
- ** = available with clamping claw on request







U-type



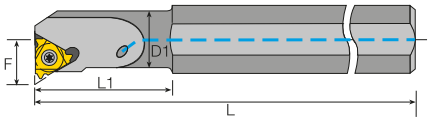
Standard type

Female thread

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm						Right-hand art.no.	€	Left-hand art.no.	€
SIR 0010H11	11*	10	10	12.0	100	-	7.4	A1				E1	**340301** 0001	82,–		
SIL 0010H11	11*	10	10	12.0	100	-	7.4	A1				E1			**340310** 0001	82,–
SIR 0010 K11	11*	16	10	12.0	125	25	7.4	A1				E1	340301 0002	82,–		
SIL 0010 K11	11*	16	10	12.0	125	25	7.4	A1				E1			340310 0002	82,–
SIR 0013 L11	11*	16	13	15.0	140	32	8.9	A1				E1	340301 0003	82,–		
SIL 0013 L11	11*	16	13	15.0	140	32	8.9	A1				E1			340310 0003	82,–
SIR 0013 M16	16*	16	13	16.0	150	32	10.2	A2				E2	340301 0011	82,–		
SIL 0013 M16	16*	16	13	16.0	150	32	10.2	A2				E2			340310 0011	82,–
SIR 0016 P16	16*	20	16	19.0	170	40	11.7	A2				E2	340301 0012	82,–		
SIL 0016 P16	16*	20	16	19.0	170	40	11.7	A2				E2			340310 0012	82,–
SIR 0020 P16	16**	20	20	24.0	170	-	13.7	A2	B1		D1	E2	340301 0013	93,–		
SIL 0020 P16	16**	20	20	24.0	170	-	13.7	A2	B1	C1		E2			340310 0013	93,–
SIR 0025 R16	16**	25	25	29.0	200	-	16.2	A2	B1		D1	E2	340301 0014	104,–		
SIL 0025 R16	16**	25	25	29.0	200	-	16.2	A2	B1	C1		E2			340310 0014	104,–
SIR 0032 S16	16**	32	32	36.0	250	-	19.7	A2	B1		D1	E2	340301 0015	131,–		
SIL 0032 S16	16**	32	32	36.0	250	-	19.7	A2	B1	C1		E2			340310 0015	131,–
SIR 0040 T16	16**	40	40	44.0	300	-	23.7	A2	B1		D1	E2	340301 0016	175,–		
SIL 0040 T16	16**	40	40	44.0	300	-	23.7	A2	B1	C1		E2			340310 0016	175,–
SIR 0020 P22	22*	20	20	24.0	170	-	15.6	A3				E3	340301 0021	96,50		
SIL 0020 P22	22*	20	20	24.0	170	-	15.6	A3				E3			340310 0021	96,50
SIR 0025 R22	22**	25	25	29.0	200	-	18.1	A3	B2		D2	E3	340301 0022	110,–		
SIL 0025 R22	22**	25	25	29.0	200	-	18.1	A3	B2	C2		E3			340310 0022	110,–
SIR 0032 S22	22	32	32	38.0	250	-	21.6	A3	B2		D2	E3	340301 0023	133,–		
SIL 0032 S22	22	32	32	38.0	250	-	21.6	A3	B2	C2		E3			340310 0023	133,–
SIR 0040 T22	22	40	40	46.0	300	-	25.6	A3	B2		D2	E3	340301 0024	172,–		
SIL 0040 T22	22	40	40	46.0	300	-	25.6	A3	B2	C2		E3			340310 0024	172,–
SIR 0032 S22U	22U	32	32	38.0	250	-	24.4	A3	B2		D3	E3	340301 0031	145,–		
SIL 0032 S22U	22U	32	32	38.0	250	-	24.4	A3	B2	C3		E3			340310 0031	145,–
SIR 0040 T22U	22U	40	40	46.0	300	-	28.1	A3	B2		D3	E3	340301 0032	181,–		
SIL 0040 T22U	22U	40	40	46.0	300	-	28.1	A3	B2	C3		E3			340310 0032	181,–
SIR 0032 S27	27	32	32	40.0	250	-	22.6	A4	B3		D4	E4	340301 0041	170,–		
SIL 0032 S27	27	32	32	40.0	250	-	22.6	A4	B3	C4		E4			340310 0041	170,–
SIR 0050 U27	27	50	50	58.0	350	-	31.6	A4	B3		D4	E4	340301 0043	250,–		
SIL 0050 U27	27	50	50	58.0	350	-	31.6	A4	B3	C4		E4			340310 0043	250,–
SIR 0032 S27U	27U	32	32	40.0	250	-	25.8	A4	B3		D5	E4	340301 0051	131,–		
SIL 0032 S27U	27U	32	32	40.0	250	-	25.8	A4	B3	C5		E4			340310 0051	131,–
SIR 0050 U27U	27U	50	50	58.0	350	-	34.3	A4	B3		D5	E4	340301 0053	255,–		
SIL 0050 U27U	27U	50	50	58.0	350	-	34.3	A4	B3	C5		E4			340310 0053	255,–
													3112		3112	

Continued on next page >>>



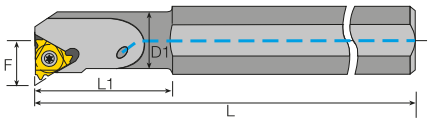


Boring bars with internal coolant supply

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm						Right-hand art.no.	€	Left-hand art.no.	€
SIR 0010 K11B	11*	16	10	12.0	125	25	7.4	A1				E1	**340320** 0002	90,50		
SIL 0010 K11B	11*	16	10	12.0	125	25	7.4	A1				E1			**340321** 0002	90,50
SIR 0013 M16B	16*	16	13	16.0	150	32	10.2	A2				E2	340320 0011	90,50		
SIL 0013 M16B	16*	16	13	16.0	150	32	10.2	A2				E2			340321 0011	90,50
SIR 0016 P16B	16*	20	16	19.0	170	40	11.7	A2				E2	340320 0012	90,50		
SIL 0016 P16B	16*	20	16	19.0	170	40	11.7	A2				E2			340321 0012	90,50
SIR 0020 P16B	16	20	20	24.0	170	-	13.7	A2	B1		D1	E2	340320 0013	102,–		
SIL 0020 P16B	16	20	20	24.0	170	-	13.7	A2	B1	C1		E2			340321 0013	102,–
SIR 0025 R16B	16	25	25	29.0	200	-	16.2	A2	B1		D1	E2	340320 0014	114,–		
SIL 0025 R16B	16	25	25	29.0	200	-	16.2	A2	B1	C1		E2			340321 0014	114,–
SIR0025 R22B	22	25	25	29.0	200	-	18.1	A3	B2		D2	E3	340320 0022	122,–		
SIL0025 R 22B	22	25	25	29.0	200	-	18.1	A3	B2	C2		E3			340321 0022	122,–
													3112		3112	

Solid carbide boring bars with internal coolant supply

- Solid carbide boring bars are used without spacers. Especially suited to preventing vibration in applications with long projections and small bore diameters



Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm			Right-hand art.no.	€	Left-hand art.no.	€
SIR/L 0010 M11CB	11*	10	10	12.0	150	-	7.4	A1	E1	**340501** 0001	270,–	**340510** 0001	325,–
SIR/L 0012 P11CB	11*	12	12	15.0	170	-	8.4	A1	E1	340501 0002	325,–	340510 0002	390,–
SIR/L 0016 R16CB	16*	16	16	19.0	200	-	11.7	A2	E2	340501 0011	475,–	340510 0011	579,–
SIR/L 0020 S16CB	16*	20	20	23.0	250	-	13.7	A2	E2	340501 0012	649,–	340510 0012	779,–
SIR/L 0025 S16CB	16*	25	25	28.0	250	-	16.2	A2	E2	340501 0013	869,–	340510 0013	1.049,–
										3112		3112	

Spare parts

Screw			Spacer screw			Spacer, external right-hand/internal left-hand			Spacer, external left-hand/internal right-hand			TORX wrench		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	341401 0001	1,87	B1	341410 0011	1,87	C1	341430 0011	8,05	D1	341430 0012	8,05	E1	705105 0008	4,94
A2	341401 0011	1,52	B2	341410 0021	2,62	C2	341430 0021	12,55	D2	341430 0022	12,55	E2	705105 0010	5,30
A3	341401 0021	2,62	B3	341410 0041	3,46	C3	341430 0031	12,55	D3	341430 0032	12,55	E3	705105 0020	5,60
A4	341401 0041	3,46				C4	341430 0041	21,–	D4	341430 0042	21,–	E4	705105 0025	5,60
						C5	341430 0051	21,–	D5	341430 0052	21,–			
3116			3116			3116			3116			7112		



… for special measurement tasks

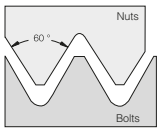
ATORN®
High quality for great performance

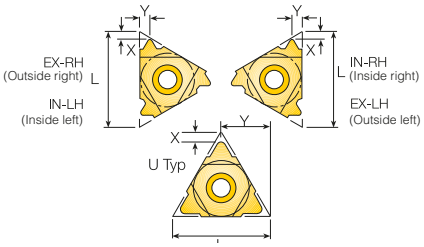
ATORN® Thread cutting inserts, partial profile, 60°

30-178

- **Partial profile, 60°**
- **Inserts available in left-hand version on request**







Partial profile, 60° external right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 ER A60	11	0.5-1.5	0.8	0.9	10	**342001** 0127	14,80	10	**342001** 0135	14,80
16 ER A60	16	0.5-1.5	0.8	0.9	10	342001 0227	14,80	10	342001 0235	14,80
16 ER G60	16	1.75-3.0	1.2	1.7	10	342001 0327	16,10	10	342001 0335	16,10
16 ER AG60	16	0.5-3.0	1.2	1.7	10	342001 0427	16,10	10	342001 0435	16,10
22 ER N60	22	3.5-5.0	1.7	2.5	5	342001 0527	25,20	5	342001 0535	25,20
22 UER/L U60	22U	5.5-8.0	0.6	11.0	5	342001 0627	25,20	5	342001 0635	25,20
						3113			3113	

Partial profile, 60º internal right-hand, ground

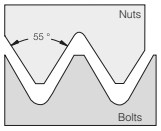
Designation	L mm	Pitch mm	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 IR A60	11	0.5-1.5	0.8	0.9	10	**342201** 0127	14,80	10	**342201** 0135	14,80
16 IR A60	16	0.5-1.5	0.8	0.9	10	342201 0227	14,80	10	342201 0235	14,80
16 IR G60	16	1.75-3.0	1.2	1.7	10	342201 0327	16,10	10	342201 0335	16,10
16 IR AG60	16	0.5-3.0	1.2	1.7	10	342201 0427	16,10	10	342201 0435	16,10
22 IR N60	22	3.5-5.0	1.7	2.5	5	342201 0527	25,20	5	342201 0535	25,20
22U IR/L U60	22U	5.5-8.0	0.6	11.0	5	342201 0627	25,20	5	342201 0635	25,20
						3113			3113	

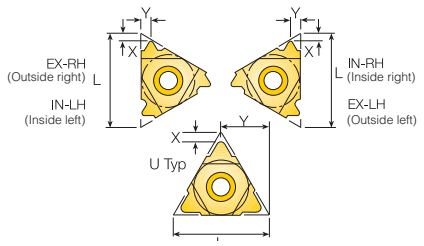
ATORN® Thread cutting inserts, partial profile, 55°

30-178

- **Partial profile, 55°**
- **Inserts available in left-hand version on request**







Partial profile, 55° external right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 ER A55	11	48 - 16	0.8	0.9	10	**342401** 0127	16,30	10	**342401** 0135	16,30
16 ER A55	16	48 - 16	0.8	0.9	10	342401 0227	16,30	10	342401 0235	16,30
16 ER G55	16	14 - 8	1.2	1.7	10	342401 0327	17,50	10	342401 0335	17,50
16 ER AG55	16	48 - 8	1.2	1.7	10	342401 0427	17,50	10	342401 0435	17,50
22 ER N55	22	7 - 5	1.7	2.5	5	342401 0527	27,20	10	342401 0535	27,20
22 UER U55	22U	4.5-3.25	0.9	11.0	5	342401 0627	27,20	5	342401 0635	27,20
						3113			3113	

Partial profile, 55° internal right-hand, ground

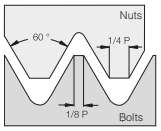
Designation	L mm	Pitch TPI	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 IR A55	11	48 - 16	0.8	0.9	10	**342601** 0127	16,30	10	**342601** 0135	16,30
16 IR A55	16	48 - 16	0.8	0.9	10	342601 0227	16,30	10	342601 0235	16,30
16 IR G55	16	14 - 8	1.2	1.7	10	342601 0327	17,50	10	342601 0335	17,50
16 IR AG55	16	48 - 8	1.2	1.7	10	342601 0427	17,50	10	342601 0435	17,50
22 IR N55	22	7 - 5	1.7	2.5	5	342601 0527	27,20	10	342601 0535	27,20
22U IR U55	22U	4.5-3.25	0.9	11.0	5	342601 0627	27,20	5	342601 0635	27,20
						3113			3113	

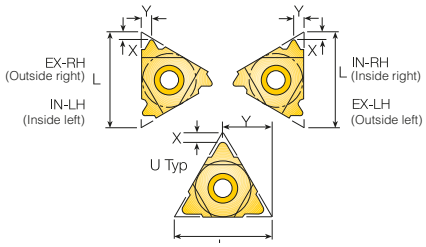
ATORN® Thread cutting inserts, full profile, ISO, ER

30-178

- **Metric, full profile, ISO**







Full profile, ISO external right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 ER 0.35ISO	11	0.35	0.8	0.4				10	**342801** 0130	15,80	10	**342801** 0135	15,80
11 ER 0.4ISO	11	0.4	0.7	0.4				10	342801 0230	15,80	10	342801 0235	15,80
11 ER 0.45ISO	11	0.45	0.7	0.4				10	342801 0330	15,80	10	342801 0335	15,80
11 ER 0.5ISO	11	0.5	0.6	0.6				10	342801 0430	15,80	10	342801 0435	15,80
11 ER 0.6ISO	11	0.6	0.6	0.6				10	342801 0530	15,80	10	342801 0535	15,80
11 ER 0.7ISO	11	0.7	0.6	0.6				10	342801 0630	15,80	10	342801 0635	15,80
11 ER 0.75ISO	11	0.75	0.6	0.6				10	342801 0730	15,80	10	342801 0735	15,80
11 ER 0.8ISO	11	0.8	0.6	0.6				10	342801 0830	15,80	10	342801 0835	15,80
11 ER 1.0ISO	11	1.0	0.7	0.7				10	342801 0930	13,80	10	342801 0935	13,80
11 ER 1.25ISO	11	1.25	0.8	0.9				10	342801 1030	13,80	10	342801 1035	13,80
11 ER 1.5ISO	11	1.5	0.8	1.0				10	342801 1130	13,80	10	342801 1135	13,80
11 ER 1.75ISO	11	1.75	0.8	1.1				10	342801 1230	13,80	10	342801 1235	13,80
16 ER 0.35ISO	16	0.35	0.8	0.4				10	342801 1330	15,80	10	342801 1335	15,80
16 ER 0.4ISO	16	0.4	0.7	0.4	10	**342801** 1427	15,80	10	342801 1430	15,80	10	342801 1435	15,80
16 ER 0.45ISO	16	0.45	0.7	0.4				10	342801 1530	15,80	10	342801 1535	15,80
16 ER 0.5ISO	16	0.5	0.6	0.6	10	342801 1627	15,80	10	342801 1630	15,80	10	342801 1635	15,80
16 ER 0.6ISO	16	0.6	0.6	0.6				10	342801 1730	15,80	10	342801 1735	15,80
16 ER 0.7ISO	16	0.7	0.6	0.6				10	342801 1830	15,80	10	342801 1835	15,80
16 ER 0.75ISO	16	0.75	0.6	0.6	10	342801 1927	15,80	10	342801 1930	15,80	10	342801 1935	15,80
16 ER 0.8ISO	16	0.8	0.6	0.6	10	342801 2027	15,80	10	342801 2030	15,80	10	342801 2035	15,80
16 ER 1.0ISO	16	1.0	0.7	0.7	10	342801 2127	13,80	10	342801 2130	13,80	10	342801 2135	13,80
16 ER 1.25ISO	16	1.25	0.8	0.9	10	342801 2227	13,80	10	342801 2230	13,80	10	342801 2235	13,80
16 ER 1.5ISO	16	1.5	0.8	1.0	10	342801 2327	13,80	10	342801 2330	13,80	10	342801 2335	13,80
16 ER 1.75ISO	16	1.75	0.9	1.2	10	342801 2427	13,80	10	342801 2430	13,80	10	342801 2435	13,80
16 ER 2.0ISO	16	2.0	1.0	1.3	10	342801 2527	13,80	10	342801 2530	13,80	10	342801 2535	13,80
16 ER 2.5ISO	16	2.5	1.1	1.5	10	342801 2627	15,20	10	342801 2630	15,20	10	342801 2635	15,20
16 ER 3.0ISO	16	3.0	1.2	1.6	10	342801 2727	15,20	10	342801 2730	15,20	10	342801 2735	15,20
16 ER 3.5ISO	16	3.5	1.2	1.7							10	342801 3735	15,20
22 ER 3.5ISO	22	3.5	1.6	2.3	10	342801 2827	20,80	10	342801 2830	20,80	10	342801 2835	20,80
22 ER 4.0ISO	22	4.0	1.6	2.3	10	342801 2927	20,80	10	342801 2930	20,80	10	342801 2935	20,80
22 ER 4.5ISO	22	4.5	1.7	2.4	10	342801 3027	20,80	10	342801 3030	20,80	10	342801 3035	20,80
22 ER 5.0ISO	22	5.0	1.7	2.5	10	342801 3127	20,80	10	342801 3130	20,80	10	342801 3135	20,80
22 ER 5.5ISO	22	5.5	1.7	2.6							10	342801 3835	20,80
22 ER 6.0ISO	22	6.0	1.9	2.7							10	342801 3935	20,80
27 ER 5.5ISO	27	5.5	1.9	2.7				5	342801 3230	34,70	5	342801 3235	34,70
27 ER 6.0ISO	27	6.0	2.0	2.9				5	342801 3330	34,70	5	342801 3335	34,70
22U ER/L5.5ISO	22U	5.5	2.3	11.0				10	342801 3430	26,20	10	342801 3435	26,20
22U ER/L6.0ISO	22U	6.0	2.6	11.0				10	342801 3530	26,20	10	342801 3535	26,20
27U ER/L8.0ISO	27U	8.0	2.4	13.7				5	342801 3630	34,70	5	342801 3635	34,70
						3113			3113			3113	

Full profile, ISO external right-hand, with chip breaker type B

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 ERB 1.0ISO	16	1.0	0.7	0.7	10	**342802** 2127	13,80
16 ERB 1.25ISO	16	1.25	0.8	0.9	10	342802 2227	13,80
16 ERB 1.5ISO	16	1.5	0.8	1.0	10	342802 2327	13,80
16 ERB 1.75ISO	16	1.75	0.9	1.2	10	342802 2427	13,80
16 ERB 2.0ISO	16	2.0	1.0	1.3	10	342802 2527	13,80
16 ERB 2.5ISO	16	2.5	1.1	1.5	10	342802 2627	15,20
16 ERB 3.0ISO	16	3.0	1.2	1.6	10	342802 2727	15,20
						3113	



Continued on next page >>>



10 pcs set, ground profile, external right

ISO P M K S H

Contents per set	HC 5630 art.no.	€
2 x 16 ER 1.0 ISO; 2 x 16 ER 1.25 ISO; 2 x 16 ER 1.5 ISO; 2 x 16 ER 1.75 ISO; 2 x 16 ER 2.0 ISO	**342801** 5016	129,–

3113

10 pcs set, ground profile, external right with chip breaker B

ISO P M K S H

Contents	HC 5630 art.no.	€
2 x 16 ER B 1.0 ISO; 2 x 16 ER B 1.25 ISO; 2 x 16 ER B 1.5 ISO; 2 x 16 ER B 1.75 ISO; 2 x 16 ER B 2.0 ISO	**342802** 5016	129,–

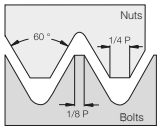
3113

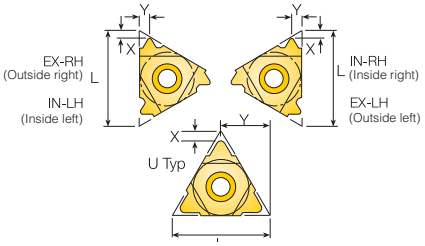
ATORN® Thread cutting inserts, full profile, ISO, EL

Vc/fz 30-178

- **Metric, full profile, ISO**
- ***Note:** Insert types 22 U and 27 U in pitches of 5.5 - 8.0 mm are identical to the right-hand version







Full profile, ISO external left-hand, ground

ISO P M K N

Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
11 EL 0.35ISO	11	0.35	0.8	0.4	10	**342810** 0135	15,80
11 EL 0.4ISO	11	0.4	0.7	0.4	10	342810 0235	15,80
11 EL 0.45ISO	11	0.45	0.7	0.4	10	342810 0335	15,80
11 EL 0.5ISO	11	0.5	0.6	0.6	10	342810 0435	15,80
11 EL 0.6ISO	11	0.6	0.6	0.6	10	342810 0535	15,80
11 EL 0.7ISO	11	0.7	0.6	0.6	10	342810 0635	15,80
11 EL 0.75ISO	11	0.75	0.6	0.6	10	342810 0735	15,80
11 EL 1.0ISO	11	1.0	0.7	0.7	10	342810 0935	13,80
11 EL 1.25ISO	11	1.25	0.8	0.9	10	342810 1035	13,80
11 EL 1.5ISO	11	1.5	0.8	1.0	10	342810 1135	13,80
11 EL 1.75ISO	11	1.75	0.8	1.1	10	342810 1235	13,80
16 EL 0.35ISO	16	0.35	0.8	0.4	10	342810 1335	15,80
16 EL 0.4ISO	16	0.4	0.7	0.4	10	342810 1435	15,80
16 EL 0.45ISO	16	0.45	0.7	0.4	10	342810 1535	15,80
16 EL 0.5ISO	16	0.5	0.6	0.6	10	342810 1635	15,80
16 EL 0.6ISO	16	0.6	0.6	0.6	10	342810 1735	15,80
16 EL 0.7ISO	16	0.7	0.6	0.6	10	342810 1835	15,80
16 EL 0.75ISO	16	0.75	0.6	0.6	10	342810 1935	15,80
16 EL 0.8ISO	16	0.8	0.6	0.6	10	342810 2035	15,80
16 EL 1.0ISO	16	1.0	0.7	0.7	10	342810 2135	13,80
16 EL 1.25ISO	16	1.25	0.8	0.9	10	342810 2235	13,80
16 EL 1.5ISO	16	1.5	0.8	1.0	10	342810 2335	13,80
16 EL 1.75ISO	16	1.75	0.9	1.2	10	342810 2435	13,80
16 EL 2.0ISO	16	2.0	1.0	1.3	10	342810 2535	13,80
16 EL 2.5ISO	16	2.5	1.1	1.5	10	342810 2635	15,20
16 EL 3.0ISO	16	3.0	1.2	1.6	10	342810 2735	15,20
16 EL 3.5ISO	16	3.5	1.2	1.7	10	342810 3735	15,20
22 EL 3.5ISO	22	3.5	1.6	2.3	10	342810 2835	20,80
22 EL 4.0ISO	22	4.0	1.6	2.3	10	342810 2935	20,80
22 EL 4.5ISO	22	4.5	1.7	2.4	10	342810 3035	20,80
22 EL 5.0ISO	22	5.0	1.7	2.5	10	342810 3135	20,80
22 EL 5.5ISO	22	5.5	1.7	2.6	10	342810 3835	20,80
22 EL 6.0ISO	22	6.0	1.9	2.7	10	342810 3935	20,80
27 EL 5.5ISO	27	5.5	1.9	2.7	5	342810 3235	34,70
27 EL 6.0ISO	27	6.0	2.0	2.9	5	342810 3335	34,70

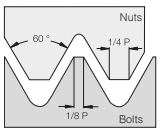
3113

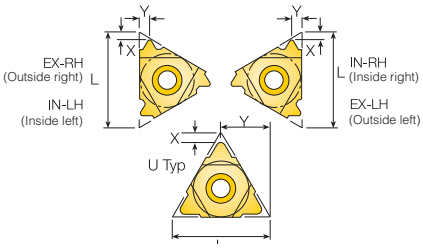
ATORN® Thread cutting inserts, full profile, ISO, IR

30-178

- **Metric, full profile, ISO**







Full profile, ISO internal right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 IR 0.35ISO	11	0.35	0.8	0.3				10	**343001** 0130	15,80	10	**343001** 0135	15,80
11 IR 0.4ISO	11	0.4	0.8	0.4				10	343001 0230	15,80	10	343001 0235	15,80
11 IR 0.45ISO	11	0.45	0.8	0.4				10	343001 0330	15,80	10	343001 0335	15,80
11 IR 0.5ISO	11	0.5	0.6	0.6	10	**343001** 0427	15,80	10	343001 0430	15,80	10	343001 0435	15,80
11 IR 0.6ISO	11	0.6	0.6	0.6				10	343001 0530	15,80	10	343001 0535	15,80
11 IR 0.7ISO	11	0.7	0.6	0.6				10	343001 0630	15,80	10	343001 0635	15,80
11 IR 0.75ISO	11	0.75	0.6	0.6	10	343001 0727	15,80	10	343001 0730	15,80	10	343001 0735	15,80
11 IR 0.8ISO	11	0.8	0.6	0.6				10	343001 0830	15,80	10	343001 0835	15,80
11 IR 1.0ISO	11	1.0	0.6	0.7	10	343001 0927	13,80	10	343001 0930	13,80	10	343001 0935	13,80
11 IR 1.25ISO	11	1.25	0.8	0.8				10	343001 1030	13,80	10	343001 1035	13,80
11 IR 1.5ISO	11	1.5	0.8	1.0	10	343001 1127	13,80	10	343001 1130	13,80	10	343001 1135	13,80
11 IR 1.75ISO	11	1.75	0.8	1.1				10	343001 1230	13,80	10	343001 1235	13,80
11 IR 2.0ISO	11	2.0	0.8	0.9	10	343001 4127	13,80				10	343001 4135	13,80
16 IR 0.5ISO	16	0.5	0.6	0.6							10	343001 4035	15,80
16 IR 0.6ISO	16	0.6	0.6	0.6				10	343001 1430	15,80	10	343001 1435	15,80
16 IR 0.7ISO	16	0.7	0.6	0.6				10	343001 1530	15,80	10	343001 1535	15,80
16 IR 0.75ISO	16	0.75	0.6	0.6				10	343001 1630	15,80	10	343001 1635	15,80
16 IR 0.8ISO	16	0.8	0.6	0.6				10	343001 1730	15,80	10	343001 1735	15,80
16 IR 1.0ISO	16	1.0	0.6	0.7	10	343001 1827	13,80	10	343001 1830	13,80	10	343001 1835	13,80
16 IR 1.25ISO	16	1.25	0.8	0.9	10	343001 1927	13,80	10	343001 1930	13,80	10	343001 1935	13,80
16 IR 1.5ISO	16	1.5	0.8	1.0	10	343001 2027	13,80	10	343001 2030	13,80	10	343001 2035	13,80
16 IR 1.75ISO	16	1.75	0.9	1.2	10	343001 2127	13,80	10	343001 2130	13,80	10	343001 2135	13,80
16 IR 2.0ISO	16	2.0	1.0	1.3	10	343001 2227	13,80	10	343001 2230	13,80	10	343001 2235	13,80
16 IR 2.5ISO	16	2.5	1.1	1.5	10	343001 2327	15,20	10	343001 2330	15,20	10	343001 2335	15,20
16 IR 3.0ISO	16	3.0	1.1	1.5	10	343001 2427	15,20	10	343001 2430	15,20	10	343001 2435	15,20
16 IR 3.5ISO	16	3.5	1.2	1.7							5	343001 3435	15,20
22 IR 3.5ISO	22	3.5	1.6	2.3	10	343001 2527	20,80	10	343001 2530	20,80	10	343001 2535	20,80
22 IR 4.0ISO	22	4.0	1.6	2.3	10	343001 2627	20,80	10	343001 2630	20,80	10	343001 2635	20,80
22 IR 4.5ISO	22	4.5	1.6	2.4				10	343001 2730	20,80	10	343001 2735	20,80
22 IR 5.0ISO	22	5.0	1.6	2.3				10	343001 2830	20,80	10	343001 2835	20,80
22 IR 5.5ISO	22	5.5	1.6	2.3							5	343001 3535	20,80
22 IR 6.0ISO	22	6.0	1.6	2.4							5	343001 3635	20,80
22U IR/L5.5ISO	22U	5.5	2.4	11.0				10	343001 3130	26,20	10	343001 3135	26,20
22U IR/L6.0ISO	22U	6.0	2.1	11.0				10	343001 3230	26,20	10	343001 3235	26,20
27 IR 5.5ISO	27	5.5	1.6	2.3				5	343001 2930	34,70	5	343001 2935	34,70
27 IR 6.0ISO	27	6.0	1.8	2.5				5	343001 3030	34,70	5	343001 3035	34,70
27U IR/L8.0ISO	27U	8.0	2.4	13.7				5	343001 3330	34,70	5	343001 3335	34,70
						3113			3113			3113	

Full profile, ISO internal right-hand, ground, with chip breaker type B

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 IRB 1.0ISO	16	1.0	0.6	0.7	10	**343002** 1827	13,80
16 IRB 1.25ISO	16	1.25	0.8	0.9	10	343002 1927	13,80
16 IRB 1.5ISO	16	1.5	0.8	1.0	10	343002 2027	13,80
16 IRB 1.75ISO	16	1.75	0.9	1.2	10	343002 2127	13,80
16 IRB 2.0ISO	16	2.0	1.0	1.3	10	343002 2227	13,80
16 IRB 2.5ISO	16	2.5	1.1	1.5	10	343002 2327	15,20
16 IRB 3.0ISO	16	3.0	1.1	1.5	10	343002 2427	15,20
						3113	



Continued on next page >>>

10 pcs set, ground profile, internal right

ISO P M K S H

Contents	HC 5630 art.no.	€
2 x 16 IR 1.0 ISO; 2 x 16 IR 1.25 ISO; 2 x 16 IR 1.5 ISO; 2 x 16 IR 1.75 ISO; 2 x 16 IR 2.0 ISO	**343001** 5016	129,–

3113



10 pcs set, ground profile, internal right with chip breaker B

ISO P M K S H

Contents	HC 5630 art.no.	€
2 x 16 IR B 1.0 ISO; 2 x 16 IR B 1.25 ISO; 2 x 16 IR B 1.5 ISO; 2 x 16 IR B 1.75 ISO; 2 x 16 IR B 2.0 ISO	**343002** 5016	129,–

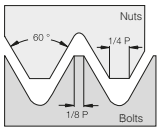
3113

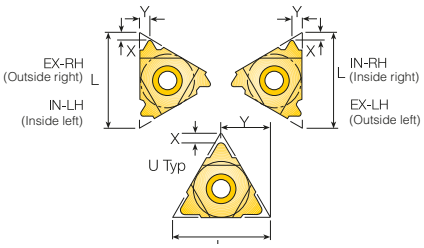
ATORN® Thread cutting inserts, full profile, ISO, IL

Vc/fz 30-178

- **Metric, full profile, ISO**
- ***Note:** Insert types 22 U and 27 U with pitches of 5.5 - 8.0 mm are identical to the right-hand version







Full profile, ISO internal left-hand, ground

ISO P M K N

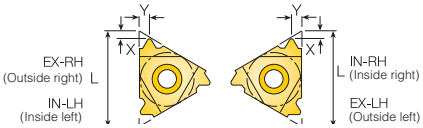
Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
11 IL 0.35ISO	11	0.35	0.8	0.3	10	**343010** 0135	15,80
11 IL 0.4ISO	11	0.4	0.8	0.4	10	343010 0235	15,80
11 IL 0.5ISO	11	0.5	0.6	0.6	10	343010 0435	15,80
11 IL 0.7ISO	11	0.7	0.6	0.6	10	343010 0635	15,80
11 IL 0.75ISO	11	0.75	0.6	0.6	10	343010 0735	15,80
11 IL 0.8ISO	11	0.8	0.6	0.6	10	343010 0835	15,80
11 IL 1.0ISO	11	1.0	0.6	0.7	10	343010 0935	13,80
11 IL 1.25ISO	11	1.25	0.8	0.8	10	343010 1035	13,80
11 IL 1.5ISO	11	1.5	0.8	1.0	10	343010 1135	13,80
11 IL 1.75ISO	11	1.75	0.8	1.1	10	343010 1235	13,80
11 IL 2.0ISO	11	2.0	0.8	0.9	10	343010 4135	13,80
16 IL 0.35ISO	16	0.35	0.8	0.3	10	343010 1335	15,80
16 IL 0.6ISO	16	0.6	0.6	0.6	10	343010 1435	15,80
16 IL 0.75ISO	16	0.75	0.6	0.6	10	343010 1635	15,80
16 IL 0.8ISO	16	0.8	0.6	0.6	10	343010 1735	15,80
16 IL 1.0ISO	16	1.0	0.6	0.7	10	343010 1835	13,80
16 IL 1.25ISO	16	1.25	0.8	0.9	10	343010 1935	13,80
16 IL 1.5ISO	16	1.5	0.8	1.0	10	343010 2035	13,80
16 IL 1.75ISO	16	1.75	0.9	1.2	10	343010 2135	13,80
16 IL 2.0ISO	16	2.0	1.0	1.3	10	343010 2235	13,80
16 IL 2.5ISO	16	2.5	1.1	1.5	5	343010 2335	15,20
16 IL 3.0ISO	16	3.0	1.1	1.5	5	343010 2435	15,20
16 IL 3.5ISO	16	3.5	1.2	1.7	5	343010 3435	15,20
22 IL 3.5ISO	22	3.5	1.6	2.3	5	343010 2535	20,80
22 IL 4.0ISO	22	4.0	1.6	2.3	5	343010 2635	20,80
22 IL 4.5ISO	22	4.5	1.6	2.4	5	343010 2735	20,80
22 IL 5.0ISO	22	5.0	1.6	2.3	5	343010 2835	20,80
22 IL 5.5ISO	22	5.5	1.6	2.3	5	343010 3535	20,80
22 IL 6.0ISO	22	6.0	1.6	2.4	5	343010 3635	20,80
27 IL 5.5ISO	27	5.5	1.6	2.3	5	343010 2935	34,70
27 IL 6.0ISO	27	6.0	1.8	2.5	5	343010 3035	34,70

3113

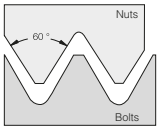
ATORN® High-performance thread cutting inserts

30-178

- **New high-performance coating for significantly higher cutting speeds**
- Partial profile, 55° ER/IR
- Partial profile, 60° ER/IR
- Full profile, ISO ER/IR







Full profile, 60° external right-hand, ground

ISO P M K N S H

Designation	L mm	Pitch mm	X mm	Y mm		HC 5620 art.no.	€
16 ER 1.0 ISO	16	1.0	0.7	0.7	10	**342164** 2145	15,20
16 ER 1.25 ISO	16	1.25	0.8	0.9	10	342164 2245	15,20
16 ER 1.5 ISO	16	1.5	0.8	1.0	10	342164 2345	15,20
16 ER 1.75 ISO	16	1.75	0.9	1.2	10	342164 2445	15,20
16 ER 2.0 ISO	16	2.0	1.0	1.3	10	342164 2545	15,20
16 ER 3.0 ISO	16	3.0	1.2	1.6	10	342164 2745	16,70

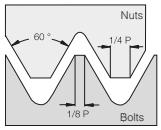
3113

ATORN® Thread cutting inserts, full profile, UN

30-178

- **Full profile, UN**
- other insert sizes and pitches available on request, along with left-hand version



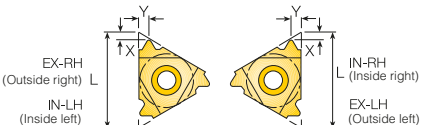


Full profile, UN external right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 ER 20UN	16	20	0.8	0.9	10	**343201** 2735	16,90
16 ER 18UN	16	18	0.8	1.0	10	343201 2835	16,90
16 ER 16UN	16	16	0.9	1.1	10	343201 2935	16,90
16 ER 12UN	16	12	1.1	1.4	10	343201 3235	16,90

3113

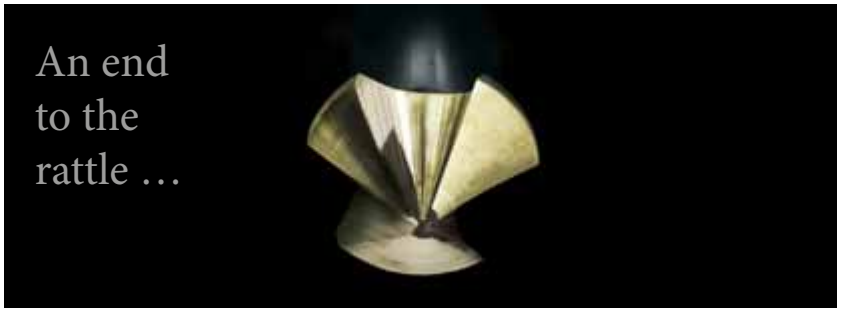


Full profile, UN internal right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 IR 14UN	16	14	0.9	1.2	10	**343401** 3035	16,90
16 IR 12UN	16	12	1.1	1.4	10	343401 3235	16,90

3113



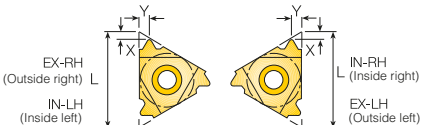
… caused by uneven divisions

ATORN®
High quality for great performance

ATORN® Thread cutting inserts, full profile, BSW

30-178

- **Full profile, BSW**
- other insert sizes and pitches available on request, along with left-hand version





Full profile, BSW external right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
16 ER 28W	16	28	0.6	0.7				10	**344401** 2430	16,90	10	**344401** 2435	16,90
16 ER 19W	16	19	0.8	1.0	10	**344401** 2927	16,90	10	344401 2930	16,90	10	344401 2935	16,90
16 ER 14W	16	14	1.0	1.2	10	344401 3227	16,90	10	344401 3230	16,90	10	344401 3235	16,90
16 ER 11W	16	11	1.1	1.5	10	344401 3427	16,90	10	344401 3430	16,90	10	344401 3435	16,90
						3113			3113			3113	



Full profile, BSW internal right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P K HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 IR 19W	11	19	0.8	1.0	10	**344601** 1327	16,90	10	**344601** 1330	16,90	10	**344601** 1335	16,90
11 IR 14W	11	14	0.9	1.1	10	344601 1627	16,90	10	344601 1630	16,90	10	344601 1635	16,90
16 IR 19W	16	19	0.8	1.0	10	344601 2927	16,90	10	344601 2930	16,90	10	344601 2935	16,90
16 IR 14W	16	14	1.0	1.2	10	344601 3227	16,90	10	344601 3230	16,90	10	344601 3235	16,90
16 IR 11W	16	11	1.1	1.5	10	344601 3427	16,90	10	344601 3430	16,90	10	344601 3435	16,90
						3113			3113			3113	

Full profile, BSW external right-hand, ground, with chip breaker type B

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 ERB 19W	16	19	0.8	1.0	10	**344402** 2927	16,90
16 ERB 14W	16	14	1.0	1.2	10	344402 3227	16,90
16 ERB 11W	16	11	1.1	1.5	10	344402 3427	16,90
						3113	



Full profile, BSW internal right-hand, ground, with chip breaker type B

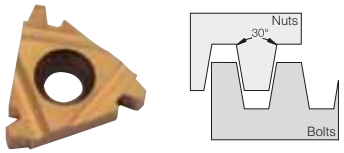
Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 IRB 19W	16	19	0.8	1.0	10	**344602** 2927	16,90
16 IRB 14W	16	14	1.0	1.2	10	344602 3227	16,90
16 IRB 11W	16	11	1.1	1.5	10	344602 3427	16,90
						3113	

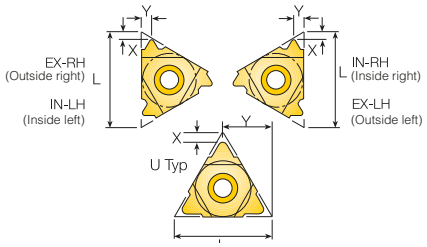


ATORN® Thread cutting inserts, full profile, trapezoidal

30-178

- **Full profile, trapezoidal, DIN 103**
- other insert sizes and pitches available on request, along with left-hand version





Full profile, trapezoidal external right-hand, ground

ISO P M K N

Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
16 ER 3TR	16	3	1.3	1.5	10	**343601** 0335	20,20
22 ER 4TR	22	4	1.8	1.9	5	343601 0435	28,–
22 ER 5TR	22	5	2.0	2.4	5	343601 0535	28,–
22 ER 6TR	22	6	2.0	2.4	5	343601 0935	28,–
22 UER/L 6TR	22U	6	2.0	11.0	10	343601 0635	28,–
22 UER/L 8TR	22U	8	2.5	11.0	5	343601 1035	28,–
27 UER/L 8TR	27U	8	2.5	13.7	5	343601 0835	41,70
						3113	

Full profile, trapezoidal internal right-hand, ground

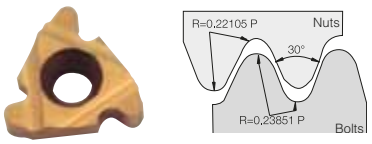
ISO P M K N

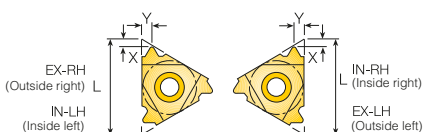
Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
16 IR 2TR	16	2	1.0	1.3	10	**343801** 0235	20,20
16 IR 3TR	16	3	1.3	1.5	10	343801 0335	20,20
22 IR 4TR	22	4	1.8	1.9	5	343801 0435	28,–
22 IR 5TR	22	5	2.0	2.4	10	343801 0535	28,–
22 IR 6TR	22	6	2.0	2.4	5	343801 1035	28,–
22 UIR/L 6TR	22U	6	2.0	11.0	5	343801 0635	28,–
22 UIR/L 7TR	22U	7	2.3	11.0	5	343801 0735	28,–
22 UIR/L 8TR	22U	8	2.5	11.0	5	343801 1135	28,–
						3113	

ATORN® Thread cutting inserts, full profile, round thread

30-178

- **Full profile, round thread, DIN 405**
- other insert sizes and pitches available on request, along with left-hand version





Full profile, external right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 ER 8 RD	16	8	1.4	1.3	10	**345601** 0235	20,20
16 ER 6 RD	16	6	1.5	1.7	10	345601 0335	20,20
						3113	

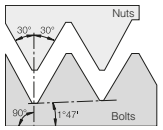
Full profile, internal right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P K			ISO P M K N		
						HC 5625 art.no.	€		HC 5615 art.no.	€
16 IR 8 RD	16	8	1.4	1.4	10	**345801** 0230	20,20	10	**345801** 0235	20,20
16 IR 6 RD	16	6	1.4	1.5	10	345801 0330	20,20	10	345801 0335	20,20
22 IR 6 RD	22	6	1.5	1.7	10	345801 0430	28,–	10	345801 0435	28,–
22 IR 4 RD	22	4	2.2	2.3	10	345801 0530	28,–	10	345801 0535	28,–
						3113			3113	

ATORN® Thread cutting inserts, full profile, NPT

30-178





- **Full profile, NPT American standard taper pipe thread**
- other insert sizes and pitches available on request, along with left-hand version

Full profile, NPT external right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 ER 18NPT	16	18	0.8	1.0	10	**344801** 0235	18,80
16 ER 14NPT	16	14	0.9	1.2	10	344801 0335	18,80
16 ER 11.5NPT	16	11.5	1.1	1.5	10	344801 0435	18,80

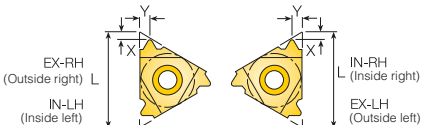
3113

Full profile, NPT internal right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
11 IR 14NPT	11	14	0.8	1.0	10	**345001** 0335	18,80
16 IR 14NPT	16	14	0.9	1.2	10	345001 0635	18,80
16 IR 11.5NPT	16	11.5	1.1	1.5	10	345001 0735	18,80

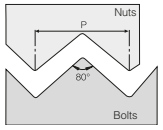
3113



ATORN® Thread cutting inserts, full profile, PG

30-178





- **Full profile, PG, DIN 40430**

Full profile, PG external right-hand, ground

ISO P M K S

Designation	L mm	Pitch TPI	PG thread	X mm	Y mm		HC 5630 art.no.	€
16 ER 20 PG	16	20	PG 7	0.7	0.8	10	**345820** 1027	25,40
16 ER 18 PG	16	18	PG 9/11/13.5/16	0.8	0.9	10	345820 1527	25,40
16 ER 16 PG	16	16	PG 21/29/36/42/48	0.8	1.0	10	345820 2027	25,40

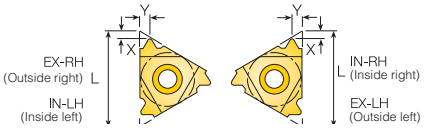
3113

Full profile, PG internal right-hand, ground

ISO P M K S

Designation	L mm	Pitch TPI	PG thread	X mm	Y mm		HC 5630 art.no.	€
16 IR 18 PG	16	18 PG	PG 11/13.5/16	0.8	0.9	10	**345825** 1527	25,40
16 IR 16 PG	16	16 PG	PG 21/29/36/42/48	0.8	1.0	10	345825 2027	25,40

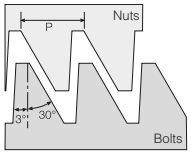
3113



ATORN® Thread cutting inserts, full profile, saw-tooth thread

30-178





- **Full profile, saw-tooth, DIN 513**
- Left-hand versions available on request

Full profile, saw-tooth external right-hand, ground

ISO P M K S

Designation	L mm	n mm	X mm	Y mm		HC 5630 art.no.	€
16 ER 2 SAW	16	2.0	1.1	1.6	10	**345830** 1027	24,20
22 ER 3 SAW	22	3.0	1.5	2.4	10	345830 1527	33,60
22 ER 4 SAW	22	4.0	1.9	3.1	10	345830 2027	33,60
22U ER 5 SAW	22U	5.0	1.2	11.6	10	345830 2527	33,60
22U ER 6 SAW	22U	6.0	1.2	11.7	10	345830 3027	33,60

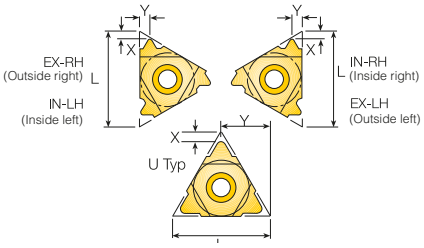
3113

Full profile, saw-tooth internal right-hand, ground

ISO P M K S

Designation	L mm	n mm	X mm	Y mm		HC 5630 art.no.	€
16 IR 2 SAW	16	2.0	1.2	1.7	10	**345835** 1027	24,20
22 IR 3 SAW	22	3.0	1.9	2.9	10	345835 1527	33,60
22 IR 4 SAW	22	4.0	2.3	3.5	10	345835 2027	33,60
22U IR 5 SAW	22U	5.0	1.9	11.7	10	345835 2527	33,60
22U IR 6 SAW	22U	6.0	2.1	11.9	10	345835 3027	33,60

3113



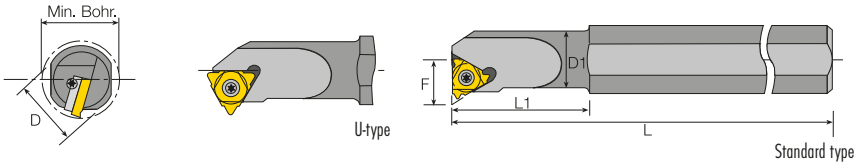
ATORN® MINI boring bar



30-178

- **Female thread**
- **Note:** The boring bars are used without spacers.
- Especially suited to preventing vibration in applications with long projections and small bore diameters.





Boring bars

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm			Right-hand art.no.	€
SIR 0005 H06	6	12	5.1	6.0	100	12	4.3	A1	B1	**340901** 0001	91,–
SIR 0007 K08	8	16	6.6	7.8	125	18	5.3	A2	B2	340901 0002	91,–
SIR 0008 K08U	8U	16	7.3	9.0	125	21	6.6	A2	B2	340901 0003	103,–

3112

Solid carbide boring bars with internal coolant supply

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm			Right-hand art.no.	€
SIR 0005 H06CB	6	6	5.1	6.0	100	26	4.3	A1	B1	**340901** 0011	210,–
SIR 0007 K08CB	8	8	6.6	7.8	125	31	5.3	A2	B2	340901 0012	230,–
SIR 0008 K08UCB	8U	8	7.3	9.0	125	35	6.6	A2	B2	340901 0013	275,–

3112

Spare parts

	Screw art.no.	€
A1	341401 0051	1,98
A2	341401 0061	1,98

3116

	TORX art.no.	€
B1	703053 0060	3,09
B2	703053 0080	3,15

7114



...suggestions are heard.

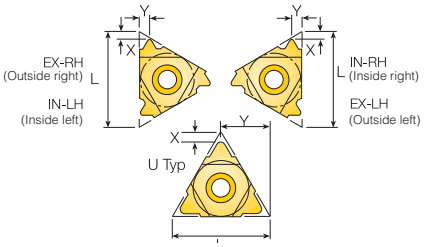
ATORN®
High quality for great performance

ATORN® Thread cutting inserts MINI

30-178



- **Female thread for bores from 6 mm in diameter**
- Amazing combination of Mini thread cutting inserts and coatings
- Specially developed for low speeds
- Successfully replace conventional taps
- Left-hand version available on request



Partial profile, 60° and 55° internal right-hand, ground

ISO P M K S

Designation	L mm	Pitch mm	Pitch TPI	X mm	Y mm		HC 5640 art.no.	€
06 IR A60	6	0.5 - 1.25		0.6	0.6	10	**347001** 0125	15,60
08 IR A60	8	0.5 - 1.5		0.6	0.7	10	347001 0225	15,60
08 U IR/L U60	8U	1.75 - 2.0		0.8	4.0	10	347001 0325	18,70
06 IR A55	6		48-20	0.5	0.6	10	347001 1125	15,60
08 IR A55	8		48-16	0.6	0.7	10	347001 1225	15,60
08 U IR/L U55	8U		14-11	0.9	4.0	10	347001 1325	18,70

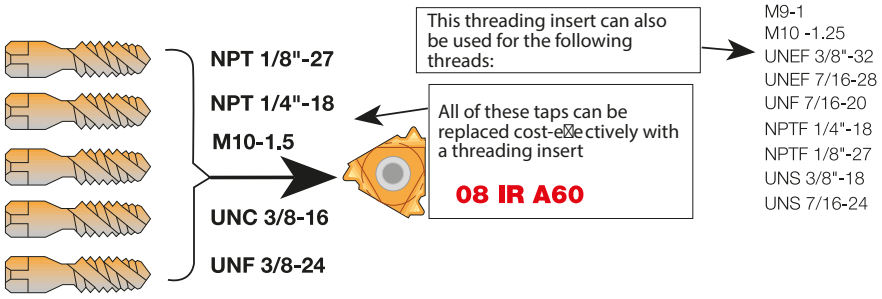
3113

Full profile, ISO metric internal right-hand, ground

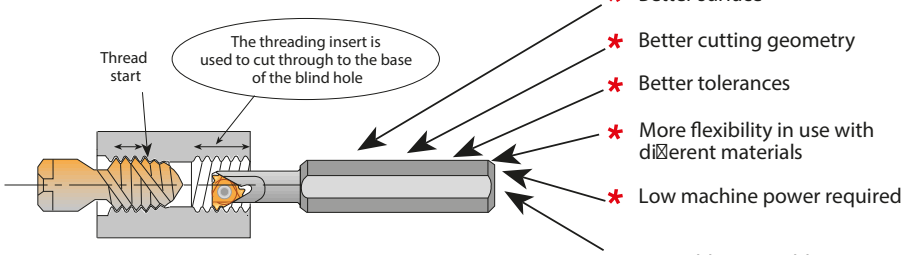
ISO P M K S

Designation	L mm	Pitch mm	X mm	Y mm		HC 5640 art.no.	€
06 IR 0.5ISO	6	0.5	0.9	0.5	10	**347201** 0125	15,60
06 IR 0.75ISO	6	0.75	0.8	0.5	10	347201 0225	15,60
06 IR 1.0ISO	6	1.0	0.7	0.6	10	347201 0325	15,60
06 IR 1.25ISO	6	1.25	0.6	0.6	10	347201 0425	15,60
08 IR 0.5ISO	8	0.5	0.6	0.5	10	347201 0525	15,60
08 IR 0.75ISO	8	0.75	0.6	0.5	10	347201 0625	15,60
08 IR 1.0ISO	8	1.0	0.6	0.6	10	347201 0725	15,60
08 IR 1.25ISO	8	1.25	0.6	0.7	10	347201 0825	15,60
08 IR 1.5ISO	8	1.5	0.6	0.7	10	347201 0925	15,60
08 IR 1.75ISO	8	1.75	0.6	0.8	10	347201 1025	15,60
08 U IR/L 2.0ISO	8U	2.0	0.9	4.0	10	347201 1125	18,70

3113



Advantages:



- * Better surface
- * Better cutting geometry
- * Better tolerances
- * More flexibility in use with different materials
- * Low machine power required
- * No welding possible



ATORN® Thread cutting set



30-178

- Common thread cutting inserts plus tool holder or boring bar
- For external/female threads

External

Contents	External art.no.	€
1 threading insert each quality HC 5625: 16ER A60 16ER G60 16ER 0.75 ISO 16ER 1.0 ISO 16ER 1.25 ISO 16ER 1.5 ISO 16ER 1.75 ISO 16ER 2.0 ISO 16ER 2.5 ISO 16ER 3.0 ISO 1 tool holder, SER 2020 K16 1 TORX key 1 screw	**348001** 0130	210,–
	3112	

Internal

Contents	Internal art.no.	€
1 threading insert each quality HC 5625: 16IR A60 16IR G60 16IR 0.75 ISO 16IR 1.0 ISO 16IR 1.25 ISO 16IR 1.5 ISO 16IR 1.75 ISO 16IR 2.0 ISO 16IR 2.5 ISO 16IR 3.0 ISO 1 boring bar, SIR 0020 P 16 1 TORX key 1 screw	**348501** 0130	230,–
	3112	

ATORN® Adapter/spacer set

Adapters/spacers allow the thread cutting inserts to be used in holders from other manufacturers such as Sandvik.



Designation	Contents	art.no.	€
Adapter set, external	Spacer, AES 16N; insert screw, AS16N; Torx key, K16	**341432** 1000	28,70
Adapter set, internal	Spacer, AIS 16N; insert screw, AS16N; Torx key, K16	341432 1001	28,70
		3116	

ATORN® Spacer set

- Spacers with different pitch angles
- **Type AE** for use in external RH/internal LH holders
- **Type AI** for use in external LH/internal RH holders



Contents	art.no.	€
AE16: +4.5 / +3.5 / +2.5 / +0.5 / -1.5; AI16: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	**341430** 1600	104,–
AE22: +4.5 / +3.5 / +2.5 / +0.5 / -1.5; AI22: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	341430 2200	163,–
AE22U: +4.5 / +3.5 / +2.5 / +0.5 / -1.5; AI22U: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	341430 2250	163,–
AE27: +4.5 / +2.5 / -1.5; AI27: +4.5 /+2.5 / -1.5	341430 2700	163,–
AE27U: +4.5 / +2.5 / -1.5; AI27U: +4.5 /+2.5 / -1.5	341430 2750	163,–
	3116	

ATORN® Grooving inserts



30-178

- **For use in thread cutting holders**
- Low tool costs, since existing holders can be used
- One tool holder for grooving and thread cutting
- Three cutting edges, precision-ground
- Coated with HC 5640
- **Supplied without spacer (spacer set), please order separately!**

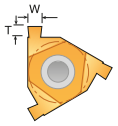
Inserts suitable for holder types SER..16 and SIL..16

ISO P M K N

Designation	W±0.02 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 ER/IL 1.00	1.00	1.4	AE 16-0	5	**349050** 1025	21,90
16 ER/IL 1.20	1.20	1.6	AE 16-0	5	349050 1225	21,90
16 ER/IL 1.40	1.40	1.8	AE 16-0	5	349050 1425	21,90
16 ER/IL 1.70	1.70	2.0	AE 16-0	5	349050 1725	21,90
16 ER/IL 1.95	1.95	2.0	AE 16-0	5	349050 1925	21,90
16 ER/IL 2.25	2.25	2.25	AE 16-0	5	349050 2225	21,90

3113





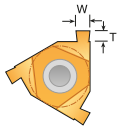
Inserts suitable for holder types SIR..16 and SEL..16

ISO P M K N

Designation	W±0.02 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 IR/EL 1.00	1.00	1.4	AI 16-0	5	**349055** 1025	21,90
16 IR/EL 1.20	1.20	1.6	AI 16-0	5	349055 1225	21,90
16 IR/EL 1.40	1.40	1.8	AI 16-0	5	349055 1425	21,90
16 IR/EL 1.70	1.70	2.0	AI 16-0	5	349055 1725	21,90
16 IR/EL 1.95	1.95	2.0	AI 16-0	5	349055 1925	21,90
16 IR/EL 2.25	2.25	2.25	AI 16-0	5	349055 2225	21,90

3113





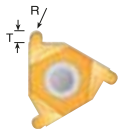
Radius inserts suitable for holder types SER..16 and SIL..16

ISO P M K N

Designation	R±0.04 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 ER/IL R 0.5	0.5	1.4	AE 16-0	5	**349052** 0525	21,90
16 ER/IL R 0.6	0.6	1.6	AE 16-0	5	349052 0625	21,90
16 ER/IL R 0.9	0.9	2.0	AE 16-0	5	349052 0925	21,90
16 ER/IL R 1.0	1.0	2.0	AE 16-0	5	349052 1025	21,90
16 ER/IL R 1.1	1.1	2.15	AE 16-0	5	349052 1125	21,90
16 ER/IL R 1.2	1.2	2.25	AE 16-0	5	349052 1225	21,90

3113





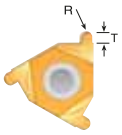
Radius inserts suitable for holder types SIR..16 and SEL..16

ISO P M K N

Designation	R±0.04 mm	T mm	suitable spacer		HC 5640 art.no.	€
16IR/EL R 0.5	0.5	1.4	AI 16-0	5	**349057** 0525	21,90
16IR/EL R 0.6	0.6	1.6	AI 16-0	5	349057 0625	21,90
16IR/EL R 0.9	0.9	2.0	AI 16-0	5	349057 0925	21,90
16IR/EL R 1.0	1.0	2.0	AI 16-0	5	349057 1025	21,90
16IR/EL R 1.1	1.1	2.15	AI 16-0	5	349057 1125	21,90
16IR/EL R 1.2	1.2	2.25	AI 16-0	5	349057 1225	21,90

3113





Continued on next page >>>

Insert sets suitable for holder types SER..16 and SIL..16

ISO P M K N

Contents	W mm	T mm	HC 5640 art.no.	€
16 ER/IL 1.0	1.0	1.4		
16 ER/IL 1.20	1.20	1.6		
16 ER/IL 1.40	1.40	1.8		
16 ER/IL 1.70	1.70	2.0	**349051** 1601	117,–
16 ER/IL 1.95	1.95	2.0		
16 ER/IL 2.25	2.25	2.25		
spacer, AE 16-0				
			3113	

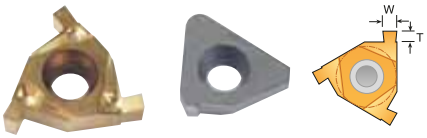


Insert sets suitable for holder types SIR..16 and SEL..16

ISO P M K N

Contents	W mm	T mm	HC 5640 art.no.	€
16 IR/EL 1.0	1.0	1.4		
16 IR/EL 1.20	1.20	1.6		
16 IR/EL 1.40	1.40	1.8		
16 IR/EL 1.70	1.70	2.0	**349056** 1601	117,–
16 IR/EL 1.95	1.95	2.0		
16 IR/EL 2.25	2.25	2.25		
spacer, AI 16-0				
			3113	





Spacers for grooving inserts

Designation	art.no.	€
AE 16-0	**349060** 1610	9,30
AI 16-0	349060 1620	9,30
	3113	


349060 1610


349060 1620

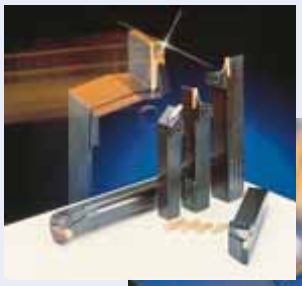


ATORN®
High quality for great performance

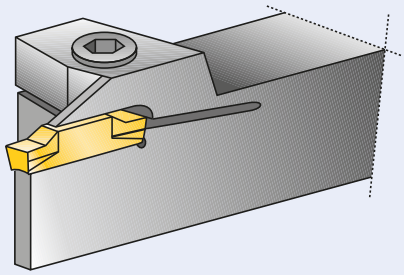
The D CLAMP system

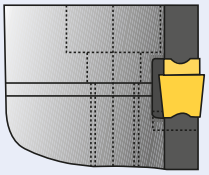
INFO

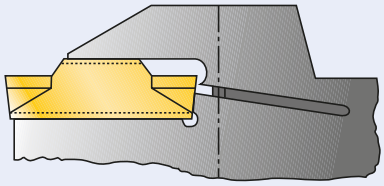
Duracarb has developed a truly simple but very effective clamping system in the form of the D-Clamp clamping system, one that guarantees short retooling times.











System description

The following operations can be performed using the D-clamp:

- Longitudinal turning and grooving
- Precision grooving and hollowing
- Recessing and hollowing, internal
- Axial grooving and facing

One-piece tool

- Simple, precise and secure positioning
- Twin guidance of the cutting insert in the holder
- Stable grip against lateral forces
- No additional spare parts

Cutting inserts

- Repetition precision
- Cutting inserts for turning and grooving
- By changing the feed direction, secondary cutting edges become main cutting edges
- The sintered chip curler operates on both the front and the sides
- One upper and one lower half-radius are used to position the cutting insert precisely and firmly
- Improved surface finish in comparison to conventional tools
- Multiple cutting edges increase the service life of the cutting insert

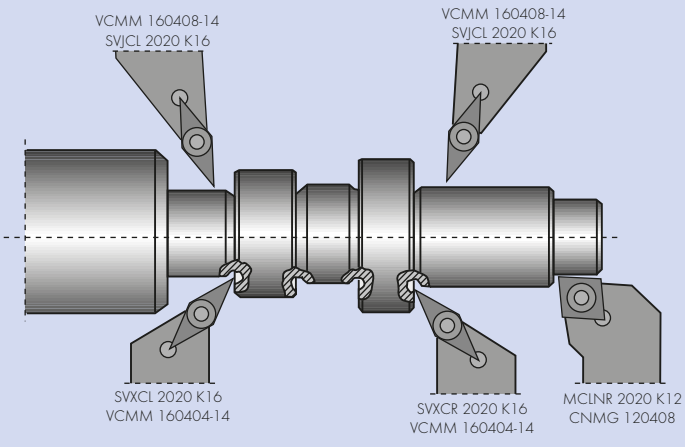
Usage characteristics

- Submersion at a 90° angle and longitudinal turning in sequence, without interruption
- Longitudinal turning to the left and right
- Reduces the number of tools per machining process
- Improves the turret usage. Reserve stations can be fitted with spare tools
- Reduces tooling times, cuts retooling times, lowers production costs

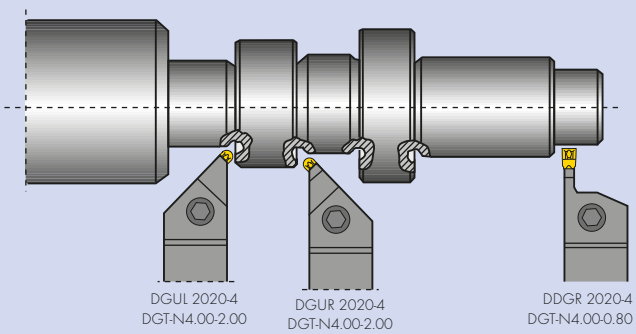
The solution: D CLAMP

D-Clamp in comparison to conventional turning tools

External machining
Conventional/ISO

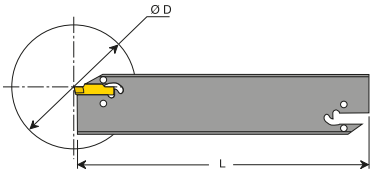


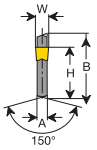
External machining
D-Clamp system



Duracarb D-CLAMP recess turning tool holder

D CLAMP







DGB

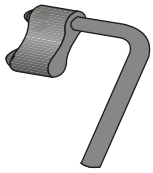
- For deep grooving and parting-off
- Supplied without chuck key

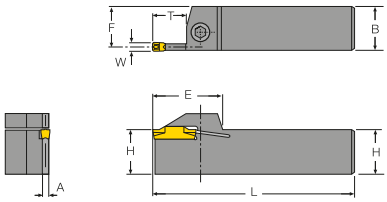
Designation	B mm	L mm	H mm	A mm	W mm	Insert seat	suitable cutting inserts	D max. mm	suitable wrench	suitable clamping shanks	art.no.	€
DGB 26-2S	26	150	21.4	1.6	2.0	Single-sided	DDC/DSC/DDJ/DSJ	39.0	EDG-33B	AGTBN 16-5 / 19-5 / 20-5	**350140** 2602	108,–
DGB 26-3S	26	150	21.4	2.4	3.0	Single-sided	DDC/DSC/DDJ/DSJ	70.0	EDG-33B	AGTBN 16-5 / 19-5 / 20-5	350140 2603	108,–
DGB 32-2	32	150	24.8	1.6	2.0	Double-sided	DDC/DSC/DDJ/DSJ	40.0	EDG-33B	AGTBN 20-6 / 25-6 / 32-6 / 38-6	350140 3202	108,–
DGB 32-3	32	150	24.8	2.4	3.0	Double-sided	DDC/DSC/DDJ/DSJ	80.0	EDG-33B	AGTBN 20-6 / 25-6 / 32-6 / 38-6	350140 3203	108,–
DGB 32-4	32	150	24.8	3.2	4.0	Double-sided	DDC/DSC/DDJ/DSJ	100.0	EDG-33B	AGTBN 20-6 / 25-6 / 32-6 / 38-6	350140 3204	108,–
											3119	

Chuck key

- For mounting cutting inserts into the cutting edge holder

Designation	art.no.	€
EDG-33B	**350501** 0200	35,–
	3106	



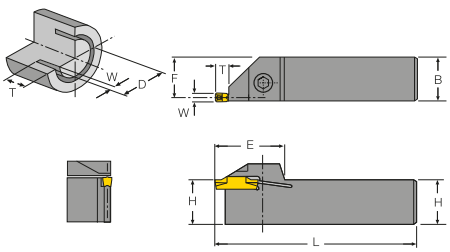




DDG

- For longitudinal turning and grooving
- For external machining

Designation	H mm	B mm	L mm	F mm	T mm	E mm	A mm	W mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
DDGR/L - 1616 - 2	16	16	110	14.95	12	32	1.6	2.0	DDC/DSC/DDJ/DSJ	DB120516	Wr. width 4	**350101** 1602	135,–		
DDGR/L - 2020 - 2	20	20	125	18.95	12	32	1.6	2.0	DDC/DSC/DDJ/DSJ	DB120516	Wr. width 4	350101 2002	155,–	**350102** 2002	155,–
DDGR/L - 1616 - 3	16	16	110	14.95	12	32	2.1	3.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0001	135,–		
DDGR/L - 2020 - 3	20	20	125	18.95	12	32	2.1	3.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0002	155,–	350102 0002	155,–
DDGR/L - 2020 - 3/4	20	20	135	18.95	22	41	2.1	3.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 3001	165,–	350102 3001	165,–
DDGR/L - 2525 - 3	25	25	150	23.95	12	32	2.1	3.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0003	167,–	350102 0003	167,–
DDGR/L - 2525 - 3/4	25	25	140	23.95	27	46	2.1	3.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 3002	165,–	350102 3002	165,–
DDGR/L - 1616 - 4	16	16	110	14.55	15	32	2.9	4.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0004	135,–		
DDGR/L - 2020 - 4	20	20	125	18.55	15	32	2.9	4.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0005	155,–	350102 0005	155,–
DDGR/L - 2525 - 4	25	25	150	23.55	15	32	2.9	4.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120516	Wr. width 4	350101 0006	167,–	350102 0006	167,–
DDGR/L - 2020 - 5	20	20	125	18.05	20	37	3.9	5.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120616	Wr. width 5	350101 0007	155,–	350102 0007	155,–
DDGR/L - 2525 - 5	25	25	150	23.05	20	37	3.9	5.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120616	Wr. width 5	350101 0008	167,–	350102 0008	167,–
DDGR/L - 2525 - 6	25	25	150	22.55	20	37	4.9	6.0	DDC/DSC/DDJ/DSJ/DGT-N/DGP-N	DB120616	Wr. width 5	350101 0010	167,–		
												3119		3119	



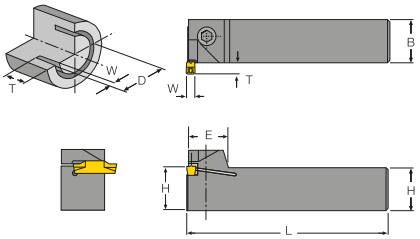


DGF

- For external and axial grooving
- For precision grooving inserts, type DGP-N

Designation	H mm	B mm	L mm	F mm	E mm	W mm	T max. mm	D min. mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
DGFR/L - 2020 - 4	20	20	125	18.55	32	4.0	6.0	30.0	DDFT R/L,DSC/DSJ	DB120516	Wr. width 4	**350120** 0003	155,–	**350121** 0003	155,–
												3119		3119	

Continued on next page >>>

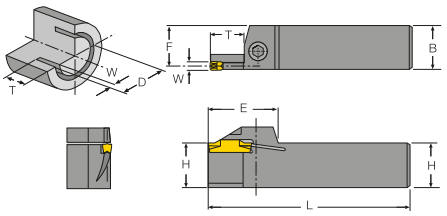




DFCP, rectangular

- For axial grooving and longitudinal turning
- After grooving, the facing diameter is unlimited

Designation	H mm	B mm	L mm	E mm	W mm	T max. mm	D mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
DGFPR/L-2525-4	25	25	150	18	4.0	4.8	30	DDFT R/L	DB120516	Wr. width 4	**350125** 0002	167,–	**350126** 0002	167,–
											3119		3119	

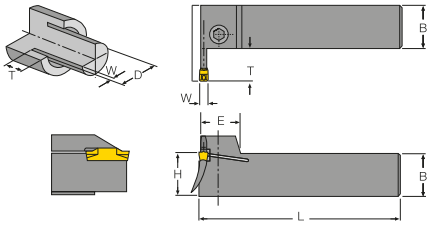




DFS

- For deep axial grooving and facing
- After grooving, the facing diameter is unlimited

Designation	H mm	B mm	L mm	F mm	E mm	W mm	T max. mm	D mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€
DFSR/L-25-30-4	25	25	150	23.55	32	4.0	15.0	30 - 40	DDFT R/L	DB120516	Wr. width 4	**350130** 0001	199,–
DFSR/L-25-40-4	25	25	150	23.55	32	4.0	15.0	40 - 50	DDFT R/L	DB120516	Wr. width 4	350130 0002	199,–
DFSR/L-25-50-4	25	25	150	23.55	32	4.0	15.0	50 - 60	DDFT R/L	DB120516	Wr. width 4	350130 0003	199,–
DFSR/L-25-60-4	25	25	150	23.55	32	4.0	15.0	60 - 85	DDFT R/L	DB120516	Wr. width 4	350130 0004	199,–
DFSR/L-25-60-6	25	25	150	22.55	37	6.0	20.0	60 - 85	DGT-N/DDC/DDJ	DB120616	Wr. width 5	350130 0005	199,–
DFSR/L-25-85-6	25	25	150	22.55	37	6.0	20.0	85 - 150	DGT-N/DDC/DDJ	DB120616	Wr. width 5	350130 0006	235,–
DFSR/L-25-150-6	25	25	150	23.55	37	6.0	20.0	150 - 250	DGT-N/DDC/DDJ	DB120616	Wr. width 5	350130 0007	235,–
												3119	

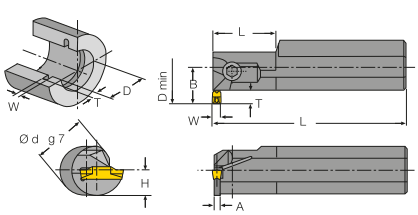




DFCP, rectangular

- For deep axial grooving and facing
- After grooving, the facing diameter is unlimited

Designation	H mm	B mm	L mm	F mm	E mm	W mm	T max. mm	D mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€
DFCPR/L-25-30-4	25	25	150	23.55	18	4.0	12.0	30 - 40	DDFT R	DB120516	Wr. width 4	**350135** 0001	199,–
DFCPR/L-25-40-4	25	25	150	23.55	18	4.0	15.0	40 - 50	DDFT R	DB120516	Wr. width 4	350135 0002	199,–
DFCPR/L-25-50-4	25	25	150	23.55	18	4.0	15.0	50 - 60	DDFT R	DB120516	Wr. width 4	350135 0003	199,–
DFCPR/L-25-60-4	25	25	150	23.55	18	4.0	15.0	60 - 85	DDFT R	DB120516	Wr. width 4	350135 0004	199,–
												3119	





DGI

- For longitudinal turning and grooving
- For internal machining

Designation	d mm	D min. mm	L2 mm	L1 mm	B mm	H mm	T max. mm	A mm	W mm	suitable cutting inserts	suitable clamping screw	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
DGIR/L - 20 - 3	20	26.0	160	40	15.8	9	6.5	2.1	3.0	DGTIN	DB 120512	Wr. width 4	**350110** 0001	220,–	**350111** 0001	220,–
DGIR/L - 20 - 4	20	26.0	160	40	15.8	9	6.5	2.9	4.0	DGTIN	DB 120512	Wr. width 4	350110 0002	220,–	350111 0002	220,–
DGIR/L - 25 - 3	25	25.0	200	40	17.5	11.5	6.5	2.1	3.0	DGTIN	DB 120512	Wr. width 4	350110 2503	225,–	350111 2503	225,–
DGIR/L - 25 - 4	25	26.0	200	40	17.5	11.5	5.8	2.9	4.0	DGTIN	DB 120512	Wr. width 4	350110 0003	220,–	350111 0003	220,–
DGIR/L - 25 - 5	25	31.0	200	40	18.3	11.5	6.5	3.9	5.0	DGTIN	DB 120616	Wr. width 5	350110 0004	220,–	350111 0004	220,–
													3119		3119	

Duracarb D-CLAMP recessing inserts

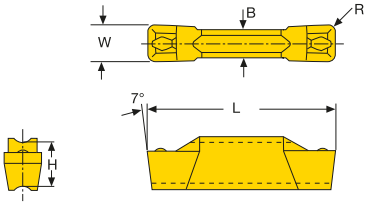


30-189

DGT

- For longitudinal turning and grooving
- Cutting edge accuracy W ± 0.02 mm

Designation	W±0.02 mm	R±0.05 mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DGT-N3.00-0.40	3.00	0.40	2.2	20	4.7	10	**351001** 0120	28,30
DGT-N4.00-0.40	4.00	0.40	3.0	20	4.7	10	351001 0220	29,20
DGT-N4.00-0.80	4.00	0.80	3.0	20	4.7	10	351001 0320	29,20
DGT-N5.00-0.40	5.00	0.40	4.0	25	5.2	10	351001 0420	30,60
DGT-N5.00-0.80	5.00	0.80	4.0	25	5.2	10	351001 0520	30,60
DGT-N6.00-0.80	6.00	0.80	5.0	25	5.2	10	351001 0620	38,20



DGT-E

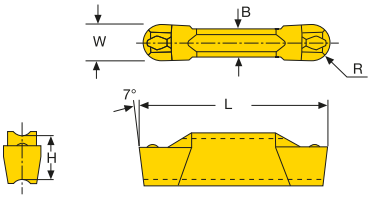
- For longitudinal turning and grooving
- Cutting edge accuracy W ± 0.05 mm

Designation	W±0.05 mm	R mm	B mm	L mm	H mm		ISO K N DC 210 uncoated art.no.	€		ISO P DC 7400 coated art.no.	€
DGT-N3E-0.4	3.00	0.40	2.2	20	4.7	10	**351003** 0103	18,50	10	**351003** 0120	22,90
DGT-N4E-0.4	4.00	0.40	3.0	20	4.7	10	351003 0203	19,–	10	351003 0220	23,60
							3120			3120	

DGT, full radius

- For longitudinal turning and grooving

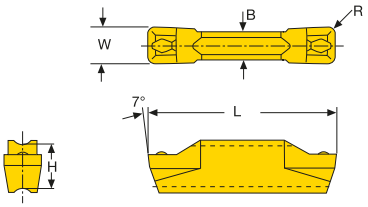
Designation	W±0.02 mm	R±0.05 mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DGT-N-3.00-1.50	3.00	1.50	2.2	20	4.7	10	**351005** 0120	29,60
DGT-N4.00-2.00	4.00	2.00	3.0	20	4.7	10	351005 0220	31,70
DGT-N5.00-2.50	5.00	2.50	4.0	25	5.2	10	351005 0320	33,20
DGT-N6.00-3.00	6.00	3.00	5.0	25	5.2	10	351005 0420	41,40
							3120	



DGTI

- For internal longitudinal turning and grooving

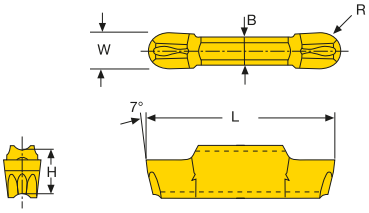
Designation	W±0.02 mm	R±0.05 mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DGTI-N3.00-0.40	3.00	0.40	2.2	20	4.7	10	**351010** 0120	28,10
DGTI-N4.00-0.40	4.00	0.40	3.0	20	4.7	10	351010 0220	29,20
DGTI-N5.00-0.40	5.00	0.40	4.0	25	5.2	10	351010 0420	29,20
							3120	



DGTI, full radius

- For internal longitudinal turning and grooving

Designation	W mm	R mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DGTI-N3.00-1.50	3.00	1.50	2.2	20	4.7	10	**351012** 0120	30,10
DGTI-N4.00-2.00	4.00	2.00	3.0	20	4.7	10	351012 0220	31,90
							3120	



DDFT, right-hand

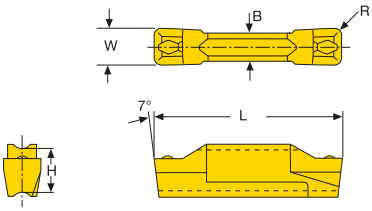
- For axial grooving and longitudinal turning

Designation	W±0.05 mm	R mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DDFT3E-0.4R	3.00	0.40	2.2	20	4.7	10	**351015** 0120	28,80
DDFT4E-0.4R	4.00	0.40	3.0	20	4.7	10	351015 0220	30,20
							3120	

DDFT, left-hand

- For axial grooving and longitudinal turning

Designation	W±0.05 mm	R mm	B mm	L mm	H mm		ISO P DC 7400 coated art.no.	€
DDFT4E-0.4L	4.00	0.40	3.0	20	4.7	10	**351016** 0220	30,20
							3120	



Continued on next page >>>

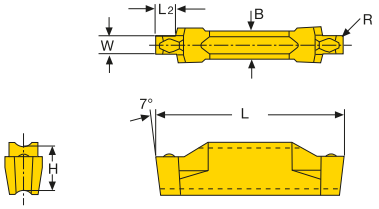
DGP

- For circlips
- For precision grooving

ISO P

Designation	W±0.02 mm	R±0.03 mm	B mm	L mm	L2 mm	H mm		DC 7400 coated art.no.	€
DGP-N1.00-0.00	1.00	0.00	2.2	20.0	2	4.7	10	**351020** 0020	26,80
DGP-N1.30-0.00	1.30	0.00	2.2	20.0	2	4.7	10	351020 0220	26,80
DGP-N1.60-0.10	1.60	0.10	2.2	20.0	2	4.7	10	351020 0320	26,80
DGP-N1.85-0.10	1.85	0.10	2.2	20.0	3	4.7	10	351020 0420	26,80
DGP-N2.15-0.15	2.15	0.15	2.2	20.0	3	4.7	10	351020 0520	26,80
DGP-N2.65-0.15	2.65	0.15	2.2	20.0	5	4.7	10	351020 0620	28,30
DGP-N3.15-0.15	3.15	0.15	2.2	20.0	5	4.7	10	351020 0720	28,30
DGP-N4.15-0.15	4.15	0.15	3.0	20.0	5	4.7	10	351020 0820	29,20

3120



Description of chip breakers C and J, page 30-140

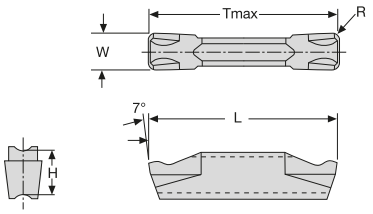
DDC

- Two-sided, with chip breaker version C
- For parting-off and grooving

ISO P M

Designation	W±0.05 mm	R mm	L mm	H mm	T max. mm		DC 554 coated art.no.	€
DDC2	2.00	0.20	20	4.7	19.0	10	**351050** 0130	21,30
DDC3	3.00	0.20	20	4.7	19.0	10	351050 0530	21,30
DDC4	4.00	0.30	20	4.7	19.0	10	351050 1030	22,80
DDC5	5.00	0.30	25	5.2	24.0	10	351050 1530	24,40

3120



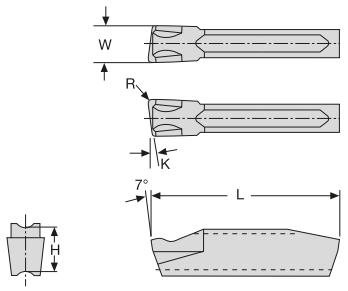
DSC, right-hand

- Single-sided, with chip breaker version C
- For deep grooving and parting-off

ISO P M

Designation	W±0.05 mm	R mm	L mm	K °	H mm		DC 554 coated art.no.	€
DSC2-6R	2.00	0.20	20	6.0	4.7	10	**351060** 0530	11,60
DSC3-6R	3.00	0.20	20	6.0	4.7	10	351060 1030	11,70
DSC4-4R	4.00	0.30	20	4.0	4.7	10	351060 1530	12,70

3120



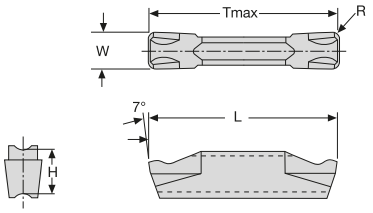
DSC, straight

- Single-sided, with chip breaker version C
- For deep grooving and parting-off

ISO P M

Designation	W±0.05 mm	R mm	L mm	H mm	K °		DC 9235 coated art.no.	€
DSC3	3.00	0.2	20.0	4.7	0	5	**351030** 1049	11,95

3120



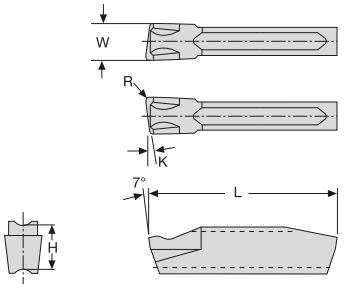
DSC, left-hand

- Single-sided, with chip breaker version C
- For deep grooving and parting-off

ISO P M

Designation	W±0.05 mm	R mm	L mm	K °	H mm		DC 554 coated art.no.	€
DSC2-6L	2.00	0.20	20	6.0	4.7	10	**351061** 0530	11,60
DSC3-6L	3.00	0.20	20	6.0	4.7	10	351061 1030	11,70
DSC4-4L	4.00	0.30	20	4.0	4.7	10	351061 1530	12,70

3120

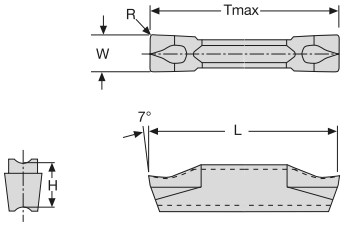


DDJ

- Two-sided, with chip breaker version J
- For parting-off and grooving

Designation	W±0.05 mm	R mm	L mm	H mm	T max. mm		ISO P M DC 554 coated art.no.	€		ISO P M DC 9800 coated art.no.	€
DDJ2	2.00	0.20	20	4.7	19.0	10	**351070** 0130	21,30	10	**351070** 0135	21,30
DDJ3	3.00	0.20	20	4.7	19.0	10	351070 0530	21,30	10	351070 0535	21,30
DDJ4	4.00	0.30	20	4.7	19.0	10	351070 1030	22,80			
DDJ5	5.00	0.30	25	5.2	24.0	10	351070 1530	24,40			

3120 3120



Continued on next page >>>

DSJ, right-hand

- Single-sided, with chip breaker version J
- For deep grooving and parting-off

ISO P M

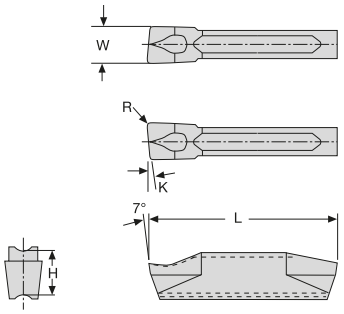
Designation	W±0.05 mm	R mm	L mm	K °	H mm		DC 554 coated art.no.	€
DSJ2-6R	2.00	0.20	20	6.0	4.7	10	**351080** 0530	11,60
DSJ3-6R	3.00	0.20	20	6.0	4.7	10	351080 1030	11,70
DSJ4-4R	4.00	0.30	20	4.0	4.7	10	351080 1530	12,70
							3120	

DSJ, left-hand

- Single-sided, with chip breaker version J
- For deep grooving and parting-off

ISO P M

Designation	W±0.05 mm	R mm	L mm	K °	H mm		DC 554 coated art.no.	€
DSJ2-6L	2.00	0.20	20	6.0	4.7	10	**351081** 0530	11,60
DSJ3-6L	3.00	0.20	20	6.0	4.7	10	351081 1030	11,70
DSJ4-4L	4.00	0.30	20	4.0	4.7	10	351081 1530	12,70
							3120	





...suggestions are heard.

ATORN®
High quality for great performance

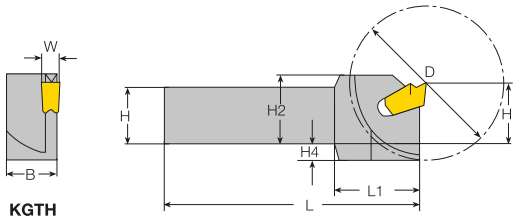
Parting-off and grooving tools DGRIP

An effective, easy-to-use system for parting-off and grooving.
Comprised of various holding tools and cutting inserts for all standard materials, it provides for a wide variety of uses.

The cutting inserts are fixed in place using a wedge-shaped clamping system.



Duracarb D-GRIP recess turning tool holder



KGTH

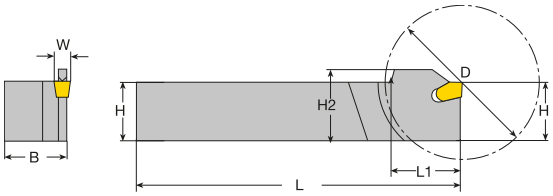


KGTHR

Designation	W±0.1 mm	D max. mm	H mm	H1 mm	B mm	L mm	L1 mm	H2 mm	H4 mm	suitable cutting inserts	Right-hand art.no.	€
KGTHR 10-2	2.2 2.4	28	10	10	10	86	18	19	5	KGT_-2; 2.4	**352001** 0001	115,–
KGTHR 12-2	2.2 2.4	30	12	12	10	110	18	19	4	KGT_-2; 2.4	352001 0002	118,–
KGTHR 12-3	3.1	32	12	12	10	110	21	21	6	KGT_-3	352001 0003	118,–
KGTHR 16-2	2.2 2.4	30	16	16	10	110	18	19	-	KGT_-2; 2.4	352001 0004	122,–
KGTHR 16-3	3.1	32	16	16	12	110	20	24	4	KGT_-3	352001 0005	122,–
KGTHR 20-3	3.1	36	20	20	12	110	23	24	-	KGT_-3	352001 0008	139,–

3121



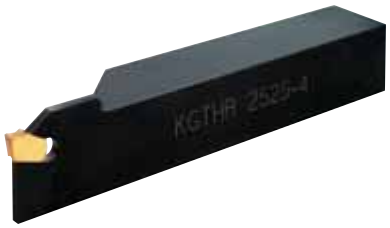


KGTHR

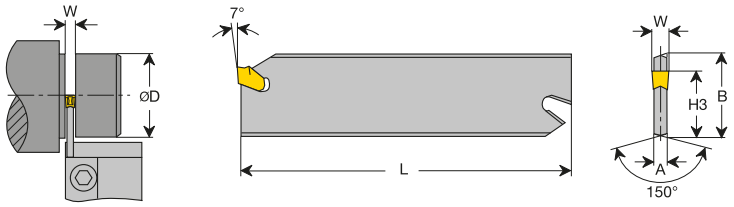
- With end-to-end supporting surface

Designation	W±0.1 mm	D max. mm	H mm	H1 mm	B mm	L mm	L1 mm	H2 mm	suitable cutting inserts	Right-hand art.no.	€
KGTHR 2020-3	3.1	45	20	20	20	120	25	25.0	KGT_-3	**352005** 0001	139,–
KGTHR 2020-4	4.1	60	20	20	20	120	33	25.0	KGT_-4	352005 0002	139,–
KGTHR 2525-3	3.1	52	25	25	25	150	25	30.0	KGT_-3	352005 0003	149,–
KGTHR 2525-4	4.1	62	25	25	25	150	30	30.0	KGT_-4	352005 0004	149,–

3121



Duracarb D-GRIP recessing blade





KGIH

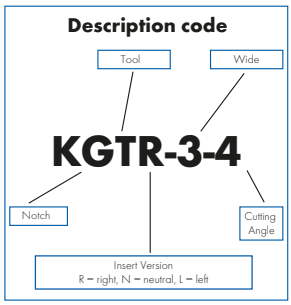
- Parting-off and grooving
- *) A = 1.6 mm only in relation to the recess depth; generally A = 2.4 mm

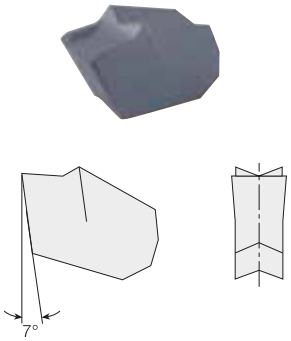
Designation	W±0.1 mm	D max. mm	A mm	B mm	L mm	H3 mm	suitable cutting inserts	Holder	art.no.	€
KGIH 19-2	2.2 2.4	40	1.6	19	86	15.7	KGT_-2	AGTBR/L 19-2; AGTBN 16-2	**352501** 0001	99,–
KGIH 26-2	2.2 2.4	50	1.6	26	110	21.4	KGT_-2	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0002	107,–
KGIH 26-3	3.1	75	2.4	26	110	21.4	KGT_-3	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0003	107,–
KGIH 26-4	4.1	80	3.2	26	110	21.4	KGT_-4	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0004	107,–
KGIH 32-2	2.2 2.4	40	1.6*)	32	150	25.0	KGT_-2	AGTBN 19-6, 20-6; AGTBN 25-6, 32-6; AGTBN 38-6	352501 0007	117,–
KGIH 32-3	3.1	100	2.4	32	150	25.0	KGT_-3	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0008	117,–
KGIH 32-4	4.1	100	3.2	32	150	25.0	KGT_-4	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0009	117,–
KGIH 32-5	5.1	120	4	32	150	25.0	KGT_-5	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0010	117,–
KGIH 32-6	6.4	120	5.2	32	150	25.0	KGT_-6	AGTBR/L 25-6; AGTBN 16-5, 19-5, 20-5	352501 0011	119,–

3121

Duracarb D-GRIP recessing inserts

30-192

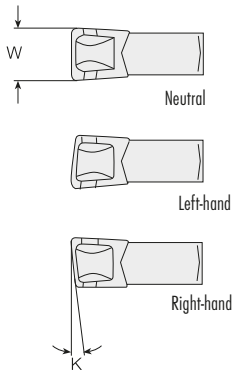




KGTN/R/L

- Parting-off and grooving

Designation	K °	W±0.1 mm	ISO P DC 340 uncoated			ISO K N DC 210 uncoated			ISO P DC 9340		
				art.no.	€		art.no.	€		art.no.	€
KGTN-2	0.0	2.2	5	**353001** 0110	10,30	5	**353001** 0120	10,30	5	**353001** 0130	13,60
KGTR-2-4 D	4.0	2.2							5	353001 0230	13,60
KGTL-2-4 D	4.0	2.2							5	353001 0330	13,60
KGTR-2-8 D	8.0	2.2	5	353001 0410	10,30				5	353001 0430	13,60
KGTL-2-8 D	8.0	2.2							5	353001 0530	13,60
KGTN-3	0.0	3.1	5	353001 1310	10,85	5	353001 1320	10,85	5	353001 1330	14,25
KGTR-3-4 D	4.0	3.1	5	353001 1410	10,85	5	353001 1420	10,85	5	353001 1430	14,25
KGTL-3-4 D	4.0	3.1				5	353001 1520	10,85	5	353001 1530	14,25
KGTR-3-8 D	8.0	3.1							5	353001 1630	14,25
KGTL-3-8 D	8.0	3.1							5	353001 1730	14,25
KGTN-4	0.0	4.1				5	353001 2020	11,55	5	353001 2030	15,30
KGTR-4-4 D	4.0	4.1	5	353001 2110	11,55				5	353001 2130	15,30
KGTL-4-4 D	4.0	4.1							5	353001 2230	15,30
KGTN-5	0.0	5.1							5	353001 3230	16,20
KGTN-6	0.0	6.4	5	353001 3710	13,45						
				3122			3122			3122	



Recess turning

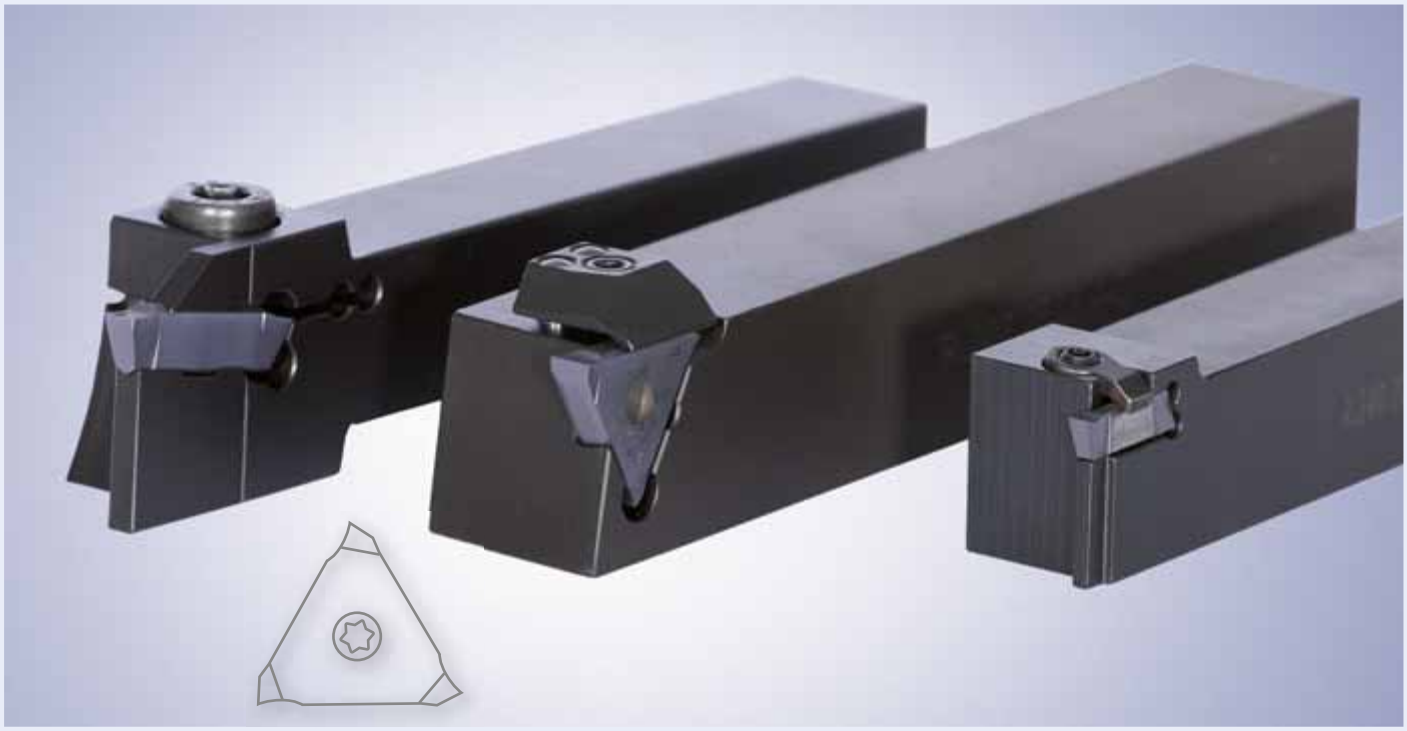
INFO



ATORN® DED grooving system

INFO

Recess turning tools with three-fluted indexable inserts

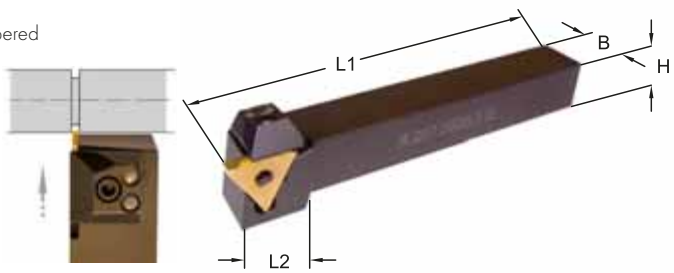


ATORN® DED

- 3-cutting-edge system
- Quick, positionally accurate changing of blades
- For punching depths up to 6 mm depth and 8 mm width
- For grooving and parting-off, for grooves in accordance with DIN 471/472, for axial grooves
- More cost-effective with 3 cutting edges
- Soft cutting with modern coatings and ground chip breakers

ATORN® DED grooving system holder

- **For three-edged recessing inserts**
- Solid tool holder made from 42 CrMo4V, approx. 1,300 N/mm² Hardened and tempered
- Powerful clamping element guided by two cylindrical pins



Holder type R/L..1-D

- Recessing depth up to 4 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
R 207.1212.1-D	12	12	100	24	4	DED.00.. DED.01..	A1	B1		D1	**350001** 1212	98,50		
L 207.1616.1-D	16	16	125	22	4	DED.00.. DED.01..		B1	C1	D1			**350005** 1616	87,50
R 207.1616.1-D	16	16	125	22	4	DED.00.. DED.01..	A1	B1		D1	350001 1616	87,50		
L 207.2020.1-D	20	20	125	21	4	DED.00.. DED.01..		B1	C1	D1			350005 2020	68,–
R 207.2020.1-D	20	20	125	21	4	DED.00.. DED.01..	A1	B1		D1	350001 2020	68,–		
L 207.2525.1-D	25	25	150	-	4	DED.00.. DED.01..		B1	C1	D1			350005 2525	71,50
R 207.2525.1-D	25	25	150	-	4	DED.00.. DED.01..	A1	B1		D1	350001 2525	71,50		
											3131		3131	

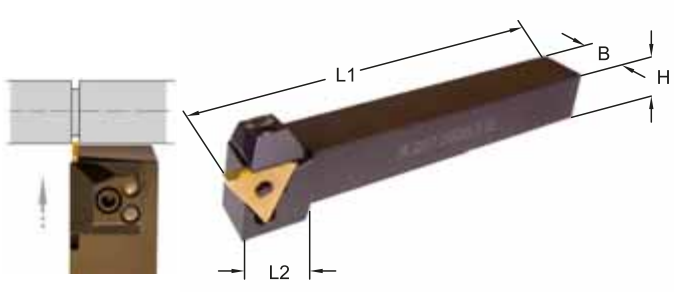
Continued on next page >>>

11 pcs set

- **DED grooving system**
- (holder with set of 10 indexable inserts)

Contents	art.no.	€
1x tool holder R.207.2020.1-D 20 x 20 mm, punching depth up to 4 mm (for DED.00../DED.01..) 1 of each recessing insert DIN 471/472: DED.0050.00-D 0.5 mm DED.0060.00-D 0.6 mm DED.0070.00-D 0.7 mm DED.0080.00-D 0.8 mm DED.0090.00-D 0.9 mm DED.0100.00-D 1.0 mm DED.0110.00-D 1.1 mm DED.0130.00-D 1.3 mm DED.0160.00-D 1.6 mm DED.0185.00-D 1.85 mm	**350600** 0011	275,–
	3131	





Holder type R/L..2-D

- Recessing depth up to 6 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 207.1616.2-D	16	16	125	22	6	DED.02..		B1	C1	D1			**350006** 1616	87,50
R 207.1616.2-D	16	16	125	22	6	DED.02..	A1	B1		D1	**350002** 1616	87,50		
L 207.2020.2-D	20	20	125	21	6	DED.02..		B1	C1	D1			350006 2020	68,–
R 207.2020.2-D	20	20	125	21	6	DED.02..	A1	B1		D1	350002 2020	68,–		
L 207.2525.2-D	25	25	150	-	6	DED.02..		B1	C1	D1			350006 2525	71,50
R 207.2525.2-D	25	25	150	-	6	DED.02..	A1	B1		D1	350002 2525	71,50		
											3131		3131	

Holder type R/L..3-D

- Recessing depth up to 6 mm

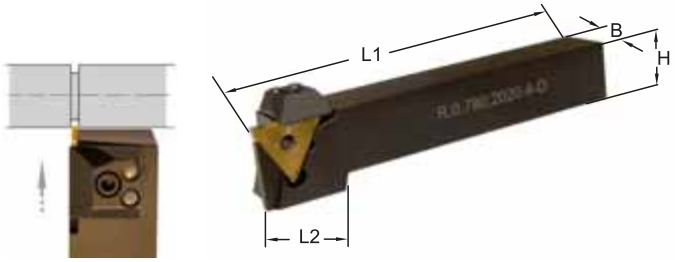
Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 207.1616.3-D	16	16	125	22	6	DED.03..		B1	C1	D1			**350007** 1616	87,50
R 207.1616.3-D	16	16	125	22	6	DED.03..	A1	B1		D1	**350003** 1616	87,50		
L 207.2020.3-D	20	20	125	21	6	DED.03..		B1	C1	D1			350007 2020	68,–
R 207.2020.3-D	20	20	125	21	6	DED.03..	A1	B1		D1	350003 2020	68,–		
L 207.2525.3-D	25	25	150	-	6	DED.03..		B1	C1	D1			350007 2525	71,50
R 207.2525.3-D	25	25	150	-	6	DED.03..	A1	B1		D1	350003 2525	71,50		
											3131		3131	

Holder type R/L..4-D

- Recessing depth up to 6 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 207.1616.4-D	16	16	125	21	6	DED.04.. DED.05..		B1	C2	D1			**350008** 1616	87,50
R 207.1616.4-D	16	16	125	21	6	DED.04.. DED.05..	A2	B1		D1	**350004** 1616	87,50		
L 207.2020.4-D	20	20	125	-	6	DED.04.. DED.05..		B1	C2	D1			350008 2020	68,–
R 207.2020.4-D	20	20	125	-	6	DED.04.. DED.05..	A2	B1		D1	350004 2020	68,–		
L 207.2525.4-D	25	25	150	-	6	DED.04.. DED.05..		B1	C2	D1			350008 2525	71,50
R 207.2525.4-D	25	25	150	-	6	DED.04.. DED.05..	A2	B1		D1	350004 2525	71,50		
											3131		3131	

Continued on next page >>>



Holder type R/L..2-D

- Recessing depth up to 8 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0.780.2020.2D	20	20	125	24	8	DED.02..		B1	C1	D1			**350012** 2020	72,50
R 0.780.2020.2D	20	20	125	24	8	DED.02..	A1	B1		D1	**350009** 2020	72,50		
L 0.780.2525.2D	25	25	150	-	8	DED.02..		B1	C1	D1			350012 2525	76,50
R 0.780.2525.2D	25	25	150	-	8	DED.02..	A1	B1		D1	350009 2525	76,50		
L 0.780.3232.2D	32	32	170	-	8	DED.02..		B1	C1	D1			350012 3232	91,–
R 0.780.3232.2D	32	32	170	-	8	DED.02..	A1	B1		D1	350009 3232	91,–		
											3131		3131	

Holder type R/L..3-D

- Recessing depth up to 8 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0.780.2020.3D	20	20	125	24	8	DED.03..		B1	C1	D1			**350013** 2020	72,50
R 0.780.2020.3D	20	20	125	24	8	DED.03..	A1	B1		D1	**350010** 2020	72,50		
L 0.780.2525.3D	25	25	150	-	8	DED.03..		B1	C1	D1			350013 2525	76,50
R 0.780.2525.3D	25	25	150	-	8	DED.03..	A1	B1		D1	350010 2525	76,50		
L 0.780.3232.3D	32	32	170	-	8	DED.03..		B1	C1	D1			350013 3232	91,–
R 0.780.3232.3D	32	32	170	-	8	DED.03..	A1	B1		D1	350010 3232	91,–		
											3131		3131	

Holder type R/L..4-D

- Recessing depth up to 8 mm

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0.780.2020.4D	20	20	125	24	8	DED.04.. DED.05..		B1	C2	D1			**350014** 2020	72,50
R 0.780.2020.4D	20	20	125	24	8	DED.04.. DED.05..	A2	B1		D1	**350011** 2020	72,50		
L 0.780.2525.4D	25	25	150	-	8	DED.04.. DED.05..		B1	C2	D1			350014 2525	76,50
R 0.780.2525.4D	25	25	150	-	8	DED.04.. DED.05..	A2	B1		D1	350011 2525	76,50		
L 0.780.3232.4D	32	32	170	-	8	DED.04.. DED.05..		B1	C2	D1			350014 3232	91,–
R 0.780.3232.4D	32	32	170	-	8	DED.04.. DED.05..	A2	B1		D1	350011 3232	91,–		
											3131		3131	

Spare parts

	Clamping jaw art.no.	€
A1	370001 0121	19,70
A2	370001 0125	21,90
	3131	

	Clamping screw art.no.	€
B1	370001 0200	3,99
	3131	

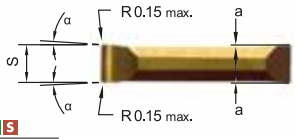
	Clamping jaw art.no.	€
C1	370001 0221	19,70
C2	370001 0225	21,90
	3131	

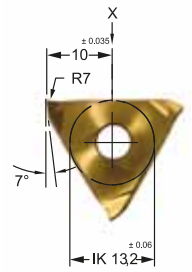
	Guide pin art.no.	€
D1	370001 6325	0,36
	3131	

ATORN® DED grooving system inserts

30-193

- **3 cutting edges**
- Sintered version with incircle Ø 13.2 mm
- Positive, ground cutting geometries
- Extremely easy cutting action
- Low cutting forces
- Parting-off insert with chip breaker
- High thermal and chemical stability
- Low friction coefficient
- Can be used under some circumstances for dry machining
- Can be used universally with almost all materials
- Versions for parting-off, grooving, radius recessing, copy turning and precision turning
- **Material: HC 8620 ISO PMKNS fine grain carbide, TiAlN-coated**





For retaining grooves in accordance with DIN 471 / 472

ISO P M K N S

Designation	Groove width mm	S -0.05 mm	Clearance angle a below	Clearance angle a above	a ± 0.02 mm	suitable tool holder		art.no.	€
DED.0050.00-D	0.5	0.57	0.5°	1°	0.06	R/L..1-D	5	**360001** 0050	15,40
DED.0060.00-D	0.6	0.67	0.5°	1°	0.07	R/L..1-D	5	360001 0060	15,40
DED.0070.00-D	0.7	0.77	0.5°	1°	0.08	R/L..1-D	5	360001 0070	15,40
DED.0080.00-D	0.8	0.87	0.5°	1°	0.08	R/L..1-D	5	360001 0080	15,40
DED.0090.00-D	0.9	0.97	0.5°	1°	0.08	R/L..1-D	5	360001 0090	15,40
DED.0100.00-D	1.0	1.07	0.5°	1°	0.09	R/L..1-D	5	360001 0100	15,40
DED.0110.00-D	1.1	1.24	3°	3°	0.15	R/L..1-D	5	360001 0110	15,40
DED.0130.00-D	1.3	1.44	3°	3°	0.15	R/L..1-D	5	360001 0130	15,40
DED.0160.00-D	1.6	1.74	3°	3°	0.20	R/L..1-D	5	360001 0160	15,40
DED.0185.00-D	1.85	1.99	3°	3°	0.20	R/L..1-D	5	360001 0185	15,40
DED.0215.00-D	2.15	2.29	3°	3°	0.20	R/L..2-D	5	360001 0215	15,40
DED.0265.00-D	2.65	2.79	3°	3°	0.20	R/L..2-D	5	360001 0265	15,40
DED.0315.00-D	3.15	3.29	3°	3°	0.20	R/L..3-D	5	360001 0315	16,50
DED.0415.00-D	4.15	4.29	3°	3°	0.20	R/L..4-D	5	360001 0415	16,80
DED.0515.00-D	5.15	5.29	3°	3°	0.20	R/L..4-D	5	360001 0515	17,40

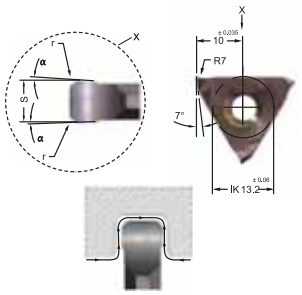
3131

For copy and precision turning

ISO P M K N S

Designation	S -0.05 mm	r mm	Clearance angle a below	Clearance angle a above	suitable tool holder		art.no.	€
DED.0150.02-D	1.5	0.2	4°	3°	R/L..1-D	5	**360002** 0150	19,10
DED.0200.02-D	2.0	0.2	4°	3°	R/L..1-D	5	360002 0202	19,10
DED.0200.04-D	2.0	0.4	4°	3°	R/L..1-D	5	360002 0204	19,70
DED.0300.02-D	3.0	0.2	4°	3°	R/L..2-D	5	360002 0302	19,70
DED.0300.06-D	3.0	0.6	4°	3°	R/L..2-D	5	360002 0306	20,20
DED.0300.08-D	3.0	0.8	4°	3°	R/L..2-D	5	360002 0308	20,20
DED.0400.02-D	4.0	0.2	4°	3°	R/L..3-D	5	360002 0402	20,40
DED.0400.08-D	4.0	0.8	4°	3°	R/L..3-D	5	360002 0408	20,40
DED.0400.12-D	4.0	1.2	4°	3°	R/L..3-D	5	360002 0412	20,40

3131



Full radius for recess turning grooves with widths from 0.5 to 1.6 mm

ISO P M K N S

Designation	S -0.05 mm	r mm	a mm	suitable tool holder		art.no.	€
DED.0002.05-D	0.5	0.25	0.07	R/L..1-D	5	**360004** 0002	21,–
DED.0005.10-D	1.0	0.5	0.09	R/L..1-D	5	360004 0005	21,–
DED.0006.12-D	1.2	0.6	0.20	R/L..1-D	5	360004 0006	21,–
DED.0008.16-D	1.6	0.8	0.25	R/L..1-D	5	360004 0008	21,–

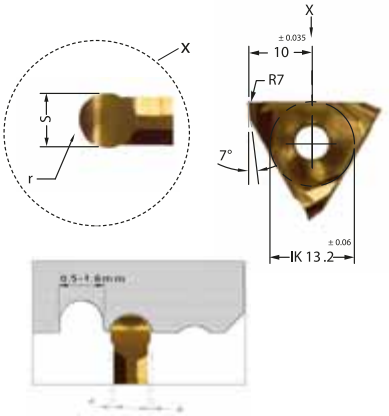
3131

Full radius for recess turning grooves with widths from 2.0 to 5.0 mm

ISO P M K N S

Designation	S -0.05 mm	r mm	suitable tool holder		art.no.	€
DED.0010.20-D	2.0	1.0	R/L..2-D	5	**360003** 0010	23,60
DED.0012.25-D	2.5	1.25	R/L..2-D	5	360003 0012	24,30
DED.0015.30-D	3.0	1.5	R/L..3-D	5	360003 0015	25,–
DED.0020.40-D	4.0	2.0	R/L..4-D	5	360003 0020	24,90
DED.0025.50-D	5.0	2.5	R/L..4-D	5	360003 0025	25,30

3131



ATORN® Recess turning with A-CUT

INFO

The A-CUT system addresses a broad selection of machining processes. It is unique in its flexibility and cost-effectiveness.
Five different cutting insert designs and a wide range of holders are available.

The work processes made possible with the A-CUT system:

- Cutting-off and grooving
- Deep precision grooving
- Turning and copying
- Scoring and face turning
- Slot milling
- Axial grooving



A-CUT cutting inserts are offered with chip breakers in four different designs.
Each is designed to provide optimum performance in a specific field.
Select the geometry that is best suited to your application.

Selection of carbide metal quality

A-CUT - Quality		ISO	Physical properties HRa, BBF= Resistance to bending fracture N/mm²	Material	Recommended field of use
uncoated	HW 3410	K10-K20	HRa 92.5 BBF* 2250 N/mm²	Grey cast iron via HB 220, malleable cast iron,aluminium and aluminium-silicium,copper alloys, phenolic resin laminates and high-temperature resistant alloys	For medium machining and finshing work with medium cutting speeds and feed rates
coated	HC 3630	P20-P40	CVD-coated Multilayer TiC+TiCN+TiN	Carbon steel, alloyed steel, cast steel, malleable cast iron, austenitic INOX steel, martensitic INOX Stahl, free machining steel	Suitable for medium finishingand roughing, machining with interrupted cut
	HC 3635	P25-P45 M20-M30 K20-K40	PVD-coated TiCN	Steel, alloyed steel, INOX steel	For general applications at medium cutting speeds and with unstable machining conditions
	HC 3540	P30-P50 M20-M30	CVD-coated Multilayer TiC+TiCN+TiN	austenitic INOX steel, carbon steel and alloyed steel	A very tough coated sort medium and low cutting speeds and high feed rate, especially for parting-off up to to the middle



Geometry C
AIMC cutting inserts are ideal for grooving and parting-off with most steel-based materials, alloyed steels and stainless steels. They have a strong cutting edge, which makes the best choice for hard materials and rough conditions with medium to high feed rates.



Geometry J
AIMJ cutting inserts are ideal for grooving and parting-off when performing general tasks with low feed rates on carbon steel, alloyed steel and austenitic stainless steel. The cutting edge has a positive rake angle, which makes this model the best choice for soft materials, small diameters and thin-walled parts.



Geometry V
AIPV cutting inserts have been developed for precision grooving, facing and profile machining (width tolerance ± 0.02 mm). These cutting inserts are available with different corner radii.
The V-design has a multidirectional chip groove.

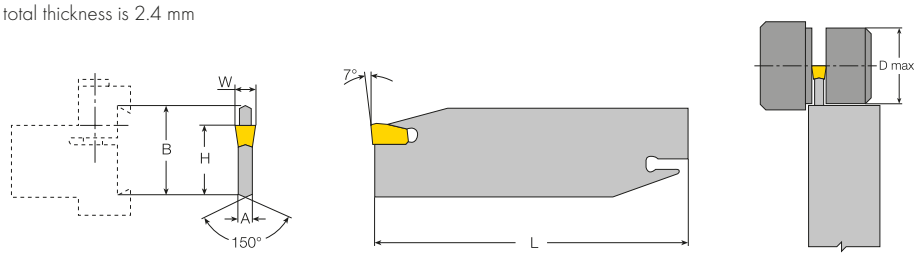


Geometry F
AIMF cutting inserts have been specially developed for axial and front-sided grooving. The height of the cutting edges with small diameters has been centre-aligned to enable grooves to be expanded with a series of overlapping grooving blades.

ATORN® A-CUT recessing blade

- **AH 101**
- Parting-off and deep grooving
- For use with recessing inserts of type **AIMC, AIMJ** and **AIPV**
- **Note:** Tool holders should **not** be used for turning or copy turning operations.
- Supplied with ejector, without recessing inserts
- *) A = 1.2 mm only in relation to the recess depth. The total thickness is 1.6 mm
- **) A = 1.6 mm only in relation to the recess depth. The total thickness is 2.4 mm





Clamping shank

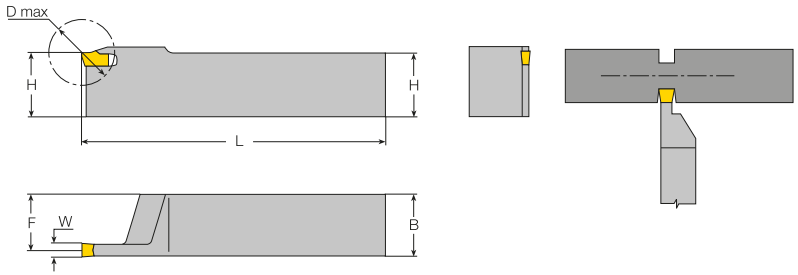
AH 101

Designation	W mm	B mm	A mm	L mm	H mm	max. workpiece Ø D max. mm	suitable clamping shanks	art.no.	€
AH 101 19 1	1.30 to 2.40	19	1.2*)	86	15.7	32.0	AGTBR 19-2/AGTBN 16-2	**354001** 1901	96,–
AH 101 19 2	1.85 to 2.50	19	1.6	86	15.7	38.0	AGTBR 19-2/AGTBN 16-2	354001 1902	96,–
AH 101 26 1	1.30 to 2.40	26	1.2*)	110	21.4	35.0	AGTBN 16-5/AGTBN 19-5/AGTBN 20-5	354001 2601	96,–
AH 101 26 2	1.85 to 2.50	26	1.6	110	21.4	50.0	AGTBN 16-5/AGTBN 19-5/AGTBN 20-5	354001 2602	96,–
AH 101 26 3	2.70 to 3.90	26	2.4	110	21.4	75.0	AGTBN 16-5/AGTBN 19-5/AGTBN 20-5	354001 2603	96,–
AH 101 26 4	3.70 to 4.70	26	3.2	110	21.4	80.0	AGTBN 16-5/AGTBN 19-5/AGTBN 20-5	354001 2604	96,–
AH 101 32 2	1.85 to 2.50	32	1.6**)	150	24.8	50.0	AGTBN 20-6/AGTBN 25-6/AGTBN 32-6	354001 3202	99,–
AH 101 32 3	2.70 to 3.90	32	2.4	150	24.8	100.0	AGTBN 20-6/AGTBN 25-6/AGTBN 32-6	354001 3203	99,–
AH 101 32 4	3.70 to 4.70	32	3.2	150	24.8	100.0	AGTBN 20-6/AGTBN 25-6/AGTBN 32-6	354001 3204	99,–
AH 101 32 5	4.50 to 5.50	32	4	150	24.8	125.0	AGTBN 20-6/AGTBN 25-6/AGTBN 32-6	354001 3205	99,–
AH 101 32 6	5.70 to 6.50	32	5.2	150	24.8	125.0	AGTBN 20-6/AGTBN 25-6/AGTBN 32-6	354001 3206	99,–
								3117	

ATORN® A-CUT parting-off and grooving tool holder

- **AHR/L 201**
- Parting-off and grooving
- For use with type **AIMC, AIMJ and AIPV** recessing inserts
- **Note:** These tool holders should not be used for turning operations (for this purpose, select tool holder type AHR/L 211),
- Supplied with ejector, without recessing inserts





AHR/L 201

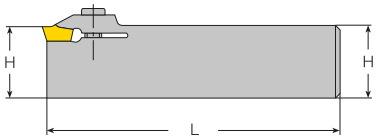
Designation	W mm	H mm	B mm	L mm	F mm	max. workpiece Ø D max. mm	**Right-hand AHR 201** art.no.	€	**Left-hand AHL 201** art.no.	€
AHR/L 201 1212 2	1.85 to 2.50	12	12	110	11.2	32.0	**354002** 1202	109,–	**354003** 1202	109,–
AHR/L 201 1212 3	2.70 to 3.90	12	12	110	10.8	32.0	354002 1203	109,–		
AHR/L 201 1616 2	1.85 to 2.50	16	16	110	15.2	32.0	354002 1602	109,–	354003 1602	109,–
AHR/L 201 1616 3	2.70 to 3.90	16	16	110	14.8	35.0	354002 1603	109,–	354003 1603	109,–
AHR/L 201 2020 2	1.85 to 2.50	20	20	110	19.2	35.0	354002 2002	125,–	354003 2002	125,–
AHR/L 201 2020 3	2.70 to 3.90	20	20	120	18.8	52.0	354002 2003	125,–	354003 2003	125,–
AHR/L 201 2020 4	3.70 to 4.70	20	20	120	18.4	57.0	354002 2004	125,–	354003 2004	125,–
AHR/L 201 2525 3	2.70 to 3.90	25	25	150	23.8	56.0	354002 2503	131,–	354003 2503	131,–
AHR/L 201 2525 4	3.70 to 4.70	25	25	150	23.4	65.0	354002 2504	131,–	354003 2504	131,–
							3117		3117	

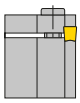
ATORN® A-CUT parting-off, grooving and turning tool holder

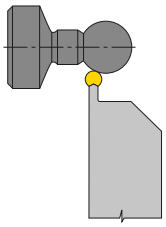
- **AHR/L 211**
- Parting-off, grooving and turning
- For use with type **AIMC, AIMJ and AIPV** recessing inserts
- **Note:** Type AIMC and AIMJ recessing inserts should **only** be used for grooving.
- Supplied without cutting inserts











Right-hand version

AHR/L 211

Designation	W mm	H mm	B mm	L mm	F mm	T mm	suitable clamping screw		Right-hand AHR 211 art.no.	€	Left-hand AHL 211 art.no.	€
AHR/L 211 1616 3	2.80 to 3.60	16	16	100	14.7	9.9	M5 x 16	A1	**354004** 1603	128,–	**354005** 1603	128,–
AHR/L 211 1616 4	3.60 to 4.60	16	16	100	14.2	13.0	M5 x 16	A1	354004 1604	128,–		
AHR/L 211 2020 3	2.80 to 3.60	20	20	125	18.7	9.9	M5 x 20	A2	354004 2003	147,–	354005 2003	147,–
AHR/L 211 2020 4	3.60 to 4.60	20	20	125	18.2	13.0	M5 x 20	A2	354004 2004	147,–	354005 2004	147,–
AHR/L 211 2525 3	2.80 to 3.60	25	25	150	23.7	9.9	M5 x 20	A2	354004 2503	159,–	354005 2503	159,–
AHR/L 211 2525 4	3.60 to 4.60	25	25	150	23.2	13.0	M5 x 25	A3	354004 2504	159,–	354005 2504	159,–
AHR/L 211 2525 5	4.50 to 5.50	25	25	150	22.7	13.0	M5 x 25	A3	354004 2505	159,–	354005 2505	159,–
AHR/L 211 2525 6	5.70 to 6.50	25	25	150	22.2	16.0	M5 x 25	A3	354004 2506	159,–	354005 2506	159,–
									3117		3117	

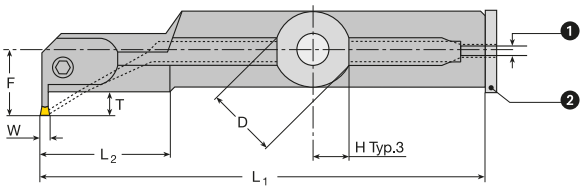
Spare parts

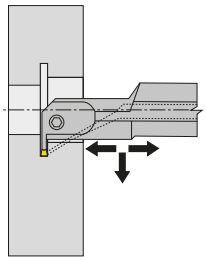
	Screw art.no.	€
A1	320901 0138	1,80
A2	320901 0139	1,80
A3	320901 0140	1,80
	3106	

ATORN® Boring bars A-CUT

- **AHR/L 619**
- Internal turning and grooving
- **With internal coolant supply**
- For use with type **AIMC, AIMJ and AIPV** recessing inserts
- **Note:** Type AIMC and AIMJ recessing inserts should **only** be used for grooving.
- Sealing thread: R 1/8"
- When using the seal, the boring bar can be shortened by max. 100 mm.
- Supplied with clamping screw, T20 Torx key and seal, without recessing inserts







Right-hand version 1 sealing thread 2 seal

AHR/L 619

Designation	W mm	D mm	Min. hole Ø mm	T max. mm	C mm	F mm	L1 mm	L2 mm	H mm	suitable clamping screw		Right-hand AHR 619 art.no.	€	Left-hand AHL 619 art.no.	€
AHR/L 619 25C 2	1.85 to 2.50	25	35.0	6.5	0.3	20	200	51	11.5	SR 76-1021	A2	**354008** 2502	215,–	**354009** 2502	215,–
AHR/L 619 25C 3	2.80 to 3.60	25	47.0	8.0	0.5	20.8	200	51	11.5	SR 76-1022	A1	354008 2503	215,–	354009 2503	215,–
AHR/L 619 25C 4	3.60 to 4.60	25	47.0	8.0	0.5	20.8	200	51	11.5	SR 76-1022	A1	354008 2504	215,–	354009 2504	215,–
AHR/L 619 32C 2	1.85 to 2.50	32	43.0	7.5	0.3	25	250	63.5	14.5	SR 76-1022	A1	354008 3202	255,–	354009 3202	255,–
AHR/L 619 32C 3	2.80 to 3.60	32	52.0	10.0	0.5	26.6	250	57	14.5	SR 76-1022	A1	354008 3203	255,–	354009 3203	255,–
AHR/L 619 32C 4	3.60 to 4.60	32	52.0	10.0	0.5	26.6	250	51	14	SR 76-1022	A1	354008 3204	255,–	354009 3204	255,–
AHR/L 619 40C 4	3.60 to 4.60	40	47.0	12.0	0.5	33	300	51	18	SR 76-1022	A1	354008 4004	345,–	354009 4004	345,–
												3117		3117	

Spare parts

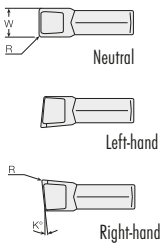
	Screw art.no.	€
A1	320901 0137	9,95
A2	320901 0142	9,95
	3106	

ATORN® A-CUT recessing inserts

30-183







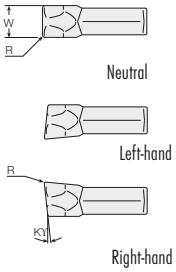
AIMC

- Parting-off and grooving
- With chip breaker
- Cutting width tolerance "W" ± 0.1 mm

Designation	W mm	R mm	K °	ISO K N HW3410 uncoated			ISO P M K HC3635 coated			ISO P HC3630 coated			ISO P M HC 3540 coated		
					art.no.	€		art.no.	€		art.no.	€		art.no.	€
AIMC 4 6L	4.1	0.25	6							5	**355001** 1464	13,05			
AIMC 1.6	1.6	0.16	0	5	**355001** 0103	9,40				5	355001 0164	12,25			
AIMC 2 6L	2.2	0.20	6	5	355001 0503	9,40				5	355001 0564	12,25			
AIMC 2 6R	2.2	0.20	6	5	355001 0603	9,40				5	355001 0664	12,25			
AIMC 2	2.2	0.20	0	5	355001 0403	9,40	5	**355001** 0449	12,25	5	355001 0464	12,25	5	**355001** 0462	12,25
AIMC 3 6L	3.1	0.20	6	5	355001 1103	9,40	5	355001 1149	12,25	5	355001 1164	12,25	5	355001 1162	12,25
AIMC 3 6R	3.1	0.20	6	5	355001 1203	9,40	5	355001 1249	12,25	5	355001 1264	12,25	5	355001 1262	12,25
AIMC 3	3.1	0.20	0	5	355001 1003	9,40	5	355001 1049	12,25	5	355001 1064	12,25	5	355001 1062	12,25
AIMC 4 6R	4.1	0.25	6	5	355001 1503	10,15				5	355001 1564	13,05			
AIMC 4	4.1	0.25	0	5	355001 1303	10,15	5	355001 1349	13,05	5	355001 1364	13,05	5	355001 1362	13,05
AIMC 5 6L	5.1	0.30	6	5	355001 2003	10,95				5	355001 2064	14,10			
AIMC 5 6R	5.1	0.30	6	5	355001 2103	10,95									
AIMC 5	5.1	0.30	0	5	355001 1903	10,95	5	355001 1949	14,10	5	355001 1964	14,10			
AIMC 6	6.4	0.35	0				5	355001 2249	15,50	5	355001 2264	15,50			
					3118			3118			3118			3118	







AIMJ

- Parting-off and grooving
- With chip breaker
- Cutting width tolerance "W" ± 0.1 mm

Designation	W mm	R mm	K °	ISO K N HW3410 uncoated			ISO P M K HC3635 coated			ISO P HC3630 coated			ISO P M HC 3540 coated		
					art.no.	€		art.no.	€		art.no.	€		art.no.	€
AIMJ 2	2.2	0.20	0	5	**355002** 0403	9,40	5	**355002** 0449	12,25	5	**355002** 0464	12,25	5	**355002** 0462	12,25
AIMJ 2 6L	2.2	0.20	6	5	355002 0503	9,40	5	355002 0549	12,25				5	355002 0562	12,25
AIMJ 2 6R	2.2	0.20	6	5	355002 0603	9,40	5	355002 0649	12,25	5	355002 0664	11,60	5	355002 0662	12,25
AIMJ 3	3.1	0.20	0	5	355002 1003	9,40	5	355002 1049	12,25	5	355002 1064	12,25	5	355002 1062	12,25
AIMJ 3 6L	3.1	0.20	6	5	355002 1103	9,40	5	355002 1149	12,25	5	355002 1164	12,25	5	355002 1162	12,25
AIMJ 3 6R	3.1	0.20	6	5	355002 1203	9,40	5	355002 1249	12,25	5	355002 1264	12,25	5	355002 1262	12,25
AIMJ 4	4.1	0.25	0	5	355002 1303	10,15	5	355002 1349	13,05	5	355002 1364	13,05	5	355002 1362	13,05
AIMJ 4 6L	4.1	0.25	6							5	355002 1464	13,05			
AIMJ 4 6R	4.1	0.25	6				5	355002 1549	12,90	5	355002 1564	13,05			
AIMJ 5	5.1	0.30	0							5	355002 1964	13,30			
					3118			3118			3118			3118	

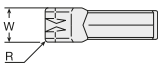
AIPV

- Precision grooving and turning (E version, rounded)
- With chip breaker
- Cutting width tolerance "W" ± 0.02 mm

Designation	W mm	R mm	ISO P M K HC3635 coated			ISO P M HC 3540 coated		
				art.no.	€		art.no.	€
AIPV 3.00E 0.40	3	0.40	5	**355003** 0149	14,20			
AIPV 4.00E 0.40	4	0.40	5	355003 0249	14,70			
AIPV 3.00E 1.50	3	1.50	5	355003 0649	14,90	5	**355003** 0662	13,75
AIPV 4.00E 2.00	4	2.00	5	355003 0749	16,–			
AIPV 6.00E 3.00	6	3.00	5	355003 0949	20,80			
				3118			3118	

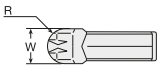


355003 0149





355003 0649



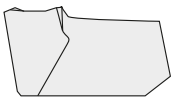
Continued on next page >>>

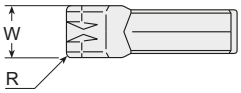
AIPV

- Precision grooving and turning (circlip)
- With chip breaker
- Cutting width tolerance "W" ± 0.02 mm

Designation	W mm	R mm		ISO P M K HC3635 coated art.no.	€		ISO P M HC 3540 coated art.no.	€
AIPV 1.85 0.10	1.85	0.10	5	**355004** 0149	13,55	5	**355004** 0162	12,50
AIPV 2.00 0.20	2.00	0.20	5	355004 0249	13,55	5	355004 0262	12,50
AIPV 2.15 0.15	2.15	0.15	5	355004 0349	13,55			
AIPV 2.65 0.15	2.65	0.15	5	355004 0449	14,20			
AIPV 3.00 0.20	3.00	0.20	5	355004 0549	14,20	5	355004 0562	13,05
AIPV 4.00 0.20	4.00	0.20	5	355004 0749	14,70			
AIPV 4.15 0.15	4.15	0.15	5	355004 0849	14,70			
AIPV 5.00 0.20	5.00	0.20				5	355004 0962	14,25
				3118			3118	







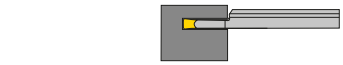
ATORN® A-CUT axial grooving blade

- **AH 106 R**
- **For use with AIMF recessing inserts**
- **Only for axial (front face) machining**
- For fitting in AGTBN clamping shanks
- For machining diameters from 35 to 700 mm

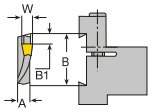


AH 106 R

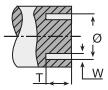
Designation	Insert size mm	W mm	B mm	D min. mm	T max. mm	D max. mm	A mm	B1 mm	L mm	Right-hand AH 106R art.no.	€
AH 106 35R-2	AIMF 2N	2.1	32.0	35	20.0	46	5.2	0.8	150.0	**354012** 3502	167,–
AH 106 45R-2	AIMF 2N	2.1	32.0	45	20.0	61	5.2	0.8	150.0	354012 4502	159,–
AH 106 60R-2	AIMF 2N	2.1	32.0	60	20.0	80	5.2	0.8	150.0	354012 6002	159,–
AH 106 80R-2	AIMF 2N	2.1	32.0	79	20.0	102	4.0	0.8	150.0	354012 8002	159,–
AH 106 100R-2	AIMF 2N	2.1	32.0	101	20.0	132	4.0	0	150.0	354012 1002	159,–
AH 106 75R-3	AIMF 3N	3.0	32.0	65	20.0	92	5.2	1.0	150.0	354012 7503	159,–
AH 106 90R-3	AIMF 3N	3.0	32.0	90	20.0	122	5.2	0.2	150.0	354012 9003	159,–
AH 106 120R-3	AIMF 3N	3.0	32.0	120	25.0	160	5.2	0	150.0	354012 1203	159,–
AH 106 80R-4	AIMF 4N	4.0	32.0	80	30.0	155	5.2	2.5	150.0	354012 8004	159,–
AH 106 150R-4	AIMF 4N	4.0	32.0	150	30.0	500	5.2	2.5	150.0	354012 1504	159,–
AH 106 80R-5	AIMF 5N	5.0	32.0	80	32.0	162	5.2	2.5	150.0	354012 8005	159,–
AH 106 150R-5	AIMF 5N	5.0	32.0	150	35.0	600	5.2	2.5	150.0	354012 1505	159,–
AH 106 90R-6	AIMF 6N	6.0	32.0	90	32.0	150	5.2	2.5	150.0	354012 9006	172,–
										3117	







Right-hand version

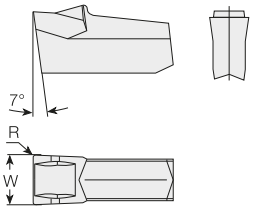


ATORN® A-CUT axial grooving inserts

i Vc/fz 30-183



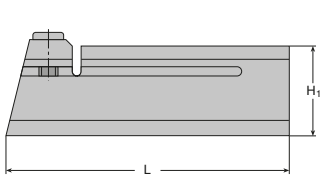
- **AIMF**
- AIMF inserts are not interchangeable with type AIMC, AIMJ or AIPV inserts
- Cutting width tolerance "W" ± 0.1 mm
- **Note:** Once the initial groove is created, its width can be increased in either direction

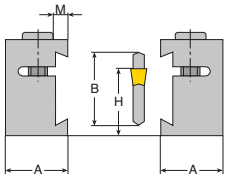


AIMF

Designation	Design	W mm	R mm	Ø mm		ISO P HC3630 coated art.no.	€
AIMF 2N	neutral	2.1	0.20	from 35	5	**355005** 0449	11,60
AIMF 3N	neutral	3.0	0.30	from 54	5	355005 0749	12,15
AIMF 4N	neutral	4.0	0.25	from 35	5	355005 1049	13,–
AIMF 5N	neutral	5.0	0.25	from 40	5	355005 1149	13,75
AIMF 6N	neutral	6.0	0.25	from 44	5	355005 1249	15,–
						3118	

ATORN® A-CUT / D-Grip / D-Clamp recessing blade holding fixture





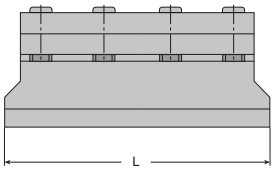


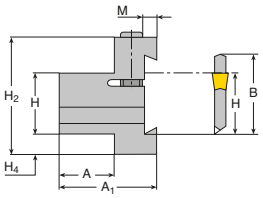
AGTBR

- For A-CUT recessing blade AH101
- For D-GRIP recessing blade KGIH

Designation	A mm	B mm	M mm	H mm	H1 mm	L mm	suitable clamping screw	suitable cutting edge holder	Right-hand art.no.	€
AGTBR 19-2	19	19	2	19	25.0	100	SR-M6 x 25	B = 19	**352010** 0001	122,–
AGTBR 25-6	20	26	5	25	32.0	120	SR-M6 x 30	B = 26	352010 0002	142,–

3121







AGTBN

- For **A-CUT** recessing blade AH101, AH106
- For **D-CLAMP** recessing blade DGB
- For **D-GRIP** recessing blade KGIH

Designation	H mm	A mm	B mm	M mm	L mm	A1 mm	H4 mm	H2 mm	suitable clamping screw	suitable cutting edge holder	art.no.	€
AGTBN16-2	16	16	19	2.0	76	26.0	4.0	30.0	SR-M5 x 25	Dimension B = 19	**352015** 0001	189,–
AGTBN16-5	16	16	26	4.0	76	30.0	12.0	38.0	SR-M6 x 30	Dimension B = 26	352015 0002	189,–
AGTBN19-5	19	19	26	5.0	87	33.0	9.0	38.0	SR-M6 x 30	Dimension B = 26	352015 0003	198,–
AGTBN20-5	20	19	26	4.0	87	33.0	8.0	38.0	SR-M6 x 30	Dimension B = 26	352015 0004	198,–
AGTBN20-6	20	19	32	5.5	100	35.0	13.0	48.0	SR-M6 x 40	Dimension B = 32	352015 0005	198,–
AGTBN25-6	25	20	32	5.5	110	36.0	8.0	48.0	SR-M6 x 40	Dimension B = 32	352015 0006	205,–
AGTBN32-6	32	28	32	5.5	120	44.0	3.0	48.0	SR-M6 x 40	Dimension B = 32	352015 0008	215,–

3121



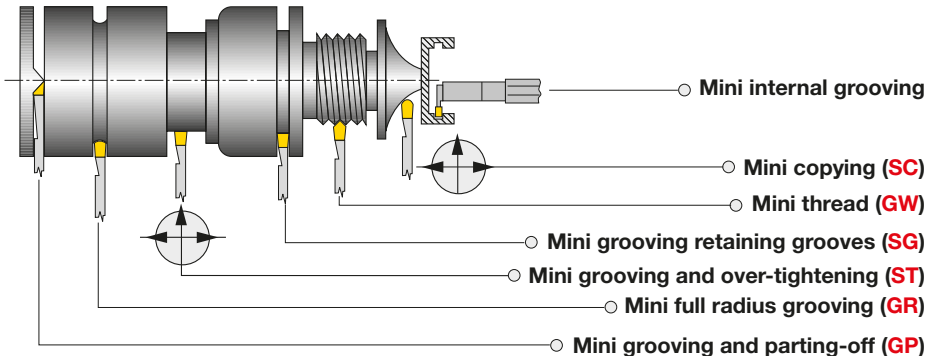
...dreams come true.

ATORN®
High quality for great performance

SARA® SARA-MINI grooving and parting-off system for internal and external machining

- Just one system for all grooving and parting-off work up to 2.0 mm. The SARA-MINI system offers two cutting edges on each indexable cutting insert (type G - internal and external) for extremely small-scale grooving and parting-off work. Practically the entire spectrum of operations involved in grooving and parting-off work up to 2.0 mm is covered with a minimum of equipment.
- The design of the insert seat in the holder, clamped in place by means of a Torx screw, ensures a high level of cutting edge precision and positioning accuracy and enables all of the indexable cutting inserts listed below to be used. The standard range on offer encompasses all sizes from 0.5 to 2.0 mm, in both uncoated and coated versions.
- The entire range of inserts can be used for internal machining, with only an appropriate holder required.





Types SC and ST available on request.

External machining

Designation	B mm	H mm	L mm	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
THE 0808	8	8	100	A1	B1	**361001** 0808	94,–	**361002** 0808	94,–
THE 1010	10	10	120	A1	B1	361001 1010	94,–	361002 1010	94,–
THE 1212	12	12	120	A1	B1	361001 1212	94,–	361002 1212	94,–
THE 1616	16	16	125	A1	B1	361001 1616	102,–	361002 1616	102,–
THE 2020	20	20	125	A1	B1	361001 2020	143,–	361002 2020	143,–
THE 2525	25	25	125	A1	B1	361001 2525	149,–	361002 2525	149,–
						3123		3123	

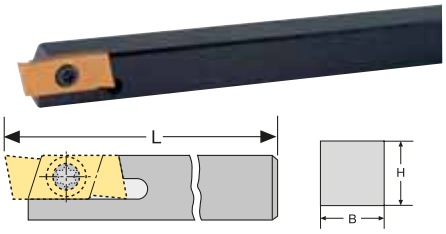
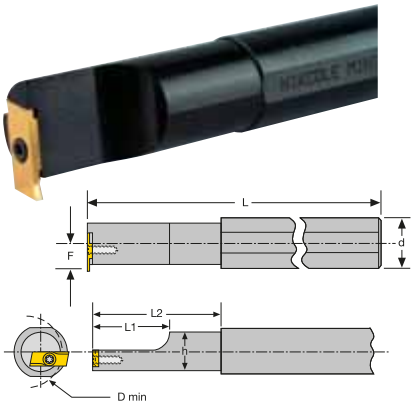


Figure shows right-hand holder

Internal machining

- For internal machining, please select right-hand inserts and left-hand holders, or left-hand inserts and right-hand holders.

Designation	D mm	H mm	L mm	L1 mm	L2 mm	F mm	D min. mm	A1	B1	Right-hand art.no.	€	Left-hand art.no.	€
THI -7-20	20.0	19.05	140	25	50	13.34	25.0	A1	B1	**361015** 0720	158,–	**361016** 0720	158,–
THI -7-25	25.0	19.05	150	32	63	13.34	27.0	A1	B1	361015 0725	171,–	361016 0725	171,–
										3123		3123	



Spare parts

	Screw art.no.	€		Steel grey art.no.	€
A1	361060 0001	3,26	B1	703038 0080	1,81
	3123			7111	

SARA® SARA-MINI grooving and parting-off set

- For producing retaining grooves (SG)
- Two cutting edges on each indexable cutting insert
- From insert thickness 1.1 mm, also suitable for parting-off operations up to a depth of T max. 6 mm
- TiN-coated indexable cutting inserts, ISO P and ISO M
- Insert seat with clamping via Torx screw ensures a high level of cutting edge precision and positioning accuracy



Contents	art.no.	€
1 holder 12x12x120 mm, right-hand; 1 carbide plate for each retaining groove: 0.9-1.1-1.3-1.6-1.85 mm ; carbide quality P25/PVD TiN-coated (ISO P M)	**362001** 0001	205,–
	3123	

SARA® SARA-MINI grooving and parting-off inserts (GP)

30-194

- All figures show right-hand versions

RN neutral

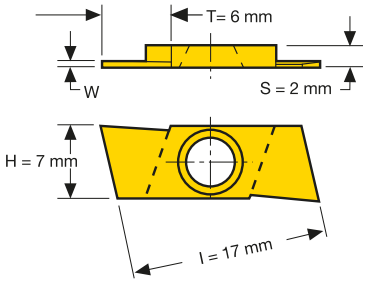
- For RH external holders + LH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 RN	1.0	10	**361501** 1020	21,70	10	**361501** 1030	24,60	10	**361501** 1040	24,60
GIE-7-GP 1.5 RN	1.5	10	361501 1520	21,70	10	361501 1530	24,60	10	361501 1540	24,60
GIE-7-GP 2.0 RN	2.0	10	361501 2020	21,70	10	361501 2030	24,60	10	361501 2040	24,60
			3124			3124			3124	

LN neutral

- For LH external holders + RH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 LN	1.0	10	**361505** 1020	21,70	10	**361505** 1030	24,60	10	**361505** 1040	24,60
GIE-7-GP 1.5 LN	1.5	10	361505 1520	21,70	10	361505 1530	24,60	10	361505 1540	24,60
GIE-7-GP 2.0 LN	2.0	10	361505 2020	21,70	10	361505 2030	24,60	10	361505 2040	24,60
			3124			3124			3124	



RR 7° right-hand

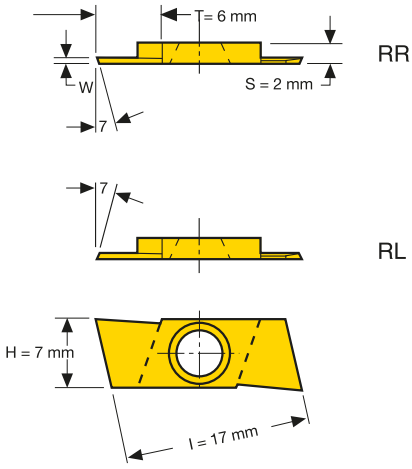
- For RH external holders + LH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 RR	1.0	10	**361502** 1020	21,70	10	**361502** 1030	24,60	10	**361502** 1040	24,60
GIE-7-GP 1.5 RR	1.5	10	361502 1520	21,70	10	361502 1530	24,60	10	361502 1540	24,60
GIE-7-GP 2.0 RR	2.0	10	361502 2020	21,70	10	361502 2030	24,60	10	361502 2040	24,60
			3124			3124			3124	

RL 7° left-hand

- For RH external holders + LH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 RL	1.0	10	**361506** 1020	21,70	10	**361506** 1030	24,60	10	**361506** 1040	24,60
GIE-7-GP 1.5 RL	1.5	10	361506 1520	21,70	10	361506 1530	24,60	10	361506 1540	24,60
GIE-7-GP 2.0 RL	2.0	10	361506 2020	21,70	10	361506 2030	24,60	10	361506 2040	24,60
			3124			3124			3124	



LR 7° right-hand

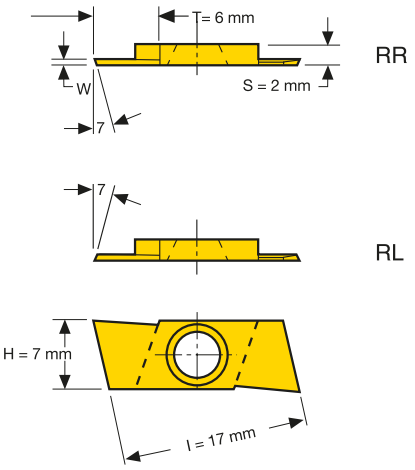
- For LH external holders + RH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 LR	1.0	10	**361503** 1020	21,70	10	**361503** 1030	24,60	10	**361503** 1040	24,60
GIE-7-GP 1.5 LR	1.5	10	361503 1520	21,70	10	361503 1530	24,60	10	361503 1540	24,60
GIE-7-GP 2.0 LR	2.0	10	361503 2020	21,70	10	361503 2030	24,60	10	361503 2040	24,60
			3124			3124			3124	

LL 7° left-hand

- For LH external holders + RH internal holders

Designation	W+0.02 mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GP 1.0 LL	1.0	10	**361507** 1020	21,70	10	**361507** 1030	24,60	10	**361507** 1040	24,60
GIE-7-GP 1.5 LL	1.5	10	361507 1520	21,70	10	361507 1530	24,60	10	361507 1540	24,60
GIE-7-GP 2.0 LL	2.0	10	361507 2020	21,70	10	361507 2030	24,60	10	361507 2040	24,60
			3124			3124			3124	



Continued on next page >>>

RR 15° right-hand

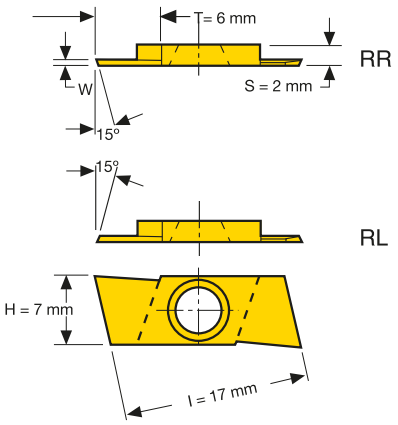
- For RH external holders + LH internal holders

Designation	W+0.02 mm	ISO P M P25 PVD			ISO P M P40 PVD		
			art.no.	€		art.no.	€
GIE-7-GP 1.0 RR	1.0	10	**361510** 1030	27,40	10	**361510** 1040	27,40
GIE-7-GP 1.5 RR	1.5	10	361510 1530	27,40	10	361510 1540	27,40
GIE-7-GP 2.0 RR	2.0	10	361510 2030	27,40	10	361510 2040	27,40
			3124			3124	

LL 15° left-hand

- For LH external holders + RH internal holders

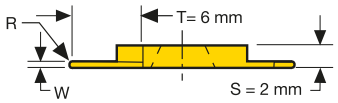
Designation	W+0.02 mm	ISO P M P25 PVD			ISO P M P40 PVD		
			art.no.	€		art.no.	€
GIE-7-GP 1.0 LL	1.0	10	**361516** 1030	27,40	10	**361516** 1040	27,40
GIE-7-GP 1.5 LL	1.5	10	361516 1530	27,40	10	361516 1540	27,40
GIE-7-GP 2.0 LL	2.0	10	361516 2030	27,40	10	361516 2040	27,40
			3124			3124	



SARA® SARA-MINI radius grooving inserts (GR)

Vc/fz 30-194

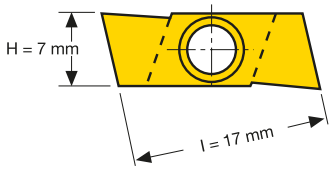
- All figures show right-hand versions



R right-hand

- For RH external holders + LH internal holders

Designation	W+0.02 mm	R mm	ISO P M P25 PVD		
				art.no.	€
GIE-7-GR 1.0 R	1.0	0.5	10	**361530** 1030	24,60
GIE-7-GR 1.5 R	1.5	0.75	10	361530 1530	24,60
GIE-7-GR 2.0 R	2.0	1.0	10	361530 2030	24,60
				3124	



L left-hand

- For LH external holders + RH internal holders

Designation	W+0.02 mm	R mm	ISO P M P25 PVD		
				art.no.	€
GIE-7-GR 1.0 L	1.0	0.5	10	**361531** 1030	24,60
GIE-7-GR 1.5 L	1.5	0.75	10	361531 1530	24,60
GIE-7-GR 2.0 L	2.0	1.0	10	361531 2030	24,60
				3124	

Safety in the workplace

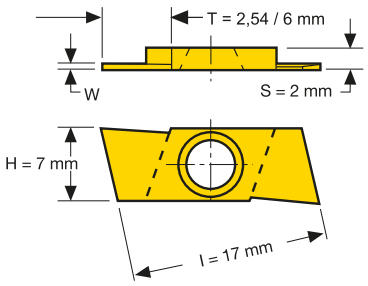
Please protect your eyes, ears and respiratory system!



SARA® SARA-MINI grooving inserts for retaining grooves (SG)

i Vc/fz 30-194

- All figures show right-hand versions



R right-hand

- For RH external holders + LH internal holders

Designation	W+0.02 mm	T mm		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-SG 0.5 R	0.5	2.54	10	**361540** 0530	24,60	10	**361540** 0540	24,60
GIE-7-SG 0.7 R	0.7	2.54	10	361540 0730	24,60	10	361540 0740	24,60
GIE-7-SG 0.8 R	0.8	2.54	10	361540 0830	24,60	10	361540 0840	24,60
GIE-7-SG 0.9 R	0.9	2.54	10	361540 0930	24,60	10	361540 0940	24,60
GIE-7-SG 1.1 R	1.1	6.0	10	361540 1130	24,60	10	361540 1140	24,60
GIE-7-SG 1.3 R	1.3	6.0	10	361540 1330	24,60	10	361540 1340	24,60
GIE-7-SG 1.6 R	1.6	6.0	10	361540 1630	24,60	10	361540 1640	24,60
GIE-7-SG 1.85 R	1.85	6.0	10	361540 1830	24,60	10	361540 1840	24,60
				3124			3124	

L left-hand

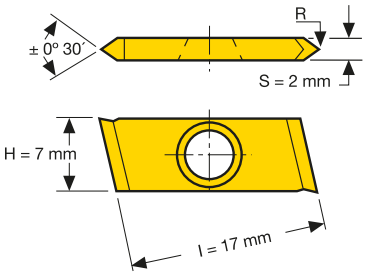
- For LH external holders + RH internal holders

Designation	W+0.02 mm	T mm		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-SG 0.5 L	0.5	2.54	10	**361541** 0530	24,60	10	**361541** 0540	24,60
GIE-7-SG 0.7 L	0.7	2.54	10	361541 0730	24,60	10	361541 0740	24,60
GIE-7-SG 0.8 L	0.8	2.54	10	361541 0830	24,60	10	361541 0840	24,60
GIE-7-SG 0.9 L	0.9	2.54	10	361541 0930	24,60	10	361541 0940	24,60
GIE-7-SG 1.1 L	1.1	6.0	10	361541 1130	24,60	10	361541 1140	24,60
GIE-7-SG 1.3 L	1.3	6.0	10	361541 1330	24,60	10	361541 1340	24,60
GIE-7-SG 1.6 L	1.6	6.0	10	361541 1630	24,60	10	361541 1640	24,60
GIE-7-SG 1.85 L	1.85	6.0	10	361541 1830	24,60	10	361541 1840	24,60
				3124			3124	

SARA® SARA-MINI grooving inserts for threads (GW)

i Vc/fz 30-194

- 55° grooving insert available on request
- All figures show right-hand versions



R 60° right-hand

- For RH external holders + LH internal holders

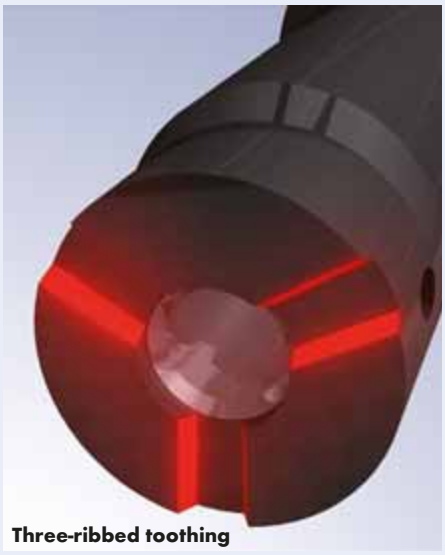
Designation	Angle °	R mm		ISO K N K10 art.no.	€		ISO P M P25 PVD art.no.	€		ISO P M P40 PVD art.no.	€
GIE-7-GW 60 R	60	0.1 / 0.12	10	**361550** 6020	21,70	10	**361550** 6030	24,60	10	**361550** 6040	24,60
				3124			3124			3124	

L 60° left-hand

- For LH external holders + RH internal holders

Designation	Angle °	R mm		ISO P M P40 PVD art.no.	€
GIE-7-GW 60 L	60	0.1 / 0.12	10	**361551** 6040	24,60
				3124	



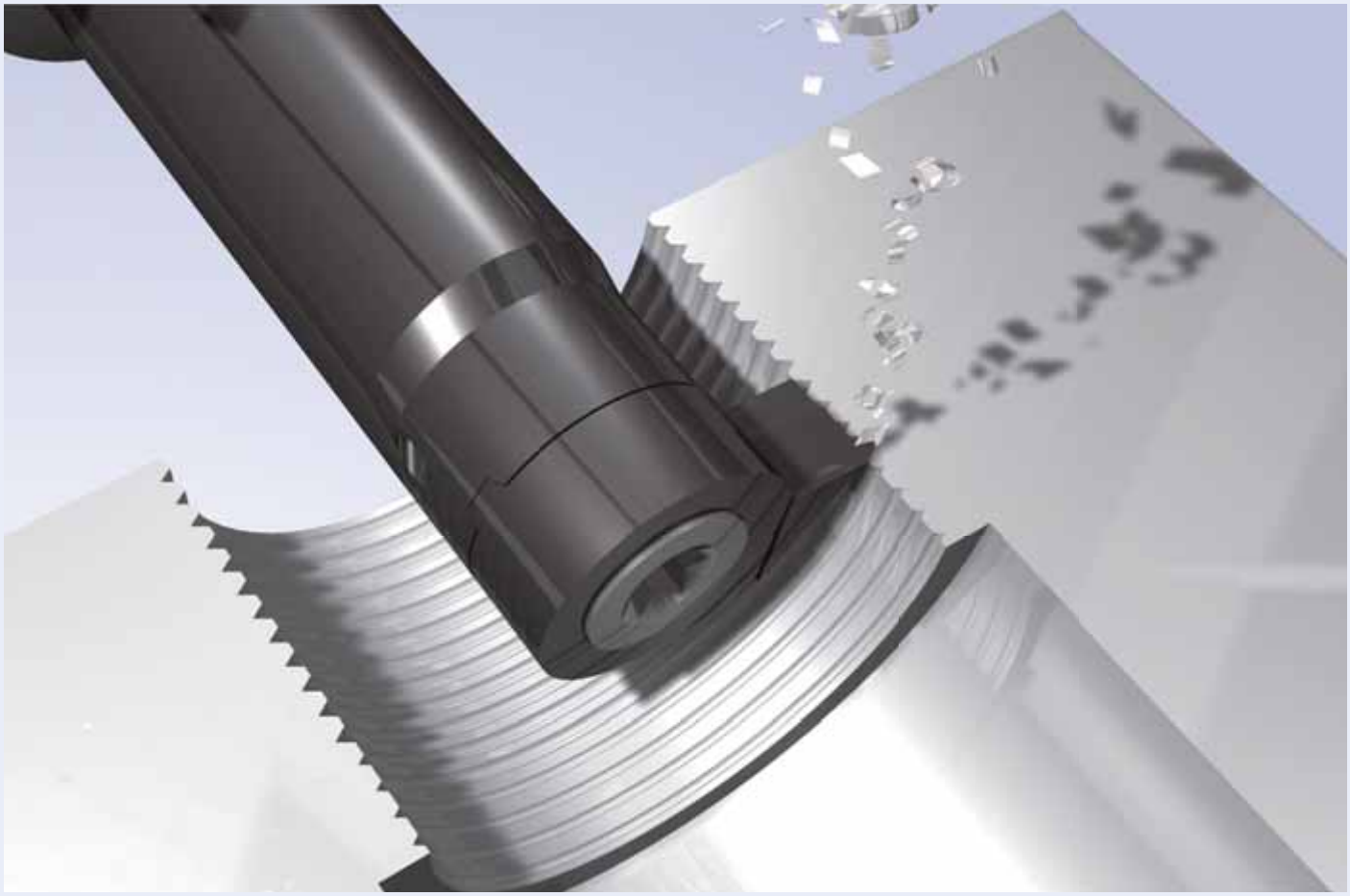


Three-ribbed toothing

ATORN® MINI-CUT

The exchangeable carbide blades are screwed onto the front using the tried and tested three-ribbed toothing.

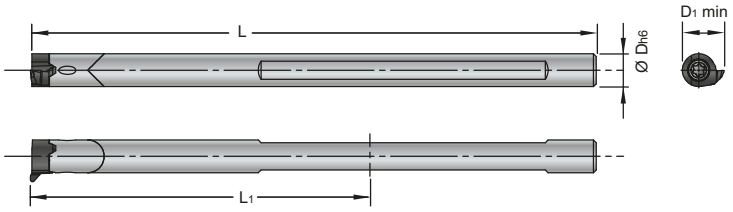
- Best repetition precision with easiest handling
- Best possible absorption of torque forces
- Very precise fixing of position of the blade at the centre of rotation



ATORN® Tool holder MINI-CUT



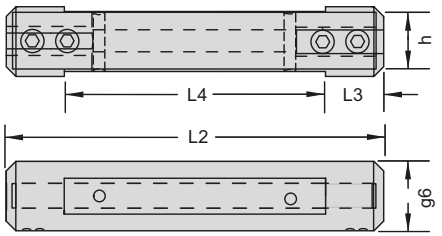
- **With internal cooling**
- For recess turning, internal turning and thread cutting (internal) from Ø 7.8 mm
- Spare clamping screws available on request
- **NEW FLEXO** clamp mounting, variable clamping range from ... to ... mm (see table Clamping Length = „ **L**"
- **FLEXO** clamp mounting for HM cutting inserts R/LS 08 and R/LS 11
- Suitable **FLEXO** steel clamp mounting



FLEXO carbide tool holder

Designation	D h6 mm	D1 min. mm	L mm	Clamping depth mm	suitable cutting inserts	art.no.	€
V08.0006.2HM	6.0	8.0	65.0	18-42	R/LS08	**305012** 0081	215,–
V08.0006.4HM	6.0	8.0	103.0	40-80	R/LS08	305012 0082	240,–
V11.0008.2HM	8.0	11.0	79.0	20-55	R/LS11	305012 0111	270,–
V11.0008.4HM	8.0	11.0	129.0	50-105	R/LS11	305012 0112	305,–

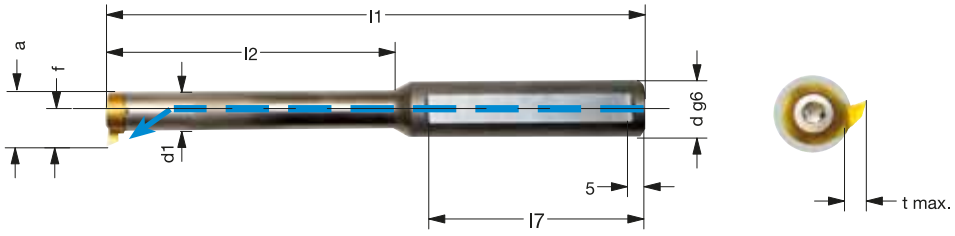
3127



FLEXO steel tool holder

Designation	d g6 mm	L2 mm	L3 mm	L4 mm	h mm	art.no.	€
VG08-16	16	75	10	55	14	**305013** 0081	108,–
VG08-20	20	90	10	70	18	305013 0082	108,–
VG11-16	16	75	10	55	14	305013 0111	108,–
VG11-20	20	90	10	70	18	305013 0112	108,–

3127



Carbide tool holder type 608...

Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
608.0012.1 HM	12	21	80	48	6	4.8	7.8	R/LS08	1.0	8	M2.6-MC	A1	**305001** 0001	139,–
608.0012.2 HM	12	30	90	48	6	4.8	7.8	R/LS08	1.0	8	M2.6-MC	A1	305001 0002	151,–
608.0012.3 HM	12	42	100	48	6	4.8	7.8	R/LS08	1.0	8	M2.6-MC	A1	305001 0003	177,–
608.0012.4 HM	12	50	115	48	6	4.8	10.2	R/LS08	1.0	8	M2.6-MC	A1	305001 0004	205,–

3127

Carbide tool holder type 611...

Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
611.0012.1 HM	12	29	95	60	8	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	**305002** 0001	139,–
611.0012.2 HM	12	42	110	60	8	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	305002 0002	151,–
611.0012.3 HM	12	56	120	60	8	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	305002 0003	177,–
611.0012.4 HM	12	64	130	60	8	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	305002 0004	205,–

3127

Continued on next page >>>

Carbide tool holder type 614...

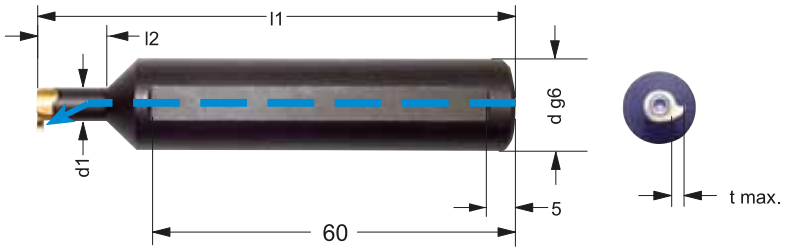
Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
614.0012.1 HM	12	34	100	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	**305003** 0001	170,–
614.0012.2 HM	12	45	110	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0002	191,–
614.0012.3 HM	12	64	130	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0003	225,–
614.0016.1 HM	16	34	100	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0004	198,–
614.0016.2 HM	16	45	110	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0005	225,–
614.0016.3 HM	16	64	130	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0006	260,–
614.0016.4 HM	16	75	145	60	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0007	280,–

3127

Carbide tool holder type 616...

Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
616.0012.1 HM	12	40	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	**305004** 0001	179,–
616.0012.2 HM	12	56	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0002	191,–
616.0012.3 HM	12	80	150	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0003	225,–
616.0016.1 HM	16	40	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0004	220,–
616.0016.2 HM	16	56	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0005	225,–
616.0016.3 HM	16	80	150	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0006	260,–

3127



Steel tool holder, short

Designation	d g6 mm	l2 mm	l1 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
608.0016.1 ST	16	12	80	6	4.8	7.8	R/LS08	1.0	8	M2.6-MC	A1	**305010** 0001	80,–
611.0016.2 ST	16	16	97	8	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	305010 0002	80,–
614.0016.3 ST	16	18	100	9.5 x 11	9.0	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305010 0003	92,–
616.0016.3 ST	16	22	100	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305010 0004	80,–

3127

Steel tool holder, long

Designation	d g6 mm	l2 mm	l1 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
611.0016.2E.ST	16	29	110	8 x 9.5	6.7	10.7	R/LS11	2.3	11	M3.5-MC	A2	**305011** 0002	92,–
614.0016.3E.ST	16	38	120	9.5 x 11	9.0	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305011 0003	92,–
616.0016.3E.ST	16	42	120	11 x 13.5	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305011 0004	92,–

3127

Spare parts

	Screw art.no.	€
A1	305199 0026	3,15
A2	305199 0035	3,15
A3	305199 0040	3,15
A4	305199 0050	3,15

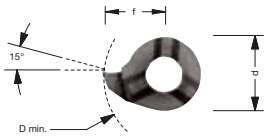
3127

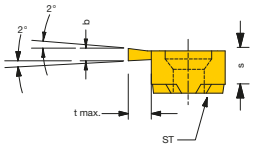
Safety in the workplace

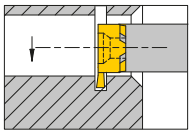
Please protect your eyes, ears and respiratory system!

ATORN® Carbide indexable cutting inserts MINI-CUT

30-194

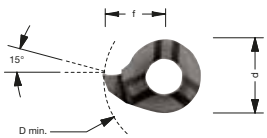


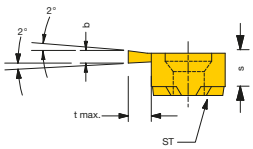


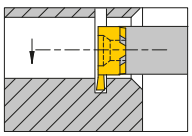


Recess turning (internal)
- **For circlip grooves**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image

model	D min. mm	t max. mm	b +0.03 mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS008.0070	8	1.0	0.73	6.0	4.8	3.3	608	**305020** 0001	14,50	**306020** 0001	14,50
R/LS008.0080	8	1.0	0.83	6.0	4.8	3.3	608	305020 0002	14,50	306020 0002	14,50
R/LS008.0090	8	1.0	0.93	6.0	4.8	3.3	608	305020 0003	14,50	306020 0003	14,50
R/LS008.0110	8	1.0	1.20	6.0	4.8	3.3	608	305020 0004	14,50	306020 0004	14,50
R/LS008.0130	8	1.0	1.40	6.0	4.8	3.3	608	305020 0005	14,50	306020 0005	14,50
R/LS008.0160	8	1.0	1.70	6.0	4.8	3.3	608	305020 0006	14,50	306020 0006	14,50
R/LS011.0070	11	1.2	0.73	8.0	6.7	4.2	611	305020 0007	14,50	306020 0007	14,50
R/LS011.0080	11	1.3	0.83	8.0	6.7	4.2	611	305020 0008	14,50	306020 0008	14,50
R/LS011.0090	11	1.5	0.93	8.0	6.7	4.2	611	305020 0009	14,50	306020 0009	14,50
R/LS011.0110	11	2.3	1.20	8.0	6.7	4.2	611	305020 0010	14,50	306020 0010	14,50
R/LS011.0130	11	2.3	1.40	8.0	6.7	4.2	611	305020 0011	14,50	306020 0011	14,50
R/LS011.0160	11	2.3	1.70	8.0	6.7	4.2	611	305020 0012	14,50	306020 0012	14,50
R/LS014.0070	14	1.2	0.73	9.0	9.0	5.3	614	305020 0013	14,50	306020 0013	14,50
R/LS014.0080	14	1.3	0.83	9.0	9.0	5.3	614	305020 0014	14,50	306020 0014	14,50
R/LS014.0090	14	1.5	0.93	9.0	9.0	5.3	614	305020 0015	14,50	306020 0015	14,50
R/LS014.0110	14	4.0	1.20	9.0	9.0	5.3	614	305020 0016	14,50	306020 0016	14,50
R/LS014.0130	14	4.0	1.40	9.0	9.0	5.3	614	305020 0017	14,50	306020 0017	14,50
R/LS014.0160	14	4.0	1.70	9.0	9.0	5.3	614	305020 0018	14,50	306020 0018	14,50
R/LS016.0070	16	1.2	0.73	11.0	10.2	5.4	616	305020 0019	17,70	306020 0019	17,70
R/LS016.0080	16	1.3	0.83	11.0	10.2	5.4	616	305020 0020	17,70	306020 0020	17,70
R/LS016.0090	16	1.5	0.93	11.0	10.2	5.4	616	305020 0021	17,70	306020 0021	17,70
R/LS016.0110	16	4.3	1.20	11.0	10.2	5.4	616	305020 0022	16,–	306020 0022	16,–
R/LS016.0130	16	4.3	1.40	11.0	10.2	5.4	616	305020 0023	16,–	306020 0023	16,–
R/LS016.0160	16	4.3	1.70	11.0	10.2	5.4	616	305020 0024	16,–	306020 0024	16,–
								3127		3127	







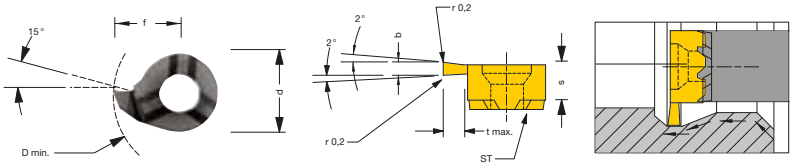
Recess turning (internal)
- **General recess turning**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image

model	D min. mm	t max. mm	b +0.03 mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS008.0100	8	1.0	1.0	6.0	4.8	3.3	608	**305021** 0001	14,50	**306021** 0001	14,50
R/LS008.0150	8	1.0	1.5	6.0	4.8	3.3	608	305021 0002	14,50	306021 0002	14,50
R/LS008.0200	8	1.0	2.0	6.0	4.8	3.3	608	305021 0003	14,50	306021 0003	14,50
R/LS011.0100	11	2.3	1.0	8.0	6.7	4.2	611	305021 0004	14,50	306021 0004	14,50
R/LS011.0150	11	2.3	1.5	8.0	6.7	4.2	611	305021 0005	14,50	306021 0005	14,50
R/LS011.0200	11	2.3	2.0	8.0	6.7	4.2	611	305021 0006	14,50	306021 0006	14,50
R/LS011.0250	11	2.3	2.5	8.0	6.7	4.2	611	305021 0007	14,50	306021 0007	14,50
R/LS011.0300	11	2.3	3.0	8.0	6.7	4.2	611	305021 0008	14,50	306021 0008	14,50
R/LS014.0150	14	4.0	1.5	9.0	9.0	5.3	614	305021 0009	14,50	306021 0009	14,50
R/LS014.0200	14	4.0	2.0	9.0	9.0	5.3	614	305021 0010	14,50	306021 0010	14,50
R/LS014.0250	14	4.0	2.5	9.0	9.0	5.3	614	305021 0011	14,50	306021 0011	14,50
R/LS014.0300	14	4.0	3.0	9.0	9.0	5.3	614	305021 0012	14,50	306021 0012	14,50
R/LS016.0150	16	4.3	1.5	11.0	10.2	5.4	616	305021 0013	16,–	306021 0013	16,–
R/LS016.0200	16	4.3	2.0	11.0	10.2	5.4	616	305021 0014	16,–	306021 0014	16,–
R/LS016.0250	16	4.3	2.5	11.0	10.2	5.4	616	305021 0015	16,–	306021 0015	16,–
R/LS016.0300	16	4.3	3.0	11.0	10.2	5.4	616	305021 0016	16,–	306021 0016	16,–
R/LS016.0350	16	4.3	3.5	11.0	10.2	5.4	616	305021 0017	16,–	306021 0017	16,–
R/LS016.0400	16	4.3	4.0	11.0	10.2	5.4	616	305021 0018	16,–	306021 0018	16,–
								3127		3127	

Continued on next page >>>

NC precision turning (internal)

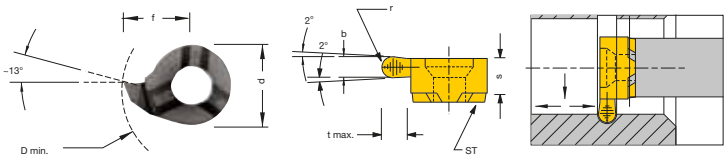
- **Carbide HC8620, TIALN-coated**
- **Ap max. = 0.2 mm (maximum cutting depth)**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	b +0.05 mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.150.02	8	1.0	1.5	6.0	4.8	3.3	608	**305025** 0001	16,20	**306025** 0001	16,20
R/LS08.200.02	8	1.0	2.0	6.0	4.8	3.3	608	305025 0002	16,20	306025 0002	16,20
R/LS11.150.02	11	2.3	1.5	8.0	6.7	4.2	611	305025 0003	17,80	306025 0003	17,80
R/LS11.200.02	11	2.3	2.0	8.0	6.7	4.2	611	305025 0004	16,30	306025 0004	16,30
R/LS14.150.02	14	4.0	1.5	9.0	9.0	5.3	614	305025 0005	16,30	306025 0005	16,30
R/LS14.200.02	14	4.0	2.0	9.0	9.0	5.3	614	305025 0006	16,30	306025 0006	16,30
R/LS16.200.02	16	4.3	2.0	11.0	10.2	5.4	616	305025 0007	17,80	306025 0007	17,80
								3127		3127	

Recess turning (internal)

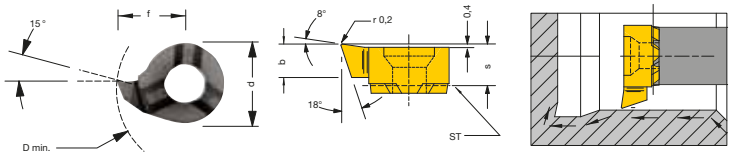
- **Full radius**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	b +0.05 mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.008R04	8	1	0.8	6.0	4.8	3.3	608	**305030** 0001	17,20	**306030** 0001	17,20
R/LS08.012R06	8	1	1.2	6.0	4.8	3.3	608	305030 0002	17,20	306030 0002	17,20
R/LS08.018R09	8	1	1.8	6.0	4.8	3.3	608	305030 0003	17,20	306030 0003	17,20
R/LS11.008R04	11	2.3	0.8	8.0	6.7	4.2	611	305030 0004	17,80	306030 0004	17,80
R/LS11.012R06	11	2.3	1.2	8.0	6.7	4.2	611	305030 0005	17,80	306030 0005	17,80
R/LS11.018R09	11	2.3	1.8	8.0	6.7	4.2	611	305030 0006	17,80	306030 0006	17,80
R/LS11.020R10	11	2.3	2.0	8.0	6.7	4.2	611	305030 0007	17,80	306030 0007	17,80
R/LS11.030R15	11	2.3	3.0	8.0	6.7	4.2	611	305030 0008	17,80	306030 0008	17,80
R/LS14.012R06	14	4.0	1.2	9.0	9.0	5.3	614	305030 0009	18,60	306030 0009	18,60
R/LS14.018R09	14	4.0	1.8	9.0	9.0	5.3	614	305030 0010	18,60	306030 0010	18,60
R/LS14.020R10	14	4.0	2.0	9.0	9.0	5.3	614	305030 0011	18,60	306030 0011	18,60
R/LS14.022R11	14	4.0	2.2	9.0	9.0	5.3	614	305030 0012	18,60	306030 0012	18,60
R/LS14.030R15	14	4.0	3.0	9.0	9.0	5.3	614	305030 0013	18,60	306030 0013	18,60
R/LS16.018R09	16	4.3	1.8	11.0	10.2	5.4	616	305030 0014	19,10	306030 0014	19,10
R/LS16.022R11	16	4.3	2.2	11.0	10.2	5.4	616	305030 0015	19,10	306030 0015	19,10
R/LS16.030R15	16	4.3	3.0	11.0	10.2	5.4	616	305030 0016	19,10	306030 0016	19,10
R/LS16.040R20	16	4.3	4.0	11.0	10.2	5.4	616	305030 0017	19,10	306030 0017	19,10
								3127		3127	

Turning and copying (internal)

- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image

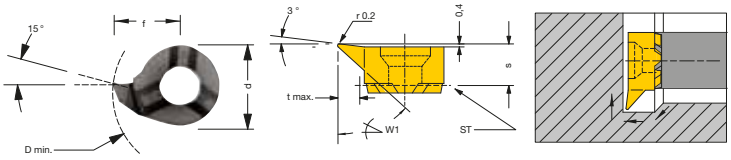


model	D min. mm	ap max. mm	b mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.1846.02	7.8	0.6	3.3	6.0	4.65	3.5	608	**305035** 0001	16,30	**306035** 0001	16,30
R/LS11.1855.02	9.8	1.0	3.9	8.0	5.50	4.2	611	305035 0002	16,30	306035 0002	16,30
R/LS11.1867.02	11.0	1.0	3.9	8.0	6.70	4.2	611	305035 0003	15,80	306035 0003	15,80
R/LS14.1867.02	13.8	1.5	5.0	9.0	8.70	5.3	614	305035 0004	15,80	306035 0004	15,80
R/LS16.1897.02	15.5	1.5	5.0	11.0	9.70	5.4	616	305035 0005	17,30	306035 0005	17,30
								3127		3127	

Continued on next page >>>

Internal turning, internal thread undercuts (DIN 509)

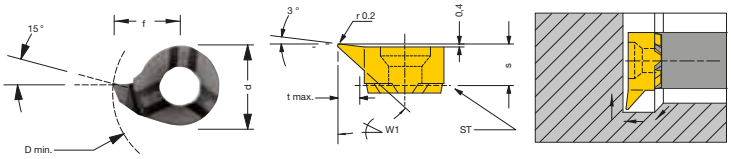
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **Internal turning and internal thread undercuts (DIN 509), angle W1 = 47°**



model	D min. mm	t max. mm	ap max. mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.4746.02	7.8	1.2	0.4	6.0	4.65	3.5	608	**305040** 0001	16,50	**306040** 0001	16,50
R/LS11.4767.02	11.0	2.3	0.6	8.0	6.70	4.2	611	305040 0002	16,–	306040 0002	16,–
R/LS14.4787.02	13.7	3.0	0.8	9.0	8.70	5.3	614	305040 0003	16,50	306040 0003	16,50
								3127		3127	

Copying

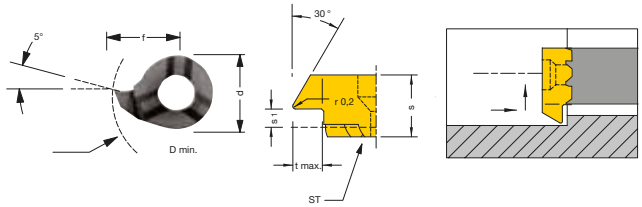
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **Copying, angle W1 = 30°**



model	D min. mm	t max. mm	ap max. mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.2555.02	7.8	1.2	0.4	6.0	4.65	3.5	608	**305045** 0001	18,90	**306045** 0001	18,90
R/LS11.2755.02	11.0	2.3	0.6	8.0	6.70	4.2	611	305045 0002	18,50	306045 0002	18,50
R/LS14.3555.02	13.7	4.0	0.8	9.0	8.70	5.3	614	305045 0003	18,90	306045 0003	18,90
R/LS16.4055.02	15.8	4.3	0.8	11.0	10.20	5.4	616	305045 0004	20,70	306045 0004	20,70
								3127		3127	

Reverse turning (internal)

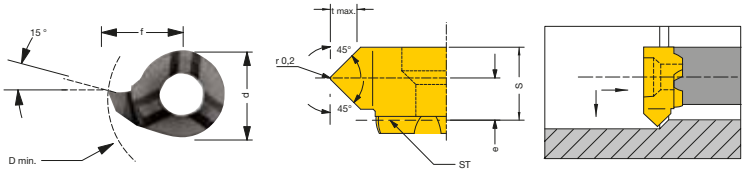
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	ap max. mm	s1 mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.3046.02	7.8	1.3	0.6	1.0	6.0	4.65	3.5	608	**305050** 0001	18,80	**306050** 0001	18,80
R/LS11.3067.02	11.0	2.3	1.0	1.6	8.0	6.70	4.3	611	305050 0002	18,20	306050 0002	18,20
R/LS14.3087.02	13.8	3.5	1.5	2.4	9.0	8.70	5.4	614	305050 0003	18,80	306050 0003	18,80
									3127		3127	

Chamfering and turning (internal)

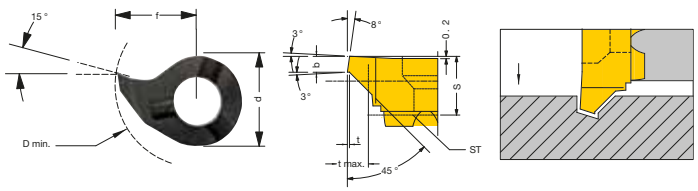
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	ap max. mm	e mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.4545.02	8.0	1.4	0.6	1.8	6.0	4.8	3.5	608	**305055** 0001	15,50	**306055** 0001	15,50
R/LS11.4545.02	11.0	1.5	1.0	2.2	8.0	6.7	4.3	611	305055 0002	15,50	306055 0002	15,50
R/LS14.4545.02	14.0	1.5	1.2	2.8	9.0	9.0	5.4	614	305055 0003	16,70	306055 0003	16,70
									3127		3127	

Roughing and chamfering (internal)

- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **t = 0.2 mm**

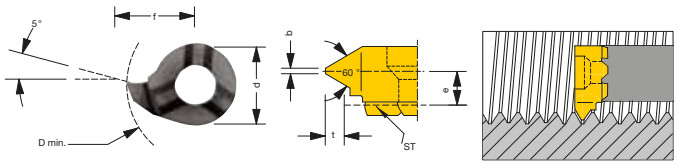


model	D min. mm	t max. mm	b mm	d mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.0810.45	8.0	1.0	1.0	6.0	4.8	3.3	608	**305060** 0001	16,–	**306060** 0001	16,–
R/LS11.0810.45	11.0	1.5	1.0	8.0	6.7	4.2	611	305060 0002	16,–	306060 0002	16,–
R/LS14.0815.45	14.0	1.5	1.0	9.0	9.0	5.3	614	305060 0003	16,–	306060 0003	16,–
R/LS16.0815.45	16.0	1.5	1.0	11.0	10.2	5.4	616	305060 0004	16,–	306060 0004	16,–
								3127		3127	

Continued on next page >>>

Thread turning (internal), coarse-pitch thread, partial profile

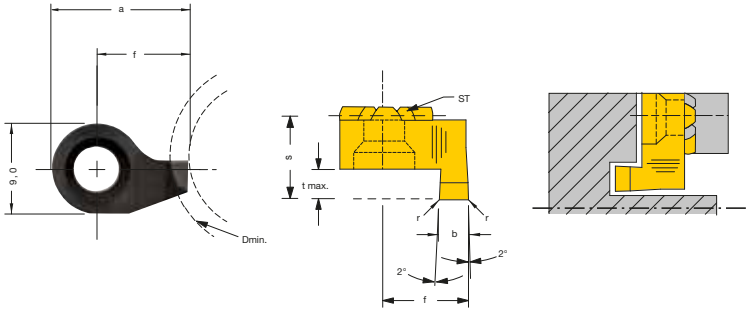
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **t = 0.2 mm**
- All other thread types are available on request



model	D min. mm	Pitch mm	t mm	e mm	b mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS08.0815.01	8.0	1.5-1.75	0.95	2.5	0.18	4.8	3.5	608	**305065** 0001	19,10	**306065** 0001	19,10
R/LS11.1020.01	11.0	2.0-2.5	1.08	3.0	0.25	6.7	4.3	611	305065 0002	19,10	306065 0002	19,10
R/LS11.1325.01	11.0	2.5-3.0	1.35	3.0	0.31	6.7	4.3	611	305065 0003	19,10	306065 0003	19,10
R/LS14.1020.01	14.0	2.0-2.5	1.08	4.2	0.25	9.0	5.4	614	305065 0004	19,10	306065 0004	19,10
R/LS14.1325.01	14.0	2.5-3.0	1.35	4.7	0.31	9.0	5.4	614	305065 0005	19,10	306065 0005	19,10
R/LS16.1325.01	16.0	2.5-3.0	1.35	4.2	0.31	10.2	5.5	616	305065 0006	19,10	306065 0006	19,10
									3127		3127	

Axial grooving, left-hand cutting past pins

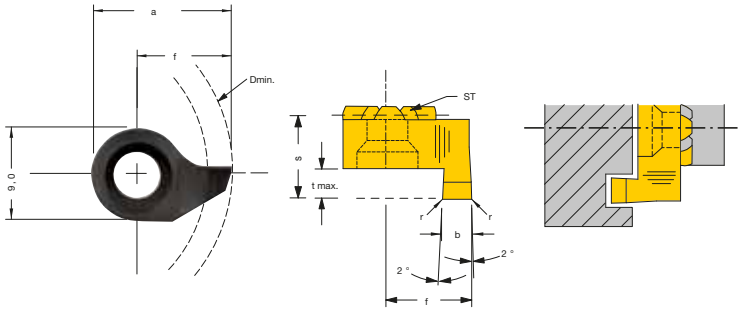
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right, left-hand cutting insert as shown
- L = left, mirror image right-hand cutting insert



model	D min. mm	t max. mm	b +0.03 mm	a mm	r mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS014.1210.00	12.0	1.5	1.0	11.5	-	7.0	8.3	614	**305095** 0001	16,–	**306095** 0001	16,–
R/LS014.1215.02	12.0	2.5	1.5	12.0	0.2	7.5	8.3	614	305095 0002	16,30	306095 0002	16,30
R/LS014.1220.02	12.0	3.0	2.0	12.5	0.2	8.0	8.3	614	305095 0003	16,30	306095 0003	16,30
R/LS014.1220.52	12.0	5.0	2.0	12.5	0.2	8.0	10.3	614	305095 0006	18,70	306095 0006	18,70
R/LS014.1225.02	12.0	3.0	2.5	13.0	0.2	8.5	8.3	614	305095 0004	16,30	306095 0004	16,30
R/LS014.1225.52	12.0	5.0	2.5	13.0	0.2	8.5	10.3	614	305095 0007	18,70	306095 0007	18,70
R/LS014.1230.02	12.0	3.0	3.0	13.5	0.2	9.0	8.3	614	305095 0005	16,30	306095 0005	16,30
R/LS014.1230.52	12.0	5.0	3.0	13.5	0.2	9.0	10.3	614	305095 0008	18,70	306095 0008	18,70
									3127		3127	

Axial grooving, right-hand cutting

- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right, right-hand cutting insert as shown
- L = left, mirror image left-hand cutting insert



model	D min. mm	t max. mm	b +0.03 mm	a mm	r mm	f mm	s mm	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
R/LS014.1410.00	14.0	1.5	1.0	13.5	-0,2	9.0	8.3	614	**305100** 0001	15,40	**306100** 0001	15,40
R/LS014.1415.02	14.0	2.5	1.5	13.5	0.2	9.0	8.3	614	305100 0002	15,40	306100 0002	15,40
R/LS014.1420.02	14.0	3.0	2.0	13.5	0.2	9.0	8.3	614	305100 0003	15,40	306100 0003	15,40
R/LS014.1420.52	14.0	5.0	2.0	13.5	0.2	9.0	10.3	614	305100 0006	17,80	306100 0006	17,80
R/LS014.1425.02	14.0	3.0	2.5	13.5	0.2	9.0	8.3	614	305100 0004	15,40	306100 0004	15,40
R/LS014.1425.52	14.0	5.0	2.5	13.5	0.2	9.0	10.3	614	305100 0007	17,80	306100 0007	17,80
R/LS014.1430.02	14.0	3.0	3.0	13.5	0.2	9.0	8.3	614	305100 0005	15,40	306100 0005	15,40
R/LS014.1430.52	14.0	5.0	3.0	13.5	0.2	9.0	10.3	614	305100 0008	17,80	306100 0008	17,80
									3127		3127	

Dümmel WERKZEUGFABRIK Carbide metal internal turning tools *mini-børe*

INFO

from a diameter of 0.6 mm,
with internal coolant supply

Hollow turning, internal plunge turning, internal turning and chamfering, roughing and internal chamfering for subsequent parting as well as internal threading for small bore diameters continually pose new problems for production – problems that can often be solved only with special tools.

mini-børe has been developed specifically to solve these problems and offers optimum conditions for cost-effective bore machining with diameters starting from 0.6 mm. The favourable cost-breakdown of the cutting inserts means that custom productions are no longer worthwhile.

The cutting inserts, available in right-hand and left-hand designs, are supported by a tool holder that can be used for both designs. The tool holder and cutting inserts are fitted with an internal coolant supply.

Cutting material

K10F uncoated, all-purpose fine-grain carbide metal, suitable for application at low and medium cutting speeds and for machining non-ferrous metals

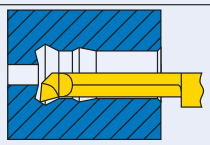
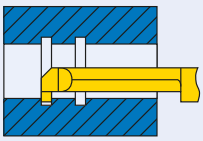
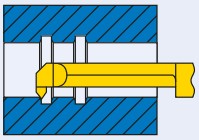
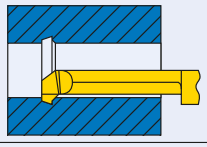
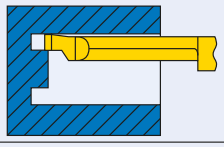
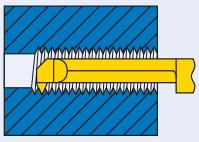
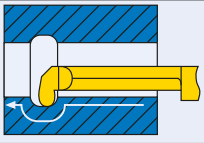
CN45F TiN coated
All-rounder, for medium to high cutting speeds, with restrictions for non-ferrous metals

AL41F TiAlN coated
High temperature resistance at high hardness levels, also very well suited to non-ferrous metals

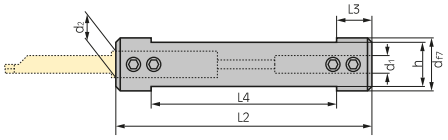
Special designs
If you have internal machining problems that cannot be handled with the cutting insert sizes listed here, we will be pleased to present you with possible solutions.



from Ø 0,6 mm

	**Hollow turning** from diameters of 0.6 mm / up to 7 x D 
	**Internal plunge turning** from diameters of 4 mm / up to 7 x D
	**Hollow turning and chamfering** from diameters of 5 mm
	**Internal roughing and chamfering** for subsequent parting-off from diameters of 5 mm
	**Axial groove turning** from external groove diameters of 15 mm
	**Internal threading** from diameters of 4 mm
	**Internal plunge turning** from diameters of 4 mm, full radius (on request)

Dümmel WERKZEUGFABRIK Tool holder *mini-børe*



- **With internal coolant supply**
- For holding right-hand and left-hand cutting inserts
- Two different holder Ø measurements (d1 and d2)
- Central coolant supply through the tool holder
- Axial position of the cutting inserts in the tool holder can be precisely reproduced via a built-in depth stop
- Radial position of the cutting edge is guaranteed by tension applied to the lateral clamping surface of the cutting inserts by the clamping screws
- Size 0316 and 0320 for 304450.... and 304455.... and high-pressure applications with central cooling hole

Designation	suitable cutting inserts	d f7 mm	L2 mm	L2 mm	L3 mm	L4 mm	h mm	art.no.	€
645.0012-D	4 / 5	12.0	75	75	10	55	10.3	**304001** 0012	86,50
645.0016-D	4 / 5	16.0	75	75	10	55	14.0	304001 0016	91,–
645.0020-D	4 / 5	20.0	90	90	10	70	18.0	304001 0020	98,–
676.0016-D	6 / 7	16.0	75	75	10	55	14.0	304001 0216	91,–
676.0020-D	6 / 7	20.0	90	90	10	70	18.0	304001 0220	98,–
687.0016-D	7 / 8	16.0	75	75	10	55	14.0	304001 0316	101,–
687.0020-D	7 / 8	20.0	90	90	10	70	18.0	304001 0320	108,–

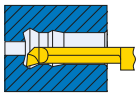
3125

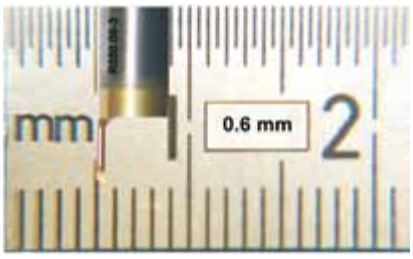
Dümmel WERKZEUGFABRIK Cutting inserts *mini-børe*

Vc/fz **30-195**

- **With internal coolant supply**
- Straight shank and lateral clamping surface
- Right-hand and left-hand versions
- **Cutting material:**
  K10F finest grain carbide, uncoated,
  CN45F finest grain carbide **TiN coated,**
  AL41F superfine grain carbide **TiAlN**

From Ø 0.6 mm L1 to 7 x D





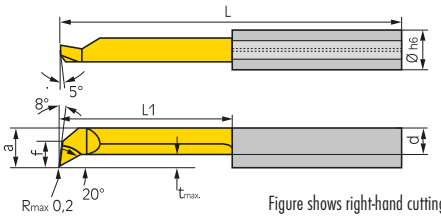


Figure shows right-hand cutting

Internal turning

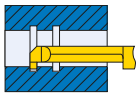
- From 0.6 mm bore diameter

Designation	D h6 mm	f mm	r mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO K N **K10F, right-hand** art.no.	€	ISO K N **K10F, left-hand** art.no.	€	ISO P M K **CN45F TiN right-hand** art.no.	€	ISO P M K **CN45F TiN left-hand** art.no.	€
R/L 050.06-2	4.0		0.04	0.4	0.5	20	2	0.08	0.6	645...					**304110** 0050	28,–	**304115** 0050	28,–
R/L 050.06-3	4.0		0.04	0.4	0.5	20	3	0.08	0.6	645...					304110 0051	28,90	304115 0051	28,90
R/L 050.15-5	4.0		0.05	1.15	1.3	19	5	0.1	1.5	645...					304110 0060	26,70	304115 0060	26,70
R/L 050.15-10	4.0		0.05	1.15	1.3	24	10	0.1	1.5	645...					304110 0061	27,40	304115 0061	27,40
R/L 050.2-5	4.0		0.05	1.5	1.7	19	5	0.1	2.0	645...	**304101** 0101	18,90	**304105** 0101	18,90	304110 0101	22,70	304115 0101	22,70
R/L 050.2-10	4.0		0.05	1.5	1.7	24	10	0.1	2.0	645...	304101 0102	19,50	304105 0102	19,50	304110 0102	23,30	304115 0102	23,30
R/L 050.2-15	4.0		0.05	1.5	1.7	29	15	0.1	2.0	645...	304101 0103	20,80	304105 0103	20,80	304110 0103	24,50	304115 0103	24,50
R/L 050.3-10	4.0	0.6	0.1	2.3	2.6	24	10	0.2	2.8	645...	304101 0001	18,80	304105 0001	18,80	304110 0001	22,60	304115 0001	22,60
R/L 050.3-16	4.0	0.6	0.1	2.3	2.6	30	16	0.2	2.8	645...	304101 0403	20,10	304105 0403	20,10	304110 0403	23,90	304115 0403	23,90
R/L 050.3-20	4.0	0.6	0.1	2.3	2.6	34	20	0.2	2.8	645...	304101 0003	24,90	304105 0003	24,90	304110 0003	28,70	304115 0003	28,70
R/L 050.4-10	4.0	1.5	0.1	3.0	3.5	24	10	0.3	4.0	645...	304101 0010	18,80	304105 0010	18,80	304110 0010	22,60	304115 0010	22,60
R/L 050.4-16	4.0	1.5	0.1	3.0	3.5	30	16	0.3	4.0	645...	304101 0404	20,10	304105 0404	20,10	304110 0404	23,90	304115 0404	23,90
R/L 050.4-20	4.0	1.5	0.1	3.0	3.5	34	20	0.3	4.0	645...	304101 0012	23,40	304105 0012	23,40	304110 0012	27,20	304115 0012	27,20
R/L 050.4-24	4.0	1.5	0.1	3.0	3.5	38	24	0.3	4.0	645...					304110 0070	30,30		
R/L 050.4-24	4.0	1.5	0.15	3.0	3.5	38	24	0.3	4.0	645...							304115 0070	30,30
R/L 050.4-28	4.0	1.5	0.1	3.0	3.5	42	28	0.3	4.0	645...					304110 0071	33,80		
R/L 050.4-28	4.0	1.5	0.15	3.0	3.5	42	28	0.3	4.0	645...							304115 0071	33,80
R/L 050.5-10	5.0	1.9	0.15	3.8	4.4	25	10	0.5	5.0	645...	304101 0020	17,50	304105 0020	17,50	304110 0020	21,20	304115 0020	21,20
R/L 050.5-15	5.0	1.9	0.15	3.8	4.4	30	15	0.5	5.0	645...	304101 0021	18,80	304105 0021	18,80	304110 0021	22,60	304115 0021	22,60
R/L 050.5-20	5.0	1.9	0.15	3.8	4.4	35	20	0.5	5.0	645...	304101 0505	22,20	304105 0505	22,20	304110 0505	26,–	304115 0505	26,–
R/L 050.5-25	5.0	1.9	0.15	3.8	4.4	40	25	0.5	5.0	645...	304101 0023	25,80	304105 0023	25,80	304110 0023	29,50	304115 0023	29,50
R/L 050.5-30	5.0	1.9	0.15	3.8	4.4	45	30	0.5	5.0	645...	304101 0024	29,50	304105 0024	29,50	304110 0024	33,20	304115 0024	33,20
R/L 050.5-35	5.0	1.9	0.15	3.8	4.4	50	35	0.5	5.0	645...					304110 0080	36,90	304115 0080	36,90
											3125		3125		3125		3125	

Continued on next page >>>

Designation	D h6 mm	f mm	r mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO K N K10F, right-hand art.no.	€	ISO K N K10F, left-hand art.no.	€	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 050.6-15	6.0	2.3	0.15	4.5	5.3	30	15	0.5	6.0	676...	304101 0030	18,80	304105 0030	18,80	304110 0030	22,60	304115 0030	22,60
R/L 050.6-22	6.0	2.3	0.15	4.5	5.3	37	22	0.5	6.0	676...	304101 0606	22,20	304105 0606	22,20	304110 0606	26,–	304115 0606	26,–
R/L 050.6-25	6.0	2.3	0.15	4.5	5.3	40	25	0.5	6.0	676...	304101 0032	25,80	304105 0032	25,80	304110 0032	29,50	304115 0032	29,50
R/L 050.6-30	6.0	2.3	0.15	4.5	5.3	45	30	0.5	6.0	676...	304101 0033	29,50	304105 0033	29,50	304110 0033	33,20	304115 0033	33,20
R/L 050.6-35	6.0	2.3	0.15	4.5	5.3	50	35	0.5	6.0	676...					304110 0150	36,90	304115 0150	36,90
R/L 050.6-42	6.0	2.3	0.15	4.5	5.3	57	42	0.5	6.0	676...					304110 0151	41,10	304115 0151	41,10
R/L 050.7-20	7.0	2.8	0.15	5.5	6.3	35	20	0.6	6.8	676...	304101 0040	22,40	304105 0040	22,40	304110 0040	26,20	304115 0040	26,20
R/L 050.7-25	7.0	2.8	0.15	5.5	6.3	40	25	0.6	6.8	676...	304101 0041	26,10	304105 0041	26,10	304110 0041	29,90	304115 0041	29,90
R/L 050.7-30	7.0	2.8	0.15	5.5	6.3	45	30	0.6	6.8	676...	304101 0042	29,90	304105 0042	29,90	304110 0042	33,70	304115 0042	33,70
R/L 050.7-35	7.0	2.8	0.15	5.5	6.3	50	35	0.6	7.0	676...					304110 0160	37,50	304115 0160	37,50
R/L 050.7-40	7.0	2.8	0.15	5.5	6.3	55	40	0.6	7.0	676...					304110 0161	41,80	304115 0161	41,80
R/L 050.7-45	7.0	2.8	0.15	5.5	6.3	60	45	0.6	7.0	676...					304110 0162	44,20	304115 0162	44,20
R/L 050.7-50	7.0	2.8	0.15	5.5	6.3	65	50	0.6	7.0	676...					304110 0163	47,70	304115 0163	47,70
											3125		3125		3125		3125	

L1 to 7 x D



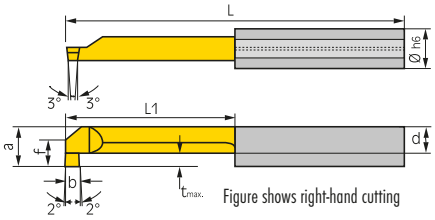


Figure shows right-hand cutting

Internal recess turning

- From 4 mm bore diameter

Designation	D h6 mm	b +0.05 mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 004.0100-10	4.0	1.0	1.5	2.4	3.5	24	10	0.8	4.0	645...	**304210** 0001	23,30	**304215** 0001	23,30
R/L 004.0100-16	4.0	1.0	1.5	2.4	3.5	30	16	0.8	4.0	645...	304210 0404	27,–	304215 0404	27,–
R/L 004.0100-20	4.0	1.0	1.5	2.4	3.5	34	20	0.8	4.0	645...	304210 0003	29,90	304215 0003	29,90
R/L 005.0100-10	5.0	1.0	1.9	3.3	4.4	25	10	1.0	5.0	645...	304210 0010	22,–	304215 0010	22,–
R/L 005.0100-15	5.0	1.0	1.9	3.3	4.4	30	15	1.0	5.0	645...	304210 0011	25,50	304215 0011	25,50
R/L 005.0100-20	5.0	1.0	1.9	3.3	4.4	35	20	1.0	5.0	645...	304210 0505	28,60	304215 0505	28,60
R/L 005.0100-25	5.0	1.0	1.9	3.3	4.4	40	25	1.0	5.0	645...	304210 0013	31,30	304215 0013	31,30
R/L 005.0100-30	5.0	1.0	1.9	3.3	4.4	45	30	1.0	5.0	645...	304210 0014	34,90	304215 0014	34,90
R/L 005.0100-35	5.0	1.0	1.9	3.3	4.4	50	35	1.0	5.0	645...	304210 0015	38,70	304215 0015	38,70
R/L 005.0150-10	5.0	1.5	1.9	3.3	4.4	25	10	1.0	5.0	645...	304210 0020	22,–	304215 0020	22,–
R/L 005.0150-15	5.0	1.5	1.9	3.3	4.4	30	15	1.0	5.0	645...	304210 0021	25,50	304215 0021	25,50
R/L 005.0150-20	5.0	1.5	1.9	3.3	4.4	35	20	1.0	5.0	645...	304210 0515	28,60	304215 0515	28,60
R/L 005.0150-25	5.0	1.5	1.9	3.3	4.4	40	25	1.0	5.0	645...	304210 0023	31,30	304215 0023	31,30
R/L 005.0150-30	5.0	1.5	1.9	3.3	4.4	45	30	1.0	5.0	645...	304210 0024	34,90	304215 0024	34,90
R/L 005.0200-10	5.0	2.0	1.9	3.3	4.4	25	10	1.0	5.0	645...	304210 0030	22,–	304215 0030	22,–
R/L 005.0200-15	5.0	2.0	1.9	3.3	4.4	30	15	1.0	5.0	645...	304210 0031	25,50	304215 0031	25,50
R/L 005.0200-20	5.0	2.0	1.9	3.3	4.4	35	20	1.0	5.0	645...	304210 0525	28,60	304215 0525	28,60
R/L 005.0200-25	5.0	2.0	1.9	3.3	4.4	40	25	1.0	5.0	645...	304210 0033	31,30	304215 0033	31,30
R/L 005.0200-30	5.0	2.0	1.9	3.3	4.4	45	30	1.0	5.0	645...	304210 0034	34,90	304215 0034	34,90
R/L 006.0100-10	6.0	1.0	2.3	3.4	5.3	25	10	1.8	6.0	676...	304210 0040	22,–	304215 0040	22,–
R/L 006.0100-15	6.0	1.0	2.3	3.4	5.3	30	15	1.8	6.0	676...	304210 0041	25,50	304215 0041	25,50
R/L 006.0100-22	6.0	1.0	2.3	3.4	5.3	37	22	1.8	6.0	676...	304210 0606	28,60	304215 0606	28,60
R/L 006.0100-25	6.0	1.0	2.3	3.4	5.3	40	25	1.8	6.0	676...	304210 0043	31,30	304215 0043	31,30
R/L 006.0100-30	6.0	1.0	2.3	3.4	5.3	45	30	1.8	6.0	676...	304210 0044	34,90	304215 0044	34,90
R/L 006.0100-35	6.0	1.0	2.3	3.4	5.3	50	35	1.8	6.0	676...	304210 0045	38,70	304215 0045	38,70
R/L 006.0100-42	6.0	1.0	2.3	3.4	5.3	57	42	1.8	6.0	676...	304210 0046	42,60	304215 0046	42,60
R/L 006.0150-10	6.0	1.5	2.3	3.4	5.3	25	10	1.8	6.0	676...	304210 0050	22,–	304215 0050	22,–
R/L 006.0150-15	6.0	1.5	2.3	3.4	5.3	30	15	1.8	6.0	676...	304210 0051	25,50	304215 0051	25,50
R/L 006.0150-22	6.0	1.5	2.3	3.4	5.3	37	22	1.8	6.0	676...	304210 0616	28,60	304215 0616	28,60
R/L 006.0150-25	6.0	1.5	2.3	3.4	5.3	40	25	1.8	6.0	676...	304210 0053	31,30	304215 0053	31,30
R/L 006.0150-30	6.0	1.5	2.3	3.4	5.3	45	30	1.8	6.0	676...	304210 0054	34,90	304215 0054	34,90
R/L 006.0150-35	6.0	1.5	2.3	3.4	5.3	50	35	1.8	6.0	676...	304210 0055	38,70	304215 0055	38,70
R/L 006.0200-10	6.0	2.0	2.3	3.4	5.3	25	10	1.8	6.0	676...	304210 0060	22,–	304215 0060	22,–
R/L 006.0200-15	6.0	2.0	2.3	3.4	5.3	30	15	1.8	6.0	676...	304210 0061	25,50	304215 0061	25,50
R/L 006.0200-22	6.0	2.0	2.3	3.4	5.3	37	22	1.8	6.0	676...	304210 0626	28,60	304215 0626	28,60
											3125		3125	

Continued on next page >>>

Designation	D h6 mm	b +0.05 mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 006.0200-25	6.0	2.0	2.3	3.4	5.3	40	25	1.8	6.0	676...	304210 0063	31,30	304215 0063	31,30
R/L 006.0200-30	6.0	2.0	2.3	3.4	5.3	45	30	1.8	6.0	676...	304210 0064	34,90	304215 0064	34,90
R/L 007.0100-10	7.0	1.0	2.8	3.7	6.3	25	10	2.5	6.8	676...	304210 0070	22,–	304215 0070	22,–
R/L 007.0100-15	7.0	1.0	2.8	3.7	6.3	30	15	2.5	6.8	676...	304210 0071	25,50	304215 0071	25,50
R/L 007.0100-22	7.0	1.0	2.8	3.7	6.3	37	22	2.5	6.8	676...	304210 0072	28,60	304215 0072	28,60
R/L 007.0100-25	7.0	1.0	2.8	3.7	6.3	40	25	2.5	6.8	676...	304210 0073	31,30	304215 0073	31,30
R/L 007.0100-30	7.0	1.0	2.8	3.7	6.3	45	30	2.5	6.8	676...	304210 0074	35,10	304215 0074	35,10
R/L 007.0100-35	7.0	1.0	2.8	3.7	6.3	50	35	2.5	7.0	676...	304210 0075	39,10	304215 0075	39,10
R/L 007.0100-40	7.0	1.0	2.8	3.7	6.3	55	40	2.5	7.0	676...	304210 0076	43,40	304215 0076	43,40
R/L 007.0100-45	7.0	1.0	2.8	3.7	6.3	60	45	2.5	7.0	676...	304210 0077	47,10	304215 0077	47,10
R/L 007.0100-50	7.0	1.0	2.8	3.7	6.3	65	50	2.5	7.0	676...	304210 0078	50,50	304215 0078	50,50
R/L 007.0150-10	7.0	1.5	2.8	3.7	6.3	25	10	2.5	6.8	676...	304210 0080	22,–	304215 0080	22,–
R/L 007.0150-15	7.0	1.5	2.8	3.7	6.3	30	15	2.5	6.8	676...	304210 0081	25,50	304215 0081	25,50
R/L 007.0150-22	7.0	1.5	2.8	3.7	6.3	37	22	2.5	6.8	676...	304210 0082	28,60	304215 0082	28,60
R/L 007.0150-25	7.0	1.5	2.8	3.7	6.3	40	25	2.5	6.8	676...	304210 0083	31,30	304215 0083	31,30
R/L 007.0150-30	7.0	1.5	2.8	3.7	6.3	45	30	2.5	6.8	676...	304210 0084	35,10	304215 0084	35,10
R/L 007.0150-35	7.0	1.5	2.8	3.7	6.3	50	35	2.5	7.0	676...	304210 0085	39,10	304215 0085	39,10
R/L 007.0150-40	7.0	1.5	2.8	3.7	6.3	55	40	2.5	7.0	676...	304210 0086	43,40	304215 0086	43,40
R/L 007.0200-10	7.0	2.0	2.8	3.7	6.3	25	10	2.5	6.8	676...	304210 0090	22,–	304215 0090	22,–
R/L 007.0200-15	7.0	2.0	2.8	3.7	6.3	30	15	2.5	6.8	676...	304210 0091	25,50	304215 0091	25,50
R/L 007.0200-22	7.0	2.0	2.8	3.7	6.3	37	22	2.5	6.8	676...	304210 0092	28,60	304215 0092	28,60
R/L 007.0200-25	7.0	2.0	2.8	3.7	6.3	40	25	2.5	6.8	676...	304210 0093	31,30	304215 0093	31,30
R/L 007.0200-30	7.0	2.0	2.8	3.7	6.3	45	30	2.5	6.8	676...	304210 0094	35,10	304215 0094	35,10
R/L 007.0200-35	7.0	2.0	2.8	3.7	6.3	50	35	2.5	7.0	676...	304210 0095	39,10	304215 0095	39,10
											3125		3125	

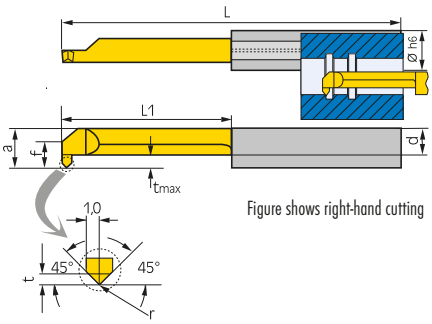


Figure shows right-hand cutting

Internal turning and chamfering

- From 5 mm bore diameter
- With internal coolant supply

Designation	D h6 mm	r mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 060.5-15	5.0	0.2	1.9	3.3	4.4	30	15	0.7	5.0	645...	**304310** 0001	23,30	**304315** 0001	23,30
R/L 060.5-20	5.0	0.2	1.9	3.3	4.4	35	20	0.7	5.0	645...	304310 0505	23,90	304315 0505	23,90
R/L 060.7-20	7.0	0.2	2.8	3.7	6.3	35	20	0.7	6.8	676...	304310 0010	27,10	304315 0010	27,10
											3125		3125	

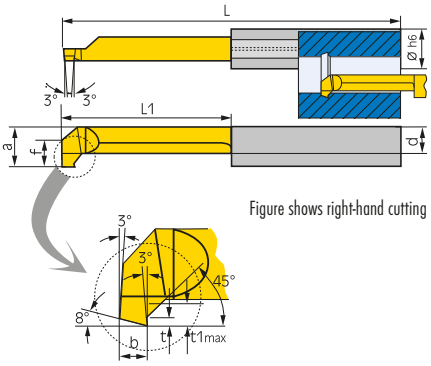


Figure shows right-hand cutting

Internal roughing and chamfering for subsequent parting-off

- From 5 mm bore diameter

Designation	D h6 mm	b mm	f mm	d mm	a mm	L mm	L1 mm	t mm	t1 max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 070.5-15	5.0	1.0	1.9	3.3	4.4	30	15	0.2	1.0	5.0	645...	**304410** 0001	23,40	**304415** 0001	23,40
R/L 070.5-20	5.0	1.0	1.9	3.3	4.4	35	20	0.2	1.0	5.0	645...	304410 0505	25,70	304415 0505	25,70
												3125		3125	

Continued on next page >>>

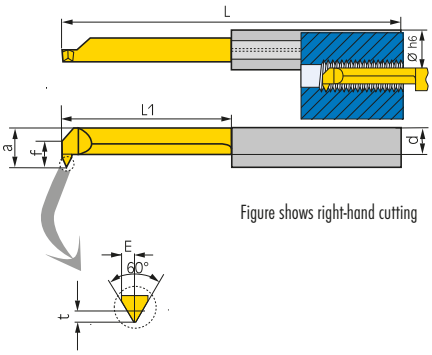


Figure shows right-hand cutting

Internal thread turning

- **Metric ISO threads** from 4.8 mm bore diameter
- Partial profile, for pitches from 1.0 to 1.5 mm

Designation	P mm	t mm	E mm	f mm	a mm	d mm	L mm	L1 mm	D min. mm	suitable tool holder	ISO P M K **CN45F TiN right-hand** art.no.	€	ISO P M K **CN45F TiN left-hand** art.no.	€
R/L 005.0510-15	1.0	0.55	0.55	1.9	4.4	3.3	30	15	4.8	645...	**304501** 0001	26,50	**304505** 0001	26,50
R/L 005.0510-20	1.0	0.55	0.55	1.9	4.4	3.3	35	20	4.8	645...	304501 1005	27,30	304505 1005	27,30
R/L 006.0612-15	1.25	0.68	0.65	2.3	5.3	3.4	30	15	6.0	676...	304501 0010	26,50	304505 0010	26,50
R/L 006.0612-22	1.25	0.68	0.65	2.3	5.3	3.4	37	22	6.0	676...	304501 1256	27,30	304505 1256	27,30
R/L 006.0815-15	1.5	0.81	0.75	2.3	5.3	3.4	30	15	6.0	676...	304501 0012	26,50	304505 0012	27,70
R/L 006.0815-22	1.5	0.81	0.75	2.3	5.3	3.4	37	22	6.0	676...	304501 1506	27,30	304505 1506	27,30
R/L 007.0815-15	1.5	0.81	0.75	2.7	6.3	3.8	30	15	7.0	676...	304501 0020	26,50	304505 0020	26,50
											3125		3125	

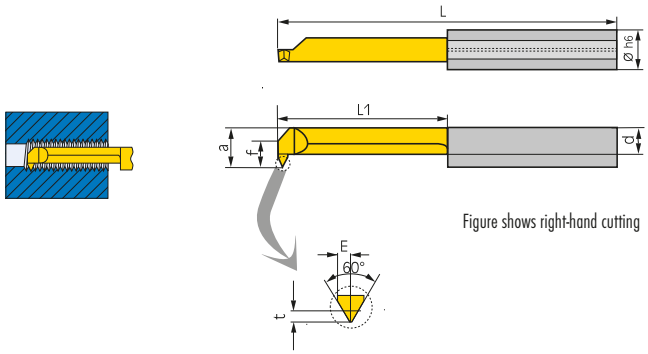


Figure shows right-hand cutting

Internal fine-pitch thread turning

- **ISO fine-pitch metric thread** from 4 mm bore diameter
- Partial profile, for pitches from 0.5 to 1.0 mm

Designation	P mm	t mm	E mm	f mm	a mm	d mm	L mm	L1 mm	D min. mm	suitable tool holder	ISO P M K **CN45F TiN right-hand** art.no.	€	ISO P M K **CN45F TiN left-hand** art.no.	€
R/L 004.0205-15	0.5	0.27	0.35	1.5	3.5	2.4	30	15	4.0	645...	**304510** 0504	28,–	**304515** 0504	28,–
R/L 005.0205-15	0.5	0.27	0.35	1.9	4.4	3.3	30	15	5.0	645...	304510 0003	26,60	304515 0003	26,60
R/L 005.0205-20	0.5	0.27	0.35	1.9	4.4	3.3	35	20	5.0	645...	304510 0505	27,40	304515 0505	27,40
R/L 005.0407-15	0.75	0.4	0.45	1.9	4.4	3.3	30	15	5.0	645...	304510 0005	26,60	304515 0005	26,60
R/L 005.0407-20	0.75	0.4	0.45	1.9	4.4	3.3	35	20	5.0	645...	304510 0755	27,40	304515 0755	27,40
R/L 006.0510-15	1.0	0.55	0.55	2.3	5.3	3.4	30	15	6.0	676...	304510 0010	26,50	304515 0010	26,60
R/L 006.0510-22	1.0	0.55	0.55	2.3	5.3	3.4	37	22	6.0	676...	304510 1006	27,40	304515 1006	27,40
											3125		3125	

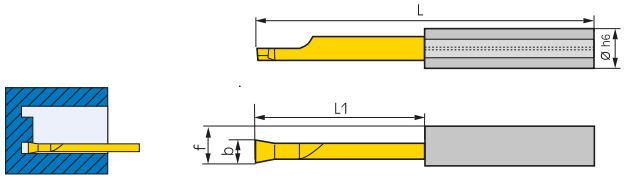


Figure shows right-hand cutting

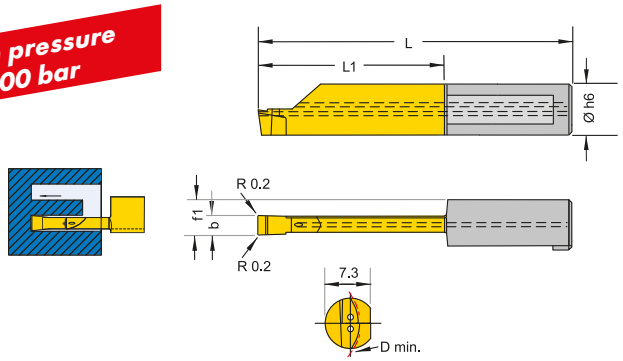
Axial grooving from 15 mm groove outer diameter

- Max. groove depth tmax. up to 30 mm

Designation	D h6 mm	b +0.05 mm	f mm	L1 mm	L mm	t max. mm	D min. mm	suitable tool holder	ISO P M K **CN45F TiN right-hand** art.no.	€	ISO P M K **CN45F TiN left-hand** art.no.	€
R/L015.2515-20	7.0	2.5	5.9	20	35	20	8.0	676...	**304420** 2520	37,10	**304421** 2520	37,10
R/L015.3015-20	7.0	3.0	5.9	20	35	20	8.0	676...	304420 3020	37,10	304421 3020	37,10
R/L015.3015-30	7.0	3.0	5.9	30	45	30	8.0	676...	304420 3030	40,80	304421 3030	40,80
									3125		3125	

Continued on next page >>>

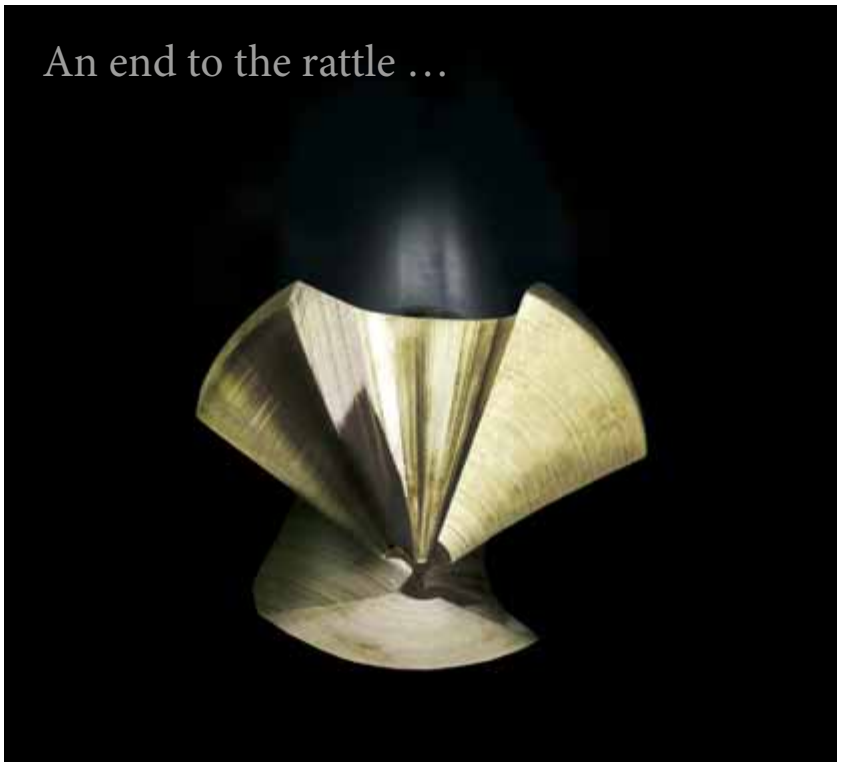
Suitable for high pressure cooling up to 100 bar



Axial grooving with double coolant bore

- From Dmin. Ø 16 mm
- Groove depth tmax. up to 40 mm

Designation	D h6 mm	b +0.05 mm	f mm	L1 mm	L mm	t max. mm	D min. mm	suitable tool holder	ISO P M K **AL41F TiAlN right-hand** art.no.	€	ISO P M K **AL41F TiAlN left-hand** art.no.	€
R/L016.0300-10	8	3.0	5.5	10	30	10	16	687...	**304450** 0310	45,10	**304455** 0310	45,10
R/L016.0300-20	8	3.0	5.5	20	40	20	16	687...	304450 0320	46,30	304455 0320	46,30
R/L016.0400-10	8	4.0	6.0	10	30	10	16	687...	304450 0410	45,10	304455 0410	45,10
R/L016.0400-20	8	4.0	6.0	20	40	20	16	687...	304450 0420	46,30	304455 0420	46,30
R/L020.0300-25	8	3.0	5.5	25	45	25	20	687...	304450 0325	46,90	304455 0325	46,90
R/L020.0300-30	8	3.0	5.5	30	50	30	20	687...	304450 0330	46,90	304455 0330	46,90
R/L020.0300-35	8	3.0	5.5	35	55	35	20	687...	304450 0335	48,10	304455 0335	48,10
R/L020.0300-40	8	3.0	5.5	40	60	40	20	687...	304450 0340	48,10	304455 0340	48,10
R/L020.0400-25	8	4.0	6.0	25	45	25	20	687...	304450 0425	46,90	304455 0425	46,90
R/L020.0400-30	8	4.0	6.0	30	50	30	20	687...	304450 0430	46,90	304455 0430	46,90
R/L020.0400-35	8	4.0	6.0	35	55	35	20	687...	304450 0435	48,10	304455 0435	48,10
R/L020.0400-40	8	4.0	6.0	40	60	40	20	687...	304450 0440	48,10	304455 0440	48,10
R/L020.0500-20	8	5.0	6.5	20	40	20	20	687...	304450 0520	45,10	304455 0520	45,10
R/L020.0500-25	8	5.0	6.5	25	45	25	20	687...	304450 0525	45,70	304455 0525	45,70
R/L020.0500-30	8	5.0	6.5	30	50	30	20	687...	304450 0530	45,70	304455 0530	45,70
R/L020.0500-35	8	5.0	6.5	35	55	35	20	687...	304450 0535	46,90	304455 0535	46,90
R/L020.0500-40	8	5.0	6.5	40	60	40	20	687...	304450 0540	46,90	304455 0540	46,90
									3125		3125	



… caused by uneven divisions

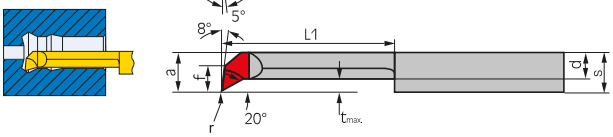
ATORN®
High quality for great performance

Dümmel WERKZEUGFABRIK Cutting inserts *mini-børe hardline*

30-195

For hard materials

- **Bore machining from Ø 2 mm**
- **Internal turning and copying**
- Straight shank and lateral clamping surface
- Right-hand and left-hand versions (other left-hand versions available on request)
- **Material: X2CA superfine grain carbide TiAlN+C**
- **Can be used up to HRc 66**
- **best service life results only when coolant emulsions are used**
- **Advantages over CBN:**
- No problems in machining thin-walled parts
- Few temperature changes inside the workpiece
- Can also be used in HRc 48 - 53 range without difficulty
- Feed 100 % reproducible for the workpiece
- Considerable reduction in tooling and adjustment costs



Internal turning

- From 2 mm bore diameter

model	r mm	s mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	D h6 mm	for holder	ISO H X2CA right-hand art.no.	€	ISO H X2CA left-hand art.no.	€
R/L 050.2-5	0.05	3.5		1.5	1.7	19	5	0.1	2.0	4.0	645...	**304550** 0001	31,60		
R/L 050.2-10	0.05	3.5		1.5	1.7	24	10	0.1	2.0	4.0	645...	304550 0002	32,20	**304555** 0002	32,20
R/L 050.3-10	0.1	3.5	0.6	2.3	2.6	24	10	0.2	2.8	4.0	645...	304550 0004	31,50		
R/L 050.3-16	0.1	3.5	0.6	2.3	2.6	30	16	0.2	2.8	4.0	645...	304550 0005	32,80	304555 0005	31,50
R/L 050.4-10	0.1	3.5	1.5	3.0	3.5	24	10	0.3	4.0	4.0	645...	304550 0007	31,50		
R/L 050.4-16	0.1	3.5	1.5	3.0	3.5	30	16	0.3	4.0	4.0	645...	304550 0008	32,80	304555 0008	32,80
R/L 050.4-20	0.1	3.5	1.5	3.0	3.5	34	20	0.3	4.0	4.0	645...	304550 0009	36,20		
R/L 050.5-10	0.15	4.4	1.9	3.8	4.4	25	10	0.5	5.0	5.0	645...	304550 0012	30,60		
R/L 050.5-15	0.15	4.4	1.9	3.8	4.4	30	15	0.5	5.0	5.0	645...	304550 0013	32,–	304555 0013	32,–
R/L 050.5-20	0.15	4.4	1.9	3.8	4.4	35	20	0.5	5.0	5.0	645...	304550 0014	35,40		
R/L 050.5-25	0.15	4.4	1.9	3.8	4.4	40	25	0.5	5.0	5.0	645...	304550 0015	38,90		
R/L 050.6-15	0.15	5.3	2.3	4.5	5.3	30	15	0.5	6.0	6.0	676...	304550 0018	32,50		
R/L 050.6-22	0.15	5.3	2.3	4.5	5.3	37	22	0.5	6.0	6.0	676...	304550 0019	35,80	304555 0019	35,80
R/L 050.6-25	0.15	5.3	2.3	4.5	5.3	40	25	0.5	6.0	6.0	676...	304550 0020	39,40		
R/L 050.6-30	0.15	5.3	2.3	4.5	5.3	45	30	0.5	6.0	6.0	676...	304550 0021	43,10		
R/L 050.7-20	0.15	6.3	2.8	5.5	6.3	35	20	0.6	6.8	7.0	676...	304550 0024	36,30		
R/L 050.7-25	0.15	6.3	2.8	5.5	6.3	40	25	0.6	6.8	7.0	676... 687...	304550 0025	40,–		
R/L 050.7-30	0.15	6.3	2.8	5.5	6.3	45	30	0.6	6.8	7.0	676... 687...	304550 0026	43,80	304555 0026	43,80
R/L 050.7-35	0.15	6.3	2.8	5.5	6.3	50	35	0.6	6.8	7.0	676... 687...	304550 0027	47,60		
R/L 050.7-40	0.15	6.3	2.8	5.5	6.3	55	40	0.6	6.8	7.0	676... 687...	304550 0028	52,–		
												3125		3125	

PSC polygonal holders



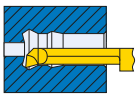
Available on request

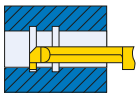
Dümmel WERKZEUGFABRIK Cutting tool sets *mini-børe*

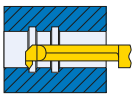
30-195

mini-børe cutting tool set 1

- **Internal turning, recess turning and chamfering**
- Complete set including holder
- Internal machining from 3 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. A


Fig. E


Fig. F

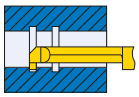


Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 050.6-22	6	22	-	-	A		
R 050.5-20	5	20	-	-	A		
R 060.5-20	5	20	-	-	F		
R 050.4-16	4	16	-	-	A	**304601** 0001	415,–
R 050.3-16	3	16	-	-	A		
R 006.0200-22	6	22	1.8	2.0	E		
R 006.0150-22	6	22	1.8	1.5	E		
R 005.0200-20	5	20	1.0	2.0	E		
R 005.0150-20	5	20	1.0	1.5	E		
R 004.0100-16	4	16	0.8	1.0	E		

3125

mini-børe cutting tool set 2

- **Internal recess turning**
- Complete set including holder
- Internal machining from 4 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. E

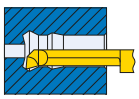


Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 006.0200-22	6	22	1,8	2,0	E	**304601** 0002	320,–
R 006.0150-22	6	22	1,8	1,5	E		
R 005.0200-20	5	20	1,0	2,0	E		
R 005.0150-20	5	20	1,0	1,5	E		
R 004.0100-16	4	16	0,8	1,0	E		

3125

mini-børe cutting tool set 3

- **Internal turning**
- Complete set including holder
- Internal machining from 3 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. A



Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 050.6-22	6	22	-	-	A	**304601** 0003	280,–
R 050.5-20	5	20	-	-	A		
R 050.4-16	4	16	-	-	A		
R 050.3-16	3	16	-	-	A		

3125

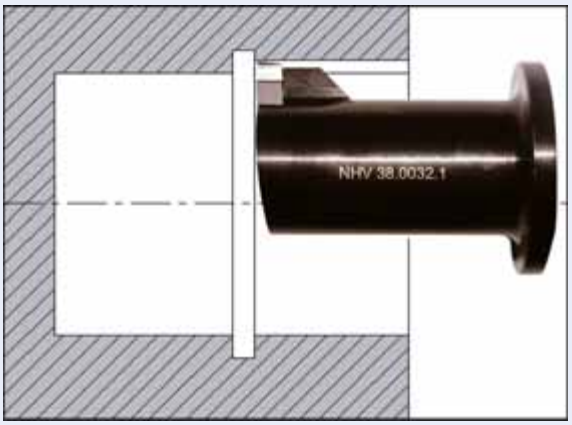
ATORN® Systematic keyway slotting

INFO

The tool system for keyway slotting offers a cost-effective and simple solution in many areas and can be used on practically any CNC lathe, milling machine or machining centre.
Practically any common groove can be created directly on the lathe. The machining of complex and therefore often valuable workpieces or semi-finished products on a lathe is frequently one of the first work processes. The workpiece is either pre-turned or finished.
Grooves must now be applied longitudinally as a carrier or anti-twist protection.
This tool system can now be used to manufacture longitudinal grooves compliant with DIN 138 and DIN 6885 on CNC lathes and reduce costs.



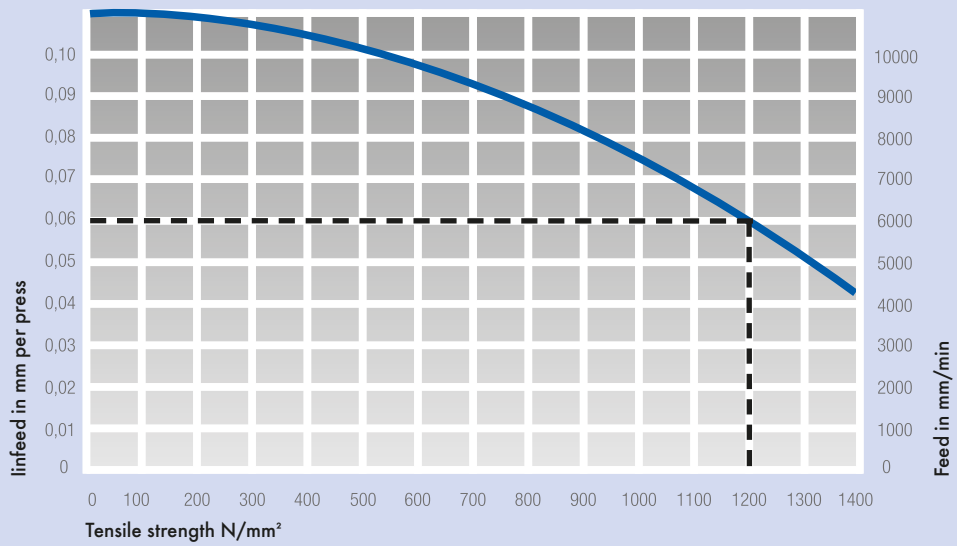




References

- an undercut is necessary at the end of the broached groove for tool run out.
- the insert should not touch the bottom of the groove as the tool retracts.
- setting of the tool is very important. Check accurate the component diameter before taking the first pass.
- using oil or emulsion helps to achieve better surface finish and flush chips out of the component.
- the tool should be set at the 12 o´ clock position to ensure that chips fall away from the groove.
- avoid interrupted cutting

Approximate value for broaching
Example: heat-treated steel for intance 42CroMo4 with1200 N/mm²
- infeed per pass 0,05-0,06 mm
- feed 5500 mm/min





ATORN® Tool holder for keyway slotting

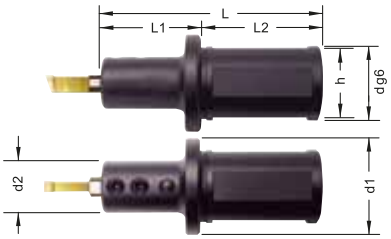
- Keyway slotting on CNC lathes, milling machines and machining centres
- Keyway slotting of longitudinal grooves in accordance with DIN 138 and DIN 6885

Type NHU, bore Ø from 6 mm

model	d g6 mm	d1 mm	d2 mm	L mm	L1 mm	L2 mm	h mm	art.no.	€
NHU.0025.1	25	33	18	73	33	40	23	**307001** 0025	199,–
NHU.0032.1	32	40	20	73	33	40	30	307001 0032	210,–
								3130	

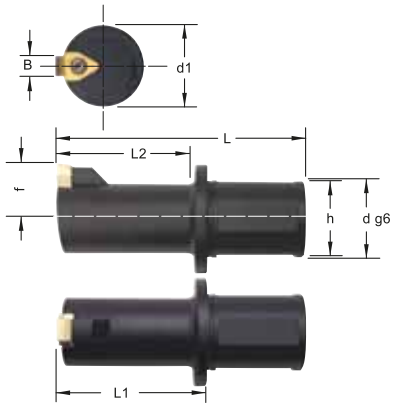
Type NH10, bore Ø from 10 mm

model	d g6 mm	d1 mm	d2 mm	L mm	L1 mm	L2 mm	h mm	art.no.	€
NH10.0025.1	25	33	20	73	33	40	23	**308001** 0025	199,–
NH10.0032.1	32	40	20	73	33	40	30	308001 0032	199,–
								3130	



Type NHV, bore Ø from 22 mm

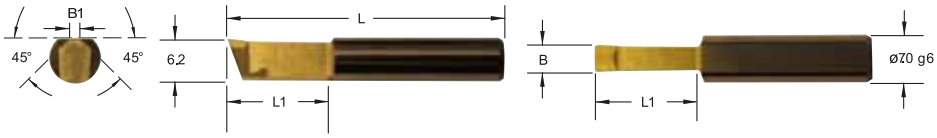
model	d g6 mm	d1 mm	f mm	L mm	L1 mm	L2 mm	h mm	D min. mm	art.no.	€
NHV.22.0025.1	25	33	12.0	100	60	50	23	22	**309001** 0022	187,–
NHV.30.0032.1	32	45	16.5	100	60	50	30	30	309001 0030	187,–
NHV.30.0032.2	32	45	16.5	125	85	75	30	38	309001 1030	215,–
NHV.38.0032.1	32	45	22.0	100	60	50	30	30	309001 0038	187,–
NHV.38.0032.2	32	45	22.0	125	85	75	30	38	309001 1038	215,–
									3130	



ATORN® Cutting inserts for keyway slotting

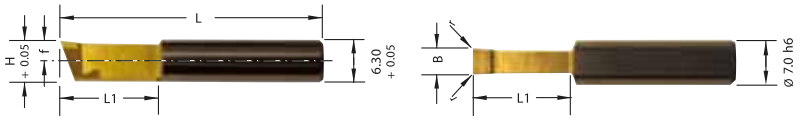
30-195

- Keyway slotting of longitudinal grooves in accordance with DIN 138 and DIN 6885
- Tolerance class C11/JS9/P9
- **Type NPU**, bore Ø from 6 mm
- **Type NP10**, bore Ø from 10 mm
- **Type NPV**, bore Ø from 22 mm
- Cutting material: **HC8620, TIALN**-coated



Type NPU, 45°/chamfered

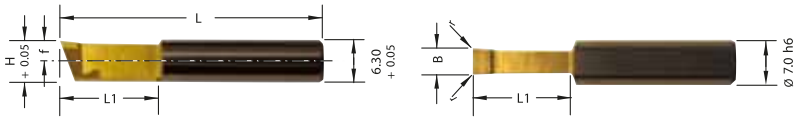
model	B1 mm	B mm	L mm	L1 mm	Groove width mm	suitable for holder	art.no.	€
NPU.4545.1	3.6	6.5	50	25	4 / 5	NHU	**307005** 4545	50,–
							3130	



Type NPU, standard, DIN 138, tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0210.03.1	6	2	0.9	C11	2.1	5.5	0.35	2.0	38	12.5	6	NHU	**307006** 0210	38,90
NPU.0310.03.1	10	3	1.5	C11	3.1	6.2	0.35	2.7	38	12.5	7	NHU	307006 0310	38,90
NPU.0310.05.1	13	3	1.6	C11	3.1	6.2	0.50	2.7	38	12.5	7	NHU	307006 0311	38,90
NPU.0410.05.1	16	4	1.7	C11	4.1	6.2	0.50	2.7	40	15.0	7	NHU	307006 0410	37,40
NPU.0410.05.2	16	4	1.7	C11	4.1	6.2	0.50	2.7	50	25.0	7	NHU	307006 0411	49,10
													3130	

Continued on next page >>>



Type NPU, loose fit, DIN 6885, tolerance JS9

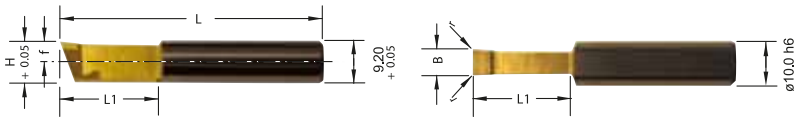
model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0200.01.1	> 6-8	2	1.0	JS9	2	5.5	0.1	2.0	38	12.5	6	NHU	**307007** 0200	38,90
NPU.0300.01.1	> 8-10	3	1.4	JS9	3	6.2	0.1	2.7	38	12.5	7	NHU	307007 0300	38,90
NPU.0400.01.1	> 10-12	4	1.8	JS9	4	6.2	0.1	2.7	40	15.0	7	NHU	307007 0400	37,40
NPU.0400.02.1	> 10-12	4	1.8	JS9	4	6.2	0.2	2.7	40	15.0	7	NHU	307007 0401	37,40
NPU.0400.02.2	> 10-12	4	1.8	JS9	4	6.2	0.2	2.7	50	25.0	7	NHU	307007 0402	46,50
NPU.0500.02.2	> 12-17	5	2.3	JS9	5	5.8	0.2	2.3	50	25.0	7	NHU	307007 0500	49,10

3130

Type NPU, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0198.01.1	> 6-8	2	1.0	P9	1.98	5.5	0.1	2.0	38	12.5	6	NHU	**307008** 0198	38,90
NPU.0298.01.1	> 8-10	3	1.4	P9	2.98	6.2	0.1	2.7	38	12.5	7	NHU	307008 0298	38,90
NPU.0398.01.1	> 10-12	4	1.8	P9	3.98	6.2	0.1	2.7	40	15.0	7	NHU	307008 0398	37,40
NPU.0398.02.2	> 10-12	4	1.8	P9	3.98	6.2	0.2	2.7	50	25.0	7	NHU	307008 1398	49,10
NPU.0498.02.2	> 12-17	5	2.3	P9	4.98	5.8	0.2	2.3	50	25.0	7	NHU	307008 0498	49,10

3130



Type NP10, standard, DIN 138 (*non-DIN), tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10.410.05.2	16	4	1.7	C11	4.1	9	0.5	4	50	25	10	NH10	**308002** 0410	54,50
NP10.410.05.3	16	4	1.7	C11	4.1	9	0.5	4	66	41	10	NH10	308002 0411	68,–
NP10.510.05.2*	10	-	-	-	5.1	9	0.5	4	50	25	10	NH10	308002 0510	54,50
NP10.510.05.3*	10	-	-	-	5.1	9	0.5	4	66	41	10	NH10	308002 0511	68,–

3130

Type NP10, loose fit, DIN 6885, tolerance JS9

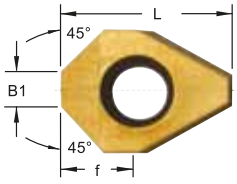
model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10.400.02.2	10	4	1.8	JS9	4	9	0.2	4	50	25	10	NH10	**308003** 0400	54,50
NP10.400.02.3	10	4	1.8	JS9	4	9	0.2	4	66	41	10	NH10	308003 0401	68,–
NP10.500.02.2	12	5	2.3	JS9	5	9	0.2	4	50	25	10	NH10	308003 0500	54,50
NP10.500.02.3	12	5	2.3	JS9	5	9	0.2	4	66	41	10	NH10	308003 0501	68,–

3130

Type NP10, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10.398.02.2	10	4	1.8	P9	3.98	9	0.2	4	50	25	10	NH10	**308004** 0398	54,50
NP10.398.02.3	10	4	1.8	P9	3.98	9	0.2	4	66	41	10	NH10	308004 1398	68,–
NP10.498.02.2	12	5	2.3	P9	4.98	9	0.2	4	50	25	10	NH10	308004 0498	54,50
NP10.498.02.3	12	5	2.3	P9	4.98	9	0.2	4	66	41	10	NH10	308004 1498	68,–

3130

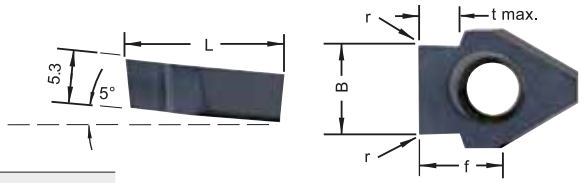


Type NPV, 45°/chamfered

model	B1 mm	L mm	B mm	Groove width mm	suitable for holder	art.no.	€
NPV.3045.1	3.5	17.3	8.0	6 / 7 / 8	NHV22	**309002** 3045	36,–
NPV.6045.1	6.0	20.2	10.9	10	NHV38	309002 6045	33,90

3130

Continued on next page >>>



Type NPV, standard, DIN 138, tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0612.085	22	6	2.1	C11	6.12	0.85	8.0	17.3	2.6	22	NHV22	**309003** 0626	34,60
NPV.0713.085	27	7	2.8	C11	7.13	0.85	8.0	17.3	3.3	22	NHV22	309003 0733	34,60
NPV.0813.105	32	8	2.8	C11	8.13	1.05	8.0	17.3	3.4	22	NHV22 / NHV30	309003 0834	34,60
NPV.1013.105	40	10	3.5	C11	10.13	1.05	10.9	20.1	4.2	40	NHV38	309003 1042	34,60
NPV.1215.135	50	12	3.6	C11	12.15	1.35	10.9	20.1	5.1	40	NHV38	309003 1251	34,60
NPV.1215.175	70	16	5.0	C11	12.15	1.75	10.9	20.1	6.6	40	NHV38	309003 1666	34,60
NPV.1215.225	100	24	7.0	C11	12.15	2.25	10.9	20.1	8.5	40	NHV38	309003 2485	34,60

3130

Type NPV, loose fit, DIN 6885, tolerance JS9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0501.02	22	5	2.3	JS9	5.01	0.2	8.0	17.3	2.7	22	NHV22	**309004** 0527	34,60
NPV.0601.02	22	6	2.8	JS9	6.01	0.2	8.0	17.3	3.4	22	NHV22	309004 0634	34,60
NPV.0801.02	> 22-30	8	3.3	JS9	8.01	0.2	8.0	17.3	4.1	22	NHV22 / NHV30	309004 0841	34,60
NPV.1001.03	> 30-38	10	3.3	JS9	10.01	0.3	8.0	17.3	4.2	30	NHV30	309004 1042	34,60
NPV.1202.03	> 38-44	12	3.3	JS9	12.02	0.3	10.9	20.1	5.7	40	NHV38	309004 1257	34,60
NPV.1202.05	> 65-75	20	4.9	JS9	12.02	0.5	10.9	20.1	8.5	40	NHV38	309004 2085	34,60

3130

Type NPV, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0498.02	22	5	2.3	P9	4.98	0.2	8.0	17.3	2.7	22	NHV22	**309005** 0490	34,60
NPV.0598.02	22	6	2.8	P9	5.98	0.2	8.0	17.3	3.4	22	NHV22	309005 0598	34,60
NPV.0798.02	> 22-30	8	3.3	P9	7.98	0.2	8.0	17.3	4.1	22	NHV22 / NHV30	309005 0798	34,60
NPV.0998.03	> 30-38	10	3.3	P9	9.98	0.3	8.0	17.3	4.2	30	NHV30	309005 0998	34,60
NPV.1197.03	> 38-44	12	3.3	P9	11.98	0.3	10.9	20.1	5.7	40	NHV38	309005 1197	34,60

3130

ATORN® Keyway slotting sets for longitudinal grooves

- Keyway slotting on CNC lathes, milling machines and machining centres
- Keyway slotting of longitudinal grooves in accordance with DIN 6885
- **Cutting inserts loose fit in accordance with DIN 6885**
- Tolerance class JS9
- Cutting material: AL41F, TiAlN-coated

Economical keyway slotting even in very small production runs!



NPU 5-piece keyway slotting set, bore Ø from 6 mm

Contents	art.no.	€
1x clamp mounting, NHU.0025.1; 3x cutting edge inserts: NPU.0200.01.1, NPU.0300.01.1, NPU.0400.01.1; 1x hex key - for groove widths of 2 / 3 / 4 mm	**307010** 0001	215,–

3130

NP10 4-piece keyway slotting set, bore Ø from 10 mm

Contents	art.no.	€
1x clamp mounting, NH10.0025.1; 2x cutting edge inserts: NP10.400.02.3, NP10.500.02.3; 1x hex key - for groove widths of 4 / 5 mm	**308010** 0001	240,–

3130

NPV 5-piece keyway slotting set, bore Ø from 22 mm

Contents	art.no.	€
1x clamp mounting, NHV.22.0025.1; 3x cutting inserts: NPV.0501.02, NPV.0601.02, NPV.0801.02; 1x Torx key, TX 15 - for groove widths of 5 / 6 / 8 mm	**309010** 0001	209,–

3130

Perfect labelling for every application

Full flexibility
Labelling can be applied everywhere, right up to the collar and on any given workpiece diameter. Ideal for several series with various workpieces and/or changing inscriptions.

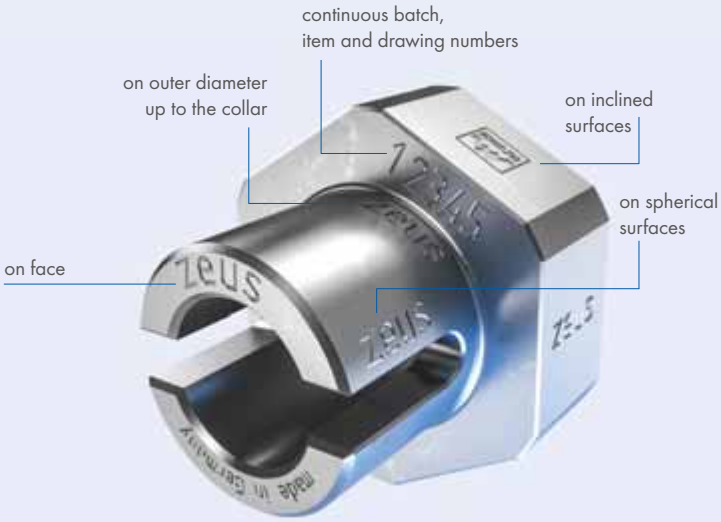
Efficiency for all series sizes
zeus labelling technology is equally suitable for all batch sizes and guarantees efficiency in all applications.



Precise in every position

Where can the workpieces be labelled?

The example shows that you can inscribe practically everywhere. Whether on spherical surfaces, on the collar, on inclined surfaces or on the face - zeus labelling technology meets your requirements.



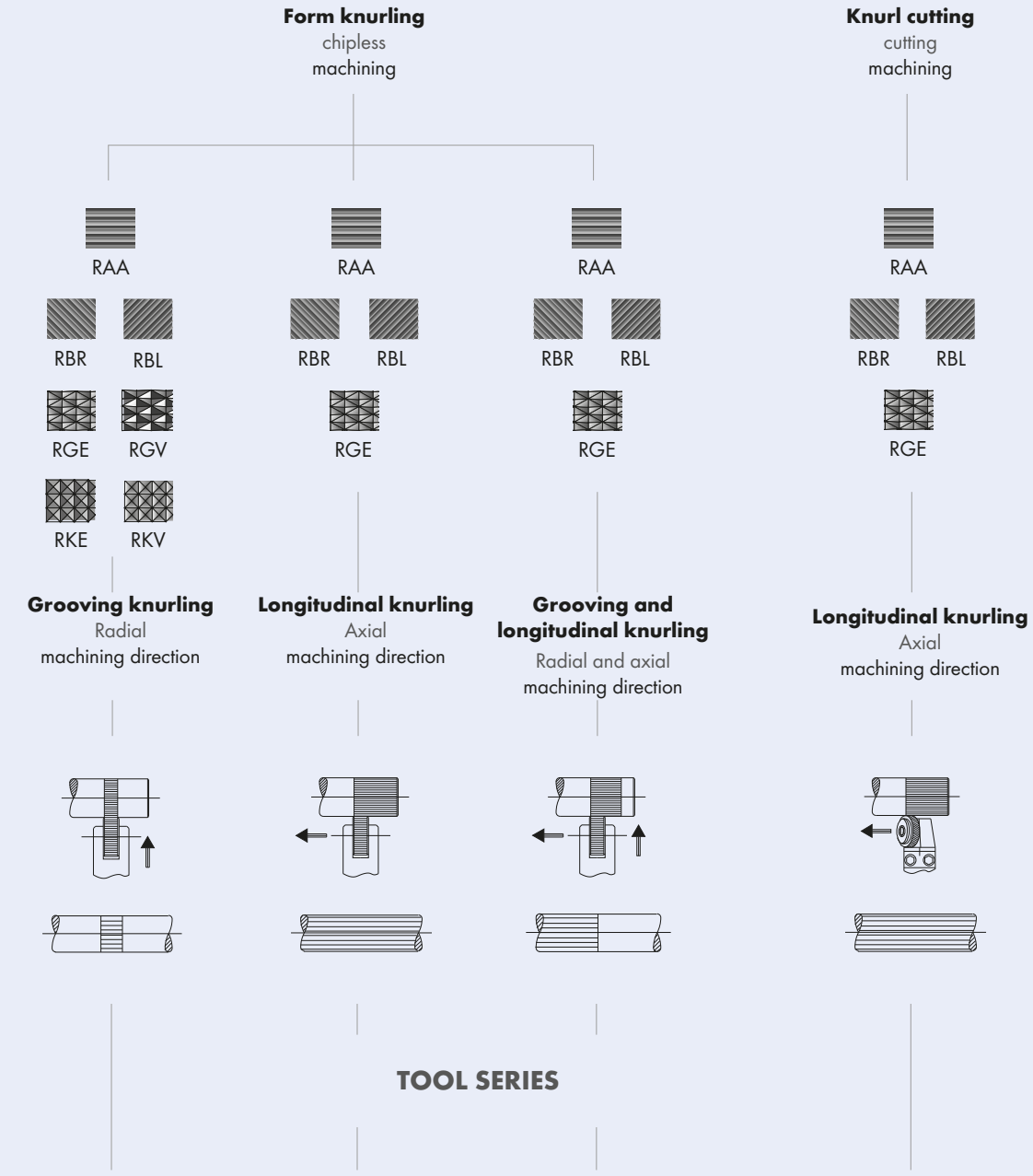
The right labelling system

We would be happy to determined the right labelling system for your application. Send us your enquiry with your specifications. Don't hesitate to contact us in person.
We offer comprehensive advice and find the optimum solution for you!



Knurl profiles according to DIN 82 – Overview of suitable tools

INFO



TOOL SERIES

Form knurling

130/131/132
all profiles

Form knurling

130/131/132
- RAA
- RBL
- RBR

141/142/161
- RAA
- RGE
- RBR
- RBL

192
- RAA
- RGE 30°
- RGE 45°

Form knurling

130/131/132
- RAA
- RBL
- RBR

141/142/161
- RAA
- RGE
- RBR
- RBL

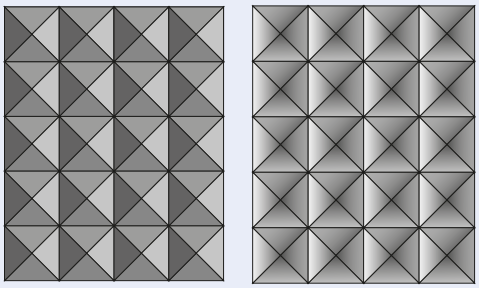
Knurl cutting

231
- RAA
- RBL
- RBR

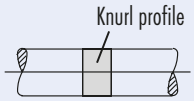
241
- RGE 30°
- RGE 45°

241
- RGE 30°
- RGE 45°

Selection of knurling tools

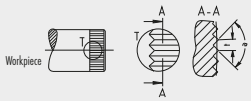
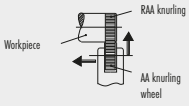
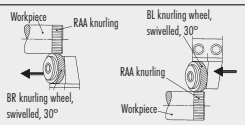
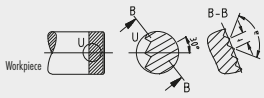
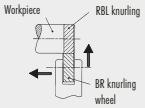
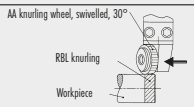
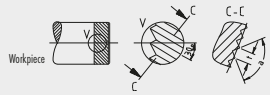
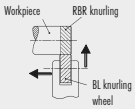
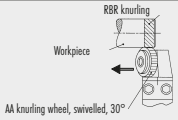
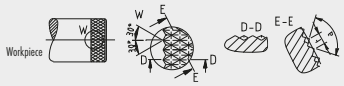
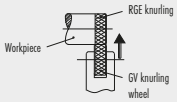
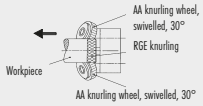
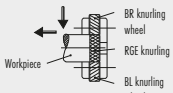
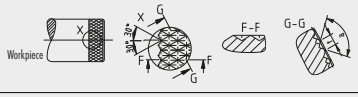
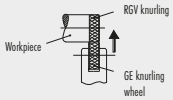
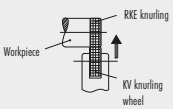
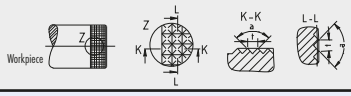
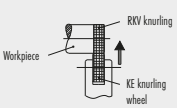


EXAMPLE:



EXPLANATION OF THE ARROWS:

- Knurl can only be produced in a radial direction (grooving knurling)
- Knurl can only be produced in an axial direction (longitudinal knurling)
- Knurl can be produced in an axial and a radial direction

Knurl profile (DIN 82)	Production process	
	Form knurling	Knurl cutting
RAA knurl with axially parallel score marks 		
RBL left knurl 		
RBR right knurl 		
RGE left / right knurl, tips increased, 30° 		
		
RGV left / right knurl, tips deepened, 30° 		
RKE cross knurl, tips increased, 90° 		
RKV cross knurl, tips deepened, 90° 		

ECO knurling tool for 1 knurling wheel





- Use: Form knurling (chipless forming), all types of knurl pattern, lettering and profiles
- Knurling wheels: all knurl forms can be used
- Machine type: conventional and automated lathes, centre height must be set
- Supplied without knurling wheel

Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	**Holder without wheel** art.no.	€
Straight version	16	16	130.5	15 - 200	20 x 8 x 6	130	**380101** 0001	22,–

3126

Knurling tool for 1 knurling wheel





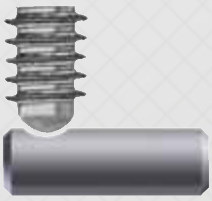
- Application: Knurl forms (chipless forming), all types of knurling patterns, profiles and lettering
- Thumb wheels: all knurl forms can be used
- Machine type: Lathes and automatic lathes (conventional and CNC), point height integrated in the tool holder
- Special surface hardening for increased wear resistance
- HM runner pins for higher rotational speeds, faster machining, longer endurance
- From 06/2017 the manufacturer will supply this tool with the CLICK PIN system as standard
- Supplied without knurling wheel

Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	**Holder without wheel** art.no.	€
Universal, right-hand + left-hand	20	20	109.5	8 - 200	20 x 8 x 6	131	**380102** 0011	147,40

3126

CLICK-PIN® system

- for switching the knurling wheel quickly and safely
- No breakage caused by overturning
- No loosening after impact, shock or vibration





Spare parts for knurling tools



Runner pin



Runner pin with flat surface



Runner pin with radius notch



Pressure piece



Spare parts set with greased bush

Description	art.no.	€
Spare parts set: HM bush, cover disc and right-hand countersunk screw, suitable for 3801502026 / 3801550525	**380110** 9907	76,70
Spare parts set: bush, cover disc and screw, suitable for 3801511212	380110 9906	77,70
HM runner pin, 4 x 12 mm with flat surface, suitable for 3801020103	380110 9902	7,50
HM runner pin, 6 x 20 mm with flat surface, suitable for 3801090005	380110 9904	11,80
HSS runner pin, 4 x 12 mm with flat surface, suitable for 3801091001	380110 9903	2,20
HSS runner pin, 6 x 18 mm, suitable for 3801010001	380110 9901	1,20
HSS runner pin, 6 x 20 mm with flat surface, suitable for 3801050001	380110 9905	2,20

3126

ECO knurling tools, for 2 knurling wheels



- Use: Form knurling (chipless forming), workpiece knurl profile in accordance with DIN 82: RAA, RGE 30°
- Knurling wheels: **RAA** = 2x type AA; **RGE 30°** = 1x BL 30°, 1x BR 30°
- Machine type: Lathes and automated lathes (conventional and CNC), centre height integrated in the tool
- Supplied without knurling wheels



With flexible centring

Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	Holder w/o wheels art.no.	€
Straight version	20	20	130	10 - 80	20 x 8 x 6	141	**380105** 0001	89,30
							3126	

Knurl cutting tool for 1 knurling wheel, 25 x 6 x 8 mm



- Use: Knurl cutting, workpiece knurl profile according to DIN 82: RAA
- Knurling wheels: RAA = 1 x BR 30° for right-hand use, RAA = 1 x BL 30° for left-hand use
- Machine type: conventional and CNC automated lathes, centre height integrated in the tool
- Modular design, tool can be used universally as a right-hand or left-hand version
- Quick retooling by simply removing and turning the knurling head, precise axis position after every reassembly thanks to 3-point support
- With position indicator for optimum initial positioning
- Fine adjustment of the knurling head via threaded spindle with scale
- Precise control for axially parallel knurling thanks to adjustable knurling head
- Clearance angle set using grub screws in the shank
- Special surface hardening for increased wear resistance
- Supplied without knurling wheel



Design	Shank width mm	Shank height mm	Total length mm	Working area mm	for knurling wheel mm	Type	Holder without wheel art.no.	€
Universal r/l	25	20	129	10 - 300	25 x 6 x 8	231	**380150** 2026	448,–
							3126	

Examples of knurling products

INFO



Precision knurling wheels

PM | DIN 403 | Vc/fz | 30-196

PM and PM-Tenifer

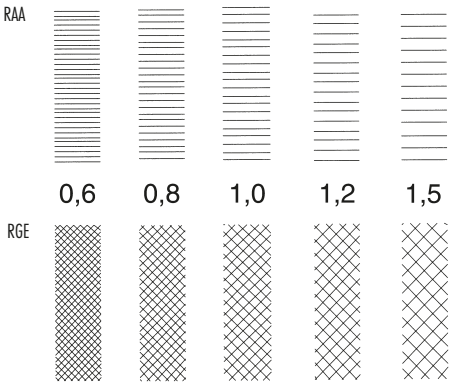
- Teeth precision-milled to the exact pitch,
- Fully hardened knurl, hardness HRc 61+2
- Flat faces and bore are ground
- **Chamfering on both sides for form knurling**
- **Sharp-edged for knurl cutting**.
- **Material: PM, PM-Tenifer with surface treatment** to enhance service life



AA | BL 30° | BR 30° | GE 30° | GV 30°

20 x 8 x 6 (Ø x width x bore), with chamfer

Type	Division mm	PM art.no.	€	PM-Tenifer art.no.	€
AA	0.6	**380132** 0106	28,40	**380133** 0106	31,60
AA	0.8	380132 0108	28,40	380133 0108	31,60
AA	1.0	380132 0110	28,40	380133 0110	31,60
AA	1.2	380132 0112	28,40	380133 0112	31,60
AA	1.5	380132 0115	28,40	380133 0115	31,60
BL 30°	0.6	380132 0206	28,40	380133 0206	31,60
BL 30°	0.8	380132 0208	28,40	380133 0208	31,60
BL 30°	1.0	380132 0210	28,40	380133 0210	31,60
BL 30°	1.2	380132 0212	28,40	380133 0212	31,60
BL 30°	1.5	380132 0215	28,40	380133 0215	31,60
BR 30°	0.6	380132 0306	28,40	380133 0306	31,60
BR 30°	0.8	380132 0308	28,40	380133 0308	31,60
BR 30°	1.0	380132 0310	28,40	380133 0310	31,60
BR 30°	1.2	380132 0312	28,40	380133 0312	31,60
BR 30°	1.5	380132 0315	28,40	380133 0315	31,60
GE 30°	0.6	380132 0406	44,50	380133 0406	47,70
GE 30°	0.8	380132 0408	44,50	380133 0408	47,70
GE 30°	1.0	380132 0410	44,50	380133 0410	47,70
GE 30°	1.2	380132 0412	44,50	380133 0412	47,70
GE 30°	1.5	380132 0415	44,50	380133 0415	47,70
GV 30°	0.8	380132 0508	45,–	380133 0508	48,20
GV 30°	1.0	380132 0510	45,–	380133 0510	48,20
		3126		3126	



25 x 6 x 8 (Ø x width x bore), sharp-edged

Type	Division mm	PM art.no.	€	PM-Tenifer art.no.	€
AA	0.6	**380192** 0106	35,10	**380193** 0106	38,30
AA	0.8	380192 0108	35,10	380193 0108	38,30
AA	1.0	380192 0110	35,10	380193 0110	38,30
AA	1.2	380192 0112	35,10	380193 0112	38,30
AA	1.5	380192 0115	35,10	380193 0115	38,30
BL 15°	0.6	380192 0206	35,10	380193 0206	38,30
BL 15°	1.0	380192 0210	35,10	380193 0210	38,30
BL 15°	1.2	380192 0212	35,10	380193 0212	38,30
BL 30°	0.6	380192 0406	35,10	380193 0406	38,30
BL 30°	0.8	380192 0408	35,10	380193 0408	38,30
BL 30°	1.0	380192 0410	35,10	380193 0410	38,30
BL 30°	1.2	380192 0412	35,10	380193 0412	38,30
BL 30°	1.5	380192 0415	35,10	380193 0415	38,30
BR 15°	0.6	380192 0306	35,10	380193 0306	38,30
BR 15°	1.0	380192 0310	35,10	380193 0310	38,30
BR 15°	1.2	380192 0312	35,10	380193 0312	38,30
BR 30°	0.6	380192 0506	35,10	380193 0506	38,30
BR 30°	0.8	380192 0508	35,10	380193 0508	38,30
BR 30°	1.0	380192 0510	35,10	380193 0510	38,30
BR 30°	1.2	380192 0512	35,10	380193 0512	38,30
BR 30°	1.5	380192 0515	35,10	380193 0515	38,30
		3126		3126	

ATORN® Technische Informationen ISO-Wendeschneidplatten

Auswahl der Hartmetallqualität

ISO	Qualität	ISO-Bereich	Werkstoff des Werkstückes	empfohlener Anwendungsbereich
P	**HC7610**	P01-P20 K15-K25	Stahl, GG und GGG	hochverschleißfeste Sorte für kleine bis mittlere Spanquerschnitte, hohe Schnittgeschwindigkeiten unter guten Bedingungen
P	**HC7620**	P10-P30 K25-K35	Stahl, GG und GGG	verschleißfeste Sorte für mittlere bis große Spanquerschnitte, mittlere bis hohe Schnittgeschwindigkeiten unter guten bis mittleren Bedingungen
P	**HC7630** **HC7640**	P20-P40 P25-P50	Stahl	sehr zähe Sorte für mittlere bis große Spanquerschnitte, mittlere Schnittgeschwindigkeiten unter mittleren und schlechten Bedingungen, unterbrochener Schnitt
M	**HC7510**	M01-M20 P15-P25	INOX nichtaustenitischer Stahl und Stahl	hochverschleißfeste Sorte für kleine bis mittlere Spanquerschnitte, hohe Schnittgeschwindigkeiten unter guten Bedingungen.
M	**HC7520**	M10-M30 S15-S25	INOX austenitischer Stahl und schwerzerspanbare Werkstoffe	verschleißfeste Sorte für mittlere bis große Spanquerschnitte, mittlere bis hohe Schnittgeschwindigkeiten unter guten bis mittleren Bedingungen.
M	**HC7530**	M20-M40 S25-S35	INOX austenitischer, superaustenitischer und Duplex- Stahl sowie schwerzerspanbare Werkstoffe	sehr zähe Sorte für mittlere bis große Spanquerschnitte, mittlere Schnittgeschwindigkeiten unter mittleren und schlechten Bedingungen.
S	**HC7220**	M10-M30 S10-S30	INOX austenitischer Stahl und schwerzerspanbare Werkstoffe	verschleißfeste Sorte für mittlere bis große Spanquerschnitte, mittlere bis hohe Schnittgeschwindigkeiten unter guten bis mittleren Bedingungen.
K	**HC6410**	K05-K15 H25-H35	GG und GGG	verschleißfeste Sorte für mittlere bis große Spanquerschnitte, mittlere bis hohe Schnittgeschwindigkeiten unter guten bis mittleren Bedingungen
N	**HC6310**	N05-N15 M00-M0	Al- Legierungen, Kupfer und Kupferlegierungen sowie nichtmetallische Werkstoffe und INOX austenitischer Stahl	verschleißfeste Sorte für kleine bis mittlere Spanquerschnitte, hohe Schnittgeschwindigkeiten unter guten Bedingungen.
N	**HW6310**	N05-N15	Al- Legierungen, Kupfer und Kupferlegierungen sowie nichtmetallische Werkstoffe	verschleißfeste Sorte für kleine bis mittlere Spanquerschnitte, hohe Schnittgeschwindigkeiten unter guten Bedingungen.

Geometrie Auswahlhilfe

ISO	Werkstoff	Bearbeitung	Spantiefe mm	Vorschub mm / Umdrehung	Geometrie Empfehlung neg. WSP	Geometrie Empfehlung pos. WSP
P	**Stahl** **ISO P (1 - 13)***	Schlichten	0,5 - 2,0 mm	0,1 - 0,3 mm	FP	FP / SP
P		mittlere Bearbeitung	1,5 - 5,0 mm	0,2 - 0,5 mm	MP	MP / SP
P		Schruppen	5 - 15 mm	0,5 - 1,5 mm	RP	
M	**INOX** **Stahl** **ISO M (14)***	Schlichten	0,5 - 2,0 mm	0,1 - 0,3 mm	FM	SM
M		mittlere Bearbeitung	1,5 - 5,0 mm	0,2 - 0,5 mm	MM	MP / SM
M		Schruppen	5 - 15 mm	0,5 - 1,5 mm	RM	
K	**Gusseisen** **ISO K (15 - 20)***	Schlichten	0,5 - 2,0 mm	0,1 - 0,3 mm	MP / MK	MP / MK
K		mittlere Bearbeitung	1,5 - 5,0 mm	0,2 - 0,5 mm	RP / MK	MP / MK
K		Schruppen	5 - 15 mm	0,5 - 1,5 mm	RP	
N	**NE - Metalle** **ISO N (21 - 30)***	Schlichten	0,5 - 2,0 mm	0,1 - 0,3 mm		MN
N		mittlere Bearbeitung	1,5 - 5,0 mm	0,2 - 0,5 mm		MN
N		Schruppen	5 - 15 mm	0,5 - 1,5 mm		
S	**schwerzerspanbare** **Werkstoffe** **ISO S (31 - 37)***	Schlichten	0,5 - 2,0 mm	0,1 - 0,3 mm	FM	SM
S		mittlere Bearbeitung	1,5 - 5,0 mm	0,2 - 0,5 mm	MM	MP / SM
S		Schruppen	5 - 15 mm	0,5 - 1,5 mm	RM	

* Zerspanungsgruppen nach VDI Richtlinie 3323

		Geometrie Empfehlung neg. WSP	Geometrie Empfehlung pos. WSP
weitere **Einflüsse**	Schnittunterbrechung	RP	MP
	Vibrationsneigung	FP / FM	FP / SP /SM
	labile Maschine	FP / FM	FP / SP / SM
	Kopierarbeiten	FP / MP / FM / MM	FP / MP / SP

ATORN® ISO-Wendeschneidplatten PKD und CBN

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

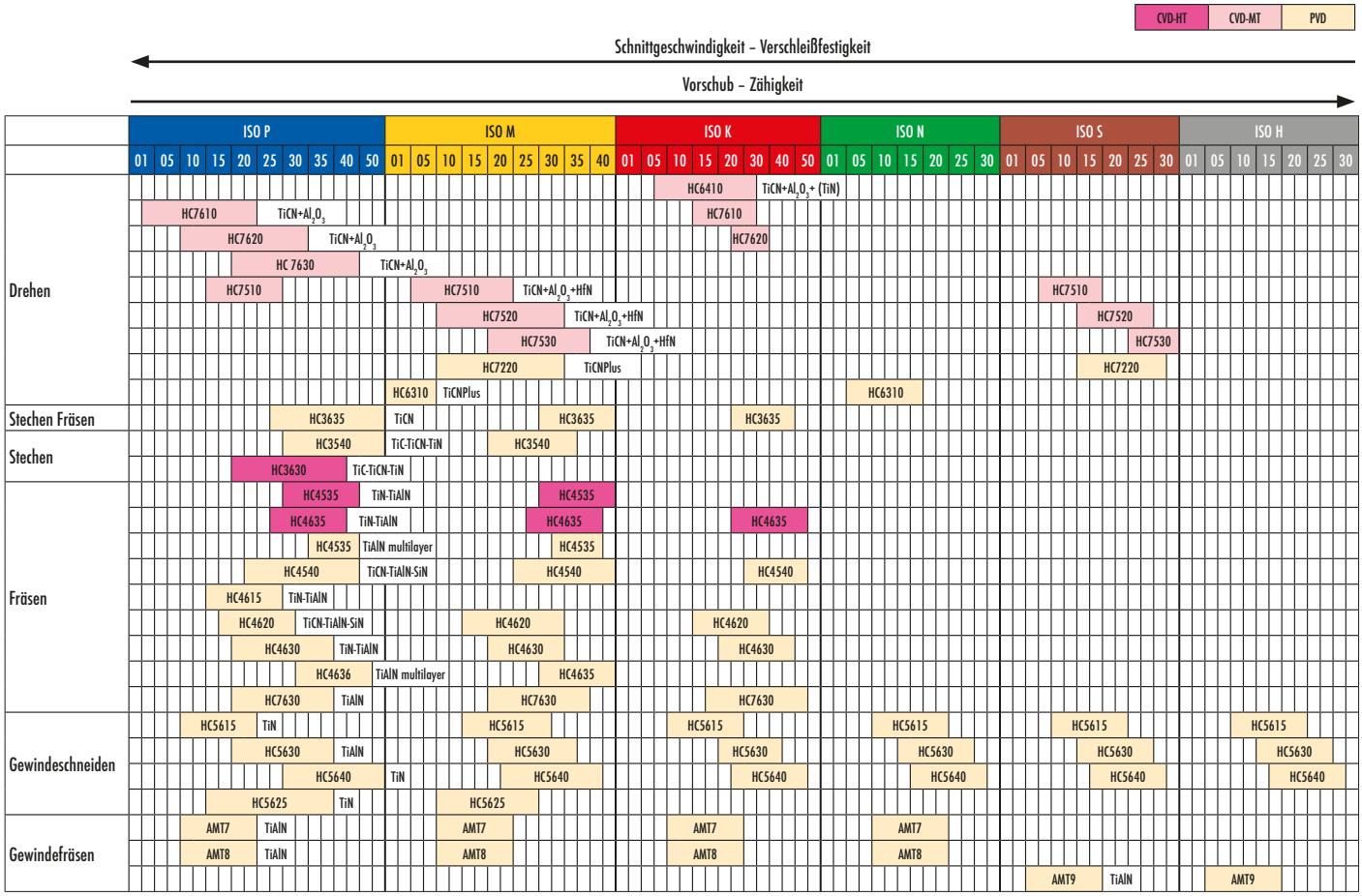
CBN

ISO	Werkstoff	Vc m/min	Vorschub f mm/U
H	gehärteter Stahl	100 - 220	0,08 - 0,20
S	Hochtemperatur-Legierungen	200 - 500	0,08 - 0,15
K	Grauguss, insbesondere harte und abriebfeste Sorten	300 - 2500	0,10 - 0,50

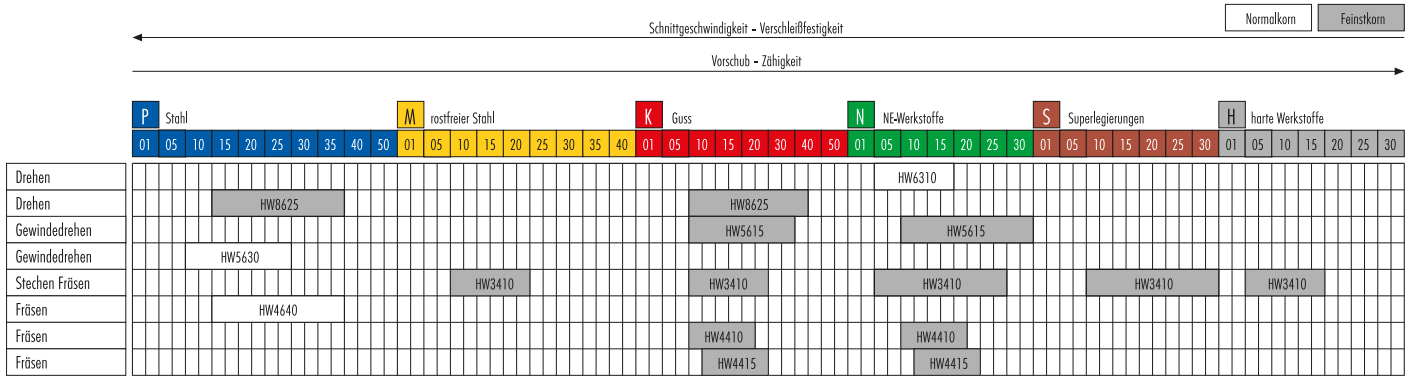
PKD

ISO	Werkstoff	Vc m/min	Vorschub f mm/U
N	Aluminiumlegierungen unter 3% SIC	200 - 2500	0,05 - 0,40
N	Aluminiumlegierungen bis zu 12% SIC	150 - 2000	0,05 - 0,40
N	Aluminiumlegierungen bis ca. 21% SIC	100 - 1800	0,05 - 0,40
N	Messing-Magnesium - Zinklegierungen	200 - 2000	0,05 - 0,40
N	Kupfer-Bronze-Bleilegierungen	200 - 1500	0,05 - 0,40
N	Duro- und Thermoplaste ohne und mit Füllstoffen z.B.: CFK, GFK und Epoxydharze	100 - 1000	0,05 - 0,20

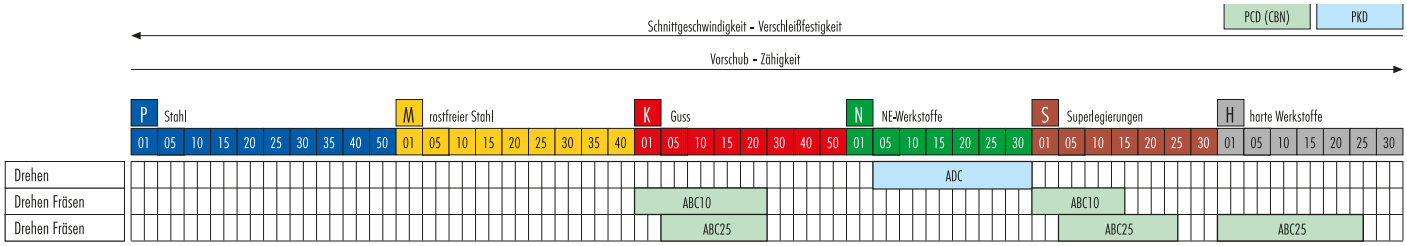
ATORN® Schneidstofftabelle HM-Qualitäten, beschichtet



ATORN® Schneidstofftabelle HM-Qualitäten, unbeschichtet



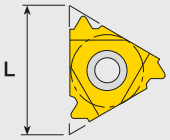
ATORN® Schneidstofftabelle CBN / PKD



ATORN® Bezeichnungscode für Gewindeschneidplatten und Klemmhalter

Gewindeschneidplatten

16 — **Größe**



6
8
8 U
11
16
22
27
22 U
27 U
16 V (vertikal)

E — E = Außen
I = Innen

R — R = Rechts
L = Links

B — B = gesintert
= geschliffen
(keine Angabe)

1,5 — Steigung
mm / Zoll

ISO

60 = 60° Profil
55 = 55° Profil

ISO	Metrisch
UN	US Unified Thread
BSW	Britisch Standard Whitworth
NPT	US National Pipe Thread
BSPT	British Standard Pipe Thread
ACME	Amerikanisches Trapezgewinde
Trapez	Trapez nach DIN 103
Round	Rund nach DIN 405

HC5630 — **HM Qualität**

HC5110
HC5615
HC5620
HC5625
HC5640
HC5630

Klemmhalter

S — **Klemmart**
S = geschraubt
C = Hebel

E — E = Außen
I = Innen

R — R = Rechts
L = Links

2020 — **Außen-Klemmhalter**



Metrisch: 2020 =
20 mm x 20 mm

Innen-Klemmhalter

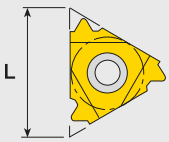


Metrisch: 0020
= Ø 20 mm

K — **Klemmhalter Länge mm**

D	= 60
F	= 80
H	= 100
K	= 125
L	= 140
M	= 150
P	= 170
R	= 200
S	= 250
T	= 300
U	= 350
V	= 400

16 — **Plattensitz L (mm)**



6
8
8 U
11
16
22
27
22 U
27 U

C

B = Kühlbohrung

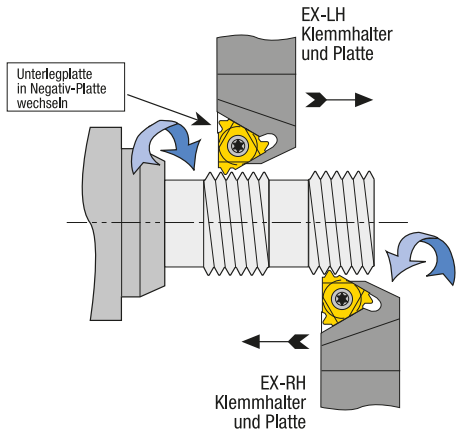
C = Vollhartmetall

O = gekröpft

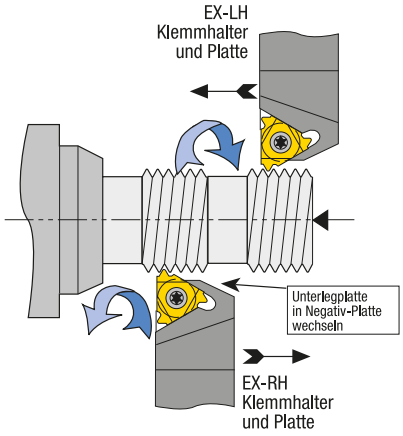
V = Vertikal

ATORN® Einsatzmöglichkeiten Gewindeschneidhalter

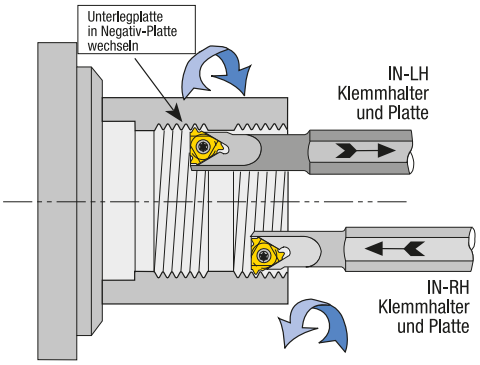
EX-RH
Gewinde
EX=Außen RH=Rechts



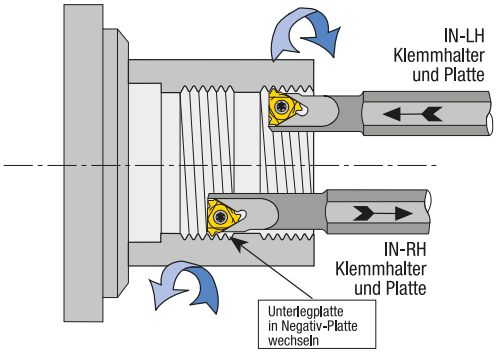
EX-LH
Gewinde
EX=Außen LH=Links



IN-RH
Gewinde
IN=Innen RH=Rechts



IN-LH
Gewinde
IN=Innen LH=Links



Hartmetall-Qualitäten und Auswahl der Schnittgeschwindigkeiten

(Angaben in m/min)

ISO	Material	HC5625 PVD TiN	HC5615 PVD TiN	HC5630 PVD TiAlN	HC5640 PVD TiN	HC5620 PVD TiN	HC5110 PVD TiN
P	Kohlenstoffstahl	80 - 160	90 - 160	100 - 180	20 - 100	110 - 210	
P	niedrig legierter Stahl	80 - 120	80 - 150	90 - 160	30 - 80	90 - 140	
P	hoch legierter Stahl	50 - 100	80 - 120	90 - 120	40 - 90	70 - 90	
P	Stahlguss	80 - 140	100 - 140	120 - 160	40 - 80	110 - 210	
M	INOX Stahl	60 - 90	70 - 120	90 - 130	30 - 90	100 - 160	
K	Grauguss		80 - 130	80 - 150	30 - 90	140 - 150	
N	Nichteisenmetalle + Aluminium		300 - 600		20 - 200	700 - 1000	
S	Superlegierung			25 - 60		30 - 65	30 - 70
H	gehärteter Stahl		20 - 40	20 - 30		30 - 40	20 - 50

Auswahl der Schnittanzahl

Steigung MM	0,5	1,0	1,5	2,0	2,5	3,0	4,0	6,0
Steigung TPI	48	24	16	12	10	8	6	4
Anzahl der Schnitte	3 - 6	4 - 9	5 - 11	6 - 13	7 - 15	8 - 17	10 - 20	11 - 22

- Bei Einsatz des Mini- oder Ultraminisystems 1 bis 3 Schnitte mehr
- Bei harten Werkstoffen erhöhen

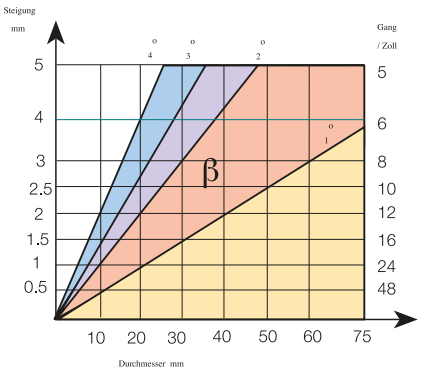
Steigungswinkelberechnung und Auswahl von Unterlegplatten

Formel zur Berechnung
des Steigungswinkels:

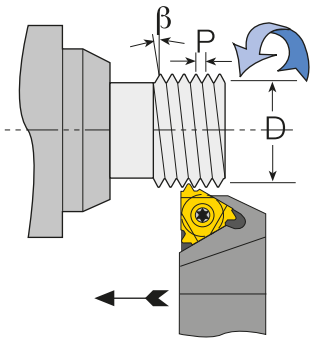
$$\tan \beta = \frac{P \text{ (Steigung)}}{\pi D \text{ (Durchmesser)}}$$

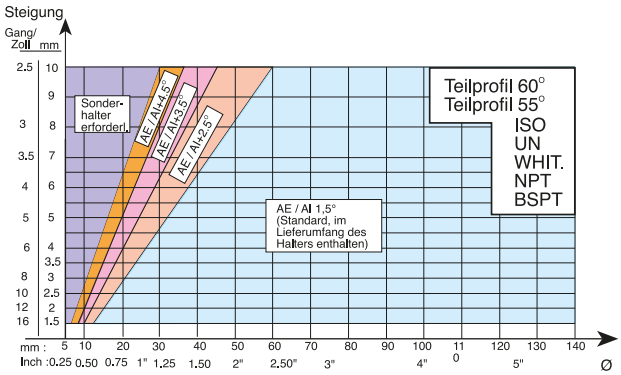
vereinfachte Formel: $\beta = 20 \times P / D$

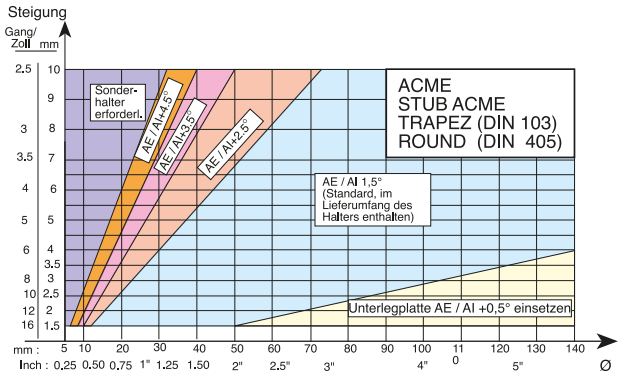
Beispiel:
D = 30 mm, P = 1,5 mm:
$\beta = 20 \times 1{,}5 \text{ mm} / 30 \text{ mm} = 1$

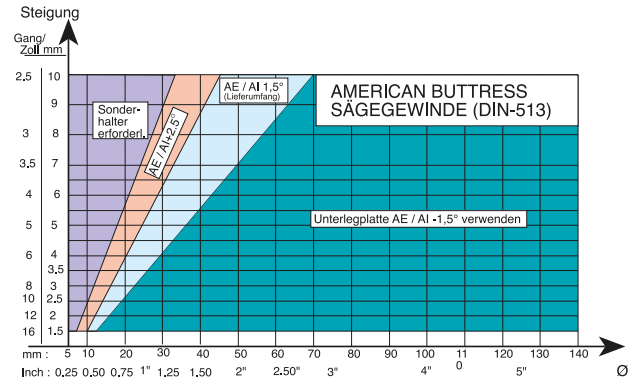


$$\tan \beta = \frac{P}{\pi D}$$







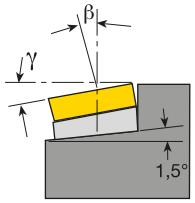


Wie aus obigen Diagrammen ersichtlich, ist für die meisten Anwendungen ein Wechseln der Unterlegplatte nicht erforderlich. Falls dennoch ein Wechsel notwendig wird, wählen Sie bitte: **AE-Unterlegplatten für EX-RH und IN-LH Klemmhalter und AI-Unterlegplatten für IN-RH und EX-LH Klemmhalter.**

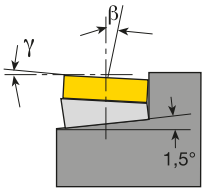
Unterlegplatten

Positiver Steigungswinkel
Einsatz beim Drehen von Rechtsgewinden mit rechtem Klemmhalter oder von Linksgewinden mit linkem Klemmhalter

Negativer Steigungswinkel
Einsatz beim Drehen von Rechtsgewinden mit linkem Klemmhalter oder von Linksgewinden mit rechtem Klemmhalter



Positiver Steigungswinkel



Negativer Steigungswinkel

Wichtig:
Das Maß H bleibt konstant für jede Unterlegplatten-Kombination

L IC	Steigungswinkel Klemmhalter	4,5°	3,5°	2,5°	STANDARD 1,5°	0,5°	–0,5°	–1,5°
16 (3/8)	EX RH/IN LH EX LH/IN RH	AE16 +4,5 AI16 +4,5	AE16 +3,5 AI16 +3,5	AE16 +2,5 AI16 +2,5	AE16 AI16	AE16 +0,5 AI16 +0,5	AE16 –0,5 AI16 –0,5	AE16 –1,5 AI16 –1,5
22 (1/2)	EX RH/IN LH EX LH/IN RH	AE22 +4,5 AI22 +4,5	AE22 +3,5 AI22 +3,5	AE22 +2,5 AI22 +2,5	AE22 AI22	AE22 +0,5 AI22 +0,5	AE22 –0,5 AI22 –0,5	AE22 –1,5 AI22 –1,5
27 (5/8)	EX RH/IN LH EX LH/IN RH	AE27 +4,5 AI27 +4,5	AE27 +3,5 AI27 +3,5	AE27 +2,5 AI27 +2,5	AE27 AI27	AE27 +0,5 AI27 +0,5	AE27 –0,5 AI27 –0,5	AE27 –1,5 AI27 –1,5
22 U (1/2)	EX RH/IN LH EX LH/IN RH	AE22U +4,5 AI22U +4,5	AE22 U +3,5 AI22 U +3,5	AE22 U +2,5 AI22 U +2,5	AE22U AI22U	AE22U +0,5 AI22U +0,5	AE22U –0,5 AI22U –0,5	AE22 U –1,5 AI22 U –1,5
27 U (5/8)	EX RH/IN LH EX LH/IN RH	AE27U +4,5 AI27U +4,5	AE27 U +3,5 AI27 U +3,5	AE27 U +2,5 AI27 U +2,5	AE27U AI27U	AE27U +0,5 AI27U +0,5	AE27U –0,5 AI27U –0,5	AE27 U –1,5 AI27 U –1,5

Vergleichstabellen Gewindeschneidwerkzeuge

ISO-Gewindeschneidplatten verschiedener Fabrikate

Beispiel: 16 mm, 1,5 ISO

	Gewindeschneidplatte **EX RH**	Gewindeschneidplatte **EX LH**	Gewindeschneidplatte **IN RH**	Gewindeschneidplatte **IN LH**
ATORN	16 ER 1,5 ISO	16 EL 1,5 ISO	16 IR 1,5 ISO	16 IL 1,5 ISO
SECO-SNAPTAP	16 ER 1,5 ISO	16 EL 1,5 ISO	16 NR 1,5 ISO	16 NL 1,5 ISO
KENNAMETAL	LT 16 ER	LT 16 EL	LT 16 NR	LT 16 NL
SANDVIK*	R166.0G-16MM01-150	L166.0G-16MM01-150	R166.0L-16MM01-150	L166.0L-16MM01-150
ISCAR	16 ER 1,5 ISO	16 EL 1,5 ISO	16 IR 1,5 ISO	16 IL 1,5 ISO
VARGUS	3 ER 1,5 ISO	3 EL 1,5 ISO	3 IR 1,5 ISO	3 IL 1,5 ISO

* diese Platten können nicht auf ATORN- oder CPT-Haltern eingesetzt werden

Klemmhalter (mit Schraube) verschiedener Fabrikate

Beispiel: Halter B = H = 25 mm, für Platte 16 mm

	Klemmhalter **EX RH**	Klemmhalter **EX LH**	Klemmhalter **IN RH**	Klemmhalter **IN LH**
ATORN	SER 2525 M 16	SEL 2525 M 16	SIR 0025 R 16	SIL 0025 R 16
SECO-SNAPTAP	SER 2525 M 16	SEL 2525 M 16	SNR 0025 R 16	SNL 0025 R 16
KENNAMETAL	LSSR 2525 M 16	LSSR 2525 M 16	S 25 R LSER - 16	S 25 R LSEL - 16
SANDVIK*	R 166.0 F G 2525 - 16	L 166.0 F G 2525 - 16	R 166.0 KF 25 - 16	L 166.0 KF 225 - 16
ISCAR	SER 2525 M 16	SEL 2525 M 16	SIR 0025 R 16	SIL 0025 R 16
VARGUS	AL 25 - 3	AL 25-3 LH	AVR 25D - 3	AVR 25D - 3 LH

* diese Halter sind nicht für ATORN- oder CPT-Platten geeignet

Hartmetallqualität-Bezeichnungen verschiedener Fabrikate

ISO CODE	ATORN	CPT	SECO-SNAPTAP	KENNAMETAL	SANDVIK	ISCAR	VARGUS
P 15 - P 30	HC 5625	P 25 C	CP30	KC 710	GC 225	IC 250	VSX
P 10 – P 25 K 10 – K 20	HC 5615	MXC	CP50	KC 730	GC 1020	IC 220	VKX
P 25 – P 40 K 25 – K 40	HC 5640	BXC	CP20	-	GC 1020	IC 228	-
P 15 – P 30 K 20 – K 30 S 10 – S 20 M 10 – M 20	HC 5630	BMA	CP500	KC 5025	GC4125	IC 908	VTX
M 10 - M 20 K 05 - K 20 N 10 - N 20 S 10 - S 20	HC 5620	BMZ/BLU	-	-	-	-	VM7
H 01 - H 20	HC 5110	HBA	-	-	-	-	-



...then it's ATORN.

ATORN®
High quality for great performance

ATORN® Steigungswinkel und Korrekturplatten

Regelgewinde

D Ø	P	P<	U-Platte
2	0,4	3,64	+3,5
2,2	0,45	3,73	+3,5
2,5	0,45	3,28	+3,5
3	0,5	3,04	+3,5
3,5	0,6	3,12	+3,5
4	0,7	3,19	+3,5
4,5	0,75	3,04	+3,5
5	0,8	2,92	+2,5
6	1	3,04	+3,5
8	1,25	2,85	+2,5
10	1,5	2,73	+2,5
12	1,75	2,66	+2,5
14	2	2,6	+2,5
16	2	2,28	+2,5
18	2,5	2,53	+2,5
20	2,5	2,28	+2,5
22	2,5	2,07	+2,5
24	3	2,28	+2,5
27	3	2,03	+2,5
30	3,5	2,13	+2,5
33	3,5	1,93	AE/Al
36	4	2,03	+2,5
39	4	1,87	AE/Al
42	4,5	1,95	AE/Al
45	4,5	1,82	AE/Al
48	5	1,9	AE/Al
52	5	1,75	AE/Al
56	5,5	1,79	AE/Al
60	5,5	1,67	AE/Al
64	6	1,71	AE/Al
68	6	1,61	AE/Al

Trapez-Gewinde DIN 103 T.2

D Ø	P	P<	U-Platte
8	1,5	3,42	+3,5
9	2	4,05	+4,5
10	2	3,64	+3,5
11	2	3,31	+3,5
12	3	4,55	+4,5
14	3	3,9	+3,5
16	4	4,55	+4,5
18	4	4,05	+4,5
20	4	3,64	+3,5
22	5	4,14	+4,5
24	5	3,79	+3,5
28	5	3,25	+3,5
30	6	3,64	+3,5
36	6	3,04	+3,5
38	6	2,88	+2,5
40	7	3,19	+3,5
42	7	3,04	+2,5
44	7	2,9	+3,5
46	7	2,77	+2,5
48	8	3,04	+3,5
50	8	2,92	+2,5
54	8	2,7	+2,5
55	9	2,98	+2,5
60	9	2,73	+2,5
65	10	2,8	+2,5
80	10	2,28	+2,5
85	12	2,57	+2,5
105	12	2,08	+2,5
110	12	1,99	AE/Al
115	14	2,22	+2,5
125	14	2,04	+2,5
130	14	1,96	AE/Al
145	14	1,76	AE/Al
150	16	1,94	AE/Al
175	16	1,67	AE/Al
180	18	1,82	AE/Al

Fein-Gewinde DIN 13 Bl.3

D Ø	P	P<	U-Platte
3,5	0,5	2,6	+2,5
4,5	0,5	2,03	+2,5
>5	0,5	1,82	AE/Al
<9	0,5	1,01	AE/Al
>10	0,5	0,91	+0,5
<90	0,5	0,1	+0,5

Fein-Gewinde DIN 13 Bl.4

D Ø	P	P<	U-Platte
5	0,75	2,73	+2,5
6	0,75	2,28	+2,5
>7	0,75	1,95	AE/Al
<13	0,75	1,05	AE/Al
>14	0,75	0,98	+0,5
<110	0,75	0,12	+0,5

Fein-Gewinde DIN 13 Bl.5

D Ø	P	P<	U-Platte
7,5	1	2,43	+2,5
9	1	2,03	+2,5
>9,5	1	1,92	AE/Al
<18	1	1,01	AE/Al
>19	1	0,96	+0,5
<200	1	0,09	+0,5
10	1,25	2,28	+2,5
12	1,25	1,9	AE/Al

Fein-Gewinde DIN 13 Bl.6

D Ø	P	P<	U-Platte
12	1,5	2,28	+2,5
13	1,5	2,10	+2,5
>14	1,5	1,95	AE/Al
<27	1,5	1,01	AE/Al
>28	1,5	0,98	+0,5
<300	1,5	0,09	+0,5

Whitworth-Gewinde DIN 11

D Ø	D Ø Zoll	Gg./Z.	P	P<	U-Platte
6,35	1/4	20	1,27	3,64	+3,5
7,938	5/16	18	1,411	3,24	+3,5
9,525	3/8	16	1,588	3,04	+3,5
11,113	7/16	14	1,814	2,97	+2,5
12,7	1/2	12	2,117	3,04	+3,5
15,876	5/8	11	2,309	2,65	+2,5
19,051	3/4	10	2,54	2,43	+2,5
22,226	7/8	9	2,822	2,31	+2,5
25,401	1	8	3,175	2,28	+2,5
28,576	1 1/8	7	3,629	2,31	+2,5
31,751	1 1/4	7	3,629	2,08	+2,5
34,926	1 3/8	6	4,233	2,21	+2,5
38,101	1 1/2	6	4,233	2,03	+2,5
41,277	1 5/8	5	5,08	2,24	+2,5
44,452	1 3/4	5	5,08	2,08	+2,5
47,627	1 7/8	4,5	5,645	2,16	+2,5
50,802	2	4,5	5,645	2,03	+2,5

Whitworth-Rohrgewinde DIN 2999 DIN 228 ISO 7/1

D Ø	D Ø Zoll	Gg./Z.	P	P<	U-Platte
9,728	R 1/8	28	0,907	1,7	AE/Al
13,157	R 1/4	19	1,337	1,85	AE/Al
16,662	R 3/8	19	1,337	1,46	AE/Al
20,955	R 1/2	14	1,814	1,58	AE/Al
26,441	R 3/4	14	1,814	1,25	AE/Al
33,249	R 1	11	2,309	1,27	AE/Al
41,91	R 1 1/4	11	2,309	1	AE/Al
47,803	R 1 1/2	11	2,309	0,88	+0,5
59,614	R2	11	2,309	0,71	+0,5
75,184	R 2 1/2	11	2,309	0,56	+0,5
87,884	R3	11	2,309	0,48	+0,5
100,33	R 3 1/2	11	2,309	0,42	+0,5
113,03	R 4	11	2,309	0,37	+0,5
138,43	R5	11	2,309	0,3	+0,5
163,83	R6	11	2,309	0,26	+0,5

Fein-Gewinde DIN 13 Bl.7

D Ø	P	P<	U-Platte
17	2	2,14	+2,5
18	2	2,03	+2,5
>19	2	1,92	AE/Al
<36	2	1,01	AE/Al
>38	2	0,96	+0,5
<300	2	0,12	+0,5

Fein-Gewinde DIN 13 Bl.8

D Ø	P	P<	U-Platte
>28	3	1,95	AE/Al
<52	3	1,05	AE/Al
>55	3	0,99	+0,5
<300	3	0,18	+0,5

Fein-Gewinde DIN 13 Bl.9

D Ø	P	P<	U-Platte
>42	4	1,74	AE/Al
<72	4	1,01	AE/Al
>75	4	0,97	+0,5
<300	4	0,24	+0,5

Fein-Gewinde DIN 13 Bl.10

D Ø	P	P<	U-Platte
>70	6	1,56	AE/Al
<105	6	1,04	AE/Al
110	6	0,99	+0,5

Fein-Gewinde DIN 13 Bl.11

D Ø	P	P<	U-Platte
130	8	1,12	AE/Al
140	8	1,04	AE/Al
>150	8	0,97	+0,5
<1000	8	0,15	+0,5

UNC-Gewinde ASA B1.1

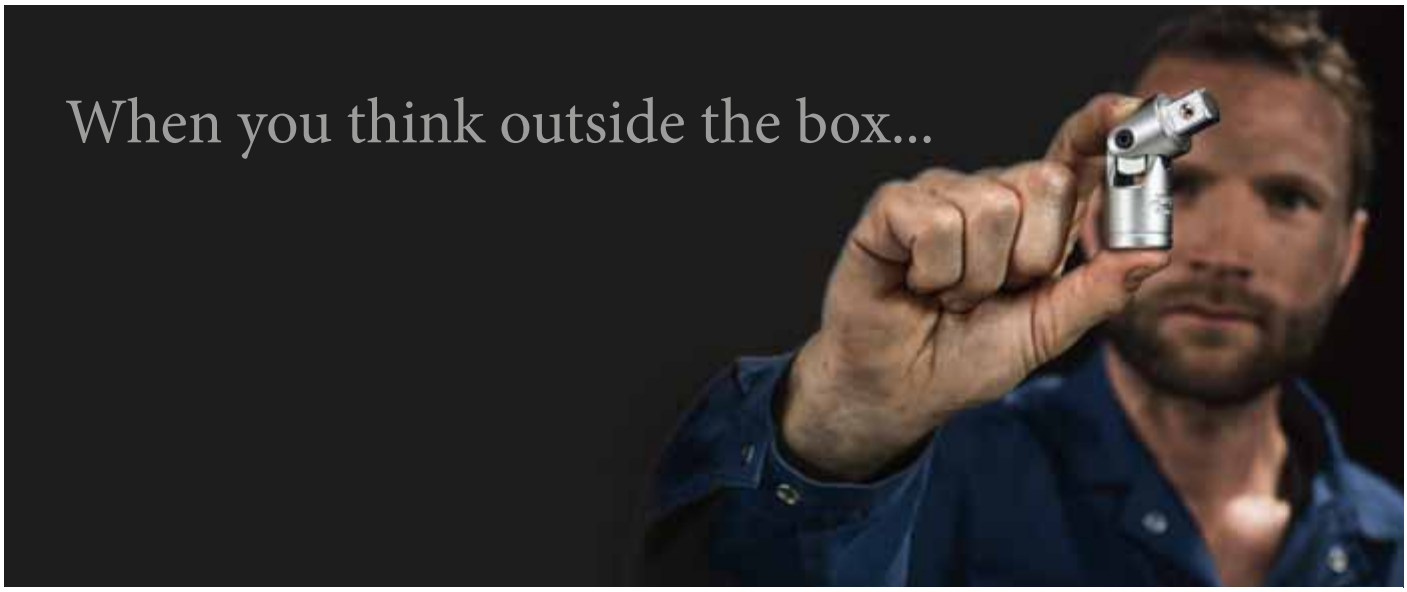
D Ø	D Ø Zoll	Gg./Z.	P	P<	U-Platte
1,854	Nr.1	64	0,397	3,9	+3,5
2,184	Nr.2	56	0,454	3,78	+3,5
2,515	Nr. 3	48	0,529	3,83	+3,5
2,845	Nr. 4	40	0,635	4,06	+4,5
3,175	Nr. 5	40	0,635	3,64	+3,5
3,505	Nr.6	32	0,794	4,12	+4,5
4,166	Nr. 8	32	0,794	3,47	+3,5
4,826	Nr. 10	24	1,058	3,99	+3,5
5,486	Nr. 12	24	1,058	3,51	+3,5
6,35	1/4	20	1,27	3,64	+3,5
7,938	5 / 16	18	1,411	3,24	+3,5
9,525	3/8	16	1,588	3,04	+3,5
11,112	7/16	14	1,814	2,98	+2,5
12,7	1/2	13	1,954	2,8	+2,5
14,288	9/16	12	2,117	2,7	+2,5
15,875	5/8	11	2,309	2,65	+2,5
19,05	3/4	10	2,54	2,43	+2,5
22,225	7/8	9	2,822	2,31	+2,5
25,4	1	8	3,175	2,28	+2,5
28,575	1 1/8	7	3,629	2,31	+2,5
31,75	1 1/4	7	3,629	2,08	+2,5
34,925	1 3/8	6	4,233	2,21	+2,5
38,1	1 1/2	6	4,233	2,03	+2,5
44,45	1 3/4	5	5,08	2,08	+2,5
50,8	2	4,5	5,644	2,03	+2,5
57,15	2 1/4	4,5	5,644	1,8	AE/Al
63,5	2 1/2	4	6,35	1,82	AE/Al
69,85	2 3/4	4	6,35	1,66	AE/Al
76,2	3	4	6,35	1,52	AE/Al
82,55	3 1/4	4	6,35	1,4	AE/Al
88,9	3 1/2	4	6,35	1,3	AE/Al
95,25	3 3/4	4	6,35	1,22	AE/Al
101,6	4	4	6,35	1,14	AE/Al

UNF-Gewinde ASA B 1.1

D Ø	D Ø Zoll	Gg./Z.	P	P<	U-Platte
1,524	Nr.0	80	0,318	3,79	+3,5
1,854	Nr.1	72	0,353	3,47	+3,5
2,184	Nr.2	64	0,397	3,31	+3,5
2,515	Nr. 3	56	0,454	3,29	+3,5
2,845	Nr. 4	48	0,529	3,39	+3,5
3,175	Nr. 5	44	0,577	3,31	+3,5
3,505	Nr.6	40	0,635	3,3	+3,5
4,166	Nr. 8	36	0,706	3,09	+3,5
4,826	Nr. 10	32	0,794	3	+2,5
5,486	Nr. 12	28	0,907	3,01	+3,5
6,35	1/4	28	0,907	2,6	+2,5
7,938	5 / 16	24	1,058	2,43	+2,5
9,525	3/8	24	1,058	2,03	+2,5
11,112	7/16	20	1,27	2,08	+2,5
12,7	1/2	20	1,27	1,82	AE/Al
14,288	9/16	18	1,411	1,8	AE/Al
15,875	5/8	18	1,411	1,62	AE/Al
19,05	3/4	16	1,588	1,52	AE/Al
22,225	7/8	14	1,814	1,49	AE/Al
25,4	1	12	2,117	1,52	AE/Al
28,575	1 1/8	12	2,117	1,35	AE/Al
31,75	1 1/4	12	2,117	1,22	AE/Al
34,925	1 3/8	12	2,117	1,11	AE/Al
38,1	1 1/2	12	2,117	1,01	AE/Al

PG DIN 40430

PG	D Ø	Gg./Z.	P	P<	U-Platte
7	12,7	20	1,27	2	AE/Al
9	15,2	18	1,41	1,85	AE/Al
11	18,6	18	1,41	1,51	AE/Al
13,5	20,4	18	1,41	1,38	AE/Al
16	22,5	18	1,41	1,25	AE/Al
21	28,3	16	1,588	1,12	AE/Al
29	37	16	1,588	0,85	+0,5
36	47	16	1,588	0,67	+0,5
42	54	16	1,588	0,58	+0,5
48	59,3	16	1,588	0,53	+0,5



...new things are created.

ATORN®
High quality for great performance

ATORN® ISO-Bezeichnungssystem A-CUT

Klemmhalter, Bohrstangen und Schneidenträger

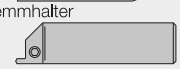
1 ATORN-Halter

3 Werkzeugtyp

1. Schneidenträger (doppelseitig)



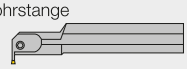
2. Klemmhalter



5. Klemmhalter (45°)



6. Bohrstange



5 Einsatz

1 - Außenbearbeitung

9 - Innenbearbeitung

6 - Axialbearbeitung

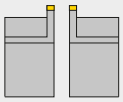
7 Kühlmittelzufuhr Option

C - Bohrstange mit innerer Kühlmittelzufuhr

AH	□	1	0	1	2525	□	4
1	2	3	4	5	6	7	8

2 Ausführung des Halters

R = Rechts
L = Links
ohne Angabe = doppelseitige Schneidenträger

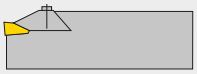


4 Klemmsystem für Wendeschneidplatte

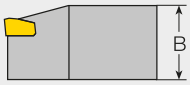
0 = Keilklemmung



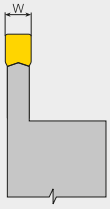
1 = Schraubenklemmung



6 Schaftgröße



8 Nennmaß der Schnittbreite



Schneideinsätze für Abstechen, Einstechen und Profildrehen

1 ATORN-Schneideinsätze

3 Spanbrecher

C für A und Einstecharbeiten

J für Ab- und Einstecharbeiten bei geringem Vorschub mit kurzen Spänen und positiver Schneidkante

V für Präzisionseinstiche und Profildreharbeiten mit unterschiedlicher Breite, Radien und Formen

F zum Axialeinstechen

5 Schneidkante

ohne Angabe = scharfkantig oder leicht gerundet

E = gerundet

N = Neutral

R = Rechts

L = Links

AI	P	V	4.00	E	0.40	HC3630
1	2	3	4	5	6	7

2 Toleranzen

M : W = ± 0,1

P : W = ± 0,02

4 Schnittbreite



6 Schneidenform

Eckradius oder
0,5 W = Vollradius

7 HM-Qualität

CVD-beschichtet	HC 3540 HC 3630
unbeschichtet	HW 3410
PVD-beschichtet	HC 3635

ATORN® Auswahl der Hartmetallqualität *A-CUT*

A-CUT - Qualität		ISO	Physikalische Eigenschaften HRa, BBF= Biegebruchfestigkeit... N/mm²	Werkstoff	Empfohlener Anwendungsbereich
unbeschichtet	**HW 3410**	K10-K20	HRa 92.5 BBF* 2250 N/mm²	Gusseisen mit Lamellengraphit über HB 220,Temperguss,Aluminium und Aluminium-Silicium,Kupferlegierungen, Phenolharzlaminat und hochhitzebeständige Legierungen	Für mittelschwere Bearbeitung und Schlichtarbeiten bei mittleren Schnittgeschwindigkeiten und Vorschüben
beschichtet	**HC 3630**	P20-P40	CVD beschichtet Multilayer TiC+TiCN+TiN	Kohlenstoffstahl, legierter Stahl, Stahlguss, Temperguss, austenitischer INOX Stahl, martensitischer INOX Stahl, Automatenstahl	Geeignet für mittelschwere Schlichtbearbeitung und Schruppen, Bearbeitung mit unterbrochenem Schnitt
	HC 3635	P25-P45 M20-M30 K20-K40	PVD beschichtet TiCN	Stahl, legierter Stahl, INOX Stahl	Für allgemeine Anwendungen bei mittleren Schnittgeschwindigkeiten und bei instabilen Maschinenbedingungen
	HC 3540	P30-P50 M20-M30	CVD beschichtet Multilayer TiC+TiCN+TiN	austenitischer INOX Stahl, Kohlenstoffstahl und legierter Stahl	Eine sehr zähe beschichtete Sorte, geeignet für mittlere und geringe Schnittgeschwindigkeiten und hohen Vorschub, besonders zum Abstechen bis zur Mitte

ATORN® Drehen/Nuteneinstechen *A-CUT*

Nachfolgend einige Schnittgeschwindigkeits- und Vorschubempfehlungen zum Drehen von Stahl mit AlPV-Schneideinsätzen.
Die angegebenen Kombinationen verstehen sich nur als Beispiele einer großen Anzahl von möglichen Einsatzbreiten und Radien.

	Schneideinsatz				AlPV														
	Form				3.00E 0.40			4.00E 0.40			4.00E 2.00			5.00E 0.40			6.00E 0.40		
	Breite „W“				3,00			4,00			4,00			5,00			6,00		
	Radius „R“				0,40			0,40			2,00			0,40			0,40		
	Sorte				HC 3630														
	Vorschub f (mm/U)				0,10	0,16	0,25	0,16	0,25	0,35	0,25	0,30	0,40	0,16	0,25	0,40	0,25	0,40	0,56
ISO	Werkstückstoff		Härte HB	V_cT Kurve	Schnittgeschwindigkeit V_c (m/min)														
P	Kohlenstoffstahl	0,2 %C	150		140	120	100	140	120	80	120	100	80	150	120	90	150	90	60
P		0,45 %C	190	k=0.2	130	120	90	130	100	70	120	90	80	150	120	80	130	80	50
P		0,83 %C	250		120	110	90	130	100	60	110	80	70	140	110	70	120	70	50
P			> 200	k=0.2	120	110	90	130	100	60	110	80	70	140	110	70	120	70	50
P	legierter Stahl		200-250		110	100	80	110	100	60	100	80	60	140	110	60	120	70	50
P			275-325	k=0.25	100	90	80	100	90	50	100	70	60	130	100	60	110	60	40
P			325-375	k=0.25	80	60	40	80	50	30	50	50	40	90	60	40	80	50	40
P			375-425		50	40	20	50	40	20	50	40	30	60	50	40	50	40	30
P	Kohlenstoffstahl		≤ 150		90	80	70	90	80	70	90	80	60	100	80	50	90	70	50
P	Stahlguss		150-200	k=0.2	70	60	50	70	60	50	70	60	50	80	60	50	80	60	50
P	Legierungen		200-250	k=0.2	70	60	40	70	50	50	60	50	50	60	50	40	60	50	40
M	martensitisch		175-225		120	100	80	110	100	60	100	90	80	110	120	80	130	90	50
M	INOX Stahl		275-325	k=0.3	90	80	60	90	70	50	90	80	70	100	80	60	110	80	50
M	austenitisch		135-175		90	80	70	90	80	70	90	90	80	100	90	70	110	80	50

Safety in the workplace

Please protect your eyes, ears and respiratory system!



ATORN® Ab- und Einstechen A-CUT

Allgemeine Hinweise

- Die optimalen Schnittgeschwindigkeiten und Vorschübe (innerhalb vorgegebener Bereiche) hängen vom Werkstückdurchmesser und der Steifigkeit des Werkzeugsystems ab.
- Die Schnittgeschwindigkeiten basieren auf einer nach ca. 15 Min. eingetretenen durchschnittlichen Verschleißmarkenbreite von V_B = 0,25 mm, bei Bearbeitung ohne Kühlmittel. Um eine längere Standzeit und/oder höhere Schnittgeschwindigkeiten zu erreichen, sollte reichlich Kühlmittel zugeführt werden.
- Die Vorschubraten sind gültig für neutrale AIMC-Schneideinsätze. Für rechte und linke Schneideinsatz-Ausführungen sind niedrigere Raten empfohlen.
- Bei niedrigeren Vorschüben als gezeigt ist die Spanformgeometrie „J", also AIMJ-Schneideinsätze zu verwenden, um besseren Spanabfluss zu erreichen.

Empfohlene Schnittgeschwindigkeiten zum Abstechen und Einstechen
Legierungen auf Eisen-Basis (AIMC Schneideinsätze)

ISO	Werkstoff	Härte HB	Vorschub mm/U	Schnittgeschwindigkeit V_c (m/min)	Hartmetallsorte
P	**17-4 PH**	einsatzgehärtet	0,10-0,15	110-120	HC3635
	17-7 PH	28-35HRc	0,10-0,15	130-140	HC3630
	Maraging-Stähle	einsatzgehärtet und vergütet 36-40HRc	0,10-0,15	60- 80	HC3630
		angelassen	0,18-0,20	90-100	HC3635
	120, 180, 200, 250, 300, 350	26-45HRc	0,10-0,15	110-120	HC3635
	120, 180	Maraging	0,10-0,15	50-60	HC3630
		35-45HRc	0,10-0,15	60-70	HC3635
M	**austenitischer**				
	INOX Stahl angelassen	120-130HB	0,10-0,15	HC3630	HC3540
	302, 303, 304, 310, 316, 321, 347	135-175HB	0,10-0,15	180-190	HC3635
	martensitischer	angelassen	0,10-0,15	200-210	HC3635
	INOX Stahl 135-175HB				
		abgeschreckt und angelassen	0,10-0,15	110-120	HC3635
	403, 405, 410, 420, 430, etc.	28-35HRc	0,10-0,15	130-140	HC3540 HC3630
S	**V57, A286**	einsatzgehärtet	0,15-0,20	30-40	HC3635
	Incoloy 800,801	einsatzgehärtet	0,10-0,15	25-30	HW3410
		vergütet 24-34HRc	0,15-0,20	25-35	HW3410
			0,10-0,15	20-25	HW3410
H	**gehärteter Stahl**	50-55 HRc	0,03-0,10	20-30	HW3410

Empfohlene Schnittgeschwindigkeiten zum Axial-Einstechen und Hohlbohren
Legierungen auf Eisen-Basis (AIMF Schneideinsätze)

ISO	Schneideinsatz			AIMF								
	Sorte			HC 3540			HC 3635			HC 3630		
	Vorschub f (mm/U)			0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15
	Werkstoff	**Härte HB**	**VcT Kurve**	**Schnittgeschwindigkeit Vc (m/min)**								
P	**Kohlen- 0,2 %C**	250	k=0.2	145	130	120	160	150	140	145	130	120
	stoffstahl 0,45 %C	190		130	120	105	150	140	130	130	120	105
	Stahl 0,83 %C	250		105	90	80	130	115	100	105	90	80
		> 250	k=0.2	110	100	90	130	120	105	110	100	90
	legierter Stahl	200-250	k=0.3	100	90	85	120	105	95	100	90	85
		275-325		80	70	60	105	95	85	80	70	60
		325-375		75	65	55	95	85	75	75	65	55
		375-425		65	60	50	80	75	65	65	60	50
	Kohlenstoffstahl	> 150	k=0.2	120	100	90	150	145	140	120	100	90
	Stahlguss	150-200		95	80	70	110	100	95	95	80	70
	Legierungen	200-250		80	70	60	100	95	90	80	70	60
		250-300		–	–	–	–	–	–	–	–	–
M	**ferritisch**	135-175	k=0.3	–	–	–	180	165	150	–	–	–
	INOX Stahl	175-225		130	120	110	150	140	130	130	120	110
	martensitisch	275-325		90	75	65	105	95	85	90	75	65
	austenitisch	135-175		70	60	50	80	75	65	70	60	50

ISO	Schneideinsatz		AIMF		
	Sorte		HW 3410		
	Vorschub f (mm/U)		0,05	0,10	0,15
	Werkstoff	**Härte HB**	**Schnittgeschwindigkeit Vc (m/min)**		
K	**Temperguss kurzspanend**	110-145	100	95	90
	langspanend	200-250	90	80	70
	Grauguss niedrige Festigkeit	180	140	130	115
	hohe Festigkeit	250	100	90	80
	sphärolitisches ferritisch	160	105	95	85
	Eisen perlitisch	250	100	90	80
H	**abgeschrecktes Gusseisen**	400	20	15	–
		600	–	–	–
N	**Magnesium**	40-60HRc	265	230	225
		60-90HRc	250	240	230
	elektrolytisches Kupfer	50- 85	110	100	90
	Bronze-Messing-Legierungen	120-200	120	115	110
	Blei-Legierungen	80-150	165	155	150
	Messing, Rot-Messing	60-110	125	120	115
	Phosphor-Bronze	85-110	90	85	80
	Aluminium-Legierungen	150-200	240	210	200
	nicht wärmebehandelbar	30- 80	800	760	730
	wärmebehandelbar	80-120	300	280	250
	Aluminium-Legierungen, Guss		340	335	300

ATORN® Ab- und Einstechen A-CUT

Empfohlene Schnittgeschwindigkeiten zum Abstechen und Nuteneinstechen

	Schneideinsatz [1]		AIMC			AIMC			AIMC			AIMC				AIMC			AIMC			AIMC				AIMC	
	Breite „W“		1,6			2 / 2,4			3			4 / 4,8 / 5 / 6				2 / 2,4			3			4 / 4,8 / 5 / 6				3	
	Sorte		HC 3635									HC 3540							HC 3630								HW 3410	
	Vorschub f (mm/U)		0,05	0,08	0,13	0,05	0,1	0,2	0,1	0,2	0,3	0,1	0,2	0,3	0,4	0,05	0,1	0,2	0,1	0,2	0,3	0,1	0,2	0,3	0,4	0,05	0,10
ISO	Werkstoff	Härte HB	Schnittgeschwindigkeit V_c (m/min)																								
P	Kohlenstoffstahl 0,2 %C	150	140	140	130	150	150	130	170	140	130	180	160	135	120	130	130	110	145	120	110	150	135	115	110	145	135
P	Kohlenstoffstahl 0,45 %C	190	125	125	120	140	140	115	155	130	115	165	145	120	100	120	120	100	130	110	100	140	120	100	90	125	120
P	Kohlenstoffstahl 0,83 %C	250	110	110	100	125	125	85	135	110	–	145	120	100	–	110	110	90	115	95	80	120	100	85	70	110	100
P	Kohlenstoffstahl	150	135	135	125	140	140	120	165	135	100	175	150	115	90	120	120	100	140	115	85	150	120	100	75	130	125
P	Stahlguss	150-200	80	80	75	85	85	70	100	85	–	105	95	65	35	72	72	60	85	70	–	90	80	55	–	115	110
P	Legierungen	200-250	70	70	65	65	65	60	85	75	–	90	80	50	–	55	55	50	70	65	–	80	70	40	–	105	100
P	legierter Stahl	200	110	110	100	125	125	85	135	110	95	145	120	100	75	110	110	90	115	95	80	120	100	85	70	110	100
P		200-250	95	95	85	110	110	60	110	95	75	120	105	85	60	95	95	70	95	80	75	100	90	80	60	95	90
P		275-325	90	90	80	105	105	55	105	90	–	115	100	80	–	90	90	65	90	75	60	85	75	70	45	90	85
P		325-375	70	70	60	80	80	–	80	70	–	80	75	60	–	70	70	40	70	60	–	70	65	50	–	80	75
P		375-425	45	45	–	55	55	–	55	45	–	60	50	–	–	50	50	–	50	40	–	50	45	–	–	60	–
M	martensitisch	175-225	110	110	100	140	140	110	160	125	–	160	130	–	–	128	125	100	145	120	85	150	140	110	–	150	140
M		275-325	105	105	90	110	110	–	125	105	–	135	120	90	–	90	90	–	105	90	65	115	100	75	–	105	95
M	INOX Stahl	375-425	50	50	–	50	50	–	55	40	–	60	50	–	–	50	50	–	50	35	–	55	40	–	–	–	–
M	austenitisch	135-175	130	130	100	135	135	110	150	130	–	160	140	–	–	105	105	110	130	115	80	140	120	95	–	130	125

[1] Bei Einsatz der AIMJ-Schneideinsätze sollte der Vorschub um ca. 30% verringert werden.

Empfohlene Schnittgeschwindigkeiten zum Abstechen und Nuteneinstechen

(AIMC Schneideinsätze; Sorte HW 3410)

Legierungen auf Nickel-Basis

ISO	Werkstoff	Härte	Vorschub mm/U	Schnittgeschwindigkeit Vc (m/min)
S	Astroloy, Rene 41	einsatzgehärtet 20-30 HRc	0,10-0,15	20
S	Udimet 5000, 7000	einsatzgehärtet und vergütet 32-42 HRc	0,10-0,12	15
S	Inconel W, X, 702, 718	einsatzgehärtet und vergütet 20-30 HRc	0,15-0,20	20
S	M 252, Waspalloy	einsatzgehärtet und vergütet 40-42 HRc	0,10-0,15	15
S	Hastolloy B, C, X	angelassen	0,20-0,25	40
S	Inconel 600	kalt gezogen 24-34 HRc	0,15-0,20	25
S	TD 2	spannungsfrei 30 HRc	0,15-0,20	65

Legierungen auf Titan-Basis

ISO	Werkstoff	Härte	Vorschub mm/U	Schnittgeschwindigkeit Vc (m/min)
S	Ti5Al-2.5 Sn Ti6-2-4-2	angelassen 32-38 HRc	0,10-0,15	50
S	Ti6Al-4V	angelassen 32-38 HRc	0,10-0,15	45
S		einsatzgehärtet und vergütet 38-42HRc	0,10-0,12	35
S	Ti6Al-6V-2Sn	angelassen 34-38 HRc	0,10-0,15	45
S	Ti7Al-4Mo Ti8Al-1Mo-1V	einsatzgehärtet und vergütet 40-44 HRc	0,10-0,12	35
S	TiA55 Ti75A	angelassen 110-175 HB	0,15-0,20	50
S	Ti140A	angelassen 30-36 HRc	0,10-0,15	45

Legierungen auf Kobalt-Basis

ISO	Werkstoff	Härte	Vorschub mm/U	Schnittgeschwindigkeit Vc (m/min)
S	HS 21, HS 31, HS 36	unbehandelt 20-30 HRc	0,10-0,15	15
S	L 605	einsatzgehärtet	0,15-0,20	20
S		einsatzgehärtet und vergütet 28-34 HRc	0,10-0,12	15
S	Stellite 6	39-43 HRc	0,15	10

Abstechen & Einstechen

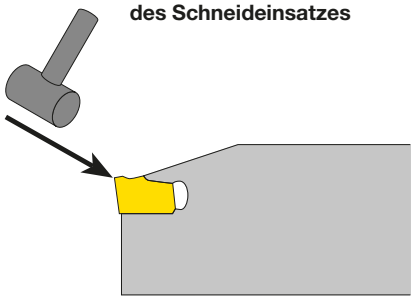
Allgemeine Empfehlungen
- AIMC-Schneideinsätze mit 0° Spitzenwinkel verwenden
- Schneidenträger mit größtmöglicher Bauhöhe B einsetzen und die schmalste einsetzbare Schneideinsatzbreite verwenden

Einstellung
- optimale Spitzenhöhe für A-Cut Werkzeuge ist bis zu ± 0,1 mm über oder unterhalb der Mitte der Drehachse; dies ist ein Durchschnittswert für das Abstechen von Vollmaterial in Richtung Werkstückdrehachse
- so dicht wie möglich beim Spannfutter abstechen
- bei neuen Anwendungen im niedrigsten oder mittleren empfohlenen Schnittgeschwindigkeits- und Vorschubbereich beginnen

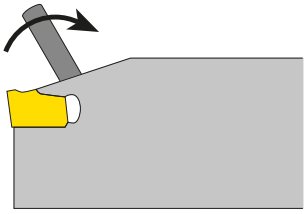
Bearbeitung
- Sie erzielen die besten Bearbeitungsergebnisse bei konstanter Schnittgeschwindigkeit und gleichbleibender Vorschubrate
- führen Sie ausreichend Kühlmittel zu
- Schneideinsätze bitte nur in saubere Aufnahmetasche einsetzen
- Die Schnittkräfte reichen bei weicheren Werkstücken manchmal nicht aus, um die Schneideinsätze ausreichend in die Aufnahmetasche zu pressen. Verwenden Sie in diesem Fall bitte einen Kunststoffhammer, um die Schneideinsätze zu fixieren.
- Bei konventionellen Drehbänken Bettschlitten blockieren, um axiale Bewegungen während des Abstechens zu vermeiden.

Verschleiß
- Bitte ersetzen Sie abgenutzte Schneideinsätze unverzüglich. Die Kosten für neue Schneideinsätze sind viel geringer als eventuelle Reparaturkosten, die durch die Verwendung abgenutzter Teile entstehen könnten.
- Abgenutzte oder beschädigte Schneidenträger müssen ebenfalls ausgetauscht werden.
- Bitte versuchen Sie nicht, Schneidenträger mit beschädigten Aufnahmetaschen zu reparieren.

Befestigung und Entfernung des Schneideinsatzes



Befestigung: manuell oder mit Kunststoffhammer



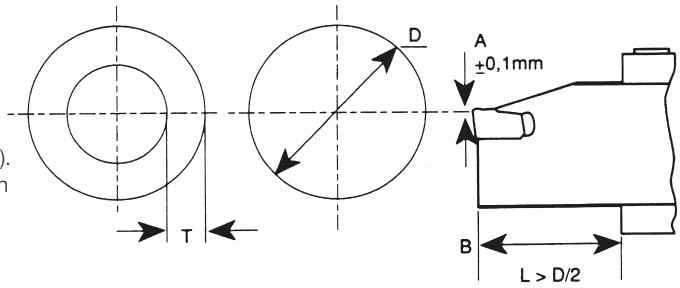
Entfernung: mit Einsatz-Auswerfer

Fehlererkennung und deren Abhilfe

Reduzierung des Restbutzens

Bei CNC-Maschinen den Vorschub um 75% reduzieren, sobald sich die Schneide der Werkstückdrehachse bis auf Schneideinsatzbreite genähert hat.
- Spitzenhöhe der Schneidkante prüfen.
- Schneideinsatz mit Spitzwinkel verwenden.
- Falls es notwendig sein sollte, einen Schneideinsatz mit einem Spitzenwinkel von 0° zu verwenden, wählen Sie bitte eine schmale Schneideinsatzbreite.
- Abgreifvorrichtung verwenden (oder Rundlauf der Drehmaschine einstellen).
- Bei innen gefasten Bohrungen Fase auf die Oberfläche des abgestochenen Werkstückes ausrichten.
- Anmerkung: Bearbeitungen, die große Restbutzen verursachen, können auch Schneidkantenausbrüche herbeiführen.

Positionierung und Überhang

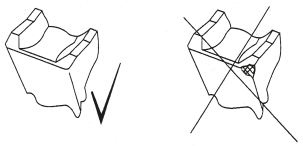


A Beim Abstechen von Vollstangen ist die Zentrierung (±0,1mm) zu berücksichtigen

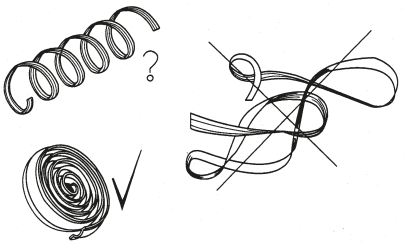
B Überhang L sollte minimal sein, allerdings größer als D/2 oder T

Verbesserung der Oberflächengüte
- Schnittgeschwindigkeit erhöhen
- Schneideinsatz mit 0° Spitzenwinkel verwenden
- Auswahl einer Spanformgeometrie, die optimale Spankontrolle ermöglicht
- beschichtete Hartmetallsorte verwenden
- Kühlmittelzufuhr verbessern
- Rattern abstellen

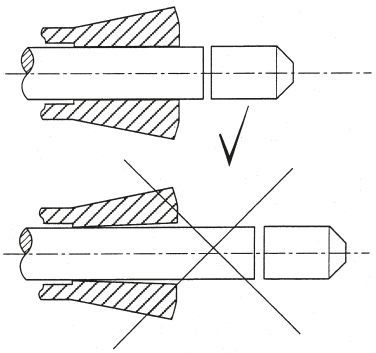
Verbesserung der Planebenheit
- Schneideinsätze überprüfen und gegebenenfalls ersetzen, falls Abnutzung oder Kantenausbrüche vorliegen.
- neutralen Schneideinsatz verwenden
- Benutzen Sie den jeweils größtmöglichen Schneidenträger, z.B. AH101 32 anstatt AH101 26.
- Verwenden Sie einen stabileren Schneidenträger und breiteren Schneideneinsatz.
- Minimieren Sie die Auslage des Schneidenträgers.
- Überprüfen Sie die Ausrichtung und Rechtwinkligkeit des Werkzeugs zur Drehachse.
- Einspannung des Werkstückes optimieren
- Support bei konventionellen Drehmaschinen blockieren
- reichlich Kühlmittel zuführen
- Vorschub reduzieren



Verbesserung der Spankontrolle
- abgenutzte Schneideinsätze auswechseln
- geeignetere Spankontrollform wählen
- neutralen Schneideinsatz verwenden
- rechtwinklige Einstellung des Schneidenträgers überprüfen
- reichlich Kühlmittel zuführen
- Vorschub erhöhen
- Vorschub bei Kontakt mit dem Werkstück kurzfristig unterbrechen, damit der Span in die Spanstufe einlaufen kann.

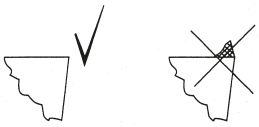


Beseitigung von Rattern
- so dicht wie möglich am Spannfutter abstechen, Schneidenträgerüberhang minimieren
- Einspannung prüfen und Werkzeugaufbau kontrollieren
- Drehzahl verändern
- Vorschub erhöhen
- Support bei konventionellen Drehmaschinen blockieren



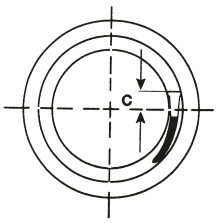
Vermeidung von Schneidkantenausbrüchen
- geeignete Hartmetallsorte und Schneideinsatzgeometrie auswählen
- Schneideinsatz mit größeren Eckradien verwenden
- Rattern vermeiden
- Vorschubruck am Ende des Schneidvorganges vermeiden, eventuell einen soliden Ruckbegrenzer verwenden
- die Flüssigkeit im hydraulischen System der Drehmaschine muss 100% frei von Luftblasen sein
- Aufbauschneidenbildung verhindern (um Aufbauschneidenbildung als Grund für die Ausbrüche zu erkennen, Schnitt unterbrechen und Schneidkante kontrollieren)

Verhinderung oder Reduzierung von Aufbauschneidenbildung
- geeignete Hartmetallsorte und Schneideinsatzgeometrie auswählen
- Schnittgeschwindigkeit erhöhen
- für ausreichende Kühlung sorgen, Empfehlung: Kühlmittel auf Ölbasis

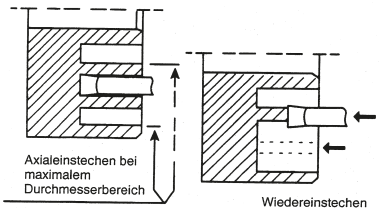


Axial-Einstechen & Hohlbohren

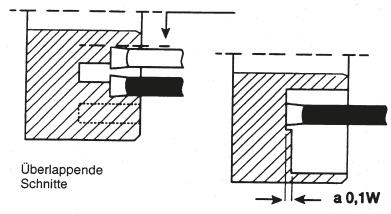
Anwendung
Rechte Schneideinsätze nur in rechte, linke Schneideinsätze nur in linke Werkzeuge einsetzen. Die Schnittgeschwindigkeit beim Axialeinstechen sollte im Vergleich mit der Schnittgeschwindigkeit beim Abstechen nur 80% betragen. Die Vorschubrate sollte auf 50% reduziert werden. Reichlich Kühlmittel verwenden, Kühlmittelstrahl direkt auf die Schnittfuge richten.
- Bei Kompakthaltern und bei der Spannschaft-/Schneidenträgerkombination ist das in nebenstehender Zeichnung beschriebene Maß C im Werkzeug integriert.



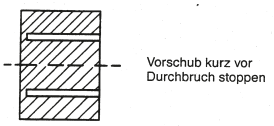
Verbreiterung des Einstichs (Auskammern)
- Ersten Einstich im größtmöglichen Durchmesserbereich des Werkzeuges vornehmen.
- Mit unmittelbar aufeinanderfolgenden, sich überlappenden Einstichen fortfahren. Dabei wird der kleinste Bearbeitungsdurchmesser durch die Schneideinsatzausführung vorgegeben (siehe Abbildung). Der maximale Durchmesser ist unbegrenzt.
- Bei überlappenden Schnitten wird eine Schneideinsatzbreite von 0,9 x W empfohlen.
- Zum Plan-Fertigdrehen der Auskammerung wird eine Spantiefe nicht größer als 0,1 x Schneideinsatzbreite empfohlen.



Ausstechen
- Um Werkzeugbeschädigungen durch einen losen Kern zu vermeiden, Vorschub kurz vor Durchbruch stoppen und den Kern mit einem Kunststoffhammer durchschlagen.

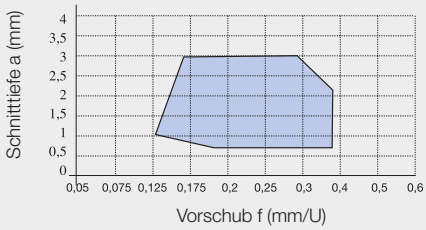


Vorsichtsmaßnahmen
Trägerwerkzeuge dürfen nicht am Werkstück reiben.
Wir empfehlen folgende Vorsichtsmaßnahmen:
- Beachten Sie bitte den Bearbeitungsdurchmesser der Werkzeuge. Einstiche sollten nur in diesem Bereich ausgeführt werden.
- Werkzeughalter genau auf Vorschubachse ausrichten.
- Beim ersten Einstich mit neuem Aufbau Vorschub bei 1,5 mm Stechtiefe stoppen und kontrollieren. Falls Reibung festzustellen ist, Werkzeughöheneinstellung prüfen.
- Verwenden Sie keine abgenutzten oder ausgebrochenen Schneideinsätze

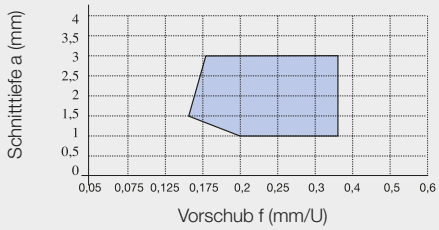


Spanbruchbereiche, Längsdrehen
Kohlenstoffstahl C-45 (1.0503)

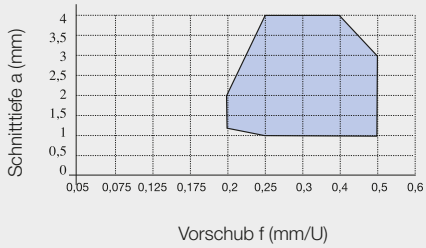
Schneideinsatz DGT-N3.00-0.40



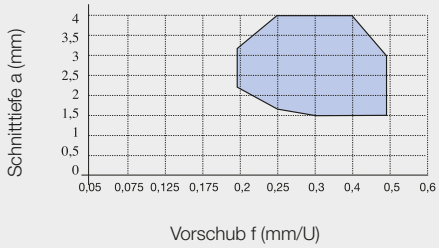
Schneideinsatz DGT-N4.00-0.80



Schneideinsatz DGT-N5.00-0.80



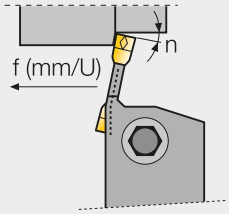
Schneideinsatz DGT-N6.00-0.80



Durchmesser-Ausgleichsfaktor

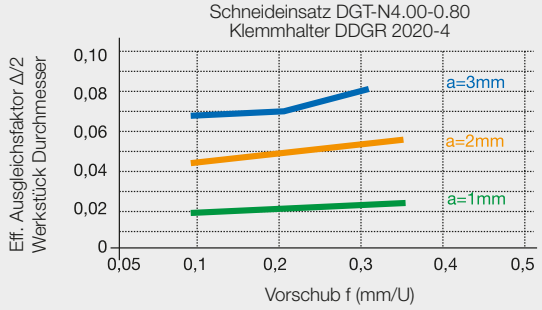
D-Clamp wurde so konstruiert, dass beim Längsdrehen durch die Vorschubkräfte, die hauptsächlich durch Vorschub und Schnitttiefe beeinflusst werden, eine minimale Ausbiegung verursacht wird.

Durch diesen kleinen Nebeneinstellwinkel erhält man eine wesentlich bessere Oberflächengüte. Zum Vorteil der besseren Oberflächengüte kommt hinzu, dass mit ein und demselben Klemmhalter und Schneideinsatz nach rechts und links gedreht werden kann. Diese Verlagerung führt zu einem kleineren Durchmesser als erwünscht. Daher muss ein Ausgleichsfaktor von Δ/2= (D-d)/2 bezogen auf den Durchmesser berücksichtigt werden.

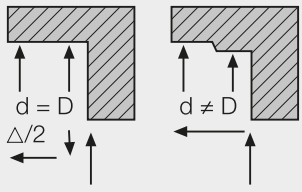


Effektiver Ausgleichsfaktor

Schneideinsatz DGT-N4.00-0.80
Klemmhalter DDGR 2020-4



Anwendung des Ausgleichsfaktors



Zu empfehlen | Nicht zu empfehlen

DGT-N-..., Längsdrehen und Einstechen
und
DGP-N-..., Präzisions Einstechen

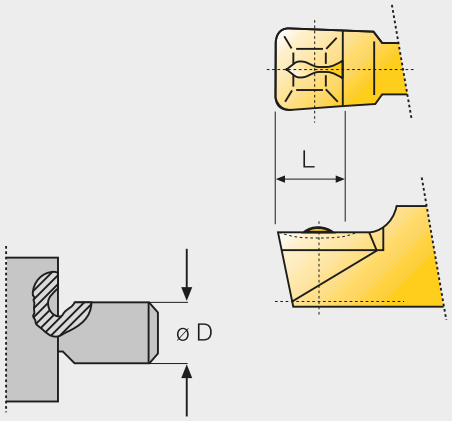
Maximale Schnitttiefe beim Längsdrehen ist für Schneideinsätze:

DGT-N-3...-...	L = 3 mm
DGT-N-4...-...	L = 3 mm
DGT-N-5...-...	L = 5 mm
DGT-N-6...-...	L = 5 mm
DGT-N-8...-...	L = 5 mm

DGT-N-..., Voll-Radius
Der Standard-Freiwinkel beträgt 7°. Diese Schneideinsätze können auch zum Profilieren und Auskammern eingesetzt werden.

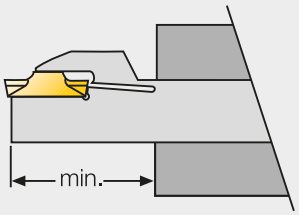
Außenbearbeitung
für Schneideinsätze-Breite 3 und 4 Ø D ≥ 32
für Schneideinsätze-Breite 5 und 6 Ø D ≥ 34

Innenbearbeitung
für Schneideinsätze-Breite 3 und 4 Ø D ≥ 50
für Schneideinsätze-Breite 5 und 6 Ø D ≥ 54

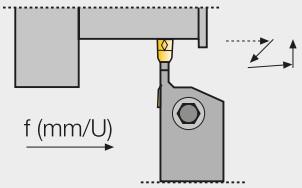


Anwendertipps CLAMP

Werkzeug-Zusammenstellung
Die maximale Abweichung beim Rüsten des Werkzeugs sollte 0,1 mm pro 100 mm Schaftlänge betragen. Klemmhalter immer mit minimaler Auskraglänge im Revolver spannen.



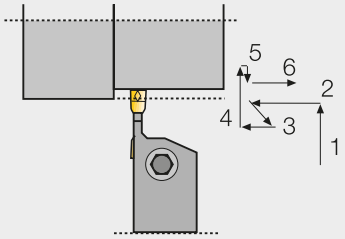
Bearbeitung
Beim Längsdrehen zum Werkstück hin ist kurz vor dem Durchbruch der dünnen Materialwand der Vorschub auf 0,1 mm (oder weniger) zu reduzieren, um plötzlichen Durchbruch und damit Bruchgefahr zu vermeiden; oder vorher anhalten und den Bund stechen (siehe Abbildung).



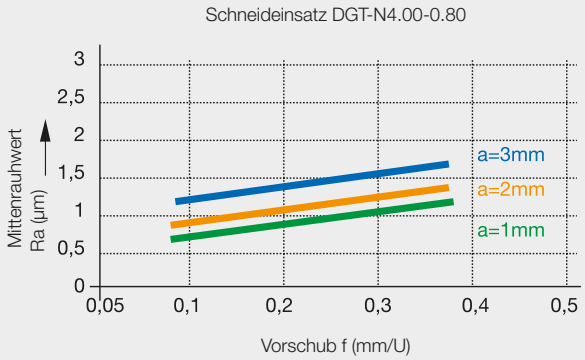
Vermeiden von Winkelfehlern beim Längsdrehen
Bearbeitungsvorgang: Längsdrehen nach rechts und nach links

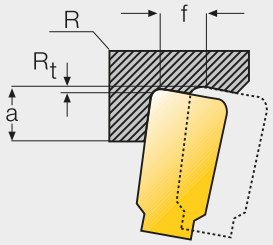
Längsdrehen nach links, Schruppen
1 Stechen bis zur erforderlichen Tiefe
2 Längsdrehen (Schruppen)
3 Zurückziehen des Werkzeugs unter einem Winkel von 45° etwa 0,5 mm vor Erreichen des Fertigmaßes. Diese Maßnahme beendet die Biegung und stellt die Winkeligkeit am Werkstück wieder her.
4 Radiales Stechen bis zur gewünschten Stechtiefe.

Längsdrehen nach rechts, Fertigdrehen
5 Zurückziehen des Werkzeugs unter Berücksichtigung des Ausgleichfaktors.
Siehe hierzu Diagramme vorherige Seite.
6 Längsdrehen nach rechts, Fertigdrehen.



Oberflächenrauhigkeit
Kohlenstoffstahl C 45 (1.0503)

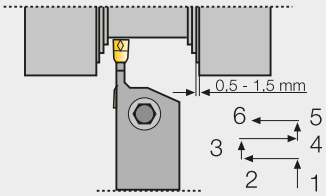




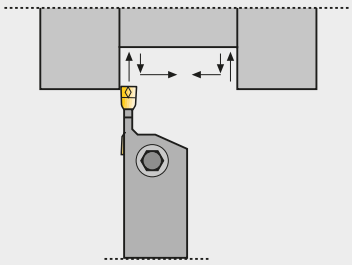
Verbesserter Spanfluss
Bearbeitungsvorgang: Längsdrehen nach rechts und nach links

1 Einstechen
2 Längsdrehen
3 Einstechen
4 Längsdrehen nach rechts bis 0,5 bzw. 1,5 mm vor Erreichen der Schulter, um Platz für besseren Spanabfluss zu schaffen.
5 Einstechen
6 Längsdrehen nach links (bis 0,5 bzw. 1,5 mm vor Erreichen der Schulter), wiederum um Platz für besseren Spanabfluss zu schaffen.

Hinweis: Die letzte Operation hat den Zweck, die Absätze zu beseitigen (siehe Winkeligkeit).



Winkeligkeit
Um die Winkeligkeit von Schulterflächen zu erreichen, empfehlen wir zwei Radialstech-Operationen von Außen nach Innen.



Wählen Sie bitte den Halter, der die maximale Unterstützung, entsprechend der Breite des Schneideinsatzes bietet.

Damit eine gute Wiederholgenauigkeit garantiert werden kann, muss der Plattensitz im Klemmhalter sauber sein und darf keine Beschädigungen aufweisen.

Ab- und Einstechen CLAMP

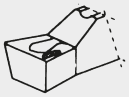
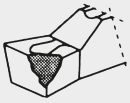
zum Längsdrehen, Schnittgeschwindigkeiten Vc in m/min (Richtwerte)

ISO	Werkstoff		Härte (Brinell)	DC 210 DGT-N Vorschub f 0,08-0,4 mm/U	DC 7400 DGT-N 3/4, DGTI-N 3/4, DDFT 3/4 Vorschub f 0,1-0,35 mm/U	DC 7400 DGT-N 5/6/8, DGTI- 5/6/8 Vorschub f 0,25-0,5 mm/U
P	Kohlenstoff-Stähle	0,2%	150		170-100	160-95
		0,24%	190		160- 90	150-80
		0,83%	250		150- 80	140-70
	legierte Stähle		-200		150- 80	140-70
			200-250		140- 75	135-65
			250-325		130- 70	125-60
			325-375		100- 40	95-40
			375-425		60- 30	55-30
	Stahlguss		-150	140-90	105- 90	100-70
			150-200	130-80	80- 60	75-55
			200-250	120-60	70- 50	60-45
M	INOX Stähle		175-225		135- 80	125-70

zum Einstechen, Schnittgeschwindigkeiten Vc in m/min (Richtwerte)

ISO	Werkstoff		Härte (Brinell)	DC 210 Vorschub f mm/U 0, 05-0,15	DC 554 Vorschub f mm/U 0,05-0,15	DC 7400 Vorschub f mm/U 0,05-0,15
P	Kohlenstoff-Stähle	0,2%	150	80-60	170-110	170-140
		0,24%	190	75-55	150-100	165-125
		0,83%	250	70-50	140- 85	145-110
	legierte Stähle		-200		140- 85	145-110
			200-250		140- 70	120- 95
			250-325		110- 60	110- 90
			325-375		100- 50	80- 60
			375-425		60- 40	65- 50
	Stahlguss		-150	100-70	130- 70	160-135
			150-200	90-60	120- 70	130-105
			200-250	80-50	100- 60	105- 85
M	INOX Stähle	mart.	175-225		150-100	160-135
		mart.	275-325		115- 70	130-110
		aust.	135-175		130- 60	140-100

Fehlererkennung und Abhilfe CLAMP

	Problem		mögliche Ursache	Abhilfe
Schneideneinsatzbruch und Standzeitprobleme	1 extremer Freiflächenverschleiß kurze Standzeit		zu hohe Schnittgeschwindigkeit. Hartmetallsorte mit zu geringer Verschleißfestigkeit	Schnittgeschwindigkeit reduzieren; härtere oder beschichtete Hartmetallsorte einsetzen
	2 Kolkverschleiß, kurze Standzeit		hohe Schnitttemperaturen der Spanfläche aufgrund hoher Schnittgeschwindigkeit und großen Vorschüben	Schnittgeschwindigkeit und Vorschub reduzieren, beschichtete Hartmetallsorte einsetzen
	3 Schneideinsatz-bruch		zu hohe Belastung des Schneideinsatzes., Schneidenbreite zu schmal. Hartmetallsorte zu spröde	breiteren Schneideinsatz benutzen, Schnittgeschwindigkeit und Vorschub reduzieren, zähere Hartmetallsorte einsetzen
Spankontrolle	lange wirre Späne wickeln sich um Werkzeug oder Werkstück und stören den Arbeitsablauf		Schnitttiefe zu gering, Vorschub zu niedrig, Schneideinsatz zu breit, Eckenradius des Schneid-einsatzes zu groß	Schnitttiefe steigern, Vorschub erhöhen, schmaleren Schneideinsatz, Schneideinsatz mit kleinerem Eckenradius benutzen, Spanbereich prüfen.
Oberflächengüte	1 schlechte Oberflächengüte		zu geringe Schnitttiefe, d.h. Schnitttiefe geringer als der Eckenradius des Schneideinsatzes	Schnitttiefe mindestens auf das Maß des Eckradius erhöhen
	2 Schwankungen und schlechte Oberflächen-Qualität		starker Kolkverschleiß führt zur Beschädigung der Hauptschneide und damit zu Ausbröckelungen	Vorschub erhöhen bis ausreichend großer Nebeneinstellwinkel erreicht wird, vor Bearbeitungsbeginn überprüfen, ob die vordere Schneidkante parallel zum Werkstück verläuft

Hartmetallqualitäten D CLAMP

	D-Clamp-Qualität	ISO	Physikalische Eigenschaften	Werkstoff	Empfohlener Anwendungsbereich
unbeschichtet	**DC 210**	K10-K20	unbesch. Qualität hohe Verschleißfestigkeit	Stahlguss Grauguss Temperguss Nichteisen-Metalle	zum Einstechen und Auskammern mit mittleren und großen Spanquerschnitten , mittlere Schnittgeschwindigkeiten und Vorschübe
beschichtet	**DC 554**	P25-P45	PVD-beschichtet, TiCN	Stahl Stahlguss INOX Stahl	mittlere bis große Spanquerschnitte, hohe Vorschübe bei mittleren Schnittgeschwindigkeiten, unterbrochene Schnitte
	DC 7400	P20-P40	CVD beschichtet Multilayer TiC+TiCN+TiN	Stahl Stahlguss INOX Stahl	eine sehr zähe Hartmetallsorte, die durch ihre hohe Verschleißfestigkeit, hohe Schnittgeschwindigkeiten und Vorschübe erlaubt

Hartmetallqualitäten D GRIP

Empfohlene Einsatzdaten: Bei Befolgung der nachstehenden Empfehlungen für den Gebrauch des D-Grip-Abstechsystems kann eine maximale Leistungsfähigkeit dieses Produktes sichergestellt werden.

- Wir empfehlen den Einsatz von Kühlmitteln.
- Schnittgeschwindigkeiten basieren auf einem Freiflächenverschleiß VB = 0,25 mm und 15 Min. Standzeit.
- Wenn bei Stangenmaterial bis zur Mitte abgestochen wird, muss die Schneide 0,1 bis 0,15 mm über Mitte stehen
- Der Minimalvorschub ist dann erreicht, wenn ein spiralförmiger Span entsteht.
- An CNC-Maschinen sollte der Vorschub auf 0,05 mm pro Umdr. reduziert werden, wenn der Abstand zur Mitte des Werkstückes die Schneidbreite der HM-Platte erreicht hat.
- Für kleine Stechbreiten und Schnittwinkel von 4°, 8° oder 15° sollten niedrigere Vorschübe angewandt werden.

Qualitäten für Ab- und Einstechen

Duracarb-Qualität	ISO	Physikalische Eigenschaften	Werkstoff	Empfohlener Anwendungsbereich
DC340	P40	HRa 90.9 BBF 2600 N/mm² 13.25 g/cm³	Stahl, Stahlguss, INOX austenitischer Stahl, INOX Stahlguss.	Geeignet für alle Bearbeitung; mit niedrigen Schnittgeschwindigkeiten bei großem Vorschub.
DC210	K10-K20	HRa 92.5 BBF 1900 N/mm² 15.05 g/cm3	Gusseisen mit Lamellengraphit, Temperguss Aluminium-Silicium, Kupfer und hochhitzebeständige Legierung.	Universalqualität für das Ab- und Einstechen.
DC9340	P20-P40	TiCN, PVD	Kohlenstoffstahl, Stahl, Stahlguss, INOX Stahl	Sehr flexible Qualität mit hoher Verschleißfestigkeit

Schnittgeschwindigkeiten und Vorschübe für Stahl und legierte Stähle

ISO	Werkstück		Härte/HB	Schnittgeschwindigkeit (m/min) DC 340 P40	Schnittgeschwindigkeit (m/min) DC 9340 P20 -P40	Vorschub mm/U KGTN/R/L 2 / 2.4	3 / 4	4.8 / 5 / 6	8 / 9
P	**Kohlenstoff-stähle**	0,2 % C 0,45 % C 0,83 % C	150 190 250	80 - 125 65 - 110 65 - 120	120 - 180 100 - 165 75 - 145	0,05 - 0,20 0,05 - 0,20 0,05 - 0,15	0,10 - 0,35 0,10 - 0,30 0,10 - 0,25	0,15 - 0,45 0,15 - 0,40 0,15 - 0,35	0,25 - 0,80 0,25 - 0,70 0,20 - 0,40
P	**legierte Stähle**		150 - 200 200 - 275 275 - 325 325 - 375 375 - 425	65 - 120 45 - 80 40 - 75 35 - 50 30 - 40	75 - 145 70 - 120 60 - 115 55 - 75 45 - 60	0,05 - 0,15 0,05 - 0,15 0,05 - 0,15 0,05 - 0,10 0,05 - 0,08	0,10 - 0,30 0,10 - 0,30 0,10 - 0,25 0,10 - 0,20 0,10 - 0,15	0,15 - 0,40 0,15 - 0,35 0,10 - 0,30 0,10 - 0,25 0,10 - 0,20	0,25 - 0,70 0,20 - 0,60 0,20 - 0,50 0,20 - 0,50 0,15 - 0,30
M	**INOX Stähle**	ferritisch	135 - 175 175 - 225	- 75 - 120	- 110 - 180	0,05 - 0,15 0,05 - 0,15	0,10 - 0,25 0,10 - 0,25	0,13 - 0,35 0,13 - 0,35	0,15 - 0,60 0,20 - 0,50
M		martensitisch	275 - 375 375 - 425	50 - 90 -	75 - 135 -	0,05 - 0,10 0,05 - 0,15	0,10 - 0,20 0,10 - 0,20	1,10 - 0,30 0,10 - 0,25	0,20 - 0,50 0,15 - 0,40
M		austenitisch	135 - 175	60 - 105	90 - 160	0,05 - 0,15	0,10 - 0,20	0,10 - 0,25	0,15 - 0,40

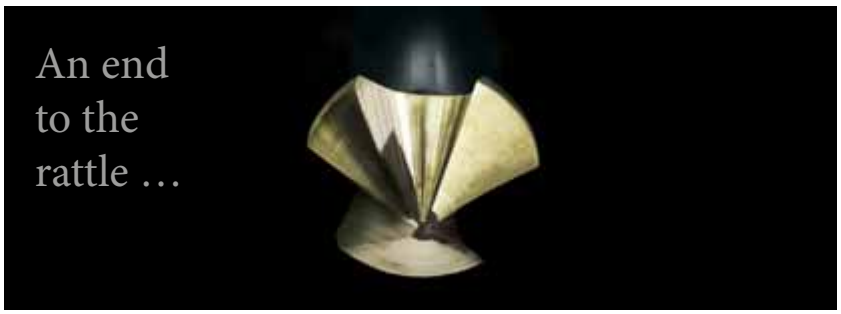
Schnittgeschwindigkeiten und Vorschübe für Gusseisen und NE-Materialien

ISO	Werkstück	Härte	Schnittgeschwindigkeit (m/min) DC 210 K10-K20	Vorschub mm/U KGTN/R/L 2 / 2.4	3 / 4	4.8 / 5 / 6	8 / 9
K	**Grauguss**	180 HB 250 HB	70 - 100 50 - 70	0,05 - 0,20 0,05 - 0,15	0,10 - 0,30 0,10 - 0,25	0,15 - 0,20 0,15 - 0,30	0,25 - 0,50 0,20 - 0,45
N	**Bronze**	80 - 100 HB	100 - 200	0,05 - 0,10	0,08 - 0,20	0,10 - 0,25	0,15 - 0,45
N	**Magnesium**	40 - 90 HB	350 - 500	0,05 - 0,10	0,08 - 0,20	0,10 - 0,25	0,15 - 0,30
N	**Aluminium**	50 -150 HB	250 - 450	0,05 - 0,06	0,05 - 0,20	0,08 - 0,25	0,10 - 0,35

ATORN® Wendeplatten für Einstech-System DED

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

ISO	Werkstoff	Festigkeit N/mm² oder HB	Vc m/min.	f mm/U	Kühlung
P	Allgemeiner Baustahl	≤ 500	180	0,05 - 0,10	Emulsion
	Allgemeiner Baustahl	500 - 800	160	0,5 - 0,10	Emulsion
	Automatenstahl	≤ 800	210	0,05 - 0,12	Emulsion
	Automatenstahl	800 - 1000	180	0,05 - 0,12	Emulsion
	Einsatzstahl unlegiert	≤ 800	250	0,05 - 0,10	Emulsion
	Einsatzstahl legiert	800 - 1000	180	0,05 - 0,10	Emulsion
	Einsatzstahl legiert	1000 - 1200	140	0,05 - 0,10	Emulsion
	Nitrierstahl	800 - 1000	180	0,05 - 0,10	Emulsion
	Nitrierstahl	1000 - 1200	140	0,05 - 0,10	Emulsion
	Vergütungsstahl unlegiert	≤ 800	210	0,05 - 0,10	Emulsion
	Vergütungsstahl unlegiert	800 - 1000	180	0,05 - 0,10	Emulsion
	Vergütungsstahl legiert	800 - 1000	160	0,05 - 0,07	Emulsion
	Vergütungsstahl legiert	1000 - 1200	120	0,05 - 0,07	Emulsion
	Werkzeugstahl für Kaltarbeit		140	0,05 - 0,10	Emulsion
	Werkzeugstahl für Warmarbeit		120	0,05 - 0,10	Emulsion
	Schnellarbeitsstahl	650 - 1000	80	0,05 - 0,07	Emulsion
	Federstahl	≤ 350 HB	60	0,05 - 0,07	Emulsion
M	Stahl und Stahlguss rostfrei geschwefelt	≤ 850	160	0,03 - 0,08	Emulsion
	Nichtrostender Stahl, ferritisch	≤ 850	120	0,03 - 0,08	Emulsion
	Nichtrostender Stahl, martensitisch	≤ 850	140	0,03 - 0,08	Emulsion
	Nichtrostender Stahl, austenitisch	≤ 850	120	0,03 - 0,08	Emulsion
K	Grauguss	≤ 240 HB	110	0,05 - 0,10	Emulsion
	Grauguss	≤ 300 HB	95	0,05 - 0,10	Emulsion
	Kugelgraphitguss	≤ 240 HB	100	0,05 - 0,10	Emulsion
	Kugelgraphitguss	≤ 300 HB	65	0,05 - 0,10	Emulsion
	Temperguss weiß	≤ 240 HB	110	0,05 - 0,10	Emulsion
	Temperguss weiß	≤ 300 HB	60	0,05 - 0,10	Emulsion
	Temperguss schwarz	≤ 240 HB	110	0,05 - 0,10	Emulsion
	Temperguss schwarz	≤ 300 HB	60	0,05 - 0,10	Emulsion
N	Reinkupfer	≤ 400	180	0,05 - 0,12	Petroleum
	Messing kurzspanend	≤ 600	180	0,05 - 0,12	Petroleum
	Messing langspanend	≤ 600	160	0,05 - 0,12	Petroleum
	Bronze kurzspanend	≤ 600	180	0,05 - 0,12	Petroleum
	Bronze kurzspanend	≤ 600 - 850	160	0,05 - 0,12	Petroleum
	Bronze langspaned	≤ 850	160	0,05 - 0,12	Petroleum
	Bronze langspaned	800 - 1000	140	0,05 - 0,12	Petroleum
	Rotguss		160	0,05 - 0,12	Petroleum
	Magnesiumlegierungen	≤ 850	250	0,05 - 0,12	Emulsion
	Reinaluminium	≤ 400	800	0,05 - 0,12	Emulsion
	ALU - Knetlegierungen	≤ 450	600	0,05 - 0,12	Emulsion
	ALU - Gusslegierungen < 12 Si	≤ 600	500	0,05 - 0,12	Emulsion
	ALU - Gusslegierungen > 12 Si	≤ 600	600	0,05 - 0,12	Emulsion
	Thermoplaste		120	0,05 - 0,12	Emulsion
	Duroplaste		180	0,05 - 0,12	Emulsion
	Glas- / Kohlefaserverstärkt		80	0,05 - 0,12	Emulsion
S	hochwarmfeste Stähle	≤ 1200	50	0,03 - 0,08	Emulsion
	Sonderlegierungen	≤ 850	40	0,03 - 0,08	Emulsion
	Reintitan	≤ 850	50	0,03 - 0,08	Emulsion
	Titanlegierungen	≤ 850 -1200	30	0,03 - 0,08	Emulsion



… caused by uneven divisions

ATORN®
High quality for great performance

SARA® SARA-MINI Ein- und Abstechsystem für Innen- und Außenbearbeitung

Außenbearbeitung: **rechte** Platten und **rechte** Halter bzw.
linke Platten und **linke** Halter

Innenbearbeitung: **rechte** Platten und **linke** Halter bzw.
linke Platten und **rechte** Halter

Für Abstecharbeiten bis zum Zentrum des Werkstückes muss die Schneide 0,10 - 0,12 mm über Mitte und die Platte senkrecht zum Werkstück stehen.

Empfohlen wird eine permanente Kühlung über die gesamte Schnittfläche.
Besonders geeignet für automatischen Vorschub, Handvorschub kann die Standzeit reduzieren.
Beim Einsatz von Platten mit 7° Freiwinkel sollte der Vorschub um 10-15 % reduziert werden.

Anwendungsbereiche Hartmetall-Qualitäten

	unbeschichtet
K10	Besonders geeignet für den Einsatz bei Guss und Nichteisenmetallen

	beschichtet
P25 PVD	TiN-Beschichtung, besonders geeignet für die Bearbeitung von Stahl (Einstechen bis zum Zentrum) sowie für unterbrochene Schnitte und zum Abstechen und Fertigen von Nuten bei der Stahlbearbeitung
P40 PVD	TiN-Beschichtung, besonders geeignet für die Bearbeitung von Stahl (Einstechen bis zum Zentrum) sowie für unterbrochene Schnitte

Empfohlene Schnittgeschwindigkeiten
Qualität P25 PVD :

ISO	Material	Härte HB	Schnittgeschwindigkeit (m/min) bei Vorschub f 0,03 mm	0,05 mm	0,10 mm
P	Kohlenstoffstahl	150	200	180	170
		190	160	150	120
		250	140	130	120
P	Legierter Stahl	200	145	135	130
		200 – 250	135	125	115
		250 – 325	110	105	100
		325 – 375	100	95	90
M	INOX Stähle				
	martensitisch	175 – 225	160	150	140
	austenitisch	135 – 175	160	150	140

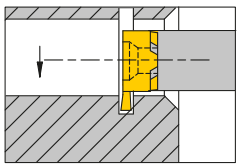
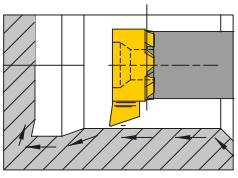
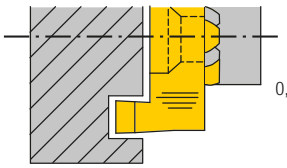
Qualität K10 :

ISO	Material	Härte HB	Schnittgeschwindigkeit (m/min) bei Vorschub f 0,03 mm	0,05 mm	0,10 mm
K	Guss	180	70	65	60
		250	55	50	45
N	Alu-Legierung	150 – 200	300	260	220
	vergütet	80 – 120	330	310	290
N	Bronze	120 – 200	130	115	100
	Bleilegierung	80 – 150	170	160	150
N	Kupfer	50 – 85	130	125	120
N	Magnesium	50 – 90	300	275	250
N	Hartgummi		150	140	130
N	Teflon		100	90	80
N	PVC		170	160	150
N	Acrylglas		100	90	80

P40 PVD: Schnittdaten um ca. 10% reduzieren

ATORN® Stechdrehen und Gewindeschneiden mit *MINI-CUT*

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

ISO	Werkstoffgruppe	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubbereich f mm/U
P	unlegierter Baustahl	9 S 20 ST 37 ST 50	1.0711 1.0037 1.0050	120 - 200	 0,01-0,03 mm
P	niedriglegierter Stahl	ST 70 16 MnCr 5 25 CrMo 4	1.0070 1.7131 1.7218	80 - 190	
P	hochlegierter Stahl	90 MnCrV 8 42 CrMoV X 40 CrMoS 17	1.2842 1.7225 1.2344	80 - 160	
M	INOX Stahl (martensitisch)	X 6 CrA 13 X 6 CrTi 17 X 12 CrMoS 17	1.4002 1.4510 1.4104	80 - 160	 0,03-0,10 mm
M	INOX Stahl (austenitisch)	20 CrNi 17 2 X 5 CrNi 18 10 X 6 CrNiMoTi 17 12 2	1.4057 1.4301 1.4571	80 - 140	
K	Grauguss	GG 20 GG 40	0.6020 0.6040	60 - 180	
K	Grauguss mit Kugelgraphit	GGG 40 GGG 70	0.7040 0.7070	60 - 180	
K	Temperguss	GTW 35 GTS 55	0.8035 0.8155	60 - 180	
N	Aluminium 0,5 10% Si Kupfer	MS 58 G-MgAl9Zn 1	2.0402 3.5912	100 - 800	 0,01-0,03 mm
S	hochwarmfeste Legierungen	TiAl6Sn 2	3.7174	30 - 80	
S	Titanlegierungen	NiCr12Al6MoNb	2.4670	30 - 80	

Schneideinsätze mini-børe

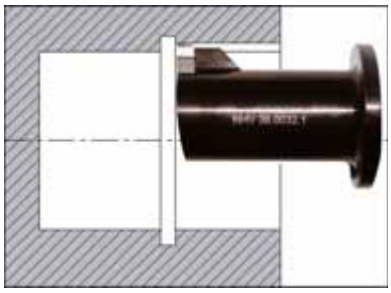
Innengewindedrehen ISO

Schneidstoff HC 8615 TiN		P					M	K	N
		Stahlwerkstoffe Festigkeit N/mm²					INOX Stahl	Grauguss	Aluminium
		400 - 550	500 - 700	700 - 850	850 - 1150	> 1150			
Vc m/min		160	140	120	90	70	90	100	300
Steigung: P mm	Gang/Zoll	**Anzahl der Schnitte**							
0,50	48	6	6	7	7	8	8	7	6
0,75	32	8	8	9	9	10	10	9	8
1,00	24	10	10	12	12	12	12	12	10
1,25	20 - 19	12	12	14	14	15	15	14	12
1,50	16	15	15	17	17	18	18	17	15

Innenstechdrehen **Vorschub: f = 0,01 bis 0,025 mm/U, * Vorschub: f = 0,02 - 0,06 mm/U**

ISO	Werkstoffgruppe	Härte	Festigkeit N/mm²	Schnittgeschwindigkeit Vc m/min			
				K10F	CN45F	AL41F	X2CA*
P	Kohlenstoffstähle C = 0,4 - 0,8 %		600 - 1000	30 - 100	40 - 180	80 - 200	
P	Stahlguss	150 - 300 HB	500 - 900	30 - 110	40 - 180	70 - 180	
P	legierte Stähle		500 - 1400	30 - 90	40 - 140	70 - 160	
M	INOX Stähle Cr = 12 - 18 %	150 - 250 HB		30 - 90	40 - 140	80 - 160	
M	hochlegierte, hochwarmfeste, INOX austenitische Stähle		600 - 1200	30 - 90	40 - 140	80 - 160	
K	Grauguss	250 - 300 HB		30 - 100	40 - 140	30 - 180	
K	Sphäroguss ferritisch / perlitisch	140 - 180 HB / 230 - 280 HB		30 - 100	40 - 140	30 - 180	
K	Temperguss	160 - 240 HB		30 - 100	40 - 140	30 - 180	
N	Aluminium und Al-Si-Legierungen	50 - 140 HB		90 - 200		80 - 700	
N	Kupfer, Messing, Bronze			90 - 200		80 - 700	
N	Kunststoffe			90 - 200		80 - 700	
H	gehärteter Stahl	46 - 66 HRc					70 - 100

ATORN® Schneideinsätze und Schneidplatten zum Nutstoßen

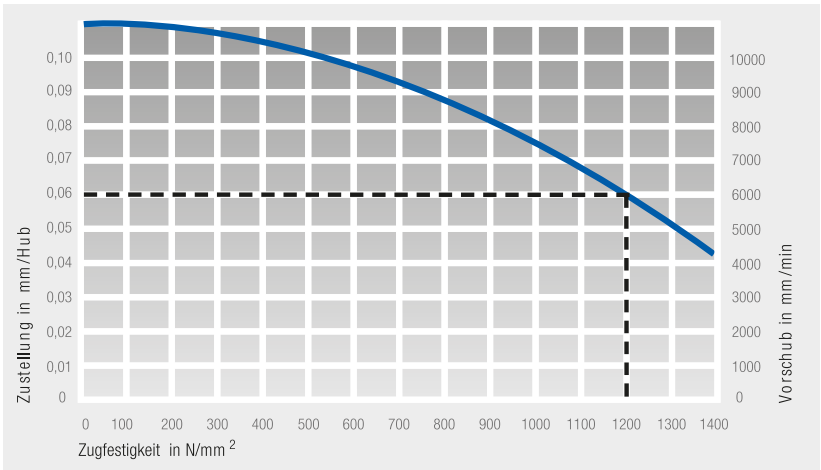


Hinweise

- Achten Sie auf den Freistich am Ende der geräumten Nut, damit das Werkzeug frei auslaufen kann.
- Während das Werkzeug zurückfährt, sollte die Schneide den Nutengrund nicht berühren.
- Das Ausjustieren des Werkzeuges ist unerlässlich. Überprüfen Sie deshalb den Durchmesser des Werkstückes genau, bevor sie den ersten Einsatz fahren.
- Wenn Sie Öl oder eine Emulsion verwenden, werden die Späne vom Werkstück weggespült und Sie erzielen gleichzeitig eine perfekte Oberfläche.
- Wenn Sie das Werkzeug nach oben hin ausrichten, fallen die Späne automatisch nach unten, von der Schneide weg.
- Vermeiden Sie einen unterbrochenen Schnitt.

Richtwerte zum Nutenstoßen

Beispiel: Vergütungsstahl z.B. 42CrMo4 mit 1200 N/mm²
– Zustellung pro Hub 0,05-0,06 mm
– Vorschub 5500 mm/min



Werkstoffaufwurf beim Rändelformen – spanlose Umformung

Unsere Erfahrungswerte für die Vergrößerung des Werkstückdurchmessers
Diese Angaben sind Erfahrungswerte. Abweichungen in Abhängigkeit vom Material sind möglich.

Rändelprofil nach DIN 82: **RAA (Rändelprofil am Werkstück)**
Rändelräder nach DIN 403: AA (Rändelprofil am Rändelrad)


RAA

	Teilung		0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,2	1,5	1,6	1,8	2,0
	Werkstoff	Werkstück-ø	Vergrößerung des Werkstück-ø in mm												
P	Automatenstahl	5	0,08	0,14	0,18	0,22	0,27	0,29	0,33	0,35	0,50	-	-	-	-
		15	0,08	0,14	0,18	0,23	0,30	0,40	0,41	0,44	0,50	0,60	0,65	0,67	0,70
		25	0,08	0,15	0,23	0,24	0,28	0,35	0,38	0,44	0,53	0,62	0,70	0,70	0,98
M	INOX Stahl	5	0,10	0,15	0,20	0,25	0,28	0,30	0,35	0,42	0,41	-	-	-	-
		15	0,10	0,15	0,19	0,25	0,30	0,34	0,40	0,45	0,51	0,60	-	-	-
		25	0,10	0,14	0,20	0,26	0,31	0,33	0,38	0,43	0,50	0,62	-	-	-
N	Messing	5	0,08	0,12	0,18	0,20	0,21	0,22	0,23	0,25	0,28	-	-	-	-
		15	0,10	0,14	0,20	0,26	0,28	0,29	0,31	0,35	0,41	0,44	0,48	0,50	0,55
		25	0,10	0,15	0,20	0,25	0,28	0,30	0,32	0,36	0,43	0,46	0,50	0,53	0,53
	Aluminium	5	0,09	0,15	0,19	0,23	0,28	0,30	0,34	0,41	0,40	-	-	-	-
		15	0,10	0,15	0,19	0,26	0,29	0,33	0,39	0,45	0,51	0,57	0,65	-	-
		25	0,09	0,15	0,19	0,26	0,29	0,32	0,37	0,45	0,52	0,59	0,65	0,78	0,75

Rändelprofil nach DIN 82: **RBL 30°/RBR 30° (Rändelprofil am Werkstück)**
Rändelräder nach DIN 403: BR 30°/BL 30° (Rändelprofil am Rändelrad)


RBL 30


RBR 30

	Teilung		0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,2	1,5	1,6	1,8	2,0
	Werkstoff	Werkstück-ø	Vergrößerung des Werkstück-ø in mm												
P	Automatenstahl	5	0,11	0,15	0,20	0,24	0,28	0,34	0,38	0,45	0,55	-	-	-	-
		15	0,11	0,15	0,22	0,26	0,30	0,35	0,42	0,45	0,52	0,67	0,73	0,75	0,85
		25	0,11	0,14	0,23	0,25	0,28	0,36	0,42	0,45	0,56	0,70	0,72	0,78	0,90
M	INOX Stahl	5	0,09	0,14	0,19	0,25	0,31	0,34	0,39	0,45	0,52	-	-	-	-
		15	0,12	0,20	0,23	0,31	0,35	0,40	0,45	0,51	0,62	0,66	0,73	0,85	0,97
		25	0,12	0,18	0,24	0,27	0,37	0,39	0,43	0,49	0,59	0,80	0,84	0,93	0,96
N	Messing	5	0,10	0,14	0,20	0,23	0,24	0,28	0,30	0,33	0,37	-	-	-	-
		15	0,10	0,15	0,21	0,23	0,24	0,31	0,36	0,41	0,47	0,53	0,55	0,64	0,63
		25	0,11	0,15	0,22	0,22	0,25	0,30	0,35	0,40	0,45	0,55	0,61	0,62	0,68
	Aluminium	5	0,12	0,14	0,21	0,24	0,29	0,34	0,39	0,41	0,51	-	-	-	-
		15	0,12	0,18	0,23	0,26	0,36	0,40	0,43	0,50	0,56	0,56	0,61	0,74	0,75
		25	0,12	0,16	0,25	0,28	0,37	0,39	0,46	0,50	0,58	0,77	0,82	0,84	0,96

Rändelprofil nach DIN 82: **RGE 30° (Rändelprofil am Werkstück)**
Rändelräder nach DIN 403: BR 30° + BL 30° (Rändelprofil am Rändelrad)


RGE

	Teilung		0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,2	1,5	1,6	1,8	2,0
	Werkstoff	Werkstück-ø	Vergrößerung des Werkstück-ø in mm												
P	Automatenstahl	5	0,12	0,16	0,20	0,25	0,33	0,41	0,45	0,55	0,65	-	-	-	-
		15	0,13	0,22	0,30	0,32	0,35	0,41	0,43	0,52	0,62	0,67	0,81	0,86	0,95
		25	0,12	0,18	0,28	0,32	0,35	0,38	0,43	0,55	0,67	0,77	0,87	0,98	0,98
M	INOX Stahl	5	0,11	0,20	0,25	0,30	0,36	0,39	0,41	0,55	0,55	-	-	-	-
		15	0,10	0,14	0,21	0,24	0,29	0,34	0,40	0,43	0,53	0,66	0,72	0,70	0,88
		25	0,11	0,13	0,20	0,25	0,28	0,32	0,41	0,44	0,52	0,67	0,70	0,71	0,83
N	Messing	5	0,12	0,13	0,16	0,20	0,24	0,28	0,30	0,32	0,38	-	-	-	-
		15	0,12	0,16	0,18	0,24	0,28	0,30	0,37	0,39	0,40	0,48	0,52	0,55	0,63
		25	0,12	0,17	0,22	0,23	0,27	0,30	0,34	0,38	0,41	0,48	0,50	0,63	0,63
	Aluminium	5	0,10	0,15	0,21	0,25	0,33	0,36	0,41	0,50	0,57	-	-	-	-
		15	0,11	0,14	0,20	0,25	0,28	0,33	0,39	0,43	0,54	0,67	0,71	0,76	0,89
		25	0,11	0,15	0,22	0,25	0,29	0,34	0,40	0,44	0,53	0,68	0,69	0,71	0,88



Rändelwerkzeuge

Diese Angaben sind Richtwerte. Die optimalen Werte sind in der Anwendung zu suchen.
Auf eine gute Kühlung/Schmierung ist zu achten, um das Einwalzen von Spänen zu verhindern und die Standzeit der Rändel zu erhöhen.

Rändelfräsen – spanabhebende Bearbeitung

	Werkstoff	Werkstück-ø mm	Rändelrad-ø mm	Vc m/min		f mm/U					
						Radial		Axial Teilung			
				von	bis	von	bis	> 0,3 < 0,5	> 0,5 < 1,0	> 1,0 < 1,5	> 1,5 < 2,0
P	Automatenstahl	< 10	10 / 15	40	70	0,04	0,08	0,14	0,09	0,06	0,05
		10 - 40	15 / 25	50	90	0,05	0,10	0,20	0,13	0,10	0,07
		40 - 100	25 / 32 / 42	65	110	0,05	0,10	0,25	0,18	0,12	0,08
		100 - 250	25 / 32 / 42	65	110	0,05	0,10	0,30	0,20	0,13	0,09
		> 250	32 / 42	80	100	0,05	0,10	0,32	0,21	0,14	0,10
M	INOX Stahl	< 10	10 / 15	22	40	0,04	0,08	0,12	0,08	0,05	0,04
		10 - 40	15 / 25	30	50	0,05	0,10	0,17	0,11	0,09	0,06
		40 - 100	25 / 32 / 42	35	60	0,05	0,10	0,21	0,15	0,10	0,07
		100 - 250	25 / 32 / 42	35	60	0,05	0,10	0,26	0,17	0,11	0,08
		> 250	32 / 42	45	55	0,05	0,10	0,27	0,18	0,12	0,09
N	Messing	< 10	10 / 15	55	100	0,04	0,08	0,15	0,09	0,06	0,05
		10 - 40	15 / 25	70	125	0,05	0,10	0,21	0,14	0,11	0,07
		40 - 100	25 / 32 / 42	90	155	0,05	0,10	0,26	0,19	0,13	0,08
		100 - 250	25 / 32 / 42	90	155	0,05	0,10	0,32	0,21	0,14	0,09
		> 250	32 / 42	115	140	0,05	0,10	0,34	0,22	0,15	0,11
	Aluminium	< 10	10 / 15	70	120	0,04	0,08	0,18	0,11	0,08	0,06
		10 - 40	15 / 25	80	150	0,05	0,10	0,25	0,16	0,13	0,09
		40 - 100	25 / 32 / 42	110	160	0,05	0,10	0,31	0,23	0,15	0,10
		100 - 250	25 / 32 / 42	110	160	0,05	0,10	0,38	0,25	0,16	0,11
		> 250	32 / 42	130	150	0,05	0,10	0,40	0,26	0,18	0,13

Rändelformen – spanlose Bearbeitung

	Werkstoff	Werkstück-ø mm	Rändelrad-ø mm	Vc m/min		f mm/U					
						Radial		Axial Teilung			
				von	bis	von	bis	> 0,3 < 0,5	> 0,5 < 1,0	> 1,0 < 1,5	> 1,5 < 2,0
P	Automatenstahl	< 10	10 / 15	20	50	0,04	0,08	0,20	0,13	0,08	0,07
		10 - 40	15 / 20	25	55	0,05	0,10	0,28	0,18	0,14	0,10
		40 - 100	20 / 25	30	60	0,05	0,10	0,35	0,25	0,17	0,11
		100 - 250	20 / 25	30	60	0,05	0,10	0,42	0,28	0,18	0,13
		> 250	25	30	60	0,05	0,10	0,45	0,29	0,20	0,14
M	INOX Stahl	< 10	10 / 15	15	40	0,04	0,08	0,14	0,09	0,06	0,05
		10 - 40	15 / 20	20	50	0,05	0,10	0,20	0,13	0,10	0,07
		40 - 100	20 / 25	25	50	0,05	0,10	0,25	0,18	0,12	0,08
		100 - 250	20 / 25	25	50	0,05	0,10	0,29	0,20	0,13	0,09
		> 250	25	25	50	0,05	0,10	0,31	0,21	0,14	0,10
N	Messing	< 10	10 / 15	30	75	0,04	0,08	0,22	0,14	0,09	0,08
		10 - 40	15 / 20	40	85	0,05	0,10	0,31	0,20	0,15	0,11
		40 - 100	20 / 25	45	90	0,05	0,10	0,39	0,28	0,18	0,12
		100 - 250	20 / 25	45	90	0,05	0,10	0,46	0,31	0,20	0,14
		> 250	25	45	90	0,05	0,10	0,49	0,32	0,22	0,15
	Aluminium	< 10	10 / 15	25	60	0,04	0,08	0,12	0,08	0,05	0,04
		10 - 40	15 / 20	30	65	0,05	0,10	0,17	0,11	0,08	0,06
		40 - 100	20 / 25	35	70	0,05	0,10	0,21	0,15	0,10	0,07
		100 - 250	20 / 25	35	70	0,05	0,10	0,25	0,17	0,11	0,08
		> 250	25	35	70	0,05	0,10	0,27	0,18	0,12	0,08



...dreams come true.

ATORN®
High quality for great performance