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1879–2024

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TOOL CATALOGUE

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Drilling tools

HSS twist drills

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Summary of icons used for drilling tools

INFO

Cutting material	HSS High-performance, high-speed steel	HSS-E High-performance, high-speed steel Cobalt-alloyed	VHM Solid carbide
Coating	TiN Titanium-nitride coating	TiCN Titanium-carbo-nitride coating	TiAlN Titanium-aluminium-nitride coating
Surface treatment	Nit. Nitrided surface	Vap. Vapour-treated surface (steam-treated)	
Type/profile	Typ N e.g. type N, for normal materials	Typ TLP e.g. type TLP Deep hole profile	Typ VA e.g. type VA for machining stainless steel
Standard	DIN 338 Complies with DIN 338	ISO 10898 Complies with ISO standard 10898	Werks-norm Manufactured in accordance with factory standard
Shank design	DIN 6535 HA Straight shank in accordance with DIN 6535 HA	Straight shank with Weldon clamping surface	MT shank
Drilling depth	3xD possible drilling depth at least 3 x diameter		
Point angle	118° Point angle of the drill is 118°		
Ground point	Cone-shaped shell	Pointed crosscut	Facet-ground
Spiral angle	15° Spiral angle is 15° right-hand twist	40° Tap 40° right-hand twist	
Form (centring drill)	A Form A For centring holes without protected centre	B Form B For centring holes with tapered protected centre	R Form R For centring holes with radius
Countersink angle	60° Countersink angle is 60°		
Thread	M metric thread	MF metric fine thread	BSW British Standard Whitworth
Thread depth	2,5xD possible thread depth 2.5 x nominal diameter		
Thread angle	60° Thread angle is 60°		
Chamfer	B 3,5-5 Tap with 3.5-5-way chamfer	Tap with spiral point	Tap straight-fluted; Forming tap with oil grooves
Threaded hole type	For blind-hole threads	For through-hole threads	For blind-hole and through-hole threads
Coolant bore version	Axial coolant outlet	Radial coolant outlet	
Cutting data	i Vc/fz Further information such as cutting data recommendations is available in the technical appendix		

Overview of drilling tools HSS / HSS-E / HSS-E-PM

	Centring drill bits									NC spotting drill bit	
											
Brand	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Drilling depth											
ISO application area	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N
Diameter range [mm]	0.5 - 10	0.8 - 10	1 - 5	0.75 - 5	2 - 4	M3 - M12	M4 - M24	1 - 6.3	1 - 6.3	3 - 20	3 - 20
DIN	DIN 333	DIN 333	DIN 333	WN	WN	DIN 332/2	DIN 332/2	DIN 333	DIN 333	ISO 10898	ISO 10898
Type	A	A	A	A, long	A, extra-long	A	A-FL	R	B		
Point angle	60°	60°	60°	60°	60°	60°	60°	60°	60°/120°	90°	90°
Cutting material	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E
Coating, surface treatment			TiAlN								TiN
Item number	100101....	100141....	100109....	100103....	100104....	102214....	102215....	100107....	100105....	100130....	100131....
Catalogue page	**55**	**55**	**55**	**56**	**56**	**57**	**57**	**57**	**58**	**58**	**58**

	NC spotting drill bit		Twist drill, short				Twist drills				
											
Brand	ATORN	ATORN	ATORN	ATORN		SARA	ATORN	ATORN	SARA	ATORN	ATORN
Drilling depth			3 x D	3 x D	3 x D	3 x D	3 x D	5 x D	5 x D	5 x D	5 x D
ISO application area	P M K S N	P M K S N	P M K N	P M K N	P M S N	P K S N H	P K N	P M K N	P K N	P K N	P M S N
Diameter range [mm]	3 - 20	3 - 20	1 - 12	1 - 13	1 - 20	2 - 16	13.5 - 25.0	0.05 - 1.50	0.5 - 16	0.4 - 20.0	1 - 16
DIN	ISO 10898	ISO 10898	DIN 1897	DIN 1897		DIN 8037		DIN 1899	DIN 338	DIN 338	DIN 338
Type			NV	NV	EX-SUS		N	N	N	N	N
Point angle	120°	120°	130°	130°	120° - 140°	118°	118°	118°	118°	118°	118°
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HM K10	HSS	HSS-E-PM	HSS	HSS	HSS
Coating, surface treatment		TiN	vap.	TiN	TiN		vap.		vap.	vap.	TiN
Item number	100120....	100121....	101055....	101051....	114045....	110501....	101080....	101075....	101405....	101005....	101008....
Catalogue page	**58**	**58**	**59**	**59**	**62**	**101**	**63**	**64**	**65**	**65**	**65**

	Twist drills										
											
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Drilling depth	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D
ISO application area	N	P M K N	P M S N	P M K	P M K N	P M K N H	P M K S N	P M K N	P M K N	P M K N	P M K N H
Diameter range [mm]	1 - 14	1 - 20	1 - 16	1 - 16	1 - 12	1 - 13	2 - 13	1 - 13	1 - 13	1 - 13	1 - 14
DIN	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338
Type	W	N	Ti	TLP	TLP	NV	VA	N	N	N	TLP
Point angle	130°	118°	130°	130°	130°	135°	135°	118°	118°	118°	130°
Cutting material	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E-PM
Coating, surface treatment		vap.		TiN	TiAlN				TiN	vap.	TiN
Item number	101017....	101006....	101010....	101014....	101012....	101016....	101076....	102669....	102668....	102667....	101095....
Catalogue page	**69**	**70**	**70**	**74**	**74**	**76**	**78**	**80**	**80**	**80**	**81**

	Twist drills	Twist drill, long				Deep-hole drill				Twist drill with MT shank	
											
Brand		ATORN	ATORN	ATORN	ATORN	ATORN				ATORN	ATORN
Drilling depth	5 x D	10 x D	10 x D	10 x D	10 x D	> 10 x D	10 x D	15 x D	20 x D	5 x D	5 x D
ISO application area	P M S N	P K N	P K N	P M K N	P M S N	P K N	P K	P K	P K	P M K N	P M K N
Diameter range [mm]	2 - 20	0.6 - 16.0	1 - 12	1 - 16	1 - 12	2 - 10	1.6 - 12	1.6 - 12	1.6 - 12	5 - 50	12 - 35
DIN	WN	DIN 340	DIN 340	DIN 340	DIN 340	DIN 1869	WN	WN	WN	DIN 345	DIN 345
Type	EX-SUS	N	TLP	TLP	VA	TLP	TDXL	TDXL	TDXL	N	N
Point angle	120° - 140°	118°	130°	130°	130°	130°	120°	120°	120°	118°	118°
Cutting material	HSS-E-V3	HSS	HSS	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS	HSS-E
Coating, surface treatment	TiN	vap.	TiN	Nit.			WXL	WXL	WXL	vap.	vap.
Item number	114050....	101060....	101061....	101063....	101062....	101070....	101099....	101100....	101101....	101505....	101507....
Catalogue page	**82**	**84**	**85**	**86**	**88**	**89**	**90**	**91**	**92**	**93**	**94**

	Twist drill with MT shank				Step drill bit					Sheet metal peeling drill	
											
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	SARA	SARA	SARA
Drilling depth	5 x D	10 x D	> 10 x D								
ISO application area	P M S N	P K N	P M K S N	P K N	P K	P K	P K	P M K N	P M K N	P M K N	P M K N
Diameter range [mm]	12.5 - 23.0	10 - 50	8 - 25	7.8 - 40.0	M3 - M10	M3 - M10	M3 - M10	4 - 30	4 - 30	3 - 61	3 - 61
DIN	DIN 345	DIN 341	WN	DIN 343	DIN 8374	DIN 8374	DIN 8374	WN	WN	WN	Wn
Type	VA	N	TLP	N		Fine		STEP	STEP	TS	TS
Point angle	130°	118°	130°		90°	90°	180°				
Cutting material	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Coating, surface treatment		vap.			vap.	vap.	vap.		TiN	vap.	TiN
Item number	101605....	101601....	101700....	101515....	102101....	102102....	102103....	102650....	102652....	102660....	102665....
Catalogue page	**95**	**96**	**97**	**98**	**99**	**99**	**99**	**100**	**100**	**100**	**100**

ATORN SARA® Centring drills

HSS | DIN 333 | A | 60° | k12 | h7 | Z 2 | Vc/fz | 356

- For centring holes without protected centre DIN 332 A
- Spiral-fluted
- Bare surface
- Ø 0.5 mm and 0.8 mm, single cutting edge
- 100101.... precision-ground design
  100141.... ground from solid material

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 35	● 20	○ 12	○ 8	○ 8		○ 20	○ 12	○ 8					● 40				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D1 mm	L1 min./max.	L mm	Feed f steel < 1000 N/mm² mm/rev		ATORN art.no.	€		SARA® art.no.	€
0.50	3.15	0.6-0.8 mm	25	0.05	5	100101 0050				
0.80	3.15	1-1.3 mm	25	0.05	5	100101 0080		1	100141 0080	
1.00	3.15	1.3-1.7 mm	31	0.05	5	100101 0100		1	100141 0100	
1.25	3.15	1.6-2.0 mm	31	0.05	1	100101 0125		1	100141 0125	
1.60	4	2.0-2.6 mm	35	0.05	1	100101 0160		1	100141 0160	
2.00	5	2.5-3.1 mm	40	0.05	1	100101 0200		1	100141 0200	
2.50	6.3	3.1-3.8 mm	45	0.05	1	100101 0250		1	100141 0250	
3.15	8	3.9-4.6 mm	50	0.07	1	100101 0315		1	100141 0315	
4.00	10	5.0-5.9 mm	55	0.07	1	100101 0400		1	100141 0400	
5.00	12.5	6.3-7.2 mm	63	0.07	1	100101 0500		1	100141 0500	
6.30	16	8.0-8.9 mm	71	0.14	1	100101 0630		1	100141 0630	
8.00	20	10.1-11.1 mm	80	0.14	1	100101 0800		1	100141 0800	
10.00	25	12.8-13.8 mm	100	0.21	1	100101 1000		1	100141 1000	
						1101			1102	

Set

Number of pieces pc.	Contents	ATORN art.no.	€	SARA® art.no.	€
15-pcs.	3 units 1.6 x 4 mm | 3 units 2 x 5 mm | 3 units 2.5 x 6.3 mm | 3 units 3.15 x 8 mm | 2 units 4 x 10 mm | 1 unit 5 x 12.5 mm	100109 1015		100111 0001	
		1101		1102	

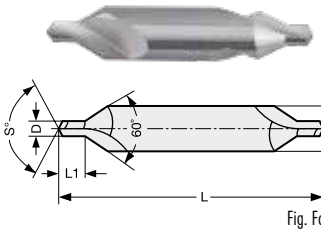
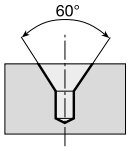


Fig. Form A




100109 1015

ATORN Centring drills

HSS-E | DIN 333 | A | 60° | k12 | h7 | Z 2 | TiAlN | Vc/fz | 356

- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40	● 20	● 20	○ 15	○ 10		○ 20	● 20	● 5	● 5	● 5	● 80	● 50	● 40	● 10			
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D1 mm	L1 min./max.	L mm	Feed f steel < 1000 N/mm² mm/rev		ATORN art.no.	€
1.00	3.15	1.3-1.6 mm	31.5	0.01	5	100109 0100	
1.25	3.15	1.6-1.9 mm	31.5	0.02	5	100109 0125	
1.60	4	2-2.4 mm	30.3	0.02	5	100109 0160	
2.00	5	2.5-2.9 mm	40	0.02	5	100109 0200	
2.50	6.3	3.1-3.6 mm	45	0.03	5	100109 0250	
3.15	8	3.9-4.4 mm	50	0.03	1	100109 0315	
4.00	10	5-5.6 mm	56	0.04	1	100109 0400	
5.00	12.5	6.3-6.9 mm	63	0.04	1	100109 0500	
						1101	

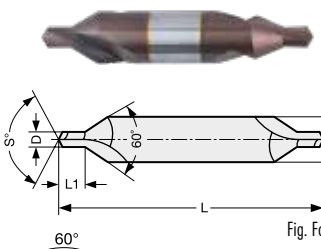
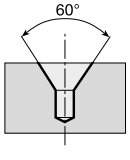


Fig. Form A



ATORN Centring drills, long

HSS-E | DIN 333 | A | 60° | k12 | h7 | Z 2 | Vc/fz | 356

- Long version for centring with access problems
- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- Bare surface
- Similar to DIN 333A

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 40	● 20	○ 10	○ 10	○ 8		○ 20	● 20	○ 8			● 80	● 50	●	○ 10			
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L1 min./max.	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.75	3.5	1-1.2 mm	120	0.05	100103 0075	
1.00	4	1.3-1.6 mm	120	0.05	100103 0100	
1.60	5	2-2.4 mm	120	0.05	100103 0160	
2.00	6	2.5-2.9 mm	120	0.05	100103 0200	
2.50	8	3.1-3.6 mm	120	0.05	100103 0250	
3.15	10	3.9-4.4 mm	120	0.07	100103 0315	
4.00	10	5-5.6 mm	120	0.07	100103 0400	
5.00	14	6.3-6.9 mm	120	0.07	100103 0500	

1101

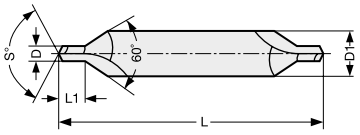
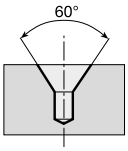


Fig. Form A



ATORN Centring drills, extra-long

HSS-E | DIN 333 | A | 60° | k12 | h7 | Z 2 | Vc/fz | 356

- Extra-long version for centring with access problems
- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- Bare surface
- Similar to DIN 333A

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 40	● 20	○ 10	○ 10	○ 8		○ 20	● 20	○ 8			● 80	● 50	● 40	○ 10			
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L1 min./max.	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.00	5	2.5-3.1 mm	200	0.05	100104 0200	
2.50	6.3	3.1-3.6 mm	200	0.05	100104 0250	
3.15	8	3.9-4.4 mm	200	0.07	100104 0315	
4.00	10	5-5.6 mm	200	0.07	100104 0400	

1101

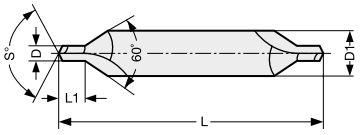
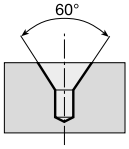


Fig. Form A



ATORN Step centring drill

HSS-E | DIN 332/2 | A | Vc/fz | 356

- **for threaded core hole centring characteristics in compliance with Form A, 60°**
- **simultaneous, perfectly-aligned placement of core holes, threaded entry bevel 90° and centring 60°**
- blank, profile-grounded surface
- 102215: with additional shank surface

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		○	○	○			●	●	●				
	35	20	12	8	8		20	12	8			75	45	45				
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

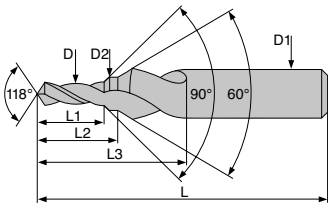
● Feed f

for thread	D mm	D mm	D1 mm	L3 mm	L2 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
M3	2.5	3.2	6	18	9	8	55	0.03	102214 0030	
M4	3.3	4.3	8	23	12.6	11	63	0.05	102214 0040	
M5	4.2	5.3	10	27	15.1	13	67	0.07	102214 0050	
M6	5	6.4	12.5	33	18.9	16	71	0.10	102214 0060	
M8	6.8	8.4	14	41	23	19	88	0.12	102214 0080	
M10	8.5	10.5	16	47	27.7	23	90	0.15	102214 0100	
M12	10.2	13	20	59	34.5	28	105	0.15	102214 0120	

1101


102214


102215



ATORN Centring drills with radius

HSS | DIN 333 | R | 60° | k12 | h7 | Z 2 | Vc/fz | 356

- For centring holes with radius DIN 332 R
- combines an annular application of the workpiece at the centre point with the advantages of a bell-type countersink, improved fit of the workpiece
- Greater stability due to radial transition
- Reduces risk of breaking
- Spiral-fluted, bare surface

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		○	●	○			●	●	●	○			
	40	20	10	10	8		20	20	8			80	50	40	10			
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

● Feed f

D mm	D1 mm	L1 min./max.	L mm	R mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.00	3.15	3-3.3 mm	31.5	2.9	0.05	5	100107 0100	
1.25	3.15	3.3-3.6 mm	31.5	3.15	0.05	5	100107 0125	
1.60	4	4.2-4.7 mm	30.3	4	0.05	5	100107 0160	
2.00	5	5-5.4 mm	40	5	0.05	5	100107 0200	
2.50	6.3	6.3-6.8 mm	45	6.3	0.05	5	100107 0250	
3.15	8	8-8.5 mm	50	8	0.07	5	100107 0315	
4.00	10	10-10.6 mm	56	10	0.07	1	100107 0400	
5.00	12.5	12.5-13.1 mm	63	12.5	0.07	1	100107 0500	
6.30	16	16-16.6 mm	71	16	0.14	1	100107 0630	

1101



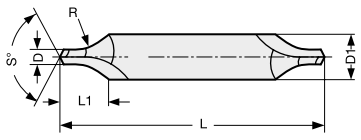
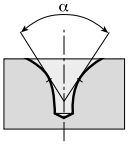


Fig. Form R



ATORN Centring drills with protected centre

HSS | DIN 333 | B | 60° | k12 | h7 | Z 2 | Vc/fz | 356

- For centring holes with protected centre DIN 332 B
- 60° centre holes, 120° tapered countersunk recess
- Application of the workpiece to the centre point over a large surface area with the advantages of a bell-type countersink
- Suitable for workpieces which are subject to deformation tension during machining
- Spiral-fluted, bare surface

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 40	● 20	○ 10	○ 10	○ 8		○ 20	● 20	○ 8			● 80	● 50	● 40	○ 10			
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D1 mm	L1 min./max.	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.00	4	1.3-1.7 mm	35	0.05	5	100105 0100	
1.25	5	1.6-2.0 mm	40	0.05	5	100105 0125	
1.60	6.3	2-2.4 mm	45	0.05	5	100105 0160	
2.00	8	2.5-2.9 mm	50	0.05	5	100105 0200	
2.50	10	3.1-3.6 mm	56	0.05	5	100105 0250	
3.15	11.2	3.9-4.4 mm	60	0.07	1	100105 0315	
4.00	14	5-5.6 mm	67	0.07	1	100105 0400	
5.00	18	6.3-7.2 mm	77	0.07	1	100105 0500	
6.30	20	8.0-8.9 mm	80	0.14	1	100105 0630	
						1101	



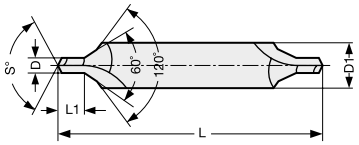
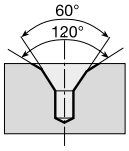


Fig. Form B

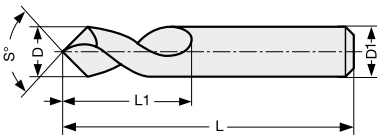


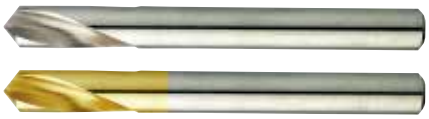
ATORN NC spotting drill

HSS-E | 90° | 120° | h7 | h6 | Z 2 | Vc/fz | 357

- S° = point angle 90° or 120°
- Precision-ground point
- Version 90° from Ø 4 mm pointed
- High stability due to short chip flutes
- For fast drilling on NC/CNC machines and machining centres with precise positioning

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
100130....	● 40	● 20	● 10	● 12	● 10		○ 45	○ 20	○ 6	○ 6		● 80	● 70	● 40	○ 10			
100131....	● 50	● 30	● 12	● 20	● 15		○ 45	● 30	● 10	○ 10	○ 10	● 90	● 80	● 50	○ 10			
100120....	● 40	● 20	● 10	● 12	● 10		○ 45	○ 20	○ 6	○ 6		● 80	● 70	● 80	○ 10			
100121....	● 50	● 30	● 12	● 20	● 15		○ 45	● 30	● 10	○ 10	○ 10	● 90	● 80	● 50	○ 10			
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								





D mm	D1 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	90°, TiN art.no.	€	120° art.no.	€	120°, TiN art.no.	€
3.00	3	10	50	0.04	100130 0300		100131 0300		100120 0300		100121 0300	
4.00	4	12	52	0.05	100130 0400		100131 0400		100120 0400		100121 0400	
5.00	5	15	60	0.05	100130 0500		100131 0500		100120 0500		100121 0500	
6.00	6	20	66	0.06	100130 0600		100131 0600		100120 0600		100121 0600	
8.00	8	25	79	0.07	100130 0800		100131 0800		100120 0800		100121 0800	
10.00	10	25	89	0.08	100130 1000		100131 1000		100120 1000		100121 1000	
12.00	12	30	102	0.08	100130 1200		100131 1200		100120 1200		100121 1200	
16.00	16	35	115	0.09	100130 1600		100131 1600		100120 1600		100121 1600	
20.00	20	40	131	0.09	100130 2000		100131 2000		100120 2000		100121 2000	
					1101		1101		1101		1101	

ATORN Twist drill bit

HSS-E | DIN 1897 | Typ NV | 130° | 27° | h8 | h8 | 3xD | Z 2 | TiN | Vc/fz

357
358

- S°= point angle 130° (self-centring)
- 101055.... vapour-treated from Ø 2.4 mm
  101051.... TiN-coated

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	101055....	○ 30	● 20	● 10	● 20	● 10		● 30	● 30	● 8	○ 6	○ 6	○ 55	○ 45	● 50				
	101051....	○ 40	● 20	● 10	● 20	● 15		● 30	● 30	○ 7	● 6	● 6	○ 55	○ 45	○ 45		○ 3		
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

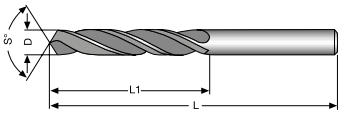
D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		vaporised art.no.	€		TiN art.no.	€
1.00	26	6	0.04	10	101055 0100		10	101051 0100	
1.10	28	7	0.04	10	101055 0110		10	101051 0110	
1.20	30	8	0.04	10	101055 0120		10	101051 0120	
1.30	30	8	0.04	10	101055 0130		10	101051 0130	
1.40	32	9	0.04	10	101055 0140		10	101051 0140	
1.50	32	9	0.04	10	101055 0150		10	101051 0150	
1.60	34	10	0.04	10	101055 0160		10	101051 0160	
1.70	34	10	0.04	10	101055 0170		10	101051 0170	
1.80	36	11	0.04	10	101055 0180		10	101051 0180	
1.90	36	11	0.04	10	101055 0190		10	101051 0190	
2.00	38	12	0.04	10	101055 0200		10	101051 0200	
2.10	38	12	0.04	10	101055 0210		10	101051 0210	
2.20	40	13	0.04	10	101055 0220		10	101051 0220	
2.30	40	13	0.04	10	101055 0230		10	101051 0230	
2.40	43	14	0.04	10	101055 0240		10	101051 0240	
2.50	43	14	0.09	10	101055 0250		10	101051 0250	
2.60	43	14	0.09	10	101055 0260		10	101051 0260	
2.70	46	16	0.09	10	101055 0270		10	101051 0270	
2.80	46	16	0.09	10	101055 0280		10	101051 0280	
2.90	46	16	0.09	10	101055 0290		10	101051 0290	
3.00	46	16	0.09	10	101055 0300		10	101051 0300	
3.10	49	18	0.09	10	101055 0310		10	101051 0310	
3.20	49	18	0.09	10	101055 0320		10	101051 0320	
3.30	49	18	0.09	10	101055 0330		10	101051 0330	
3.40	52	20	0.09	10	101055 0340		10	101051 0340	
3.50	52	20	0.09	10	101055 0350		10	101051 0350	
3.60	52	20	0.09	10	101055 0360		10	101051 0360	
3.70	52	20	0.09	10	101055 0370		10	101051 0370	
3.80	55	22	0.09	10	101055 0380		10	101051 0380	
3.90	55	22	0.09	10	101055 0390		10	101051 0390	
4.00	55	22	0.09	10	101055 0400		10	101051 0400	
4.10	55	22	0.09	10	101055 0410		10	101051 0410	
4.20	55	22	0.09	10	101055 0420		10	101051 0420	
4.30	58	24	0.09	10	101055 0430		10	101051 0430	
4.40	58	24	0.09	10	101055 0440		10	101051 0440	
4.50	58	24	0.09	10	101055 0450		10	101051 0450	
4.60	58	24	0.09	10	101055 0460		10	101051 0460	
4.70	58	24	0.09	10	101055 0470		10	101051 0470	
4.80	62	26	0.09	10	101055 0480		10	101051 0480	
4.90	62	26	0.09	10	101055 0490		10	101051 0490	
5.00	62	26	0.09	10	101055 0500		10	101051 0500	
5.10	62	26	0.13	10	101055 0510		10	101051 0510	
5.20	62	26	0.13	10	101055 0520		10	101051 0520	
5.30	62	26	0.13	10	101055 0530		10	101051 0530	
					1104			1104	

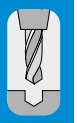


Type NV, vapour-treated



type NV, TiN





D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		vaporised art.no.	€		TiN art.no.	€
5.40	66	28	0.13	10	101055 0540		10	101051 0540	
5.50	66	28	0.13	10	101055 0550		10	101051 0550	
5.60	66	28	0.13	10	101055 0560		10	101051 0560	
5.70	66	28	0.13	10	101055 0570		10	101051 0570	
5.80	66	28	0.13	10	101055 0580		10	101051 0580	
5.90	66	28	0.13	10	101055 0590		10	101051 0590	
6.00	66	28	0.13	10	101055 0600		10	101051 0600	
6.10	70	31	0.13	1	101055 0610		1	101051 0610	
6.20	70	31	0.13	1	101055 0620		1	101051 0620	
6.30	70	31	0.13	1	101055 0630		1	101051 0630	
6.40	70	31	0.13	1	101055 0640		1	101051 0640	
6.50	70	31	0.13	1	101055 0650		1	101051 0650	
6.60	70	31	0.13	1	101055 0660		1	101051 0660	
6.70	70	31	0.13	1	101055 0670		1	101051 0670	
6.80	74	34	0.13	1	101055 0680		1	101051 0680	
6.90	74	34	0.13	1	101055 0690		1	101051 0690	
7.00	74	34	0.13	1	101055 0700		1	101051 0700	
7.10	74	34	0.13	1	101055 0710		1	101051 0710	
7.20	74	34	0.13	1	101055 0720		1	101051 0720	
7.30	74	34	0.13	1	101055 0730		1	101051 0730	
7.40	74	34	0.13	1	101055 0740		1	101051 0740	
7.50	74	34	0.13	1	101055 0750		1	101051 0750	
7.60	79	37	0.13	1	101055 0760		1	101051 0760	
7.70	79	37	0.13	1	101055 0770		1	101051 0770	
7.80	79	37	0.13	1	101055 0780		1	101051 0780	
7.90	79	37	0.13	1	101055 0790		1	101051 0790	
8.00	79	37	0.13	1	101055 0800		1	101051 0800	
8.10	79	37	0.18	1	101055 0810		1	101051 0810	
8.20	79	37	0.18	1	101055 0820		1	101051 0820	
8.30	79	37	0.18	1	101055 0830		1	101051 0830	
8.40	79	37	0.18	1	101055 0840		1	101051 0840	
8.50	79	37	0.18	1	101055 0850		1	101051 0850	
8.60	84	40	0.18	1	101055 0860		1	101051 0860	
8.70	84	40	0.18	1	101055 0870		1	101051 0870	
8.80	84	40	0.18	1	101055 0880		1	101051 0880	
8.90	84	40	0.18	1	101055 0890		1	101051 0890	
9.00	84	40	0.18	1	101055 0900		1	101051 0900	
9.10	84	40	0.18	1	101055 0910		1	101051 0910	
9.20	84	40	0.18	1	101055 0920		1	101051 0920	
9.30	84	40	0.18	1	101055 0930		1	101051 0930	
9.40	84	40	0.18	1	101055 0940		1	101051 0940	
9.50	84	40	0.18	1	101055 0950		1	101051 0950	
9.60	89	43	0.18	1	101055 0960		1	101051 0960	
9.70	89	43	0.18	1	101055 0970		1	101051 0970	
9.80	89	43	0.18	1	101055 0980		1	101051 0980	
9.90	89	43	0.18	1	101055 0990		1	101051 0990	
10.00	89	43	0.18	1	101055 1000		1	101051 1000	
10.20	89	43	0.18	1	101055 1020		1	101051 1020	
10.50	89	43	0.18	1	101055 1050		1	101051 1050	
11.00	95	47	0.18	1	101055 1100		1	101051 1100	
11.50	95	47	0.18	1	101055 1150		1	101051 1150	
12.00	102	51	0.18	1	101055 1200		1	101051 1200	
12.50	102	51	0.22	1	101055 1250		1	101051 1250	
13.00	102	51	0.22	1	101055 1300		1	101051 1300	
13.50	107	54	0.22	1	101055 1350		1	101051 1350	
14.00	107	54	0.22	1	101055 1400		1	101051 1400	
14.50	111	56	0.22	1	101055 1450		1	101051 1450	
15.00	111	56	0.22	1	101055 1500		1	101051 1500	
15.50	115	58	0.22	1	101055 1550		1	101051 1550	
					1104			1104	

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		vaporised art.no.	€		TiN art.no.	€
16.00	115	58	0.22	1	101055 1600		1	101051 1600	
16.50	119	60	0.28	1	101055 1650		1	101051 1650	
17.00	119	60	0.28	1	101055 1700		1	101051 1700	
17.50	123	62	0.28	1	101055 1750		1	101051 1750	
18.00	123	62	0.28	1	101055 1800		1	101051 1800	
18.50	127	64	0.28	1	101055 1850		1	101051 1850	
19.00	127	64	0.28	1	101055 1900		1	101051 1900	
19.50	131	66	0.28	1	101055 1950		1	101051 1950	
20.00	131	66	0.28	1	101055 2000		1	101051 2000	
					1104			1104	

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EX-SUS-GDS twist drill bit

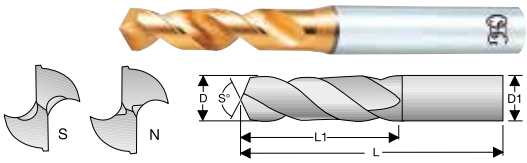
Werks-norm | 120° | 130° | 140° | 35° -40° | 3xD | TiN | Vc/fz | 360

- Large chip spaces, high toughness
- Reduced heat build-up
- Shank design: straight
- **From Ø 12.1 with driving plane in accordance with DIN 1835B**
- S°= point angle: < Ø 2 mm = 140°, ≤ Ø 4 mm = 130°, > Ø 4 mm = 120°
- Centring geometry: up to Ø 13 mm S version, from Ø 13.5 mm N version
- Available on request: Intermediate dimensions from Ø 0.5 to Ø 6 mm (in 0.01 mm increments)

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 36	○ 30		● 18	● 16	○ 10			● 7			● 82	● 48	● 35				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



● Feed f steel < 700 N/mm² mm/rev

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.0	38	6	3	0.03	114045 0100	
1.1	39	7	3	0.03	114045 0110	
1.2	40	8	3	0.03	114045 0120	
1.3	40	8	3	0.03	114045 0130	
1.4	41	9	3	0.03	114045 0140	
1.5	41	9	3	0.07	114045 0150	
1.6	42	10	3	0.07	114045 0160	
1.7	42	10	3	0.07	114045 0170	
1.8	43	11	3	0.07	114045 0180	
1.9	43	11	3	0.07	114045 0190	
2.0	44	12	3	0.07	114045 0200	
2.1	44	12	3	0.07	114045 0210	
2.2	45	13	3	0.07	114045 0220	
2.3	45	13	3	0.07	114045 0230	
2.4	46	14	3	0.07	114045 0240	
2.5	46	14	3	0.11	114045 0250	
2.6	46	14	3	0.11	114045 0260	
2.7	48	16	3	0.11	114045 0270	
2.8	48	16	3	0.11	114045 0280	
2.9	48	16	3	0.11	114045 0290	
3.0	48	16	3	0.11	114045 0300	
3.1	50	18	4	0.11	114045 0310	
3.2	50	18	4	0.11	114045 0320	
3.3	50	18	4	0.11	114045 0330	
3.4	52	20	4	0.11	114045 0340	
3.5	52	20	4	0.13	114045 0350	
3.6	52	20	4	0.13	114045 0360	
3.7	52	20	4	0.13	114045 0370	
3.8	54	22	4	0.13	114045 0380	
3.9	54	22	4	0.13	114045 0390	
4.0	54	22	4	0.13	114045 0400	
4.1	66	22	6	0.13	114045 0410	
4.2	66	22	6	0.13	114045 0420	
4.3	68	24	6	0.13	114045 0430	
4.4	68	24	6	0.13	114045 0440	
4.5	68	24	6	0.15	114045 0450	
4.6	68	24	6	0.15	114045 0460	
4.7	68	24	6	0.15	114045 0470	
4.8	70	26	6	0.15	114045 0480	
4.9	70	26	6	0.15	114045 0490	

1107

● Feed f steel < 700 N/mm² mm/rev

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.0	70	26	6	0.15	114045 0500	
5.1	70	26	6	0.15	114045 0510	
5.2	70	26	6	0.15	114045 0520	
5.3	70	28	6	0.15	114045 0530	
5.4	72	28	6	0.15	114045 0540	
5.5	72	28	6	0.16	114045 0550	
5.6	72	28	6	0.16	114045 0560	
5.7	72	28	6	0.16	114045 0570	
5.8	72	28	6	0.16	114045 0580	
5.9	72	28	6	0.16	114045 0590	
6.0	72	28	6	0.16	114045 0600	
6.1	75	31	8	0.16	114045 0610	
6.2	75	31	8	0.16	114045 0620	
6.3	75	31	8	0.16	114045 0630	
6.4	75	31	8	0.16	114045 0640	
6.5	75	31	8	0.16	114045 0650	
6.6	75	31	8	0.16	114045 0660	
6.7	75	31	8	0.16	114045 0670	
6.8	78	34	8	0.16	114045 0680	
6.9	78	34	8	0.16	114045 0690	
7.0	78	34	8	0.16	114045 0700	
7.1	78	34	8	0.20	114045 0710	
7.2	78	34	8	0.20	114045 0720	
7.3	78	34	8	0.20	114045 0730	
7.4	78	34	8	0.20	114045 0740	
7.5	78	34	8	0.20	114045 0750	
7.6	81	37	8	0.20	114045 0760	
7.7	81	37	8	0.20	114045 0770	
7.8	81	37	8	0.20	114045 0780	
7.9	81	37	8	0.20	114045 0790	
8.0	81	37	8	0.20	114045 0800	
8.1	87	37	10	0.20	114045 0810	
8.2	87	37	10	0.20	114045 0820	
8.3	87	37	10	0.20	114045 0830	
8.4	87	37	10	0.20	114045 0840	
8.5	87	37	10	0.20	114045 0850	
8.6	90	40	10	0.20	114045 0860	
8.7	90	40	10	0.20	114045 0870	
8.8	90	40	10	0.20	114045 0880	
8.9	90	40	10	0.20	114045 0890	

1107

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
9.0	90	40	10	0.20	114045 0900	
9.1	90	40	10	0.24	114045 0910	
9.2	90	40	10	0.24	114045 0920	
9.3	90	40	10	0.24	114045 0930	
9.4	90	40	10	0.24	114045 0940	
9.5	90	40	10	0.24	114045 0950	
9.6	93	43	10	0.24	114045 0960	
9.7	93	43	10	0.24	114045 0970	
9.8	93	43	10	0.24	114045 0980	
9.9	93	43	10	0.24	114045 0990	
10.0	93	43	10	0.24	114045 1000	
10.1	100	43	12	0.24	114045 1010	
10.2	100	43	12	0.24	114045 1020	
10.3	100	43	12	0.24	114045 1030	
10.4	100	43	12	0.24	114045 1040	
10.5	100	43	12	0.24	114045 1050	
10.6	100	43	12	0.24	114045 1060	
10.7	104	47	12	0.24	114045 1070	
10.8	104	47	12	0.24	114045 1080	
10.9	104	47	12	0.24	114045 1090	
11.0	104	47	12	0.24	114045 1100	
11.1	104	47	12	0.29	114045 1110	
11.2	104	47	12	0.29	114045 1120	
11.3	104	47	12	0.29	114045 1130	
11.4	104	47	12	0.29	114045 1140	
11.5	104	47	12	0.29	114045 1150	
11.6	104	47	12	0.29	114045 1160	
11.7	104	47	12	0.29	114045 1170	

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
11.8	104	47	12	0.29	114045 1180	
11.9	108	51	12	0.29	114045 1190	
12.0	108	51	12	0.29	114045 1200	
12.1	108	51	16	0.29	114045 1210	
12.2	108	51	16	0.29	114045 1220	
12.3	108	51	16	0.29	114045 1230	
12.4	108	51	16	0.29	114045 1240	
12.5	108	51	16	0.29	114045 1250	
12.6	108	51	16	0.29	114045 1260	
12.7	108	51	16	0.29	114045 1270	
12.8	108	51	16	0.29	114045 1280	
12.9	108	51	16	0.29	114045 1290	
13.0	108	51	16	0.29	114045 1300	
13.5	114	54	16	0.33	114045 1350	
14.0	114	54	16	0.33	114045 1400	
14.5	116	56	16	0.33	114045 1450	
15.0	116	56	16	0.33	114045 1500	
15.5	118	58	16	0.36	114045 1550	
16.0	118	58	16	0.36	114045 1600	
16.5	126	60	20	0.36	114045 1650	
17.0	126	60	20	0.36	114045 1700	
17.5	128	62	20	0.40	114045 1750	
18.0	128	62	20	0.40	114045 1800	
18.5	130	64	20	0.40	114045 1850	
19.0	130	64	20	0.40	114045 1900	
19.5	132	66	20	0.43	114045 1950	
20.0	132	66	20	0.43	114045 2000	

ATORN Twist drill bit

HSS | Werks-norm | Typ N | 118° | 27° | h8 | 3xD | Z 2 | Vap. | Vc/fz

361

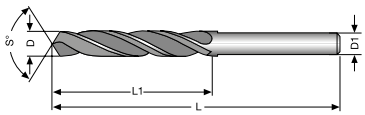
- **Offset uniform shank**
- Clamping and tooling benefits due to uniform length of straight shank irrespective of diameter
- **Vapour-treated**

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	○		●	●	○			○	●	●	○			
30	20	10	10	8		25	20	4			60	40	50	10			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





with offset shank

D mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13.50	152	76	12.7	0.22	101080 1350	
14.00	152	76	12.7	0.22	101080 1400	
14.50	152	76	12.7	0.22	101080 1450	
15.00	152	76	12.7	0.22	101080 1500	
15.50	152	76	12.7	0.22	101080 1550	
16.00	152	76	12.7	0.22	101080 1600	
16.50	152	76	12.7	0.28	101080 1650	
17.00	152	76	12.7	0.28	101080 1700	
17.50	152	76	12.7	0.28	101080 1750	
18.00	152	76	12.7	0.28	101080 1800	

D mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
18.50	152	76	12.7	0.28	101080 1850	
19.00	152	76	12.7	0.28	101080 1900	
19.50	152	76	12.7	0.28	101080 1950	
20.00	152	76	12.7	0.28	101080 2000	
21.00	152	76	12.7	0.28	101080 2100	
22.00	152	76	12.7	0.28	101080 2200	
23.00	152	76	12.7	0.28	101080 2300	
24.00	152	76	12.7	0.28	101080 2400	
25.00	152	76	12.7	0.28	101080 2500	

ATORN Micro drill

HSS-E PM | DIN 1899 | Typ N | 118° | 27° | h6 | h7 | 5xD | Z 2 | Vc/fz | 362

- **Reinforced shank**
- Profile-ground
- **High true-running accuracy and precision-ground point**
- HSS-E-PM for high cutting rates and high rigidity

From Ø 0.05 mm

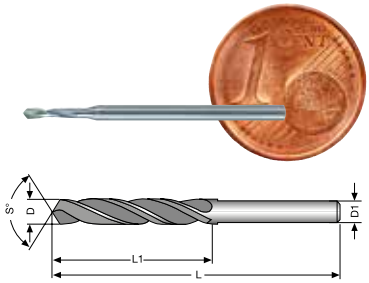
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●		●	●	●	○	○	●	●	●	○			
30	20	10	10	10		25	30	7	6	6	60	50	50	10			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.05	1.0	0.4	25	0.006	10	101075 0005	
0.08	1.0	0.5	25	0.006	10	101075 0008	
0.10	1.0	0.5	25	0.006	10	101075 0010	
0.15	1.0	0.8	25	0.007	10	101075 0015	
0.20	1.0	1.5	25	0.008	10	101075 0020	
0.25	1.0	1.9	25	0.009	10	101075 0025	
0.30	1.0	1.9	25	0.010	10	101075 0030	
0.35	1.0	2.4	25	0.011	10	101075 0035	
0.40	1.0	3	25	0.012	10	101075 0040	
0.45	1.0	3	25	0.013	10	101075 0045	
0.50	1.0	3.4	25	0.014	10	101075 0050	
0.55	1.0	3.9	25	0.015	10	101075 0055	
0.60	1.0	3.9	25	0.016	10	101075 0060	
0.65	1.0	4.2	25	0.017	10	101075 0065	
0.70	1.0	4.8	25	0.018	10	101075 0070	
0.75	1.0	4.8	25	0.019	10	101075 0075	
0.80	1.5	5.3	25	0.022	10	101075 0080	
0.85	1.5	5.3	25	0.025	10	101075 0085	
0.90	1.5	6	25	0.028	10	101075 0090	
0.95	1.5	6	25	0.031	10	101075 0095	
1.00	1.5	6.8	25	0.034	10	101075 0100	
1.10	1.5	7.6	25	0.037	10	101075 0110	
1.20	1.5	8.5	25	0.040	10	101075 0120	
1.30	1.5	8.5	25	0.043	10	101075 0130	
1.40	1.5	9.5	25	0.046	10	101075 0140	
1.50	2.0	9.5	25	0.049	10	101075 0150	

1101



Micro universal chuck

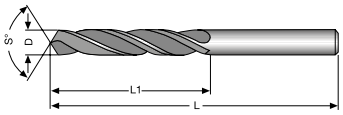
CoolSpeed mini & air configurator

The Toodle-Blue-Configurator for determining the operating values is available in the service section of our website: **saratools.com**

ATORN Twist drill bit

HSS | DIN 338 | Typ N | 118° | 27° | h8 | h8 | 5xD | Z 2 | TiN | Vap. | Vc/fz | 361

- 101005.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- 101405.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- 101008.... TiN head coating, bare chip flute, point thinning from Ø ≥ 1 mm



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101005....	● 30	○ 20		○ 10			● 25	○ 25				○ 45	○ 50	○ 40	○ 10			
101405....	● 25	● 15					● 25	○ 22				○ 48	○ 35	○ 30				
101008....	● 30	○ 20		○ 10				○ 25				○ 45	○ 50	○ 40	○ 10			

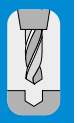
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.


HSS, vapour-treated


HSS, TiN

Single ●

D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		ATORN vaporised art.no.	€		ATORN TiN art.no.	€
0.40	5	20	0.03	10	101005 0040				
0.50	6	22	0.03	10	101005 0050				
0.60	7	24	0.03	10	101005 0060				
0.70	9	28	0.03	10	101005 0070				
0.80	10	30	0.03	10	101005 0080				
0.90	11	32	0.03	10	101005 0090				
1.00	12	34	0.03	10	101005 0100		10	101008 0100	
1.10	14	36	0.04	10	101005 0110		10	101008 0110	
1.20	16	38	0.04	10	101005 0120		10	101008 0120	
1.30	16	38	0.04	10	101005 0130		10	101008 0130	
1.40	18	40	0.04	10	101005 0140		10	101008 0140	
1.50	18	40	0.04	10	101005 0150		10	101008 0150	
1.60	20	43	0.04	10	101005 0160		10	101008 0160	
1.70	20	43	0.04	10	101005 0170		10	101008 0170	
1.80	22	46	0.04	10	101005 0180		10	101008 0180	
1.90	22	46	0.04	10	101005 0190		10	101008 0190	
2.00	24	49	0.04	10	101005 0200		10	101008 0200	
2.10	24	49	0.04	10	101005 0210		10	101008 0210	
2.20	27	53	0.04	10	101005 0220		10	101008 0220	
2.30	27	53	0.04	10	101005 0230		10	101008 0230	
2.40	30	57	0.04	10	101005 0240		10	101008 0240	
2.50	30	57	0.09	10	101005 0250		10	101008 0250	
2.60	30	57	0.09	10	101005 0260		10	101008 0260	
2.70	33	61	0.09	10	101005 0270		10	101008 0270	
2.80	33	61	0.09	10	101005 0280		10	101008 0280	
2.90	33	61	0.09	10	101005 0290		10	101008 0290	
3.00	33	61	0.09	10	101005 0300		10	101008 0300	
3.10	36	65	0.09	10	101005 0310		10	101008 0310	
3.20	36	65	0.09	10	101005 0320		10	101008 0320	
3.30	36	65	0.09	10	101005 0330		10	101008 0330	
3.40	39	70	0.09	10	101005 0340		10	101008 0340	
3.50	39	70	0.09	10	101005 0350		10	101008 0350	
3.60	39	70	0.09	10	101005 0360		10	101008 0360	
3.70	39	70	0.09	10	101005 0370		10	101008 0370	
3.80	43	75	0.09	10	101005 0380		10	101008 0380	
3.90	43	75	0.09	10	101005 0390		10	101008 0390	
4.00	43	75	0.09	10	101005 0400		10	101008 0400	
4.10	43	75	0.09	10	101005 0410		10	101008 0410	
					1104			1104	



D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		ATORN vaporised art.no.	€		ATORN TiN art.no.	€
4.20	43	75	0.09	10	101005 0420		10	101008 0420	
4.30	47	80	0.09	10	101005 0430		10	101008 0430	
4.40	47	80	0.09	10	101005 0440		10	101008 0440	
4.50	47	80	0.09	10	101005 0450		10	101008 0450	
4.60	47	80	0.09	10	101005 0460		10	101008 0460	
4.70	47	80	0.09	10	101005 0470		10	101008 0470	
4.80	52	86	0.09	10	101005 0480		10	101008 0480	
4.90	52	86	0.09	10	101005 0490		10	101008 0490	
5.00	52	86	0.09	10	101005 0500		10	101008 0500	
5.10	52	86	0.13	10	101005 0510		10	101008 0510	
5.20	52	86	0.13	10	101005 0520		10	101008 0520	
5.30	52	86	0.13	10	101005 0530		10	101008 0530	
5.40	57	93	0.13	10	101005 0540		10	101008 0540	
5.50	57	93	0.13	10	101005 0550		10	101008 0550	
5.60	57	93	0.13	10	101005 0560		10	101008 0560	
5.70	57	93	0.13	10	101005 0570		10	101008 0570	
5.80	57	93	0.13	10	101005 0580		10	101008 0580	
5.90	57	93	0.13	10	101005 0590		10	101008 0590	
6.00	57	93	0.13	10	101005 0600		10	101008 0600	
6.10	63	101	0.13	1	101005 0610		1	101008 0610	
6.20	63	101	0.13	1	101005 0620		1	101008 0620	
6.30	63	101	0.13	1	101005 0630		1	101008 0630	
6.40	63	101	0.13	1	101005 0640		1	101008 0640	
6.50	63	101	0.13	1	101005 0650		1	101008 0650	
6.60	63	101	0.13	1	101005 0660		1	101008 0660	
6.70	63	101	0.13	1	101005 0670		1	101008 0670	
6.80	69	109	0.13	1	101005 0680		1	101008 0680	
6.90	69	109	0.13	1	101005 0690		1	101008 0690	
7.00	69	109	0.13	1	101005 0700		1	101008 0700	
7.10	69	109	0.13	1	101005 0710		1	101008 0710	
7.20	69	109	0.13	1	101005 0720		1	101008 0720	
7.30	69	109	0.13	1	101005 0730		1	101008 0730	
7.40	69	109	0.13	1	101005 0740		1	101008 0740	
7.50	69	109	0.13	1	101005 0750		1	101008 0750	
7.60	75	117	0.13	1	101005 0760		1	101008 0760	
7.70	75	117	0.13	1	101005 0770		1	101008 0770	
7.80	75	117	0.13	1	101005 0780		1	101008 0780	
7.90	75	117	0.13	1	101005 0790		1	101008 0790	
8.00	75	117	0.13	1	101005 0800		1	101008 0800	
8.10	75	117	0.18	1	101005 0810		1	101008 0810	
8.20	75	117	0.18	1	101005 0820		1	101008 0820	
8.30	75	117	0.18	1	101005 0830		1	101008 0830	
8.40	75	117	0.18	1	101005 0840		1	101008 0840	
8.50	75	117	0.18	1	101005 0850		1	101008 0850	
8.60	81	125	0.18	1	101005 0860		1	101008 0860	
8.70	81	125	0.18	1	101005 0870		1	101008 0870	
8.80	81	125	0.18	1	101005 0880		1	101008 0880	
8.90	81	125	0.18	1	101005 0890		1	101008 0890	
9.00	81	125	0.18	1	101005 0900		1	101008 0900	
9.10	81	125	0.18	1	101005 0910		1	101008 0910	
9.20	81	125	0.18	1	101005 0920		1	101008 0920	
9.30	81	125	0.18	1	101005 0930		1	101008 0930	
9.40	81	125	0.18	1	101005 0940		1	101008 0940	
9.50	81	125	0.18	1	101005 0950		1	101008 0950	
9.60	87	133	0.18	1	101005 0960		1	101008 0960	
9.70	87	133	0.18	1	101005 0970		1	101008 0970	
9.80	87	133	0.18	1	101005 0980		1	101008 0980	
9.90	87	133	0.18	1	101005 0990		1	101008 0990	
10.00	87	133	0.18	1	101005 1000		1	101008 1000	
					1104			1104	

D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		ATORN vaporised art.no.	€		ATORN TiN art.no.	€
10.10	87	133	0.18	1	101005 1010		1	101008 1010	
10.20	87	133	0.18	1	101005 1020		1	101008 1020	
10.30	87	133	0.18	1	101005 1030		1	101008 1030	
10.40	87	133	0.18	1	101005 1040		1	101008 1040	
10.50	87	133	0.18	1	101005 1050		1	101008 1050	
10.60	87	133	0.18	1	101005 1060		1	101008 1060	
10.70	94	142	0.18	1	101005 1070		1	101008 1070	
10.80	94	142	0.18	1	101005 1080		1	101008 1080	
10.90	94	142	0.18	1	101005 1090		1	101008 1090	
11.00	94	142	0.18	1	101005 1100		1	101008 1100	
11.10	94	142	0.18	1	101005 1110		1	101008 1110	
11.20	94	142	0.18	1	101005 1120		1	101008 1120	
11.30	94	142	0.18	1	101005 1130		1	101008 1130	
11.40	94	142	0.18	1	101005 1140		1	101008 1140	
11.50	94	142	0.18	1	101005 1150		1	101008 1150	
11.60	94	142	0.18	1	101005 1160		1	101008 1160	
11.70	94	142	0.18	1	101005 1170		1	101008 1170	
11.80	94	142	0.18	1	101005 1180		1	101008 1180	
11.90	101	151	0.18	1	101005 1190		1	101008 1190	
12.00	101	151	0.18	1	101005 1200		1	101008 1200	
12.10	101	151	0.22	1	101005 1210		1	101008 1210	
12.20	101	151	0.22	1	101005 1220		1	101008 1220	
12.30	101	151	0.22	1	101005 1230		1	101008 1230	
12.40	101	151	0.22	1	101005 1240		1	101008 1240	
12.50	101	151	0.22	1	101005 1250		1	101008 1250	
12.60	101	151	0.22	1	101005 1260		1	101008 1260	
12.70	101	151	0.22	1	101005 1270		1	101008 1270	
12.80	101	151	0.22	1	101005 1280		1	101008 1280	
12.90	101	151	0.22	1	101005 1290		1	101008 1290	
13.00	101	151	0.22	1	101005 1300		1	101008 1300	
13.25	108	160	0.22	1	101005 1325		1	101008 1325	
13.50	108	160	0.22	1	101005 1350		1	101008 1350	
13.75	108	160	0.22	1	101005 1375		1	101008 1375	
14.00	108	160	0.22	1	101005 1400		1	101008 1400	
14.25	114	169	0.22	1	101005 1425		1	101008 1425	
14.50	114	169	0.22	1	101005 1450		1	101008 1450	
14.75	114	169	0.22	1	101005 1475		1	101008 1475	
15.00	114	169	0.22	1	101005 1500		1	101008 1500	
15.25	120	178	0.22	1	101005 1525		1	101008 1525	
15.50	120	178	0.22	1	101005 1550		1	101008 1550	
15.75	120	178	0.22	1	101005 1575		1	101008 1575	
16.00	120	178	0.22	1	101005 1600		1	101008 1600	
16.50	125	187	0.28	1	101005 1650				
17.00	125	187	0.28	1	101005 1700				
17.50	130	196	0.28	1	101005 1750				
18.00	130	196	0.28	1	101005 1800				
18.50	135	205	0.28	1	101005 1850				
19.00	135	205	0.28	1	101005 1900				
19.50	140	214	0.28	1	101005 1950				
20.00	140	214	0.28	1	101005 2000				
					1104			1104	

ATORN Twist drill bit sets

HSS | DIN 338 | Typ N | 118° | 38° | h8 | 5xD | Z 2 | TiN | Vap. | Vc/fz | 361

- 101035.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- 101048.... TiN head coating, bare chip flute, point thinning from Ø ≥ 1 mm

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101035....	● 30	○ 20		○ 10			● 25	○ 25				○ 60	○ 40	○ 70	○ 10			
101048....	● 30	○ 20		○ 10				○ 25				○ 60	○ 40	○ 70	○ 10			
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



101035 0004



101048 0004

Number of pieces pc.	Contents	Pitch	vaporised art.no.	€	TiN art.no.	€
50	1.0-5.9	0.1 mm	101035 0001		101048 0001	
41	6.0-10.0	0.1 mm	101035 0002		101048 0002	
19	1.0-10.0	0.5 mm	101035 0003		101048 0003	
25	1.0-13.0	0.5 mm	101035 0004		101048 0004	
24	1.0-10.5	0.5 mm + core-hole drill	101035 0005		101048 0005	
			1104		1104	

SARA® Twist drill bit sets

HSS | DIN 338 | Typ N | 118° | 27° | h8 | 5xD | Z 2 | Vc/fz | 361

- Bright surface, ground, for production



101033 0001



101033 0002



101033 0003



101033 0004



101033 0005

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 30	● 20					○ 20					○ 40		○ 35				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Number of pieces pc.	art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	101033 0001	
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101033 0002	
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101033 0003	
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101033 0004	
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3-4.2-6.8-10.2 mm	24	101033 0005	
		1137	

ATORN Twist drill bit

HSS | DIN 338 | Typ W | 130° | 37° | 5xD | Vc/fz

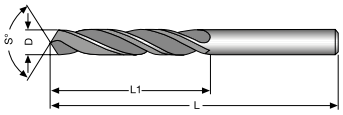
363

Aluminium

- Self-centring
- **Specially designed for machining aluminium/aluminium alloys**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 75	● 65	● 45				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		





D mm	L mm	L1 mm	● Feed f aluminium mm/rev		art.no.	€
1.0	34	12	0.05	10	101017 0100	
1.2	38	16	0.05	10	101017 0120	
1.5	40	18	0.05	10	101017 0150	
1.6	43	20	0.05	10	101017 0160	
1.7	43	20	0.05	10	101017 0170	
1.8	46	22	0.05	10	101017 0180	
1.9	46	22	0.05	10	101017 0190	
2.0	49	24	0.05	10	101017 0200	
2.1	49	24	0.05	10	101017 0210	
2.2	53	27	0.05	10	101017 0220	
2.3	53	27	0.05	10	101017 0230	
2.4	57	30	0.05	10	101017 0240	
2.5	57	30	0.05	10	101017 0250	
2.6	57	30	0.05	10	101017 0260	
2.7	61	33	0.05	10	101017 0270	
2.8	61	33	0.05	10	101017 0280	
3.0	61	33	0.09	10	101017 0300	
3.1	65	36	0.09	10	101017 0310	
3.2	65	36	0.09	10	101017 0320	
3.3	65	36	0.09	10	101017 0330	
3.4	70	39	0.09	10	101017 0340	
3.5	70	39	0.09	10	101017 0350	
3.6	70	39	0.09	10	101017 0360	
3.7	70	39	0.09	10	101017 0370	
3.8	75	43	0.09	10	101017 0380	
3.9	75	43	0.09	10	101017 0390	
4.0	75	43	0.09	10	101017 0400	
4.1	75	43	0.09	10	101017 0410	
4.2	75	43	0.09	10	101017 0420	
4.3	80	47	0.09	10	101017 0430	
4.5	80	47	0.09	10	101017 0450	
4.8	86	52	0.09	10	101017 0480	
4.9	86	52	0.09	10	101017 0490	

D mm	L mm	L1 mm	● Feed f aluminium mm/rev		art.no.	€
5.0	86	52	0.09	10	101017 0500	
5.2	86	52	0.13	10	101017 0520	
5.3	86	52	0.13	10	101017 0530	
5.5	93	57	0.13	10	101017 0550	
5.6	93	57	0.13	10	101017 0560	
5.7	93	57	0.13	10	101017 0570	
5.8	93	57	0.13	10	101017 0580	
5.9	93	57	0.13	10	101017 0590	
6.0	93	57	0.13	10	101017 0600	
6.1	101	63	0.13	1	101017 0610	
6.2	101	63	0.13	1	101017 0620	
6.3	101	63	0.13	1	101017 0630	
6.5	101	63	0.13	1	101017 0650	
6.6	101	63	0.13	1	101017 0660	
6.8	109	69	0.13	1	101017 0680	
7.0	109	69	0.13	1	101017 0700	
7.5	109	69	0.13	1	101017 0750	
8.0	117	75	0.13	1	101017 0800	
8.1	117	75	0.13	1	101017 0810	
8.2	117	75	0.18	1	101017 0820	
8.4	117	75	0.18	1	101017 0840	
8.5	117	75	0.18	1	101017 0850	
9.0	125	81	0.18	1	101017 0900	
9.5	125	81	0.18	1	101017 0950	
10.0	133	87	0.18	1	101017 1000	
10.5	133	87	0.18	1	101017 1050	
11.0	142	94	0.18	1	101017 1100	
12.0	151	101	0.18	1	101017 1200	
12.5	151	101	0.22	1	101017 1250	
13.0	151	101	0.22	1	101017 1300	
13.5	160	108	0.22	1	101017 1350	
14.0	160	108	0.22	1	101017 1400	

ATORN Twist drill bit

HSS-E | DIN 338 | Typ N | Typ VA | 118° | 130° | 27° | 35° | h8 | h8 | 5xD | Z 2 | Vap. | Vc/fz | 361

- 101006.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from ≥ Ø 1 mm
- 101010.... profile-ground, point thinning from Ø ≥ 1 mm, self-centring

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101006....	● 30	● 20		○ 12	○ 10		● 25	○ 20				○ 55	○ 45	○ 45				
101010....	○ 30	○ 20	○ 10	● 10	● 20				● 10	● 10	● 10	○ 70	○ 50	● 70				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

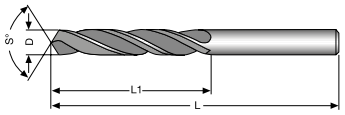
D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		Type N, 118°, vap. art.no.	€		Type VA, 130°, blank art.no.	€
1.00	12	34	0.03	10	101006 0100		10	101010 0100	
1.10	14	36	0.04	10	101006 0110		10	101010 0110	
1.20	16	38	0.04	10	101006 0120		10	101010 0120	
1.30	16	38	0.04	10	101006 0130		10	101010 0130	
1.40	18	40	0.04	10	101006 0140		10	101010 0140	
1.50	18	40	0.04	10	101006 0150		10	101010 0150	
1.60	20	43	0.04	10	101006 0160		10	101010 0160	
1.70	20	43	0.04	10	101006 0170		10	101010 0170	
1.80	22	46	0.04	10	101006 0180		10	101010 0180	
1.90	22	46	0.04	10	101006 0190		10	101010 0190	
2.00	24	49	0.04	10	101006 0200		10	101010 0200	
2.10	24	49	0.04	10	101006 0210		10	101010 0210	
2.20	27	53	0.04	10	101006 0220		10	101010 0220	
2.30	27	53	0.04	10	101006 0230		10	101010 0230	
2.40	30	57	0.04	10	101006 0240		10	101010 0240	
2.50	30	57	0.09	10	101006 0250		10	101010 0250	
2.60	30	57	0.09	10	101006 0260		10	101010 0260	
2.70	33	61	0.09	10	101006 0270		10	101010 0270	
2.80	33	61	0.09	10	101006 0280		10	101010 0280	
2.90	33	61	0.09	10	101006 0290		10	101010 0290	
3.00	33	61	0.09	10	101006 0300		10	101010 0300	
3.10	36	65	0.09	10	101006 0310		10	101010 0310	
3.20	36	65	0.09	10	101006 0320		10	101010 0320	
3.30	36	65	0.09	10	101006 0330		10	101010 0330	
3.40	39	70	0.09	10	101006 0340		10	101010 0340	
3.50	39	70	0.09	10	101006 0350		10	101010 0350	
3.60	39	70	0.09	10	101006 0360		10	101010 0360	
3.70	39	70	0.09	10	101006 0370		10	101010 0370	
3.80	43	75	0.09	10	101006 0380		10	101010 0380	
3.90	43	75	0.09	10	101006 0390		10	101010 0390	
4.00	43	75	0.09	10	101006 0400		10	101010 0400	
4.10	43	75	0.09	10	101006 0410		10	101010 0410	
4.20	43	75	0.09	10	101006 0420		10	101010 0420	
4.30	47	80	0.09	10	101006 0430		10	101010 0430	
4.40	47	80	0.09	10	101006 0440		10	101010 0440	
4.50	47	80	0.09	10	101006 0450		10	101010 0450	
4.60	47	80	0.09	10	101006 0460		10	101010 0460	
4.70	47	80	0.09	10	101006 0470		10	101010 0470	
4.80	52	86	0.09	10	101006 0480		10	101010 0480	
4.90	52	86	0.09	10	101006 0490		10	101010 0490	
5.00	52	86	0.09	10	101006 0500		10	101010 0500	
5.10	52	86	0.13	10	101006 0510		10	101010 0510	
5.20	52	86	0.13	10	101006 0520		10	101010 0520	
5.30	52	86	0.13	10	101006 0530		10	101010 0530	
					1104			1104	



HSS-E, vapour-treated



HSS-E, blank



D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		Type N, 118°, vap. art.no.	€		Type VA, 130°, blank art.no.	€
5.40	57	93	0.13	10	101006 0540		10	101010 0540	
5.50	57	93	0.13	10	101006 0550		10	101010 0550	
5.60	57	93	0.13	10	101006 0560		10	101010 0560	
5.70	57	93	0.13	10	101006 0570		10	101010 0570	
5.80	57	93	0.13	10	101006 0580		10	101010 0580	
5.90	57	93	0.13	10	101006 0590		10	101010 0590	
6.00	57	93	0.13	10	101006 0600		10	101010 0600	
6.10	63	101	0.13	1	101006 0610		1	101010 0610	
6.20	63	101	0.13	1	101006 0620		1	101010 0620	
6.30	63	101	0.13	1	101006 0630		1	101010 0630	
6.40	63	101	0.13	1	101006 0640		1	101010 0640	
6.50	63	101	0.13	1	101006 0650		1	101010 0650	
6.60	63	101	0.13	1	101006 0660		1	101010 0660	
6.70	63	101	0.13	1	101006 0670		1	101010 0670	
6.80	69	109	0.13	1	101006 0680		1	101010 0680	
6.90	69	109	0.13	1	101006 0690		1	101010 0690	
7.00	69	109	0.13	1	101006 0700		1	101010 0700	
7.10	69	109	0.13	1	101006 0710		1	101010 0710	
7.20	69	109	0.13	1	101006 0720		1	101010 0720	
7.30	69	109	0.13	1	101006 0730		1	101010 0730	
7.40	69	109	0.13	1	101006 0740		1	101010 0740	
7.50	69	109	0.13	1	101006 0750		1	101010 0750	
7.60	75	117	0.13	1	101006 0760		1	101010 0760	
7.70	75	117	0.13	1	101006 0770		1	101010 0770	
7.80	75	117	0.13	1	101006 0780		1	101010 0780	
7.90	75	117	0.13	1	101006 0790		1	101010 0790	
8.00	75	117	0.13	1	101006 0800		1	101010 0800	
8.10	75	117	0.18	1	101006 0810		1	101010 0810	
8.20	75	117	0.18	1	101006 0820		1	101010 0820	
8.30	75	117	0.18	1	101006 0830		1	101010 0830	
8.40	75	117	0.18	1	101006 0840		1	101010 0840	
8.50	75	117	0.18	1	101006 0850		1	101010 0850	
8.60	81	125	0.18	1	101006 0860		1	101010 0860	
8.70	81	125	0.18	1	101006 0870		1	101010 0870	
8.80	81	125	0.18	1	101006 0880		1	101010 0880	
8.90	81	125	0.18	1	101006 0890		1	101010 0890	
9.00	81	125	0.18	1	101006 0900		1	101010 0900	
9.10	81	125	0.18	1	101006 0910		1	101010 0910	
9.20	81	125	0.18	1	101006 0920		1	101010 0920	
9.30	81	125	0.18	1	101006 0930		1	101010 0930	
9.40	81	125	0.18	1	101006 0940		1	101010 0940	
9.50	81	125	0.18	1	101006 0950		1	101010 0950	
9.60	87	133	0.18	1	101006 0960		1	101010 0960	
9.70	87	133	0.18	1	101006 0970		1	101010 0970	
9.80	87	133	0.18	1	101006 0980		1	101010 0980	
9.90	87	133	0.18	1	101006 0990		1	101010 0990	
10.00	87	133	0.18	1	101006 1000		1	101010 1000	
10.10	87	133	0.18	1	101006 1010				
10.20	87	133	0.18	1	101006 1020		1	101010 1020	
10.30	87	133	0.18	1	101006 1030				
10.40	87	133	0.18	1	101006 1040				
10.50	87	133	0.18	1	101006 1050		1	101010 1050	
10.60	87	133	0.18	1	101006 1060				
10.70	94	142	0.18	1	101006 1070				
10.80	94	142	0.18	1	101006 1080				
10.90	94	142	0.18	1	101006 1090				
11.00	94	142	0.18	1	101006 1100		1	101010 1100	
11.10	94	142	0.18	1	101006 1110				
11.20	94	142	0.18	1	101006 1120				
					1104			1104	

D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		Type N, 118°, vap. art.no.	€		Type VA, 130°, blank art.no.	€
11.30	94	142	0.18	1	101006 1130				
11.40	94	142	0.18	1	101006 1140				
11.50	94	142	0.18	1	101006 1150		1	101010 1150	
11.60	94	142	0.18	1	101006 1160				
11.70	94	142	0.18	1	101006 1170				
11.80	94	142	0.18	1	101006 1180		1	101010 1180	
11.90	101	151	0.18	1	101006 1190				
12.00	101	151	0.18	1	101006 1200		1	101010 1200	
12.10	101	151	0.22	1	101006 1210				
12.20	101	151	0.22	1	101006 1220		1	101010 1220	
12.30	101	151	0.22	1	101006 1230				
12.40	101	151	0.22	1	101006 1240				
12.50	101	151	0.22	1	101006 1250		1	101010 1250	
12.60	101	151	0.22	1	101006 1260				
12.70	101	151	0.22	1	101006 1270				
12.80	101	151	0.22	1	101006 1280				
12.90	101	151	0.22	1	101006 1290				
13.00	101	151	0.22	1	101006 1300		1	101010 1300	
13.50	108	160	0.22	1	101006 1350		1	101010 1350	
13.75	108	160	0.22	1	101006 1375				
14.00	108	160	0.22	1	101006 1400		1	101010 1400	
14.50	114	169	0.22	1	101006 1450		1	101010 1450	
15.00	114	169	0.22	1	101006 1500		1	101010 1500	
15.25	120	178	0.22	1	101006 1525				
15.50	120	178	0.22	1	101006 1550		1	101010 1550	
15.75	120	178	0.22	1	101006 1575				
16.00	120	178	0.22	1	101006 1600		1	101010 1600	
16.50	125	187	0.28	1	101006 1650				
17.00	125	187	0.28	1	101006 1700				
17.50	130	196	0.28	1	101006 1750				
18.00	130	196	0.28	1	101006 1800				
18.50	135	205	0.28	1	101006 1850				
19.00	135	205	0.28	1	101006 1900				
19.50	140	214	0.28	1	101006 1950				
20.00	140	214	0.28	1	101006 2000				
					1104			1104	

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ATORN Twist drill bit sets

HSS-E | DIN 338 | Typ N | Typ VA | 118° | 130° | 27° | 35° | h8 | 5xD | Z 2 | Vc/fz 361

- 101036.... profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101038.... profile-ground, point thinning from Ø ≥ 1 mm, drilling with no need for accurate centring
- 101039.... Plastic case

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101036....	● 30	● 20		○ 12	○ 10		● 25	○ 20				○ 55	○ 45	○ 45				
101038....	○ 30	○ 20	○ 10	● 10	● 20				● 10	● 10	● 10	○ 70	○ 50	● 70				
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



101036 0004 101038 0004 101039 0004

D mm	Number of pieces pc.	Type N, 118°, vap. art.no.	€	Type VA, 130°, blank art.no.	€	Empty case art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	101036 0001		101038 0001		101039 0001	
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101036 0002		101038 0002		101039 0002	
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101036 0003		101038 0003		101039 0003	
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101036 0004		101038 0004		101039 0004	
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3 - 4.2 - 6.8 - 10.2 mm	24	101036 0005		101038 0005		101039 0005	
		1104		1104		1104	



SARA® Twist drill bit

HSS-E | DIN 338 | Typ TLP | 130° | 38° | h8 | h8 | 5xD | Z 2 | TiN | TiAlN | Vc/fz

362
363

- **Self-centring**
- 101014.... profile-ground, TiN-coated
- 101012.... profile-ground, TiAlN-coated
- Optimised chip flute profile for excellent chip removal

material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101014....	● 35	● 30	○ 15	○ 15	○ 10		○ 30	○ 25										
101012....	● 40	● 20	● 10	● 10	○ 20		● 35	● 30	○ 10	○ 10	○ 10	● 80	● 60	● 60	○ 10			
Cutting speed Vc m/min.																		

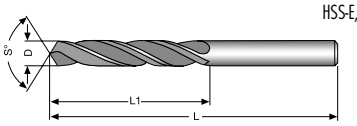
Please adjust these guidelines according to clamping operation and machine set-up.



HSS-E, TiN



HSS-E, TiAlN



D mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev			SARA® TiAlN art.no.	€
1.00	34	12	0.04	10	10	101012 0100	
1.10	36	14	0.04	10	10	101012 0110	
1.20	38	16	0.04	10	10	101012 0120	
1.30	38	16	0.04	10	10	101012 0130	
1.40	40	18	0.04	10	10	101012 0140	
1.50	40	18	0.04	10	10	101012 0150	
1.60	43	20	0.04	10	10	101012 0160	
1.70	43	20	0.04	10	10	101012 0170	
1.80	46	22	0.04	10	10	101012 0180	
1.90	46	22	0.04	10	10	101012 0190	
2.00	49	24	0.04	10	10	101012 0200	
2.10	49	24	0.04	10	10	101012 0210	
2.20	53	27	0.04	10	10	101012 0220	
2.30	53	27	0.04	10	10	101012 0230	
2.40	57	30	0.04	10	10	101012 0240	
2.50	57	30	0.09	10	10	101012 0250	
2.60	57	30	0.09	10	10	101012 0260	
2.70	61	33	0.09	10	10	101012 0270	
2.80	61	33	0.09	10	10	101012 0280	
2.90	61	33	0.09	10	10	101012 0290	
3.00	61	33	0.09	10	10	101012 0300	
3.10	65	36	0.09	10	10	101012 0310	
3.20	65	36	0.09	10	10	101012 0320	
3.30	65	36	0.09	10	10	101012 0330	
3.40	70	39	0.09	10	10	101012 0340	
3.50	70	39	0.09	10	10	101012 0350	
3.60	70	39	0.09	10	10	101012 0360	
3.70	70	39	0.09	10	10	101012 0370	
3.80	75	43	0.09	10	10	101012 0380	
3.90	75	43	0.09	10	10	101012 0390	
4.00	75	43	0.09	10	10	101012 0400	
4.10	75	43	0.09	10	10	101012 0410	
4.20	75	43	0.09	10	10	101012 0420	
4.30	80	47	0.09	10	10	101012 0430	
4.40	80	47	0.09	10	10	101012 0440	
4.50	80	47	0.09	10	10	101012 0450	
4.60	80	47	0.09	10	10	101012 0460	

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SARA® ATORN

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev			TiAlN art.no.	€
4.70	80	47	0.09	10	10	101012 0470	
4.80	86	52	0.09	10	10	101012 0480	
4.90	86	52	0.09	10	10	101012 0490	
5.00	86	52	0.09	10	10	101012 0500	
5.10	86	52	0.13	10	10	101012 0510	
5.20	86	52	0.13	10	10	101012 0520	
5.30	86	52	0.13	10	10	101012 0530	
5.40	93	57	0.13	10	10	101012 0540	
5.50	93	57	0.13	10	10	101012 0550	
5.60	93	57	0.13	10	10	101012 0560	
5.70	93	57	0.13	10	10	101012 0570	
5.80	93	57	0.13	10	10	101012 0580	
5.90	93	57	0.13	10	10	101012 0590	
6.00	93	57	0.13	10	10	101012 0600	
6.10	101	63	0.13	1	1	101012 0610	
6.20	101	63	0.13	1	1	101012 0620	
6.30	101	63	0.13	1	1	101012 0630	
6.40	101	63	0.13	1	1	101012 0640	
6.50	101	63	0.13	1	1	101012 0650	
6.60	101	63	0.13	1	1	101012 0660	
6.70	101	63	0.13	1	1	101012 0670	
6.80	109	69	0.13	1	1	101012 0680	
6.90	109	69	0.13	1	1	101012 0690	
7.00	109	69	0.13	1	1	101012 0700	
7.10	109	69	0.13	1	1	101012 0710	
7.20	109	69	0.13	1	1	101012 0720	
7.30	109	69	0.13	1	1	101012 0730	
7.40	109	69	0.13	1	1	101012 0740	
7.50	109	69	0.13	1	1	101012 0750	
7.60	117	75	0.13	1	1	101012 0760	
7.70	117	75	0.13	1	1	101012 0770	
7.80	117	75	0.13	1	1	101012 0780	
7.90	117	75	0.13	1	1	101012 0790	
8.00	117	75	0.13	1	1	101012 0800	
8.10	117	75	0.18	1	1	101012 0810	
8.20	117	75	0.18	1	1	101012 0820	
8.30	117	75	0.18	1	1	101012 0830	
8.40	117	75	0.18	1	1	101012 0840	
8.50	117	75	0.18	1	1	101012 0850	
8.60	125	81	0.18	1	1	101012 0860	
8.70	125	81	0.18	1	1	101012 0870	
8.80	125	81	0.18	1	1	101012 0880	
8.90	125	81	0.18	1	1	101012 0890	
9.00	125	81	0.18	1	1	101012 0900	
9.10	125	81	0.18	1	1	101012 0910	
9.20	125	81	0.18	1	1	101012 0920	
9.30	125	81	0.18	1	1	101012 0930	
9.40	125	81	0.18	1	1	101012 0940	
9.50	125	81	0.18	1	1	101012 0950	
9.60	133	87	0.18	1	1	101012 0960	
9.70	133	87	0.18	1	1	101012 0970	
9.80	133	87	0.18	1	1	101012 0980	
9.90	133	87	0.18	1	1	101012 0990	
10.00	133	87	0.18	1	1	101012 1000	
10.20	133	87	0.18	1	1	101012 1020	
10.50	133	87	0.18	1	1	101012 1050	
11.00	142	94	0.18	1	1	101012 1100	
11.50	142	94	0.18	1	1	101012 1150	
11.80	142	94	0.18	1	1	101012 1180	

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev			TiAlN art.no.	€
12.00	151	101	0.18	1	1	101012 1200	
15.00	169	114	0.22	1	1	101012 1500	
16.00	178	120	0.22	1	1	101012 1600	

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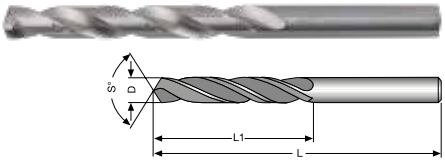
ATORN Twist drill bit

HSS Co8 | DIN 338 | Typ NV | 135° | 35° | h8 | h8 | 5xD | Z 2 | Vc/fz

363

- Self-centring
- **With reinforced core**
- HSS cutting material with increased heat resistance

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 30	● 20	● 10	● 20	● 10		○ 30	● 30	● 7	○ 6	○ 6			● 45				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
1.00	34	12	0.03	10	101016 0100	
1.10	36	14	0.03	10	101016 0110	
1.20	38	16	0.03	10	101016 0120	
1.30	38	16	0.03	10	101016 0130	
1.40	40	18	0.03	10	101016 0140	
1.50	40	18	0.03	10	101016 0150	
1.60	43	20	0.03	10	101016 0160	
1.70	43	20	0.03	10	101016 0170	
1.80	46	22	0.03	10	101016 0180	
1.90	46	22	0.03	10	101016 0190	
2.00	49	24	0.03	10	101016 0200	
2.10	49	24	0.03	10	101016 0210	
2.20	53	27	0.04	10	101016 0220	
2.30	53	27	0.04	10	101016 0230	
2.40	57	30	0.04	10	101016 0240	
2.50	57	30	0.04	10	101016 0250	
2.60	57	30	0.04	10	101016 0260	
2.70	61	33	0.04	10	101016 0270	
2.80	61	33	0.04	10	101016 0280	
2.90	61	33	0.04	10	101016 0290	
3.00	61	33	0.04	10	101016 0300	
3.10	65	36	0.04	10	101016 0310	
3.20	65	36	0.04	10	101016 0320	
3.30	65	36	0.04	10	101016 0330	
3.40	70	39	0.05	10	101016 0340	

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D mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
3.50	70	39	0.05	10	101016 0350	
3.60	70	39	0.05	10	101016 0360	
3.70	70	39	0.05	10	101016 0370	
3.80	75	43	0.05	10	101016 0380	
3.90	75	43	0.05	10	101016 0390	
4.00	75	43	0.05	10	101016 0400	
4.10	75	43	0.05	10	101016 0410	
4.20	75	43	0.05	10	101016 0420	
4.30	80	47	0.06	10	101016 0430	
4.40	80	47	0.06	10	101016 0440	
4.50	80	47	0.06	10	101016 0450	
4.60	80	47	0.06	10	101016 0460	
4.70	80	47	0.06	10	101016 0470	
4.80	86	52	0.06	10	101016 0480	
4.90	86	52	0.06	10	101016 0490	
5.00	86	52	0.06	10	101016 0500	
5.10	86	52	0.07	10	101016 0510	
5.20	86	52	0.07	10	101016 0520	
5.30	86	52	0.07	10	101016 0530	
5.40	93	57	0.07	10	101016 0540	
5.50	93	57	0.07	10	101016 0550	
5.60	93	57	0.07	10	101016 0560	
5.70	93	57	0.07	10	101016 0570	
5.80	93	57	0.07	10	101016 0580	
5.90	93	57	0.08	10	101016 0590	

1104

D mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
6.00	93	57	0.08	10	101016 0600	
6.10	101	63	0.08	1	101016 0610	
6.20	101	63	0.08	1	101016 0620	
6.30	101	63	0.08	1	101016 0630	
6.40	101	63	0.08	1	101016 0640	
6.50	101	63	0.08	1	101016 0650	
6.60	101	63	0.08	1	101016 0660	
6.70	101	63	0.08	1	101016 0670	
6.80	109	69	0.09	1	101016 0680	
6.90	109	69	0.09	1	101016 0690	
7.00	109	69	0.09	1	101016 0700	
7.10	109	69	0.09	1	101016 0710	
7.20	109	69	0.09	1	101016 0720	
7.30	109	69	0.09	1	101016 0730	
7.40	109	69	0.09	1	101016 0740	
7.50	109	69	0.09	1	101016 0750	
7.60	117	75	0.1	1	101016 0760	
7.70	117	75	0.1	1	101016 0770	
7.80	117	75	0.1	1	101016 0780	
7.90	117	75	0.1	1	101016 0790	
8.00	117	75	0.1	1	101016 0800	
8.10	117	75	0.1	1	101016 0810	
8.20	117	75	0.1	1	101016 0820	
8.30	117	75	0.1	1	101016 0830	
8.40	117	75	0.1	1	101016 0840	

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D mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
8.50	117	75	0.11	1	101016 0850	
8.60	125	81	0.11	1	101016 0860	
8.70	125	81	0.11	1	101016 0870	
8.80	125	81	0.11	1	101016 0880	
8.90	125	81	0.11	1	101016 0890	
9.00	125	81	0.11	1	101016 0900	
9.10	125	81	0.11	1	101016 0910	
9.20	125	81	0.11	1	101016 0920	
9.30	125	81	0.11	1	101016 0930	
9.40	125	81	0.11	1	101016 0940	
9.50	125	81	0.12	1	101016 0950	
9.60	133	87	0.12	1	101016 0960	
9.70	133	87	0.12	1	101016 0970	
9.80	133	87	0.12	1	101016 0980	
9.90	133	87	0.12	1	101016 0990	
10.00	133	87	0.12	1	101016 1000	
10.10	133	87	0.12	1	101016 1010	
10.20	133	87	0.12	1	101016 1020	
10.50	133	87	0.13	1	101016 1050	
11.00	142	94	0.13	1	101016 1100	
11.50	142	94	0.14	1	101016 1150	
11.80	142	94	0.14	1	101016 1180	
12.00	151	101	0.14	1	101016 1200	
12.50	151	101	0.15	1	101016 1250	
13.00	151	101	0.15	1	101016 1300	

1104

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ATORN Twist drill, with 3 surface shank

HSS-E | DIN 338 | Typ VA | 135° | 40° | h8 | 5xD | Z 2 | Vc/fz

362

- **3-facet grinding** on shank (from Ø 4 mm) for optimum transfer of force and secure hold in the drill chuck, no possibility of slippage
- Low force application when opening and closing in the drill chuck
- **Special surface treatment** in conjunction with relief grinding for maximum lubricant adhesion and for fast, reliable chip removal
- Designed especially for use on portable drilling machines

also ideal for stainless steel

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 30	● 20	○ 10	● 10	● 10			○ 30	○ 10	○ 10	○ 10	● 60	● 50	● 50	● 15			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

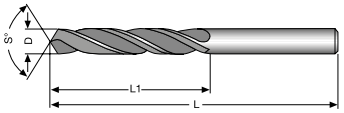
D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
2.00	24	49	0.04	10	101076 0020	
2.50	30	57	0.04	10	101076 0025	
3.00	33	61	0.05	10	101076 0030	
3.20	36	65	0.05	10	101076 0032	
3.30	36	65	0.05	10	101076 0033	
3.50	39	70	0.05	10	101076 0035	
4.00	43	75	0.07	10	101076 0040	
4.20	43	75	0.07	10	101076 0042	
4.50	47	80	0.07	10	101076 0045	
5.00	52	86	0.08	10	101076 0050	
5.20	52	86	0.08	10	101076 0052	
5.50	57	93	0.08	10	101076 0055	
6.00	57	93	0.10	1	101076 0060	
6.50	63	101	0.10	1	101076 0065	
6.80	69	109	0.10	1	101076 0068	
7.00	69	109	0.11	1	101076 0070	
7.50	69	109	0.11	1	101076 0075	
8.00	75	117	0.12	1	101076 0080	
8.50	75	117	0.12	1	101076 0085	
9.00	81	125	0.13	1	101076 0090	
9.50	81	125	0.13	1	101076 0095	
10.00	87	133	0.15	1	101076 0100	
10.20	87	133	0.15	1	101076 0102	
10.50	87	133	0.15	1	101076 0105	
11.00	94	142	0.15	1	101076 0110	
11.50	94	142	0.15	1	101076 0115	
12.00	101	151	0.16	1	101076 0120	
12.50	101	151	0.16	1	101076 0125	
13.00	101	151	0.16	1	101076 0130	

1104





Straight shank with 3-facet grinding



ATORN Twist drill bit sets, with 3 surface shank

HSS-E | DIN 338 | Typ VA | 135° | h8 | 5xD | Z 2 | Vc/fz | 362

- **3-facet grinding** on shank (from Ø 4 mm) for optimum transfer of force and secure hold in the drill chuck, no possibility of slippage
- Low force application when opening and closing in the drill chuck
- **Special surface treatment** in conjunction with relief grinding for maximum lubricant adhesion and for fast, reliable chip removal
- Designed especially for use on portable drilling machines



101076 0003

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			○	○	○	○	●	●	●	●			
		30	20	10	10	10			30	10	10	10	60	50	50	15			
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Number of pieces pc.	D mm	Contents	art.no.	€
6	2.0 - 8.0	2.0 - 8.0 mm	101076 0001	
19	1.0 - 10.0	1.0-10.0	101076 0002	
25	1.0 - 13.0	1.0-13.0	101076 0003	
			1104	

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ATORN Twist drill STEP DRILL

HSS | HSS-E | DIN 338 | Typ N | 118° | h8 | 5xD | Z 2 | TiN | Vap.

- Drilling of sheet metal and flat materials
- **Innovative step-structured tip geometry**
- **Excellent self-centring**
- 3-facet grinding to shank for optimum transfer of force and secure hold in the drill chuck, no possibility of slippage
- Best used on hand drills
- Low-burr drilling
- **Versions:**
  102669 - HSS, blank
  102668 - HSS, TiN head coating
  102667 - HSS-E, vapour-treated

Innovative step geometry

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

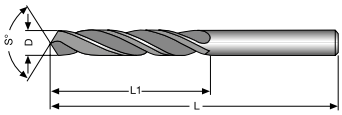
Single

D mm	L1 mm	L mm		HSS art.no.	€		HSS, TiN art.no.	€		art.no.	€
1	12	34	10	102669 0100		10	102668 0100		10	102667 0100	
1.5	18	40	10	102669 0150		10	102668 0150		10	102667 0150	
2	24	49	10	102669 0200		10	102668 0200		10	102667 0200	
2.5	30	57	10	102669 0250		10	102668 0250		10	102667 0250	
3	33	61	10	102669 0300		10	102668 0300		10	102667 0300	
3.2	36	65	10	102669 0320		10	102668 0320		10	102667 0320	
3.3	36	65	10	102669 0330		10	102668 0330		10	102667 0330	
3.5	39	70	10	102669 0350		10	102668 0350		10	102667 0350	
4	43	75	10	102669 0400		10	102668 0400		10	102667 0400	
4.1	43	75	10	102669 0410		10	102668 0410		10	102667 0410	
4.2	43	75	10	102669 0420		10	102668 0420		10	102667 0420	
4.5	47	80	10	102669 0450		10	102668 0450		10	102667 0450	
4.9	52	86	10	102669 0490		10	102668 0490		10	102667 0490	
5	52	86	10	102669 0500		10	102668 0500		10	102667 0500	
5.1	52	86	10	102669 0510		10	102668 0510		10	102667 0510	
5.2	52	86	10	102669 0520		10	102668 0520		10	102667 0520	
5.5	57	93	10	102669 0550		10	102668 0550		10	102667 0550	
6	57	93	10	102669 0600		10	102668 0600		10	102667 0600	
6.5	63	101	1	102669 0650		1	102668 0650		1	102667 0650	
6.8	69	109	1	102669 0680		1	102668 0680		1	102667 0680	
7	69	109	1	102669 0700		1	102668 0700		1	102667 0700	
7.5	69	109	1	102669 0750		1	102668 0750		1	102667 0750	
8	75	117	1	102669 0800		1	102668 0800		1	102667 0800	
8.5	75	117	1	102669 0850		1	102668 0850		1	102667 0850	
9	81	125	1	102669 0900		1	102668 0900		1	102667 0900	
9.5	81	125	1	102669 0950		1	102668 0950		1	102667 0950	
10	87	133	1	102669 1000		1	102668 1000		1	102667 1000	
10.2	87	133	1	102669 1020		1	102668 1020		1	102667 1020	
10.5	87	133	1	102669 1050		1	102668 1050		1	102667 1050	
11	94	142	1	102669 1100		1	102668 1100		1	102667 1100	
11.5	94	142	1	102669 1150		1	102668 1150		1	102667 1150	
12	101	151	1	102669 1200		1	102668 1200		1	102667 1200	
12.5	101	151	1	102669 1250		1	102668 1250		1	102667 1250	
13	101	151	1	102669 1300		1	102668 1300		1	102667 1300	
				1101			1101			1101	


102669....


102668....


102667....



Sets

Contents	Pitch mm	Number of pieces pc.	HSS art.no.	€	HSS, TiN art.no.	€	art.no.	€
1.0-10.0	0.5 mm	19	102669 2001		102668 2001		102667 2001	
1.0-13.0	0.5 mm	25	102669 2002		102668 2002		102667 2002	
1.0-10.5	0.5 mm + core-hole drill	24	102669 2003					
1.0-10.5		24			102668 2003		102667 2003	
1.0-13.0	0.5 mm + core-hole drill	29	102669 2004					
1.0-13.0		29			102668 2004		102667 2004	
			1101		1101		1101	


1026682001

ATORN KSB-5D twist drill

HSS-E PM | DIN 338 | Typ N | 130° | 38° | h8 | h8 | 5xD | Z 2 | TiN | Vc/fz | 364

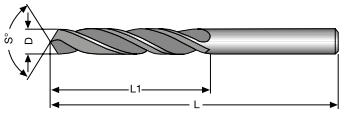
- Self-centring
- Low wear on cutting edges
- Especially resistant to high temperatures
- Extended service life
- Excellent chip removal
- **Short chips**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	●	●		●	●	○	○	○	●	●	●	●	○		
	50	35	15	12	10		45	40	12	12	12	90	80	80	15	4		
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D mm	L1 mm	L mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.00	12	34	0.03	101095 0100	
1.10	14	36	0.03	101095 0110	
1.20	16	38	0.03	101095 0120	
1.30	16	38	0.03	101095 0130	
1.40	18	40	0.03	101095 0140	
1.50	18	40	0.03	101095 0150	
1.60	20	43	0.03	101095 0160	
1.70	20	43	0.03	101095 0170	
1.80	22	46	0.03	101095 0180	
1.90	22	46	0.03	101095 0190	
2.00	24	49	0.03	101095 0200	
2.10	24	49	0.03	101095 0210	
2.20	27	53	0.04	101095 0220	
2.30	27	53	0.04	101095 0230	
2.40	30	57	0.04	101095 0240	
2.50	30	57	0.04	101095 0250	
2.60	30	57	0.04	101095 0260	
2.70	33	61	0.04	101095 0270	
2.80	33	61	0.04	101095 0280	
2.90	33	61	0.04	101095 0290	
3.00	33	61	0.04	101095 0300	
3.10	36	65	0.04	101095 0310	
3.20	36	65	0.04	101095 0320	
3.30	36	65	0.05	101095 0330	
3.40	39	70	0.05	101095 0340	
3.50	39	70	0.05	101095 0350	
3.60	39	70	0.05	101095 0360	
3.70	39	70	0.06	101095 0370	
3.80	43	75	0.06	101095 0380	
3.90	43	75	0.06	101095 0390	
4.00	43	75	0.06	101095 0400	
4.10	43	75	0.06	101095 0410	
4.20	43	75	0.07	101095 0420	
4.30	47	80	0.07	101095 0430	
4.40	47	80	0.07	101095 0440	
4.50	47	80	0.07	101095 0450	
4.60	47	80	0.08	101095 0460	
4.70	47	80	0.08	101095 0470	

1106

D mm	L1 mm	L mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.80	52	86	0.08	101095 0480	
4.90	52	86	0.08	101095 0490	
5.00	52	86	0.08	101095 0500	
5.10	52	86	0.09	101095 0510	
5.20	52	86	0.09	101095 0520	
5.30	52	86	0.09	101095 0530	
5.40	57	93	0.09	101095 0540	
5.50	57	93	0.1	101095 0550	
5.60	57	93	0.1	101095 0560	
5.70	57	93	0.1	101095 0570	
5.80	57	93	0.1	101095 0580	
5.90	57	93	0.1	101095 0590	
6.00	57	93	0.11	101095 0600	
6.10	63	101	0.11	101095 0610	
6.20	63	101	0.11	101095 0620	
6.30	63	101	0.11	101095 0630	
6.40	63	101	0.12	101095 0640	
6.50	63	101	0.12	101095 0650	
6.60	63	101	0.12	101095 0660	
6.70	63	101	0.12	101095 0670	
6.80	69	109	0.12	101095 0680	
6.90	69	109	0.13	101095 0690	
7.00	69	109	0.13	101095 0700	
7.10	69	109	0.13	101095 0710	
7.20	69	109	0.13	101095 0720	
7.30	69	109	0.14	101095 0730	
7.40	69	109	0.14	101095 0740	
7.50	69	109	0.14	101095 0750	
7.60	75	117	0.14	101095 0760	
7.70	75	117	0.14	101095 0770	
7.80	75	117	0.15	101095 0780	
7.90	75	117	0.15	101095 0790	
8.00	75	117	0.15	101095 0800	
8.10	75	117	0.15	101095 0810	
8.20	75	117	0.15	101095 0820	
8.30	75	117	0.15	101095 0830	
8.40	75	117	0.15	101095 0840	
8.50	75	117	0.15	101095 0850	

1106

D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.80	81	125	0.16	101095 0880	
9.00	81	125	0.16	101095 0900	
9.30	81	125	0.16	101095 0930	
9.50	81	125	0.16	101095 0950	
9.80	87	133	0.16	101095 0980	
10.00	87	133	0.16	101095 1000	
10.20	87	133	0.16	101095 1020	
10.30	87	133	0.16	101095 1030	
10.50	87	133	0.17	101095 1050	

1106

D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.00	94	142	0.17	101095 1100	
11.50	94	142	0.17	101095 1150	
12.00	101	151	0.18	101095 1200	
12.30	101	151	0.18	101095 1230	
12.50	101	151	0.18	101095 1250	
12.70	101	151	0.18	101095 1270	
13.00	101	151	0.18	101095 1300	
13.50	108	160	0.18	101095 1350	
14.00	108	160	0.19	101095 1400	

1106

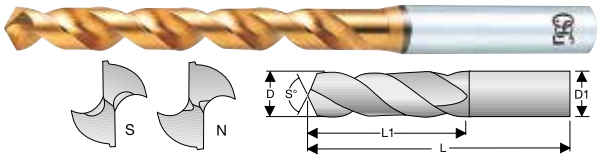
EX-SUS-GDR twist drill bit



- Large chip spaces, high toughness
- **Reduced heat build-up**
- Shank design: straight
- **From Ø 12.1 with driving plane in accordance with DIN 1835B**
- S°= point angle: ≤ Ø 4 mm = 130°, > Ø 4 mm = 120°
- Centring geometry: up to Ø 13 mm S version, from Ø 13.5 mm N version
- Available on request: Intermediate dimensions from Ø 2 to Ø 6 mm (in 0.01 mm increments)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 36	○ 33		18	16	○ 10			7			82	48	38				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.0	56	24	3	0.07	114050 0200	
2.1	56	24	3	0.07	114050 0210	
2.2	59	27	3	0.07	114050 0220	
2.3	59	27	3	0.07	114050 0230	
2.4	62	30	3	0.07	114050 0240	
2.5	62	30	3	0.11	114050 0250	
2.6	62	30	3	0.11	114050 0260	
2.7	65	33	3	0.11	114050 0270	
2.8	65	33	3	0.11	114050 0280	
2.9	65	33	3	0.11	114050 0290	
3.0	65	33	3	0.11	114050 0300	
3.1	68	36	4	0.11	114050 0310	
3.2	68	36	4	0.11	114050 0320	
3.3	68	36	4	0.11	114050 0330	
3.4	71	39	4	0.11	114050 0340	
3.5	71	39	4	0.13	114050 0350	
3.6	71	39	4	0.13	114050 0360	
3.7	71	39	4	0.13	114050 0370	
3.8	75	43	4	0.13	114050 0380	
3.9	75	43	4	0.13	114050 0390	
4.0	75	43	4	0.13	114050 0400	
4.1	87	43	6	0.13	114050 0410	
4.2	87	43	6	0.13	114050 0420	
4.3	91	47	6	0.13	114050 0430	
4.4	91	47	6	0.13	114050 0440	

1107

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
4.5	91	47	6	0.15	114050 0450	
4.6	91	47	6	0.15	114050 0460	
4.7	91	47	6	0.15	114050 0470	
4.8	96	52	6	0.15	114050 0480	
4.9	96	52	6	0.15	114050 0490	
5.0	96	52	6	0.15	114050 0500	
5.1	96	52	6	0.15	114050 0510	
5.2	96	52	6	0.15	114050 0520	
5.3	96	52	6	0.15	114050 0530	
5.4	101	57	6	0.15	114050 0540	
5.5	101	57	6	0.16	114050 0550	
5.6	101	57	6	0.16	114050 0560	
5.7	101	57	6	0.16	114050 0570	
5.8	101	57	6	0.16	114050 0580	
5.9	101	57	6	0.16	114050 0590	
6.0	101	57	6	0.16	114050 0600	
6.1	107	63	8	0.16	114050 0610	
6.2	107	63	8	0.16	114050 0620	
6.3	107	63	8	0.16	114050 0630	
6.4	107	63	8	0.16	114050 0640	
6.5	107	63	8	0.16	114050 0650	
6.6	107	63	8	0.16	114050 0660	
6.7	107	63	8	0.16	114050 0670	
6.8	113	69	8	0.16	114050 0680	
6.9	113	69	8	0.16	114050 0690	

1107

D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
7.0	113	69	8	0.16	114050 0700	
7.1	113	69	8	0.20	114050 0710	
7.2	113	69	8	0.20	114050 0720	
7.3	113	69	8	0.20	114050 0730	
7.4	113	69	8	0.20	114050 0740	
7.5	113	69	8	0.20	114050 0750	
7.6	119	75	8	0.20	114050 0760	
7.7	119	75	8	0.20	114050 0770	
7.8	119	75	8	0.20	114050 0780	
7.9	119	75	8	0.20	114050 0790	
8.0	119	75	8	0.20	114050 0800	
8.1	125	75	10	0.20	114050 0810	
8.2	125	75	10	0.20	114050 0820	
8.3	125	75	10	0.20	114050 0830	
8.4	125	75	10	0.20	114050 0840	
8.5	125	75	10	0.20	114050 0850	
8.6	131	81	10	0.20	114050 0860	
8.7	131	81	10	0.20	114050 0870	
8.8	131	81	10	0.20	114050 0880	
8.9	131	81	10	0.20	114050 0890	
9.0	131	81	10	0.20	114050 0900	
9.1	131	81	10	0.24	114050 0910	
9.2	131	81	10	0.24	114050 0920	
9.3	131	81	10	0.24	114050 0930	
9.4	131	81	10	0.24	114050 0940	
9.5	131	81	10	0.24	114050 0950	
9.6	137	87	10	0.24	114050 0960	
9.7	137	87	10	0.24	114050 0970	
9.8	137	87	10	0.24	114050 0980	
9.9	137	87	10	0.24	114050 0990	
10.0	137	87	10	0.24	114050 1000	
10.1	144	87	12	0.24	114050 1010	
10.2	144	87	12	0.24	114050 1020	
10.3	144	87	12	0.24	114050 1030	
10.4	144	87	12	0.24	114050 1040	
10.5	144	87	12	0.24	114050 1050	
10.6	144	87	12	0.24	114050 1060	
10.7	151	94	12	0.24	114050 1070	

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D mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
10.8	151	94	12	0.24	114050 1080	
10.9	151	94	12	0.24	114050 1090	
11.0	151	94	12	0.24	114050 1100	
11.1	151	94	12	0.29	114050 1110	
11.2	151	94	12	0.29	114050 1120	
11.3	151	94	12	0.29	114050 1130	
11.4	151	94	12	0.29	114050 1140	
11.5	151	94	12	0.29	114050 1150	
11.6	151	94	12	0.29	114050 1160	
11.7	151	94	12	0.29	114050 1170	
11.8	151	94	12	0.29	114050 1180	
11.9	158	101	12	0.29	114050 1190	
12.0	158	101	12	0.29	114050 1200	
12.1	158	101	16	0.29	114050 1210	
12.2	158	101	16	0.29	114050 1220	
12.3	158	101	16	0.29	114050 1230	
12.4	158	101	16	0.29	114050 1240	
12.5	158	101	16	0.29	114050 1250	
12.6	158	101	16	0.29	114050 1260	
12.7	158	101	16	0.29	114050 1270	
12.8	158	101	16	0.29	114050 1280	
12.9	158	101	16	0.29	114050 1290	
13.0	158	101	16	0.29	114050 1300	
13.5	166	106	16	0.33	114050 1350	
14.0	166	106	16	0.33	114050 1400	
14.5	169	109	16	0.33	114050 1450	
15.0	169	109	16	0.33	114050 1500	
15.5	172	112	16	0.36	114050 1550	
16.0	172	112	16	0.36	114050 1600	
16.5	181	115	20	0.36	114050 1650	
17.0	181	115	20	0.36	114050 1700	
17.5	184	118	20	0.40	114050 1750	
18.0	184	118	20	0.40	114050 1800	
18.5	188	122	20	0.40	114050 1850	
19.0	188	122	20	0.40	114050 1900	
19.5	191	125	20	0.43	114050 1950	
20.0	191	125	20	0.43	114050 2000	

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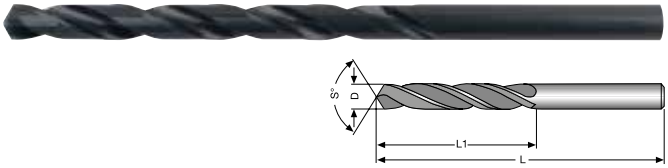
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ATORN Twist drill bit

HSS | DIN 340 | Typ N | 118° | 30° | h8 | h8 | 10xD | Z 2 | Vap. | Vc/fz | 361

- **For deep bores** (multiple chip removal)
- vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- Profile-ground to meet the highest demands for process reliability
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30	○ 20		○ 10			● 25	○ 25				○ 60	○ 40	○ 50	○ 10			
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.60	15	35	0.01	10	101060 0060	
0.80	29	46	0.01	10	101060 0080	
1.00	33	56	0.02	10	101060 0100	
1.10	37	60	0.02	10	101060 0110	
1.20	41	65	0.02	10	101060 0120	
1.30	41	65	0.02	10	101060 0130	
1.40	45	70	0.02	10	101060 0140	
1.50	45	70	0.02	10	101060 0150	
1.60	50	76	0.02	10	101060 0160	
1.70	50	76	0.02	10	101060 0170	
1.80	53	80	0.02	10	101060 0180	
1.90	53	80	0.02	10	101060 0190	
2.00	56	85	0.05	10	101060 0200	
2.10	56	85	0.05	10	101060 0210	
2.20	59	90	0.05	10	101060 0220	
2.30	59	90	0.05	10	101060 0230	
2.40	62	95	0.05	10	101060 0240	
2.50	62	95	0.06	10	101060 0250	
2.60	62	95	0.06	10	101060 0260	
2.70	66	100	0.06	10	101060 0270	
2.80	66	100	0.06	10	101060 0280	
2.90	66	100	0.06	10	101060 0290	
3.00	66	100	0.06	10	101060 0300	
3.10	69	106	0.08	10	101060 0310	
3.20	69	106	0.08	10	101060 0320	
3.30	69	106	0.08	10	101060 0330	
3.40	73	112	0.08	10	101060 0340	
3.50	73	112	0.08	10	101060 0350	
3.60	73	112	0.08	10	101060 0360	
3.70	73	112	0.08	10	101060 0370	
3.80	78	119	0.08	10	101060 0380	
3.90	78	119	0.08	10	101060 0390	
4.00	78	119	0.10	10	101060 0400	
4.10	78	119	0.10	10	101060 0410	
4.20	78	119	0.10	10	101060 0420	
4.30	82	126	0.10	10	101060 0430	
4.50	82	126	0.10	10	101060 0450	
4.60	82	126	0.10	10	101060 0460	
4.70	82	126	0.10	10	101060 0470	
4.80	87	132	0.10	10	101060 0480	

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D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
4.90	87	132	0.10	10	101060 0490	
5.00	87	132	0.10	10	101060 0500	
5.10	87	132	0.10	10	101060 0510	
5.20	87	132	0.10	10	101060 0520	
5.30	87	132	0.10	10	101060 0530	
5.40	91	139	0.10	10	101060 0540	
5.50	91	139	0.10	10	101060 0550	
5.60	91	139	0.10	10	101060 0560	
5.70	91	139	0.10	10	101060 0570	
5.80	91	139	0.10	10	101060 0580	
5.90	91	139	0.10	10	101060 0590	
6.00	91	139	0.10	10	101060 0600	
6.10	97	148	0.10	1	101060 0610	
6.20	97	148	0.10	1	101060 0620	
6.30	97	148	0.13	1	101060 0630	
6.40	97	148	0.13	1	101060 0640	
6.50	97	148	0.13	1	101060 0650	
6.60	97	148	0.13	1	101060 0660	
6.70	97	148	0.13	1	101060 0670	
6.80	102	156	0.13	1	101060 0680	
6.90	102	156	0.13	1	101060 0690	
7.00	102	156	0.13	1	101060 0700	
7.10	102	156	0.13	1	101060 0710	
7.20	102	156	0.13	1	101060 0720	
7.30	102	156	0.13	1	101060 0730	
7.40	102	156	0.13	1	101060 0740	
7.50	102	156	0.13	1	101060 0750	
7.60	102	156	0.13	1	101060 0760	
7.70	109	165	0.13	1	101060 0770	
7.80	109	165	0.13	1	101060 0780	
7.90	109	165	0.13	1	101060 0790	
8.00	109	165	0.16	1	101060 0800	
8.10	109	165	0.16	1	101060 0810	
8.20	109	165	0.16	1	101060 0820	
8.30	109	165	0.16	1	101060 0830	
8.40	109	165	0.16	1	101060 0840	
8.50	109	165	0.16	1	101060 0850	
8.60	115	175	0.16	1	101060 0860	
8.70	115	175	0.16	1	101060 0870	
8.80	115	175	0.16	1	101060 0880	

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D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
8.90	115	175	0.16	1	101060 0890	
9.00	115	175	0.18	1	101060 0900	
9.10	115	175	0.18	1	101060 0910	
9.20	115	175	0.18	1	101060 0920	
9.30	115	175	0.18	1	101060 0930	
9.40	115	175	0.18	1	101060 0940	
9.50	115	175	0.18	1	101060 0950	
9.60	121	184	0.18	1	101060 0960	
9.80	121	184	0.18	1	101060 0980	
9.90	121	184	0.18	1	101060 0990	
10.00	121	184	0.20	1	101060 1000	
10.20	121	184	0.20	1	101060 1020	
10.50	121	184	0.20	1	101060 1050	

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D mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
11.00	128	197	0.20	1	101060 1100	
11.50	128	197	0.20	1	101060 1150	
12.00	134	205	0.20	1	101060 1200	
12.50	134	205	0.20	1	101060 1250	
13.00	134	205	0.20	1	101060 1300	
13.50	140	214	0.20	1	101060 1350	
14.00	140	214	0.20	1	101060 1400	
14.50	144	220	0.20	1	101060 1450	
15.00	144	220	0.20	1	101060 1500	
15.50	149	227	0.20	1	101060 1550	
16.00	149	227	0.25	1	101060 1600	

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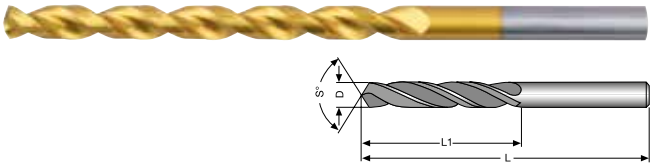
ATORN Twist drill bit

HSS | DIN 340 | Typ TLP | 130° | 38° | h8 | h8 | 10xD | Z 2 | TiN | Vc/fz | 364

- For deep bores (no chip removal)
- **Wide chip flutes for better chip removal**
- Point thinning from ∅ > 1 mm
- Profile-ground to meet the highest demands for process reliability
- **Pilot hole recommended**

Deep bore profile

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○				●	●				●	●	●	○			
		30	20	15				30	20				60	40	45	10			
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
1.00	33	56	0.03	10	101061 0100	
1.10	37	60	0.03	10	101061 0110	
1.20	41	65	0.03	10	101061 0120	
1.30	41	65	0.03	10	101061 0130	
1.40	45	70	0.03	10	101061 0140	
1.50	45	70	0.03	10	101061 0150	
1.60	50	76	0.03	10	101061 0160	
1.70	50	76	0.03	10	101061 0170	
1.80	53	80	0.03	10	101061 0180	
1.90	53	80	0.03	10	101061 0190	
2.00	56	85	0.03	10	101061 0200	
2.10	56	85	0.03	10	101061 0210	
2.20	59	90	0.04	10	101061 0220	
2.30	59	90	0.04	10	101061 0230	
2.40	62	95	0.04	10	101061 0240	
2.50	62	95	0.04	10	101061 0250	
2.60	62	95	0.04	10	101061 0260	
2.70	66	100	0.04	10	101061 0270	
2.80	66	100	0.04	10	101061 0280	
2.90	66	100	0.04	10	101061 0290	
3.00	66	100	0.04	10	101061 0300	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
3.10	69	106	0.04	10	101061 0310	
3.20	69	106	0.04	10	101061 0320	
3.30	69	106	0.05	10	101061 0330	
3.40	73	112	0.05	10	101061 0340	
3.50	73	112	0.05	10	101061 0350	
3.60	73	112	0.05	10	101061 0360	
3.70	73	112	0.06	10	101061 0370	
3.80	78	119	0.06	10	101061 0380	
3.90	78	119	0.06	10	101061 0390	
4.00	78	119	0.06	10	101061 0400	
4.10	78	119	0.06	10	101061 0410	
4.20	78	119	0.07	10	101061 0420	
4.30	82	126	0.07	10	101061 0430	
4.40	82	126	0.07	10	101061 0440	
4.50	82	126	0.07	10	101061 0450	
4.70	82	126	0.08	10	101061 0470	
4.80	87	132	0.08	10	101061 0480	
4.90	87	132	0.08	10	101061 0490	
5.00	87	132	0.08	10	101061 0500	
5.10	87	132	0.09	10	101061 0510	
5.20	87	132	0.09	10	101061 0520	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
5.30	87	132	0.09	10	101061 0530	
5.40	91	139	0.09	10	101061 0540	
5.50	91	139	0.1	10	101061 0550	
5.60	91	139	0.1	10	101061 0560	
5.70	91	139	0.1	10	101061 0570	
5.80	91	139	0.1	10	101061 0580	
5.90	91	139	0.1	10	101061 0590	
6.00	91	139	0.11	10	101061 0600	
6.10	97	148	0.11	1	101061 0610	
6.20	97	148	0.11	1	101061 0620	
6.30	97	148	0.11	1	101061 0630	
6.40	97	148	0.12	1	101061 0640	
6.50	97	148	0.12	1	101061 0650	
6.60	97	148	0.12	1	101061 0660	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
6.70	97	148	0.12	1	101061 0670	
6.80	102	156	0.12	1	101061 0680	
7.00	102	156	0.13	1	101061 0700	
7.50	102	156	0.14	1	101061 0750	
8.00	109	165	0.15	1	101061 0800	
8.50	109	165	0.15	1	101061 0850	
9.00	115	175	0.16	1	101061 0900	
9.50	115	175	0.16	1	101061 0950	
10.00	121	184	0.16	1	101061 1000	
10.20	121	184	0.16	1	101061 1020	
10.50	121	184	0.16	1	101061 1050	
11.00	128	197	0.16	1	101061 1100	
11.50	128	197	0.16	1	101061 1150	
12.00	134	205	0.16	1	101061 1200	

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ATORN Twist drill bit

HSS-E | DIN 340 | Typ TLP | 130° | 40° | h8 | h8 | 10xD | Z 2 | Vc/fz | 361

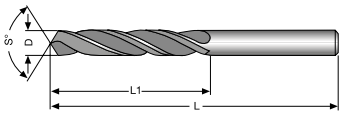
- Wide chip flutes
- Profile-ground, chamfers nitrided from a diameter of 2.4 mm
- High wear-resistance
- Recommended in cases of poor chip removal
- **Pilot hole recommended**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○		●	●	○	○	○	●	●	●	○			
40	20	10	12	10		30	25	6	6	6	70	50	45	10			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
1.00	33	56	0.03	10	101063 0100	
1.10	37	60	0.03	10	101063 0110	
1.20	41	65	0.03	10	101063 0120	
1.30	41	65	0.03	10	101063 0130	
1.40	45	70	0.03	10	101063 0140	
1.50	45	70	0.03	10	101063 0150	
1.60	50	76	0.03	10	101063 0160	
1.70	50	76	0.03	10	101063 0170	
1.80	53	80	0.03	10	101063 0180	
1.90	53	80	0.03	10	101063 0190	
2.00	56	85	0.03	10	101063 0200	
2.10	56	85	0.03	10	101063 0210	
2.20	59	90	0.04	10	101063 0220	
2.30	59	90	0.04	10	101063 0230	
2.40	62	95	0.04	10	101063 0240	
2.50	62	95	0.04	10	101063 0250	
2.60	62	95	0.04	10	101063 0260	
2.70	66	100	0.04	10	101063 0270	
2.80	66	100	0.04	10	101063 0280	
2.90	66	100	0.04	10	101063 0290	
3.00	66	100	0.04	10	101063 0300	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
3.10	69	106	0.04	10	101063 0310	
3.20	69	106	0.04	10	101063 0320	
3.30	69	106	0.05	10	101063 0330	
3.40	73	112	0.05	10	101063 0340	
3.50	73	112	0.05	10	101063 0350	
3.60	73	112	0.05	10	101063 0360	
3.70	73	112	0.06	10	101063 0370	
3.80	78	119	0.06	10	101063 0380	
3.90	78	119	0.06	10	101063 0390	
4.00	78	119	0.06	10	101063 0400	
4.10	78	119	0.06	10	101063 0410	
4.20	78	119	0.07	10	101063 0420	
4.30	82	126	0.07	10	101063 0430	
4.40	82	126	0.07	10	101063 0440	
4.50	82	126	0.07	10	101063 0450	
4.60	82	126	0.08	10	101063 0460	
4.70	82	126	0.08	10	101063 0470	
4.80	87	132	0.08	10	101063 0480	
4.90	87	132	0.08	10	101063 0490	
5.00	87	132	0.08	10	101063 0500	
5.10	87	132	0.09	10	101063 0510	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
5.20	87	132	0.09	10	101063 0520	
5.30	87	132	0.09	10	101063 0530	
5.40	91	139	0.09	10	101063 0540	
5.50	91	139	0.1	10	101063 0550	
5.60	91	139	0.1	10	101063 0560	
5.70	91	139	0.1	10	101063 0570	
5.80	91	139	0.1	10	101063 0580	
5.90	91	139	0.1	10	101063 0590	
6.00	91	139	0.11	10	101063 0600	
6.10	97	148	0.11	1	101063 0610	
6.20	97	148	0.11	1	101063 0620	
6.30	97	148	0.11	1	101063 0630	
6.40	97	148	0.12	1	101063 0640	
6.50	97	148	0.12	1	101063 0650	
6.60	97	148	0.12	1	101063 0660	
6.70	97	148	0.12	1	101063 0670	
6.80	102	156	0.12	1	101063 0680	
6.90	102	156	0.13	1	101063 0690	
7.00	102	156	0.13	1	101063 0700	
7.10	102	156	0.13	1	101063 0710	
7.20	102	156	0.13	1	101063 0720	
7.30	102	156	0.14	1	101063 0730	
7.40	102	156	0.14	1	101063 0740	
7.50	102	156	0.14	1	101063 0750	
7.60	109	165	0.14	1	101063 0760	
7.70	109	165	0.14	1	101063 0770	

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D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
7.80	109	165	0.15	1	101063 0780	
7.90	109	165	0.15	1	101063 0790	
8.00	109	165	0.15	1	101063 0800	
8.10	109	165	0.15	1	101063 0810	
8.20	109	165	0.15	1	101063 0820	
8.30	109	165	0.15	1	101063 0830	
8.40	109	165	0.15	1	101063 0840	
8.50	109	165	0.15	1	101063 0850	
9.00	115	175	0.16	1	101063 0900	
9.50	115	175	0.16	1	101063 0950	
9.80	121	184	0.16	1	101063 0980	
10.00	121	184	0.16	1	101063 1000	
10.20	121	184	0.16	1	101063 1020	
10.50	121	184	0.16	1	101063 1050	
11.00	128	197	0.16	1	101063 1100	
11.50	128	197	0.16	1	101063 1150	
12.00	134	205	0.16	1	101063 1200	
12.50	134	205	0.18	1	101063 1250	
13.00	134	205	0.18	1	101063 1300	
13.50	140	214	0.18	1	101063 1350	
14.00	140	214	0.19	1	101063 1400	
14.50	144	220	0.19	1	101063 1450	
15.00	144	220	0.19	1	101063 1500	
15.50	149	227	0.2	1	101063 1550	
16.00	149	227	0.2	1	101063 1600	

1104

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ATORN Twist drill bit

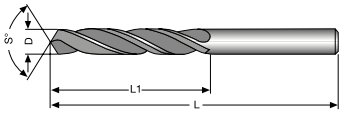
HSS-E | DIN 340 | Typ VA | 130° | 35° | h8 | h8 | 10xD | Z 2 | Vc/fz | 364

Stainless steel

- **For deep bores** (multiple chip removal)
- Point thinning from Ø ≥ 1 mm
- Increased wear-resistance with special geometry for machining stainless steel
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○	○	○	●	●				●	●	●	○	○	●				
		30	20	10	15	10				7	6	6	70	50	45				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		





D mm	L1 mm	L mm	Feed f stainless steel mm/rev		art.no.	€
1.00	33	56	0.03	10	101062 0100	
1.10	37	60	0.03	10	101062 0110	
1.20	41	65	0.03	10	101062 0120	
1.30	41	65	0.03	10	101062 0130	
1.40	45	70	0.03	10	101062 0140	
1.50	45	70	0.03	10	101062 0150	
1.60	50	76	0.03	10	101062 0160	
1.70	50	76	0.03	10	101062 0170	
1.80	53	80	0.03	10	101062 0180	
1.90	53	80	0.03	10	101062 0190	
2.00	56	85	0.03	10	101062 0200	
2.10	56	85	0.03	10	101062 0210	
2.20	59	90	0.04	10	101062 0220	
2.30	59	90	0.04	10	101062 0230	
2.40	62	95	0.04	10	101062 0240	
2.50	62	95	0.04	10	101062 0250	
2.60	62	95	0.04	10	101062 0260	
2.70	66	100	0.04	10	101062 0270	
2.80	66	100	0.04	10	101062 0280	
2.90	66	100	0.04	10	101062 0290	
3.00	66	100	0.04	10	101062 0300	
3.10	69	106	0.04	10	101062 0310	
3.20	69	106	0.04	10	101062 0320	
3.30	69	106	0.04	10	101062 0330	
3.40	73	112	0.05	10	101062 0340	
3.50	73	112	0.05	10	101062 0350	
3.60	73	112	0.05	10	101062 0360	
3.70	73	112	0.05	10	101062 0370	
3.80	78	119	0.05	10	101062 0380	
3.90	78	119	0.05	10	101062 0390	
4.00	78	119	0.05	10	101062 0400	
4.10	78	119	0.05	10	101062 0410	
4.20	78	119	0.05	10	101062 0420	
4.30	82	126	0.06	10	101062 0430	
4.40	82	126	0.06	10	101062 0440	
4.50	82	126	0.06	10	101062 0450	
4.70	82	126	0.06	10	101062 0470	
4.80	87	132	0.06	10	101062 0480	

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D mm	L1 mm	L mm	Feed f stainless steel mm/rev		art.no.	€
4.90	87	132	0.06	10	101062 0490	
5.00	87	132	0.06	10	101062 0500	
5.10	87	132	0.07	10	101062 0510	
5.20	87	132	0.07	10	101062 0520	
5.30	87	132	0.07	10	101062 0530	
5.40	91	139	0.07	10	101062 0540	
5.50	91	139	0.07	10	101062 0550	
5.60	91	139	0.07	10	101062 0560	
5.70	91	139	0.07	10	101062 0570	
5.80	91	139	0.07	10	101062 0580	
5.90	91	139	0.08	10	101062 0590	
6.00	91	139	0.08	10	101062 0600	
6.10	97	148	0.08	1	101062 0610	
6.20	97	148	0.08	1	101062 0620	
6.30	97	148	0.08	1	101062 0630	
6.40	97	148	0.08	1	101062 0640	
6.50	97	148	0.08	1	101062 0650	
6.60	97	148	0.08	1	101062 0660	
6.70	97	148	0.08	1	101062 0670	
6.80	102	156	0.09	1	101062 0680	
7.00	102	156	0.09	1	101062 0700	
7.50	102	156	0.09	1	101062 0750	
7.70	109	165	0.1	1	101062 0770	
7.80	109	165	0.1	1	101062 0780	
8.00	109	165	0.1	1	101062 0800	
8.10	109	165	0.1	1	101062 0810	
8.20	109	165	0.1	1	101062 0820	
8.40	109	165	0.1	1	101062 0840	
8.50	109	165	0.11	1	101062 0850	
9.00	115	175	0.11	1	101062 0900	
9.50	115	175	0.12	1	101062 0950	
9.80	121	184	0.12	1	101062 0980	
10.00	121	184	0.12	1	101062 1000	
10.20	121	184	0.12	1	101062 1020	
10.50	121	184	0.13	1	101062 1050	
11.00	128	195	0.13	1	101062 1100	
11.50	128	195	0.13	1	101062 1150	
12.00	134	205	0.14	1	101062 1200	

1104

ATORN Deep hole drill bit

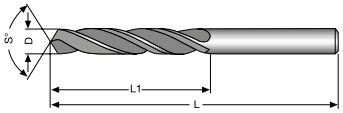
HSS | DIN 1869 | Typ TLP | 130° | 38° | h8 | h8 | >10xD | Z 2 | Vc/fz | 365

- **For extremely deep bores, 15xD to 25xD**
- Flat slot shape for increased chip space, leading to less frequent chip removal in particularly deep holes
- Point thinning from Ø ≥ 2 mm
- Slots bare
- **Nitrided chamfers from Ø 2.5 mm**
- **Pilot hole recommended**

Deep bore profile

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○				●	●				●	●	●				
		25	10	10				20	20				50	40	45				
	Cutting speed Vc m/min.																		





● Feed f steel < 700 N/mm²

D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.00	85	125	0.05	101070 0036	
2.50	95	140	0.05	101070 0037	
3.00	100	150	0.06	101070 0001	
3.00	130	190	0.06	101070 0002	
3.50	115	165	0.07	101070 0003	
3.50	145	210	0.07	101070 0004	
4.00	120	175	0.09	101070 0005	
4.00	150	220	0.09	101070 0006	
4.00	190	280	0.09	101070 0007	
4.50	125	185	0.10	101070 0008	
4.50	160	235	0.10	101070 0009	
5.00	135	195	0.12	101070 0010	
5.00	170	245	0.12	101070 0011	
5.00	210	315	0.12	101070 0012	
5.50	140	205	0.13	101070 0013	
5.50	180	260	0.13	101070 0014	
6.00	140	205	0.14	101070 0015	
6.00	180	260	0.14	101070 0016	

● Feed f steel < 700 N/mm²

D mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
6.00	225	330	0.14	101070 0017	
6.50	150	215	0.16	101070 0039	
6.50	190	275	0.16	101070 0018	
6.80	155	225	0.16	101070 0019	
7.00	155	225	0.17	101070 0020	
7.00	200	290	0.17	101070 0021	
7.50	155	225	0.17	101070 0022	
7.50	200	290	0.17	101070 0023	
8.00	165	240	0.20	101070 0024	
8.00	210	305	0.20	101070 0025	
8.00	265	390	0.20	101070 0026	
8.50	165	240	0.21	101070 0027	
8.50	210	305	0.21	101070 0028	
9.00	175	250	0.21	101070 0029	
9.00	220	320	0.21	101070 0030	
10.00	185	265	0.22	101070 0032	
10.00	235	340	0.22	101070 0033	
10.00	295	430	0.22	101070 0034	

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TDXL high-performance deep hole drill

HSS-E | Werks-norm | 120° | 40° | 40° | 10xD | 15xD | 20xD | TiAlN | Vc/fz | 365

- **Flat flute for increased chip space, drilling without chip removal**
- **Bore depths of 10xD, 15xD and 20xD**
- New chip flute structure for enhanced chip removal, polished wave-shaped flute
- Newly developed point thinning for lower torque, axial force and friction
- New heat and wear-resistant WXL coating with a very low friction coefficient
- **Cutting material: HSS-E, WXL-coated**
- Shank tolerance h7
- Use with water-soluble emulsion recommended
- **Without internal cooling**
- **Pilot hole recommended**

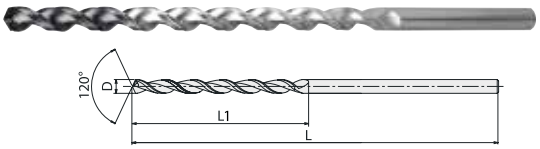
Drilling without chip removal

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 22	● 20	● 14				● 21	● 18										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Chip flute shape



10xD

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	75	26	0.02	101099 0016	
1.8	75	26	0.03	101099 0018	
2.0	75	26	0.03	101099 0020	
2.1	75	33	0.03	101099 0021	
2.2	75	33	0.03	101099 0022	
2.3	75	33	0.03	101099 0023	
2.4	75	33	0.04	101099 0024	
2.5	75	33	0.04	101099 0025	
2.6	90	40	0.04	101099 0026	
2.7	90	40	0.04	101099 0027	
2.8	90	40	0.04	101099 0028	
2.9	90	40	0.04	101099 0029	
3.0	90	40	0.05	101099 0030	
3.1	100	45	0.05	101099 0031	
3.2	100	45	0.05	101099 0032	
3.3	100	45	0.05	101099 0033	
3.4	100	50	0.05	101099 0034	
3.5	100	50	0.05	101099 0035	
3.6	100	50	0.05	101099 0036	
3.7	100	50	0.06	101099 0037	
3.8	100	50	0.06	101099 0038	
3.9	100	50	0.06	101099 0039	
4.0	100	50	0.06	101099 0040	
4.1	115	55	0.06	101099 0041	
4.2	115	55	0.06	101099 0042	
4.3	115	60	0.06	101099 0043	
4.4	115	60	0.07	101099 0044	
4.5	115	60	0.07	101099 0045	
4.6	115	60	0.07	101099 0046	
4.7	115	60	0.07	101099 0047	
4.8	115	65	0.07	101099 0048	
4.9	115	65	0.07	101099 0049	
5.0	115	65	0.08	101099 0050	
5.1	128	70	0.08	101099 0051	
5.2	128	70	0.08	101099 0052	
5.3	128	70	0.08	101099 0053	

1107

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.4	128	78	0.08	101099 0054	
5.5	128	78	0.08	101099 0055	
5.6	128	78	0.08	101099 0056	
5.7	128	78	0.09	101099 0057	
5.8	128	78	0.09	101099 0058	
5.9	128	78	0.09	101099 0059	
6.0	128	78	0.09	101099 0060	
6.1	140	78	0.09	101099 0061	
6.2	140	87	0.09	101099 0062	
6.3	140	87	0.09	101099 0063	
6.4	140	87	0.10	101099 0064	
6.5	140	87	0.10	101099 0065	
6.6	140	87	0.10	101099 0066	
6.7	140	87	0.10	101099 0067	
6.8	140	90	0.10	101099 0068	
6.9	140	90	0.10	101099 0069	
7.0	140	90	0.11	101099 0070	
7.1	155	100	0.11	101099 0071	
7.2	155	100	0.11	101099 0072	
7.3	155	100	0.11	101099 0073	
7.4	155	100	0.11	101099 0074	
7.5	155	100	0.11	101099 0075	
7.6	155	105	0.11	101099 0076	
7.7	155	105	0.12	101099 0077	
7.8	155	105	0.12	101099 0078	
7.9	155	105	0.12	101099 0079	
8.0	155	105	0.12	101099 0080	
8.1	165	110	0.12	101099 0081	
8.2	165	110	0.12	101099 0082	
8.3	165	110	0.12	101099 0083	
8.4	165	110	0.13	101099 0084	
8.5	165	110	0.13	101099 0085	
8.6	165	115	0.13	101099 0086	
8.7	165	115	0.13	101099 0087	
8.8	165	115	0.13	101099 0088	
8.9	165	115	0.13	101099 0089	

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Fortsetzung nächste Seite >>>

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.0	165	115	0.14	101099 0090	
9.1	190	125	0.14	101099 0091	
9.2	190	125	0.14	101099 0092	
9.3	190	125	0.14	101099 0093	
9.4	190	125	0.14	101099 0094	
9.5	190	125	0.14	101099 0095	
9.6	190	130	0.14	101099 0096	
9.7	190	130	0.15	101099 0097	
9.8	190	130	0.15	101099 0098	
9.9	190	130	0.15	101099 0099	
10.0	190	130	0.15	101099 0100	
10.1	205	140	0.15	101099 0101	
10.2	205	140	0.15	101099 0102	
10.3	205	140	0.15	101099 0103	
10.4	205	140	0.16	101099 0104	
10.5	205	140	0.16	101099 0105	

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D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.6	205	145	0.16	101099 0106	
10.7	205	145	0.16	101099 0107	
10.8	205	145	0.16	101099 0108	
10.9	205	145	0.16	101099 0109	
11.0	205	145	0.17	101099 0110	
11.1	215	155	0.17	101099 0111	
11.2	215	155	0.17	101099 0112	
11.3	215	155	0.17	101099 0113	
11.4	215	155	0.17	101099 0114	
11.5	215	155	0.17	101099 0115	
11.6	215	155	0.17	101099 0116	
11.7	215	155	0.18	101099 0117	
11.8	215	155	0.18	101099 0118	
11.9	215	155	0.18	101099 0119	
12.0	215	155	0.18	101099 0120	

1107

15xD

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	70	30	0.02	101100 0016	
1.8	75	34	0.03	101100 0018	
2	80	36	0.03	101100 0020	
2.1	80	38	0.03	101100 0021	
2.2	80	40	0.03	101100 0022	
2.3	85	42	0.03	101100 0023	
2.4	85	44	0.04	101100 0024	
2.5	85	46	0.04	101100 0025	
2.6	100	48	0.04	101100 0026	
2.7	100	50	0.04	101100 0027	
2.8	100	50	0.04	101100 0028	
2.9	105	54	0.04	101100 0029	
3	105	54	0.05	101100 0030	
3.1	110	56	0.05	101100 0031	
3.2	110	58	0.05	101100 0032	
3.3	110	60	0.05	101100 0033	
3.4	115	62	0.05	101100 0034	
3.5	115	64	0.05	101100 0035	
3.6	115	66	0.05	101100 0036	
3.7	120	68	0.06	101100 0037	
3.8	120	70	0.06	101100 0038	
3.9	120	70	0.06	101100 0039	
4	120	72	0.06	101100 0040	
4.1	135	74	0.06	101100 0041	
4.2	135	76	0.06	101100 0042	
4.3	140	78	0.06	101100 0043	
4.4	140	80	0.07	101100 0044	
4.5	140	82	0.07	101100 0045	
4.6	145	84	0.07	101100 0046	
4.7	145	86	0.07	101100 0047	
4.8	145	86	0.07	101100 0048	
4.9	150	88	0.07	101100 0049	
5	150	90	0.08	101100 0050	
5.1	150	92	0.08	101100 0051	

1107

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.2	155	94	0.08	101100 0052	
5.3	155	96	0.08	101100 0053	
5.4	155	98	0.08	101100 0054	
5.5	155	100	0.08	101100 0055	
5.6	160	102	0.08	101100 0056	
5.7	165	104	0.09	101100 0057	
5.8	165	106	0.09	101100 0058	
6	170	108	0.09	101100 0060	
6.2	170	112	0.09	101100 0062	
6.3	175	114	0.09	101100 0063	
6.5	200	118	0.10	101100 0065	
6.6	200	120	0.10	101100 0066	
6.8	200	124	0.10	101100 0068	
6.9	200	126	0.10	101100 0069	
7	200	126	0.11	101100 0070	
7.1	200	128	0.11	101100 0071	
7.5	205	136	0.11	101100 0075	
8	215	144	0.12	101100 0080	
8.1	215	146	0.12	101100 0081	
8.2	220	148	0.12	101100 0082	
8.5	225	154	0.13	101100 0085	
8.6	225	156	0.13	101100 0086	
8.8	230	160	0.13	101100 0088	
9	230	162	0.14	101100 0090	
9.3	240	168	0.14	101100 0093	
9.5	240	172	0.14	101100 0095	
9.7	245	176	0.15	101100 0097	
9.8	245	178	0.15	101100 0098	
10	250	180	0.15	101100 0100	
10.5	270	190	0.16	101100 0105	
11	280	200	0.17	101100 0110	
11.5	290	208	0.17	101100 0115	
11.8	295	214	0.18	101100 0118	
12	300	216	0.18	101100 0120	

1107

20XD

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	85	38	0.02	101101 0016	
1.8	85	42	0.03	101101 0018	
2	85	46	0.03	101101 0020	
2.1	90	50	0.03	101101 0021	
2.2	90	52	0.03	101101 0022	
2.3	95	54	0.03	101101 0023	
2.4	95	56	0.04	101101 0024	
2.5	100	58	0.04	101101 0025	
2.6	110	60	0.04	101101 0026	
2.7	115	64	0.04	101101 0027	
2.8	115	66	0.04	101101 0028	
2.9	120	68	0.04	101101 0029	
3	120	70	0.05	101101 0030	
3.1	125	72	0.05	101101 0031	
3.2	125	74	0.05	101101 0032	
3.3	125	76	0.05	101101 0033	
3.4	130	80	0.05	101101 0034	
3.5	130	82	0.05	101101 0035	
3.7	135	86	0.06	101101 0037	
3.8	140	88	0.06	101101 0038	
4	140	92	0.06	101101 0040	
4.1	155	96	0.06	101101 0041	
4.2	155	98	0.06	101101 0042	
4.3	160	100	0.06	101101 0043	

1107

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.5	165	104	0.07	101101 0045	
4.6	165	106	0.07	101101 0046	
4.8	170	112	0.07	101101 0048	
5	175	116	0.08	101101 0050	
5.1	180	118	0.08	101101 0051	
5.2	180	120	0.08	101101 0052	
5.5	185	128	0.08	101101 0055	
5.7	190	132	0.09	101101 0057	
5.8	200	134	0.09	101101 0058	
6	200	138	0.09	101101 0060	
6.3	200	146	0.09	101101 0063	
6.5	225	150	0.10	101101 0065	
6.8	225	158	0.10	101101 0068	
6.9	230	160	0.10	101101 0069	
7	230	162	0.11	101101 0070	
7.5	245	174	0.11	101101 0075	
8	255	184	0.12	101101 0080	
8.1	255	188	0.12	101101 0081	
8.2	260	190	0.12	101101 0082	
8.5	265	196	0.13	101101 0085	
9	275	208	0.14	101101 0090	
10	300	230	0.15	101101 0100	
11	350	254	0.17	101101 0110	
12	350	276	0.18	101101 0120	

1107

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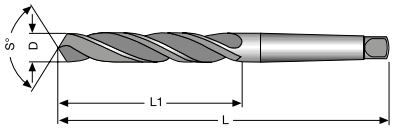
ATORN Twist drill with MT shank

HSS | DIN 345 | Typ N | 118° | 30° | h8 | 5xD | Z 2 | Vap. | Vc/fz | 361

- **Point thinning from Ø 14.25 mm**
- MT shank
- **Vapour-treated, resulting in lower welding tendency and better chip removal**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○			●	○				○	○	○	○			
		30	20		10			25	25				45	50	40	10			
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	Shank	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.00	52	133	MT 1	0.11	101505 0050	
6.00	57	138	MT 1	0.12	101505 0060	
6.80	69	150	MT 1	0.13	101505 0068	
7.00	69	150	MT 1	0.12	101505 0070	
8.00	75	156	MT 1	0.12	101505 0080	
8.50	75	156	MT 1	0.13	101505 0085	
9.00	81	162	MT 1	0.13	101505 0090	
9.50	81	162	MT 1	0.14	101505 0095	
10.00	87	168	MT 1	0.22	101505 0100	
10.20	87	168	MT 1	0.22	101505 0102	
10.50	87	168	MT 1	0.23	101505 0105	
11.00	94	175	MT 1	0.23	101505 0110	
11.50	94	175	MT 1	0.24	101505 0115	
11.75	94	175	MT 1	0.24	101505 0117	
11.80	94	175	MT 1	0.24	101505 0118	
12.00	101	182	MT 1	0.24	101505 0120	
12.10	101	182	MT 1	0.24	101505 0121	
12.20	101	182	MT 1	0.24	101505 0122	
12.50	101	182	MT 1	0.25	101505 0125	
12.75	101	182	MT 1	0.25	101505 0127	
13.00	101	182	MT 1	0.25	101505 0130	
13.50	108	189	MT 1	0.26	101505 0135	
13.75	108	189	MT 1	0.26	101505 0137	
14.00	108	189	MT 1	0.26	101505 0140	
14.25	114	212	MT 2	0.26	101505 0142	
14.50	114	212	MT 2	0.27	101505 0145	
14.75	114	212	MT 2	0.27	101505 0147	
15.00	114	212	MT 2	0.27	101505 0150	
15.25	120	218	MT 2	0.27	101505 0152	
15.50	120	218	MT 2	0.28	101505 0155	
15.75	120	218	MT 2	0.28	101505 0157	
16.00	120	218	MT 2	0.28	101505 0160	
16.25	125	223	MT 2	0.28	101505 0163	
16.50	125	223	MT 2	0.28	101505 0165	
16.75	125	223	MT 2	0.29	101505 0167	
17.00	125	223	MT 2	0.29	101505 0170	
17.25	130	228	MT 2	0.29	101505 0172	
17.50	130	228	MT 2	0.29	101505 0175	
17.75	130	228	MT 2	0.29	101505 0177	
18.00	130	228	MT 2	0.3	101505 0180	
18.50	135	233	MT 2	0.3	101505 0185	
18.75	135	233	MT 2	0.3	101505 0187	
19.00	135	233	MT 2	0.3	101505 0190	

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D mm	L1 mm	L mm	Shank	Feed f steel < 700 N/mm² mm/rev	art.no.	€
19.50	140	238	MT 2	0.31	101505 0195	
19.75	140	238	MT 2	0.31	101505 0197	
20.00	140	238	MT 2	0.31	101505 0200	
20.50	145	243	MT 2	0.32	101505 0205	
21.00	145	243	MT 2	0.32	101505 0210	
21.50	150	248	MT 2	0.32	101505 0215	
21.75	150	248	MT 2	0.33	101505 0217	
22.00	150	248	MT 2	0.33	101505 0220	
22.50	155	253	MT 2	0.33	101505 0225	
23.00	155	253	MT 2	0.33	101505 0230	
23.50	155	276	MT 3	0.34	101505 0235	
24.00	160	281	MT 3	0.34	101505 0240	
24.50	160	281	MT 3	0.35	101505 0245	
24.75	160	281	MT 3	0.35	101505 0247	
25.00	160	281	MT 3	0.35	101505 0250	
25.50	165	286	MT 3	0.35	101505 0255	
26.00	165	286	MT 3	0.35	101505 0260	
26.50	165	286	MT 3	0.36	101505 0265	
27.00	170	291	MT 3	0.36	101505 0270	
27.50	170	291	MT 3	0.36	101505 0275	
28.00	170	291	MT 3	0.36	101505 0280	
28.50	175	296	MT 3	0.37	101505 0285	
29.00	175	296	MT 3	0.37	101505 0290	
29.50	175	296	MT 3	0.37	101505 0295	
30.00	175	296	MT 3	0.37	101505 0300	
30.50	180	301	MT 3	0.37	101505 0305	
30.75	180	301	MT 3	0.37	101505 0307	
31.00	180	301	MT 3	0.38	101505 0310	
32.00	185	334	MT 4	0.38	101505 0320	
32.50	185	334	MT 4	0.38	101505 0325	
33.00	185	334	MT 4	0.38	101505 0330	
34.00	190	339	MT 4	0.39	101505 0340	
34.50	190	339	MT 4	0.28	101505 0345	
35.00	190	339	MT 4	0.39	101505 0350	
35.50	190	339	MT 4	0.28	101505 0355	
36.50	195	344	MT 4	0.28	101505 0365	
38.00	200	349	MT 4	0.41	101505 0380	
40.00	200	349	MT 4	0.41	101505 0400	
44.00	210	359	MT 4	0.28	101505 0440	
45.00	210	359	MT 4	0.44	101505 0450	
46.00	215	364	MT 4	0.28	101505 0460	
50.00	220	369	MT 4	0.46	101505 0500	

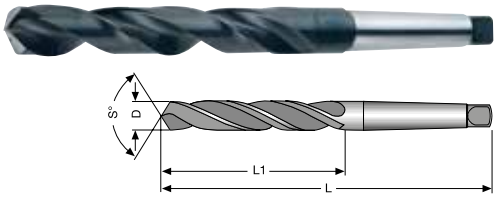
1104

ATORN Twist drill with MT shank

HSS-E | DIN 345 | Typ N | 118° | 30° | h8 | 5xD | Vap. | Vc/fz | 365

- Point thinning from Ø 12.0 mm
- Morse taper shank
- **Vapour-treated for reduced welding tendencies and better chip removal**
- Higher wear resistance

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30	● 25	○ 15	○ 15	○ 12		● 35	○ 30				○ 60	○ 50	○ 45				
	Cutting speed Vc m/min.																		



● Feed f steel < 1000 N/mm² mm/rev

D mm	L1 mm	L mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.00	101	182	MT 1	0.28	101507 0120	
12.50	101	182	MT 1	0.31	101507 0125	
13.00	101	182	MT 1	0.31	101507 0130	
13.50	108	189	MT 1	0.31	101507 0135	
14.00	108	189	MT 1	0.31	101507 0140	
14.50	114	212	MT 2	0.31	101507 0145	
15.00	114	212	MT 2	0.31	101507 0150	
15.50	120	218	MT 2	0.31	101507 0155	
15.75	120	218	MT 2	0.31	101507 0157	
16.00	120	218	MT 2	0.31	101507 0160	
16.50	125	223	MT 2	0.35	101507 0165	
17.00	125	223	MT 2	0.35	101507 0170	
17.50	130	228	MT 2	0.35	101507 0175	
18.00	130	228	MT 2	0.35	101507 0180	
18.50	135	233	MT 2	0.35	101507 0185	
19.00	135	233	MT 2	0.35	101507 0190	
19.50	140	238	MT 2	0.35	101507 0195	
20.00	140	238	MT 2	0.35	101507 0200	
20.50	145	243	MT 2	0.35	101507 0205	

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● Feed f steel < 1000 N/mm² mm/rev

D mm	L1 mm	L mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.00	145	243	MT 2	0.35	101507 0210	
21.50	150	248	MT 2	0.35	101507 0215	
22.00	150	248	MT 2	0.35	101507 0220	
22.50	155	253	MT 2	0.35	101507 0225	
23.00	155	253	MT 2	0.35	101507 0230	
23.50	155	276	MT 3	0.35	101507 0235	
24.00	160	281	MT 3	0.35	101507 0240	
24.50	160	281	MT 3	0.35	101507 0245	
25.00	160	281	MT 3	0.35	101507 0250	
26.00	165	286	MT 3	0.35	101507 0260	
27.00	170	291	MT 3	0.35	101507 0270	
28.00	170	291	MT 3	0.35	101507 0280	
29.00	175	296	MT 3	0.35	101507 0290	
30.00	175	296	MT 3	0.35	101507 0300	
31.00	180	301	MT 3	0.35	101507 0310	
32.00	185	334	MT 4	0.35	101507 0320	
33.00	185	334	MT 4	0.35	101507 0330	
34.00	190	339	MT 4	0.35	101507 0340	
35.00	190	339	MT 4	0.35	101507 0350	

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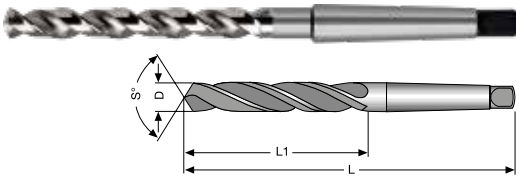
ATORN Twist drill with MT shank

HSS-E | DIN 345 | Typ VA | 130° | 40° | h8 | 5xD | Z 2 | Vc/fz | 361

Stainless steel

- Profile-ground
- Morse taper shank
- **For machining stainless steel**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○	○	○	●	●	○			●	●	●	○	○	●				
		30	20	10	10	20	6			10	10	10	70	50	70				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
12.50	182	101	MT 1	0.18	101605 0125	
13.00	182	101	MT 1	0.18	101605 0130	
13.50	189	108	MT 1	0.19	101605 0135	
14.00	189	108	MT 1	0.19	101605 0140	
14.50	212	114	MT 2	0.20	101605 0145	
15.00	212	114	MT 2	0.20	101605 0150	
15.50	218	120	MT 2	0.21	101605 0155	
16.00	218	120	MT 2	0.21	101605 0160	
16.50	223	125	MT 2	0.21	101605 0165	
17.00	223	125	MT 2	0.22	101605 0170	
17.50	228	130	MT 2	0.22	101605 0175	

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D mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
18.00	228	130	MT 2	0.23	101605 0180	
18.50	233	135	MT 2	0.23	101605 0185	
19.00	233	135	MT 2	0.23	101605 0190	
19.50	238	140	MT 2	0.24	101605 0195	
20.00	238	140	MT 2	0.24	101605 0200	
20.50	243	145	MT 2	0.25	101605 0205	
21.00	243	145	MT 2	0.25	101605 0210	
21.50	248	150	MT 2	0.25	101605 0215	
22.00	248	150	MT 2	0.26	101605 0220	
22.50	253	155	MT 2	0.26	101605 0225	
23.00	253	155	MT 2	0.26	101605 0230	

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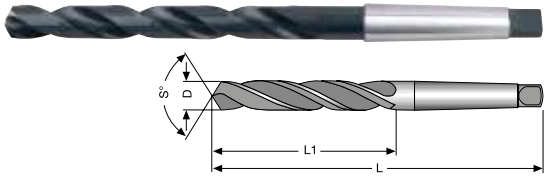
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SARA® Twist drill bit (drilling bush), with MT shank

HSS | DIN 341 | Typ N | 118° | 30° | h8 | 10xD | Z 2 | Vap. | Vc/fz | 366

- Special geometry
- **For drilling through drill guide bushes**
- In comparison to DIN 345, the spiral length is extended by the height of the drill guide bush so that the effective drilling depth is not reduced
- Morse taper shank
- **Vapour-treated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 22	○ 14					○ 27	○ 20	○ 5			○ 50	● 40	● 45				
	Cutting speed Vc m/min.																		



D mm	L1 mm	L mm	Shank	● Feed f steel < 700 N/mm² mm/rev	art.no.	€
10.0	116	197	MT 1	0.23	101601 0100	
10.2	116	197	MT 1	0.23	101601 0102	
10.5	116	197	MT 1	0.23	101601 0105	
11.0	125	206	MT 1	0.23	101601 0110	
11.5	125	206	MT 1	0.23	101601 0115	
12.0	134	215	MT 1	0.23	101601 0120	
12.5	134	215	MT 1	0.23	101601 0125	
13.0	134	215	MT 1	0.23	101601 0130	
13.5	142	223	MT 1	0.23	101601 0135	
14.0	142	223	MT 1	0.26	101601 0140	
14.5	147	245	MT 2	0.23	101601 0145	
15.0	147	245	MT 2	0.27	101601 0150	
15.5	153	251	MT 2	0.23	101601 0155	
16.0	153	251	MT 2	0.28	101601 0160	
16.5	159	257	MT 2	0.35	101601 0165	
17.0	159	257	MT 2	0.29	101601 0170	
17.5	165	263	MT 2	0.35	101601 0175	
18.0	165	263	MT 2	0.3	101601 0180	
18.5	171	269	MT 2	0.35	101601 0185	
19.0	171	269	MT 2	0.35	101601 0190	
20.0	177	275	MT 2	0.31	101601 0200	
20.5	184	282	MT 2	0.35	101601 0205	
21.0	184	282	MT 2	0.32	101601 0210	
21.5	184	282	MT 2	0.35	101601 0215	
22.0	191	289	MT 2	0.35	101601 0220	
22.5	198	296	MT 2	0.35	101601 0225	
23.0	198	296	MT 2	0.35	101601 0230	

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D mm	L1 mm	L mm	Shank	● Feed f steel < 700 N/mm² mm/rev	art.no.	€
24.0	206	327	MT 3	0.34	101601 0240	
25.0	206	327	MT 3	0.35	101601 0250	
26.0	214	335	MT 3	0.45	101601 0260	
27.0	222	343	MT 3	0.45	101601 0270	
28.0	222	343	MT 3	0.45	101601 0280	
29.0	230	351	MT 3	0.45	101601 0290	
30.0	230	351	MT 3	0.45	101601 0300	
31.0	239	360	MT 3	0.45	101601 0310	
32.0	248	397	MT 4	0.45	101601 0320	
33.0	248	397	MT 4	0.45	101601 0330	
34.0	257	406	MT 4	0.45	101601 0340	
35.0	257	406	MT 4	0.45	101601 0350	
36.0	267	416	MT 4	0.45	101601 0360	
37.0	267	416	MT 4	0.45	101601 0370	
38.0	277	426	MT 4	0.45	101601 0380	
39.0	277	426	MT 4	0.45	101601 0390	
40.0	277	426	MT 4	0.45	101601 0400	
41.0	287	436	MT 4	0.56	101601 0410	
42.0	287	436	MT 4	0.56	101601 0420	
43.0	298	447	MT 4	0.56	101601 0430	
44.0	298	447	MT 4	0.56	101601 0440	
45.0	298	447	MT 4	0.56	101601 0450	
47.0	310	459	MT 4	0.56	101601 0470	
48.0	321	470	MT 4	0.56	101601 0480	
49.0	321	470	MT 4	0.56	101601 0490	
50.0	321	470	MT 4	0.56	101601 0500	

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ATORN Deep hole drill with MT shank

Werks-norm | Typ TLP | 130° | 38° | h8 | >10xD | Z 2 | Vc/fz | 361

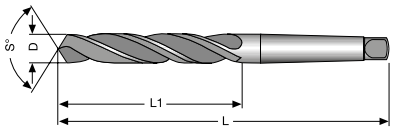
Deep bore profile

- Extra-long, for deep bores
- **Wide chip flutes for better chip removal**
- Morse taper shank
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30	○ 20	○ 6	○ 7	○ 6		● 20	● 20	○ 5			● 60	● 40	● 45	○ 10			
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.00	181	100	MT 1	0.15	101700 0800	
8.00	265	165	MT 1	0.15	101700 0801	
8.00	330	210	MT 1	0.15	101700 0802	
8.00	500	420	MT 1	0.15	101700 0803	
9.00	188	107	MT 1	0.16	101700 0900	
9.00	275	175	MT 1	0.16	101700 0901	
9.00	345	220	MT 1	0.16	101700 0902	
9.00	500	420	MT 1	0.16	101700 0903	
10.00	197	116	MT 1	0.16	101700 1000	
10.00	285	185	MT 1	0.16	101700 1001	
10.00	360	235	MT 1	0.16	101700 1002	
10.00	500	420	MT 1	0.16	101700 1003	
11.00	206	125	MT 1	0.17	101700 1100	
11.00	300	195	MT 1	0.17	101700 1101	
11.00	500	420	MT 1	0.17	101700 1103	
12.00	215	134	MT 1	0.18	101700 1200	
12.00	310	205	MT 1	0.18	101700 1201	
12.00	395	260	MT 1	0.18	101700 1202	
12.00	500	420	MT 1	0.18	101700 1203	
13.00	215	134	MT 1	0.18	101700 1300	
13.00	310	205	MT 1	0.18	101700 1301	
13.00	395	260	MT 1	0.18	101700 1302	
14.00	223	142	MT 1	0.19	101700 1400	
14.00	325	220	MT 1	0.19	101700 1401	
14.00	410	275	MT 1	0.19	101700 1402	
14.00	500	420	MT 1	0.19	101700 1403	
14.00	600	500	MT 1	0.19	101700 1404	
15.00	245	147	MT 2	0.19	101700 1500	
15.00	340	220	MT 2	0.19	101700 1501	

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● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.00	425	275	MT 2	0.19	101700 1502	
15.00	600	500	MT 2	0.19	101700 1504	
16.00	251	153	MT 2	0.2	101700 1600	
16.00	355	230	MT 2	0.2	101700 1601	
16.00	445	295	MT 2	0.2	101700 1602	
16.00	500	400	MT 2	0.2	101700 1603	
16.00	600	500	MT 2	0.2	101700 1604	
17.00	257	159	MT 2	0.21	101700 1700	
17.00	355	230	MT 2	0.21	101700 1701	
18.00	263	165	MT 2	0.21	101700 1800	
18.00	370	245	MT 2	0.21	101700 1801	
18.00	465	310	MT 2	0.21	101700 1802	
18.00	500	400	MT 2	0.21	101700 1803	
18.00	600	500	MT 2	0.21	101700 1804	
20.00	275	177	MT 2	0.22	101700 2000	
20.00	385	260	MT 2	0.22	101700 2001	
20.00	490	325	MT 2	0.22	101700 2002	
20.00	500	400	MT 2	0.22	101700 2003	
20.00	600	500	MT 2	0.22	101700 2004	
21.00	282	184	MT 2	0.23	101700 2100	
21.00	385	260	MT 2	0.23	101700 2101	
21.00	600	500	MT 2	0.23	101700 2104	
22.00	405	270	MT 2	0.23	101700 2201	
22.00	600	500	MT 2	0.23	101700 2204	
24.00	440	290	MT 3	0.24	101700 2401	
24.00	600	475	MT 3	0.24	101700 2404	
25.00	327	206	MT 3	0.25	101700 2500	
25.00	600	475	MT 3	0.25	101700 2504	

1104

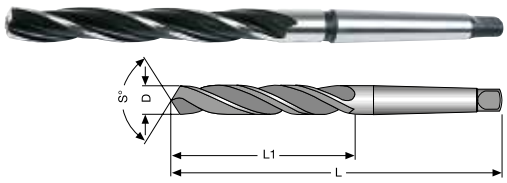
SARA® Core drill with MT shank

HSS | DIN 343 | Typ N | 120° | 25° | h8 | Z 3 | Vc/fz | 366

3 cutting edges

- **MT shank with driving pin lugs in accordance with DIN 228**
- Robust drill with strong core for optimum guidance in the bore hole
- **For drilling pre-drilled, pre-cast or pre-punched holes**
- The sturdy design and 3 cutting edges correct alignment inaccuracies and roundness issues in prefabricated holes
- **Also available with straight shank where required**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 28	● 27					○ 14					○ 33		○ 20				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L mm	L1 mm	Pre-drill min. Ø mm	Shank	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.80	156	75	5.6	MT 1	0.10	101515 0780	
8.00	156	75	5.6	MT 1	0.10	101515 0800	
8.80	162	81	6.3	MT 1	0.12	101515 0880	
9.80	168	87	7.0	MT 1	0.12	101515 0980	
10.00	168	87	7.0	MT 1	0.12	101515 1000	
10.75	175	94	7.7	MT 1	0.12	101515 1075	
11.00	175	94	7.7	MT 1	0.12	101515 1100	
11.75	182	101	8.4	MT 1	0.12	101515 1175	
12.00	182	101	8.4	MT 1	0.12	101515 1200	
12.75	182	101	9.1	MT 1	0.12	101515 1275	
13.00	182	101	9.1	MT 1	0.12	101515 1300	
13.75	189	108	9.8	MT 1	0.12	101515 1375	
14.00	189	108	9.8	MT 1	0.12	101515 1400	
14.75	212	114	10.5	MT 2	0.18	101515 1475	
15.00	212	114	10.5	MT 2	0.18	101515 1500	
15.75	218	120	11.2	MT 2	0.18	101515 1575	
16.00	218	120	11.2	MT 2	0.18	101515 1600	
16.75	223	125	11.9	MT 2	0.18	101515 1675	
17.00	223	125	11.9	MT 2	0.18	101515 1700	
17.75	228	130	12.6	MT 2	0.18	101515 1775	
18.00	228	130	12.6	MT 2	0.18	101515 1800	
18.70	233	135	13.3	MT 2	0.18	101515 1870	
19.00	233	135	13.3	MT 2	0.18	101515 1900	
19.70	238	140	14.0	MT 2	0.18	101515 1970	
20.00	238	140	14.0	MT 2	0.18	101515 2000	
20.70	243	145	14.6	MT 2	0.22	101515 2070	
21.00	243	145	14.6	MT 2	0.22	101515 2100	

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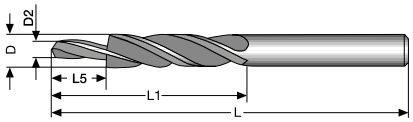
D mm	L mm	L1 mm	Pre-drill min. Ø mm	Shank	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.70	248	150	15.3	MT 2	0.22	101515 2170	
22.00	248	150	15.3	MT 2	0.22	101515 2200	
22.70	253	155	16.0	MT 2	0.22	101515 2270	
23.00	253	155	16.0	MT 2	0.22	101515 2300	
23.70	281	160	16.6	MT 3	0.22	101515 2370	
24.00	281	160	16.6	MT 3	0.22	101515 2400	
24.70	281	160	17.3	MT 3	0.22	101515 2470	
25.00	281	160	17.3	MT 3	0.22	101515 2500	
25.70	286	165	18.0	MT 3	0.22	101515 2570	
26.00	286	165	18.0	MT 3	0.22	101515 2600	
26.70	291	170	18.6	MT 3	0.22	101515 2670	
27.70	291	170	19.3	MT 3	0.22	101515 2770	
28.00	291	170	19.3	MT 3	0.22	101515 2800	
28.70	296	175	20.0	MT 3	0.22	101515 2870	
29.70	296	175	20.5	MT 3	0.22	101515 2970	
30.00	296	175	20.5	MT 3	0.22	101515 3000	
30.60	301	180	21.0	MT 3	0.22	101515 3060	
31.60	334	185	22.0	MT 4	0.22	101515 3160	
32.00	334	185	22.0	MT 4	0.22	101515 3200	
33.00	334	185	23.0	MT 4	0.22	101515 3300	
33.60	339	190	24.0	MT 4	0.22	101515 3360	
34.60	339	190	25.0	MT 4	0.22	101515 3460	
37.60	349	200	26.5	MT 4	0.22	101515 3760	
38.00	349	200	26.5	MT 4	0.22	101515 3800	
39.60	349	200	28.0	MT 4	0.22	101515 3960	
40.00	349	200	28.0	MT 4	0.22	101515 4000	

1105

SARA® Step drills

HSS | DIN 8378 | DIN 8374 | DIN 8376 | 118° | 29° | Vap. | Vc/fz | 361

- Cone-shaped shell
- **Vapour-treated**
- Point thinning in accordance with DIN 1412 type A
- Ø tolerance h8, other design features in accordance with DIN 1414
- **Note:** The cutting speed is determined by the large diameter, while the feed rate is determined by the small diameter for core drilling



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 27	● 21					● 27	○ 22										

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

90° through-hole countersink

- For thread core drilling in accordance with DIN 336
- For through-holes in accordance with DIN EN 20273

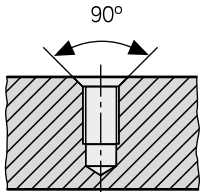


● Feed f steel < 700 N/mm² mm/rev

for thread	D mm	D2 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	3.4	2.5	8.8	39	70	0.03	102101 0030	
M 4	4.5	3.3	11.4	47	80	0.04	102101 0040	
M 5	5.5	4.2	13.6	57	93	0.05	102101 0050	
M 6	6.6	5	16.5	63	101	0.07	102101 0060	
M 8	9.0	6.8	21	81	125	0.08	102101 0080	
M 10	11.0	8.5	25.5	94	142	0.10	102101 0100	

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DIN 8378



90° fine countersink

- For through-holes in accordance with DIN EN 20273
- For 90° countersunk screw heads

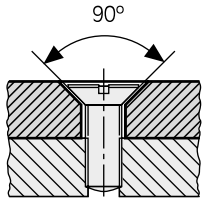


● Feed f steel < 700 N/mm² mm/rev

for thread	D mm	D2 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	6.0	3.2	9	63	101	0.03	102102 0030	
M 4	8.0	4.3	11	75	117	0.04	102102 0040	
M 5	10.0	5.3	13	87	133	0.05	102102 0050	
M 6	11.5	6.4	15	94	142	0.07	102102 0060	
M 8	15.0	8.4	19	114	169	0.08	102102 0080	
M 10	19.0	10.5	23	135	198	0.10	102102 0100	

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DIN 8374



180° countersink

- For through-holes in accordance with DIN EN 20273
- For 180° countersunk screw heads in accordance with DIN 974-1
- For screws in accordance with DIN 6912, 7513, 7984

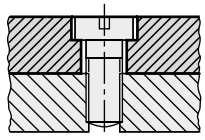


● Feed f steel < 700 N/mm² mm/rev

for thread	D mm	D2 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	6.0	3.4	9	57	93	0.03	102103 0030	
M 4	8.0	4.5	11	75	117	0.04	102103 0040	
M 5	10.0	5.5	13	87	133	0.05	102103 0050	
M 6	11.0	6.6	15	94	142	0.07	102103 0060	
M 8	15.0	9	19	114	169	0.08	102103 0080	
M 10	18.0	11	23	130	191	0.10	102103 0100	

1105

DIN 8376



SARA® STEP step drill

HSS | Werks-norm | TiN

- **For burr-free drilling and reaming of sheet metal, pipes and sections and one-sided deburring in a single operation**
- The exact bore diameter results from the cylindrical graduation, the ground section of each step deburrs the next smaller bore diameter
- Point thinning in accordance with DIN 1412 C
- Especially suitable for use on hand drills when drilling thin materials
- **Corner breakers for double-sided deburring** (up to 1.5 mm sheets)
- No need for pre-drilling or centre punching even with curved surfaces
- **Straight shank with 3 driving planes prevents "slipping" in the chuck**
- Laser scaling of bore diameters and rotational speed data
- **Note:** material thickness suitable up to 5 mm

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

Single

Model	D mm	L mm	D1 mm	Bare art.no.	€	TiN art.no.	€
1	4.0 - 12.0	79	6	102650 0001		102652 0001	
2	6.0 - 20.0	71	9	102650 0002		102652 0002	
3	6.0 - 30.0	100	10	102650 0003		102652 0003	
				1137		1137	


102652 0003


102650 0003

Sets

Contents	Bare art.no.	€	TiN art.no.	€
1 step drill each model 1 - 3	102651 0001		102653 0001	
	1137		1137	


102651 0001


102653 0001

SARA® TS cone drill bit

HSS | Werks-norm | TiN | Vap.

- **For burr-free drilling and reaming of sheet metal, pipes and sections**
- Cylindrically ground / milled chip flute for absolutely smooth running and high cutting power
- **Straight shank with 3 driving planes prevents "slipping" in the chuck**
- Laser scaling of bore diameters and rotational speed data

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

Single

Model	D mm	L mm	D1 mm	vaporised art.no.	€	TiN art.no.	€
0	3.0 - 14.0	58	6	102660 0314		102665 0314	
1	8.0 - 20.0	66	8	102660 0820		102665 0820	
2	16.0 - 30.5	77	9	102660 1630		102665 1630	
3	26.0 - 40.0	90	9	102660 2640		102665 2640	
4	36.0 - 50.0	87	9	102660 3650		102665 3650	
6	40.0 - 61.0	90	10	102660 0430		102665 0430	
				1137		1137	


102660 1630


102665 1630

Sets

Contents	vaporised art.no.	€	TiN art.no.	€
Cone drill bit No. 0, 1 and 2 incl. cutting paste	102661 0001		102666 0001	
	1137		1137	


102661 0001


102666 0001

SARA® Carbide-tipped twist drill bit

HM | DIN 8037 | 118° | 15° | h8 | 3xD | Z 2

- With driving pin in accordance with DIN 1809 for use in collets
- HSS shank
- **Cutting element: carbide K10**
- Solid carbide cutting edges with four-facet grinding
- Self-centring
- Intermediate dimensions available on request

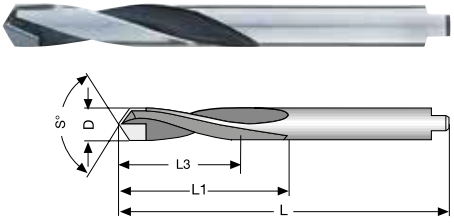
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 45	● 37	● 22				● 60	● 40	○ 30			● 95	● 95	● 70	○ 60	● 8		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
2.0	45	18	12	0.02	5	110501 0020	
3.0	50	20	16	0.02	5	110501 0030	
3.2	56	25	21	0.02	5	110501 0032	
3.5	56	25	20	0.02	5	110501 0035	
4.0	56	25	20	0.02	5	110501 0040	
4.2	63	28	23	0.02	5	110501 0042	
4.5	63	28	22	0.02	5	110501 0045	
5.0	63	28	22	0.03	5	110501 0050	
5.5	71	32	25	0.03	5	110501 0055	
6.0	71	32	25	0.03	5	110501 0060	
6.5	71	32	24	0.03	1	110501 0065	
7.0	80	40	31	0.04	1	110501 0070	
7.5	80	40	31	0.04	1	110501 0075	
8.0	80	40	30	0.04	1	110501 0080	
8.5	90	50	40	0.04	1	110501 0085	
9.0	90	50	39	0.04	1	110501 0090	
9.5	90	50	39	0.04	1	110501 0095	
10.0	100	56	44	0.04	1	110501 0100	
10.5	100	56	44	0.05	1	110501 0105	
11.0	100	56	42	0.05	1	110501 0110	
12.0	112	63	47	0.05	1	110501 0120	
13.0	112	63	47	0.05	1	110501 0130	
14.0	125	71	54	0.05	1	110501 0140	
15.0	125	71	53	0.06	1	110501 0150	
16.0	140	80	60	0.06	1	110501 0160	

1108



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Overview of solid carbide drilling tools

	Centring drill bits	NC spotting drill bit										Micro drill	
													
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	SARA	SARA	ATORN	
Drilling depth												3 x D	2 x D
ISO application area	P M K S N H	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N H	P M K S N H	P M K S N H	P M K S N	P M K S N	P M K S N	P M K S N H
Diameter range [mm]	1 - 5	2 - 20	2 - 20	2 - 20	2 - 20	2 - 12	2 - 12	2 - 12	3 - 20	3 - 20	3 - 20	0.1 - 3.0	0.7 - 2
DIN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN
Type	A					Extra-long	Extra-long	Extra-long					ADO-MICRO
Point angle	60°	90°	90°	120°	142°	90°	120°	142°	90°	120°	142°	118°, 130°	140°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating			TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	IchAda
Item number	100501....	100570....	100580....	100581...	100582....	100583....	100584....	100585....	100540....	100550....	100560....	111550....	111721....
Catalogue page	**104**	**105**	**105**	**105**	**105**	**106**	**106**	**106**	**106**	**106**	**106**	**107**	**108**

	Micro drill				Twist drill, short		High-performance drill, short						
													
Brand					ATORN	ATORN	SARA	ATORN	ATORN	SARA	ATORN	ATORN	
Drilling depth	5 x D	12 x D	20 x D	30 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D, IC	3 x D, IC	3 x D, IC	3 x D
ISO application area	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H
Diameter range [mm]	0.7 - 2	1 - 2	1 - 2	1 - 2	0.5 - 16.0	0.5 - 16	1 - 20	1 - 20	3 - 20	3 - 20	1 - 20	3 - 20	3 - 20
DIN	WN	WN	WN	WN	DIN 6539	DIN 6539	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537
Type	ADO-MICRO	ADO-MICRO	ADO-MICRO	ADO-MICRO	N	N	U	U	U	U	U	U	HYP-HPO
Point angle	135°	135°	135°	135°	118°	118°	140°	140°	140°	140°	140°	140°	140°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	IchAda	IchAda	IchAda	IchAda		TiAlN	AlCrN	TiAlNplus	TiAlNplus	AlCrN	TiAlNplus	TiAlNplus	TiAlN
Item number	111722....	111723....	111724....	111725....	111005....	111009....	111603....	111562....	111563....	111607....	111564....	111565....	111628....
Catalogue page	**108**	**109**	**109**	**109**	**110**	**111**	**112**	**113**	**113**	**115**	**116**	**116**	**118**

	High-performance drill, short		Twist drills		High-performance drill								
													
Brand	ATORN		ATORN	ATORN	ATORN	ATORN	SARA	ATORN	ATORN		ATORN		ATORN
Drilling depth	3 x D, IC	3 x D, IC	5 x D	5 x D	5 x D	5 x D	5 x D, IC	5 x D, IC	5 x D, IC	5 x D	5 x D, IC	5 x D, IC	5 x D, IC
ISO application area	M S	P M K S N	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	M S	P M K S N	N
Diameter range [mm]	3 - 20	2.8 - 20	1 - 13	1 - 13	1 - 20	3 - 20	1 - 20	1 - 20	3 - 20	3 - 20	3 - 20	2.78 - 20	1 - 20
DIN	DIN 6537	WN	DIN 338	DIN 338	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537	DIN 6537	WN	DIN 6537
Type	Ultra-M	VA	N	N	U	U	U	U	U	HYP-HPO	VA	VA	W
Point angle	140°	140°	118°	118°	140°	140°	140°	140°	140°	140°	140°	140°	130°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN		TiAlN	TiAlNplus	TiAlNplus	AlCrN	TiAlNplus	TiAlNplus	TiAlN	TiAlN	TiAlN	
Item number	111549....	111613....	111010....	111012....	111566....	111567....	111612....	111568....	111569....	111629....	111551....	111615....	111411....
Catalogue page	**119**	**121**	**123**	**124**	**125**	**125**	**127**	**128**	**129**	**131**	**133**	**134**	**136**

	High-performance drill			Deep-hole drill								
												
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN				
Drilling depth	5 x D	8 x D, IC	12 x D, IC	5 x D, IC	16 x D, IC	20 x D, IC	25 x D, IC	30 x D, IC	Pilot drill bit	10 x D	15 x D	20 x D
ISO application area	P K H	P M K S N H	P M K N H	P M K S N H	P M K	P M K	P M K	P M K	P M K	P M K	P M K	P M K
Diameter range [mm]	2 - 18	3 - 20	3 - 20	2.02 - 12.02	3 - 12	2 - 12	3 - 12	2 - 12	3.03 - 12.03	2 - 12	2 - 12	2 - 12
DIN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN
Type	HARD	U	TLP	PLT	TLP	TLP	TLP	TLP	PLT	ADO	ADO	ADO
Point angle	140°	140°	140°	140°	135°	135°	135°	135°	160°	140°	140°	140°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlSiN	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	EgiAs	EgiAs	EgiAs	EgiAs
Item number	111536....	111570....	111572....	111573....	111574....	111575....	111576....	111577	111726....	111715....	111716....	111717....
Catalogue page	**137**	**146**	**147**	**145**	**149**	**150**	**151**	**152**	**138**	**138**	**140**	**141**

	Deep-hole drill			Flat drill bit				High feed-rate	Drill reamer	Step drill bit	
											
Brand						ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Drilling depth	30 x D	40 x D	50 x D	2 x D	3 x D, IC	3 x D, IC	5 x D, IC	5 x D	Drill reamer, IC	Step drill bit	Step drill bit
ISO application area	P M K	P M K	P M K	P K N H	P K N	P M K N H	P M K N H	P M K	P K	P M K S N H	P M K S N H
Diameter range [mm]	2 - 10	3 - 10	3 - 8	2 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3.98 - 20	for M3-M12	for M3 - M10
DIN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN	WN
Type	ADO	ADO	ADO	ADF	ADFO	FLAT	FLAT	HIGH FEED	N		
Point angle	140°	140°	140°	180°	180°	180°	180°	135°	140°	90°	180°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	EgiAs	EgiAs	EgiAs	EgiAs	EgiAs	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Item number	111718....	111719....	111720....	111711....	111713....	111709....	111710....	111585....	111701....	102202....	102211....
Catalogue page	**142**	**144**	**144**	**153**	**155**	**156**	**158**	**160**	**162**	**163**	**163**

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ATORN Centring drills

VHM | DIN 333 | A | 60° | k12 | Z 2 | Vc/fz | 356

- For centring holes without protected centre DIN 332 A
- Spiral-fluted, bare surface
- Precision-ground version, high true-running accuracy
- With application of the workpiece to the centre point over a large surface area
- Suitable for heavy workpieces when using revolving centre points

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 60	● 40	● 30	● 25	○ 20	● 55	● 60	● 20	● 20	● 20	● 190	● 180	● 70	● 40	○ 4		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.00	3.15	1.3 - 1.7	31.5	0.06	100501 0100	
1.25	3.15	1.6 - 2.0	31.5	0.06	100501 0125	
1.60	4	2.0 - 2.6	30.3	0.06	100501 0160	
2.00	5	2.5 - 3.1	40	0.06	100501 0200	
2.50	6.3	3.1 - 3.8	45	0.06	100501 0250	
3.15	8	3.9 - 4.6	50	0.07	100501 0315	
4.00	10	5.0 - 5.9	56	0.07	100501 0400	
5.00	12.5	6.3 - 7.2	63	0.07	100501 0500	

1179

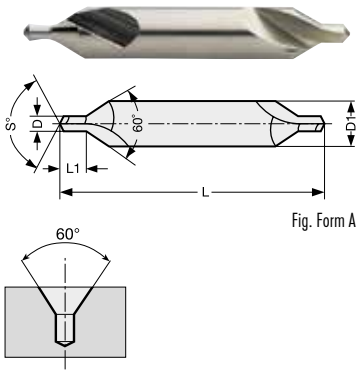


Fig. Form A

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ATORN NC spotting drill

VHM | Werks-norm | 90° | 30° | h6 | h6 | Vc/fz | 357

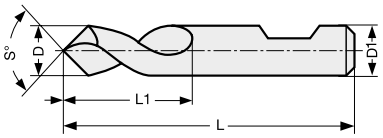
- S° = 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **Cutting material: SC, uncoated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 60	● 50	● 35	● 30		○ 85	● 90	● 40	● 20	● 20	● 160	● 200	● 120				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€
2.00	2	32	6	0.07	100570 0200	
3.00	3	46	12	0.07	100570 0300	
4.00	4	55	12	0.07	100570 0400	
5.00	5	62	14	0.07	100570 0500	
6.00	6	66	20	0.13	100570 0600	
8.00	8	79	25	0.13	100570 0800	
10.00	10	89	25	0.20	100570 1000	
12.00	12	102	30	0.20	100570 1200	
16.00	16	115	35	0.27	100570 1600	
20.00	20	131	40	0.27	100570 2000	
					1179	



100570....



ATORN NC spotting drill

VHM | Werks-norm | 90° | 120° | 142° | 30° | h6 | h6 | TiAlN | Vc/fz | 357

- S° = 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **Cutting material: SC, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 60	● 50	● 35	● 30		○ 70	● 70	● 40	● 20	● 20	● 260	● 240	● 120		● 28		
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
2.00	2	32	6	0.05	100580 0200		100581 0200		100582 0200	
3.00	3	46	12	0.075	100580 0300		100581 0300		100582 0300	
4.00	4	55	12	0.095	100580 0400		100581 0400		100582 0400	
5.00	5	62	14	0.11	100580 0500		100581 0500		100582 0500	
6.00	6	66	20	0.125	100580 0600		100581 0600		100582 0600	
8.00	8	79	25	0.15	100580 0800		100581 0800		100582 0800	
10.00	10	89	25	0.175	100580 1000		100581 1000		100582 1000	
12.00	12	102	30	0.2	100580 1200		100581 1200		100582 1200	
16.00	16	115	35	0.26	100580 1600		100581 1600		100582 1600	
20.00	20	131	40	0.325	100580 2000		100581 2000		100582 2000	
					1179		1179		1179	



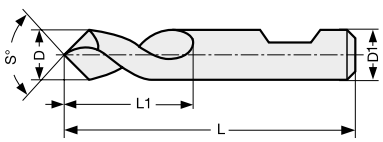
100580....



100581....



100582....



ATORN NC spotting drill, extra-long

VHM | Werks-norm | 90° | 120° | 142° | 30° | h6 | h6 | Z 2 | TiAlN | Vc/fz | 357

- S°= 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **long version for bridging protruding contours**
- **Cutting material: SC, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 80	● 60	● 50	● 35	● 30		○ 85	● 90	● 40	● 20	● 20	● 260	● 240	● 150		● 16		

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

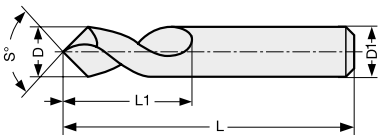

100583....


100584....


100585....

● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
2.00	2	75	6	0.07	100583 0200		100584 0200		100585 0200	
3.00	3	80	12	0.07	100583 0300		100584 0300		100585 0300	
4.00	4	100	12	0.07	100583 0400		100584 0400		100585 0400	
5.00	5	120	14	0.07	100583 0500		100584 0500		100585 0500	
6.00	6	140	20	0.13	100583 0600		100584 0600		100585 0600	
8.00	8	140	25	0.13	100583 0800		100584 0800		100585 0800	
10.00	10	170	25	0.20	100583 1000		100584 1000		100585 1000	
12.00	12	170	30	0.20	100583 1200		100584 1200		100585 1200	
16.00	16	200	35	0.27	100583 1600		100584 1600		100585 1600	
20.00	20	200	40	0.27	100583 2000		100584 2000		100585 2000	
					1179		1179			



SARA® NC spotting drill bits

VHM | Werks-norm | 90° | 120° | 142° | TiAlN | Vc/fz | 357

- S° = point angle 90°, 120° and 142°
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6 mm)
- **Cutting material: ultra-superfine grain solid carbide, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 80	● 65	● 40	○ 37	○ 37	○ 28	● 85	● 80	○ 38	○ 35	○ 35	● 175	● 140	● 125		○ 28		

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

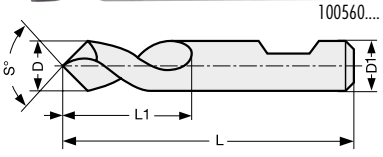
● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
3	3	38	8	0.07	100540 0300		100550 0300		100560 0300	
4	4	50	10	0.07	100540 0400		100550 0400		100560 0400	
5	5	50	13	0.07	100540 0500		100550 0500		100560 0500	
6	6	57	13	0.13	100540 0600		100550 0600		100560 0600	
8	8	63	19	0.13	100540 0800		100550 0800		100560 0800	
10	10	66	20	0.20	100540 1000		100550 1000		100560 1000	
12	12	73	22	0.20	100540 1200		100550 1200		100560 1200	
16	16	82	24	0.27	100540 1600		100550 1600		100560 1600	
20	20	92	30	0.27	100540 2000		100550 2000		100560 2000	
					1167		1167		1167	


100540....


100550....

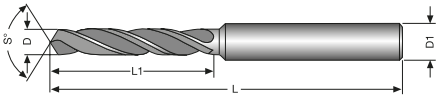

100560....



ATORN Solid carbide micro drill bit

VHM | Werks-norm | Typ U | 130° | | 30° | h6 | 3xD | | Z 2 | TiAlN | Vc/fz | 367

- S° = 130° point angle, 118° up to a diameter of 0.35 mm
- **Cutting material: ultra-fine grain solid carbide**
- Tolerance D = 0.004 mm



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○	○	●	●	●	●	●	○	○	○	○			
		60	60	40	30	30	20	80	90	30	20	20	190	150	100	40			
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.10	3	38	1	0.01	111550 0010	
0.15	3	38	2	0.01	111550 0015	
0.20	3	38	2.5	0.01	111550 0020	
0.25	3	38	4	0.01	111550 0025	
0.30	3	38	5.5	0.01	111550 0030	
0.35	3	38	5.5	0.01	111550 0035	
0.40	3	38	6	0.01	111550 0040	
0.45	3	38	6	0.01	111550 0045	
0.50	3	38	6	0.015	111550 0050	
0.55	3	38	8	0.015	111550 0055	
0.60	3	38	8	0.015	111550 0060	
0.65	3	38	8	0.015	111550 0065	
0.70	3	38	8	0.015	111550 0070	
0.75	3	38	8	0.015	111550 0075	
0.80	3	38	8	0.015	111550 0080	
0.85	3	38	8	0.015	111550 0085	
0.90	3	38	8	0.015	111550 0090	
0.95	3	38	8	0.015	111550 0095	
0.97	3	38	8	0.02	111550 0097	
0.98	3	38	8	0.02	111550 0098	
0.99	3	38	8	0.02	111550 0099	
1.00	3	38	10	0.02	111550 0100	
1.01	3	38	10	0.02	111550 0101	
1.02	3	38	10	0.03	111550 0102	
1.03	3	38	10	0.03	111550 0103	
1.05	3	38	10	0.03	111550 0105	
1.10	3	38	10	0.03	111550 0110	
1.15	3	38	10	0.03	111550 0115	
1.20	3	38	10	0.03	111550 0120	
1.25	3	38	10	0.03	111550 0125	
1.30	3	38	10	0.03	111550 0130	
1.35	3	38	10	0.03	111550 0135	
1.40	3	38	10	0.03	111550 0140	
1.45	3	38	10	0.03	111550 0145	
1.47	3	38	10	0.03	111550 0147	
1.48	3	38	10	0.03	111550 0148	
1.49	3	38	10	0.03	111550 0149	
1.50	3	38	12	0.03	111550 0150	
1.51	3	38	12	0.03	111550 0151	
1.52	3	38	12	0.03	111550 0152	
1.53	3	38	12	0.03	111550 0153	
1.55	3	38	12	0.03	111550 0155	

1154

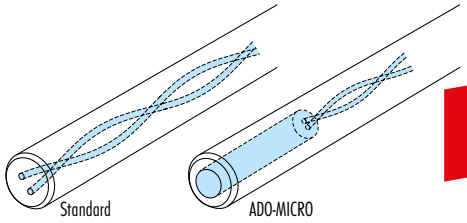
D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.60	3	38	12	0.03	111550 0160	
1.65	3	38	12	0.03	111550 0165	
1.70	3	38	12	0.03	111550 0170	
1.75	3	38	12	0.03	111550 0175	
1.80	3	38	12	0.03	111550 0180	
1.85	3	38	12	0.03	111550 0185	
1.90	3	38	12	0.03	111550 0190	
1.95	3	38	12	0.03	111550 0195	
1.97	3	38	12	0.03	111550 0197	
1.98	3	38	12	0.03	111550 0198	
1.99	3	38	12	0.03	111550 0199	
2.00	3	38	12	0.05	111550 0200	
2.01	3	38	12	0.05	111550 0201	
2.02	3	38	12	0.05	111550 0202	
2.03	3	38	12	0.05	111550 0203	
2.05	3	38	12	0.05	111550 0205	
2.10	3	38	12	0.05	111550 0210	
2.15	3	38	12	0.05	111550 0215	
2.20	3	38	12	0.05	111550 0220	
2.25	3	38	12	0.05	111550 0225	
2.30	3	38	12	0.05	111550 0230	
2.35	3	38	12	0.05	111550 0235	
2.40	3	38	12	0.05	111550 0240	
2.45	3	38	12	0.05	111550 0245	
2.50	3	38	12	0.05	111550 0250	
2.51	3	38	12	0.06	111550 0251	
2.52	3	38	12	0.06	111550 0252	
2.53	3	38	12	0.06	111550 0253	
2.55	3	38	12	0.06	111550 0255	
2.60	3	38	12	0.06	111550 0260	
2.65	3	38	12	0.06	111550 0265	
2.70	3	38	12	0.06	111550 0270	
2.75	3	38	12	0.06	111550 0275	
2.80	3	38	12	0.06	111550 0280	
2.85	3	38	12	0.06	111550 0285	
2.90	3	38	12	0.06	111550 0290	
2.95	3	38	12	0.06	111550 0295	
2.96	3	38	12	0.06	111550 0296	
2.97	3	38	12	0.06	111550 0297	
2.98	3	38	12	0.06	111550 0298	
2.99	3	38	12	0.06	111550 0299	
3.00	3	38	12	0.06	111550 0300	

1154

Solid carbide high-performance drill bit ADO-MICRO

VHM | Werks-norm | 140° | 135° | 30° | 2xD | 5xD | 12xD | 20xD | 30xD | TiAlN | Vc/fz | 374

- 2xD, 5xD: 0.7-2mm, 12xD, 20xD, 30xD: 1-2mm
- **SC material, IchAda coating**
- Double guide chamfers for a high degree of stability
- Internal coolant supply with a hollow shank increases the flow rate

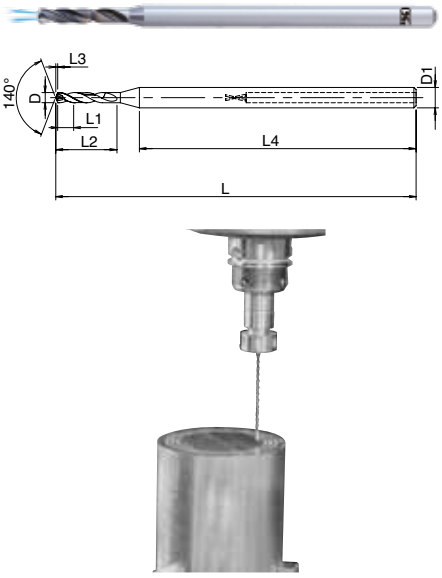


Deep-hole bores with minimal diameters

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	○	○	○	○	○	○		○		
		40	40	30	40	40	33	40	40	50	10	10	50	40	40		30		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

ADO-MICRO 2xD

- Point angle 140°
- Cutting tolerance: +0.001 to +0.010mm

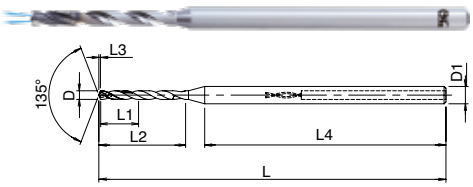


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.7	1.4	4.2	0.1	38.5	47	3	0.014	111721 0070	
0.75	1.5	4.5	0.1	38.3	47	3	0.014	111721 0075	
0.8	1.6	4.8	0.1	41.1	50	3	0.014	111721 0080	
0.85	1.7	5.1	0.2	40.9	50	3	0.014	111721 0085	
0.9	1.8	5.4	0.2	40.7	50	3	0.014	111721 0090	
0.95	1.9	5.7	0.2	40.5	50	3	0.014	111721 0095	
1	2	6	0.2	42.8	53	3	0.02	111721 0100	
1.1	2.2	6.6	0.2	42.4	53	3	0.02	111721 0110	
1.2	2.4	7.2	0.2	41.9	53	3	0.02	111721 0120	
1.3	2.6	7.8	0.2	41.5	53	3	0.02	111721 0130	
1.4	2.8	8.4	0.3	41.1	53	3	0.02	111721 0140	
1.5	3	9	0.3	40.7	53	3	0.03	111721 0150	
1.6	3.2	9.6	0.3	40.3	53	3	0.03	111721 0160	
1.7	3.4	10.2	0.3	39.9	53	3	0.03	111721 0170	
1.8	3.6	10.8	0.3	39.5	53	3	0.03	111721 0180	
1.9	3.8	11.4	0.3	39	53	3	0.03	111721 0190	
2	4	12	0.4	43.6	58	3	0.04	111721 0200	

1107

ADO-MICRO 5xD

- Point angle 135°
- Cutting tolerance: 0 to -0.009mm

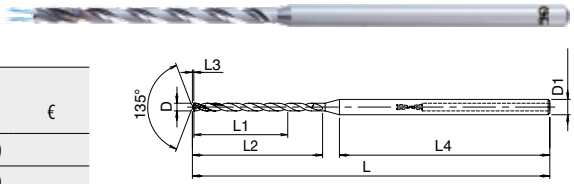


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.7	3.5	7	0.1	35.7	47	3	0.014	111722 0070	
0.75	3.8	7.5	0.2	35.3	47	3	0.014	111722 0075	
0.8	4	8	0.2	37.9	50	3	0.014	111722 0080	
0.85	4.3	8.5	0.2	37.5	50	3	0.014	111722 0085	
0.9	4.5	9	0.2	37.1	50	3	0.014	111722 0090	
0.95	4.8	9.5	0.2	36.7	50	3	0.014	111722 0095	
1	5	10	0.2	40.8	55	3	0.02	111722 0100	
1.1	5.5	11	0.2	40	55	3	0.02	111722 0110	
1.2	6	12	0.2	44.1	60	3	0.02	111722 0120	
1.3	6.5	13	0.3	43.3	60	3	0.02	111722 0130	
1.4	7	14	0.3	42.5	60	3	0.02	111722 0140	
1.5	7.5	15	0.3	41.7	60	3	0.03	111722 0150	
1.6	8	16	0.3	40.9	60	3	0.03	111722 0160	
1.7	8.5	17	0.4	40.1	60	3	0.03	111722 0170	
1.8	9	18	0.4	44.3	65	3	0.03	111722 0180	
1.9	9.5	19	0.4	43.4	6	3	0.03	111722 0190	
2	10	20	0.4	42.6	65	3	0.04	111722 0200	

1107

ADO-MICRO 12xD

- Point angle 135°
- Cutting tolerance: 0 to -0.009mm



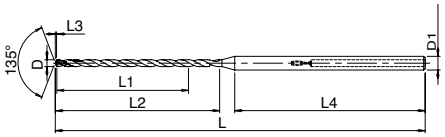
D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	12	17	0.2	38.8	60	3	0.02	111723 0100	
1.1	13.2	18.7	0.2	42.3	65	3	0.02	111723 0110	
1.2	14.4	20.4	0.2	40.7	65	3	0.02	111723 0120	
1.3	14.4	20.4	0.3	40.1	65	3	0.02	111723 0130	
1.4	16.8	23.8	0.3	42.7	70	3	0.02	111723 0140	
1.5	18	25.5	0.3	41.2	70	3	0.03	111723 0150	
1.6	19.2	27.2	0.3	39.7	70	3	0.03	111723 0160	
1.7	20.4	28.9	0.4	41.2	73	3	0.03	111723 0170	
1.8	21.6	30.6	0.4	39.7	73	3	0.03	111723 0180	
1.9	22.8	32.3	0.4	38.1	73	3	0.03	111723 0190	
2	24	34	0.4	40.6	77	3	0.04	111723 0200	

1107

ADO-MICRO 20xD

- Point angle 135°
- Cutting tolerance: 0 to -0.009mm





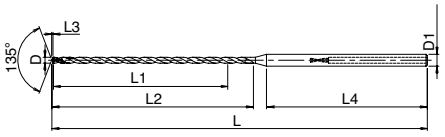
D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	20	24	0.2	39.8	68	3	0.02	111724 0100	
1.1	22	26.4	0.2	44.6	75	3	0.02	111724 0110	
1.2	24	28.8	0.2	42.3	75	3	0.02	111724 0120	
1.3	26	31.2	0.3	40.1	75	3	0.02	111724 0130	
1.4	28	33.6	0.3	43.9	81	3	0.02	111724 0140	
1.5	30	36	0.3	41.7	81	3	0.03	111724 0150	
1.6	32	38.4	0.3	39.5	81	3	0.03	111724 0160	
1.7	34	40.8	0.4	44.3	88	3	0.03	111724 0170	
1.8	36	43.2	0.4	42.1	88	3	0.03	111724 0180	
1.9	38	45.6	0.4	39.8	88	3	0.03	111724 0190	
2	40	48	0.4	44.6	95	3	0.04	111724 0200	

1107

ADO-MICRO 30xD

- Point angle 135°
- Cutting tolerance: 0 to -0.009mm



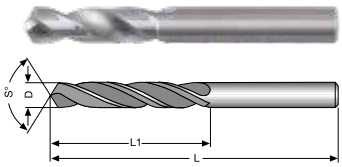


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	30	34	0.2	38.8	77	3	0.02	111725 0100	
1.1	33	37.4	0.2	44.6	86	3	0.02	111725 0110	
1.2	36	40.8	0.2	41.3	86	3	0.02	111725 0120	
1.3	39	44.2	0.3	38.1	86	3	0.02	111725 0130	
1.4	42	47.6	0.3	43.9	95	3	0.02	111725 0140	
1.5	45	51	0.3	40.7	95	3	0.03	111725 0150	
1.6	48	54.4	0.3	43.5	101	3	0.03	111725 0160	
1.7	51	57.8	0.4	40.3	101	3	0.03	111725 0170	
1.8	54	61.2	0.4	43.1	107	3	0.03	111725 0180	
1.9	57	64.6	0.4	39.8	107	3	0.03	111725 0190	
2	60	68	0.4	41.6	112	3	0.04	111725 0200	

1107

ATORN Solid carbide twist drill, uncoated

VHM | DIN 6539 | Typ N | 118° | 32° | h7 | h6 | 3xD | Z 2 | Vc/fz | 367



- Strong twist drill for automatic units/revolving lathes
- Facet-ground
- **Cutting material: solid carbide, uncoated**

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 70	● 60	● 50	○ 30	○ 28		● 85	● 80	● 25	○ 25	○ 25	● 190	● 140	● 130	○ 80	○ 20		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.50	20	3	0.02	111005 0005	
0.60	21	3.5	0.02	111005 0006	
0.70	23	4.5	0.02	111005 0007	
0.80	24	5	0.02	111005 0008	
0.90	25	5.5	0.02	111005 0009	
1.00	26	6	0.03	111005 0010	
1.10	28	7	0.03	111005 0011	
1.20	30	8	0.03	111005 0012	
1.30	30	8	0.03	111005 0013	
1.40	32	9	0.05	111005 0014	
1.50	32	9	0.05	111005 0015	
1.60	34	10	0.06	111005 0016	
1.70	34	10	0.06	111005 0017	
1.80	36	11	0.06	111005 0018	
1.90	36	11	0.06	111005 0019	
2.00	38	12	0.06	111005 0020	
2.10	38	12	0.07	111005 0021	
2.20	40	13	0.07	111005 0022	
2.30	40	13	0.07	111005 0023	
2.40	43	14	0.07	111005 0024	
2.50	43	14	0.07	111005 0025	
2.60	43	14	0.08	111005 0026	
2.70	46	16	0.08	111005 0027	
2.80	46	16	0.08	111005 0028	
2.90	46	16	0.08	111005 0029	
3.00	46	16	0.09	111005 0030	
3.10	49	18	0.09	111005 0031	
3.20	49	18	0.09	111005 0032	
3.30	49	18	0.09	111005 0033	
3.40	52	20	0.09	111005 0034	
3.50	52	20	0.09	111005 0035	
3.60	52	20	0.09	111005 0036	
3.70	52	20	0.09	111005 0037	
3.80	55	22	0.09	111005 0038	
3.90	55	22	0.09	111005 0039	
4.00	55	22	0.09	111005 0040	
4.10	55	22	0.09	111005 0041	
4.20	55	22	0.09	111005 0042	
4.30	58	24	0.09	111005 0043	
4.40	58	24	0.09	111005 0044	
4.50	58	24	0.09	111005 0045	
4.60	58	24	0.09	111005 0046	
4.70	58	24	0.09	111005 0047	
4.80	62	26	0.09	111005 0048	
4.90	62	26	0.09	111005 0049	
5.00	62	26	0.09	111005 0050	
5.10	62	26	0.09	111005 0051	
5.20	62	26	0.09	111005 0052	
5.30	62	26	0.09	111005 0053	
5.40	66	28	0.09	111005 0054	
5.50	66	28	0.1	111005 0055	
5.60	66	28	0.1	111005 0056	
5.70	66	28	0.1	111005 0057	
5.80	66	28	0.1	111005 0058	

1154

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.90	66	28	0.1	111005 0059	
6.00	66	28	0.1	111005 0060	
6.10	70	31	0.1	111005 0061	
6.20	70	31	0.1	111005 0062	
6.30	70	31	0.1	111005 0063	
6.40	70	31	0.1	111005 0064	
6.50	70	31	0.11	111005 0065	
6.60	70	31	0.11	111005 0066	
6.70	70	31	0.11	111005 0067	
6.80	74	34	0.11	111005 0068	
6.90	74	34	0.11	111005 0069	
7.00	74	34	0.11	111005 0070	
7.10	74	34	0.11	111005 0071	
7.20	74	34	0.11	111005 0072	
7.30	74	34	0.11	111005 0073	
7.40	74	34	0.11	111005 0074	
7.50	74	34	0.12	111005 0075	
7.60	79	37	0.12	111005 0076	
7.70	79	37	0.12	111005 0077	
7.80	79	37	0.12	111005 0078	
7.90	79	37	0.12	111005 0079	
8.00	79	37	0.12	111005 0080	
8.10	79	37	0.12	111005 0081	
8.20	79	37	0.12	111005 0082	
8.30	79	37	0.12	111005 0083	
8.40	79	37	0.13	111005 0084	
8.50	79	37	0.13	111005 0085	
8.60	84	40	0.13	111005 0086	
8.70	84	40	0.13	111005 0087	
8.80	84	40	0.13	111005 0088	
8.90	84	40	0.13	111005 0089	
9.00	84	40	0.13	111005 0090	
9.10	84	40	0.13	111005 0091	
9.20	84	40	0.14	111005 0092	
9.30	84	40	0.14	111005 0093	
9.40	84	40	0.14	111005 0094	
9.50	84	40	0.14	111005 0095	
9.60	89	43	0.14	111005 0096	
9.70	89	43	0.14	111005 0097	
9.80	89	43	0.14	111005 0098	
9.90	89	43	0.14	111005 0099	
10.00	89	43	0.15	111005 0100	
10.20	89	43	0.15	111005 0102	
10.50	89	43	0.15	111005 0105	
11.00	95	47	0.16	111005 0110	
11.20	95	47	0.16	111005 0112	
11.50	95	47	0.16	111005 0115	
12.00	102	51	0.17	111005 0120	
13.00	102	51	0.18	111005 0130	
14.00	107	54	0.19	111005 0140	
15.00	111	56	0.19	111005 0150	
16.00	115	58	0.2	111005 0160	

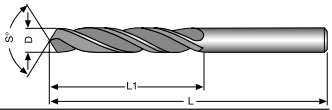
1154

ATORN Solid carbide twist drill, TiAlN-coated

VHM | DIN 6539 | Typ N | 118° | 30° | h7 | h6 | 3xD | Z 2 | TiAlN | Vc/fz | 368

- Strong twist drill for automatic units/revolving lathes
- Facet-ground
- **Cutting material: solid carbide, TiAlN coating**





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 70	● 60	● 32	○ 30		● 111	● 90	● 30	○ 30	○ 30	○ 200	○ 150	● 140	○ 80	○ 26		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.50	20	3	0.02	111009 0005	
0.60	21	3.5	0.02	111009 0006	
0.70	23	4.5	0.02	111009 0007	
0.80	24	5	0.02	111009 0008	
0.90	25	5.5	0.02	111009 0009	
1.00	26	6	0.03	111009 0010	
1.10	28	7	0.03	111009 0011	
1.20	30	8	0.03	111009 0012	
1.30	30	8	0.03	111009 0013	
1.40	32	9	0.05	111009 0014	
1.50	32	9	0.05	111009 0015	
1.60	34	10	0.06	111009 0016	
1.70	34	10	0.06	111009 0017	
1.80	36	11	0.06	111009 0018	
1.90	36	11	0.06	111009 0019	
2.00	38	12	0.06	111009 0020	
2.10	38	12	0.07	111009 0021	
2.20	40	13	0.07	111009 0022	
2.30	40	13	0.07	111009 0023	
2.40	43	14	0.07	111009 0024	
2.50	43	14	0.07	111009 0025	
2.60	43	14	0.08	111009 0026	
2.70	46	16	0.08	111009 0027	
2.80	46	16	0.08	111009 0028	
2.90	46	16	0.08	111009 0029	
3.00	46	16	0.09	111009 0030	
3.10	49	18	0.09	111009 0031	
3.20	49	18	0.09	111009 0032	
3.30	49	18	0.09	111009 0033	
3.40	52	20	0.09	111009 0034	
3.50	52	20	0.09	111009 0035	
3.60	52	20	0.09	111009 0036	
3.70	52	20	0.09	111009 0037	
3.80	55	22	0.09	111009 0038	
3.90	55	22	0.09	111009 0039	
4.00	55	22	0.09	111009 0040	
4.10	55	22	0.09	111009 0041	
4.20	55	22	0.09	111009 0042	
4.30	58	24	0.09	111009 0043	
4.40	58	24	0.09	111009 0044	
4.50	58	24	0.09	111009 0045	
4.60	58	24	0.09	111009 0046	
4.70	58	24	0.09	111009 0047	
4.80	62	26	0.09	111009 0048	
4.90	62	26	0.09	111009 0049	
5.00	62	26	0.09	111009 0050	
5.10	62	26	0.09	111009 0051	
5.20	62	26	0.09	111009 0052	
5.30	62	26	0.09	111009 0053	
5.40	66	28	0.09	111009 0054	
5.50	66	28	0.1	111009 0055	
5.60	66	28	0.1	111009 0056	
5.70	66	28	0.1	111009 0057	

1154

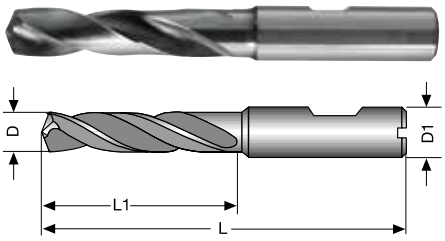
D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.80	66	28	0.1	111009 0058	
5.90	66	28	0.1	111009 0059	
6.00	66	28	0.1	111009 0060	
6.10	70	31	0.1	111009 0061	
6.20	70	31	0.1	111009 0062	
6.30	70	31	0.1	111009 0063	
6.40	70	31	0.1	111009 0064	
6.50	70	31	0.11	111009 0065	
6.60	70	31	0.11	111009 0066	
6.70	70	31	0.11	111009 0067	
6.80	74	34	0.11	111009 0068	
6.90	74	34	0.11	111009 0069	
7.00	74	34	0.11	111009 0070	
7.10	74	34	0.11	111009 0071	
7.20	74	34	0.11	111009 0072	
7.30	74	34	0.11	111009 0073	
7.40	74	34	0.11	111009 0074	
7.50	74	34	0.12	111009 0075	
7.60	79	37	0.12	111009 0076	
7.70	79	37	0.12	111009 0077	
7.80	79	37	0.12	111009 0078	
7.90	79	37	0.12	111009 0079	
8.00	79	37	0.12	111009 0080	
8.10	79	37	0.12	111009 0081	
8.20	79	37	0.12	111009 0082	
8.30	79	37	0.12	111009 0083	
8.40	79	37	0.13	111009 0084	
8.50	79	37	0.13	111009 0085	
8.60	84	40	0.13	111009 0086	
8.70	84	40	0.13	111009 0087	
8.80	84	40	0.13	111009 0088	
8.90	84	40	0.13	111009 0089	
9.00	84	40	0.13	111009 0090	
9.10	84	40	0.13	111009 0091	
9.20	84	40	0.14	111009 0092	
9.30	84	40	0.14	111009 0093	
9.40	84	40	0.14	111009 0094	
9.50	84	40	0.14	111009 0095	
9.60	89	43	0.14	111009 0096	
9.70	89	43	0.14	111009 0097	
9.80	89	43	0.14	111009 0098	
9.90	89	43	0.14	111009 0099	
10.00	89	43	0.15	111009 0100	
10.20	89	43	0.15	111009 0102	
10.50	89	43	0.15	111009 0105	
11.00	95	47	0.16	111009 0110	
11.20	95	47	0.16	111009 0112	
11.50	95	47	0.16	111009 0115	
12.00	102	51	0.17	111009 0120	
13.00	102	51	0.18	111009 0130	
14.00	107	54	0.19	111009 0140	
15.00	111	56	0.19	111009 0150	
16.00	115	58	0.2	111009 0160	

1154

SARA® SC high-performance drill bit HPC-UNI 3D with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | AlCrN | Vc/fz

369



- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material AlCrN**
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **Universally applicable**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- Shank designs up to Ø 2.9 mm HA, from Ø 3.0 mm HB

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○	○	●	○	○	○	○	○	○	○		○	○	
120	98	63	45	40	27	125	110	34	27	22	230	160	110		43	27	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	4	45	7	0.03	111603 0100	
1.1	4	45	7	0.03	111603 0110	
1.2	4	45	7	0.03	111603 0120	
1.3	4	45	7	0.03	111603 0130	
1.4	4	45	7	0.04	111603 0140	
1.5	4	55	14	0.04	111603 0150	
1.6	4	55	14	0.04	111603 0160	
1.7	4	55	14	0.04	111603 0170	
1.8	4	55	14	0.05	111603 0180	
1.9	4	55	14	0.05	111603 0190	
2	4	55	20	0.05	111603 0200	
2.1	4	55	20	0.05	111603 0210	
2.2	4	55	20	0.06	111603 0220	
2.3	4	55	20	0.06	111603 0230	
2.4	4	55	20	0.06	111603 0240	
2.5	4	55	20	0.06	111603 0250	
2.6	4	55	20	0.07	111603 0260	
2.7	4	55	20	0.07	111603 0270	
2.8	4	55	20	0.07	111603 0280	
2.9	4	55	20	0.07	111603 0290	
3	6	62	20	0.06	111603 0300	
3.1	6	62	20	0.06	111603 0310	
3.2	6	62	20	0.06	111603 0320	
3.25	6	62	20	0.07	111603 0325	
3.3	6	62	20	0.07	111603 0330	
3.4	6	62	20	0.07	111603 0340	
3.5	6	62	20	0.07	111603 0350	
3.6	6	62	20	0.07	111603 0360	
3.7	6	62	20	0.07	111603 0370	
3.8	6	66	24	0.08	111603 0380	
3.9	6	66	24	0.08	111603 0390	
4	6	66	24	0.08	111603 0400	
4.1	6	66	24	0.08	111603 0410	
4.2	6	66	24	0.08	111603 0420	
4.3	6	66	24	0.09	111603 0430	
4.4	6	66	24	0.09	111603 0440	
4.5	6	66	24	0.09	111603 0450	
4.6	6	66	24	0.09	111603 0460	
4.65	6	66	24	0.09	111603 0465	
4.7	6	66	24	0.09	111603 0470	
4.8	6	66	28	0.10	111603 0480	
4.9	6	66	28	0.10	111603 0490	
5	6	66	28	0.10	111603 0500	
5.1	6	66	28	0.10	111603 0510	

1184

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.2	6	66	28	0.10	111603 0520	
5.3	6	66	28	0.11	111603 0530	
5.4	6	66	28	0.11	111603 0540	
5.5	6	66	28	0.11	111603 0550	
5.55	6	66	28	0.11	111603 0555	
5.6	6	66	28	0.11	111603 0560	
5.7	6	66	28	0.11	111603 0570	
5.8	6	66	28	0.12	111603 0580	
5.9	6	66	28	0.12	111603 0590	
6	6	66	28	0.12	111603 0600	
6.1	8	79	34	0.12	111603 0610	
6.2	8	79	34	0.12	111603 0620	
6.3	8	79	34	0.13	111603 0630	
6.4	8	79	34	0.13	111603 0640	
6.5	8	79	34	0.13	111603 0650	
6.6	8	79	34	0.13	111603 0660	
6.7	8	79	34	0.13	111603 0670	
6.8	8	79	34	0.14	111603 0680	
6.9	8	79	34	0.14	111603 0690	
7	8	79	34	0.14	111603 0700	
7.1	8	79	41	0.14	111603 0710	
7.2	8	79	41	0.14	111603 0720	
7.3	8	79	41	0.15	111603 0730	
7.4	8	79	41	0.15	111603 0740	
7.5	8	79	41	0.15	111603 0750	
7.6	8	79	41	0.15	111603 0760	
7.7	8	79	41	0.15	111603 0770	
7.8	8	79	41	0.16	111603 0780	
7.9	8	79	41	0.16	111603 0790	
8	8	79	41	0.16	111603 0800	
8.1	10	89	47	0.16	111603 0810	
8.2	10	89	47	0.16	111603 0820	
8.3	10	89	47	0.17	111603 0830	
8.4	10	89	47	0.17	111603 0840	
8.5	10	89	47	0.17	111603 0850	
8.6	10	89	47	0.17	111603 0860	
8.7	10	89	47	0.17	111603 0870	
8.8	10	89	47	0.18	111603 0880	
8.9	10	89	47	0.18	111603 0890	
9	10	89	47	0.18	111603 0900	
9.1	10	89	47	0.18	111603 0910	
9.2	10	89	47	0.18	111603 0920	
9.3	10	89	47	0.19	111603 0930	
9.4	10	89	47	0.19	111603 0940	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.5	10	89	47	0.19	111603 0950	
9.6	10	89	47	0.19	111603 0960	
9.7	10	89	47	0.19	111603 0970	
9.8	10	89	47	0.20	111603 0980	
9.9	10	89	47	0.20	111603 0990	
10	10	89	47	0.20	111603 1000	
10.2	12	102	55	0.20	111603 1020	
10.3	12	102	55	0.21	111603 1030	
10.5	12	102	55	0.21	111603 1050	
10.8	12	102	55	0.22	111603 1080	
11	12	102	55	0.22	111603 1100	
11.2	12	102	55	0.22	111603 1120	
11.5	12	102	55	0.23	111603 1150	
11.8	12	102	55	0.24	111603 1180	
12	12	102	55	0.24	111603 1200	
12.5	14	107	60	0.25	111603 1250	
12.8	14	107	60	0.26	111603 1280	
13	14	107	60	0.26	111603 1300	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13.5	14	107	60	0.27	111603 1350	
13.8	14	107	60	0.28	111603 1380	
14	14	107	60	0.28	111603 1400	
14.2	16	115	65	0.28	111603 1420	
14.5	16	115	65	0.29	111603 1450	
14.8	16	115	65	0.30	111603 1480	
15	16	115	65	0.30	111603 1500	
15.5	16	115	65	0.31	111603 1550	
15.8	16	115	65	0.32	111603 1580	
16	16	115	65	0.32	111603 1600	
16.5	18	123	73	0.33	111603 1650	
17	18	123	73	0.34	111603 1700	
17.5	18	123	73	0.35	111603 1750	
18	18	123	73	0.36	111603 1800	
18.5	20	131	79	0.37	111603 1850	
19	20	131	79	0.38	111603 1900	
19.5	20	131	79	0.39	111603 1950	
20	20	131	79	0.40	111603 2000	

ATORN TiAlNplus HPC 3D solid carbide high-performance drill bit without internal cooling

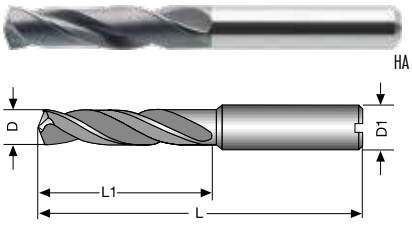
VHM | DIN 6537 | Typ U | 140° | 30° | h7 | h6 | 3xD | Z 2 | TiAlN plus | Vc/fz | 370

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life

material — ● very well suited ○ well suited

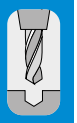
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
135	110	90	35	30	30	140	110	40	30	35	260	210	230		45		

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
1.00	4	45	7	0.025	111562 0100	
1.10	4	45	7	0.025	111562 0110	
1.20	4	45	7	0.025	111562 0120	
1.30	4	45	7	0.025	111562 0130	
1.40	4	45	7	0.025	111562 0140	
1.50	4	55	14	0.033	111562 0150	
1.60	4	55	14	0.033	111562 0160	
1.70	4	55	14	0.033	111562 0170	
1.80	4	55	14	0.033	111562 0180	
1.90	4	55	14	0.033	111562 0190	
2.00	4	55	20	0.045	111562 0200	
2.10	4	55	20	0.045	111562 0210	
2.20	4	55	20	0.045	111562 0220	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
2.30	4	55	20	0.045	111562 0230	
2.40	4	55	20	0.045	111562 0240	
2.50	4	55	20	0.045	111562 0250	
2.60	4	55	20	0.045	111562 0260	
2.70	4	55	20	0.045	111562 0270	
2.80	4	55	20	0.045	111562 0280	
2.90	4	55	20	0.045	111562 0290	
3.00	6	62	20	0.10	111562 0300	
3.10	6	62	20	0.10	111562 0310	
3.20	6	62	20	0.10	111562 0320	
3.25	6	62	20	0.10	111562 0325	
3.30	6	62	20	0.10	111562 0330	
3.40	6	62	20	0.10	111562 0340	



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
3.50	6	62	20	0.10	111562 0350	
3.60	6	62	20	0.10	111562 0360	
3.70	6	62	20	0.10	111562 0370	
3.80	6	66	24	0.10	111562 0380	
3.90	6	66	24	0.10	111562 0390	
4.00	6	66	24	0.10	111562 0400	
4.10	6	66	24	0.10	111562 0410	
4.20	6	66	24	0.10	111562 0420	
4.30	6	66	24	0.10	111562 0430	
4.40	6	66	24	0.10	111562 0440	
4.50	6	66	24	0.10	111562 0450	
4.60	6	66	24	0.10	111562 0460	
4.65	6	66	24	0.10	111562 0465	
4.70	6	66	24	0.10	111562 0470	
4.80	6	66	28	0.10	111562 0480	
4.90	6	66	28	0.10	111562 0490	
5.00	6	66	28	0.10	111562 0500	
5.10	6	66	28	0.10	111562 0510	
5.20	6	66	28	0.10	111562 0520	
5.30	6	66	28	0.10	111562 0530	
5.40	6	66	28	0.10	111562 0540	
5.50	6	66	28	0.10	111562 0550	
5.55	6	66	28	0.10	111562 0555	
5.60	6	66	28	0.10	111562 0560	
5.65	6	66	28	0.10	111562 0565	
5.70	6	66	28	0.10	111562 0570	
5.80	6	66	28	0.10	111562 0580	
5.90	6	66	28	0.10	111562 0590	
6.00	6	66	28	0.15	111562 0600	
6.10	8	79	34	0.15	111562 0610	
6.20	8	79	34	0.15	111562 0620	
6.30	8	79	34	0.15	111562 0630	
6.40	8	79	34	0.15	111562 0640	
6.50	8	79	34	0.15	111562 0650	
6.60	8	79	34	0.15	111562 0660	
6.70	8	79	34	0.15	111562 0670	
6.80	8	79	34	0.15	111562 0680	
6.90	8	79	34	0.15	111562 0690	
7.00	8	79	34	0.15	111562 0700	
7.10	8	79	41	0.15	111562 0710	
7.20	8	79	41	0.15	111562 0720	
7.30	8	79	41	0.15	111562 0730	
7.40	8	79	41	0.15	111562 0740	
7.50	8	79	41	0.15	111562 0750	
7.55	8	79	41	0.15	111562 0755	
7.60	8	79	41	0.15	111562 0760	
7.65	8	79	41	0.15	111562 0765	
7.70	8	79	41	0.15	111562 0770	
7.80	8	79	41	0.15	111562 0780	
7.90	8	79	41	0.15	111562 0790	
8.00	8	79	41	0.15	111562 0800	
8.10	10	89	47	0.15	111562 0810	
8.20	10	89	47	0.15	111562 0820	
8.30	10	89	47	0.15	111562 0830	
8.40	10	89	47	0.15	111562 0840	
8.50	10	89	47	0.15	111562 0850	
8.60	10	89	47	0.15	111562 0860	
8.70	10	89	47	0.15	111562 0870	
8.80	10	89	47	0.15	111562 0880	

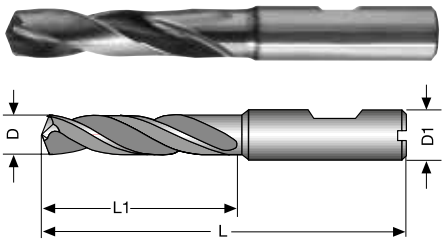
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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
8.90	10	89	47	0.15	111562 0890	
9.00	10	89	47	0.15	111562 0900	
9.10	10	89	47	0.15	111562 0910	
9.20	10	89	47	0.15	111562 0920	
9.30	10	89	47	0.15	111562 0930	
9.40	10	89	47	0.15	111562 0940	
9.50	10	89	47	0.15	111562 0950	
9.60	10	89	47	0.15	111562 0960	
9.70	10	89	47	0.15	111562 0970	
9.80	10	89	47	0.15	111562 0980	
9.90	10	89	47	0.15	111562 0990	
10.00	10	89	47	0.15	111562 1000	
10.10	12	102	55	0.15	111562 1010	
10.20	12	102	55	0.15	111562 1020	
10.30	12	102	55	0.15	111562 1030	
10.40	12	102	55	0.15	111562 1040	
10.50	12	102	55	0.15	111562 1050	
10.60	12	102	55	0.15	111562 1060	
10.70	12	102	55	0.15	111562 1070	
10.80	12	102	55	0.15	111562 1080	
10.90	12	102	55	0.15	111562 1090	
11.00	12	102	55	0.15	111562 1100	
11.10	12	102	55	0.15	111562 1110	
11.20	12	102	55	0.15	111562 1120	
11.30	12	102	55	0.15	111562 1130	
11.40	12	102	55	0.15	111562 1140	
11.50	12	102	55	0.15	111562 1150	
11.60	12	102	55	0.15	111562 1160	
11.70	12	102	55	0.15	111562 1170	
11.80	12	102	55	0.15	111562 1180	
11.90	12	102	55	0.15	111562 1190	
12.00	12	102	55	0.15	111562 1200	
12.20	14	107	60	0.20	111562 1220	
12.50	14	107	60	0.20	111562 1250	
12.80	14	107	60	0.20	111562 1280	
13.00	14	107	60	0.20	111562 1300	
13.10	14	107	60	0.20	111562 1310	
13.50	14	107	60	0.20	111562 1350	
13.80	14	107	60	0.20	111562 1380	
14.00	14	107	60	0.20	111562 1400	
14.20	16	115	65	0.20	111562 1420	
14.40	16	115	65	0.20	111562 1440	
14.50	16	115	65	0.20	111562 1450	
14.80	16	115	65	0.20	111562 1480	
15.00	16	115	65	0.20	111562 1500	
15.10	16	115	65	0.20	111562 1510	
15.20	16	115	65	0.20	111562 1520	
15.50	16	115	65	0.20	111562 1550	
15.80	16	115	65	0.20	111562 1580	
16.00	16	115	65	0.28	111562 1600	
16.50	18	123	73	0.28	111562 1650	
17.00	18	123	73	0.28	111562 1700	
17.50	18	123	73	0.28	111562 1750	
18.00	18	123	73	0.28	111562 1800	
18.50	20	131	79	0.28	111562 1850	
18.90	20	131	79	0.28	111562 1890	
19.00	20	131	79	0.28	111562 1900	
19.50	20	131	79	0.28	111562 1950	
20.00	20	131	79	0.30	111562 2000	

1111

SARA® SC high-performance drill bit HPC-UNI 3D with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | AlCrN | Vc/fz 369



- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material AlCrN**
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **Universal application**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **With internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 130	● 88	● 78	○ 40	○ 50	○ 40	● 145	● 110	● 38	○ 36	○ 32	● 255	● 200	● 110		○ 50	○ 32	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	62	20	0.11	111607 0300	
3.1	6	62	20	0.11	111607 0310	
3.2	6	62	20	0.11	111607 0320	
3.25	6	62	20	0.11	111607 0325	
3.3	6	62	20	0.11	111607 0330	
3.4	6	62	20	0.11	111607 0340	
3.5	6	62	20	0.16	111607 0350	
3.6	6	62	20	0.16	111607 0360	
3.7	6	62	20	0.16	111607 0370	
3.8	6	66	24	0.16	111607 0380	
3.9	6	66	24	0.16	111607 0390	
4	6	66	24	0.16	111607 0400	
4.1	6	66	24	0.16	111607 0410	
4.2	6	66	24	0.16	111607 0420	
4.3	6	66	24	0.16	111607 0430	
4.4	6	66	24	0.16	111607 0440	
4.5	6	66	24	0.16	111607 0450	
4.6	6	66	24	0.16	111607 0460	
4.65	6	66	24	0.16	111607 0465	
4.7	6	66	24	0.16	111607 0470	
4.8	6	66	28	0.16	111607 0480	
4.9	6	66	28	0.16	111607 0490	
5	6	66	28	0.16	111607 0500	
5.1	6	66	28	0.16	111607 0510	
5.2	6	66	28	0.16	111607 0520	
5.3	6	66	28	0.16	111607 0530	
5.4	6	66	28	0.16	111607 0540	
5.5	6	66	28	0.20	111607 0550	
5.55	6	66	28	0.20	111607 0555	
5.6	6	66	28	0.20	111607 0560	
5.7	6	66	28	0.20	111607 0570	
5.8	6	66	28	0.20	111607 0580	
5.9	6	66	28	0.20	111607 0590	
6	6	66	28	0.20	111607 0600	
6.1	8	79	34	0.20	111607 0610	
6.2	8	79	34	0.20	111607 0620	
6.3	8	79	34	0.20	111607 0630	
6.4	8	79	34	0.20	111607 0640	
6.5	8	79	34	0.20	111607 0650	
6.6	8	79	34	0.20	111607 0660	
6.7	8	79	34	0.20	111607 0670	
6.8	8	79	34	0.20	111607 0680	
6.9	8	79	34	0.20	111607 0690	
7	8	79	34	0.20	111607 0700	

1184

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.1	8	79	41	0.25	111607 0710	
7.2	8	79	41	0.25	111607 0720	
7.3	8	79	41	0.25	111607 0730	
7.4	8	79	41	0.25	111607 0740	
7.5	8	79	41	0.25	111607 0750	
7.6	8	79	41	0.25	111607 0760	
7.7	8	79	41	0.25	111607 0770	
7.8	8	79	41	0.25	111607 0780	
7.9	8	79	41	0.25	111607 0790	
8	8	79	41	0.25	111607 0800	
8.1	10	89	47	0.25	111607 0810	
8.2	10	89	47	0.25	111607 0820	
8.3	10	89	47	0.25	111607 0830	
8.4	10	89	47	0.25	111607 0840	
8.5	10	89	47	0.25	111607 0850	
8.6	10	89	47	0.25	111607 0860	
8.7	10	89	47	0.25	111607 0870	
8.8	10	89	47	0.25	111607 0880	
8.9	10	89	47	0.25	111607 0890	
9	10	89	47	0.25	111607 0900	
9.1	10	89	47	0.32	111607 0910	
9.2	10	89	47	0.32	111607 0920	
9.3	10	89	47	0.32	111607 0930	
9.4	10	89	47	0.32	111607 0940	
9.5	10	89	47	0.32	111607 0950	
9.6	10	89	47	0.32	111607 0960	
9.7	10	89	47	0.32	111607 0970	
9.8	10	89	47	0.32	111607 0980	
9.9	10	89	47	0.32	111607 0990	
10	10	89	47	0.32	111607 1000	
10.2	12	102	55	0.32	111607 1020	
10.3	12	102	55	0.32	111607 1030	
10.5	12	102	55	0.32	111607 1050	
10.8	12	102	55	0.32	111607 1080	
11	12	102	55	0.32	111607 1100	
11.2	12	102	55	0.32	111607 1120	
11.5	12	102	55	0.32	111607 1150	
11.8	12	102	55	0.32	111607 1180	
12	12	102	55	0.32	111607 1200	
12.5	14	107	60	0.32	111607 1250	
12.8	14	107	60	0.32	111607 1280	
13	14	107	60	0.32	111607 1300	
13.5	14	107	60	0.32	111607 1350	
13.8	14	107	60	0.32	111607 1380	

1184

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14	14	107	60	0.32	111607 1400	
14.2	16	115	65	0.32	111607 1420	
14.5	16	115	65	0.32	111607 1450	
14.8	16	115	65	0.32	111607 1480	
15	16	115	65	0.32	111607 1500	
15.5	16	115	65	0.40	111607 1550	
15.8	16	115	65	0.40	111607 1580	
16	16	115	65	0.40	111607 1600	
					1184	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
16.5	18	123	73	0.40	111607 1650	
17	18	123	73	0.40	111607 1700	
17.5	18	123	73	0.40	111607 1750	
18	18	123	73	0.40	111607 1800	
18.5	20	131	79	0.50	111607 1850	
19	20	131	79	0.50	111607 1900	
19.5	20	131	79	0.50	111607 1950	
20	20	131	79	0.50	111607 2000	
					1184	

ATORN TiAlNplus HPC 3D solid carbide high-performance drill bit with internal cooling

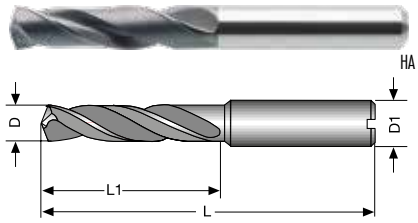
VHM | DIN 6537 | Typ U | 140° | 30° | h7 | h6 | 3xD | Z 2 | TiAlN plus | Vc/fz

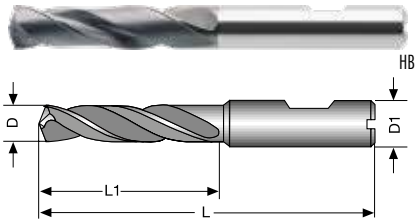
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- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **With internal cooling**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 135	● 110	● 90	● 35	● 30	○ 44	● 160	● 110	○ 40	○ 30	○ 35	○ 260	○ 210	● 230		○ 55	○ 35	
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1.00	4	45	7	0.025	111564 0100			
1.10	4	45	7	0.025	111564 0110			
1.20	4	45	7	0.025	111564 0120			
1.30	4	45	7	0.025	111564 0130			
1.40	4	45	7	0.025	111564 0140			
1.50	4	55	14	0.033	111564 0150			
1.60	4	55	14	0.033	111564 0160			
1.70	4	55	14	0.033	111564 0170			
1.80	4	55	14	0.033	111564 0180			
1.90	4	55	14	0.033	111564 0190			
2.00	4	55	20	0.045	111564 0200			
2.10	4	55	20	0.045	111564 0210			
2.20	4	55	20	0.045	111564 0220			
2.30	4	55	20	0.045	111564 0230			
2.40	4	55	20	0.045	111564 0240			
2.50	4	55	20	0.045	111564 0250			
2.60	4	55	20	0.045	111564 0260			
2.70	4	55	20	0.045	111564 0270			
2.80	4	55	20	0.045	111564 0280			
2.90	4	55	20	0.045	111564 0290			
3.00	6	62	20	0.16	111564 0300		111565 0300	
3.10	6	62	20	0.16	111564 0310		111565 0310	
3.20	6	62	20	0.16	111564 0320		111565 0320	
3.25	6	62	20	0.16	111564 0325		111565 0325	
					1111		1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
3.30	6	62	20	0.16	111564 0330		111565 0330	
3.40	6	62	20	0.16	111564 0340		111565 0340	
3.50	6	62	20	0.16	111564 0350		111565 0350	
3.60	6	62	20	0.16	111564 0360		111565 0360	
3.70	6	62	20	0.16	111564 0370		111565 0370	
3.80	6	66	24	0.16	111564 0380		111565 0380	
3.90	6	66	24	0.16	111564 0390		111565 0390	
4.00	6	66	24	0.16	111564 0400		111565 0400	
4.10	6	66	24	0.16	111564 0410		111565 0410	
4.20	6	66	24	0.16	111564 0420		111565 0420	
4.30	6	66	24	0.16	111564 0430		111565 0430	
4.40	6	66	24	0.16	111564 0440		111565 0440	
4.50	6	66	24	0.16	111564 0450		111565 0450	
4.60	6	66	24	0.16	111564 0460		111565 0460	
4.65	6	66	24	0.16	111564 0465		111565 0465	
4.70	6	66	24	0.16	111564 0470		111565 0470	
4.80	6	66	28	0.16	111564 0480		111565 0480	
4.90	6	66	28	0.16	111564 0490		111565 0490	
5.00	6	66	28	0.16	111564 0500		111565 0500	
5.10	6	66	28	0.16	111564 0510		111565 0510	
5.20	6	66	28	0.16	111564 0520		111565 0520	
5.30	6	66	28	0.16	111564 0530		111565 0530	
5.40	6	66	28	0.16	111564 0540		111565 0540	
5.50	6	66	28	0.16	111564 0550		111565 0550	
					1111		1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
5.55	6	66	28	0.16	111564 0555		111565 0555	
5.60	6	66	28	0.16	111564 0560		111565 0560	
5.65	6	66	28	0.16	111564 0565		111565 0565	
5.70	6	66	28	0.16	111564 0570		111565 0570	
5.80	6	66	28	0.16	111564 0580		111565 0580	
5.90	6	66	28	0.21	111564 0590		111565 0590	
6.00	6	66	28	0.21	111564 0600		111565 0600	
6.10	8	79	34	0.21	111564 0610		111565 0610	
6.20	8	79	34	0.21	111564 0620		111565 0620	
6.30	8	79	34	0.21	111564 0630		111565 0630	
6.40	8	79	34	0.21	111564 0640		111565 0640	
6.50	8	79	34	0.21	111564 0650		111565 0650	
6.60	8	79	34	0.21	111564 0660		111565 0660	
6.70	8	79	34	0.21	111564 0670		111565 0670	
6.80	8	79	34	0.21	111564 0680		111565 0680	
6.90	8	79	34	0.21	111564 0690		111565 0690	
7.00	8	79	34	0.21	111564 0700		111565 0700	
7.10	8	79	41	0.21	111564 0710		111565 0710	
7.20	8	79	41	0.21	111564 0720		111565 0720	
7.30	8	79	41	0.21	111564 0730		111565 0730	
7.40	8	79	41	0.21	111564 0740		111565 0740	
7.50	8	79	41	0.21	111564 0750		111565 0750	
7.55	8	79	41	0.21	111564 0755		111565 0755	
7.60	8	79	41	0.21	111564 0760		111565 0760	
7.65	8	79	41	0.21	111564 0765		111565 0765	
7.70	8	79	41	0.21	111564 0770		111565 0770	
7.80	8	79	41	0.21	111564 0780		111565 0780	
7.90	8	79	41	0.21	111564 0790		111565 0790	
8.00	8	79	41	0.21	111564 0800		111565 0800	
8.10	10	89	47	0.21	111564 0810		111565 0810	
8.20	10	89	47	0.21	111564 0820		111565 0820	
8.30	10	89	47	0.21	111564 0830		111565 0830	
8.40	10	89	47	0.21	111564 0840		111565 0840	
8.50	10	89	47	0.21	111564 0850		111565 0850	
8.60	10	89	47	0.21	111564 0860		111565 0860	
8.70	10	89	47	0.21	111564 0870		111565 0870	
8.80	10	89	47	0.21	111564 0880		111565 0880	
8.90	10	89	47	0.21	111564 0890		111565 0890	
9.00	10	89	47	0.21	111564 0900		111565 0900	
9.10	10	89	47	0.21	111564 0910		111565 0910	
9.20	10	89	47	0.21	111564 0920		111565 0920	
9.30	10	89	47	0.21	111564 0930		111565 0930	
9.40	10	89	47	0.21	111564 0940		111565 0940	
9.50	10	89	47	0.21	111564 0950		111565 0950	
9.60	10	89	47	0.21	111564 0960		111565 0960	
9.70	10	89	47	0.21	111564 0970		111565 0970	
9.80	10	89	47	0.21	111564 0980		111565 0980	
9.90	10	89	47	0.21	111564 0990		111565 0990	
10.00	10	89	47	0.28	111564 1000		111565 1000	
10.10	12	102	55	0.28	111564 1010		111565 1010	
					1111		1111	

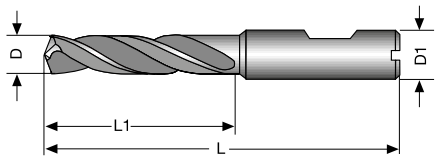
D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
10.20	12	102	55	0.28	111564 1020		111565 1020	
10.30	12	102	55	0.28	111564 1030		111565 1030	
10.40	12	102	55	0.28	111564 1040		111565 1040	
10.50	12	102	55	0.28	111564 1050		111565 1050	
10.60	12	102	55	0.28	111564 1060		111565 1060	
10.70	12	102	55	0.28	111564 1070		111565 1070	
10.80	12	102	55	0.28	111564 1080		111565 1080	
10.90	12	102	55	0.28	111564 1090		111565 1090	
11.00	12	102	55	0.28	111564 1100		111565 1100	
11.10	12	102	55	0.28	111564 1110		111565 1110	
11.20	12	102	55	0.28	111564 1120		111565 1120	
11.30	12	102	55	0.28	111564 1130		111565 1130	
11.40	12	102	55	0.28	111564 1140		111565 1140	
11.50	12	102	55	0.28	111564 1150		111565 1150	
11.60	12	102	55	0.28	111564 1160		111565 1160	
11.70	12	102	55	0.28	111564 1170		111565 1170	
11.80	12	102	55	0.28	111564 1180		111565 1180	
11.90	12	102	55	0.28	111564 1190		111565 1190	
12.00	12	102	55	0.33	111564 1200		111565 1200	
12.20	14	107	60	0.33	111564 1220		111565 1220	
12.30	14	107	60	0.33	111564 1230		111565 1230	
12.50	14	107	60	0.33	111564 1250		111565 1250	
12.70	14	107	60	0.33	111564 1270		111565 1270	
12.80	14	107	60	0.33	111564 1280		111565 1280	
12.90	14	107	60	0.33	111564 1290		111565 1290	
13.00	14	107	60	0.33	111564 1300		111565 1300	
13.50	14	107	60	0.33	111564 1350		111565 1350	
13.80	14	107	60	0.33	111564 1380		111565 1380	
14.00	14	107	60	0.33	111564 1400		111565 1400	
14.20	16	115	65	0.33	111564 1420		111565 1420	
14.40	16	115	65	0.33	111564 1440		111565 1440	
14.50	16	115	65	0.33	111564 1450		111565 1450	
14.80	16	115	65	0.33	111564 1480		111565 1480	
15.00	16	115	65	0.33	111564 1500		111565 1500	
15.10	16	115	65	0.33	111564 1510		111565 1510	
15.20	16	115	65	0.33	111564 1520		111565 1520	
15.50	16	115	65	0.33	111564 1550		111565 1550	
15.80	16	115	65	0.33	111564 1580		111565 1580	
16.00	16	115	65	0.33	111564 1600		111565 1600	
16.50	18	123	73	0.33	111564 1650		111565 1650	
17.00	18	123	73	0.36	111564 1700		111565 1700	
17.50	18	123	73	0.36	111564 1750		111565 1750	
18.00	18	123	73	0.36	111564 1800		111565 1800	
18.50	20	131	79	0.36	111564 1850		111565 1850	
18.90	20	131	79	0.36	111564 1890		111565 1890	
19.00	20	131	79	0.39	111564 1900		111565 1900	
19.30	20	131	79	0.39	111564 1930		111565 1930	
19.50	20	131	79	0.39	111564 1950		111565 1950	
20.00	20	131	79	0.40	111564 2000		111565 2000	
					1111		1111	

HYP-HPO-3D solid carbide high-performance drill bit

VHM | Werks-norm | Typ U | 140° | 30° | m7 | 3xD | DIN 6535 HB | TiAlN | Vc/fz | 376

- Universal geometry
- **Cutting material: VHM EgiAs coating (TiAlN)**
- With internal cooling

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	○	○		●	●	○	○		○	○	○		○	○	
	125	90	55	45	45		175	125	20	20		170	85	70		20	18	
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	62	20	0.06	111628 0300	
3.1	6	62	20	0.06	111628 0310	
3.17 (1/8)	6	62	20	0.06	111628 0317	
3.2	6	62	20	0.06	111628 0320	
3.3	6	62	20	0.07	111628 0330	
3.4	6	62	20	0.07	111628 0340	
3.5	6	62	20	0.07	111628 0350	
3.57 (9/64)	6	62	20	0.07	111628 0357	
3.6	6	62	20	0.07	111628 0360	
3.7	6	62	20	0.07	111628 0370	
3.8	6	66	24	0.08	111628 0380	
3.9	6	66	24	0.08	111628 0390	
3.97 (5/32)	6	66	24	0.08	111628 0397	
4	6	66	24	0.08	111628 0400	
4.1	6	66	24	0.08	111628 0410	
4.2	6	66	24	0.08	111628 0420	
4.3	6	66	24	0.09	111628 0430	
4.37 (11/64)	6	66	24	0.09	111628 0437	
4.4	6	66	24	0.09	111628 0440	
4.5	6	66	24	0.09	111628 0450	
4.6	6	66	24	0.09	111628 0460	
4.65	6	66	24	0.09	111628 0465	
4.7	6	66	24	0.09	111628 0470	
4.76 (3/16)	6	66	24	0.10	111628 0476	
4.8	6	66	28	0.10	111628 0480	
4.9	6	66	28	0.10	111628 0490	
5	6	66	28	0.10	111628 0500	
5.1	6	66	28	0.10	111628 0510	
5.16 (13/64)	6	66	28	0.10	111628 0516	
5.2	6	66	28	0.10	111628 0520	
5.3	6	66	28	0.11	111628 0530	
5.4	6	66	28	0.11	111628 0540	
5.5	6	66	28	0.11	111628 0550	
5.55	6	66	28	0.11	111628 0555	
5.56 (7/32)	6	66	28	0.11	111628 0556	
5.6	6	66	28	0.11	111628 0560	
5.7	6	66	28	0.11	111628 0570	
5.8	6	66	28	0.12	111628 0580	
5.9	6	66	28	0.12	111628 0590	
5.95 (15/64)	6	66	28	0.12	111628 0595	
6	6	66	28	0.12	111628 0600	
6.1	8	79	34	0.12	111628 0610	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.2	8	79	34	0.12	111628 0620	
6.3	8	79	34	0.13	111628 0630	
6.35 (1/4)	8	79	34	0.13	111628 0635	
6.4	8	79	34	0.13	111628 0640	
6.5	8	79	34	0.13	111628 0650	
6.6	8	79	34	0.13	111628 0660	
6.7	8	79	34	0.13	111628 0670	
6.75 (17/64)	8	79	34	0.14	111628 0675	
6.8	8	79	34	0.14	111628 0680	
6.9	8	79	34	0.14	111628 0690	
7	8	79	34	0.14	111628 0700	
7.1	8	79	34	0.14	111628 0710	
7.14 (9/32)	8	79	41	0.14	111628 0714	
7.2	8	79	41	0.14	111628 0720	
7.3	8	79	41	0.15	111628 0730	
7.4	8	79	41	0.15	111628 0740	
7.5	8	79	41	0.15	111628 0750	
7.54 (19/64)	8	79	41	0.15	111628 0754	
7.6	8	79	41	0.15	111628 0760	
7.7	8	79	41	0.15	111628 0770	
7.8	8	79	41	0.16	111628 0780	
7.9	8	79	41	0.16	111628 0790	
7.94 (5/16)	8	79	41	0.16	111628 0794	
8	8	79	41	0.16	111628 0800	
8.1	10	79	41	0.16	111628 0810	
8.2	10	79	41	0.16	111628 0820	
8.3	10	79	41	0.17	111628 0830	
8.33 (21/64)	10	89	47	0.17	111628 0833	
8.4	10	89	47	0.17	111628 0840	
8.5	10	89	47	0.17	111628 0850	
8.6	10	89	47	0.17	111628 0860	
8.7	10	89	47	0.17	111628 0870	
8.73 (11/32)	10	89	47	0.17	111628 0873	
8.8	10	89	47	0.18	111628 0880	
8.9	10	89	47	0.18	111628 0890	
9	10	89	47	0.18	111628 0900	
9.1	10	89	47	0.18	111628 0910	
9.13 (23/64)	10	89	47	0.18	111628 0913	
9.2	10	89	47	0.18	111628 0920	
9.3	10	89	47	0.19	111628 0930	
9.4	10	89	47	0.19	111628 0940	
9.5	10	89	47	0.19	111628 0950	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.52 (3/8)	10	89	47	0.19	111628 0952	
9.6	10	89	47	0.19	111628 0960	
9.7	10	89	47	0.19	111628 0970	
9.8	10	89	47	0.20	111628 0980	
9.9	10	89	47	0.20	111628 0990	
9.92 (25/64)	10	89	47	0.20	111628 0992	
10	10	89	47	0.20	111628 1000	
10.1	12	89	47	0.20	111628 1010	
10.2	12	102	55	0.20	111628 1020	
10.3	12	102	55	0.21	111628 1030	
10.32 (13/32)	12	102	55	0.21	111628 1032	
10.4	12	102	55	0.21	111628 1040	
10.5	12	102	55	0.21	111628 1050	
10.6	12	102	55	0.21	111628 1060	
10.7	12	102	55	0.21	111628 1070	
10.72 (27/64)	12	102	55	0.21	111628 1072	
10.8	12	102	55	0.22	111628 1080	
10.9	12	102	55	0.22	111628 1090	
11	12	102	55	0.22	111628 1100	
11.1	12	102	55	0.22	111628 1110	
11.11 (7/16)	12	102	55	0.22	111628 1111	
11.2	12	102	55	0.22	111628 1120	
11.3	12	102	55	0.23	111628 1130	
11.4	12	102	55	0.23	111628 1140	
11.5	12	102	55	0.23	111628 1150	
11.51 (29/64)	12	102	55	0.23	111628 1151	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.6	12	102	55	0.23	111628 1160	
11.7	12	102	55	0.23	111628 1170	
11.8	12	102	55	0.24	111628 1180	
11.9	12	102	55	0.24	111628 1190	
11.91 (15/32)	12	102	55	0.24	111628 1191	
12	12	102	55	0.24	111628 1200	
12.3 (31/64)	14	107	60	0.25	111628 1230	
12.5	14	107	60	0.25	111628 1250	
12.7 (1/2)	14	107	60	0.25	111628 1270	
13	14	107	60	0.26	111628 1300	
13.5	14	107	60	0.27	111628 1350	
14	14	107	60	0.28	111628 1400	
14.29 (9/16)	16	115	65	0.29	111628 1429	
14.5	16	115	65	0.29	111628 1450	
15	16	115	65	0.30	111628 1500	
15.5	16	115	65	0.31	111628 1550	
15.87 (5/8)	16	115	65	0.32	111628 1587	
16	16	115	65	0.32	111628 1600	
16.5	18	123	73	0.33	111628 1650	
17	18	123	73	0.34	111628 1700	
17.5	18	123	73	0.35	111628 1750	
18	18	123	73	0.36	111628 1800	
18.5	20	131	79	0.37	111628 1850	
19	20	131	79	0.38	111628 1900	
19.5	20	131	79	0.39	111628 1950	
20	20	131	79	0.40	111628 2000	

1107

ATORN Solid carbide high-performance drill bit Ultra-M 3D

VHM | DIN 6537 | Typ VA | 140° | 30° | m7 | h6 | 3xD | Z 2 | TiAlN | Vc/fz | 370

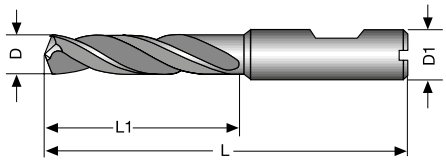
- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HB with coolant bore straight shank DIN 6535 HB
- **Cutting material: solid carbide, TiAlN-Ultra-M-coated**
- True-running accuracy of the tool when clamped max. 0.02 mm
- **Especially suitable for stainless steel and superalloys**

Especially for stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 60	● 55	● 48			● 40	● 30	● 40							
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



HB with coolant bore

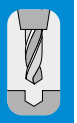


D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
3.00	6	62	20	0.09	111549 0030	
3.10	6	62	20	0.09	111549 0031	
3.20	6	62	20	0.09	111549 0032	
3.25	6	62	20	0.09	111549 0325	
3.30	6	62	20	0.09	111549 0033	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
3.40	6	62	20	0.09	111549 0034	
3.50	6	62	20	0.09	111549 0035	
3.60	6	62	20	0.09	111549 0036	
3.70	6	62	20	0.09	111549 0037	
3.80	6	66	24	0.09	111549 0038	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
3.90	6	66	24	0.09	111549 0039	
4.00	6	66	24	0.09	111549 0040	
4.10	6	66	24	0.09	111549 0041	
4.20	6	66	24	0.09	111549 0042	
4.30	6	66	24	0.09	111549 0043	
4.40	6	66	24	0.09	111549 0044	
4.50	6	66	24	0.09	111549 0045	
4.60	6	66	24	0.09	111549 0046	
4.65	6	66	24	0.09	111549 0465	
4.70	6	66	28	0.09	111549 0047	
4.80	6	66	28	0.09	111549 0048	
4.90	6	66	28	0.09	111549 0049	
5.00	6	66	28	0.09	111549 0050	
5.10	6	66	28	0.09	111549 0051	
5.20	6	66	28	0.09	111549 0052	
5.30	6	66	28	0.09	111549 0053	
5.40	6	66	28	0.09	111549 0054	
5.50	6	66	28	0.1	111549 0055	
5.55	6	66	28	0.1	111549 0555	
5.60	6	66	28	0.1	111549 0056	
5.70	6	66	28	0.1	111549 0057	
5.80	6	66	28	0.1	111549 0058	
5.90	6	66	28	0.1	111549 0059	
6.00	6	66	28	0.1	111549 0060	
6.10	8	79	34	0.1	111549 0061	
6.20	8	79	34	0.1	111549 0062	
6.30	8	79	34	0.1	111549 0063	
6.40	8	79	34	0.1	111549 0064	
6.50	8	79	34	0.11	111549 0065	
6.60	8	79	34	0.11	111549 0066	
6.70	8	79	34	0.11	111549 0067	
6.80	8	79	34	0.11	111549 0068	
6.90	8	79	34	0.11	111549 0069	
7.00	8	79	34	0.11	111549 0070	
7.10	8	79	41	0.11	111549 0071	
7.20	8	79	41	0.11	111549 0072	
7.30	8	79	41	0.11	111549 0073	
7.40	8	79	41	0.11	111549 0074	
7.50	8	79	41	0.12	111549 0075	
7.60	8	79	41	0.12	111549 0076	
7.70	8	79	41	0.12	111549 0077	
7.80	8	79	41	0.12	111549 0078	
7.90	8	79	41	0.12	111549 0079	
8.00	8	79	41	0.12	111549 0080	
8.10	10	89	47	0.12	111549 0081	
8.20	10	89	47	0.12	111549 0082	
8.30	10	89	47	0.12	111549 0083	
8.40	10	89	47	0.13	111549 0084	
8.50	10	89	47	0.13	111549 0085	
8.60	10	89	47	0.13	111549 0086	
8.70	10	89	47	0.13	111549 0087	
8.80	10	89	47	0.13	111549 0088	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
8.90	10	89	47	0.13	111549 0089	
9.00	10	89	47	0.13	111549 0090	
9.10	10	89	47	0.13	111549 0091	
9.20	10	89	47	0.14	111549 0092	
9.25	10	89	47	0.1	111549 0925	
9.30	10	89	47	0.14	111549 0093	
9.40	10	89	47	0.14	111549 0094	
9.50	10	89	47	0.14	111549 0095	
9.60	10	89	47	0.14	111549 0096	
9.70	10	89	47	0.14	111549 0097	
9.80	10	89	47	0.14	111549 0098	
9.90	10	89	47	0.14	111549 0099	
10.00	10	89	47	0.15	111549 0100	
10.10	12	102	55	0.15	111549 0101	
10.20	12	102	55	0.15	111549 0102	
10.30	12	102	55	0.15	111549 0103	
10.40	12	102	55	0.15	111549 0104	
10.50	12	102	55	0.15	111549 0105	
10.60	12	102	55	0.15	111549 0106	
10.70	12	102	55	0.15	111549 0107	
10.80	12	102	55	0.16	111549 0108	
10.90	12	102	55	0.16	111549 0109	
11.00	12	102	55	0.16	111549 0110	
11.10	12	102	55	0.16	111549 0111	
11.20	12	102	55	0.16	111549 0112	
11.30	12	102	55	0.16	111549 0113	
11.40	12	102	55	0.16	111549 0114	
11.50	12	102	55	0.16	111549 0115	
11.60	12	102	55	0.17	111549 0116	
11.70	12	102	55	0.17	111549 0117	
11.80	12	102	55	0.17	111549 0118	
11.90	12	102	55	0.17	111549 0119	
12.00	12	102	55	0.17	111549 0120	
12.50	14	107	60	0.17	111549 0125	
12.70	14	107	60	0.18	111549 0127	
13.00	14	107	60	0.18	111549 0130	
13.50	14	107	60	0.18	111549 0135	
14.00	14	107	60	0.19	111549 0140	
14.50	16	115	65	0.19	111549 0145	
15.00	16	115	65	0.19	111549 0150	
15.50	16	115	65	0.2	111549 0155	
16.00	16	115	65	0.2	111549 0160	
16.50	18	123	73	0.21	111549 0165	
16.90	18	123	73	0.22	111549 0169	
17.00	18	123	73	0.23	111549 0170	
17.50	18	123	73	0.24	111549 0175	
18.00	18	123	73	0.25	111549 0180	
18.50	20	131	79	0.26	111549 0185	
18.90	20	131	79	0.27	111549 0189	
19.00	20	131	79	0.28	111549 0190	
19.50	20	131	79	0.29	111549 0195	
20.00	20	131	79	0.3	111549 0200	

1154

ADO-SUS-3D solid carbide high-performance drill

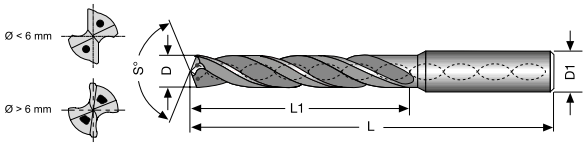
VHM | Werks-norm | 140° | 30° | h8 | 3xD | TiAlN | Vc/fz | 377

- **Cutting material: solid carbide, EgiAs coating**
- Sharp cutting edges reduce machining-induced material hardenings
- **Short and compact chips thanks to innovative chip flute geometry**
- Friction-reducing protective chamfer reduces heat development
- **New coolant bore design increases coolant flow rate and thus reduces heat generation in the material**
- Increased coating adhesion of the new EgiAs coating reduces premature wear and coating spalling

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●	●	●	●	●			●	○	○				
100	100	75	80	80	45	80	100	35			140	120	70				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.







● Feed f steel < 1000 N/mm² mm/rev

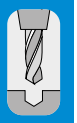
D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.8	3	66	17	0.06	111613 0280	
2.83	3	66	17	0.06	111613 0283	
2.87	3	66	18	0.06	111613 0287	
2.9	3	66	18	0.06	111613 0290	
3	3	66	18	0.06	111613 0300	
3.1	4	74	19	0.08	111613 0310	
3.2	4	74	20	0.08	111613 0320	
3.3	4	74	20	0.08	111613 0330	
3.4	4	74	21	0.08	111613 0340	
3.5	4	74	21	0.08	111613 0350	
3.6	4	74	22	0.08	111613 0360	
3.7	4	74	23	0.08	111613 0370	
3.73	4	74	23	0.08	111613 0373	
3.8	4	74	23	0.08	111613 0380	
3.9	4	74	24	0.08	111613 0390	
4	4	74	24	0.08	111613 0400	
4.1	6	80	25	0.10	111613 0410	
4.2	6	80	26	0.10	111613 0420	
4.3	6	80	26	0.10	111613 0430	
4.4	6	80	27	0.10	111613 0440	
4.45	6	80	27	0.10	111613 0445	
4.5	6	80	27	0.10	111613 0450	
4.6	6	80	28	0.10	111613 0460	
4.65	6	80	28	0.10	111613 0465	
4.7	6	80	29	0.10	111613 0470	
4.8	6	80	29	0.10	111613 0480	
4.9	6	80	30	0.10	111613 0490	
5	6	80	25	0.10	111613 0500	
5.1	6	82	26	0.12	111613 0510	
5.2	6	82	26	0.12	111613 0520	
5.3	6	82	27	0.12	111613 0530	
5.4	6	82	27	0.12	111613 0540	
5.5	6	82	28	0.12	111613 0550	
5.55	6	82	28	0.12	111613 0555	
5.6	6	82	28	0.12	111613 0560	
5.7	6	82	29	0.12	111613 0570	
5.8	6	82	29	0.12	111613 0580	

1107

● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.9	6	82	30	0.12	111613 0590	
6	6	82	30	0.12	111613 0600	
6.1	8	88	31	0.14	111613 0610	
6.2	8	88	31	0.14	111613 0620	
6.3	8	88	32	0.14	111613 0630	
6.4	8	88	32	0.14	111613 0640	
6.5	8	88	33	0.14	111613 0650	
6.6	8	88	33	0.14	111613 0660	
6.7	8	88	34	0.14	111613 0670	
6.8	8	88	34	0.14	111613 0680	
6.9	8	88	35	0.14	111613 0690	
7	8	88	35	0.14	111613 0700	
7.1	8	94	36	0.16	111613 0710	
7.2	8	94	36	0.16	111613 0720	
7.3	8	94	37	0.16	111613 0730	
7.4	8	94	37	0.16	111613 0740	
7.45	8	94	38	0.16	111613 0745	
7.5	8	94	38	0.16	111613 0750	
7.55	8	94	38	0.16	111613 0755	
7.6	8	94	38	0.16	111613 0760	
7.7	8	94	39	0.16	111613 0770	
7.8	8	94	39	0.16	111613 0780	
7.9	8	94	40	0.16	111613 0790	
8	8	94	40	0.16	111613 0800	
8.1	10	101	41	0.18	111613 0810	
8.2	10	101	41	0.18	111613 0820	
8.3	10	101	42	0.18	111613 0830	
8.4	10	101	42	0.18	111613 0840	
8.5	10	101	43	0.18	111613 0850	
8.6	10	101	43	0.18	111613 0860	
8.7	10	101	44	0.18	111613 0870	
8.8	10	101	44	0.18	111613 0880	
8.9	10	101	45	0.18	111613 0890	
9	10	101	45	0.18	111613 0900	
9.1	10	106	46	0.20	111613 0910	
9.2	10	106	46	0.20	111613 0920	
9.3	10	106	47	0.20	111613 0930	

1107



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.4	10	106	47	0.20	111613 0940	
9.5	10	106	48	0.20	111613 0950	
9.55	10	106	48	0.20	111613 0955	
9.6	10	106	48	0.20	111613 0960	
9.7	10	106	49	0.20	111613 0970	
9.8	10	106	49	0.20	111613 0980	
9.9	10	106	50	0.20	111613 0990	
10	10	106	50	0.20	111613 1000	
10.1	12	113	51	0.22	111613 1010	
10.2	12	113	51	0.22	111613 1020	
10.3	12	113	52	0.22	111613 1030	
10.4	12	113	52	0.22	111613 1040	
10.5	12	113	53	0.22	111613 1050	
10.6	12	113	53	0.22	111613 1060	
10.7	12	113	54	0.22	111613 1070	
10.8	12	113	54	0.22	111613 1080	
10.9	12	113	55	0.22	111613 1090	
11	12	113	55	0.22	111613 1100	
11.1	12	120	56	0.24	111613 1110	
11.2	12	120	56	0.24	111613 1120	
11.3	12	120	57	0.24	111613 1130	
11.4	12	120	57	0.24	111613 1140	
11.5	12	120	58	0.24	111613 1150	
11.6	12	120	58	0.24	111613 1160	
11.7	12	120	59	0.24	111613 1170	
11.8	12	120	59	0.24	111613 1180	
11.9	12	120	60	0.24	111613 1190	
12	12	120	60	0.24	111613 1200	
12.1	14	128	61	0.26	111613 1210	
12.5	14	128	63	0.26	111613 1250	
12.8	14	128	64	0.26	111613 1280	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13	14	128	65	0.26	111613 1300	
13.1	14	134	66	0.28	111613 1310	
13.2	14	134	67	0.28	111613 1320	
13.3	14	134	68	0.28	111613 1330	
13.43	14	134	68	0.28	111613 1343	
13.5	14	134	68	0.28	111613 1350	
13.55	14	134	68	0.28	111613 1355	
13.6	14	134	68	0.28	111613 1360	
14	14	134	70	0.28	111613 1400	
14.5	16	140	73	0.28	111613 1450	
15	16	140	75	0.28	111613 1500	
15.1	16	145	76	0.28	111613 1510	
15.3	16	145	77	0.28	111613 1530	
15.5	16	145	78	0.28	111613 1550	
15.55	16	145	78	0.28	111613 1555	
16	16	145	80	0.30	111613 1600	
16.5	18	150	83	0.30	111613 1650	
16.7	18	150	84	0.30	111613 1670	
17	18	150	85	0.30	111613 1700	
17.3	18	155	87	0.30	111613 1730	
17.5	18	155	88	0.30	111613 1750	
17.55	18	155	88	0.30	111613 1755	
18	18	155	90	0.32	111613 1800	
18.5	20	160	93	0.32	111613 1850	
18.7	20	160	94	0.32	111613 1870	
19	20	160	95	0.34	111613 1900	
19.3	20	165	97	0.34	111613 1930	
19.5	20	165	98	0.34	111613 1950	
19.55	20	165	98	0.34	111613 1955	
20	20	165	100	0.36	111613 2000	

1107

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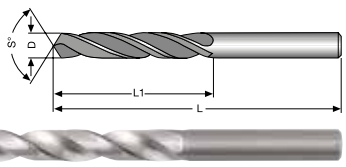


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ATORN Solid carbide twist drill, uncoated

VHM | DIN 338 | Typ N | 118° | 32° | h7 | h6 | 5xD | Vc/fz | 367



- **Similar to DIN 338**
- Facet-ground, point thinning from ⌀ 2.0 mm
- **Cutting material: solid carbide, uncoated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 70	● 60	● 50	○ 30	○ 28		● 80	● 80	○ 25	○ 25	○ 25	● 190	● 140	● 130	○ 80	○ 20		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	L1 mm	art.no.	€
1.00	34	12	0.04	111010 0100
1.10	36	14	0.04	111010 0110
1.20	38	16	0.05	111010 0120
1.30	38	16	0.05	111010 0130
1.40	40	18	0.05	111010 0140
1.50	40	18	0.05	111010 0150
1.60	43	20	0.06	111010 0160
1.70	43	20	0.06	111010 0170
1.80	46	22	0.06	111010 0180
1.90	46	22	0.06	111010 0190
2.00	49	24	0.06	111010 0200
2.10	49	24	0.07	111010 0210
2.20	53	27	0.07	111010 0220
2.30	53	27	0.07	111010 0230
2.40	57	30	0.07	111010 0240
2.50	57	30	0.07	111010 0250
2.60	57	30	0.08	111010 0260
2.70	61	33	0.08	111010 0270
2.80	61	33	0.08	111010 0280
2.90	61	33	0.08	111010 0290
3.00	61	33	0.09	111010 0300
3.10	65	36	0.09	111010 0310
3.20	65	36	0.09	111010 0320
3.30	65	36	0.09	111010 0330
3.40	70	39	0.09	111010 0340
3.50	70	39	0.09	111010 0350
3.60	70	39	0.09	111010 0360
3.70	70	39	0.09	111010 0370
3.80	75	43	0.09	111010 0380
3.90	75	43	0.09	111010 0390
4.00	75	43	0.09	111010 0400
4.10	75	43	0.09	111010 0410
4.20	75	43	0.09	111010 0420
4.30	80	47	0.09	111010 0430
4.40	80	47	0.09	111010 0440
4.50	80	47	0.09	111010 0450
4.60	80	47	0.09	111010 0460
4.70	80	47	0.09	111010 0470
4.80	86	52	0.09	111010 0480
4.90	86	52	0.09	111010 0490
5.00	86	52	0.09	111010 0500
5.10	86	52	0.10	111010 0510
5.20	86	52	0.10	111010 0520
5.30	86	52	0.10	111010 0530
5.40	93	57	0.10	111010 0540
5.50	93	57	0.1	111010 0550
5.60	93	57	0.1	111010 0560
5.70	93	57	0.1	111010 0570
5.80	93	57	0.1	111010 0580

1154

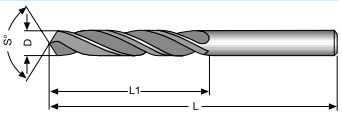
● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	L1 mm	art.no.	€
5.90	93	57	0.1	111010 0590
6.00	93	57	0.1	111010 0600
6.10	101	63	0.1	111010 0610
6.20	101	63	0.1	111010 0620
6.30	101	63	0.1	111010 0630
6.40	101	63	0.1	111010 0640
6.50	101	63	0.11	111010 0650
6.60	101	63	0.11	111010 0660
6.70	101	63	0.11	111010 0670
6.80	109	69	0.11	111010 0680
6.90	109	69	0.11	111010 0690
7.00	109	69	0.11	111010 0700
7.10	109	69	0.11	111010 0710
7.20	109	69	0.11	111010 0720
7.30	109	69	0.11	111010 0730
7.40	109	69	0.11	111010 0740
7.50	109	69	0.12	111010 0750
7.60	117	75	0.12	111010 0760
7.70	117	75	0.12	111010 0770
7.80	117	75	0.12	111010 0780
7.90	117	75	0.12	111010 0790
8.00	117	75	0.12	111010 0800
8.10	117	75	0.14	111010 0810
8.20	117	75	0.14	111010 0820
8.30	117	75	0.14	111010 0830
8.40	117	75	0.14	111010 0840
8.50	117	75	0.14	111010 0850
8.60	125	81	0.14	111010 0860
8.70	125	81	0.14	111010 0870
8.80	125	81	0.14	111010 0880
8.90	125	81	0.14	111010 0890
9.00	125	81	0.14	111010 0900
9.10	125	81	0.14	111010 0910
9.20	125	81	0.14	111010 0920
9.30	125	81	0.14	111010 0930
9.40	125	81	0.14	111010 0940
9.50	125	81	0.14	111010 0950
9.60	133	87	0.14	111010 0960
9.70	133	87	0.14	111010 0970
9.80	133	87	0.14	111010 0980
9.90	133	87	0.14	111010 0990
10.00	133	87	0.14	111010 1000
10.20	133	87	0.14	111010 1020
10.50	133	87	0.14	111010 1050
11.00	142	94	0.15	111010 1100
11.50	142	94	0.15	111010 1150
12.00	151	101	0.18	111010 1200
13.00	151	101	0.18	111010 1300

1154

ATORN Solid carbide twist drill, TiAlN-coated

VHM | DIN 338 | Typ N | 118° | 32° | h7 | h6 | 5xD | TiAlN | Vc/fz | 371





- **Similar to DIN 338**
- Facet-ground, point thinning from ⌀ 2.0 mm
- **Cutting material VHM, TiAlN coating**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 80	● 70	● 60	● 32	○ 30		● 98	● 90	● 30	○ 30	○ 30	● 200	● 150	● 140	○ 80	○ 25		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.00	34	12	0.04	111012 0100	
1.10	36	14	0.04	111012 0110	
1.20	38	16	0.05	111012 0120	
1.30	38	16	0.05	111012 0130	
1.40	40	18	0.05	111012 0140	
1.50	40	18	0.05	111012 0150	
1.60	43	20	0.06	111012 0160	
1.70	43	20	0.06	111012 0170	
1.80	46	22	0.06	111012 0180	
1.90	46	22	0.06	111012 0190	
2.00	49	24	0.06	111012 0200	
2.10	49	24	0.07	111012 0210	
2.20	53	27	0.07	111012 0220	
2.30	53	27	0.07	111012 0230	
2.40	57	30	0.07	111012 0240	
2.50	57	30	0.07	111012 0250	
2.60	57	30	0.08	111012 0260	
2.70	61	33	0.08	111012 0270	
2.80	61	33	0.08	111012 0280	
2.90	61	33	0.08	111012 0290	
3.00	61	33	0.09	111012 0300	
3.10	65	36	0.09	111012 0310	
3.20	65	36	0.09	111012 0320	
3.30	65	36	0.09	111012 0330	
3.40	70	39	0.09	111012 0340	
3.50	70	39	0.09	111012 0350	
3.60	70	39	0.09	111012 0360	
3.70	70	39	0.09	111012 0370	
3.80	75	43	0.09	111012 0380	
3.90	75	43	0.09	111012 0390	
4.00	75	43	0.09	111012 0400	
4.10	75	43	0.09	111012 0410	
4.20	75	43	0.09	111012 0420	
4.30	80	47	0.09	111012 0430	
4.40	80	47	0.09	111012 0440	
4.50	80	47	0.09	111012 0450	
4.60	80	47	0.09	111012 0460	
4.70	80	47	0.09	111012 0470	
4.80	86	52	0.09	111012 0480	
4.90	86	52	0.09	111012 0490	
5.00	86	52	0.09	111012 0500	
5.10	86	52	0.10	111012 0510	
5.20	86	52	0.10	111012 0520	
5.30	86	52	0.10	111012 0530	
5.40	93	57	0.10	111012 0540	
5.50	93	57	0.1	111012 0550	
5.60	93	57	0.1	111012 0560	
5.70	93	57	0.1	111012 0570	
5.80	93	57	0.1	111012 0580	

1154

D mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.90	93	57	0.1	111012 0590	
6.00	93	57	0.1	111012 0600	
6.10	101	63	0.1	111012 0610	
6.20	101	63	0.1	111012 0620	
6.30	101	63	0.1	111012 0630	
6.40	101	63	0.1	111012 0640	
6.50	101	63	0.11	111012 0650	
6.60	101	63	0.11	111012 0660	
6.70	101	63	0.11	111012 0670	
6.80	109	69	0.11	111012 0680	
6.90	109	69	0.11	111012 0690	
7.00	109	69	0.11	111012 0700	
7.10	109	69	0.11	111012 0710	
7.20	109	69	0.11	111012 0720	
7.30	109	69	0.11	111012 0730	
7.40	109	69	0.11	111012 0740	
7.50	109	69	0.12	111012 0750	
7.60	117	75	0.12	111012 0760	
7.70	117	75	0.12	111012 0770	
7.80	117	75	0.12	111012 0780	
7.90	117	75	0.12	111012 0790	
8.00	117	75	0.12	111012 0800	
8.10	117	75	0.14	111012 0810	
8.20	117	75	0.14	111012 0820	
8.30	117	75	0.14	111012 0830	
8.40	117	75	0.14	111012 0840	
8.50	117	75	0.14	111012 0850	
8.60	125	81	0.14	111012 0860	
8.70	125	81	0.14	111012 0870	
8.80	125	81	0.14	111012 0880	
8.90	125	81	0.14	111012 0890	
9.00	125	81	0.14	111012 0900	
9.10	125	81	0.14	111012 0910	
9.20	125	81	0.14	111012 0920	
9.30	125	81	0.14	111012 0930	
9.40	125	81	0.14	111012 0940	
9.50	125	81	0.14	111012 0950	
9.60	133	87	0.14	111012 0960	
9.70	133	87	0.14	111012 0970	
9.80	133	87	0.14	111012 0980	
9.90	133	87	0.14	111012 0990	
10.00	133	87	0.14	111012 1000	
10.20	133	87	0.14	111012 1020	
10.50	133	87	0.14	111012 1050	
11.00	142	94	0.15	111012 1100	
11.50	142	94	0.15	111012 1150	
12.00	151	101	0.18	111012 1200	
13.00	151	101	0.18	111012 1300	

1154

ATORN TiAlNplus HPC 5D solid carbide high-performance drill bit without internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | h7 | h6 | 5xD | Z 2 | TiAlN plus | Vc/fz | 370

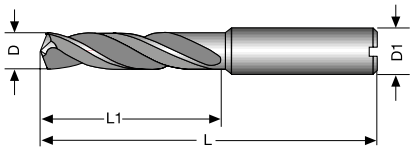
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Without internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●	○	●	●	○	○	○	○	○	●		○		
135	110	90	35	30	30	140	110	40	30	35	260	210	230		45	30	25

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
1.00	4	55	8	0.025	111566 0100	
1.10	4	55	12	0.025	111566 0110	
1.20	4	55	12	0.025	111566 0120	
1.30	4	55	12	0.025	111566 0130	
1.40	4	55	12	0.025	111566 0140	
1.50	4	55	12	0.033	111566 0150	
1.60	4	55	16	0.033	111566 0160	
1.70	4	55	16	0.033	111566 0170	
1.80	4	55	16	0.033	111566 0180	
1.90	4	55	16	0.033	111566 0190	
2.00	4	57	21	0.045	111566 0200	
2.05	4	57	21	0.045	111566 0205	
2.10	4	57	21	0.045	111566 0210	
2.20	4	57	21	0.045	111566 0220	
2.30	4	57	21	0.045	111566 0230	
2.40	4	57	21	0.045	111566 0240	
2.50	4	57	21	0.045	111566 0250	
3.00	6	66	28	0.10	111566 0300	
3.10	6	66	28	0.10	111566 0310	
3.20	6	66	28	0.10	111566 0320	
3.25	6	66	28	0.10	111566 0325	
3.30	6	66	28	0.10	111566 0330	
3.40	6	66	28	0.10	111566 0340	
3.50	6	66	28	0.10	111566 0350	
3.60	6	66	28	0.10	111566 0360	
3.70	6	66	28	0.10	111566 0370	
3.80	6	74	36	0.10	111566 0380	
3.90	6	74	36	0.10	111566 0390	
4.00	6	74	36	0.10	111566 0400	
4.10	6	74	36	0.10	111566 0410	
4.20	6	74	36	0.10	111566 0420	
4.30	6	74	36	0.10	111566 0430	
4.40	6	74	36	0.10	111566 0440	
4.50	6	74	36	0.10	111566 0450	
4.60	6	74	36	0.10	111566 0460	
4.65	6	74	36	0.10	111566 0465	

1111

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
4.70	6	74	36	0.10	111566 0470	
4.80	6	82	44	0.10	111566 0480	
4.90	6	82	44	0.10	111566 0490	
5.00	6	82	44	0.10	111566 0500	
5.10	6	82	44	0.10	111566 0510	
5.20	6	82	44	0.10	111566 0520	
5.30	6	82	44	0.10	111566 0530	
5.40	6	82	44	0.10	111566 0540	
5.50	6	82	44	0.10	111566 0550	
5.55	6	82	44	0.10	111566 0555	
5.60	6	82	44	0.10	111566 0560	
5.65	6	82	44	0.10	111566 0565	
5.70	6	82	44	0.10	111566 0570	
5.80	6	82	44	0.10	111566 0580	
5.90	6	82	44	0.10	111566 0590	
6.00	6	82	44	0.15	111566 0600	
6.10	8	91	53	0.15	111566 0610	
6.20	8	91	53	0.15	111566 0620	
6.30	8	91	53	0.15	111566 0630	
6.40	8	91	53	0.15	111566 0640	
6.50	8	91	53	0.15	111566 0650	
6.60	8	91	53	0.15	111566 0660	
6.70	8	91	53	0.15	111566 0670	
6.80	8	91	53	0.15	111566 0680	
6.90	8	91	53	0.15	111566 0690	
7.00	8	91	53	0.15	111566 0700	
7.10	8	91	53	0.15	111566 0710	
7.20	8	91	53	0.15	111566 0720	
7.30	8	91	53	0.15	111566 0730	
7.40	8	91	53	0.15	111566 0740	
7.50	8	91	53	0.15	111566 0750	
7.55	8	91	53	0.15	111566 0755	
7.60	8	91	53	0.15	111566 0760	
7.65	8	91	53	0.15	111566 0765	
7.70	8	91	53	0.15	111566 0770	
7.80	8	91	53	0.15	111566 0780	

1111

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
7.90	8	91	53	0.15	111566 0790	
8.00	8	91	53	0.15	111566 0800	
8.10	10	103	61	0.15	111566 0810	
8.20	10	103	61	0.15	111566 0820	
8.30	10	103	61	0.15	111566 0830	
8.40	10	103	61	0.15	111566 0840	
8.50	10	103	61	0.15	111566 0850	
8.60	10	103	61	0.15	111566 0860	
8.70	10	103	61	0.15	111566 0870	
8.80	10	103	61	0.15	111566 0880	
8.90	10	103	61	0.15	111566 0890	
9.00	10	103	61	0.15	111566 0900	
9.10	10	103	61	0.15	111566 0910	
9.20	10	103	61	0.15	111566 0920	
9.30	10	103	61	0.15	111566 0930	
9.40	10	103	61	0.15	111566 0940	
9.50	10	103	61	0.15	111566 0950	
9.60	10	103	61	0.15	111566 0960	
9.70	10	103	61	0.15	111566 0970	
9.80	10	103	61	0.15	111566 0980	
9.90	10	103	61	0.15	111566 0990	
10.00	10	103	61	0.15	111566 1000	
10.10	12	118	71	0.15	111566 1010	
10.20	12	118	71	0.15	111566 1020	
10.30	12	118	71	0.15	111566 1030	
10.40	12	118	71	0.15	111566 1040	
10.50	12	118	71	0.15	111566 1050	
10.60	12	118	71	0.15	111566 1060	
10.70	12	118	71	0.15	111566 1070	
10.80	12	118	71	0.15	111566 1080	
10.90	12	118	71	0.15	111566 1090	
11.00	12	118	71	0.15	111566 1100	
11.10	12	118	71	0.15	111566 1110	
11.20	12	118	71	0.15	111566 1120	
11.30	12	118	71	0.15	111566 1130	
					1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€
11.40	12	118	71	0.15	111566 1140	
11.50	12	118	71	0.15	111566 1150	
11.60	12	118	71	0.15	111566 1160	
11.70	12	118	71	0.15	111566 1170	
11.80	12	118	71	0.15	111566 1180	
11.90	12	118	71	0.15	111566 1190	
12.00	12	118	71	0.15	111566 1200	
12.10	14	124	77	0.20	111566 1210	
12.20	14	124	77	0.20	111566 1220	
12.50	14	124	77	0.20	111566 1250	
12.80	14	124	77	0.20	111566 1280	
13.00	14	124	77	0.20	111566 1300	
13.20	14	124	77	0.20	111566 1320	
13.50	14	124	77	0.20	111566 1350	
13.80	14	124	77	0.20	111566 1380	
14.00	14	124	77	0.20	111566 1400	
14.20	16	133	83	0.20	111566 1420	
14.40	16	133	83	0.20	111566 1440	
14.50	16	133	83	0.20	111566 1450	
14.80	16	133	83	0.20	111566 1480	
15.00	16	133	83	0.20	111566 1500	
15.20	16	133	83	0.20	111566 1520	
15.50	16	133	83	0.20	111566 1550	
15.80	16	133	83	0.20	111566 1580	
16.00	16	133	83	0.28	111566 1600	
16.50	18	143	93	0.28	111566 1650	
17.00	18	143	93	0.28	111566 1700	
17.50	18	143	93	0.28	111566 1750	
18.00	18	143	93	0.28	111566 1800	
18.50	20	153	101	0.28	111566 1850	
18.90	20	153	101	0.28	111566 1890	
19.00	20	153	101	0.28	111566 1900	
19.50	20	153	101	0.28	111566 1950	
20.00	20	153	101	0.30	111566 2000	
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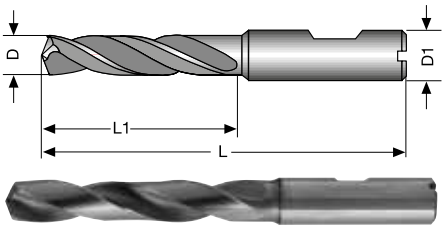
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SARA® SC high-performance drill bit HPC-UNI 5D with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 5xD | AlCrN | Vc/fz | 369

- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material AlCrN**
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **Universal application**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **With internal cooling**
- Shank designs up to Ø 2.9 mm HA, from Ø 3.0 mm HB



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 130	● 88	● 78	○ 40	○ 50	○ 40	● 145	● 110	● 38	● 36	○ 32	○ 255	● 200	○ 110		● 50	○ 32	
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	3	55	10	0.03	111612 0100	
1.1	3	55	12	0.03	111612 0110	
1.2	3	55	12	0.03	111612 0120	
1.3	3	55	12	0.03	111612 0130	
1.4	3	55	12	0.04	111612 0140	
1.5	3	55	12	0.04	111612 0150	
1.6	3	55	16	0.04	111612 0160	
1.7	3	55	16	0.04	111612 0170	
1.8	3	55	16	0.05	111612 0180	
1.9	3	55	16	0.05	111612 0190	
2	3	57	16	0.05	111612 0200	
2.1	3	57	21	0.05	111612 0210	
2.2	3	57	21	0.06	111612 0220	
2.3	3	57	21	0.06	111612 0230	
2.4	3	57	21	0.06	111612 0240	
2.5	3	57	21	0.06	111612 0250	
2.6	3	57	21	0.07	111612 0260	
2.7	3	57	21	0.07	111612 0270	
2.8	3	57	21	0.07	111612 0280	
2.9	3	57	21	0.07	111612 0290	
3	6	66	28	0.11	111612 0300	
3.1	6	66	28	0.11	111612 0310	
3.2	6	66	28	0.11	111612 0320	
3.25	6	66	28	0.11	111612 0325	
3.3	6	66	28	0.11	111612 0330	
3.4	6	66	28	0.11	111612 0340	
3.5	6	66	28	0.16	111612 0350	
3.6	6	66	28	0.16	111612 0360	
3.7	6	66	28	0.16	111612 0370	
3.8	6	74	36	0.16	111612 0380	
3.9	6	74	36	0.16	111612 0390	
4	6	74	36	0.16	111612 0400	
4.1	6	74	36	0.16	111612 0410	
4.2	6	74	36	0.16	111612 0420	
4.3	6	74	36	0.16	111612 0430	
4.4	6	74	36	0.16	111612 0440	
4.5	6	74	36	0.16	111612 0450	
4.6	6	74	36	0.16	111612 0460	
4.65	6	74	36	0.16	111612 0465	
4.7	6	74	36	0.16	111612 0470	
4.8	6	82	44	0.16	111612 0480	
4.9	6	82	44	0.16	111612 0490	
5	6	82	44	0.16	111612 0500	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.1	6	82	44	0.16	111612 0510	
5.2	6	82	44	0.16	111612 0520	
5.3	6	82	44	0.16	111612 0530	
5.4	6	82	44	0.16	111612 0540	
5.5	6	82	44	0.20	111612 0550	
5.55	6	82	44	0.20	111612 0555	
5.6	6	82	44	0.20	111612 0560	
5.7	6	82	44	0.20	111612 0570	
5.8	6	82	44	0.20	111612 0580	
5.9	6	82	44	0.20	111612 0590	
6	6	82	44	0.20	111612 0600	
6.1	8	91	53	0.20	111612 0610	
6.2	8	91	53	0.20	111612 0620	
6.3	8	91	53	0.20	111612 0630	
6.4	8	91	53	0.20	111612 0640	
6.5	8	91	53	0.20	111612 0650	
6.6	8	91	53	0.20	111612 0660	
6.7	8	91	53	0.20	111612 0670	
6.8	8	91	53	0.20	111612 0680	
6.9	8	91	53	0.20	111612 0690	
7	8	91	53	0.20	111612 0700	
7.1	8	91	53	0.25	111612 0710	
7.2	8	91	53	0.25	111612 0720	
7.3	8	91	53	0.25	111612 0730	
7.4	8	91	53	0.25	111612 0740	
7.5	8	91	53	0.25	111612 0750	
7.6	8	91	53	0.25	111612 0760	
7.7	8	91	53	0.25	111612 0770	
7.8	8	91	53	0.25	111612 0780	
7.9	8	91	53	0.25	111612 0790	
8	8	91	53	0.25	111612 0800	
8.1	10	103	61	0.25	111612 0810	
8.2	10	103	61	0.25	111612 0820	
8.3	10	103	61	0.25	111612 0830	
8.4	10	103	61	0.25	111612 0840	
8.5	10	103	61	0.25	111612 0850	
8.6	10	103	61	0.25	111612 0860	
8.7	10	103	61	0.25	111612 0870	
8.8	10	103	61	0.25	111612 0880	
8.9	10	103	61	0.25	111612 0890	
9	10	103	61	0.25	111612 0900	
9.1	10	103	61	0.32	111612 0910	
9.2	10	103	61	0.32	111612 0920	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.3	10	103	61	0.32	111612 0930	
9.4	10	103	61	0.32	111612 0940	
9.5	10	103	61	0.32	111612 0950	
9.6	10	103	61	0.32	111612 0960	
9.7	10	103	61	0.32	111612 0970	
9.8	10	103	61	0.32	111612 0980	
9.9	10	103	61	0.32	111612 0990	
10	10	103	61	0.32	111612 1000	
10.1	12	118	71	0.32	111612 1010	
10.2	12	118	71	0.32	111612 1020	
10.3	12	118	71	0.32	111612 1030	
10.4	12	118	71	0.32	111612 1040	
10.5	12	118	71	0.32	111612 1050	
10.8	12	118	71	0.32	111612 1080	
11	12	118	71	0.32	111612 1100	
11.1	12	118	71	0.32	111612 1110	
11.2	12	118	71	0.32	111612 1120	
11.3	12	118	71	0.32	111612 1130	
11.5	12	118	71	0.32	111612 1150	
11.8	12	118	71	0.32	111612 1180	
12	12	118	71	0.32	111612 1200	
12.2	14	124	77	0.32	111612 1220	
12.5	14	124	77	0.32	111612 1250	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.8	14	124	77	0.32	111612 1280	
13	14	124	77	0.32	111612 1300	
13.5	14	124	77	0.32	111612 1350	
13.8	14	124	77	0.32	111612 1380	
13.9	14	124	77	0.32	111612 1390	
14	14	124	77	0.32	111612 1400	
14.2	16	133	83	0.32	111612 1420	
14.5	16	133	83	0.32	111612 1450	
14.8	16	133	83	0.32	111612 1480	
15	16	133	83	0.32	111612 1500	
15.2	16	133	83	0.40	111612 1520	
15.5	16	133	83	0.40	111612 1550	
15.7	16	133	83	0.40	111612 1570	
15.8	16	133	83	0.40	111612 1580	
16	16	133	83	0.40	111612 1600	
16.5	18	143	93	0.40	111612 1650	
17	18	143	93	0.40	111612 1700	
17.5	18	143	93	0.40	111612 1750	
18	18	143	93	0.40	111612 1800	
18.5	20	153	101	0.50	111612 1850	
19	20	153	101	0.50	111612 1900	
19.5	20	153	101	0.50	111612 1950	
20	20	153	101	0.50	111612 2000	

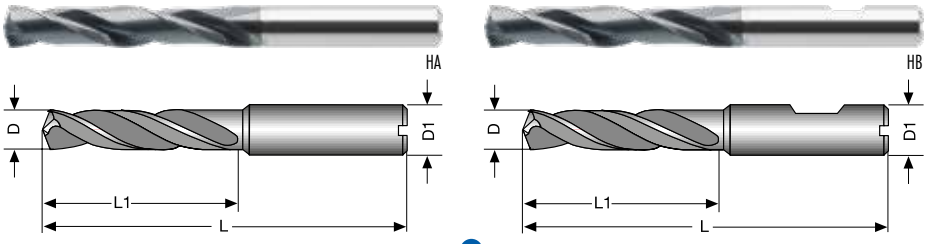
1184

ATORN TiAlNplus HPC 5D solid carbide high-performance drill bit with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | h7 | h6 | 5xD | Z 2 | TiAlN plus | Vc/fz | 370

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **With internal cooling**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 135	● 110	● 90	● 35	● 30	○ 44	● 160	● 110	○ 40	○ 30	○ 35	○ 260	○ 210	● 230		○ 55	35	30
	Cutting speed Vc m/min.																		



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1.00	4	55	8	0.025	111568 0100			
1.10	4	55	12	0.025	111568 0110			
1.20	4	55	12	0.025	111568 0120			
1.30	4	55	12	0.025	111568 0130			
1.40	4	55	12	0.025	111568 0140			
1.50	4	55	12	0.033	111568 0150			
1.60	4	55	16	0.033	111568 0160			
1.70	4	55	16	0.033	111568 0170			

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1.80	4	55	16	0.033	111568 0180			
1.90	4	55	16	0.033	111568 0190			
2.00	4	57	21	0.045	111568 0200			
2.10	4	57	21	0.045	111568 0210			
2.20	4	57	21	0.045	111568 0220			
2.30	4	57	21	0.045	111568 0230			
2.40	4	57	21	0.045	111568 0240			
2.50	4	57	21	0.045	111568 0250			

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
2.60	4	57	21	0.045	111568 0260			
2.70	4	57	21	0.045	111568 0270			
2.80	4	57	21	0.045	111568 0280			
2.90	4	57	21	0.045	111568 0290			
3.00	6	66	28	0.07	111568 0300		111569 0300	
3.10	6	66	28	0.07	111568 0310		111569 0310	
3.20	6	66	28	0.07	111568 0320		111569 0320	
3.25	6	66	28	0.07	111568 0325		111569 0325	
3.30	6	66	28	0.07	111568 0330		111569 0330	
3.40	6	66	28	0.07	111568 0340		111569 0340	
3.50	6	66	28	0.07	111568 0350		111569 0350	
3.60	6	66	28	0.07	111568 0360		111569 0360	
3.70	6	66	28	0.07	111568 0370		111569 0370	
3.80	6	74	36	0.07	111568 0380		111569 0380	
3.85	6	74	36	0.07	111568 0385		111569 0385	
3.90	6	74	36	0.07	111568 0390		111569 0390	
4.00	6	74	36	0.1	111568 0400		111569 0400	
4.10	6	74	36	0.1	111568 0410		111569 0410	
4.20	6	74	36	0.1	111568 0420		111569 0420	
4.30	6	74	36	0.1	111568 0430		111569 0430	
4.40	6	74	36	0.1	111568 0440		111569 0440	
4.50	6	74	36	0.1	111568 0450		111569 0450	
4.60	6	74	36	0.1	111568 0460		111569 0460	
4.65	6	74	36	0.1	111568 0465		111569 0465	
4.70	6	74	36	0.1	111568 0470		111569 0470	
4.80	6	82	44	0.1	111568 0480		111569 0480	
4.90	6	82	44	0.1	111568 0490		111569 0490	
5.00	6	82	44	0.1	111568 0500		111569 0500	
5.10	6	82	44	0.1	111568 0510		111569 0510	
5.20	6	82	44	0.1	111568 0520		111569 0520	
5.30	6	82	44	0.1	111568 0530		111569 0530	
5.40	6	82	44	0.1	111568 0540		111569 0540	
5.50	6	82	44	0.1	111568 0550		111569 0550	
5.55	6	82	44	0.1	111568 0555		111569 0555	
5.60	6	82	44	0.1	111568 0560		111569 0560	
5.65	6	82	44	0.1	111568 0565		111569 0565	
5.70	6	82	44	0.1	111568 0570		111569 0570	
5.80	6	82	44	0.1	111568 0580		111569 0580	
5.90	6	82	44	0.1	111568 0590		111569 0590	
6.00	6	82	44	0.13	111568 0600		111569 0600	
6.10	8	91	53	0.13	111568 0610		111569 0610	
6.20	8	91	53	0.13	111568 0620		111569 0620	
6.30	8	91	53	0.13	111568 0630		111569 0630	
6.40	8	91	53	0.13	111568 0640		111569 0640	
6.50	8	91	53	0.13	111568 0650		111569 0650	
6.60	8	91	53	0.13	111568 0660		111569 0660	
6.70	8	91	53	0.13	111568 0670		111569 0670	
6.80	8	91	53	0.13	111568 0680		111569 0680	
6.90	8	91	53	0.13	111568 0690		111569 0690	
7.00	8	91	53	0.16	111568 0700		111569 0700	
7.10	8	91	53	0.16	111568 0710		111569 0710	
7.20	8	91	53	0.16	111568 0720		111569 0720	
7.30	8	91	53	0.16	111568 0730		111569 0730	
7.40	8	91	53	0.16	111568 0740		111569 0740	
7.50	8	91	53	0.16	111568 0750		111569 0750	
7.55	8	91	53	0.16	111568 0755		111569 0755	
7.60	8	91	53	0.16	111568 0760		111569 0760	
7.65	8	91	53	0.16	111568 0765		111569 0765	
7.70	8	91	53	0.16	111568 0770		111569 0770	
					1111		1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
7.80	8	91	53	0.16	111568 0780		111569 0780	
7.90	8	91	53	0.16	111568 0790		111569 0790	
8.00	8	91	53	0.2	111568 0800		111569 0800	
8.10	10	103	61	0.2	111568 0810		111569 0810	
8.20	10	103	61	0.2	111568 0820		111569 0820	
8.30	10	103	61	0.2	111568 0830		111569 0830	
8.40	10	103	61	0.2	111568 0840		111569 0840	
8.50	10	103	61	0.2	111568 0850		111569 0850	
8.60	10	103	61	0.2	111568 0860		111569 0860	
8.70	10	103	61	0.2	111568 0870		111569 0870	
8.80	10	103	61	0.2	111568 0880		111569 0880	
8.90	10	103	61	0.2	111568 0890		111569 0890	
9.00	10	103	61	0.2	111568 0900		111569 0900	
9.10	10	103	61	0.2	111568 0910		111569 0910	
9.20	10	103	61	0.2	111568 0920		111569 0920	
9.30	10	103	61	0.2	111568 0930		111569 0930	
9.40	10	103	61	0.2	111568 0940		111569 0940	
9.50	10	103	61	0.2	111568 0950		111569 0950	
9.55	10	103	61	0.2	111568 0955		111569 0955	
9.60	10	103	61	0.2	111568 0960		111569 0960	
9.70	10	103	61	0.2	111568 0970		111569 0970	
9.80	10	103	61	0.2	111568 0980		111569 0980	
9.90	10	103	61	0.2	111568 0990		111569 0990	
10.00	10	103	61	0.2	111568 1000		111569 1000	
10.10	12	118	71	0.2	111568 1010		111569 1010	
10.20	12	118	71	0.2	111568 1020		111569 1020	
10.30	12	118	71	0.2	111568 1030		111569 1030	
10.40	12	118	71	0.2	111568 1040		111569 1040	
10.50	12	118	71	0.2	111568 1050		111569 1050	
10.60	12	118	71	0.2	111568 1060		111569 1060	
10.70	12	118	71	0.2	111568 1070		111569 1070	
10.80	12	118	71	0.2	111568 1080		111569 1080	
10.90	12	118	71	0.2	111568 1090		111569 1090	
11.00	12	118	71	0.2	111568 1100		111569 1100	
11.10	12	118	71	0.2	111568 1110		111569 1110	
11.20	12	118	71	0.2	111568 1120		111569 1120	
11.30	12	118	71	0.2	111568 1130		111569 1130	
11.40	12	118	71	0.2	111568 1140		111569 1140	
11.50	12	118	71	0.2	111568 1150		111569 1150	
11.60	12	118	71	0.2	111568 1160		111569 1160	
11.70	12	118	71	0.2	111568 1170		111569 1170	
11.80	12	118	71	0.2	111568 1180		111569 1180	
11.90	12	118	71	0.2	111568 1190		111569 1190	
12.00	12	118	71	0.2	111568 1200		111569 1200	
12.10	14	124	77	0.2	111568 1210		111569 1210	
12.20	14	124	77	0.2	111568 1220		111569 1220	
12.40	14	124	77	0.2	111568 1240		111569 1240	
12.50	14	124	77	0.2	111568 1250		111569 1250	
12.60	14	124	77	0.2	111568 1260		111569 1260	
12.80	14	124	77	0.2	111568 1280		111569 1280	
13.00	14	124	77	0.2	111568 1300		111569 1300	
13.10	14	124	77	0.2	111568 1310		111569 1310	
13.20	14	124	77	0.2	111568 1320		111569 1320	
13.30	14	124	77	0.2	111568 1330		111569 1330	
13.50	14	124	77	0.2	111568 1350		111569 1350	
13.80	14	124	77	0.2	111568 1380		111569 1380	
14.00	14	124	77	0.2	111568 1400		111569 1400	
14.20	16	133	83	0.2	111568 1420		111569 1420	
14.30	16	133	83	0.2	111568 1430		111569 1430	
					1111		1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
14.40	16	133	83	0.2	111568 1440		111569 1440	
14.50	16	133	83	0.2	111568 1450		111569 1450	
14.80	16	133	83	0.2	111568 1480		111569 1480	
15.00	16	133	83	0.2	111568 1500		111569 1500	
15.10	16	133	83	0.2	111568 1510		111569 1510	
15.20	16	133	83	0.2	111568 1520		111569 1520	
15.25	16	133	83	0.2	111568 1525		111569 1525	
15.30	16	133	83	0.2	111568 1530		111569 1530	
15.50	16	133	83	0.2	111568 1550		111569 1550	
15.80	16	133	83	0.2	111568 1580		111569 1580	
16.00	16	133	83	0.25	111568 1600		111569 1600	
16.20	18	143	93	0.25	111568 1620		111569 1620	
16.30	18	143	93	0.25	111568 1630		111569 1630	
16.50	18	143	93	0.25	111568 1650		111569 1650	
					1111		1111	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
16.80	18	143	93	0.25	111568 1680		111569 1680	
17.00	18	143	93	0.25	111568 1700		111569 1700	
17.30	18	143	93	0.25	111568 1730		111569 1730	
17.50	18	143	93	0.25	111568 1750		111569 1750	
18.00	18	143	93	0.25	111568 1800		111569 1800	
18.50	20	153	101	0.25	111568 1850		111569 1850	
18.90	20	153	101	0.25	111568 1890		111569 1890	
19.00	20	153	101	0.25	111568 1900		111569 1900	
19.20	20	153	101	0.25	111568 1920		111569 1920	
19.30	20	153	101	0.25	111568 1930		111569 1930	
19.50	20	153	101	0.25	111568 1950		111569 1950	
19.70	20	153	101	0.25	111568 1970		111569 1970	
20.00	20	153	101	0.32	111568 2000		111569 2000	
					1111		1111	

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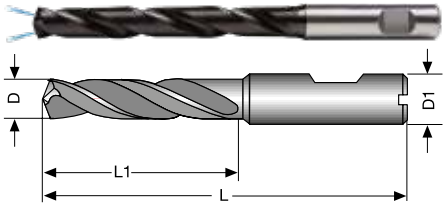
HYP-HPO-5D solid carbide high-performance drill bit

VHM | Werks-norm | 140° | 30° | m7 | 5xD | TiAlN | Vc/fz | 376

- Universal geometry
- **Cutting material: VHM EgiAs coating (TiAlN)**
- With internal cooling

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 125	● 90	● 55	○ 45	○ 45		● 175	● 125	○ 20	○ 20		○ 170	○ 85	○ 70		○ 20	○ 18	
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

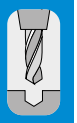


D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	66	28	0.06	111629 0300	
3.1	6	66	28	0.06	111629 0310	
3.17 (1/8)	6	66	28	0.06	111629 0317	
3.2	6	66	28	0.06	111629 0320	
3.3	6	66	28	0.07	111629 0330	
3.4	6	66	28	0.07	111629 0340	
3.5	6	66	28	0.07	111629 0350	
3.57 (9/64)	6	66	28	0.07	111629 0357	
3.6	6	66	28	0.07	111629 0360	
3.7	6	66	28	0.07	111629 0370	
3.8	6	74	36	0.08	111629 0380	
3.9	6	74	36	0.08	111629 0390	
3.97 (5/32)	6	74	36	0.08	111629 0397	
4	6	74	36	0.08	111629 0400	
4.1	6	74	36	0.08	111629 0410	
4.2	6	74	36	0.08	111629 0420	
4.3	6	74	36	0.09	111629 0430	
4.37 (11/64)	6	74	36	0.09	111629 0437	
4.4	6	74	36	0.09	111629 0440	
4.5	6	74	36	0.09	111629 0450	
4.6	6	74	36	0.09	111629 0460	
4.65	6	74	36	0.09	111629 0465	
4.7	6	82	44	0.09	111629 0470	
4.76 (3/16)	6	82	44	0.10	111629 0476	
4.8	6	82	44	0.10	111629 0480	
4.9	6	82	44	0.10	111629 0490	
5	6	82	44	0.10	111629 0500	
5.1	6	82	44	0.10	111629 0510	
5.16 (13/64)	6	82	44	0.10	111629 0516	
5.2	6	82	44	0.10	111629 0520	
5.3	6	82	44	0.11	111629 0530	
5.4	6	82	44	0.11	111629 0540	
5.5	6	82	44	0.11	111629 0550	
5.55	6	82	44	0.11	111629 0555	
5.56 (7/32)	6	82	44	0.11	111629 0556	
5.6	6	82	44	0.11	111629 0560	
5.7	6	82	44	0.11	111629 0570	
5.8	6	82	44	0.12	111629 0580	
5.9	6	82	44	0.12	111629 0590	
5.95 (15/64)	6	82	44	0.12	111629 0595	
6	6	82	44	0.12	111629 0600	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.1	8	91	53	0.12	111629 0610	
6.2	8	91	53	0.12	111629 0620	
6.3	8	91	53	0.13	111629 0630	
6.35 (1/4)	8	91	53	0.13	111629 0635	
6.4	8	91	53	0.13	111629 0640	
6.5	8	91	53	0.13	111629 0650	
6.6	8	91	53	0.13	111629 0660	
6.7	8	91	53	0.13	111629 0670	
6.75 (17/64)	8	91	53	0.14	111629 0675	
6.8	8	91	53	0.14	111629 0680	
6.9	8	91	53	0.14	111629 0690	
7	8	91	53	0.14	111629 0700	
7.1	8	91	53	0.14	111629 0710	
7.14 (9/32)	8	91	53	0.14	111629 0714	
7.2	8	91	53	0.14	111629 0720	
7.3	8	91	53	0.15	111629 0730	
7.4	8	91	53	0.15	111629 0740	
7.5	8	91	53	0.15	111629 0750	
7.54 (19/64)	8	91	53	0.15	111629 0754	
7.6	8	91	53	0.15	111629 0760	
7.7	8	91	53	0.15	111629 0770	
7.8	8	91	53	0.16	111629 0780	
7.9	8	91	53	0.16	111629 0790	
7.94 (5/16)	8	91	53	0.16	111629 0794	
8	8	91	53	0.16	111629 0800	
8.1	8	103	61	0.16	111629 0810	
8.2	10	103	61	0.16	111629 0820	
8.3	10	103	61	0.17	111629 0830	
8.33 (21/64)	10	103	61	0.17	111629 0833	
8.4	10	103	61	0.17	111629 0840	
8.5	10	103	61	0.17	111629 0850	
8.6	10	103	61	0.17	111629 0860	
8.7	10	103	61	0.17	111629 0870	
8.73 (11/32)	10	103	61	0.17	111629 0873	
8.8	10	103	61	0.18	111629 0880	
8.9	10	103	61	0.18	111629 0890	
9	10	103	61	0.18	111629 0900	
9.1	10	103	61	0.18	111629 0910	
9.13 (23/64)	10	103	61	0.18	111629 0913	
9.2	10	103	61	0.18	111629 0920	
9.3	10	103	61	0.19	111629 0930	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.4	10	103	61	0.19	111629 0940	
9.5	10	103	61	0.19	111629 0950	
9.52 (3/8)	10	103	61	0.19	111629 0952	
9.6	10	103	61	0.19	111629 0960	
9.7	10	103	61	0.19	111629 0970	
9.8	10	103	61	0.20	111629 0980	
9.9	10	103	61	0.20	111629 0990	
9.92 (25/64)	10	103	61	0.20	111629 0992	
10	10	103	61	0.20	111629 1000	
10.1	12	118	71	0.20	111629 1010	
10.2	12	118	71	0.20	111629 1020	
10.3	12	118	71	0.21	111629 1030	
10.32 (13/32)	12	118	71	0.21	111629 1032	
10.4	12	118	71	0.21	111629 1040	
10.5	12	118	71	0.21	111629 1050	
10.6	12	118	71	0.21	111629 1060	
10.7	12	118	71	0.21	111629 1070	
10.72 (27/64)	12	118	71	0.21	111629 1072	
10.8	12	118	71	0.22	111629 1080	
10.9	12	118	71	0.22	111629 1090	
11	12	118	71	0.22	111629 1100	
11.1	12	118	71	0.22	111629 1110	
11.11 (7/16)	12	118	71	0.22	111629 1111	
11.2	12	118	71	0.22	111629 1120	
11.3	12	118	71	0.23	111629 1130	
11.4	12	118	71	0.23	111629 1140	
11.5	12	118	71	0.23	111629 1150	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.51 (29/64)	12	118	71	0.23	111629 1151	
11.6	12	118	71	0.23	111629 1160	
11.7	12	118	71	0.23	111629 1170	
11.8	12	118	71	0.24	111629 1180	
11.9	12	118	71	0.24	111629 1190	
11.91 (15/32)	12	118	71	0.24	111629 1191	
12	12	118	71	0.24	111629 1200	
12.3 (31/64)	14	124	77	0.25	111629 1230	
12.5	14	124	77	0.25	111629 1250	
12.7 (1/2)	14	124	77	0.25	111629 1270	
13	14	124	77	0.26	111629 1300	
13.5	14	124	77	0.27	111629 1350	
14	14	124	77	0.28	111629 1400	
14.29 (9/16)	16	133	83	0.29	111629 1429	
14.5	16	133	83	0.29	111629 1450	
15	16	133	83	0.30	111629 1500	
15.5	16	133	83	0.31	111629 1550	
15.87 (5/8)	16	133	83	0.32	111629 1587	
16	16	133	83	0.32	111629 1600	
16.5	18	143	93	0.33	111629 1650	
17	18	143	93	0.34	111629 1700	
17.5	18	143	93	0.35	111629 1750	
18	18	143	93	0.36	111629 1800	
18.5	20	153	101	0.37	111629 1850	
19	20	153	101	0.38	111629 1900	
19.5	20	153	101	0.39	111629 1950	
20	20	153	101	0.40	111629 2000	

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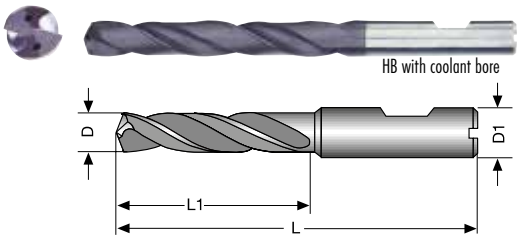
ATORN Solid carbide high-performance drill bit Ultra-M 5D

VHM | DIN 6537 | Typ VA | 140° | 30° | m7 | h6 | 5xD | Z 2 | TiAlN | Vc/fz | 370

- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HB with coolant bore straight shank DIN 6535 HB
- **Cutting material: solid carbide, TiAlN-Ultra-M-coated**
- True-running accuracy of the tool when clamped max. 0.02 mm
- **Especially suitable for stainless steel and superalloys**

Especially for stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 60	● 55	● 48			● 40	● 30	● 30							
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
3.00	6	66	28	0.09	111551 0030	
3.10	6	66	28	0.09	111551 0031	
3.20	6	66	28	0.09	111551 0032	
3.25	6	66	28	0.09	111551 0325	
3.30	6	66	28	0.09	111551 0033	
3.40	6	66	28	0.09	111551 0034	
3.50	6	66	28	0.09	111551 0035	
3.60	6	66	28	0.09	111551 0036	
3.70	6	66	28	0.09	111551 0037	
3.80	6	74	36	0.09	111551 0038	
3.90	6	74	36	0.09	111551 0039	
4.00	6	74	36	0.09	111551 0040	
4.10	6	74	36	0.09	111551 0041	
4.20	6	74	36	0.09	111551 0042	
4.30	6	74	36	0.09	111551 0043	
4.40	6	74	36	0.09	111551 0044	
4.50	6	74	36	0.09	111551 0045	
4.60	6	74	36	0.09	111551 0046	
4.65	6	74	36	0.09	111551 0465	
4.70	6	74	36	0.09	111551 0047	
4.80	6	82	44	0.09	111551 0048	
4.90	6	82	44	0.09	111551 0049	
5.00	6	82	44	0.09	111551 0050	
5.10	6	82	44	0.09	111551 0051	
5.20	6	82	44	0.09	111551 0052	
5.30	6	82	44	0.09	111551 0053	
5.40	6	82	44	0.09	111551 0054	
5.50	6	82	44	0.1	111551 0055	
5.55	6	82	44	0.1	111551 0555	
5.60	6	82	44	0.1	111551 0056	
5.70	6	82	44	0.1	111551 0057	
5.80	6	82	44	0.1	111551 0058	
5.90	6	82	44	0.1	111551 0059	
6.00	6	82	44	0.1	111551 0060	
6.10	8	91	53	0.1	111551 0061	
6.20	8	91	53	0.1	111551 0062	
6.30	8	91	53	0.1	111551 0063	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
6.40	8	91	53	0.1	111551 0064	
6.50	8	91	53	0.11	111551 0065	
6.60	8	91	53	0.11	111551 0066	
6.70	8	91	53	0.11	111551 0067	
6.80	8	91	53	0.11	111551 0068	
6.90	8	91	53	0.11	111551 0069	
7.00	8	91	53	0.11	111551 0070	
7.10	8	91	53	0.11	111551 0071	
7.20	8	91	53	0.11	111551 0072	
7.30	8	91	53	0.11	111551 0073	
7.40	8	91	53	0.11	111551 0074	
7.50	8	91	53	0.12	111551 0075	
7.60	8	91	53	0.12	111551 0076	
7.70	8	91	53	0.12	111551 0077	
7.80	8	91	53	0.12	111551 0078	
7.90	8	91	53	0.12	111551 0079	
8.00	8	91	53	0.12	111551 0080	
8.10	10	103	61	0.12	111551 0081	
8.20	10	103	61	0.12	111551 0082	
8.30	10	103	61	0.12	111551 0083	
8.40	10	103	61	0.13	111551 0084	
8.50	10	103	61	0.13	111551 0085	
8.60	10	103	61	0.13	111551 0086	
8.70	10	103	61	0.13	111551 0087	
8.80	10	103	61	0.13	111551 0088	
8.90	10	103	61	0.13	111551 0089	
9.00	10	103	61	0.13	111551 0090	
9.10	10	103	61	0.13	111551 0091	
9.20	10	103	61	0.14	111551 0092	
9.30	10	103	61	0.14	111551 0093	
9.40	10	103	61	0.14	111551 0094	
9.50	10	103	61	0.14	111551 0095	
9.60	10	103	61	0.14	111551 0096	
9.70	10	103	61	0.14	111551 0097	
9.80	10	103	61	0.14	111551 0098	
9.90	10	103	61	0.14	111551 0099	
10.00	10	103	61	0.15	111551 0100	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
10.20	12	118	71	0.15	111551 0102	
10.50	12	118	71	0.15	111551 0105	
10.80	12	118	71	0.16	111551 0108	
11.00	12	118	71	0.16	111551 0110	
11.20	12	118	71	0.16	111551 0112	
11.50	12	118	71	0.16	111551 0115	
11.80	12	118	71	0.17	111551 0118	
12.00	12	118	71	0.17	111551 0120	
12.20	14	124	77	0.17	111551 0122	
12.50	14	124	77	0.17	111551 0125	
12.70	14	124	77	0.18	111551 0127	
13.00	14	124	77	0.18	111551 0130	
13.50	14	124	77	0.18	111551 0135	
14.00	14	124	77	0.19	111551 0140	
14.20	16	133	83	0.19	111551 0142	

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D mm	D1 mm	L mm	L1 mm	Feed f stainless steel mm/rev	HB art.no.	€
14.50	16	133	83	0.19	111551 0145	
15.00	16	133	83	0.19	111551 0150	
15.50	16	133	83	0.2	111551 0155	
16.00	16	133	83	0.2	111551 0160	
16.50	18	143	93	0.21	111551 0165	
16.90	18	143	93	0.22	111551 0169	
17.00	18	143	93	0.23	111551 0170	
17.50	18	143	93	0.24	111551 0175	
18.00	18	143	93	0.25	111551 0180	
18.50	20	153	101	0.26	111551 0185	
18.90	20	153	101	0.27	111551 0189	
19.00	20	153	101	0.28	111551 0190	
19.50	20	153	101	0.29	111551 0195	
20.00	20	153	101	0.3	111551 0200	

1154

ADO-SUS-5D solid carbide high-performance drill

VHM | Werks-norm | 140° | 30° | h8 | 5xD | Vc/fz

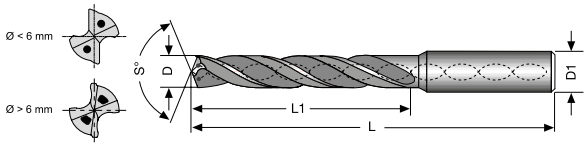
377

- **Cutting material: solid carbide, EgiAs coating**
- Sharp cutting edges reduce machining-induced material hardenings
- **Short and compact chips thanks to innovative chip flute geometry**
- Friction-reducing protective chamfer reduces heat development
- **New coolant bore design increases coolant flow rate and thus reduces heat generation in the material**
- Increased coating adhesion of the new EgiAs coating reduces premature wear and coating spalling

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 100	● 100	○ 75	● 80	● 80	● 45	● 80	● 100	● 35			● 140	○ 120	○ 70				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.







D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.78	3	78	26	0.06	111615 0278	
2.8	3	78	26	0.06	111615 0280	
2.83	3	78	26	0.06	111615 0283	
2.87	3	78	26	0.06	111615 0287	
2.9	3	78	27	0.06	111615 0290	
3	3	78	27	0.06	111615 0300	
3.1	4	86	28	0.08	111615 0310	
3.2	4	86	29	0.08	111615 0320	
3.3	4	86	30	0.08	111615 0330	
3.4	4	86	31	0.08	111615 0340	
3.5	4	86	32	0.08	111615 0350	
3.6	4	86	33	0.08	111615 0360	
3.68	4	86	34	0.08	111615 0368	
3.7	4	86	34	0.08	111615 0370	
3.73	4	86	34	0.08	111615 0373	
3.8	4	86	35	0.08	111615 0380	
3.9	4	86	36	0.08	111615 0390	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4	4	86	36	0.08	111615 0400	
4.1	6	95	37	0.10	111615 0410	
4.2	6	95	38	0.10	111615 0420	
4.3	6	95	39	0.10	111615 0430	
4.4	6	95	40	0.10	111615 0440	
4.45	6	95	41	0.10	111615 0445	
4.5	6	95	41	0.10	111615 0450	
4.6	6	95	42	0.10	111615 0460	
4.64	6	95	42	0.10	111615 0464	
4.7	6	95	43	0.10	111615 0470	
4.8	6	95	44	0.10	111615 0480	
4.9	6	95	45	0.10	111615 0490	
5	6	95	45	0.10	111615 0500	
5.1	6	100	41	0.12	111615 0510	
5.2	6	100	42	0.12	111615 0520	
5.3	6	100	43	0.12	111615 0530	
5.4	6	100	44	0.12	111615 0540	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.5	6	100	44	0.12	111615 0550	
5.54	6	100	45	0.12	111615 0554	
5.6	6	100	45	0.12	111615 0560	
5.7	6	100	46	0.12	111615 0570	
5.8	6	100	47	0.12	111615 0580	
5.9	6	100	48	0.12	111615 0590	
6	6	100	48	0.12	111615 0600	
6.1	8	109	49	0.14	111615 0610	
6.2	8	109	50	0.14	111615 0620	
6.3	8	109	51	0.14	111615 0630	
6.4	8	109	52	0.14	111615 0640	
6.5	8	109	52	0.14	111615 0650	
6.6	8	109	53	0.14	111615 0660	
6.7	8	109	54	0.14	111615 0670	
6.8	8	109	55	0.14	111615 0680	
6.9	8	109	56	0.14	111615 0690	
7	8	109	56	0.14	111615 0700	
7.1	8	118	57	0.16	111615 0710	
7.2	8	118	58	0.16	111615 0720	
7.3	8	118	59	0.16	111615 0730	
7.38	8	118	60	0.16	111615 0738	
7.4	8	118	60	0.16	111615 0740	
7.45	8	118	60	0.16	111615 0745	
7.5	8	118	60	0.16	111615 0750	
7.54	8	118	61	0.16	111615 0754	
7.6	8	118	61	0.16	111615 0760	
7.7	8	118	62	0.16	111615 0770	
7.8	8	118	63	0.16	111615 0780	
7.9	8	118	64	0.16	111615 0790	
8	8	118	64	0.16	111615 0800	
8.1	10	128	65	0.18	111615 0810	
8.2	10	128	66	0.18	111615 0820	
8.3	10	128	67	0.18	111615 0830	
8.4	10	128	68	0.18	111615 0840	
8.5	10	128	68	0.18	111615 0850	
8.6	10	128	69	0.18	111615 0860	
8.7	10	128	70	0.18	111615 0870	
8.8	10	128	71	0.18	111615 0880	
8.9	10	128	72	0.18	111615 0890	
9	10	128	72	0.18	111615 0900	
9.1	10	136	73	0.20	111615 0910	
9.2	10	136	74	0.20	111615 0920	
9.26	10	136	75	0.20	111615 0926	
9.3	10	136	75	0.20	111615 0930	
9.38	10	136	76	0.20	111615 0938	
9.4	10	136	76	0.20	111615 0940	
9.5	10	136	76	0.20	111615 0950	
9.54	10	136	77	0.20	111615 0954	
9.6	10	136	77	0.20	111615 0960	
9.7	10	136	78	0.20	111615 0970	
9.8	10	136	79	0.20	111615 0980	
9.9	10	136	80	0.20	111615 0990	
10	10	136	80	0.20	111615 1000	
10.1	12	146	81	0.22	111615 1010	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.2	12	146	82	0.22	111615 1020	
10.3	12	146	83	0.22	111615 1030	
10.4	12	146	84	0.22	111615 1040	
10.5	12	146	84	0.22	111615 1050	
10.6	12	146	85	0.22	111615 1060	
10.7	12	146	86	0.22	111615 1070	
10.8	12	146	87	0.22	111615 1080	
10.9	12	146	88	0.22	111615 1090	
11	12	146	88	0.22	111615 1100	
11.1	12	156	89	0.24	111615 1110	
11.2	12	156	90	0.24	111615 1120	
11.24	12	156	90	0.24	111615 1124	
11.3	12	156	91	0.24	111615 1130	
11.38	12	156	92	0.24	111615 1138	
11.4	12	156	92	0.24	111615 1140	
11.5	12	156	92	0.24	111615 1150	
11.6	12	156	93	0.24	111615 1160	
11.7	12	156	94	0.24	111615 1170	
11.8	12	156	95	0.24	111615 1180	
11.9	12	156	96	0.24	111615 1190	
12	12	156	96	0.24	111615 1200	
12.1	14	167	97	0.26	111615 1210	
12.5	14	167	100	0.26	111615 1250	
12.8	14	167	103	0.26	111615 1280	
13	14	167	104	0.26	111615 1300	
13.1	14	176	105	0.28	111615 1310	
13.2	14	176	106	0.28	111615 1320	
13.25	14	176	106	0.28	111615 1325	
13.43	14	176	108	0.28	111615 1343	
13.5	14	176	108	0.28	111615 1350	
13.55	14	176	109	0.28	111615 1355	
13.6	14	176	109	0.28	111615 1360	
14	14	176	112	0.28	111615 1400	
14.5	16	185	116	0.28	111615 1450	
15	16	185	120	0.28	111615 1500	
15.1	16	193	121	0.28	111615 1510	
15.25	16	193	122	0.28	111615 1525	
15.5	16	193	124	0.28	111615 1550	
15.55	16	193	125	0.28	111615 1555	
16	16	193	128	0.30	111615 1600	
16.5	18	184	113	0.30	111615 1650	
16.7	18	184	117	0.30	111615 1670	
17	18	184	114	0.30	111615 1700	
17.3	18	191	122	0.30	111615 1730	
17.5	18	191	123	0.30	111615 1750	
17.55	18	191	123	0.30	111615 1755	
18	18	191	126	0.32	111615 1800	
18.5	20	198	130	0.32	111615 1850	
18.7	20	198	131	0.32	111615 1870	
19	20	198	133	0.32	111615 1900	
19.3	20	205	136	0.32	111615 1930	
19.5	20	205	137	0.32	111615 1950	
19.55	20	205	137	0.32	111615 1955	
20	20	205	140	0.34	111615 2000	

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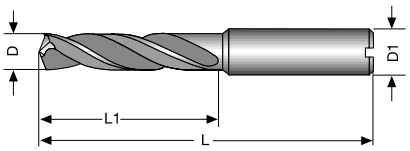
ATORN High-performance drill VHM-ULTRA N PRO HPC 5xD with IK HA

VHM | DIN 6537 | Typ W | 130° | 30° | m7 | h6 | 5xD | Z 2 | 369

- Optimal chip breaking due to the sharp, prepared cutting edges
- No built-up cutting edge due to the specially designed **ULTRA N PRO** coating
- Very good chip drainage even with long-chipping material due to the large and polished flutes
- Excellent bore quality due to low friction coefficient

Especially for aluminium





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 330	● 240	● 210				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	D1 mm	L mm	L1 mm	Feed f aluminium mm/rev	art.no.	€
1.00	3	50	6.5	0.08	111411 0100	
1.10	3	50	7.2	0.08	111411 0110	
1.20	3	50	7.8	0.08	111411 0120	
1.30	3	50	8.5	0.08	111411 0130	
1.40	3	50	9.1	0.08	111411 0140	
1.50	3	50	9.8	0.08	111411 0150	
1.60	3	50	10.4	0.08	111411 0160	
1.70	3	50	11.1	0.08	111411 0170	
1.80	3	50	11.7	0.08	111411 0180	
1.90	3	50	12.4	0.08	111411 0190	
2.00	3	55	13	0.08	111411 0200	
2.1	3	55	13.7	0.08	111411 0210	
2.2	3	55	14.3	0.08	111411 0220	
2.3	3	55	15	0.08	111411 0230	
2.4	3	55	15.6	0.08	111411 0240	
2.5	3	55	16.3	0.08	111411 0250	
2.6	3	55	16.9	0.08	111411 0260	
2.7	3	55	17.6	0.08	111411 0270	
2.8	3	55	18.2	0.08	111411 0280	
2.9	3	55	18.9	0.08	111411 0290	
3	6	66	28	0.08	111411 0300	
3.1	6	66	28	0.13	111411 0310	
3.2	6	66	28	0.13	111411 0320	
3.3	6	66	28	0.13	111411 0330	
3.4	6	66	28	0.13	111411 0340	
3.5	6	66	28	0.13	111411 0350	
3.6	6	66	28	0.13	111411 0360	
3.7	6	66	28	0.13	111411 0370	
3.8	6	74	36	0.13	111411 0380	
3.9	6	74	36	0.13	111411 0390	
4	6	74	36	0.18	111411 0400	
4.1	6	74	36	0.18	111411 0410	
4.2	6	74	36	0.18	111411 0420	
4.3	6	74	36	0.18	111411 0430	
4.4	6	74	36	0.18	111411 0440	
4.5	6	74	36	0.18	111411 0450	
4.6	6	74	36	0.18	111411 0460	
4.7	6	74	36	0.18	111411 0470	
4.8	6	82	44	0.18	111411 0480	
4.9	6	82	44	0.18	111411 0490	
5	6	82	44	0.18	111411 0500	
5.1	6	82	44	0.25	111411 0510	

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D mm	D1 mm	L mm	L1 mm	Feed f aluminium mm/rev	art.no.	€
5.2	6	82	44	0.25	111411 0520	
5.3	6	82	44	0.25	111411 0530	
5.4	6	82	44	0.25	111411 0540	
5.5	6	82	44	0.25	111411 0550	
5.6	6	82	44	0.25	111411 0560	
5.7	6	82	44	0.25	111411 0570	
5.8	6	82	44	0.25	111411 0580	
5.9	6	82	44	0.25	111411 0590	
6	6	82	44	0.25	111411 0600	
6.1	8	91	53	0.3	111411 0610	
6.2	8	91	53	0.3	111411 0620	
6.3	8	91	53	0.3	111411 0630	
6.4	8	91	53	0.3	111411 0640	
6.5	8	91	53	0.3	111411 0650	
6.6	8	91	53	0.3	111411 0660	
6.7	8	91	53	0.3	111411 0670	
6.8	8	91	53	0.3	111411 0680	
6.9	8	91	53	0.3	111411 0690	
7	8	91	53	0.3	111411 0700	
7.1	8	91	53	0.33	111411 0710	
7.2	8	91	53	0.33	111411 0720	
7.3	8	91	53	0.33	111411 0730	
7.4	8	91	53	0.33	111411 0740	
7.5	8	91	53	0.33	111411 0750	
7.6	8	91	53	0.33	111411 0760	
7.7	8	91	53	0.33	111411 0770	
7.8	8	91	53	0.33	111411 0780	
7.9	8	91	53	0.33	111411 0790	
8	8	91	53	0.33	111411 0800	
8.1	10	103	61	0.36	111411 0810	
8.2	10	103	61	0.36	111411 0820	
8.3	10	103	61	0.36	111411 0830	
8.4	10	103	61	0.36	111411 0840	
8.5	10	103	61	0.36	111411 0850	
8.6	10	103	61	0.36	111411 0860	
8.7	10	103	61	0.36	111411 0870	
8.8	10	103	61	0.36	111411 0880	
8.9	10	103	61	0.36	111411 0890	
9	10	103	61	0.36	111411 0900	
9.1	10	103	61	0.4	111411 0910	
9.2	10	103	61	0.4	111411 0920	
9.3	10	103	61	0.4	111411 0930	

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D mm	D1 mm	L mm	L1 mm	Feed f aluminium mm/rev	art.no.	€
9.4	10	103	61	0.4	111411 0940	
9.5	10	103	61	0.4	111411 0950	
9.6	10	103	61	0.4	111411 0960	
9.7	10	103	61	0.4	111411 0970	
9.8	10	103	61	0.4	111411 0980	
9.9	10	103	61	0.4	111411 0990	
10	10	103	61	0.4	111411 1000	
10.2	12	118	71	0.45	111411 1020	
10.5	12	118	71	0.45	111411 1050	
10.8	12	118	71	0.45	111411 1080	
11	12	118	71	0.45	111411 1100	
11.2	12	118	71	0.45	111411 1120	
11.3	12	118	71	0.45	111411 1130	
11.5	12	118	71	0.45	111411 1150	
11.8	12	118	71	0.45	111411 1180	
12	12	118	71	0.45	111411 1200	
12.2	14	124	77	0.5	111411 1220	
12.5	14	124	77	0.5	111411 1250	
12.7	14	124	77	0.5	111411 1270	
12.8	14	124	77	0.5	111411 1280	
13	14	124	77	0.5	111411 1300	
13.3	14	124	77	0.5	111411 1330	
13.5	14	124	77	0.5	111411 1350	
13.7	14	124	77	0.5	111411 1370	
13.8	14	124	77	0.5	111411 1380	
14	14	124	77	0.5	111411 1400	
14.5	16	133	83	0.54	111411 1450	
15	16	133	83	0.54	111411 1500	
15.3	16	133	83	0.54	111411 1530	
15.5	16	133	83	0.54	111411 1550	
15.8	16	133	83	0.54	111411 1580	
16	16	133	83	0.54	111411 1600	
16.5	18	143	93	0.54	111411 1650	
17	18	143	93	0.58	111411 1700	
17.5	18	143	93	0.58	111411 1750	
18	18	143	93	0.58	111411 1800	
18.5	20	153	101	0.58	111411 1850	
19	20	153	101	0.58	111411 1900	
19.5	20	153	101	0.62	111411 1950	
20	20	153	101	0.62	111411 2000	

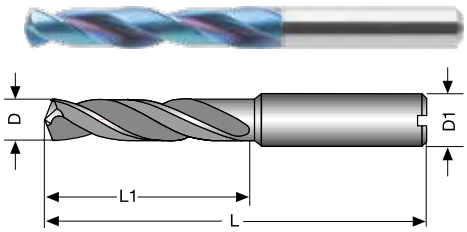
1178

ATORN Solid carbide high-performance drill bit HARD 5D

VHM | DIN 6537 | Typ H | 140° | 30° | h7 | h6 | 5xD | Z 2 | TiAlSiN | Vc/fz | 369

- for machining drill holes up to 65 HRC
- **Cutting material: SC, TiAlSiN coating**
- reinforced core and special point thinning with sharp chisel edge
- no internal coolant supply for increased stability
- **also available in 3xD**
- **Note:** Do not hard drill dry!

Up to 65 HRC



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 65	● 40					● 70								○ 28	○ 14	○ 14
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Without internal cooling ○

D mm	D1 mm	L mm	L1 mm	Feed f hardened steel ≤ 65 HRC mm/rev	art.no.	€
2.00	4	57	21	0.04	111536 0020	
2.50	4	57	21	0.04	111536 0025	
2.60	4	57	21	0.04	111536 0026	
2.80	4	57	21	0.04	111536 0028	
3.00	6	66	28	0.04	111536 0030	
3.30	6	66	28	0.06	111536 0033	
3.40	6	66	28	0.06	111536 0034	
3.50	6	66	28	0.06	111536 0035	
3.70	6	66	28	0.06	111536 0037	
3.80	6	74	36	0.06	111536 0038	
3.90	6	74	36	0.06	111536 0039	
4.00	6	74	36	0.06	111536 0040	
4.20	6	74	36	0.06	111536 0042	
4.30	6	74	36	0.06	111536 0043	
4.50	6	74	36	0.06	111536 0045	
4.80	6	82	44	0.06	111536 0048	
4.90	6	82	44	0.06	111536 0049	
5.00	6	82	44	0.06	111536 0050	
5.10	6	82	44	0.07	111536 0051	
5.20	6	82	44	0.07	111536 0052	
5.50	6	82	44	0.07	111536 0055	
5.80	6	82	44	0.07	111536 0058	
5.90	6	82	44	0.07	111536 0059	
6.00	6	82	44	0.07	111536 0060	
6.50	8	91	53	0.07	111536 0065	
6.80	8	91	53	0.07	111536 0068	
7.00	8	91	53	0.07	111536 0070	
7.20	8	91	53	0.07	111536 0072	

1154

○

D mm	D1 mm	L mm	L1 mm	Feed f hardened steel ≤ 65 HRC mm/rev	art.no.	€
7.80	8	91	53	0.07	111536 0078	
7.90	8	91	53	0.07	111536 0079	
8.00	8	91	53	0.07	111536 0080	
8.50	10	103	61	0.08	111536 0085	
8.70	10	103	61	0.08	111536 0087	
8.80	10	103	61	0.08	111536 0088	
9.00	10	103	61	0.08	111536 0090	
9.80	10	103	61	0.08	111536 0098	
9.90	10	103	61	0.08	111536 0099	
10.00	10	103	61	0.08	111536 0100	
10.20	12	118	71	0.08	111536 0102	
10.30	12	118	71	0.08	111536 0103	
10.50	12	118	71	0.08	111536 0105	
11.00	12	118	71	0.08	111536 0110	
11.80	12	118	71	0.08	111536 0118	
11.90	12	118	71	0.08	111536 0119	
12.00	12	118	71	0.08	111536 0120	
12.50	14	124	77	0.1	111536 0125	
13.00	14	124	77	0.1	111536 0130	
14.00	14	124	77	0.1	111536 0140	
14.90	16	133	83	0.1	111536 0149	
15.00	16	133	83	0.1	111536 0150	
15.90	16	133	83	0.1	111536 0159	
16.00	16	133	83	0.1	111536 0160	
17.50	18	143	93	0.11	111536 0175	
18.00	18	143	93	0.11	111536 0180	

1154

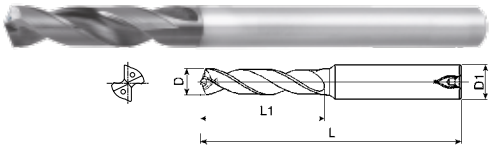
Solid carbide pilot drill ADO-PLT

VHM | Werks-norm | 160° | 30° | TiAlN | Vc/fz

374

- **for positioning a pilot bore for deep-hole drills from 10xD**
- with optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- Optimum chip removal with special cutting geometry and large chip spaces
- True-running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance h8

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 93	● 93	● 93	○ 60	○ 60		● 93	● 65										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	STANDARD art.no.	€
3.03	3	65	15	0.06	111726 0303	
3.53	4	70	18	0.07	111726 0353	
4.03	4	70	20	0.08	111726 0403	
4.53	5	75	23	0.09	111726 0453	
5.03	5	75	25	0.10	111726 0503	
5.53	6	80	28	0.11	111726 0553	
6.03	6	80	30	0.12	111726 0603	
6.53	7	85	33	0.13	111726 0653	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	STANDARD art.no.	€
7.03	7	85	35	0.14	111726 0703	
8.03	8	90	40	0.16	111726 0803	
8.53	9	95	43	0.17	111726 0853	
9.03	9	95	45	0.18	111726 0903	
10.03	10	100	50	0.20	111726 1003	
11.03	11	115	55	0.22	111726 1103	
12.03	12	120	60	0.24	111726 1203	

1107

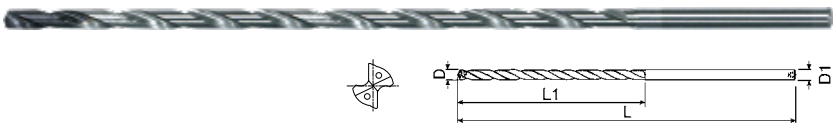
Solid carbide deep-hole drill ADO-10D

VHM | Werks-norm | 140° | 30° | 10xD | TiAlN | Vc/fz

374

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 10xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True-running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 93	● 93	● 93	○ 60	○ 60		● 93	● 65										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	75	26	0.04	111715 0020	
2.1	3	75	33	0.04	111715 0021	
2.2	3	75	33	0.04	111715 0022	
2.3	3	75	33	0.05	111715 0023	
2.4	3	75	33	0.05	111715 0024	
2.5	3	75	33	0.05	111715 0025	
2.6	3	90	40	0.05	111715 0026	
2.7	3	90	40	0.05	111715 0027	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.8	3	90	40	0.06	111715 0028	
2.9	3	90	40	0.06	111715 0029	
3	3	90	40	0.06	111715 0030	
3.1	4	100	45	0.06	111715 0031	
3.2	4	100	45	0.06	111715 0032	
3.3	4	100	45	0.07	111715 0033	
3.4	4	100	50	0.07	111715 0034	
3.5	4	100	50	0.07	111715 0035	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.6	4	100	50	0.07	111715 0036	
3.7	4	100	50	0.07	111715 0037	
3.8	4	100	50	0.08	111715 0038	
3.9	4	100	50	0.08	111715 0039	
4	4	100	50	0.08	111715 0040	
4.1	6	115	55	0.08	111715 0041	
4.2	6	115	55	0.08	111715 0042	
4.3	6	115	60	0.09	111715 0043	
4.4	6	115	60	0.09	111715 0044	
4.5	6	115	60	0.09	111715 0045	
4.6	6	115	60	0.09	111715 0046	
4.7	6	115	65	0.09	111715 0047	
4.8	6	115	65	0.1	111715 0048	
4.9	6	115	65	0.1	111715 0049	
5	6	115	65	0.1	111715 0050	
5.1	6	128	70	0.1	111715 0051	
5.2	6	128	70	0.1	111715 0052	
5.3	6	128	70	0.11	111715 0053	
5.4	6	128	78	0.11	111715 0054	
5.5	6	128	78	0.11	111715 0055	
5.6	6	128	78	0.11	111715 0056	
5.7	6	128	78	0.11	111715 0057	
5.8	6	128	78	0.12	111715 0058	
5.9	6	128	78	0.12	111715 0059	
6	6	128	78	0.12	111715 0060	
6.1	8	140	87	0.12	111715 0061	
6.2	8	140	87	0.12	111715 0062	
6.3	8	140	87	0.13	111715 0063	
6.4	8	140	87	0.13	111715 0064	
6.5	8	140	87	0.13	111715 0065	
6.6	8	140	87	0.13	111715 0066	
6.7	8	140	87	0.13	111715 0067	
6.8	8	140	90	0.14	111715 0068	
6.9	8	140	90	0.14	111715 0069	
7	8	140	90	0.14	111715 0070	
7.1	8	155	100	0.14	111715 0071	
7.2	8	155	100	0.14	111715 0072	
7.3	8	155	100	0.15	111715 0073	
7.4	8	155	100	0.15	111715 0074	
7.5	8	155	100	0.15	111715 0075	
7.6	8	155	105	0.15	111715 0076	
7.7	8	155	105	0.15	111715 0077	
7.8	8	155	105	0.16	111715 0078	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.9	8	155	105	0.16	111715 0079	
8	8	155	105	0.16	111715 0080	
8.1	10	165	110	0.16	111715 0081	
8.2	10	165	110	0.16	111715 0082	
8.3	10	165	110	0.17	111715 0083	
8.4	10	165	110	0.17	111715 0084	
8.5	10	165	110	0.17	111715 0085	
8.6	10	165	115	0.17	111715 0086	
8.7	10	165	115	0.17	111715 0087	
8.8	10	165	115	0.18	111715 0088	
8.9	10	165	115	0.18	111715 0089	
9	10	165	115	0.18	111715 0090	
9.1	10	190	125	0.18	111715 0091	
9.2	10	190	125	0.18	111715 0092	
9.3	10	190	125	0.19	111715 0093	
9.4	10	190	125	0.19	111715 0094	
9.5	10	190	125	0.19	111715 0095	
9.6	10	190	130	0.19	111715 0096	
9.7	10	190	130	0.19	111715 0097	
9.8	10	190	130	0.2	111715 0098	
9.9	10	190	130	0.2	111715 0099	
10	10	190	130	0.2	111715 0100	
10.1	12	205	140	0.2	111715 0101	
10.2	12	205	140	0.2	111715 0102	
10.3	12	205	140	0.21	111715 0103	
10.4	12	205	140	0.21	111715 0104	
10.5	12	205	140	0.21	111715 0105	
10.6	12	205	140	0.21	111715 0106	
10.7	12	205	140	0.21	111715 0107	
10.8	12	205	145	0.22	111715 0108	
10.9	12	205	145	0.22	111715 0109	
11	12	205	145	0.22	111715 0110	
11.1	12	215	155	0.22	111715 0111	
11.2	12	215	155	0.22	111715 0112	
11.3	12	215	155	0.23	111715 0113	
11.4	12	215	155	0.23	111715 0114	
11.5	12	215	155	0.23	111715 0115	
11.6	12	215	155	0.23	111715 0116	
11.7	12	215	155	0.23	111715 0117	
11.8	12	215	155	0.24	111715 0118	
11.9	12	215	155	0.24	111715 0119	
12	12	215	155	0.24	111715 0120	

1107

Solid carbide deep-hole drill ADO-15D

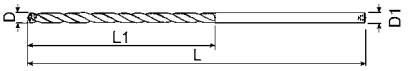
VHM | Werks-norm | 140° | 30° | 15xD | TiAlN | Vc/fz | 374

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 15xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 93	● 93	● 93	○ 60	○ 60		● 93	● 65										
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		







D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	90	36	0.04	111716 0020	
2.1	3	90	38	0.04	111716 0021	
2.2	3	90	40	0.04	111716 0022	
2.3	3	96	42	0.05	111716 0023	
2.4	3	90	44	0.05	111716 0024	
2.5	3	96	45	0.05	111716 0025	
2.6	3	96	47	0.05	111716 0026	
2.7	3	96	49	0.05	111716 0027	
2.8	3	96	51	0.06	111716 0028	
2.9	3	96	53	0.06	111716 0029	
3	3	105	55	0.06	111716 0030	
3.1	4	125	60	0.06	111716 0031	
3.2	4	125	60	0.06	111716 0032	
3.3	4	125	60	0.07	111716 0033	
3.4	4	125	65	0.07	111716 0034	
3.5	4	125	65	0.07	111716 0035	
3.6	4	125	65	0.07	111716 0036	
3.7	4	125	65	0.07	111716 0037	
3.8	4	125	75	0.08	111716 0038	
3.9	4	125	75	0.08	111716 0039	
4	4	125	75	0.08	111716 0040	
4.1	6	140	75	0.08	111716 0041	
4.2	6	140	75	0.08	111716 0042	
4.3	6	140	85	0.09	111716 0043	
4.4	6	140	85	0.09	111716 0044	
4.5	6	140	85	0.09	111716 0045	
4.6	6	140	85	0.09	111716 0046	
4.7	6	140	85	0.09	111716 0047	
4.8	6	140	90	0.1	111716 0048	
4.9	6	140	90	0.1	111716 0049	
5	6	140	90	0.1	111716 0050	
5.1	6	160	95	0.1	111716 0051	
5.2	6	160	95	0.1	111716 0052	
5.3	6	160	95	0.11	111716 0053	
5.4	6	160	110	0.11	111716 0054	
5.5	6	160	110	0.11	111716 0055	
5.6	6	160	110	0.11	111716 0056	
5.7	6	160	110	0.11	111716 0057	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.8	6	160	110	0.12	111716 0058	
5.9	6	160	110	0.12	111716 0059	
6	6	160	110	0.12	111716 0060	
6.1	8	175	120	0.12	111716 0061	
6.2	8	175	120	0.12	111716 0062	
6.3	8	175	120	0.13	111716 0063	
6.4	8	175	120	0.13	111716 0064	
6.5	8	175	120	0.13	111716 0065	
6.6	8	175	120	0.13	111716 0066	
6.7	8	175	120	0.13	111716 0067	
6.8	8	175	125	0.14	111716 0068	
6.9	8	175	125	0.14	111716 0069	
7	8	175	125	0.14	111716 0070	
7.1	8	195	135	0.14	111716 0071	
7.2	8	195	135	0.14	111716 0072	
7.3	8	195	135	0.15	111716 0073	
7.4	8	195	135	0.15	111716 0074	
7.5	8	195	135	0.15	111716 0075	
7.6	8	195	145	0.15	111716 0076	
7.7	8	195	145	0.15	111716 0077	
7.8	8	195	145	0.16	111716 0078	
7.9	8	195	145	0.16	111716 0079	
8	8	195	145	0.16	111716 0080	
8.1	10	210	155	0.16	111716 0081	
8.2	10	210	155	0.16	111716 0082	
8.3	10	210	155	0.17	111716 0083	
8.4	10	210	155	0.17	111716 0084	
8.5	10	210	155	0.17	111716 0085	
8.6	10	210	160	0.17	111716 0086	
8.7	10	210	160	0.17	111716 0087	
8.8	10	210	160	0.18	111716 0088	
8.9	10	210	160	0.18	111716 0089	
9	10	210	160	0.18	111716 0090	
9.1	10	240	170	0.18	111716 0091	
9.2	10	240	170	0.18	111716 0092	
9.3	10	240	170	0.19	111716 0093	
9.4	10	240	170	0.19	111716 0094	
9.5	10	240	170	0.19	111716 0095	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.6	10	240	180	0.19	111716 0096	
9.7	10	240	180	0.19	111716 0097	
9.8	10	240	180	0.2	111716 0098	
9.9	10	240	180	0.2	111716 0099	
10	10	240	180	0.2	111716 0100	
10.1	12	260	190	0.2	111716 0101	
10.2	12	260	190	0.2	111716 0102	
10.3	12	260	190	0.21	111716 0103	
10.4	12	260	190	0.21	111716 0104	
10.5	12	260	190	0.21	111716 0105	
10.6	12	260	190	0.21	111716 0106	
10.7	12	260	200	0.21	111716 0107	
10.8	12	260	200	0.22	111716 0108	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.9	12	260	200	0.22	111716 0109	
11	12	260	200	0.22	111716 0110	
11.1	12	280	210	0.22	111716 0111	
11.2	12	280	210	0.22	111716 0112	
11.3	12	280	210	0.23	111716 0113	
11.4	12	280	210	0.23	111716 0114	
11.5	12	280	210	0.23	111716 0115	
11.6	12	280	210	0.23	111716 0116	
11.7	12	280	210	0.23	111716 0117	
11.8	12	280	210	0.24	111716 0118	
11.9	12	280	215	0.24	111716 0119	
12	12	280	215	0.24	111716 0120	

1107

Solid carbide deep-hole drill ADO-20D

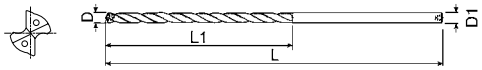
VHM | Werks-norm | 140° | 30° | 20xD | TiAlN | Vc/fz

374

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 20xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 93	● 93	● 93	○ 60	○ 60		● 93	● 65										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	100	46	0.04	111717 0020	
2.1	3	100	49	0.04	111717 0021	
2.2	3	100	51	0.04	111717 0022	
2.3	3	100	53	0.05	111717 0023	
2.4	3	100	56	0.05	111717 0024	
2.5	3	109	58	0.05	111717 0025	
2.6	3	109	60	0.05	111717 0026	
2.7	3	109	63	0.05	111717 0027	
2.8	3	109	65	0.06	111717 0028	
2.9	3	109	67	0.06	111717 0029	
3	3	120	70	0.06	111717 0030	
3.1	4	140	80	0.06	111717 0031	
3.2	4	140	80	0.06	111717 0032	
3.3	4	140	80	0.07	111717 0033	
3.4	4	140	85	0.07	111717 0034	
3.5	4	140	85	0.07	111717 0035	
3.6	4	140	85	0.07	111717 0036	
3.7	4	140	85	0.07	111717 0037	
3.8	4	140	90	0.08	111717 0038	
3.9	4	140	90	0.08	111717 0039	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4	4	140	90	0.08	111717 0040	
4.1	6	165	100	0.08	111717 0041	
4.2	6	165	100	0.08	111717 0042	
4.3	6	165	110	0.09	111717 0043	
4.4	6	165	110	0.09	111717 0044	
4.5	6	165	110	0.09	111717 0045	
4.6	6	165	110	0.09	111717 0046	
4.7	6	165	110	0.09	111717 0047	
4.8	6	165	115	0.1	111717 0048	
4.9	6	165	115	0.1	111717 0049	
5	6	165	115	0.1	111717 0050	
5.1	6	190	120	0.1	111717 0051	
5.2	6	190	120	0.1	111717 0052	
5.3	6	190	120	0.11	111717 0053	
5.4	6	190	140	0.11	111717 0054	
5.5	6	190	140	0.11	111717 0055	
5.6	6	190	140	0.11	111717 0056	
5.7	6	190	140	0.11	111717 0057	
5.8	6	190	140	0.12	111717 0058	
5.9	6	190	140	0.12	111717 0059	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	6	190	140	0.12	111717 0060	
6.1	8	210	155	0.12	111717 0061	
6.2	8	210	155	0.12	111717 0062	
6.3	8	210	155	0.13	111717 0063	
6.4	8	210	155	0.13	111717 0064	
6.5	8	210	155	0.13	111717 0065	
6.6	8	210	155	0.13	111717 0066	
6.7	8	210	155	0.13	111717 0067	
6.8	8	210	160	0.14	111717 0068	
6.9	8	210	160	0.14	111717 0069	
7	8	210	160	0.14	111717 0070	
7.1	8	230	170	0.14	111717 0071	
7.2	8	230	170	0.14	111717 0072	
7.3	8	230	170	0.15	111717 0073	
7.4	8	230	170	0.15	111717 0074	
7.5	8	230	170	0.15	111717 0075	
7.6	8	230	180	0.15	111717 0076	
7.7	8	230	180	0.15	111717 0077	
7.8	8	230	180	0.16	111717 0078	
7.9	8	230	180	0.16	111717 0079	
8	8	230	180	0.16	111717 0080	
8.1	10	260	195	0.16	111717 0081	
8.2	10	260	195	0.16	111717 0082	
8.3	10	260	195	0.17	111717 0083	
8.4	10	260	195	0.17	111717 0084	
8.5	10	260	195	0.17	111717 0085	
8.6	10	260	210	0.17	111717 0086	
8.7	10	260	210	0.17	111717 0087	
8.8	10	260	210	0.18	111717 0088	
8.9	10	260	210	0.18	111717 0089	
9	10	260	210	0.18	111717 0090	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.1	10	290	220	0.18	111717 0091	
9.2	10	290	220	0.18	111717 0092	
9.3	10	290	220	0.19	111717 0093	
9.4	10	290	220	0.19	111717 0094	
9.5	10	290	220	0.19	111717 0095	
9.6	10	290	230	0.19	111717 0096	
9.7	10	290	230	0.19	111717 0097	
9.8	10	290	230	0.2	111717 0098	
9.9	10	290	230	0.2	111717 0099	
10	10	290	230	0.2	111717 0100	
10.1	12	310	250	0.2	111717 0101	
10.2	12	310	250	0.2	111717 0102	
10.3	12	310	250	0.21	111717 0103	
10.4	12	310	250	0.21	111717 0104	
10.5	12	310	250	0.21	111717 0105	
10.6	12	310	250	0.21	111717 0106	
10.7	12	310	250	0.21	111717 0107	
10.8	12	310	250	0.22	111717 0108	
10.9	12	310	250	0.22	111717 0109	
11	12	310	250	0.22	111717 0110	
11.1	12	330	270	0.22	111717 0111	
11.2	12	330	270	0.22	111717 0112	
11.3	12	330	270	0.23	111717 0113	
11.4	12	330	270	0.23	111717 0114	
11.5	12	330	270	0.23	111717 0115	
11.6	12	330	270	0.23	111717 0116	
11.7	12	330	270	0.23	111717 0117	
11.8	12	330	270	0.24	111717 0118	
11.9	12	330	270	0.24	111717 0119	
12	12	330	270	0.24	111717 0120	

1107

Solid carbide deep-hole drill ADO-30D

VHM | Werks-norm | 140° | 30° | 30xD | TiAlN | Vc/fz

374

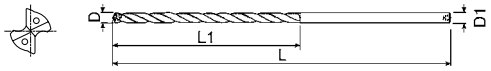
- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 30xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 93	● 93	● 90	○ 60	○ 60		● 93	● 65										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	120	66	0.04	111718 0020	
2.1	3	120	70	0.04	111718 0021	
2.2	3	120	73	0.04	111718 0022	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.3	3	120	76	0.05	111718 0023	
2.4	3	120	80	0.05	111718 0024	
2.5	3	134	83	0.05	111718 0025	

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D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.6	3	134	86	0.05	111718 0026	
2.7	3	134	90	0.05	111718 0027	
2.8	3	134	93	0.06	111718 0028	
2.9	3	134	96	0.06	111718 0029	
3	3	150	100	0.06	111718 0030	
3.1	4	185	102	0.06	111718 0031	
3.2	4	185	105	0.06	111718 0032	
3.3	4	185	109	0.07	111718 0033	
3.4	4	185	112	0.07	111718 0034	
3.5	4	185	116	0.07	111718 0035	
3.6	4	185	116	0.07	111718 0036	
3.7	4	185	116	0.07	111718 0037	
3.8	4	185	132	0.08	111718 0038	
3.9	4	185	132	0.08	111718 0039	
4	4	185	132	0.08	111718 0040	
4.1	6	215	140	0.08	111718 0041	
4.2	6	215	140	0.08	111718 0042	
4.3	6	215	150	0.09	111718 0043	
4.4	6	215	150	0.09	111718 0044	
4.5	6	215	150	0.09	111718 0045	
4.6	6	215	150	0.09	111718 0046	
4.7	6	215	150	0.09	111718 0047	
4.8	6	215	165	0.1	111718 0048	
4.9	6	215	165	0.1	111718 0049	
5	6	215	165	0.1	111718 0050	
5.1	6	250	180	0.1	111718 0051	
5.2	6	250	180	0.1	111718 0052	
5.3	6	250	180	0.11	111718 0053	
5.4	6	250	200	0.11	111718 0054	
5.5	6	250	200	0.11	111718 0055	
5.6	6	250	200	0.11	111718 0056	
5.7	6	250	200	0.11	111718 0057	
5.8	6	250	200	0.12	111718 0058	
5.9	6	250	200	0.12	111718 0059	
6	6	250	200	0.12	111718 0060	
6.1	8	280	215	0.12	111718 0061	
6.2	8	280	215	0.12	111718 0062	
6.3	8	280	215	0.13	111718 0063	

1107

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.4	8	280	215	0.13	111718 0064	
6.5	8	280	215	0.13	111718 0065	
6.6	8	280	215	0.13	111718 0066	
6.7	8	280	215	0.13	111718 0067	
6.8	8	280	230	0.14	111718 0068	
6.9	8	280	230	0.14	111718 0069	
7	8	280	230	0.14	111718 0070	
7.1	8	315	250	0.14	111718 0071	
7.2	8	315	250	0.14	111718 0072	
7.3	8	315	250	0.15	111718 0073	
7.4	8	315	250	0.15	111718 0074	
7.5	8	315	250	0.15	111718 0075	
7.6	8	315	265	0.15	111718 0076	
7.7	8	315	265	0.15	111718 0077	
7.8	8	315	265	0.16	111718 0078	
7.9	8	315	265	0.16	111718 0079	
8	8	315	265	0.16	111718 0080	
8.1	10	350	280	0.16	111718 0081	
8.2	10	350	280	0.16	111718 0082	
8.3	10	350	280	0.17	111718 0083	
8.4	10	350	280	0.17	111718 0084	
8.5	10	350	280	0.17	111718 0085	
8.6	10	350	300	0.17	111718 0086	
8.7	10	350	300	0.17	111718 0087	
8.8	10	350	300	0.18	111718 0088	
8.9	10	350	300	0.18	111718 0089	
9	10	350	300	0.18	111718 0090	
9.1	10	390	315	0.18	111718 0091	
9.2	10	390	315	0.18	111718 0092	
9.3	10	390	315	0.19	111718 0093	
9.4	10	390	315	0.19	111718 0094	
9.5	10	390	315	0.19	111718 0095	
9.6	10	390	330	0.19	111718 0096	
9.7	10	390	330	0.19	111718 0097	
9.8	10	390	330	0.2	111718 0098	
9.9	10	390	330	0.2	111718 0099	
10	10	390	330	0.2	111718 0100	

1107

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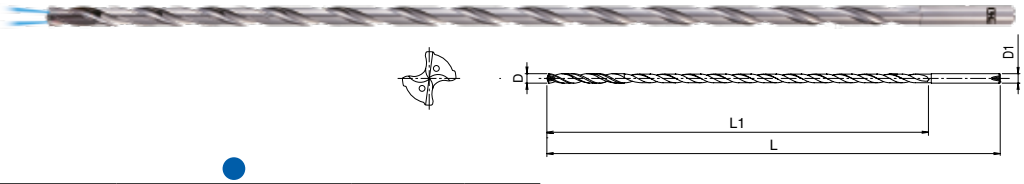
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Solid carbide deep-hole drill ADO-40D

VHM | Werks-norm | 140° | 25° | 40xD | TiAlN | Vc/fz | 374

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 40xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 75	● 75	● 65	○ 50	○ 50		● 75	● 65										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	D1 mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	179	3	120	0.06	111719 0030	
4	222	4	160	0.08	111719 0040	
5	265	5	200	0.1	111719 0050	
6	308	6	240	0.12	111719 0060	
8	394	8	320	0.16	111719 0080	
10	490	10	400	0.2	111719 0100	

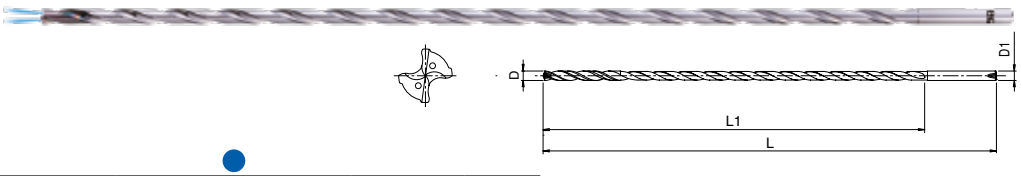
1107

Solid carbide deep-hole drill ADO-50D

VHM | Werks-norm | 140° | 25° | 50xD | TiAlN | Vc/fz | 374

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 50xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 75	● 75	● 65	○ 50	○ 50		● 75	● 65										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



● Feed f steel < 1000 N/mm² mm/rev

D mm	L mm	D1 mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	209	3	150	0.06	111720 0030	
4	262	4	200	0.08	111720 0040	
5	315	5	250	0.1	111720 0050	
6	368	6	300	0.12	111720 0060	
8	474	8	400	0.16	111720 0080	

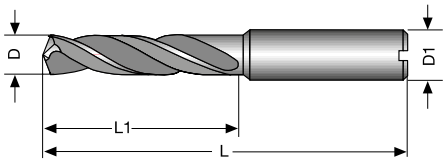
1107

ATORN Solid carbide pilot drill bit TiAlNplus HPC

VHM | DIN 6537 | Typ U | 140° | 30° | h7 | h5 | 5xD | Z 2 | TiAlN plus | Vc/fz | 370

- For setting a pilot bore for deep-hole drill bits from 12xD
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Precision-ground for extreme boring accuracy to meet high dimensional demands
- High guidance accuracy thanks to innovative geometry
- High-performance coating guarantees high cutting data and service life
- The tools are coordinated by geometry and diameter.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●		●	●	○	○	○	○	○	○				
		95	80	65	50	40		95	95	35	30	30	250	200	230				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		





D mm	D1 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.02	4	57	21	0.08	111573 0202	
2.22	4	57	21	0.08	111573 0222	
2.32	4	57	21	0.08	111573 0232	
2.42	4	57	21	0.08	111573 0242	
2.52	4	57	21	0.08	111573 0252	
2.62	4	57	21	0.08	111573 0262	
2.72	4	57	21	0.08	111573 0272	
2.82	4	57	21	0.08	111573 0282	
2.92	4	57	21	0.08	111573 0292	
3.02	6	66	28	0.08	111573 0302	
3.22	6	66	28	0.08	111573 0322	
3.32	6	66	28	0.08	111573 0332	
3.52	6	66	28	0.08	111573 0352	
3.82	6	74	36	0.15	111573 0382	
4.02	6	74	36	0.15	111573 0402	
4.22	6	74	36	0.15	111573 0422	
4.52	6	74	36	0.15	111573 0452	
4.82	6	82	44	0.15	111573 0482	
5.02	6	82	44	0.15	111573 0502	
5.52	6	82	44	0.15	111573 0552	

1154

D mm	D1 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.82	6	82	44	0.25	111573 0582	
6.02	6	82	44	0.25	111573 0602	
6.52	8	91	53	0.25	111573 0652	
6.82	8	91	53	0.25	111573 0682	
7.02	8	91	53	0.25	111573 0702	
7.52	8	91	53	0.25	111573 0752	
7.82	8	91	53	0.25	111573 0782	
8.02	8	91	53	0.25	111573 0802	
8.52	10	103	61	0.27	111573 0852	
8.82	10	103	61	0.27	111573 0882	
9.02	10	103	61	0.27	111573 0902	
9.52	10	103	61	0.27	111573 0952	
9.82	10	103	61	0.27	111573 0982	
10.02	10	103	61	0.27	111573 1002	
10.22	12	118	71	0.27	111573 1022	
10.82	12	118	71	0.27	111573 1082	
11.02	12	118	71	0.27	111573 1102	
11.52	12	118	71	0.27	111573 1152	
11.82	12	118	71	0.27	111573 1182	
12.02	12	118	71	0.27	111573 1202	

1154

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ATORN TiAlNplus HPC 8D solid carbide high-performance drill bit with internal cooling

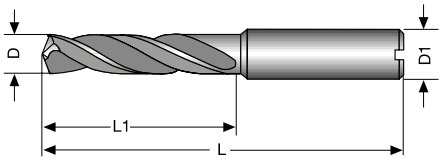
VHM | Werks-norm | Typ U | 135° | | 30° | h7 | h6 | 8xD | | Z 2 | | TiAlN plus | Vc/fz | 372

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Excellent alignment precision thanks to 4 guide chamfers**
- High process reliability, even at difficult-to-reach bore depths
- With internal cooling

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 135	● 110	● 90	● 35	● 30		● 160	● 110	○ 40	○ 30	○ 35	○ 260	○ 210	● 230		○ 55		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	6	72	34	0.11	111570 0300	
3.10	6	72	34	0.11	111570 0310	
3.20	6	72	34	0.11	111570 0320	
3.30	6	72	34	0.11	111570 0330	
3.40	6	72	34	0.11	111570 0340	
3.50	6	72	34	0.11	111570 0350	
3.60	6	72	34	0.11	111570 0360	
3.70	6	72	34	0.11	111570 0370	
3.80	6	81	43	0.11	111570 0380	
3.90	6	81	43	0.11	111570 0390	
4.00	6	81	43	0.11	111570 0400	
4.10	6	81	43	0.11	111570 0410	
4.20	6	81	43	0.11	111570 0420	
4.30	6	81	43	0.11	111570 0430	
4.40	6	81	43	0.11	111570 0440	
4.50	6	81	43	0.11	111570 0450	
4.60	6	81	43	0.11	111570 0460	
4.70	6	81	43	0.11	111570 0470	
4.80	6	95	57	0.11	111570 0480	
4.90	6	95	57	0.11	111570 0490	
5.00	6	95	57	0.11	111570 0500	
5.10	6	95	57	0.11	111570 0510	
5.20	6	95	57	0.11	111570 0520	
5.30	6	95	57	0.11	111570 0530	
5.40	6	95	57	0.11	111570 0540	
5.50	6	95	57	0.11	111570 0550	
5.60	6	95	57	0.11	111570 0560	
5.70	6	95	57	0.11	111570 0570	
5.80	6	95	57	0.11	111570 0580	
5.90	6	95	57	0.11	111570 0590	
6.00	6	95	57	0.16	111570 0600	
6.10	8	114	76	0.16	111570 0610	
6.20	8	114	76	0.16	111570 0620	
6.30	8	114	76	0.16	111570 0630	
6.40	8	114	76	0.16	111570 0640	
6.50	8	114	76	0.16	111570 0650	

1110

● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.60	8	114	76	0.16	111570 0660	
6.70	8	114	76	0.16	111570 0670	
6.80	8	114	76	0.16	111570 0680	
6.90	8	114	76	0.16	111570 0690	
7.00	8	114	76	0.16	111570 0700	
7.10	8	114	76	0.16	111570 0710	
7.20	8	114	76	0.16	111570 0720	
7.30	8	114	76	0.16	111570 0730	
7.40	8	114	76	0.16	111570 0740	
7.50	8	114	76	0.16	111570 0750	
7.60	8	114	76	0.16	111570 0760	
7.70	8	114	76	0.16	111570 0770	
7.80	8	114	76	0.16	111570 0780	
7.90	8	114	76	0.16	111570 0790	
8.00	8	114	76	0.16	111570 0800	
8.10	10	142	95	0.16	111570 0810	
8.20	10	142	95	0.16	111570 0820	
8.30	10	142	95	0.16	111570 0830	
8.40	10	142	95	0.16	111570 0840	
8.50	10	142	95	0.16	111570 0850	
8.60	10	142	95	0.16	111570 0860	
8.70	10	142	95	0.16	111570 0870	
8.80	10	142	95	0.16	111570 0880	
8.90	10	142	95	0.16	111570 0890	
9.00	10	142	95	0.21	111570 0900	
9.10	10	142	95	0.21	111570 0910	
9.20	10	142	95	0.21	111570 0920	
9.30	10	142	95	0.21	111570 0930	
9.40	10	142	95	0.21	111570 0940	
9.50	10	142	95	0.21	111570 0950	
9.60	10	142	95	0.21	111570 0960	
9.70	10	142	95	0.21	111570 0970	
9.80	10	142	95	0.21	111570 0980	
9.90	10	142	95	0.21	111570 0990	
10.00	10	142	95	0.21	111570 1000	
10.20	12	162	114	0.21	111570 1020	

1110

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.50	12	162	114	0.21	111570 1050	
10.80	12	162	114	0.21	111570 1080	
11.00	12	162	114	0.21	111570 1100	
11.50	12	162	114	0.21	111570 1150	
11.80	12	162	114	0.21	111570 1180	
12.00	12	162	114	0.27	111570 1200	
12.20	14	178	131	0.27	111570 1220	
12.50	14	178	131	0.27	111570 1250	

1110

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13.00	14	178	131	0.27	111570 1300	
13.50	14	178	131	0.27	111570 1350	
14.00	14	178	131	0.27	111570 1400	
14.50	16	203	152	0.27	111570 1450	
15.00	16	203	152	0.27	111570 1500	
15.50	16	203	152	0.27	111570 1550	
16.00	16	203	152	0.31	111570 1600	
16.50	18	222	171	0.31	111570 1650	

1110

ATORN TiAlNplus HPC 12D solid carbide high-performance drill bit with internal cooling

VHM | Werks-norm | Typ U | 135° | h7 | h6 | 12xD | Z 2 | TiAlN plus | Vc/fz

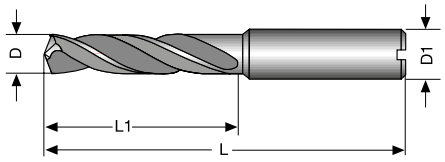
372

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Excellent alignment precision thanks to 4 guide chamfers**
- High process reliability, even at difficult-to-reach bore depths
- With internal cooling

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 135	● 110	● 90	● 35	● 30		● 120	● 110	○ 40	○ 30	○ 35	○ 260	● 210	● 230		○ 35		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	6	92	54	0.10	111572 0300	
3.10	6	92	54	0.10	111572 0310	
3.20	6	92	54	0.10	111572 0320	
3.30	6	92	54	0.10	111572 0330	
3.40	6	92	54	0.10	111572 0340	
3.50	6	92	54	0.10	111572 0350	
3.60	6	92	54	0.10	111572 0360	
3.70	6	92	54	0.10	111572 0370	
3.80	6	102	64	0.10	111572 0380	
3.90	6	102	64	0.10	111572 0390	
4.00	6	102	64	0.10	111572 0400	
4.10	6	102	64	0.10	111572 0410	
4.20	6	102	64	0.10	111572 0420	
4.30	6	102	64	0.10	111572 0430	
4.40	6	102	64	0.10	111572 0440	
4.50	6	102	64	0.10	111572 0450	
4.60	6	102	64	0.10	111572 0460	
4.70	6	102	64	0.10	111572 0470	

1110

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.80	6	116	78	0.10	111572 0480	
4.90	6	116	78	0.10	111572 0490	
5.00	6	116	78	0.10	111572 0500	
5.10	6	116	78	0.10	111572 0510	
5.20	6	116	78	0.10	111572 0520	
5.30	6	116	78	0.10	111572 0530	
5.40	6	116	78	0.10	111572 0540	
5.50	6	116	78	0.10	111572 0550	
5.60	6	116	78	0.10	111572 0560	
5.70	6	116	78	0.10	111572 0570	
5.80	6	116	78	0.10	111572 0580	
5.90	6	116	78	0.10	111572 0590	
6.00	6	116	78	0.15	111572 0600	
6.10	8	146	108	0.15	111572 0610	
6.20	8	146	108	0.15	111572 0620	
6.30	8	146	108	0.15	111572 0630	
6.40	8	146	108	0.15	111572 0640	
6.50	8	146	108	0.15	111572 0650	

1110

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.60	8	146	108	0.15	111572 0660	
6.70	8	146	108	0.15	111572 0670	
6.80	8	146	108	0.15	111572 0680	
6.90	8	146	108	0.15	111572 0690	
7.00	8	146	108	0.15	111572 0700	
7.10	8	146	108	0.15	111572 0710	
7.20	8	146	108	0.15	111572 0720	
7.30	8	146	108	0.15	111572 0730	
7.40	8	146	108	0.15	111572 0740	
7.50	8	146	108	0.15	111572 0750	
7.60	8	146	108	0.15	111572 0760	
7.70	8	146	108	0.15	111572 0770	
7.80	8	146	108	0.15	111572 0780	
7.90	8	146	108	0.15	111572 0790	
8.00	8	146	108	0.15	111572 0800	
8.10	10	162	120	0.15	111572 0810	
8.20	10	162	120	0.15	111572 0820	
8.30	10	162	120	0.15	111572 0830	
8.40	10	162	120	0.15	111572 0840	
8.50	10	162	120	0.15	111572 0850	
8.60	10	162	120	0.15	111572 0860	
					1110	

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.70	10	162	120	0.15	111572 0870	
8.80	10	162	120	0.15	111572 0880	
8.90	10	162	120	0.15	111572 0890	
9.00	10	162	120	0.20	111572 0900	
9.10	10	162	120	0.20	111572 0910	
9.20	10	162	120	0.20	111572 0920	
9.30	10	162	120	0.20	111572 0930	
9.40	10	162	120	0.20	111572 0940	
9.50	10	162	120	0.20	111572 0950	
9.60	10	162	120	0.20	111572 0960	
9.70	10	162	120	0.20	111572 0970	
9.80	10	162	120	0.20	111572 0980	
9.90	10	162	120	0.20	111572 0990	
10.00	10	162	120	0.20	111572 1000	
10.20	12	204	156	0.20	111572 1020	
10.50	12	204	156	0.20	111572 1050	
10.80	12	204	156	0.20	111572 1080	
11.00	12	204	156	0.20	111572 1100	
11.50	12	204	156	0.20	111572 1150	
11.80	12	204	156	0.20	111572 1180	
12.00	12	204	156	0.26	111572 1200	
					1110	

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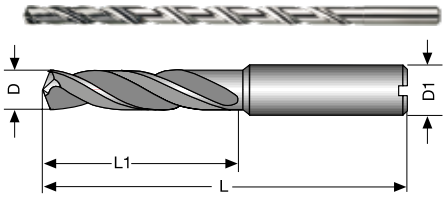
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ATORN Solid carbide deep-hole drill bit TiAlNplus HPC 16D

VHM | Werks-norm | Typ U | 135° | | 30° | h7 | h6 | 16xD | | Z 2 | | TiAlN plus | Vc/fz | 373

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●		●	●	○	○	○	○	○	○				
		90	75	65	35	30		80	80	35	30	30	250	200	180				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	6	100	60	0.08	111574 0300	
3.20	6	100	60	0.08	111574 0320	
3.30	6	100	60	0.08	111574 0330	
3.50	6	100	60	0.08	111574 0350	
3.80	6	115	75	0.08	111574 0380	
4.00	6	115	75	0.08	111574 0400	
4.20	6	115	75	0.08	111574 0420	
4.50	6	130	90	0.08	111574 0450	
4.80	6	130	90	0.08	111574 0480	
5.00	6	130	90	0.08	111574 0500	
5.50	6	150	108	0.12	111574 0550	
5.80	6	150	108	0.12	111574 0580	
6.00	6	150	108	0.12	111574 0600	
6.50	8	165	125	0.12	111574 0650	
6.80	8	165	125	0.12	111574 0680	
7.00	8	165	125	0.12	111574 0700	

1154

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.50	8	180	140	0.12	111574 0750	
7.80	8	180	140	0.12	111574 0780	
8.00	8	180	140	0.12	111574 0800	
8.50	10	205	160	0.15	111574 0850	
8.80	10	205	160	0.15	111574 0880	
9.00	10	205	160	0.15	111574 0900	
9.50	10	205	160	0.15	111574 0950	
9.80	10	225	180	0.15	111574 0980	
10.00	10	225	180	0.15	111574 1000	
10.20	12	240	190	0.15	111574 1020	
10.50	12	240	190	0.15	111574 1050	
10.80	12	240	190	0.15	111574 1080	
11.00	12	240	190	0.15	111574 1100	
11.50	12	265	215	0.15	111574 1150	
11.80	12	265	215	0.15	111574 1180	
12.00	12	265	215	0.15	111574 1200	

1154

ATORN Solid carbide deep-hole drill bit TiAlNplus HPC 20D

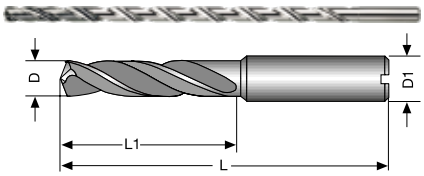
VHM | Werks-norm | Typ TLP | 135° | 30° | 20xD | DIN 6535 HA | TiAlN plus | Vc/fz | 373

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●		●	●	○	○	○	○	○	○				
90	75	65	35	30		80	80	35	30	30	250	200	180				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.00	4	92	50	0.05	111575 0200	
2.20	4	92	50	0.05	111575 0220	
2.30	4	92	50	0.05	111575 0230	
2.40	4	112	70	0.05	111575 0240	
2.50	4	112	70	0.05	111575 0250	
2.70	4	112	70	0.05	111575 0270	
2.80	4	112	70	0.05	111575 0280	
2.90	4	112	70	0.05	111575 0290	
3.00	6	120	80	0.08	111575 0300	
3.20	6	120	80	0.08	111575 0320	
3.30	6	120	80	0.08	111575 0330	
3.50	6	120	80	0.08	111575 0350	
3.80	6	130	90	0.08	111575 0380	
4.00	6	130	90	0.08	111575 0400	
4.20	6	160	110	0.08	111575 0420	
4.50	6	160	110	0.08	111575 0450	
4.60	6	160	120	0.08	111575 0460	
4.80	6	160	120	0.08	111575 0480	
5.00	6	160	120	0.08	111575 0500	
5.50	6	185	140	0.12	111575 0550	
5.80	6	185	140	0.12	111575 0580	

1154

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.00	6	185	140	0.12	111575 0600	
6.50	8	210	160	0.12	111575 0650	
6.80	8	210	160	0.12	111575 0680	
7.00	8	210	160	0.12	111575 0700	
7.50	8	230	180	0.12	111575 0750	
7.80	8	230	180	0.12	111575 0780	
8.00	8	230	180	0.12	111575 0800	
8.50	10	260	195	0.15	111575 0850	
8.80	10	290	230	0.15	111575 0880	
9.00	10	290	230	0.15	111575 0900	
9.50	10	290	230	0.15	111575 0950	
9.80	10	290	230	0.15	111575 0980	
10.00	10	290	230	0.15	111575 1000	
10.20	12	315	268	0.15	111575 1020	
10.50	12	315	268	0.15	111575 1050	
10.80	12	315	268	0.15	111575 1080	
11.00	12	315	268	0.15	111575 1100	
11.50	12	315	268	0.15	111575 1150	
11.80	12	315	268	0.15	111575 1180	
12.00	12	315	268	0.15	111575 1200	

1154

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ATORN Solid carbide deep-hole drill bit TiAlNplus HPC 25D

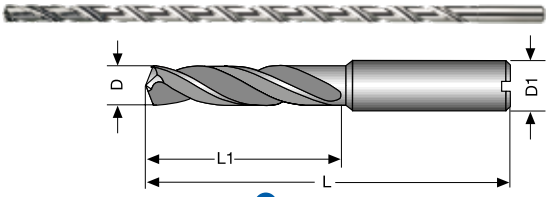
VHM | Werks-norm | Typ U | Typ TLP | 135° | | 30° | h7 | h5 | 25xD | | | TiAlN | Vc/fz | 373

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 60	● 50	● 35	● 35	● 30		● 70	● 70	○ 30	○ 20	○ 20	○ 200	○ 150	○ 160				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	6	135	98	0.08	111576 0300	
3.20	6	135	98	0.08	111576 0320	
3.30	6	150	110	0.08	111576 0330	
3.50	6	150	110	0.08	111576 0350	
3.80	6	160	120	0.08	111576 0380	
4.00	6	160	120	0.08	111576 0400	
4.20	6	160	120	0.08	111576 0420	
4.50	6	180	135	0.08	111576 0450	
4.80	6	180	135	0.08	111576 0480	
5.00	6	180	135	0.08	111576 0500	
5.50	6	205	168	0.12	111576 0550	
5.80	6	205	168	0.12	111576 0580	
6.00	6	205	168	0.12	111576 0600	
6.50	8	240	200	0.12	111576 0650	
6.80	8	240	200	0.12	111576 0680	
7.00	8	240	200	0.12	111576 0700	

1154

● Feed f steel < 1000 N/mm² mm/rev

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.50	8	260	220	0.12	111576 0750	
7.80	8	260	220	0.12	111576 0780	
8.00	8	260	220	0.12	111576 0800	
8.50	10	285	240	0.15	111576 0850	
8.80	10	310	268	0.15	111576 0880	
9.00	10	310	268	0.15	111576 0900	
9.50	10	310	268	0.15	111576 0950	
9.80	10	310	268	0.15	111576 0980	
10.00	10	310	268	0.15	111576 1000	
10.20	12	375	325	0.15	111576 1020	
10.50	12	375	325	0.15	111576 1050	
10.80	12	375	325	0.15	111576 1080	
11.00	12	375	325	0.15	111576 1100	
11.50	12	375	325	0.15	111576 1150	
11.80	12	375	325	0.15	111576 1180	
12.00	12	375	325	0.15	111576 1200	

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ATORN Solid carbide deep-hole drill bit TiAlNplus HPC 30D

VHM | Werks-norm | Typ TLP | 135° | 30° | 30xD | DIN 6535 HA | TiAlN plus | Vc/fz | 377

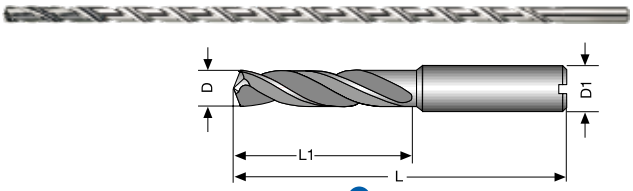
- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●		●	●	○	○	○	○	○	○				
80	60	40	35	30		70	70	30	20	20	200	150	160				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.00	4	115	70	0.05	111577 0200	
2.20	4	115	70	0.05	111577 0220	
2.30	4	115	70	0.05	111577 0230	
2.40	4	138	90	0.05	111577 0240	
2.50	4	138	90	0.05	111577 0250	
2.70	4	138	90	0.05	111577 0270	
2.80	4	138	90	0.05	111577 0280	
2.90	4	138	90	0.05	111577 0290	
3.00	6	150	105	0.05	111577 0300	
3.20	6	150	105	0.08	111577 0320	
3.30	6	185	135	0.08	111577 0330	
3.50	6	185	135	0.08	111577 0350	
3.80	6	185	135	0.08	111577 0380	
4.00	6	185	135	0.08	111577 0400	
4.20	6	185	135	0.08	111577 0420	
4.50	6	215	165	0.08	111577 0450	
4.60	6	215	165	0.08	111577 0460	
4.80	6	215	165	0.08	111577 0480	
5.00	6	215	165	0.08	111577 0500	
5.50	6	230	180	0.12	111577 0550	
5.80	6	230	180	0.12	111577 0580	

1154

D mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.00	6	230	180	0.12	111577 0600	
6.50	8	280	215	0.12	111577 0650	
6.80	8	280	230	0.12	111577 0680	
7.00	8	280	230	0.12	111577 0700	
7.50	8	280	230	0.12	111577 0750	
7.80	8	315	265	0.12	111577 0780	
8.00	8	315	265	0.12	111577 0800	
8.50	10	350	295	0.15	111577 0850	
8.80	10	380	330	0.15	111577 0880	
9.00	10	380	330	0.15	111577 0900	
9.50	10	380	330	0.15	111577 0950	
9.80	10	380	330	0.15	111577 0980	
10.00	10	380	330	0.15	111577 1000	
10.20	12	430	380	0.15	111577 1020	
10.50	12	430	380	0.15	111577 1050	
10.80	12	430	380	0.15	111577 1080	
11.00	12	430	380	0.15	111577 1100	
11.50	12	430	380	0.15	111577 1150	
11.80	12	430	380	0.15	111577 1180	
12.00	12	430	380	0.15	111577 1200	

1154

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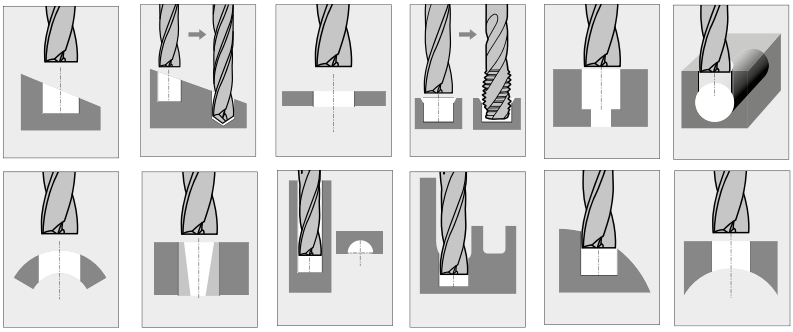
ADF-2D solid carbide flat drill

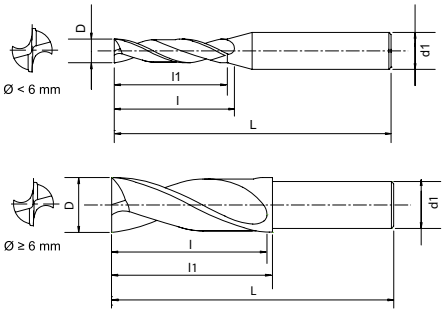
VHM | Werks-norm | 180° | 20° | 2xD | TiAlN | Vc/fz | 377

- Suitable for a variety of applications, such as inclined surfaces, round surfaces, shallow drilling and eccentric drilling etc.
- **Cutting material: solid carbide, EgiAs-coating**
- Outstanding wear resistance thanks to new EgiAs coating
- **Reduced cutting forces thanks to innovative cutting edge geometry**
- Large chip space and adapted point thinning



Long version available on request





material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 80	● 60	○ 30				● 90	● 65				● 140	○ 140			○ 25		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
2	50	10.3	10	4	111711 0200	
2.1	50	10.5	10	4	111711 0210	
2.2	50	11	10.6	4	111711 0220	
2.3	50	11	10.8	4	111711 0230	
2.32	50	11	10.9	4	111711 0232	
2.4	50	12	11	4	111711 0240	
2.42	50	12	11.1	4	111711 0242	
2.5	50	12	11.2	4	111711 0250	
2.54	50	12	11.3	4	111711 0254	
2.58	50	12	11.4	4	111711 0258	
2.6	50	13	11.4	4	111711 0260	
2.7	50	13	11.6	4	111711 0270	
2.76	50	13	11.7	4	111711 0276	
2.78	50	13	11.7	4	111711 0278	
2.8	50	14	11.8	4	111711 0280	
2.9	50	14	11.9	4	111711 0290	
3	55	15	11.4	6	111711 0300	
3.03	55	15	11.5	6	111711 0303	
3.1	55	15	11.6	6	111711 0310	
3.15	55	15	11.7	6	111711 0315	
3.2	55	15	11.8	6	111711 0320	
3.3	55	15	12	6	111711 0330	
3.4	55	16	12.1	6	111711 0340	
3.5	55	16	12.3	6	111711 0350	
3.53	55	16	12.4	6	111711 0353	
3.6	55	16	12.5	6	111711 0360	
3.66	55	16	12.6	6	111711 0366	
3.68	55	16	12.7	6	111711 0368	
3.7	55	16	12.7	6	111711 0370	
3.8	60	19	17.9	6	111711 0380	
3.9	60	19	18.1	6	111711 0390	
4	60	19	18.3	6	111711 0400	
4.03	60	19	18.3	6	111711 0403	

1107

D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
4.1	60	19	18.5	6	111711 0410	
4.2	60	21	18.6	6	111711 0420	
4.3	60	21	18.8	6	111711 0430	
4.4	60	21	19	6	111711 0440	
4.5	60	21	19.2	6	111711 0450	
4.53	60	21	19.3	6	111711 0453	
4.6	60	21	19.4	6	111711 0460	
4.62	60	21	19.4	6	111711 0462	
4.64	60	21	19.5	6	111711 0464	
4.7	60	21	19.6	6	111711 0470	
4.8	65	24.8	24	6	111711 0480	
4.9	65	24.9	24	6	111711 0490	
5	65	25.1	24	6	111711 0500	
5.03	65	25.2	24	6	111711 0503	
5.1	65	25.3	24	6	111711 0510	
5.2	65	25.5	24	6	111711 0520	
5.3	65	25.7	24	6	111711 0530	
5.4	65	27	25.9	6	111711 0540	
5.5	65	27	26.1	6	111711 0550	
5.52	65	27	26.1	6	111711 0552	
5.54	65	27	26.1	6	111711 0554	
5.6	65	27	26.3	6	111711 0560	
5.7	65	27	26.4	6	111711 0570	
5.8	65	27	26.6	6	111711 0580	
5.9	65	27	26.8	6	111711 0590	
6	65	27	27	6	111711 0600	
6.03	70	30	32	6	111711 0603	
6.1	70	30	32	6	111711 0610	
6.2	70	30	32	6	111711 0620	
6.3	70	30	32	6	111711 0630	
6.4	70	30	32	6	111711 0640	
6.5	70	30	32	6	111711 0650	
6.53	70	30	32	6	111711 0653	

1107

D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
6.6	70	30	32	6	111711 0660	
6.7	70	30	32	6	111711 0670	
6.8	70	30	32	6	111711 0680	
6.9	70	30	32	6	111711 0690	
7	70	30	32	6	111711 0700	
7.03	75	34	36	6	111711 0703	
7.1	75	34	36	6	111711 0710	
7.2	75	34	36	6	111711 0720	
7.3	75	34	36	6	111711 0730	
7.4	75	34	36	6	111711 0740	
7.5	75	34	36	6	111711 0750	
7.6	75	34	36	6	111711 0760	
7.7	75	34	36	6	111711 0770	
7.8	75	34	36	6	111711 0780	
7.9	75	34	36	6	111711 0790	
8	75	34	36	8	111711 0800	
8.03	80	38	40	8	111711 0803	
8.1	80	38	40	8	111711 0810	
8.2	80	38	40	8	111711 0820	
8.3	80	38	40	8	111711 0830	
8.4	80	38	40	8	111711 0840	
8.5	80	38	40	8	111711 0850	
8.53	80	38	40	8	111711 0853	
8.6	80	38	40	8	111711 0860	
8.7	80	38	40	8	111711 0870	
8.8	80	38	40	8	111711 0880	
8.9	80	38	40	8	111711 0890	
9	80	38	40	8	111711 0900	
9.03	85	42	44	8	111711 0903	
9.1	85	42	44	8	111711 0910	
9.2	85	42	44	8	111711 0920	
9.3	85	42	44	8	111711 0930	
9.4	85	42	44	8	111711 0940	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
9.5	85	42	44	8	111711 0950	
9.6	85	42	44	8	111711 0960	
9.7	85	42	44	8	111711 0970	
9.8	85	42	44	8	111711 0980	
9.9	85	42	44	8	111711 0990	
10	85	42	44	10	111711 1000	
10.03	90	46	48	10	111711 1003	
10.1	90	46	48	10	111711 1010	
10.2	90	46	48	10	111711 1020	
10.3	90	46	48	10	111711 1030	
10.4	90	46	48	10	111711 1040	
10.5	90	46	48	10	111711 1050	
10.6	90	46	48	10	111711 1060	
10.7	90	46	48	10	111711 1070	
10.8	90	46	48	10	111711 1080	
10.9	90	46	48	10	111711 1090	
11	90	46	48	10	111711 1100	
11.03	95	50	52	10	111711 1103	
11.1	95	50	52	10	111711 1110	
11.2	95	50	52	10	111711 1120	
11.3	95	50	52	10	111711 1130	
11.4	95	50	52	10	111711 1140	
11.5	95	50	52	10	111711 1150	
11.6	95	50	52	10	111711 1160	
11.7	95	50	52	10	111711 1170	
11.8	95	50	52	10	111711 1180	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
11.9	95	50	52	10	111711 1190	
12	95	50	52	12	111711 1200	
12.03	100	56	58	12	111711 1203	
12.1	100	56	58	12	111711 1210	
12.2	100	56	58	12	111711 1220	
12.3	100	56	58	12	111711 1230	
12.4	100	56	58	12	111711 1240	
12.5	100	56	58	12	111711 1250	
12.6	100	56	58	12	111711 1260	
12.7	100	56	58	12	111711 1270	
12.8	100	56	58	12	111711 1280	
12.9	100	56	58	12	111711 1290	
13	100	56	58	12	111711 1300	
13.1	105	60	62	12	111711 1310	
13.2	105	60	62	12	111711 1320	
13.3	105	60	62	12	111711 1330	
13.4	105	60	62	12	111711 1340	
13.5	105	60	62	12	111711 1350	
13.6	105	60	62	12	111711 1360	
13.7	105	60	62	12	111711 1370	
13.8	105	60	62	12	111711 1380	
13.9	105	60	62	12	111711 1390	
14	105	60	62	12	111711 1400	
14.1	110	64	66	12	111711 1410	
14.2	110	64	66	12	111711 1420	
14.3	110	64	66	12	111711 1430	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
14.4	110	64	66	12	111711 1440	
14.5	110	64	66	12	111711 1450	
14.6	110	64	66	12	111711 1460	
14.7	110	64	66	12	111711 1470	
14.8	110	64	66	12	111711 1480	
14.9	110	64	66	12	111711 1490	
15	110	64	66	12	111711 1500	
15.1	115	68	70	12	111711 1510	
15.2	115	68	70	12	111711 1520	
15.3	115	68	70	12	111711 1530	
15.4	115	68	70	12	111711 1540	
15.5	115	68	70	12	111711 1550	
15.6	115	68	70	12	111711 1560	
15.7	115	68	70	12	111711 1570	
15.8	115	68	70	12	111711 1580	
15.9	115	68	70	12	111711 1590	
16	115	68	70	16	111711 1600	
16.5	125	74	76	16	111711 1650	
17	125	74	76	16	111711 1700	
17.5	130	78	80	16	111711 1750	
18	130	78	80	16	111711 1800	
18.5	135	84	86	16	111711 1850	
19	135	84	86	16	111711 1900	
19.5	140	88	90	16	111711 1950	
20	140	88	90	20	111711 2000	

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RESHARPENING AND COATING SERVICE

COMPLETE PROFESSIONAL RECONDITIONING OF YOUR CUTTING TOOLS WITH IMPRESSIVE BEFORE AND AFTER

- Only the best for your tools!
- Up to 85% cost savings thanks to resharpening
- Reduced storage and capital costs
- Shorter turnaround times with maximum productivity and process reliability
- Latest coating technology

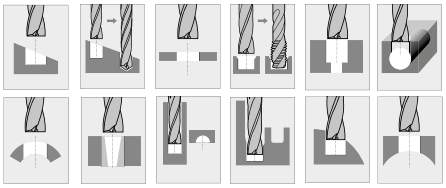


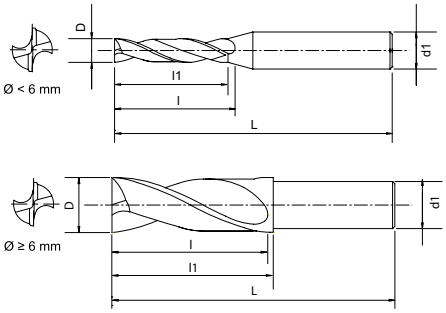
Solid carbide flat drill ADFO-3D

VHM | 20° | 20° | h8 | 3xD | | Vc/fz | 377

- Suitable for a variety of different applications such as bevelled surfaces, round surfaces, flat bores, eccentric bores, etc.
- **Solid carbide cutting material, EgiAs coating**
- Outstanding wear resistance due to new EgiAs coating
- **Reduced cutting forces thanks to innovative cutting edge geometry**
- Large chip space and adapted point thinning
- **Internal coolant supply**







material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80	● 60	● 30	○ 60	○ 50	○ 40	● 90	● 65				○ 140	● 140			○ 25		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L mm	L1 max. mm	l1 mm	d1 mm	art.no.	€
3	55	15	16	4	111713 0300	
3.03	55	15	16	4	111713 0303	
3.1	55	15	16	4	111713 0310	
3.15	55	15	16	4	111713 0315	
3.2	55	15	16	4	111713 0320	
3.3	55	15	16	4	111713 0330	
3.4	55	16	17	4	111713 0340	
3.5	55	16	17	4	111713 0350	
3.53	55	16	17	4	111713 0353	
3.6	55	16	17	4	111713 0360	
3.66	55	16	17	4	111713 0366	
3.68	55	16	17	4	111713 0368	
3.7	55	16	17	4	111713 0370	
3.8	60	19	20	4	111713 0380	
3.9	60	19	20	4	111713 0390	
4	60	19	20	4	111713 0400	
4.03	60	21	22	6	111713 0403	
4.1	60	21	22	6	111713 0410	
4.2	60	21	22	6	111713 0420	
4.3	60	21	22	6	111713 0430	
4.4	60	21	22	6	111713 0440	
4.5	60	21	22	6	111713 0450	
4.53	60	21	21	6	111713 0453	
4.6	60	21	21	6	111713 0460	
4.62	60	21	21	6	111713 0462	
4.64	60	21	21	6	111713 0464	
4.7	60	21	21	6	111713 0470	
4.8	65	24	24	6	111713 0480	
4.9	65	24	24	6	111713 0490	
5	65	24	24	6	111713 0500	
5.03	65	24	24	6	111713 0503	
5.1	65	24	24	6	111713 0510	
5.2	65	24	24	6	111713 0520	
5.3	65	24	24	6	111713 0530	
5.4	65	27	27	6	111713 0540	
5.5	65	27	27	6	111713 0550	
5.52	65	27	27	6	111713 0552	
5.54	65	27	27	6	111713 0554	

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D mm	L mm	L1 max. mm	l1 mm	d1 mm	art.no.	€
5.6	65	27	27	6	111713 0560	
5.7	65	27	27	6	111713 0570	
5.8	65	27	27	6	111713 0580	
5.9	65	27	27	6	111713 0590	
6	65	27	27	6	111713 0600	
6.03	70	30	31	8	111713 0603	
6.1	70	30	31	8	111713 0610	
6.2	70	30	31	8	111713 0620	
6.3	70	30	31	8	111713 0630	
6.4	70	30	31	8	111713 0640	
6.5	70	30	31	8	111713 0650	
6.53	70	30	31	8	111713 0653	
6.6	70	30	31	8	111713 0660	
6.7	70	30	31	8	111713 0670	
6.8	70	30	31	8	111713 0680	
6.9	70	30	31	8	111713 0690	
7	70	30	31	8	111713 0700	
7.03	70	30	31	8	111713 0703	
7.1	75	34	35	8	111713 0710	
7.2	75	34	35	8	111713 0720	
7.3	75	34	35	8	111713 0730	
7.4	75	34	35	8	111713 0740	
7.5	75	34	35	8	111713 0750	
7.6	75	34	35	8	111713 0760	
7.7	75	34	35	8	111713 0770	
7.8	75	34	35	8	111713 0780	
7.9	75	34	35	8	111713 0790	
8	75	34	35	8	111713 0800	
8.03	80	38	39	10	111713 0803	
8.1	80	38	39	10	111713 0810	
8.2	80	38	39	10	111713 0820	
8.3	80	38	39	10	111713 0830	
8.4	80	38	39	10	111713 0840	
8.5	80	38	39	10	111713 0850	
8.53	80	38	39	10	111713 0853	
8.6	80	38	39	10	111713 0860	
8.7	80	38	39	10	111713 0870	
8.8	80	38	39	10	111713 0880	

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D mm	L mm	L1 max. mm	l1 mm	d1 mm	art.no.	€
8.9	80	38	39	10	111713 0890	
9	80	38	39	10	111713 0900	
9.03	80	38	39	10	111713 0903	
9.1	85	42	43	10	111713 0910	
9.2	85	42	43	10	111713 0920	
9.3	85	42	43	10	111713 0930	
9.4	85	42	43	10	111713 0940	
9.5	85	42	43	10	111713 0950	
9.6	85	42	43	10	111713 0960	
9.7	85	42	43	10	111713 0970	
9.8	85	42	43	10	111713 0980	
9.9	85	42	43	10	111713 0990	
10	85	42	43	10	111713 1000	
10.03	90	46	47	12	111713 1003	
10.1	90	46	47	12	111713 1010	
10.2	90	46	47	12	111713 1020	
10.3	90	46	47	12	111713 1030	
10.4	90	46	47	12	111713 1040	
10.5	90	46	47	12	111713 1050	
10.6	90	46	47	12	111713 1060	
10.7	90	46	47	12	111713 1070	
10.8	90	46	47	12	111713 1080	
10.9	90	46	47	12	111713 1090	
11	90	46	47	12	111713 1100	
11.03	90	46	47	12	111713 1103	
11.1	95	50	51	12	111713 1110	
11.2	95	50	51	12	111713 1120	
11.3	95	50	51	12	111713 1130	
11.4	95	50	51	12	111713 1140	
11.5	95	50	51	12	111713 1150	
11.6	95	50	51	12	111713 1160	
11.7	95	50	51	12	111713 1170	
11.8	95	50	51	12	111713 1180	
11.9	95	50	51	12	111713 1190	
12	95	50	51	12	111713 1200	
12.03	100	56	57	14	111713 1203	
12.1	100	56	57	14	111713 1210	
12.2	100	56	57	14	111713 1220	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
12.3	100	56	57	14	111713 1230	
12.4	100	56	57	14	111713 1240	
12.5	100	56	57	14	111713 1250	
12.6	100	56	57	14	111713 1260	
12.7	100	56	57	14	111713 1270	
12.8	100	56	57	14	111713 1280	
12.9	100	56	57	14	111713 1290	
13	100	56	57	14	111713 1300	
13.1	105	60	61	14	111713 1310	
13.2	105	60	61	14	111713 1320	
13.3	105	60	61	14	111713 1330	
13.4	105	60	61	14	111713 1340	
13.5	105	60	61	14	111713 1350	
13.6	105	60	61	14	111713 1360	
13.7	105	60	61	14	111713 1370	
13.8	105	60	61	14	111713 1380	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
13.9	105	60	61	14	111713 1390	
14	105	60	61	14	111713 1400	
14.1	110	64	65	16	111713 1410	
14.2	110	64	65	16	111713 1420	
14.3	110	64	65	16	111713 1430	
14.4	110	64	65	16	111713 1440	
14.5	110	64	65	16	111713 1450	
14.6	110	65	65	16	111713 1460	
14.7	110	65	65	16	111713 1470	
14.8	110	65	65	16	111713 1480	
14.9	110	65	65	16	111713 1490	
15	110	65	65	16	111713 1500	
15.1	115	69	69	16	111713 1510	
15.2	115	69	69	16	111713 1520	
15.3	115	69	69	16	111713 1530	
15.4	115	69	69	16	111713 1540	

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D mm	L mm	L1 max. mm	L1 mm	d1 mm	art.no.	€
15.5	115	69	69	16	111713 1550	
15.6	115	69	69	16	111713 1560	
15.7	115	69	69	16	111713 1570	
15.8	115	69	69	16	111713 1580	
15.9	115	69	69	16	111713 1590	
16	115	69	69	16	111713 1600	
16.5	125	75	75	18	111713 1650	
17	125	75	75	18	111713 1700	
17.5	130	79	79	18	111713 1750	
18	130	79	79	18	111713 1800	
18.5	135	85	85	20	111713 1850	
19	135	85	85	20	111713 1900	
19.5	140	88	89	20	111713 1950	
20	140	88	89	20	111713 2000	

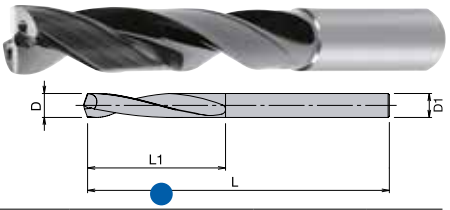
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ATORN Solid carbide flat drill FLAT 3D with internal cooling

VHM | DIN 6537 | Typ N | 180° | 30° | h7 | h6 | 3xD | Z 2 | TiAlN | Vc/fz | 373

- **For producing flat-bottomed holes in one single operation**
- **Facilitates drilling in a single operation on inclined surfaces**
- Improved drilling quality with special cutting and 4-guide chamfer geometry
- Better self-centring

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		●	●				○	●	●		○		
	Cutting speed Vc m/min.	100	90	40	40	25		80	80				220	180	120		25		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	14	62	6	0.08	111709 0030	
3.10	14	62	6	0.08	111709 0031	
3.20	14	62	6	0.08	111709 0032	
3.30	14	62	6	0.08	111709 0033	
3.40	14	62	6	0.08	111709 0034	
3.50	14	62	6	0.08	111709 0035	
3.60	14	62	6	0.08	111709 0036	
3.70	14	62	6	0.08	111709 0037	
3.80	17	66	6	0.08	111709 0038	
3.90	17	66	6	0.08	111709 0039	
4.00	17	66	6	0.08	111709 0040	
4.10	17	66	6	0.08	111709 0041	
4.20	17	66	6	0.08	111709 0042	
4.30	17	66	6	0.08	111709 0043	
4.40	17	66	6	0.08	111709 0044	
4.50	17	66	6	0.08	111709 0045	
4.60	17	66	6	0.08	111709 0046	
4.65	17	66	6	0.08	111709 0465	
4.70	17	66	6	0.08	111709 0047	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.80	20	66	6	0.08	111709 0048	
4.90	20	66	6	0.08	111709 0049	
5.00	20	66	6	0.13	111709 0050	
5.10	20	66	6	0.13	111709 0051	
5.20	20	66	6	0.13	111709 0052	
5.30	20	66	6	0.13	111709 0053	
5.40	20	66	6	0.13	111709 0054	
5.50	20	66	6	0.13	111709 0055	
5.55	20	66	6	0.13	111709 0555	
5.60	20	66	6	0.13	111709 0056	
5.70	20	66	6	0.13	111709 0057	
5.80	20	66	6	0.13	111709 0058	
5.90	20	66	6	0.13	111709 0059	
6.00	20	66	6	0.13	111709 0060	
6.10	24	79	8	0.13	111709 0061	
6.20	24	79	8	0.13	111709 0062	
6.30	24	79	8	0.13	111709 0063	
6.40	24	79	8	0.13	111709 0064	
6.50	24	79	8	0.13	111709 0065	

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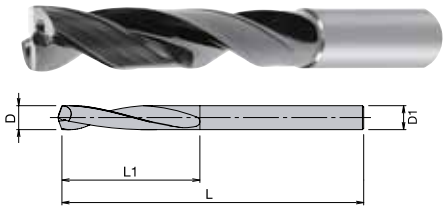
D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.60	24	79	8	0.13	111709 0066	
6.70	24	79	8	0.13	111709 0067	
6.80	24	79	8	0.13	111709 0068	
6.90	24	79	8	0.13	111709 0069	
7.00	24	79	8	0.13	111709 0070	
7.10	29	79	8	0.13	111709 0071	
7.20	29	79	8	0.13	111709 0072	
7.30	29	79	8	0.13	111709 0073	
7.40	29	79	8	0.13	111709 0074	
7.50	29	79	8	0.13	111709 0075	
7.60	29	79	8	0.13	111709 0076	
7.70	29	79	8	0.13	111709 0077	
7.80	29	79	8	0.13	111709 0078	
7.90	29	79	8	0.13	111709 0079	
8.00	29	79	8	0.13	111709 0080	
8.10	35	89	10	0.13	111709 0081	
8.20	35	89	10	0.13	111709 0082	
8.30	35	89	10	0.13	111709 0083	
8.40	35	89	10	0.13	111709 0084	
8.50	35	89	10	0.13	111709 0085	
8.60	35	89	10	0.13	111709 0086	
8.70	35	89	10	0.13	111709 0087	
8.80	35	89	10	0.13	111709 0088	
8.90	35	89	10	0.13	111709 0089	
9.00	35	89	10	0.14	111709 0090	
9.10	35	89	10	0.14	111709 0091	
9.20	35	89	10	0.14	111709 0092	
9.30	35	89	10	0.14	111709 0093	
9.40	35	89	10	0.14	111709 0094	
9.50	35	89	10	0.14	111709 0095	
9.60	35	89	10	0.14	111709 0096	
9.70	35	89	10	0.14	111709 0097	
9.80	35	89	10	0.14	111709 0098	
9.90	35	89	10	0.14	111709 0099	
10.00	35	89	10	0.14	111709 0100	
10.10	40	102	12	0.14	111709 0101	
10.20	40	102	12	0.14	111709 0102	
10.30	40	102	12	0.14	111709 0103	
10.40	40	102	12	0.14	111709 0104	
10.50	40	102	12	0.14	111709 0105	
						1154

D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.60	40	102	12	0.14	111709 0106	
10.70	40	102	12	0.14	111709 0107	
10.80	40	102	12	0.14	111709 0108	
10.90	40	102	12	0.14	111709 0109	
11.00	40	102	12	0.14	111709 0110	
11.10	40	102	12	0.16	111709 0111	
11.20	40	102	12	0.16	111709 0112	
11.30	40	102	12	0.16	111709 0113	
11.40	40	102	12	0.16	111709 0114	
11.50	40	102	12	0.16	111709 0115	
11.60	40	102	12	0.16	111709 0116	
11.70	40	102	12	0.16	111709 0117	
11.80	40	102	12	0.16	111709 0118	
11.90	40	102	12	0.16	111709 0119	
12.00	40	102	12	0.16	111709 0120	
12.50	43	107	14	0.16	111709 0125	
12.80	43	107	14	0.16	111709 0128	
13.00	43	107	14	0.16	111709 0130	
13.50	43	107	14	0.16	111709 0135	
13.80	43	107	14	0.16	111709 0138	
14.00	43	107	14	0.16	111709 0140	
14.50	45	115	16	0.16	111709 0145	
14.80	45	115	16	0.16	111709 0148	
15.00	45	115	16	0.18	111709 0150	
15.50	45	115	16	0.18	111709 0155	
15.80	45	115	16	0.18	111709 0158	
16.00	45	115	16	0.18	111709 0160	
16.50	51	123	18	0.18	111709 0165	
16.80	51	123	18	0.18	111709 0168	
17.00	51	123	18	0.18	111709 0170	
17.50	51	123	18	0.18	111709 0175	
17.80	51	123	18	0.18	111709 0178	
18.00	51	123	18	0.20	111709 0180	
18.50	55	131	20	0.20	111709 0185	
18.80	55	131	20	0.20	111709 0188	
19.00	55	131	20	0.20	111709 0190	
19.50	55	131	20	0.20	111709 0195	
19.80	55	131	20	0.20	111709 0198	
20.00	55	131	20	0.23	111709 0200	
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ATORN Solid carbide flat drill FLAT 5D with internal cooling

VHM | DIN 6537 | Typ N | 180° | 30° | h7 | h6 | 5xD | Z 2 | TiAlN | Vc/fz | 373

- **For producing flat-bottomed holes in a single operation**
- **facilitates drilling in a single operation on inclined surfaces**
- Improved drilling quality with special cutting and 4-guide chamfer geometry
- better self-centring



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 100	● 90	● 40	○ 40	○ 35		● 80	● 80				○ 220	● 180	● 120		○ 25		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	28	66	6	0.08	111710 0030	
3.10	28	66	6	0.08	111710 0031	
3.20	28	66	6	0.08	111710 0032	
3.30	28	66	6	0.08	111710 0033	
3.40	28	66	6	0.08	111710 0034	
3.50	28	66	6	0.08	111710 0035	
3.60	28	66	6	0.08	111710 0036	
3.70	28	66	6	0.08	111710 0037	
3.80	36	74	6	0.08	111710 0038	
3.90	36	74	6	0.08	111710 0039	
4.00	36	74	6	0.08	111710 0040	
4.10	36	74	6	0.08	111710 0041	
4.20	36	74	6	0.08	111710 0042	
4.30	36	74	6	0.08	111710 0043	
4.40	36	74	6	0.08	111710 0044	
4.50	36	74	6	0.08	111710 0045	
4.60	36	74	6	0.08	111710 0046	
4.65	36	74	6	0.08	111710 0465	
4.70	36	74	6	0.08	111710 0047	
4.80	44	82	6	0.08	111710 0048	
4.90	44	82	6	0.08	111710 0049	
5.00	44	82	6	0.13	111710 0050	
5.10	44	82	6	0.13	111710 0051	
5.20	44	82	6	0.13	111710 0052	
5.30	44	82	6	0.13	111710 0053	
5.40	44	82	6	0.13	111710 0054	
5.50	44	82	6	0.13	111710 0055	
5.55	44	82	6	0.13	111710 0555	
5.60	44	82	6	0.13	111710 0056	
5.70	44	82	6	0.13	111710 0057	
5.80	44	82	6	0.13	111710 0058	
5.90	44	82	6	0.13	111710 0059	
6.00	44	82	6	0.13	111710 0060	
6.10	53	91	8	0.13	111710 0061	
6.20	53	91	8	0.13	111710 0062	
6.30	53	91	8	0.13	111710 0063	
6.40	53	91	8	0.13	111710 0064	
6.50	53	91	8	0.13	111710 0065	
6.60	53	91	8	0.13	111710 0066	
6.70	53	91	8	0.13	111710 0067	
6.80	53	91	8	0.13	111710 0068	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.90	53	91	8	0.13	111710 0069	
7.00	53	91	8	0.13	111710 0070	
7.10	53	91	8	0.13	111710 0071	
7.20	53	91	8	0.13	111710 0072	
7.30	53	91	8	0.13	111710 0073	
7.40	53	91	8	0.13	111710 0074	
7.50	53	91	8	0.13	111710 0075	
7.60	53	91	8	0.13	111710 0076	
7.70	53	91	8	0.13	111710 0077	
7.80	53	91	8	0.13	111710 0078	
7.90	53	91	8	0.13	111710 0079	
8.00	53	91	8	0.13	111710 0080	
8.10	61	103	10	0.13	111710 0081	
8.20	61	103	10	0.13	111710 0082	
8.30	61	103	10	0.13	111710 0083	
8.40	61	103	10	0.13	111710 0084	
8.50	61	103	10	0.13	111710 0085	
8.60	61	103	10	0.13	111710 0086	
8.70	61	103	10	0.13	111710 0087	
8.80	61	103	10	0.13	111710 0088	
8.90	61	103	10	0.13	111710 0089	
9.00	61	103	10	0.14	111710 0090	
9.10	61	103	10	0.14	111710 0091	
9.20	61	103	10	0.14	111710 0092	
9.30	61	103	10	0.14	111710 0093	
9.40	61	103	10	0.14	111710 0094	
9.50	61	103	10	0.14	111710 0095	
9.60	61	103	10	0.14	111710 0096	
9.70	61	103	10	0.14	111710 0097	
9.80	61	103	10	0.14	111710 0098	
9.90	61	103	10	0.14	111710 0099	
10.00	61	103	10	0.14	111710 0100	
10.10	69	116	12	0.14	111710 0101	
10.20	69	116	12	0.14	111710 0102	
10.30	69	116	12	0.14	111710 0103	
10.40	69	116	12	0.14	111710 0104	
10.50	69	116	12	0.14	111710 0105	
10.60	69	116	12	0.14	111710 0106	
10.70	69	116	12	0.14	111710 0107	
10.80	69	116	12	0.14	111710 0108	
10.90	69	116	12	0.14	111710 0109	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.00	69	116	12	0.16	111710 0110	
11.10	69	116	12	0.16	111710 0111	
11.20	69	116	12	0.16	111710 0112	
11.30	69	116	12	0.16	111710 0113	
11.40	69	116	12	0.16	111710 0114	
11.50	69	116	12	0.16	111710 0115	
11.60	69	116	12	0.16	111710 0116	
11.70	69	116	12	0.16	111710 0117	
11.80	69	116	12	0.16	111710 0118	
11.90	69	116	12	0.16	111710 0119	
12.00	69	116	12	0.16	111710 0120	
12.50	75	122	14	0.16	111710 0125	
12.80	75	122	14	0.16	111710 0128	
13.00	75	122	14	0.16	111710 0130	
13.50	75	122	14	0.16	111710 0135	
13.80	75	122	14	0.16	111710 0138	
14.00	75	122	14	0.16	111710 0140	
14.50	81	131	16	0.16	111710 0145	
						1154

D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14.80	81	131	16	0.16	111710 0148	
15.00	81	131	16	0.18	111710 0150	
15.50	81	131	16	0.18	111710 0155	
15.80	81	131	16	0.18	111710 0158	
16.00	81	131	16	0.18	111710 0160	
16.50	91	141	18	0.18	111710 0165	
16.80	91	141	18	0.18	111710 0168	
17.00	91	141	18	0.18	111710 0170	
17.50	91	141	18	0.18	111710 0175	
17.80	91	141	18	0.18	111710 0178	
18.00	91	141	18	0.20	111710 0180	
18.50	99	151	20	0.20	111710 0185	
18.80	99	151	20	0.20	111710 0188	
19.00	99	151	20	0.20	111710 0190	
19.50	99	151	20	0.20	111710 0195	
19.80	99	151	20	0.20	111710 0198	
20.00	99	151	20	0.23	111710 0200	
						1154

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ATORN Solid carbide high-performance drill bit HIGH FEED 5D

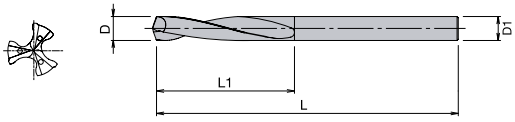
VHM | DIN 6537 | Typ U | 135° | 30° | h7 | h6 | 5xD | Z 3 | TiAlN plus | Vc/fz | 375

- **3-edged drill for high feed rate**
- **Cutting material: Ultra micro-grain SC TiAlNplus**
- **special HFD point thinning reduces cutting forces and generates short chip breaking**
- large chip spaces allow good chip removal
- optimum centring characteristics

for high feed rate

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140	● 110	● 90	○ 60	○ 50		● 100	● 130										
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.00	28	66	6	0.28	111585 0300	
3.10	28	66	6	0.28	111585 0310	
3.20	28	66	6	0.28	111585 0320	
3.30	28	66	6	0.28	111585 0330	
3.40	28	66	6	0.28	111585 0340	
3.50	28	66	6	0.28	111585 0350	
3.60	28	66	6	0.28	111585 0360	
3.70	28	66	6	0.28	111585 0370	
3.80	36	74	6	0.28	111585 0380	
3.90	36	74	6	0.28	111585 0390	
4.00	36	74	6	0.28	111585 0400	
4.10	36	74	6	0.30	111585 0410	
4.20	36	74	6	0.30	111585 0420	
4.30	36	74	6	0.30	111585 0430	
4.40	36	74	6	0.30	111585 0440	
4.50	36	74	6	0.30	111585 0450	
4.60	36	74	6	0.30	111585 0460	
4.70	36	74	6	0.30	111585 0470	
4.80	44	82	6	0.30	111585 0480	
4.90	44	82	6	0.30	111585 0490	
5.00	44	82	6	0.30	111585 0500	
5.10	44	82	6	0.33	111585 0510	
5.20	44	82	6	0.33	111585 0520	
5.30	44	82	6	0.33	111585 0530	
5.40	44	82	6	0.33	111585 0540	
5.50	44	82	6	0.33	111585 0550	
5.60	44	82	6	0.33	111585 0560	
5.70	44	82	6	0.33	111585 0570	
5.80	44	82	6	0.33	111585 0580	
5.90	44	82	6	0.33	111585 0590	
6.00	44	82	6	0.33	111585 0600	
6.10	53	91	8	0.38	111585 0610	
6.20	53	91	8	0.38	111585 0620	
6.30	53	91	8	0.38	111585 0630	
6.40	53	91	8	0.38	111585 0640	
6.50	53	91	8	0.38	111585 0650	
6.60	53	91	8	0.38	111585 0660	
6.70	53	91	8	0.38	111585 0670	
6.80	53	91	8	0.38	111585 0680	
6.90	53	91	8	0.38	111585 0690	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.00	53	91	8	0.38	111585 0700	
7.10	53	91	8	0.38	111585 0710	
7.20	53	91	8	0.38	111585 0720	
7.30	53	91	8	0.38	111585 0730	
7.40	53	91	8	0.38	111585 0740	
7.50	53	91	8	0.38	111585 0750	
7.60	53	91	8	0.38	111585 0760	
7.70	53	91	8	0.38	111585 0770	
7.80	53	91	8	0.38	111585 0780	
7.90	53	91	8	0.38	111585 0790	
8.00	53	91	8	0.38	111585 0800	
8.10	61	103	10	0.45	111585 0810	
8.20	61	103	10	0.45	111585 0820	
8.30	61	103	10	0.45	111585 0830	
8.40	61	103	10	0.45	111585 0840	
8.50	61	103	10	0.45	111585 0850	
8.60	61	103	10	0.45	111585 0860	
8.70	61	103	10	0.45	111585 0870	
8.80	61	103	10	0.45	111585 0880	
8.90	61	103	10	0.45	111585 0890	
9.00	61	103	10	0.45	111585 0900	
9.10	61	103	10	0.45	111585 0910	
9.20	61	103	10	0.45	111585 0920	
9.30	61	103	10	0.45	111585 0930	
9.40	61	103	10	0.45	111585 0940	
9.50	61	103	10	0.45	111585 0950	
9.60	61	103	10	0.45	111585 0960	
9.70	61	103	10	0.45	111585 0970	
9.80	61	103	10	0.45	111585 0980	
9.90	61	103	10	0.45	111585 0990	
10.00	61	103	10	0.45	111585 1000	
10.10	71	118	12	0.52	111585 1010	
10.20	71	118	12	0.52	111585 1020	
10.30	71	118	12	0.52	111585 1030	
10.40	71	118	12	0.52	111585 1040	
10.50	71	118	12	0.52	111585 1050	
10.60	71	118	12	0.52	111585 1060	
10.70	71	118	12	0.52	111585 1070	
10.80	71	118	12	0.52	111585 1080	
10.90	71	118	12	0.52	111585 1090	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.00	71	118	12	0.52	111585 1100	
11.10	71	118	12	0.52	111585 1110	
11.20	71	118	12	0.52	111585 1120	
11.30	71	118	12	0.52	111585 1130	
11.40	71	118	12	0.52	111585 1140	
11.50	71	118	12	0.52	111585 1150	
11.60	71	118	12	0.52	111585 1160	
11.70	71	118	12	0.52	111585 1170	
11.80	71	118	12	0.52	111585 1180	
11.90	71	118	12	0.52	111585 1190	
12.00	71	118	12	0.52	111585 1200	
12.20	77	124	14	0.58	111585 1220	
12.50	77	124	14	0.58	111585 1250	
12.80	77	124	14	0.58	111585 1280	
13.00	77	124	14	0.58	111585 1300	
13.20	77	124	14	0.58	111585 1320	
13.50	77	124	14	0.58	111585 1350	
13.80	77	124	14	0.58	111585 1380	
14.00	77	124	14	0.58	111585 1400	
14.20	83	133	16	0.63	111585 1420	
14.50	83	133	16	0.63	111585 1450	
14.80	83	133	16	0.63	111585 1480	

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D mm	L1 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.00	83	133	16	0.63	111585 1500	
15.10	83	133	16	0.63	111585 1510	
15.20	83	133	16	0.63	111585 1520	
15.50	83	133	16	0.63	111585 1550	
15.80	83	133	16	0.63	111585 1580	
16.00	83	133	16	0.63	111585 1600	
16.20	93	143	18	0.68	111585 1620	
16.50	93	143	18	0.68	111585 1650	
16.80	93	143	18	0.68	111585 1680	
17.00	93	143	18	0.68	111585 1700	
17.20	93	143	18	0.68	111585 1720	
17.50	93	143	18	0.68	111585 1750	
17.80	93	143	18	0.68	111585 1780	
18.00	93	143	18	0.68	111585 1800	
18.20	101	153	20	0.70	111585 1820	
18.50	101	153	20	0.70	111585 1850	
18.80	101	153	20	0.70	111585 1880	
19.00	101	153	20	0.70	111585 1900	
19.20	101	153	20	0.70	111585 1920	
19.50	101	153	20	0.70	111585 1950	
19.80	101	153	20	0.70	111585 1980	
20.00	101	153	20	0.70	111585 2000	

1154

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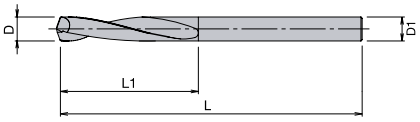
ATORN Solid carbide drill reamers

VHM | DIN 6537 | H7 | Typ N | 140° | 30° | h6 | 5xD | Z 2 | TiAlN | Vc/fz | 375

- **Drilling and reaming in one operation**
- Reduced machining and auxiliary processing times
- Production of bores in **tolerance zone H7**
- 2 boring inserts and 4 reaming inserts for high surface quality, dimensional stability and true-running accuracy

Drilling and reaming in one work step

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60	● 45	● 30				● 50	● 50										
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														





D mm	L1 mm	L mm	D1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.98	36	74	6	0.14	111701 0398	
3.99	36	74	6	0.14	111701 0399	
4.00	36	74	6	0.14	111701 0400	
4.01	36	74	6	0.14	111701 0401	
4.02	36	74	6	0.14	111701 0402	
4.98	44	82	6	0.17	111701 0498	
4.99	44	82	6	0.17	111701 0499	
5.00	44	82	6	0.17	111701 0500	
5.01	44	82	6	0.17	111701 0501	
5.02	44	82	6	0.17	111701 0502	
5.98	53	91	6	0.19	111701 0598	
5.99	53	91	6	0.19	111701 0599	
6.00	53	91	6	0.19	111701 0600	
6.01	53	91	6	0.19	111701 0601	
6.02	53	91	6	0.19	111701 0602	
7.98	53	91	8	0.23	111701 0798	
7.99	53	91	8	0.23	111701 0799	

1154

D mm	L1 mm	L mm	D1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.00	53	91	8	0.23	111701 0800	
8.01	53	91	8	0.23	111701 0801	
8.02	53	91	8	0.23	111701 0802	
9.98	61	103	10	0.28	111701 0998	
9.99	61	102	10	0.28	111701 0999	
10.00	61	103	10	0.28	111701 1000	
10.01	61	103	10	0.28	111701 1001	
10.02	61	103	10	0.28	111701 1002	
11.98	71	118	12	0.32	111701 1198	
11.99	71	118	12	0.32	111701 1199	
12.00	71	118	12	0.32	111701 1200	
12.01	71	118	12	0.32	111701 1201	
12.02	71	118	12	0.32	111701 1202	
14.00	77	124	14	0.35	111701 1400	
16.00	83	133	16	0.37	111701 1600	
18.00	93	143	18	0.39	111701 1800	
20.00	101	153	20	0.40	111701 2000	

1154

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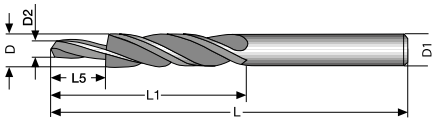


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ATORN Solid carbide short step drill bit

VHM | Werks-norm | Typ N | 140° | TiAlN | Vc/fz | 378

- ∅ tolerance h8
- **Cutting material: solid carbide, TiAlN-coated**
- For economical bore and countersink production in one operation
- Tight concentricity tolerance for precise alignment
- **Especially suitable for NC machines and automatic units**
- **Note:** The cutting speed is determined by the large diameter, while the feed rate is determined by the small diameter



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 70	● 60	● 40	● 35	○ 25	○ 25	● 70	● 100	○ 30	○ 35		● 200	● 170	● 180		○ 25		
	Cutting speed Vc m/min.																		

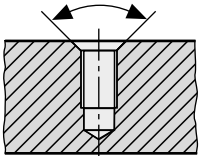
Please adjust these guidelines according to clamping operation and machine set-up.

90°

- **For core drilling**
- Step length in accordance with DIN 8378
- **For DIN-ISO 273 screw through-holes and DIN 74-1 countersinks, ISO 2009-2010 and DIN 963-966 countersunk screws**



90°



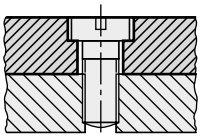
for thread	D mm	D2 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	90° countersink angle art.no.	€
M3	6.0	2.5	6	8.8	28	66	0.10	102202 0003	
M4	6.0	3.3	6	11.4	28	66	0.10	102202 0004	
M5	6.0	4.2	6	13.6	28	66	0.10	102202 0005	
M6	8.0	5	8	16.5	41	79	0.10	102202 0006	
M8	10	6.8	10	21	47	89	0.12	102202 0008	
M10	12	8.5	12	25.5	55	102	0.15	102202 0010	
M12	14	10.2	14	30	60	107	0.15	102202 0012	

1154

180°

- **For through-holes**
- Step length in accordance with DIN 8376,
- **For screw through-holes in accordance with DIN-ISO 273 and countersinks in accordance with DIN 74 Part 2, Type H, J and K, medium version; for screws in accordance with DIN 912, 6912 and 7984, ISO 1207 (DIN 84)**





for thread	D mm	D2 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	180° countersink angle art.no.	€
M3	6	3.4	6	9	28	64	0.10	102211 0003	
M4	8	4.5	8	11	37	79	0.10	102211 0004	
M5	10	5.5	10	13	43	89	0.11	102211 0005	
M6	11	6.6	12	15	55	102	0.11	102211 0006	
M8	15	9	16	19	60	115	0.14	102211 0008	
M10	18	11	18	23	62	123	0.14	102211 0010	

1154

Overview of modular drilling tools

	NC spotting drill bit	Solid drill					
							
Brand	palbit	ATORN					palbit
System	CHT	ETD 840	T-A Pro	T-A® Original GEN2 T-A®	Phoenix PD	PDZ	SCS
ISO application area	P M K	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N H	P M K S N
Type/info	90°				XCMT	ZPNT	SPKX
Drilling depth		3, 7 and 10 x D	to 15 x D	to 32 x D	2, 3, 4 and 5 x D	2 x D, 3 x D	3 and 4 x D
Diameter [mm]	13	8 - 40	11.5 - 47.5	9.5 - 114	15 - 63	16 - 43	13 - 50
Shank	Straight	Straight	Straight	cylinder / MT	Straight	Straight	Straight
Cutting material	HM	HM	HSS / HM	HSS-E / HM	HM	HM	HM
Coating	PH7920	TiAlN	AM200, AM300, TiAlN, TiCN	AM 200 / 300™	XP / CK	XP	PH6920/6930
Catalogue page	**165**	**166**	**172**	**179**	**192**	**199**	**201**

	Solid drill					Drilling and turning tool
						
Brand	palbit	palbit	palbit	palbit	SARA	SARA
System	SCC	TDS	TDC	Vortex Drill	SARADRILL	SARAcut 2.0
ISO application area	P M K S N	P M K S N	P M K S N	P M K N	P M K N H	P M K S N
Type/info	SPKX	WCKX	WCKX	WCKX		XPNT, XPET
Drilling depth	3 and 4 x D	3 x D	3 x D	10 x D	to 15 x D	1.5 and 2.5 x D
Diameter	50 - 80	13 - 58	59 - 80	45 - 180	49 - 270	8 - 32
Shank	Straight	Straight	Straight	Straight	MT	Straight
Cutting material	HM	HM	HM	HM	HSS-E-PM	HM
Coating	PH6920/6930	PH6920/6930	PH6920/6930	PH6920/6930	(TiN)	SP300/350, SW200
Catalogue page	**204**	**206**	**208**	**209**	**214**	**218**

	Core and countersink drill			reverse countersinks
Sorting by type and diameter				
Brand	ATORN	ATORN	palbit	ATORN
System	Precision boring bar	Core and countersink drill		Reverse countersink 45°/180°
ISO application area	P M K S N	P M K S N	P M K S N	P M K S N
Type/info	CCMT	CCMT	SPKX	TCMT
Drilling depth	2.5 x D			
Diameter	10 - 32	16 - 48	10 - 25	15 - 76
Shank	Straight	Straight	Straight	Straight
Cutting material	HM	HM	HM	HM
Coating	ICI-dependent	ICI-dependent	PH6920/6930	ICI-dependent
Catalogue page	**219**	**220**	**221**	**222**

palbit Indexable inserts NC spotting drill bit CHT

90° | Vc/fz | 385

- Surface-hardened carrier tool
- **for NC spot drilling and chamfering**
- **Suitable indexable cutting inserts:**
  SOMT 11T308 for universal applications
  SOGT 11T303 for engraving



Centring, chamfering, engraving



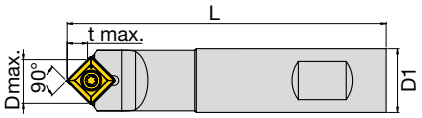
100800 1310

100800 1315

Single

Designation	D max. mm	t max. mm	D1 mm	L mm	suitable indexable inserts	Number of index. inserts	A1	B1	art.no.	€
CHT S16H N11-45	13	6.5	16	100	S.MT 11T3..	1	A1	B1	100800 1310	
CHT S16M N11-45	13	6.5	16	150	S.MT 11T3..	1	A1	B1	100800 1315	

2174



NC spotting drill bit incl. 10 indexable cutting inserts

Sets

Designation	Contents	art.no.	€
PK SOMT 11T308 CHTS16H	Indexable inserts centre drill bits L = 100 mm incl. 10 x SOMT 11T308	100801 1310	
PK SOMT 11T308 CHTS16M	Indexable inserts centre drill bits L = 150 mm incl. 10 x SOMT 11T308	100801 1315	

2174

Indexable cutting inserts

ISO P M K

ISO designation		PH7920 art.no.	€
SOMT 11T308 (UNI)	10	100802 1108	
SOGT 11T303 (GR)	10	100802 1103	

2170



SOMT 11T308 SOGT 11T303

Spare parts

	Screw art.no.	€
A1	321099 0009	

3160

	TORX art.no.	€
B1	703053 0150	

7114

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- **Latest coating technology**



ETD 840 EXCHANGEABLE TIP DRILL

Innovative, efficient cutting edge geometry

SARA® The ETD 840 exchangeable tip drill covers a variety of materials. Thanks to the modern cutting material and innovative geometry, the tools offer enormous capacity. What's more, they come in a variety of different materials with maximum process reliability and efficiency. You can benefit from the enormous breadth and depth of this range.

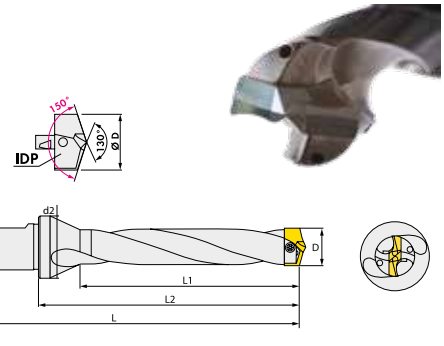


1. Universal geometry for a wide range of applications
2. Available tool lengths in 3xD, 5xD, 7xD and 10xD
3. Diameter 8-50 mm, exchangeable drill heads available from the manufacturer in 0.1 mm diameter increments
4. Polished chip chambers for low-vibration, reliable chip removal
5. Supports made from high-strength, heat-resistant powdered metal

SARA® ETD 840 indexable insert drill bit

3xD 5xD 7xD Vc/fz 385

- **Drilling in the 8.0 - 40.0 mm diameter range**
- **Innovative cutting edge geometry**
- **Up to 10xD and Ø 50 mm available on request**
- Made from high-strength, heat-resistant powdered metal
- Polished chip chambers for low-vibration, reliable chip removal
- **Indexable inserts available from the manufacturer in 0.1 mm diameter increments**
- High bore surface quality and precision
- **Coated bodies for increased wear-resistance available on request**





3xD

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	87	32	42		B1			E1	106003 0080	
8.5 - 8.9	10 (HA)	18	89	34	44		B1			E1	106003 0085	
9.0 - 9.4	10 (HA)	18	92	36	47		B2			E1	106003 0090	
9.5 - 9.9	12 (HA)	18	97	38	49		B2			E1	106003 0095	
10.0 - 10.4	12 (HA)	18	99	40	51		B3			E1	106003 0100	
10.5 - 10.9	12 (HA)	18	102	42	54		B3			E1	106003 0105	
11.0 - 11.4	12 (HA)	18	104	44	56		B3			E1	106003 0110	
11.5 - 11.9	12 (HA)	18	107	46	59		B3			E1	106003 0115	
12.0 - 12.4	16 (HB)	21	109	48	61	A1	B4	C1		E1	106003 0120	
12.5 - 12.9	16 (HB)	21	111	50	63	A1	B4	C1		E1	106003 0125	
13.0 - 13.4	16 (HB)	21	114	52	66	A1	B4	C1		E1	106003 0130	
13.5 - 13.9	16 (HB)	21	116	54	68	A1	B4	C1		E1	106003 0135	
14.0 - 14.4	16 (HB)	21	119	56	71	A1	B5		D1	E2	106003 0140	
14.5 - 14.9	20 (HB)	27	123	58	73	A1	B5		D1	E2	106003 0145	
15.0 - 15.4	20 (HB)	27	127	60	77	A1	B5		D1	E2	106003 0150	
15.5 - 15.9	20 (HB)	27	130	62	80	A1	B5		D1	E2	106003 0155	
16.0 - 16.4	20 (HB)	27	132	64	82	A1	B6		D1	E2	106003 0160	
16.5 - 16.9	20 (HB)	27	135	66	85	A1	B6		D1	E2	106003 0165	
17.0 - 17.4	20 (HB)	27	137	68	87	A1	B6		D1	E2	106003 0170	
17.5 - 17.9	20 (HB)	27	139	70	89	A1	B6		D1	E2	106003 0175	
18.0 - 18.4	20 (HB)	27	142	72	92	A1	B7		D1	E3	106003 0180	
18.5 - 18.9	20 (HB)	27	144	74	94	A1	B7		D1	E3	106003 0185	
19.0 - 19.4	20 (HB)	27	147	76	97	A1	B7		D1	E3	106003 0190	
19.5 - 19.9	20 (HB)	27	149	78	99	A1	B7		D1	E3	106003 0195	
20.0 - 20.4	25 (HB)	32	157	80	101	A2	B8		D2	E3	106003 0200	
20.5 - 20.9	25 (HB)	32	160	82	104	A2	B8		D2	E3	106003 0205	
21.0 - 21.4	25 (HB)	32	162	84	106	A2	B8		D2	E3	106003 0210	
21.5 - 21.9	25 (HB)	32	165	86	109	A2	B8		D2	E3	106003 0215	
22.0 - 22.4	25 (HB)	32	167	88	111	A2	B9		D2	E3	106003 0220	
22.5 - 22.9	25 (HB)	39	169	90	113	A2	B9		D2	E3	106003 0225	
23.0 - 23.4	25 (HB)	39	172	92	116	A2	B9		D2	E3	106003 0230	
23.5 - 23.9	25 (HB)	39	174	94	118	A2	B9		D2	E3	106003 0235	
24.0 - 24.4	32 (HB)	39	181	96	121	A2	B10		D2	E4	106003 0240	
24.5 - 24.9	32 (HB)	39	183	98	123	A2	B10		D2	E4	106003 0245	
25.0 - 25.4	32 (HB)	39	185	100	125	A2	B10		D2	E4	106003 0250	
25.5 - 25.9	32 (HB)	39	188	102	128	A2	B10		D2	E4	106003 0255	
26.0 - 26.4	32 (HB)	39	190	104	130	A2	B11		D2	E4	106003 0260	
26.5 - 26.9	32 (HB)	39	193	106	133	A2	B11		D2	E4	106003 0265	
27.0 - 27.4	32 (HB)	39	195	108	135	A3	B11		D3	E4	106003 0270	
27.5 - 27.9	32 (HB)	39	197	110	137	A3	B11		D3	E4	106003 0275	
28.0 - 28.4	32 (HB)	39	200	112	140	A3	B12		D3	E4	106003 0280	
28.5 - 28.9	32 (HB)	39	202	114	142	A3	B12		D3	E4	106003 0285	
29.0 - 29.4	32 (HB)	39	205	116	145	A3	B12		D3	E4	106003 0290	

1152

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm						art.no.	€
29.5 - 29.9	32 (HB)	39	207	118	147	A3	B12		D3	E4	106003 0295	
30.0 - 30.4	32 (HB)	39	209	120	149	A3	B13		D3	E5	106003 0300	
30.5 - 30.9	32 (HB)	39	212	122	152	A3	B13		D3	E5	106003 0305	
31.0 - 31.4	32 (HB)	39	214	124	154	A4	B13		D4	E5	106003 0310	
31.5 - 31.9	32 (HB)	39	217	126	157	A4	B13		D4	E5	106003 0315	
32.0 - 32.4	32 (HB)	39	219	128	159	A4	B14		D4	E5	106003 0320	
32.5 - 32.9	32 (HB)	39	221	130	161	A4	B14		D4	E5	106003 0325	
33.0 - 334	32 (HB)	39	224	132	164	A4	B14		D4	E5	106003 0330	
33.5 - 33.9	32 (HB)	39	226	134	166	A4	B14		D4	E5	106003 0335	
34.0 - 34.4	40 (HB)	55	239	136	169	A4	B14		D4	E5	106003 0340	
34.5 - 34.9	40 (HB)	55	241	138	171	A4	B14		D4	E5	106003 0345	
35.0 - 35.4	40 (HB)	55	243	140	173	A4	B14		D4	E5	106003 0350	
35.5 - 35.9	40 (HB)	55	246	142	176	A4	B14		D4	E5	106003 0355	
36.0 - 36.4	40 (HB)	55	248	144	178	A4	B15		D4	E5	106003 0360	
36.5 - 36.9	40 (HB)	55	251	146	181	A4	B15		D4	E5	106003 0365	
37.0 - 37.4	40 (HB)	55	253	148	183	A4	B15		D4	E5	106003 0370	
37.5 - 37.9	40 (HB)	55	255	150	185	A4	B15		D4	E5	106003 0375	
38.0 - 38.4	40 (HB)	55	258	152	188	A4	B15		D4	E5	106003 0380	
38.5 - 38.9	40 (HB)	55	260	154	196	A4	B15		D4	E5	106003 0385	
39.0 - 39.4	40 (HB)	55	263	156	193	A4	B15		D4	E5	106003 0390	
39.5 - 39.9	40 (HB)	55	265	158	195	A4	B15		D4	E5	106003 0395	
40.0 - 40.4	40 (HB)	55	267	160	197	A5	B16		D5	E5	106003 0400	

1152



5xD

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	103	48	58		B1			E1	106005 0080	
8.5 - 8.9	10 (HA)	18	106	51	61		B1			E1	106005 0085	
9.0 - 9.4	10 (HA)	18	110	54	65		B2			E1	106005 0090	
9.5 - 9.9	12 (HA)	18	116	57	68		B2			E1	106005 0095	
10.0 - 10.4	12 (HA)	18	119	60	71		B3			E1	106005 0100	
10.5 - 10.9	12 (HA)	18	123	63	75		B3			E1	106005 0105	
11.0 - 11.4	12 (HA)	18	126	66	78		B3			E1	106005 0110	
11.5 - 11.9	12 (HA)	18	130	69	82		B3			E1	106005 0115	
12.0 - 12.4	16 (HB)	21	133	72	85	A1	B4	C1		E1	106005 0120	
12.5 - 12.9	16 (HB)	21	136	75	88	A1	B4	C1		E1	106005 0125	
13.0 - 13.4	16 (HB)	21	140	78	92	A1	B4	C1		E1	106005 0130	
13.5 - 13.9	16 (HB)	21	143	81	95	A1	B4	C1		E1	106005 0135	
14.0 - 14.4	16 (HB)	21	147	84	99	A1	B5		D1	E2	106005 0140	
14.5 - 14.9	20 (HB)	27	152	87	102	A1	B5		D1	E2	106005 0145	
15.0 - 15.4	20 (HB)	27	157	90	107	A1	B5		D1	E2	106005 0150	
15.5 - 15.9	20 (HB)	27	161	93	111	A1	B5		D1	E2	106005 0155	
16.0 - 16.4	20 (HB)	27	164	96	114	A1	B6		D1	E2	106005 0160	
16.5 - 16.9	20 (HB)	27	168	99	118	A1	B6		D1	E2	106005 0165	
17.0 - 17.4	20 (HB)	27	171	102	121	A1	B6		D1	E2	106005 0170	
17.5 - 17.9	20 (HB)	27	174	105	124	A1	B6		D1	E2	106005 0175	
18.0 - 18.4	20 (HB)	27	178	108	128	A1	B7		D1	E3	106005 0180	
18.5 - 18.9	20 (HB)	27	181	111	131	A1	B7		D1	E3	106005 0185	
19.0 - 19.4	20 (HB)	27	185	114	135	A1	B7		D1	E3	106005 0190	
19.5 - 19.9	20 (HB)	27	188	117	138	A1	B7		D1	E3	106005 0195	
20.0 - 20.4	25 (HB)	32	197	120	141	A2	B8		D2	E3	106005 0200	
20.5 - 20.9	25 (HB)	32	201	123	145	A2	B8		D2	E3	106005 0205	
21.0 - 21.4	25 (HB)	32	204	126	148	A2	B8		D2	E3	106005 0210	
21.5 - 21.9	25 (HB)	32	208	129	152	A2	B8		D2	E3	106005 0215	
22.0 - 22.4	25 (HB)	32	211	132	155	A2	B9		D2	E3	106005 0220	
22.5 - 22.9	25 (HB)	39	214	135	158	A2	B9		D2	E3	106005 0225	
23.0 - 23.4	25 (HB)	39	218	138	162	A2	B9		D2	E3	106005 0230	
23.5 - 23.9	25 (HB)	39	221	141	165	A2	B9		D2	E3	106005 0235	
24.0 - 24.4	32 (HB)	39	229	144	169	A2	B10		D2	E4	106005 0240	
24.5 - 24.9	32 (HB)	39	232	147	172	A2	B10		D2	E4	106005 0245	

1152

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm						art.no.	€
25.0 - 25.4	32 (HB)	39	235	150	175	A2	B10		D2	E4	106005 0250	
25.5 - 25.9	32 (HB)	39	239	153	179	A2	B10		D2	E4	106005 0255	
26.0 - 26.4	32 (HB)	39	242	156	182	A2	B11		D2	E4	106005 0260	
26.5 - 26.9	32 (HB)	39	246	159	186	A2	B11		D2	E4	106005 0265	
27.0 - 27.4	32 (HB)	39	249	162	189	A3	B11		D3	E4	106005 0270	
27.5 - 27.9	32 (HB)	39	252	165	192	A3	B11		D3	E4	106005 0275	
28.0 - 28.4	32 (HB)	39	256	168	196	A3	B12		D3	E4	106005 0280	
28.5 - 28.9	32 (HB)	39	259	171	199	A3	B12		D3	E4	106005 0285	
29.0 - 29.4	32 (HB)	39	263	174	203	A3	B12		D3	E4	106005 0290	
29.5 - 29.9	32 (HB)	39	266	177	206	A3	B12		D3	E4	106005 0295	
30.0 - 30.4	32 (HB)	39	269	180	209	A3	B13		D3	E5	106005 0300	
30.5 - 30.9	32 (HB)	39	273	183	213	A3	B13		D3	E5	106005 0305	
31.0 - 31.4	32 (HB)	39	276	186	216	A4	B13		D4	E5	106005 0310	
31.5 - 31.9	32 (HB)	39	280	189	220	A4	B13		D4	E5	106005 0315	
32.0 - 32.4	32 (HB)	39	283	192	223	A4	B14		D4	E5	106005 0320	
32.5 - 32.9	32 (HB)	39	286	195	226	A4	B14		D4	E5	106005 0325	
33.0 - 33.4	32 (HB)	39	290	198	230	A4	B14		D4	E5	106005 0330	
33.5 - 33.9	32 (HB)	39	293	201	233	A4	B14		D4	E5	106005 0335	
34.0 - 34.4	40 (HB)	55	307	204	237	A4	B14		D4	E5	106005 0340	
34.5 - 34.9	40 (HB)	55	310	207	240	A4	B14		D4	E5	106005 0345	
35.0 - 35.4	40 (HB)	55	313	210	243	A4	B14		D4	E5	106005 0350	
35.5 - 35.9	40 (HB)	55	317	213	247	A4	B14		D4	E5	106005 0355	
36.0 - 36.4	40 (HB)	55	320	216	250	A4	B15		D4	E5	106005 0360	
36.5 - 36.9	40 (HB)	55	324	219	254	A4	B15		D4	E5	106005 0365	
37.0 - 37.4	40 (HB)	55	327	222	257	A4	B15		D4	E5	106005 0370	
37.5 - 37.9	40 (HB)	55	330	225	260	A4	B15		D4	E5	106005 0375	
38.0 - 38.4	40 (HB)	55	334	228	264	A4	B15		D4	E5	106005 0380	
38.5 - 38.9	40 (HB)	55	337	231	267	A4	B15		D4	E5	106005 0385	
39.0 - 39.4	40 (HB)	55	341	234	271	A4	B15		D4	E5	106005 0390	
39.5 - 39.9	40 (HB)	55	344	237	274	A4	B15		D4	E5	106005 0395	
40.0- 40.4	40 (HB)	55	347	240	277	A5	B16		D5	E5	106005 0400	



7xD

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	119	64	74		B1			E1	106007 0080	
8.5 - 8.9	10 (HA)	18	123	68	78		B1			E1	106007 0085	
9.0 - 9.4	10 (HA)	18	128	72	83		B2			E1	106007 0090	
9.5 - 9.9	12 (HA)	18	135	76	87		B2			E1	106007 0095	
10.0 - 10.4	12 (HA)	18	139	80	91		B3			E1	106007 0100	
10.5 - 10.9	12 (HA)	18	144	84	96		B3			E1	106007 0105	
11.0 - 11.4	12 (HA)	18	148	88	100		B3			E1	106007 0110	
11.5 - 11.9	12 (HA)	18	153	92	105		B3			E1	106007 0115	
12.0 - 12.4	16 (HB)	21	157	96	109	A1	B4	C1		E1	106007 0120	
12.5 - 12.9	16 (HB)	21	161	100	113	A1	B4	C1		E1	106007 0125	
13.0 - 13.4	16 (HB)	21	166	104	118	A1	B4	C1		E1	106007 0130	
13.5 - 13.9	16 (HB)	21	170	108	122	A1	B4	C1		E1	106007 0135	
14.0 - 14.4	16 (HB)	21	175	112	127	A1	B5		D1	E2	106007 0140	
14.5 - 14.9	20 (HB)	27	181	116	131	A1	B5		D1	E2	106007 0145	
15.0 - 15.4	20 (HB)	27	187	120	137	A1	B5		D1	E2	106007 0150	
15.5 - 15.9	20 (HB)	27	192	124	142	A1	B5		D1	E2	106007 0155	
16.0 - 16.4	20 (HB)	27	196	128	146	A1	B6		D1	E2	106007 0160	
16.5 - 16.9	20 (HB)	27	201	132	151	A1	B6		D1	E2	106007 0165	
17.0 - 17.4	20 (HB)	27	205	136	155	A1	B6		D1	E2	106007 0170	
17.5 - 17.9	20 (HB)	27	209	140	159	A1	B6		D1	E2	106007 0175	
18.0 - 18.4	20 (HB)	27	214	144	164	A1	B7		D1	E3	106007 0180	
18.5 - 18.9	20 (HB)	27	218	148	168	A1	B7		D1	E3	106007 0185	
19.0 - 19.4	20 (HB)	27	223	152	173	A1	B7		D1	E3	106007 0190	
19.5 - 19.9	20 (HB)	27	227	156	177	A1	B7		D1	E3	106007 0195	
20.0 - 20.4	25 (HB)	32	237	160	181	A2	B8		D2	E3	106007 0200	

D mm	D1 mm	d2 mm	L mm	L1 mm	L2 mm					art.no.	€
20.5 - 20.9	25 (HB)	32	242	164	186	A2	B8		D2	E3	106007 0205	
21.0 - 21.4	25 (HB)	32	246	168	190	A2	B8		D2	E3	106007 0210	
21.5 - 21.9	25 (HB)	32	251	172	195	A2	B8		D2	E3	106007 0215	
22.0 - 22.4	25 (HB)	32	255	176	199	A2	B9		D2	E3	106007 0220	
22.5 - 22.9	25 (HB)	39	259	180	203	A2	B9		D2	E3	106007 0225	
23.0 - 23.4	25 (HB)	39	264	184	208	A2	B9		D2	E3	106007 0230	
23.5 - 23.9	25 (HB)	39	268	188	212	A2	B9		D2	E3	106007 0235	
24.0 - 24.4	32 (HB)	39	277	192	217	A2	B10		D2	E4	106007 0240	
24.5 - 24.9	32 (HB)	39	281	196	221	A2	B10		D2	E4	106007 0245	
25.0 - 25.4	32 (HB)	39	285	200	225	A2	B10		D2	E4	106007 0250	
25.5 - 25.9	32 (HB)	39	290	204	230	A2	B10		D2	E4	106007 0255	
26.0 - 26.4	32 (HB)	39	294	208	234	A2	B11		D2	E4	106007 0260	
26.5 - 26.9	32 (HB)	39	299	212	239	A2	B11		D2	E4	106007 0265	
27.0 - 27.4	32 (HB)	39	303	216	243	A3	B11		D3	E4	106007 0270	
27.5 - 27.9	32 (HB)	39	307	220	247	A3	B11		D3	E4	106007 0275	
28.0 - 28.4	32 (HB)	39	312	224	252	A3	B12		D3	E4	106007 0280	
28.5 - 28.9	32 (HB)	39	316	228	256	A3	B12		D3	E4	106007 0285	
29.0 - 29.4	32 (HB)	39	321	232	261	A3	B12		D3	E4	106007 0290	
29.5 - 29.9	32 (HB)	39	325	236	265	A3	B12		D3	E4	106007 0295	
30.0 - 30.4	32 (HB)	39	329	240	269	A3	B13		D3	E5	106007 0300	
30.5 - 30.9	32 (HB)	39	334	244	274	A3	B13		D3	E5	106007 0305	
31.0 - 31.4	32 (HB)	39	338	248	278	A4	B13		D4	E5	106007 0310	
31.5 - 31.9	32 (HB)	39	343	252	283	A4	B13		D4	E5	106007 0315	
32.0 - 32.4	32 (HB)	39	347	256	287	A4	B14		D4	E5	106007 0320	
32.5 - 32.9	32 (HB)	39	351	260	291	A4	B14		D4	E5	106007 0325	
33.0 - 33.4	32 (HB)	39	356	264	296	A4	B14		D4	E5	106007 0330	
33.5 - 33.9	32 (HB)	39	360	268	300	A4	B14		D4	E5	106007 0335	
34.0 - 34.4	40 (HB)	55	375	272	305	A4	B14		D4	E5	106007 0340	
34.5 - 34.9	40 (HB)	55	379	276	309	A4	B14		D4	E5	106007 0345	
35.0 - 35.4	40 (HB)	55	383	280	313	A4	B14		D4	E5	106007 0350	
35.5 - 35.9	40 (HB)	55	388	284	318	A4	B14		D4	E5	106007 0355	
36.0 - 36.4	40 (HB)	55	392	288	322	A4	B15		D4	E5	106007 0360	
36.5 - 36.9	40 (HB)	55	397	292	327	A4	B15		D4	E5	106007 0365	
37.0 - 37.4	40 (HB)	55	401	296	331	A4	B15		D4	E5	106007 0370	
37.5 - 37.9	40 (HB)	55	405	300	335	A4	B15		D4	E5	106007 0375	
38.0 - 38.4	40 (HB)	55	410	304	340	A4	B15		D4	E5	106007 0380	
38.5 - 38.9	40 (HB)	55	414	308	344	A4	B15		D4	E5	106007 0385	
39.0 - 39.4	40 (HB)	55	419	312	349	A4	B15		D4	E5	106007 0390	
39.5 - 39.9	40 (HB)	55	423	316	353	A4	B15		D4	E5	106007 0395	
40.0 - 40.4	40 (HB)	55	427	320	357	A5	B16		D5	E5	106007 0400	
												1152

Spare parts

	Clamping screw art.no.	€
A1	106025 0020	
A2	106025 0030	
A3	106025 0040	
A4	106025 0050	
A5	106025 0060	
		1152

	Through bolt art.no.	€
B1	106027 0800	
B2	106027 0900	
B3	106027 1000	
B4	106027 1200	
B5	106027 1400	
B6	106027 1600	
B7	106027 1800	
B8	106027 2000	
B9	106027 2200	
B10	106027 2400	
B11	106027 2600	
B12	106027 2800	
B13	106027 3000	
B14	106027 3200	
B15	106027 3600	
B16	106027 4000	
		1152

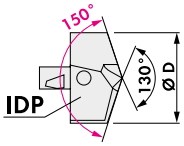
	Black, oiled art.no.	€
C1	703001 0009	
		7111

	Nickel plated art.no.	€
D1	703005 0013	
D2	703005 0015	
D3	703005 0020	
D4	703005 0025	
D5	703005 0030	
		7111

	TORX art.no.	€
E1	703053 0060	
E2	703053 0070	
E3	703053 0080	
E4	703053 0150	
E5	703053 0200	
		7114

SARA® ETD 840 indexable inserts

VHM | 130° | h7 | Z 2 | TiAlN | Vc/fz | 385





- **innovative, efficient cutting edge geometry**
- Precision-ground
- **Adapted to tool holder**
- Excellent wear-resistance and cutting properties
- **All intermediate dimensions available in 0.1 mm increments**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 100	● 100	● 45	● 30	● 30		● 110	● 180	○ 30	○ 22	○ 30	○ 230	○ 250	● 200		○ 30		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	art.no.	€
8.0	106020 0080	
8.5	106020 0085	
8.8	106020 0088	
9.0	106020 0090	
9.3	106020 0093	
9.5	106020 0095	
9.8	106020 0098	
10.0	106020 0100	
10.2	106020 0102	
10.5	106020 0105	
10.8	106020 0108	
11.0	106020 0110	
11.2	106020 0112	
11.5	106020 0115	
11.8	106020 0118	
12.0	106020 0120	
12.5	106020 0125	
12.8	106020 0128	
13.0	106020 0130	
13.1	106020 0131	
13.5	106020 0135	
13.8	106020 0138	
14.0	106020 0140	
14.5	106020 0145	
14.8	106020 0148	
15.0	106020 0150	
15.1	106020 0151	
15.5	106020 0155	
15.8	106020 0158	
16.0	106020 0160	
16.1	106020 0161	
16.5	106020 0165	
16.8	106020 0168	
17.0	106020 0170	
17.5	106020 0175	
	1153	

D mm	art.no.	€
17.8	106020 0178	
18.0	106020 0180	
18.5	106020 0185	
18.8	106020 0188	
19.0	106020 0190	
19.5	106020 0195	
19.8	106020 0198	
20.0	106020 0200	
20.5	106020 0205	
20.8	106020 0208	
21.0	106020 0210	
21.5	106020 0215	
21.8	106020 0218	
22.0	106020 0220	
22.5	106020 0225	
22.8	106020 0228	
23.0	106020 0230	
23.5	106020 0235	
23.8	106020 0238	
24.0	106020 0240	
24.5	106020 0245	
24.8	106020 0248	
25.0	106020 0250	
25.5	106020 0255	
25.7	106020 0257	
26.0	106020 0260	
26.5	106020 0265	
26.7	106020 0267	
27.0	106020 0270	
27.5	106020 0275	
27.7	106020 0277	
28.0	106020 0280	
28.5	106020 0285	
28.7	106020 0287	
29.0	106020 0290	
	1153	

D mm	art.no.	€
29.5	106020 0295	
29.7	106020 0297	
30.0	106020 0300	
30.5	106020 0305	
30.7	106020 0307	
31.0	106020 0310	
31.5	106020 0315	
31.7	106020 0317	
32.0	106020 0320	
32.5	106020 0325	
32.7	106020 0327	
33.0	106020 0330	
33.5	106020 0335	
33.7	106020 0337	
34.0	106020 0340	
34.5	106020 0345	
34.7	106020 0347	
35.0	106020 0350	
35.5	106020 0355	
35.7	106020 0357	
36.0	106020 0360	
36.5	106020 0365	
36.7	106020 0367	
37.0	106020 0370	
37.5	106020 0375	
37.7	106020 0377	
38.0	106020 0380	
38.5	106020 0385	
38.7	106020 0387	
39.0	106020 0390	
39.5	106020 0395	
39.7	106020 0397	
40.0	106020 0400	
	1153	

DRILLING SYSTEM T-A® PRO

Modular drilling tools from Allied Machine & Engineering Co. (AMEC) meet the increasing demands of customers from various industries. Solutions are provided not only for general mechanical engineering, but also for the automotive sector and aerospace technology. The flexible drilling tool systems are characterised by their universal application capabilities and in particular by the combination of cutting materials, coatings and geometries.

Guaranteed application
Describe your machining problem to us. Working with the manufacturer, we will draw up a quotation for you for the use of appropriate tools. Allied Machine Engineering Co. guarantees the feasibility of the project.



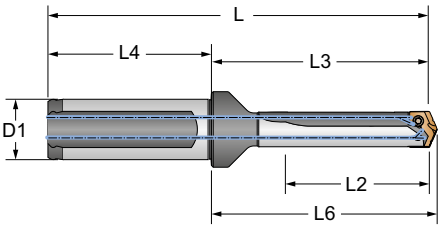
1. Diameter range 11.50 to 47.50 mm
2. Geometries and basic materials for machining steel, cast iron and non-ferrous metals
3. Material-specific geometries in accordance with ISO for simplified tool selection
4. Drilling depths up to 15 x D
5. New support and coolant bore design for improved chip removal

Series Z Drilling system T-A Pro™

HM | 132° | Vc/fz | 381

- **Series Z, diameter range 11.20 - 12.60 mm**
- **Drill depths up to 15 x D**
- Supports with innovative coolant bore system for higher flow rate
- Cutting fluid is fed directly under the chip and creates a "hydraulic wedge"
- Sturdy support and new chip flute design for safe chip removal
- **4 geometries for a wide range of applications**:
  105980.... AM300 (P), for steel materials
  105986.... AM460 (M), for rust-proof and acid-proof steels
  105982.... TiAlN (K) for cast materials
  105984.... TiCN (NE) for non-ferrous materials

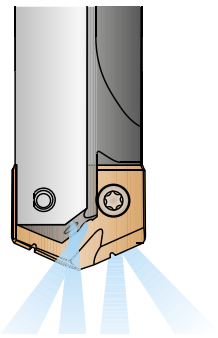




Series Z holder

Type	L4 mm	L2 mm	L3 mm	L mm	D1 mm	D mm			art.no.	€
3xD (A)	50	36.9	71.2	118.4	20	11.11 - 12.60	A1	B1	105023 0103	
5xD (A)	50	61.0	95.3	142.5	20	11.11 - 12.60	A1	B1	105023 0105	
7xD (A)	50	85.0	119.3	166.6	20	11.11 - 12.60	A1	B1	105023 0107	
10xD (A)	50	121.2	155.5	202.7	20	11.11 - 12.60	A1	B1	105023 0110	
12xD (A)	50	145.2	179.5	226.8	20	11.11 - 12.60	A1	B1	105023 0112	
15xD (A)	50	181.4	215.7	262.9	20	11.11 - 12.60	A1	B1	105023 0115	

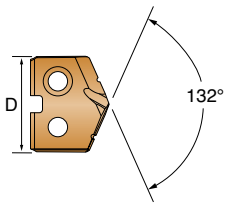
1141



Coolant bore system with 4 discharge bores

Series Z cutting inserts

D mm	ISO P	AM300 art.no.	€	ISO M	AM460 art.no.	€	ISO K	TiAlN art.no.	€	ISO N	TiCN art.no.	€
11.50	2	105980 1150		2	105986 1150		2	105982 1150		2	105984 1150	
12.00	2	105980 1200		2	105986 1200		2	105982 1200		2	105984 1200	
12.50	2	105980 1250		2	105986 1250		2	105982 1250		2	105984 1250	
		1183			1183			1183			1183	





AM300



AM460



TiAlN



TiCN

Spare parts

	Screw art.no.	€
A1	105085 0020	
	1145	

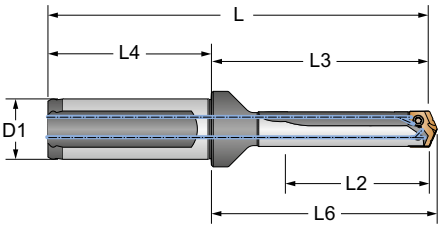
	TORX PLUS art.no.	€
B1	705145 0007	

Series 0 Drilling system T-A Pro™

HM | 132° | Vc/fz | 381



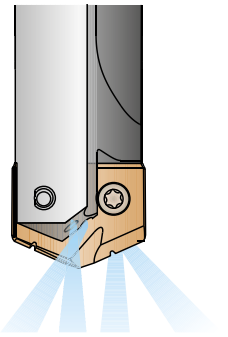
- **Series 0, diameter range 12.70 - 17.60 mm**
- **Drill depths up to 15 x D**
- Supports with innovative coolant bore system for higher flow rate
- Cutting fluid is fed directly under the chip and creates a "hydraulic wedge"
- Sturdy support and new chip flute design for safe chip removal
- **4 geometries for a wide range of applications**:
  105980.... AM300 (P), for steel materials
  105986.... AM460 (M), for rust-proof and acid-proof steels
  105982.... TiAlN (K) for cast materials
  105984.... TiCN (NE) for non-ferrous materials



Series 0 holder

Type	L4 mm	L2 mm	L3 mm	L mm	D1 mm	D mm			art.no.	€
3xD (A)	77.8	45.9	80.5	129.4	20	12.70 - 15.00	A1	B1	105025 0103	
3xD (C)	77.8	45.9	80.5	129.4	20	15.08 - 17.60	A2	B1	105025 0303	
5xD (A)	108.5	76.6	111.2	160	20	12.70 - 15.00	A1	B1	105025 0105	
5xD (C)	108.5	76.6	111.2	160	20	15.08 - 17.60	A2	B1	105025 0305	
7xD (A)	139.1	107.2	141.8	190.7	20	12.70 - 15.00	A1	B1	105025 0107	
7xD (C)	139.1	107.2	141.8	190.7	20	15.08 - 17.60	A2	B1	105025 0307	
10xD (A)	185	153.2	187.8	236.6	20	12.70 - 15.00	A1	B1	105025 0110	
10xD (C)	185	153.2	187.8	236.6	20	15.08 - 17.60	A2	B1	105025 0310	
12xD (A)	215.7	183.8	218.4	267.2	20	12.70 - 15.00	A1	B1	105025 0112	
12xD (C)	215.7	183.8	218.4	267.2	20	15.08 - 17.60	A2	B1	105025 0312	
15xD (A)	261.6	229.7	264.3	313.2	20	12.70 - 15.00	A1	B1	105025 0115	
15xD (C)	261.6	229.7	264.3	313.2	20	15.08 - 17.60	A2	B1	105025 0315	

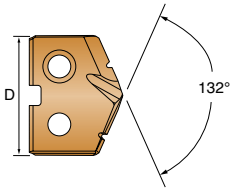
1141

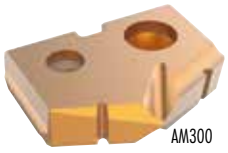


Coolant bore system with 4 discharge bores

Series 0 cutting inserts

D mm	ISO P AM300		ISO M AM460		ISO K TiAlN		ISO N TiCN	
		art.no. €		art.no. €		art.no. €		art.no. €
12.80	2	105980 1280	2	105986 1280	2	105982 1280	2	105984 1280
13.00	2	105980 1300	2	105986 1300	2	105982 1300	2	105984 1300
13.50	2	105980 1350	2	105986 1350	2	105982 1350	2	105984 1350
14.00	2	105980 1400	2	105986 1400	2	105982 1400	2	105984 1400
14.50	2	105980 1450	2	105986 1450	2	105982 1450	2	105984 1450
14.80	2	105980 1480	2	105986 1480	2	105982 1480	2	105984 1480
15.00	2	105980 1500	2	105986 1500	2	105982 1500	2	105984 1500
15.20	2	105980 1520	2	105986 1520	2	105982 1520	2	105984 1520
15.50	2	105980 1550	2	105986 1550	2	105982 1550	2	105984 1550
16.00	2	105980 1600	2	105986 1600	2	105982 1600	2	105984 1600
16.50	2	105980 1650	2	105986 1650	2	105982 1650	2	105984 1650
17.00	2	105980 1700	2	105986 1700	2	105982 1700	2	105984 1700
17.50	2	105980 1750	2	105986 1750	2	105982 1750	2	105984 1750
		1183		1183		1183		1183





AM300



AM460



TiAlN



TiCN

Spare parts

	Screw art.no.	€
A1	105085 0030	
A2	105085 0035	

1145

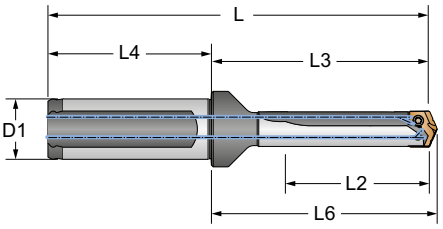
	TORX PLUS art.no.	€
B1	705145 0008	

Series 1 Drilling system T-A Pro™

HM | 132° | 381



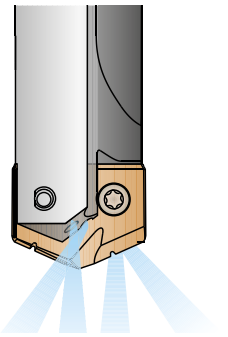
- **Series 1, diameter range 17.70 - 24.30 mm**
- **Drill depths up to 15 x D**
- Supports with innovative coolant bore system for higher flow rate
- Cutting fluid is fed directly under the chip and creates a "hydraulic wedge"
- Sturdy support and new chip flute design for safe chip removal
- **4 geometries for a wide range of applications**:
  105980.... AM300 (P), for steel materials
  105986.... AM460 (M), for rust-proof and acid-proof steels
  105982.... TiAlN (K) for cast materials
  105984.... TiCN (NE) for non-ferrous materials



Series 1 holder

Type	L4 mm	L2 mm	L3 mm	L mm	D1 mm	D mm			art.no.	€
3xD (A)	57.9	62.9	104.5	158.8	25	17.70 - 20.50	A1	B1	105027 0103	
3xD (C)	57.9	62.9	104.5	158.8	25	20.60 - 24.30	A2	B1	105027 0303	
5xD (A)	57.9	104.8	146.4	200.7	25	17.70 - 20.50	A1	B1	105027 0105	
5xD (C)	57.9	104.8	146.4	200.7	25	20.60 - 24.30	A2	B1	105027 0305	
7xD (A)	57.9	146.7	188.3	242.7	25	17.70 - 20.50	A1	B1	105027 0107	
7xD (C)	57.9	146.7	188.3	242.7	25	20.60 - 24.30	A2	B1	105027 0307	
10xD (A)	57.9	209.6	251.2	305.5	25	17.70 - 20.50	A1	B1	105027 0110	
10xD (C)	57.9	209.6	251.2	305.5	25	20.60 - 24.30	A2	B1	105027 0310	
12xD (A)	57.9	251.5	293.1	347.4	25	17.70 - 20.50	A1	B1	105027 0112	
12xD (C)	57.9	251.5	293.1	347.4	25	20.60 - 24.30	A2	B1	105027 0312	
15xD (A)	57.9	314.3	355.9	410.3	25	17.70 - 20.50	A1	B1	105027 0115	
15xD (C)	57.9	314.3	355.9	410.3	25	20.60 - 24.30	A2	B1	105027 0315	

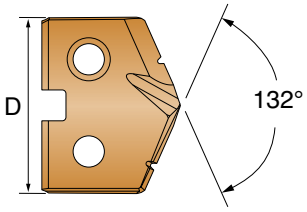
1141



Coolant bore system with 4 discharge bores

Series 1 cutting inserts

D mm	ISO P AM300			ISO M AM460			ISO K TiAlN			ISO N TiCN		
		art.no.	€		art.no.	€		art.no.	€		art.no.	€
18.00	2	105980 1800		2	105986 1800		2	105982 1800		2	105984 1800	
18.50	2	105980 1850		2	105986 1850		2	105982 1850		2	105984 1850	
19.00	2	105980 1900		2	105986 1900		2	105982 1900		2	105984 1900	
19.50	2	105980 1950		2	105986 1950		2	105982 1950		2	105984 1950	
20.00	2	105980 2000		2	105986 2000		2	105982 2000		2	105984 2000	
20.50	2	105980 2050		2	105986 2050		2	105982 2050		2	105984 2050	
21.00	2	105980 2100		2	105986 2100		2	105982 2100		2	105984 2100	
21.50	2	105980 2150		2	105986 2150		2	105982 2150		2	105984 2150	
22.00	2	105980 2200		2	105986 2200		2	105982 2200		2	105984 2200	
22.50	2	105980 2250		2	105986 2250		2	105982 2250		2	105984 2250	
23.00	2	105980 2300		2	105986 2300		2	105982 2300		2	105984 2300	
23.50	2	105980 2350		2	105986 2350		2	105982 2350		2	105984 2350	
24.00	2	105980 2400		2	105986 2400		2	105982 2400		2	105984 2400	
		1183			1183			1183			1183	







AM300



AM460



TiCN

Spare parts

Screw		
	art.no.	€
A1	105085 0050	
A2	105085 0060	

1145

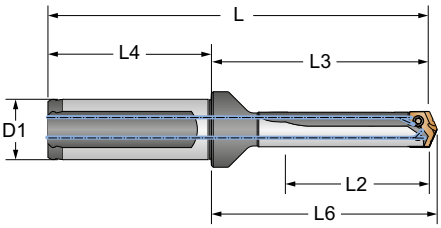
TORX PLUS		
	art.no.	€
B1	705145 0009	

Series 2 Drilling system T-A Pro™

HM | 132° | 380



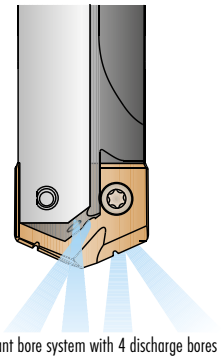
- **Series 2, diameter range 24.40 - 35.00 mm**
- **Drill depths up to 15 x D**
- Supports with innovative coolant bore system for higher flow rate
- Cutting fluid is fed directly under the chip and creates a "hydraulic wedge"
- Sturdy support and new chip flute design for safe chip removal
- **4 geometries for a wide range of applications**:
  105980.... AM300 (P), for steel materials
  105986.... AM460 (M), for rust-proof and acid-proof steels
  105982.... TiAlN (K) for cast materials
  105984.... TiCN (NE) for non-ferrous materials



Series 2 holder

Type	L4 mm	L2 mm	L3 mm	L mm	D1 mm	D mm	A1	B1	art.no.	€
3xD (A)	137.4	89.2	141	195.4	32	24.40 - 28.40	A1	B1	105029 0103	
3xD (C)	137.4	89.2	141	195.4	32	28.50 - 35.00	A1	B1	105029 0303	
5xD (A)	196.9	148.7	200.5	254.8	32	24.40 - 28.40	A1	B1	105029 0105	
5xD (C)	196.9	148.7	200.5	254.8	32	28.50 - 35.00	A1	B1	105029 0305	
7xD (A)	256.4	208.2	260	314.3	32	24.40 - 28.40	A1	B1	105029 0107	
7xD (C)	256.4	208.2	260	314.3	32	28.50 - 35.00	A1	B1	105029 0307	
10xD (A)	345.6	297.4	349.2	403.6	32	24.40 - 28.40	A1	B1	105029 0110	
10xD (C)	345.6	297.4	349.2	403.6	32	28.50 - 35.00	A1	B1	105029 0310	
12xD (A)	405.1	356.9	408.7	463	32	24.40 - 28.40	A1	B1	105029 0112	
12xD (C)	405.1	356.9	408.7	463	32	28.50 - 35.00	A1	B1	105029 0312	
15xD (A)	494.4	446.2	497.9	552.3	32	24.40 - 28.40	A1	B1	105029 0115	
15xD (C)	494.4	446.2	497.9	552.3	32	28.50 - 35.00	A1	B1	105029 0315	

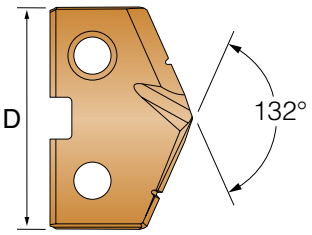
1141



Coolant bore system with 4 discharge bores

Series 2 cutting inserts

D mm	ISO P AM300		ISO M AM460		ISO K TiAlN		ISO N TiCN	
		art.no. €		art.no. €		art.no. €		art.no. €
24.50	2	105980 2450	2	105986 2450	2	105982 2450	2	105984 2450
25.00	2	105980 2500	2	105986 2500	2	105982 2500	2	105984 2500
25.50	2	105980 2550	2	105986 2550	2	105982 2550	2	105984 2550
26.00	2	105980 2600	2	105986 2600	2	105982 2600	2	105984 2600
26.50	2	105980 2650	2	105986 2650	2	105982 2650	2	105984 2650
27.00	2	105980 2700	2	105986 2700	2	105982 2700	2	105984 2700
27.50	2	105980 2750	2	105986 2750	2	105982 2750	2	105984 2750
28.00	2	105980 2800	2	105986 2800	2	105982 2800	2	105984 2800
28.50	2	105980 2850	2	105986 2850	2	105982 2850	2	105984 2850
29.00	2	105980 2900	2	105986 2900	2	105982 2900	2	105984 2900
29.50	2	105980 2950	2	105986 2950	2	105982 2950	2	105984 2950
30.00	2	105980 3000	2	105986 3000	2	105982 3000	2	105984 3000
30.50	2	105980 3050	2	105986 3050	2	105982 3050	2	105984 3050
31.00	2	105980 3100	2	105986 3100	2	105982 3100	2	105984 3100
31.50	2	105980 3150	2	105986 3150	2	105982 3150	2	105984 3150
32.00	2	105980 3200	2	105986 3200	2	105982 3200	2	105984 3200
32.50	2	105980 3250	2	105986 3250	2	105982 3250	2	105984 3250
33.00	2	105980 3300	2	105986 3300	2	105982 3300	2	105984 3300
33.50	2	105980 3350	2	105986 3350	2	105982 3350	2	105984 3350
34.00	2	105980 3400	2	105986 3400	2	105982 3400	2	105984 3400
34.50	2	105980 3450	2	105986 3450	2	105982 3450	2	105984 3450
35.00	1	105980 3500	2	105986 3500	2	105982 3500	2	105984 3500
		1183		1183		1183		1183





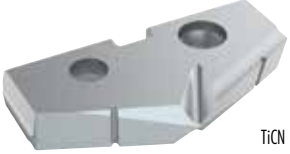
AM300



TiAlN



AM460



TiCN

Spare parts

	Screw art.no.	€
A1	105085 0070	

1145

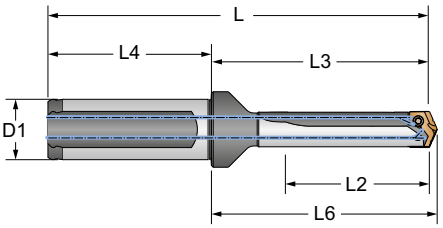
	TORX PLUS art.no.	€
B1	705145 0015	

Series 3 Drilling system T-A Pro™

HM | 132° | Vc/fz | 381



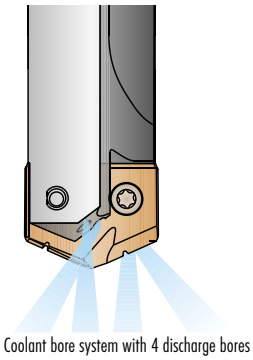
- **Series 3, diameter range 35.80 - 47.60 mm**
- **Drill depths up to 15 x D**
- Supports with innovative coolant bore system for higher flow rate
- Cutting fluid is fed directly under the chip and creates a "hydraulic wedge"
- Sturdy support and new chip flute design for safe chip removal
- **4 geometries for a wide range of applications**:
  105980.... AM300 (P), for steel materials
  105986.... AM460 (M), for rust-proof and acid-proof steels
  105982.... TiAlN (K) for cast materials
  105984.... TiCN (NE) for non-ferrous materials



Series 3 holder

Type	L4 mm	L2 mm	L3 mm	L mm	D1 mm	D mm			art.no.	€
3xD (A)	68.3	123.3	184.8	248.3	40	35.72 - 40.90	A1	B1	105031 0103	
3xD (C)	68.3	123.3	184.8	248.3	40	41.00 - 47.63	A1	B1	105031 0303	
5xD (A)	68.3	205.5	267	330.5	40	35.72 - 40.90	A1	B1	105031 0105	
5xD (C)	68.3	205.5	267	330.5	40	41.00 - 47.63	A1	B1	105031 0305	
7xD (A)	68.3	287.7	349.2	412.7	40	35.72 - 40.90	A1	B1	105031 0107	
7xD (C)	68.3	287.7	349.2	412.7	40	41.00 - 47.63	A1	B1	105031 0307	
10xD (A)	68.3	411	472.5	536	40	35.72 - 40.90	A1	B1	105031 0110	
10xD (C)	68.3	411	472.5	536	40	41.00 - 47.63	A1	B1	105031 0310	
12xD (A)	68.3	493.2	554.7	618.2	40	35.72 - 40.90	A1	B1	105031 0112	
12xD (C)	68.3	493.2	554.7	618.2	40	41.00 - 47.63	A1	B1	105031 0312	
15xD (A)	68.3	616.5	678	741.5	40	35.72 - 40.90	A1	B1	105031 0115	
15xD (C)	68.3	616.5	678	741.5	40	41.00 - 47.63	A1	B1	105031 0315	

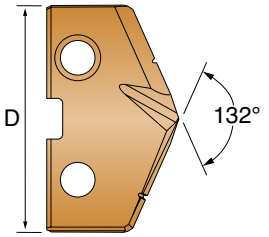
1141



Coolant bore system with 4 discharge bores

Series 3 cutting inserts

D mm	ISO P AM300 art.no.	€	ISO M AM460 art.no.	€	ISO K TiAlN art.no.	€	ISO N TiCN art.no.	€
36.00	105980 3600		105986 3600		105982 3600		105984 3600	
36.50	105980 3650		105986 3650		105982 3650		105984 3650	
37.00	105980 3700		105986 3700		105982 3700		105984 3700	
37.50	105980 3750		105986 3750		105982 3750		105984 3750	
38.00	105980 3800		105986 3800		105982 3800		105984 3800	
38.50	105980 3850		105986 3850		105982 3850		105984 3850	
39.00	105980 3900		105986 3900		105982 3900		105984 3900	
39.50	105980 3950		105986 3950		105982 3950		105984 3950	
40.00	105980 4000		105986 4000		105982 4000		105984 4000	
40.50	105980 4050		105986 4050		105982 4050		105984 4050	
41.00	105980 4100		105986 4100		105982 4100		105984 4100	
41.50	105980 4150		105986 4150		105982 4150		105984 4150	
42.00	105980 4200		105986 4200		105982 4200		105984 4200	
42.50	105980 4250		105986 4250		105982 4250		105984 4250	
43.00	105980 4300		105986 4300		105982 4300		105984 4300	
43.50	105980 4350		105986 4350		105982 4350		105984 4350	
44.00	105980 4400		105986 4400		105982 4400		105984 4400	
44.50	105980 4450		105986 4450		105982 4450		105984 4450	
45.00	105980 4500		105986 4500		105982 4500		105984 4500	
45.50	105980 4550		105986 4550		105982 4550		105984 4550	
46.00	105980 4600		105986 4600		105982 4600		105984 4600	
46.50	105980 4650		105986 4650		105982 4650		105984 4650	
47.00	105980 4700		105986 4700		105982 4700		105984 4700	
47.50	105980 4750		105986 4750		105982 4750		105984 4750	
	1183		1183		1183		1183	





AM300



TiAlN



TiCN



AM460

Spare parts

	Screw art.no.	€
A1	105085 0080	

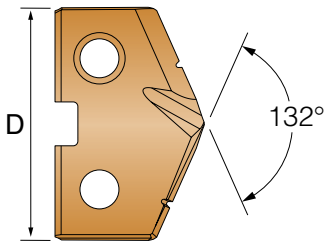
1145

	TORX PLUS art.no.	€
B1	705145 0020	

Cutting inserts T-A Pro™

HSS | 132° | Vc/fz | 380

- **Diameter 11.50 - 47.50mm**
- suitable for carrier tools T-A Pro™, series Z to 3
- **Cutting material: HSS super cobalt AM200**
- Universal geometry with a wide range of applications





AM200

D mm	Suitable for holder		AM200 art.no.	€
11.50	Series Z	2	105990 1150	
12.00	Series Z	2	105990 1200	
12.50	Series Z	2	105990 1250	
12.80	Series 0	2	105990 1280	
13.00	Series 0	2	105990 1300	
13.50	Series 0	2	105990 1350	
14.00	Series 0	2	105990 1400	
14.50	Series 0	2	105990 1450	
14.80	Series 0	2	105990 1480	
15.00	Series 0	2	105990 1500	
15.20	Series 0	2	105990 1520	
15.50	Series 0	2	105990 1550	
16.00	Series 0	2	105990 1600	
16.50	Series 0	2	105990 1650	
17.00	Series 0	2	105990 1700	
17.50	Series 0	2	105990 1750	
18.00	Series 1	2	105990 1800	
18.50	Series 1	2	105990 1850	
19.00	Series 1	2	105990 1900	
19.50	Series 1	2	105990 1950	
20.00	Series 1	2	105990 2000	
20.50	Series 1	2	105990 2050	
21.00	Series 1	2	105990 2100	
21.50	Series 1	2	105990 2150	
22.00	Series 1	2	105990 2200	
22.50	Series 1	2	105990 2250	
23.00	Series 1	2	105990 2300	
23.50	Series 1	2	105990 2350	
24.00	Series 1	2	105990 2400	
24.50	Series 2	2	105990 2450	
25.00	Series 2	2	105990 2500	
25.50	Series 2	2	105990 2550	
26.00	Series 2	2	105990 2600	
26.50	Series 2	2	105990 2650	
27.00	Series 2	2	105990 2700	
27.50	Series 2	2	105990 2750	
28.00	Series 2	2	105990 2800	
28.50	Series 2	2	105990 2850	

1183

D mm	Suitable for holder		AM200 art.no.	€
29.00	Series 2	2	105990 2900	
29.50	Series 2	2	105990 2950	
30.00	Series 2	2	105990 3000	
30.50	Series 2	2	105990 3050	
31.00	Series 2	2	105990 3100	
31.50	Series 2	2	105990 3150	
32.00	Series 2	2	105990 3200	
32.50	Series 2	2	105990 3250	
33.00	Series 2	2	105990 3300	
33.50	Series 2	2	105990 3350	
34.00	Series 2	2	105990 3400	
34.50	Series 2	2	105990 3450	
35.00	Series 2	2	105990 3500	
36.00	Series 3	1	105990 3600	
36.50	Series 3	1	105990 3650	
37.00	Series 3	1	105990 3700	
37.50	Series 3	1	105990 3750	
38.00	Series 3	1	105990 3800	
38.50	Series 3	1	105990 3850	
39.00	Series 3	1	105990 3900	
39.50	Series 3	1	105990 3950	
40.00	Series 3	1	105990 4000	
40.50	Series 3	1	105990 4050	
41.00	Series 3	1	105990 4100	
41.50	Series 3	1	105990 4150	
42.00	Series 3	1	105990 4200	
42.50	Series 3	1	105990 4250	
43.00	Series 3	1	105990 4300	
43.50	Series 3	1	105990 4350	
44.00	Series 3	1	105990 4400	
44.50	Series 3	1	105990 4450	
45.00	Series 3	1	105990 4500	
45.50	Series 3	1	105990 4550	
46.00	Series 3	1	105990 4600	
46.50	Series 3	1	105990 4650	
47.00	Series 3	1	105990 4700	
47.50	Series 3	1	105990 4750	

1183

GEN2 T-A® UND T-A® ORIGINAL DRILLING SYSTEM

Modular drilling tools from Allied Machine & Engineering Co. (AMEC) meet the increasing demands of customers from various industries. Solutions are provided not only for general mechanical engineering, but also for the automotive sector and aerospace technology. The flexible drilling tool systems are characterised by their universal application capabilities and in particular by the combination of cutting materials, coatings and geometries.

Guaranteed application

Describe your machining problem to us. Working with the manufacturer, we will draw up a quotation for you for the use of appropriate tools. Allied Machine Engineering Co. guarantees the feasibility of the project.



1. Exchangeable cutting inserts reduce regrinding work
2. Diameter range 9.50 - 160 mm
3. Various geometries, base substrates and coatings available
4. Drilling depths of 1.5 x D to 32 x D in the standard range

Drilling system T-A® Series Y

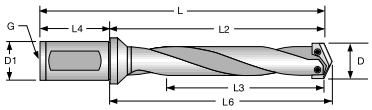
132° | Vc/fz | 382

- **Internal coolant supply** (* holders also have a 1/8 inch coolant supply connection on the side)
- Also available in MT version

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105140....	●	●	●	○	○				○	○	○			●				
	105147....	●	●	●	●	●				●	●	○			●				







Series Y holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread	A1	B1	art.no.	€
straight-fluted	extra-short	9.50-11.00	19	47.6	50	95.6	16	48	1/16" *	A1	B1	105001 0010	
straight-fluted	Short	9.50-11.00	32	61.1	63.5	111.1	20	50	1/8 Zoll	A1	B1	105001 0020	
spiral-fluted	Standard	9.50-11.00	60	89.7	92.1	139.7	20	50	1/8 Zoll	A1	B1	105001 0030	
spiral-fluted	Standard plus	9.50-11.00	86	115.4	117.8	165.4	20	50	1/8 Zoll	A1	B1	105001 0035	
spiral-fluted	extra-long	9.50-11.00	111	140.5	142.9	190.5	20	50	1/8 Zoll	A1	B1	105001 0040	
straight-fluted	XL	9.50-11.00	222	251.7	254.1	301.7	20	50	1/8 Zoll	A1	B1	105001 0050	
straight-fluted	3XL	9.50-11.00	290	319.9	322.3	369.9	20	50	1/8 Zoll	A1	B1	105001 0060	

1141

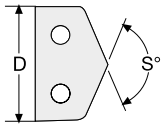
Series Y cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™			Carbide C1 K35 AM300™		
			art.no.	€		art.no.	€
9.50	132	2	105140 0950		2	105147 0950	
10.00	132	2	105140 1000		2	105147 1000	
10.20	132	2	105140 1020		2	105147 1020	
10.50	132	2	105140 1050		2	105147 1050	
10.80	132	2	105140 1080		2	105147 1080	
11.00	132	2	105140 1100		2	105147 1100	
			1142			1143	





Spare parts

Screw			Nyloc			TORX PLUS		
	art.no.	€		art.no.	€		art.no.	€
A1	105085 0010		B1	105086 0010		C1	705145 0007	
	1145			1145				

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- order measuring instruments including calibration
- available in real time
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Drilling system T-A® Series Z

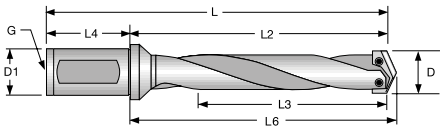
132° | Vc/fz | 382

- **Internal coolant supply** (* holders also have a 1/8 inch coolant supply connection on the side)
- Also available in MT version

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105236....	●	●	●	○	○				○	○	○			●				
	105242....	●	●	●	●	●				●	●	○			●				







Series Z holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread	A1	B1	art.no.	€
straight-fluted	extra-short	11.11-12.80	19.1	45.6	48	93.6	16	48	1/16" *	A1	B1	105003 0010	
straight-fluted	short	11.11-12.80	32	61.1	63.5	111.1	20	50	1/8 Zoll	A1	B1	105003 0020	
spiral-fluted	Standard	11.11-12.80	60	89.7	92.1	139.7	20	50	1/8 Zoll	A1	B1	105003 0030	
spiral-fluted	Standard plus	11.11-12.80	86	115.4	117.8	165.4	20	50	1/8 Zoll	A1	B1	105003 0035	
spiral-fluted	extra-long	11.11-12.80	111	140.5	142.9	190.5	20	50	1/8 Zoll	A1	B1	105003 0040	
spiral-fluted	long	11.11-12.80	180	209.4	211.8	259.4	20	50	1/8 Zoll	A1	B1	105003 0045	
straight-fluted	XL	11.11-12.80	222.3	251.7	254.1	301.7	20	50	1/8 Zoll	A1	B1	105003 0050	
straight-fluted	3XL	11.11-12.80	290.5	319.9	322.3	369.9	20	50	1/8 Zoll	A1	B1	105003 0060	

1141

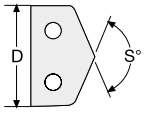
Series Z cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€	Carbide C1 K35 AM300™ art.no.	€
11.50	132	2 105236 1150		2 105242 1150	
12.00	132	2 105236 1200		2 105242 1200	
12.50	132	2 105236 1250		2 105242 1250	
		1142		1143	





Spare parts

	Screw art.no.	€
A1	105085 0020	

1145

	TORX PLUS art.no.	€
B1	705145 0007	

1145

Spare parts

	Screw art.no.	€
A1	105085 0020	

1145

	Nyloc art.no.	€
B1	105086 0020	

1145

	TORX PLUS art.no.	€
C1	705145 0007	

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- order measuring instruments including calibration
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- in 8 languages



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Drilling system T-A® Series 0

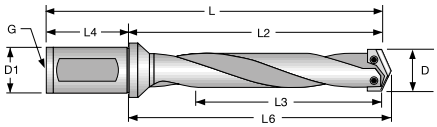
132° | Vc/fz | 382

- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105336....	●	●	●	○	○				○	○	○			●				
	105342....	●	●	●	●	●				●	●	○			●				





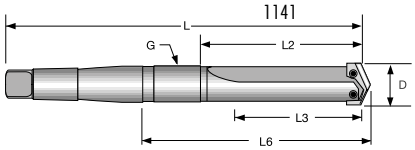


Series 0 holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread			art.no.	€
straight-fluted	extra-short	13.00-17.50	22	47.6	50.4	97.6	20	50	1/8" *	A1	B1	105005 0010	
straight-fluted	extra-short	15.50-17.50	22	47.6	50.4	97.6	20	50	1/8 Zoll	A2	B1	105005 0020	
straight-fluted	short	13.00-17.50	35	63.5	66.3	113.5	20	50	1/8 Zoll	A1	B1	105005 0030	
straight-fluted	short	15.50-17.50	35	63.5	66.3	113.5	20	50	1/8 Zoll	A2	B1	105005 0040	
spiral-fluted	Standard	13.00-17.50	64	92.1	94.9	142.1	20	50	1/8 Zoll	A1	B1	105005 0050	
spiral-fluted	Standard	15.50-17.50	64	92.1	94.9	142.1	20	50	1/8 Zoll	A2	B1	105005 0060	
spiral-fluted	Standard plus	13.00-17.50	89	117.6	120.4	167.6	20	50	1/8 Zoll	A1	B1	105005 0065	
spiral-fluted	extra-long	13.00-17.50	114	142.9	145.7	192.9	20	50	1/8 Zoll	A1	B1	105005 0070	
spiral-fluted	extra-long	15.50-17.50	114	142.9	145.7	192.9	20	50	1/8 Zoll	A2	B1	105005 0080	
spiral-fluted	Ultra-long	13.00-17.50	177	206.4	209.1	256.4	20	50	1/8 Zoll	A1	B1	105005 0090	
spiral-fluted	Ultra-long	15.50-17.50	177	206.4	209.1	256.4	20	50	1/8 Zoll	A2	B1	105005 0100	
spiral-fluted	Ultra-long	13.00-17.50	240	268.6	271.4	318.6	20	50	1/8 Zoll	A1	B1	105005 0105	
straight-fluted	XL	13.00-17.50	295	323.9	326.7	373.9	20	50	1/8 Zoll	A1	B1	105005 0110	
straight-fluted	3XL	13.00-17.50	387	416	418.8	466.0	20	50	1/8 Zoll	A1	B1	105005 0120	







Series 0 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread			art.no.	€
straight-fluted	short	13.00-17.50	35	55.5	92.4	164.3	MK 2	2SRM	1/16	A1	B1	105006 0010	
straight-fluted	short	15.50-17.50	35	55.5	92.4	164.3	MK 2	2SRM	1/16	A2	B1	105006 0020	
spiral-fluted	Standard	13.00-17.50	64	84.1	121	192.9	MK 2	2SRM	1/16	A1	B1	105006 0030	
spiral-fluted	Standard	15.50-17.50	64	84.1	121	192.9	MK 2	2SRM	1/16	A2	B1	105006 0040	
spiral-fluted	extra-long	13.00-17.50	114	135	171.8	243.7	MK 2	2SRM	1/16	A1	B1	105006 0050	
spiral-fluted	extra-long	15.50-17.50	114	135	171.8	243.7	MK 2	2SRM	1/16	A2	B1	105006 0060	
spiral-fluted	Ultra-long	13.00-17.50	177	198.5	235.3	307.2	MK 2	2SRM	1/16	A1	B1	105006 0070	
spiral-fluted	Ultra-long	15.50-17.50	177	198.5	235.3	307.2	MK 2	2SRM	1/16	A2	B1	105006 0080	

1141

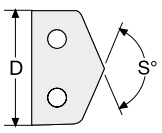
Series 0 cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€	Carbide C1 K35 AM300™ art.no.	€
13.00	132	2 105336 1300		2 105342 1300	
13.50	132	2 105336 1350		2 105342 1350	
14.00	132	2 105336 1400		2 105342 1400	
14.50	132	2 105336 1450		2 105342 1450	
15.00	132	2 105336 1500		2 105342 1500	
15.50	132	2 105336 1550		2 105342 1550	
16.00	132	2 105336 1600		1 105342 1600	
16.50	132	2 105336 1650		2 105342 1650	
17.00	132	2 105336 1700		2 105342 1700	
17.50	132	2 105336 1750		2 105342 1750	
		1142		1143	





Spare parts

Screw art.no.	€	Nyloc art.no.	€	TORX PLUS art.no.	€
A1 105085 0030		B1 105086 0030		C1 705145 0008	
A2 105085 0040					
1145		1145			

Drilling system T-A® Series 1

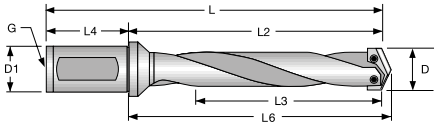
132° | Vc/fz | 382

- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105441....	●	●	●	○	○				○	○	○			●				
	105447....	●	●	●	●	●				●	●	○			●				







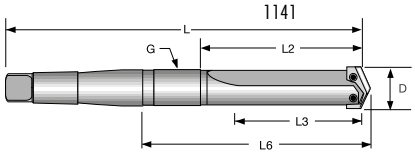
Series 1 holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread			art.no.	€
straight-fluted	extra-short	18.00-24.00	47	75.8	79.4	131.8	25	56	1/8" *	A1	B1	105007 0010	
straight-fluted	extra-short	22.00-24.00	57	88.5	92.1	144.5	25	56	1/8" *	A2	B1	105007 0020	
straight-fluted	short	18.00-24.00	67	107.2	110.7	163.2	25	56	1/8 Zoll	A1	B1	105007 0030	
straight-fluted	short	22.00-24.00	67	107.2	110.7	163.2	25	56	1/8 Zoll	A2	B1	105007 0040	
spiral-fluted	Medium-length	18.00-24.00	118	154.8	158.4	210.8	25	56	1/8 Zoll	A1	B1	105007 0050	
spiral-fluted	Medium-length	22.00-24.00	118	154.8	158.4	210.8	25	56	1/8 Zoll	A2	B1	105007 0060	
spiral-fluted	Standard	18.00-24.00	168	205.6	209.2	261.6	25	56	1/8 Zoll	A1	B1	105007 0070	
spiral-fluted	Standard	22.00-24.00	168	205.6	209.2	261.6	25	56	1/8 Zoll	A2	B1	105007 0080	
spiral-fluted	Standard plus	18.00-24.00	219	256.3	259.9	312.3	25	56	1/8 Zoll	A1	B1	105007 0085	
spiral-fluted	extra-long	18.00-24.00	270	307.2	310.8	363.2	25	56	1/8 Zoll	A1	B1	105007 0090	
spiral-fluted	extra-long	22.00-24.00	270	307.2	310.8	363.2	25	56	1/8 Zoll	A2	B1	105007 0100	
spiral-fluted	Ultra-long	18.00-24.00	365	402.3	405.9	458.3	25	56	1/8 Zoll	A1	B1	105007 0105	
straight-fluted	XL	18.00-24.00	457	494.5	498.1	550.5	25	56	1/8 Zoll	A1	B1	105007 0110	
straight-fluted	3XL	18.00-24.00	565	602.5	606.1	658.5	25	56	1/8 Zoll	A1	B1	105007 0120	

1141







Series 1 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread			art.no.	€
straight-fluted	short	18.00-24.00	70	98.4	142.5	232.5	MK 3	3SRM	1/8 Zoll	A1	B1	105008 0010	
straight-fluted	short	22.00-24.00	70	98.4	142.5	232.5	MK 3	3SRM	1/8 Zoll	A2	B1	105008 0020	
spiral-fluted	Medium-length	18.00-24.00	121	149.2	193.3	283.3	MK 3	3SRM	1/8 Zoll	A1	B1	105008 0030	
spiral-fluted	Medium-length	22.00-24.00	121	149.2	193.3	283.3	MK 3	3SRM	1/8 Zoll	A2	B1	105008 0040	
spiral-fluted	Standard	18.00-24.00	172	200	244.1	334.2	MK 3	3SRM	1/8 Zoll	A1	B1	105008 0050	
spiral-fluted	Standard	22.00-24.00	172	200	244.1	334.2	MK 3	3SRM	1/8 Zoll	A2	B1	105008 0060	
spiral-fluted	extra-long	18.00-24.00	273	301.6	345.7	435.8	MK 3	3SRM	1/8 Zoll	A1	B1	105008 0070	
spiral-fluted	extra-long	22.00-24.00	273	301.6	345.7	435.8	MK 3	3SRM	1/8 Zoll	A2	B1	105008 0080	

1141

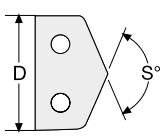
Series 1 cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
18.00	132	2	105441 1800		2	105447 1800	
18.50	132	2	105441 1850		2	105447 1850	
19.00	132	2	105441 1900		2	105447 1900	
19.50	132	2	105441 1950		2	105447 1950	
20.00	132	2	105441 2000		2	105447 2000	
20.50	132	2	105441 2050		2	105447 2050	
21.00	132	2	105441 2100		2	105447 2100	
21.50	132	2	105441 2150		2	105447 2150	
22.00	132	2	105441 2200		2	105447 2200	
22.50	132	2	105441 2250		2	105447 2250	
23.00	132	2	105441 2300		1	105447 2300	
23.50	132	2	105441 2350		2	105447 2350	
24.00	132	2	105441 2400		2	105447 2400	
			1142			1143	





Drilling system T-A® Series 2

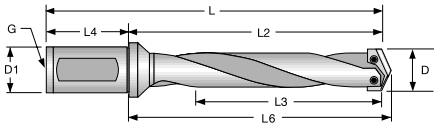
132° | Vc/fz | 382

- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105541....	●	●	●	○	○				○	○	○			●				
	105547....	●	●	●	●	●				●	●	○			●				







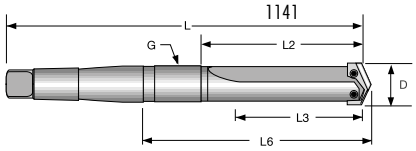
Series 2 holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread	A1	B1	art.no.	€
straight-fluted	extra-short	24.50-35.00	57	88.5	92.1	148.5	32	60	1/4" *	A1	B1	105009 0010	
straight-fluted	extra-short	30.00-35.00	92	123.4	127	183.4	32	60	1/4" *	A1	B1	105009 0020	
straight-fluted	short	24.50-35.00	86	128.6	132.2	188.6	32	60	1/4 Zoll	A1	B1	105009 0030	
straight-fluted	short	30.00-35.00	86	128.6	132.2	188.6	32	60	1/4 Zoll	A1	B1	105009 0040	
spiral-fluted	Medium-length	24.50-35.00	137	179.4	183	239.4	32	60	1/4 Zoll	A1	B1	105009 0050	
spiral-fluted	Medium-length	30.00-35.00	137	179.4	183	239.4	32	60	1/4 Zoll	A1	B1	105009 0060	
spiral-fluted	Standard	24.50-35.00	187	230.2	233.8	290.2	32	60	1/4 Zoll	A1	B1	105009 0070	
spiral-fluted	Standard	30.00-35.00	187	230.2	233.8	290.2	32	60	1/4 Zoll	A1	B1	105009 0080	
spiral-fluted	Standard plus	24.50-35.00	238	280.9	284.5	340.9	32	60	1/4 Zoll	A1	B1	105009 0085	
spiral-fluted	extra-long	24.50-35.00	289	331.8	335.4	391.8	32	60	1/4 Zoll	A1	B1	105009 0090	
spiral-fluted	extra-long	30.00-35.00	289	331.8	335.4	391.8	32	60	1/4 Zoll	A1	B1	105009 0100	
spiral-fluted	Ultra-long	24.50-35.00	410	452.9	456.5	512.9	32	60	1/4 Zoll	A1	B1	105009 0105	
straight-fluted	XL	24.50-35.00	511	554.1	557.7	614.1	32	60	1/4 Zoll	A1	B1	105009 0110	
straight-fluted	3XL	24.50-35.00	692	735.1	738.7	795.1	32	60	1/4 Zoll	A1	B1	105009 0120	

1141







Series 2 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread	A1	B1	art.no.	€
straight-fluted	short	24.50-35.00	86	114.3	160.4	273.8	MK 4	3SRM	1/8 Zoll	A1	B1	105010 0010	
straight-fluted	short	30.00-35.00	86	114.3	167.6	281	MK 4	4SRM	1/4 Zoll	A1	B1	105010 0020	
spiral-fluted	Medium-length	24.50-35.00	137	165.1	211.2	324.6	MK 4	3SRM	1/8 Zoll	A1	B1	105010 0030	
spiral-fluted	Medium-length	30.00-35.00	137	165.1	218.4	331.8	MK 4	4SRM	1/4 Zoll	A1	B1	105010 0040	
spiral-fluted	Standard	24.50-35.00	188	215.9	262	375.4	MK 4	3SRM	1/8 Zoll	A1	B1	105010 0050	
spiral-fluted	Standard	30.00-35.00	188	215.9	269.2	382.6	MK 4	4SRM	1/4 Zoll	A1	B1	105010 0060	
spiral-fluted	extra-long	24.50-35.00	289	317.5	363.6	477	MK 4	3SRM	1/8 Zoll	A1	B1	105010 0070	
spiral-fluted	extra-long	30.00-35.00	289	317.5	370.8	484.2	MK 4	4SRM	1/4 Zoll	A1	B1	105010 0080	

1141

Series 2 cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A



D mm	S °	HSS Super Kobalt AM200™	art.no.	€	Carbide C1 K35 AM300™	art.no.	€
24.50	132	1	105541 2450		2	105547 2450	
25.00	132	2	105541 2500		2	105547 2500	
25.50	132	2	105541 2550		2	105547 2550	
26.00	132	2	105541 2600		2	105547 2600	
26.50	132	2	105541 2650		2	105547 2650	
27.00	132	2	105541 2700		2	105547 2700	
27.50	132	2	105541 2750		2	105547 2750	
28.00	132	2	105541 2800		2	105547 2800	
28.50	132	2	105541 2850		2	105547 2850	
29.00	132	2	105541 2900		2	105547 2900	
29.50	132	2	105541 2950		2	105547 2950	
30.00	132	2	105541 3000		2	105547 3000	
30.50	132	2	105541 3050		2	105547 3050	

1142 1143

D mm	S °	HSS Super Kobalt AM200™	art.no.	€	Carbide C1 K35 AM300™	art.no.	€
31.00	132	2	105541 3100		2	105547 3100	
31.50	132	2	105541 3150		2	105547 3150	
32.00	132	2	105541 3200		2	105547 3200	
32.50	132	2	105541 3250		2	105547 3250	
33.00	132	2	105541 3300		2	105547 3300	
33.50	132	2	105541 3350		2	105547 3350	
34.00	132	2	105541 3400		2	105547 3400	
34.50	132	2	105541 3450				
35.00	132	2	105541 3500		2	105547 3500	

1142 1143

Spare parts

Nyloc	art.no.	€
A1	100001 0764	

1145

Screw	art.no.	€
B1	105085 0070	

1145

TORX PLUS	art.no.	€
C1	705145 0015	

Drilling system T-A® Series 3

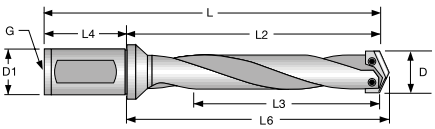
132° | Vc/fz | 384

- **Internal coolant supply**
- * Holders also have a 1/4 inch coolant supply connection on the side

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







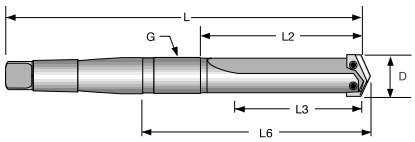
Series 3 holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread	A1	B1	art.no.	€
straight-fluted	extra-short	36.00-47.00	76.2	125	129.8	195	40	70	1/4" *	A1	B1	105011 0010	
straight-fluted	short	36.00-47.00	121	173	177.8	243	40	70	1/4 Zoll	A1	B1	105011 0020	
spiral-fluted	Medium-length	36.00-47.00	165	217.5	222.3	287.5	40	70	1/4 Zoll	A1	B1	105011 0030	
spiral-fluted	Standard	36.00-47.00	210	261.9	266.7	331.9	40	70	1/4 Zoll	A1	B1	105011 0040	
straight-fluted	extra-long	36.00-47.00	349.3	401.6	406.4	471.6	40	70	1/4 Zoll	A1	B1	105011 0050	
straight-fluted	XL	36.00-47.00	558.8	611.1	615.9	681.1	40	70	1/4 Zoll	A1	B1	105011 0060	
straight-fluted	3XL	36.00-47.00	787.4	839.7	844.5	909.7	40	70	1/4 Zoll	A1	B1	105011 0070	

1141







Series 3 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread	A1	B1	art.no.	€
straight-fluted	short	36.00-47.00	121	152.4	206.4	319.1	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0010	
spiral-fluted	Medium-length	36.00-47.00	165	196.9	250.9	363.6	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0020	
spiral-fluted	Standard	36.00-47.00	210	241.3	295.3	408	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0030	
straight-fluted	extra-long	36.00-47.00	349	381	435	547	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0040	
straight-fluted	XL	36.00-47.00	558.8	590.6	644.6	757.2	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0050	
straight-fluted	3XL	36.00-47.00	787.4	819.2	873.2	985.8	MK 4	4SRM	1/4 Zoll	A1	B1	105012 0060	

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Series 3 cutting inserts

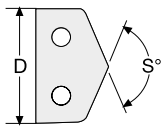
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
36.00	132	105641 3600	
37.00	132	105641 3700	
38.00	132	105641 3800	
39.00	132	105641 3900	
40.00	132	105641 4000	
41.00	132	105641 4100	
42.00	132	105641 4200	
43.00	132	105641 4300	
44.00	132	105641 4400	
45.00	132	105641 4500	
46.00	132	105641 4600	
47.00	132	105641 4700	

1142





Spare parts

	Screw art.no.	€	Nyloc art.no.	€	TORX PLUS art.no.	€
A1	105085 0080					
B1			105086 0080			
C1					705145 0020	
	1145		1145			

Drilling system T-A® Series 4

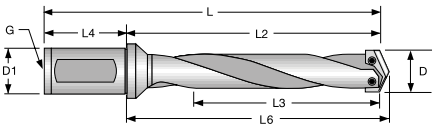
132° | Vc/fz | 384

- **Internal coolant supply**

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







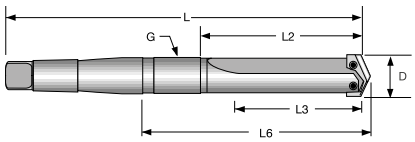
Series 4 holder with straight shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Connection thread	A1	B1	art.no.	€
straight-fluted	short	48.00-65.00	130	179.4	184.2	249.4	40	70	1/4 Zoll	A1	B1	105013 0010	
spiral-fluted	Standard	48.00-65.00	232	281	285.8	351	40	70	1/4 Zoll	A1	B1	105013 0020	
straight-fluted	extra-long	48.00-65.00	422	471.5	476.3	541.5	40	70	1/4 Zoll	A1	B1	105013 0030	
straight-fluted	XL	48.00-65.00	625	674.7	679.5	744.7	40	70	1/4 Zoll	A1	B1	105013 0040	
straight-fluted	3XL	48.00-65.00	879	928.7	933.5	998.7	40	70	1/4 Zoll	A1	B1	105013 0050	

1141







Series 4 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread	A1	B1	art.no.	€
straight-fluted	short	48.00-65.00	130	165.1	219.1	363.5	MK 5	5SRM	1/4 Zoll	A1	B1	105014 0010	
spiral-fluted	Standard	48.00-65.00	232	266.7	320.7	465.1	MK 5	5SRM	1/4 Zoll	A1	B1	105014 0020	
straight-fluted	extra-long	48.00-65.00	422	457	511.2	655.6	MK 5	5SRM	1/4 Zoll	A1	B1	105014 0030	
straight-fluted	XL	48.00-65.00	625	660.4	714.4	858.8	MK 5	5SRM	1/4 Zoll	A1	B1	105014 0040	
straight-fluted	3XL	48.00-65.00	879	914.4	968.4	1112.8	MK 5	5SRM	1/4 Zoll	A1	B1	105014 0050	

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Series 4 cutting inserts

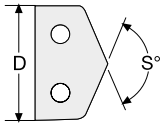
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
48.00	132	105716 4800	
49.00	132	105716 4900	
50.00	132	105716 5000	
51.00	132	105716 5100	
52.00	132	105716 5200	
53.00	132	105716 5300	
54.00	132	105716 5400	
55.00	132	105716 5500	
56.00	132	105716 5600	
57.00	132	105716 5700	
58.00	132	105716 5800	
59.00	132	105716 5900	
60.00	132	105716 6000	
61.00	132	105716 6100	
62.00	132	105716 6200	
63.00	132	105716 6300	
64.00	132	105716 6400	
65.00	132	105716 6500	

1142





Spare parts

	Screw art.no.	€
A1	105085 0080	

1145

	Nyloc art.no.	€
B1	105086 0080	

1145

	TORX PLUS art.no.	€
C1	705145 0020	

Drilling system T-A® Series 5/6 and 7/8

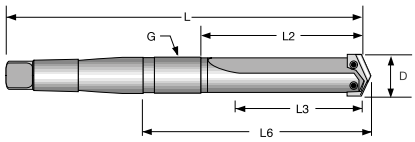
384

- **Internal coolant supply**

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







Series 5/6 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread			art.no.	€
straight-fluted	short	64.00-88.00	172	215.9	287.3	430.2	MK 5	6SRM	1/2 Zoll	A1	B1	105016 0010	
spiral-fluted	Standard	64.00-88.00	273	317.5	388.9	531.8	MK 5	6SRM	1/2 Zoll	A1	B1	105016 0020	
straight-fluted	extra-long	64.00-88.00	464	508	579.4	722.3	MK 5	6SRM	1/2 Zoll	A1	B1	105016 0030	
straight-fluted	XL	64.00-88.00	660	704.8	776.2	919.1	MK 5	6SRM	1/2 Zoll	A1	B1	105016 0040	

1141

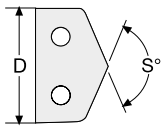
Series 7/8 holder with Morse taper shank

Design	Overall length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	Type	Connection thread			art.no.	€
straight-fluted	short	90.00-114.00	172	225.4	296.8	439.7	MK 5	6SRM	1/2 Zoll	A1	B1	105017 0010	
spiral-fluted	Standard	90.00-114.00	273	327	398.5	541.3	MK 5	6SRM	1/2 Zoll	A1	B1	105017 0020	
straight-fluted	extra-long	90.00-114.00	556	610	681	823.9	MK 5	6SRM	1/2 Zoll	A1	B1	105017 0030	
straight-fluted	XL	90.00-114.00	685	739.7	811.2	954	MK 5	6SRM	1/2 Zoll	A1	B1	105017 0040	

1141

GEN2 T-A





Series 5 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
64.00	144	105765 6400	
66.00	144	105765 6600	
68.00	144	105765 6800	
70.00	144	105765 7000	
72.00	144	105765 7200	
74.00	144	105765 7400	
76.00	144	105765 7600	

1142

Series 6 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
78.00	144	105810 7800	
80.00	144	105810 8000	
82.00	144	105810 8200	
84.00	144	105810 8400	
86.00	144	105810 8600	
88.00	144	105810 8800	

1142

Series 7 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
90.00	144	105860 9000	
92.00	144	105860 9200	
94.00	144	105860 9400	
96.00	144	105860 9600	
98.00	144	105860 9800	
100.00	144	105860 0000	

1142

Series 8 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
102.00	144	105910 0200	
104.00	144	105910 0400	
106.00	144	105910 0600	
108.00	144	105910 0800	
110.00	144	105910 1000	
112.00	144	105910 1200	
114.00	144	105910 1400	

1142

Spare parts

	Screw art.no.	€
A1	105085 0090	

1145

	TORX PLUS art.no.	€
B1	705145 0025	

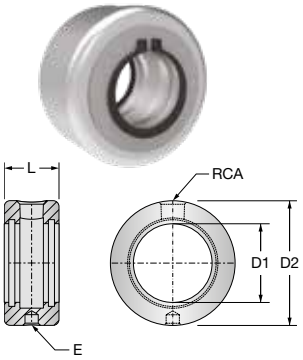
Accessories

Coolant adapter

- Coolant ring, 2 O-ring seals, 2 retaining rings, 2 thrust washers

Connection thread	D1 mm	Drill Ø mm	A mm	Designation	L mm	art.no.	€
1/8 Zoll	19.05	44.45	M 8	2SRM	22.23	105050 0010	
1/8 Zoll	25,4	53.97	M 8	3SRM	28.57	105050 0020	
1/4 Zoll	31.75	63,5	M10	4SRM	34.92	105050 0030	
1/4 Zoll	44.45	76,2	M10	5SRM	34.92	105050 0040	

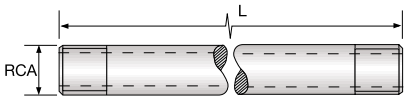
1145



Coolant pipe extension/support rod

Connection thread	L mm	Designation	art.no.	€
1/8	150	302T-2SRM	105060 0020	
1/8	150	302T-3SRM	105060 0030	
1/4	200	302T-4SRM	105060 0040	
1/4	200	302T-5SRM	105060 0050	
1/2	200	302T-6SRM	105060 0060	

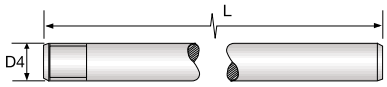
1145



Support rod, solid

d4 mm	L mm	Designation	art.no.	€
M 8	250	312T-2SRM	105065 0020	
M 8	250	312T-3SRM	105065 0030	
M10	250	312T-4SRM	105065 0040	
M10	250	312T-5SRM	105065 0050	
M12	250	312T-6SRM	105065 0060	

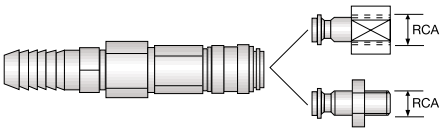
1145



Quick coupling

Connection thread	Hose connection diameter mm	Designation	art.no.	€
1/8	9	322T-2SRM	105070 0020	
1/8	9	322T-3SRM	105070 0030	
1/4	9	322T-4SRM	105070 0040	
1/4	12	322T-5SRM	105070 0050	
1/2	12	322T-6SRM	105070 0060	

1145



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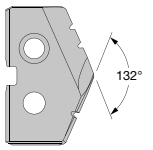
Cutting inserts T-A® Original

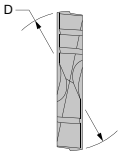
HSS | 132° | TiN | TiCN | Vc/fz | 382 – 384

- **Diameter 9.5 - 65mm**
- suitable for carrier tools T-A® Original, series Y to 4
- **Cutting material: HSS Super Cobalt, TiN/TiCN-coated**
- Universal geometry with a wide range of applications
- **Recommendation:** TiCN variant for applications in stainless steel


TiN


TiCN





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105100....	●	●	●	○	○				○	○	○			●				
	105102....	●	●	●	●	●				○	○	○	○		○				

D mm	Suitable for holder		TiN art.no.	€		TiCN art.no.	€
9.5	Series Y	2	105100 0950		2	105102 0950	
10	Series Y	2	105100 1000		2	105102 1000	
10.2	Series Y	2	105100 1020		2	105102 1020	
10.5	Series Y	2	105100 1050		2	105102 1050	
10.8	Series Y	2	105100 1080		2	105102 1080	
11	Series Y	2	105100 1100		2	105102 1100	
11.5	Series Z	2	105200 1150		2	105202 1150	
12	Series Z	2	105200 1200		2	105202 1200	
12.5	Series Z	2	105200 1250		2	105202 1250	
13	Series 0	2	105300 1300		2	105302 1300	
13.5	Series 0	2	105300 1350		2	105302 1350	
14	Series 0	2	105300 1400		2	105302 1400	
14.5	Series 0	2	105300 1450		2	105302 1450	
15	Series 0	2	105300 1500		2	105302 1500	
15.5	Series 0	2	105300 1550		2	105302 1550	
16	Series 0	2	105300 1600		2	105302 1600	
16.5	Series 0	2	105300 1650		2	105302 1650	
17	Series 0	2	105300 1700		2	105302 1700	
17.5	Series 0	2	105300 1750		2	105302 1750	
18	Series 1	2	105405 1800		2	105407 1800	
18.5	Series 1	2	105405 1850		2	105407 1850	
19	Series 1	2	105405 1900		2	105407 1900	
19.5	Series 1	2	105405 1950		2	105407 1950	
20	Series 1	2	105405 2000		2	105407 2000	
20.5	Series 1	2	105405 2050		2	105407 2050	
21	Series 1	2	105405 2100		2	105407 2100	
22	Series 1	2	105405 2200		2	105407 2200	
22.5	Series 1	2	105405 2250		2	105407 2250	
23	Series 1	2	105405 2300		2	105407 2300	
23.5	Series 1	2	105405 2350		2	105407 2350	
24	Series 1	2	105405 2400		2	105407 2400	
24.5	Series 2	2	105505 2450		2	105507 2450	
25	Series 2	2	105505 2500		2	105507 2500	
25.5	Series 2	2	105505 2550		2	105507 2550	
26	Series 2	2	105505 2600		2	105507 2600	
26.5	Series 2	2	105505 2650		2	105507 2650	
27	Series 2	2	105505 2700		2	105507 2700	
27.5	Series 2	2	105505 2750		2	105507 2750	
28	Series 2	2	105505 2800		2	105507 2800	
29	Series 2	2	105505 2900		2	105507 2900	
29.5	Series 2	2	105505 2950		2	105507 2950	
			1142			1142	

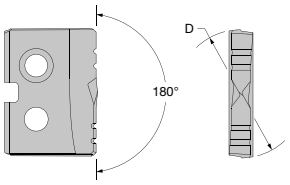
D mm	Suitable for holder		TiN art.no.	€		TiCN art.no.	€
30	Series 2	2	105505 3000		2	105507 3000	
30.5	Series 2	2	105505 3050		2	105507 3050	
31	Series 2	2	105505 3100		2	105507 3100	
31.5	Series 2	2	105505 3150		2	105507 3150	
32	Series 2	2	105505 3200		2	105507 3200	
32.5	Series 2	2	105505 3250		2	105507 3250	
33	Series 2	2	105505 3300		2	105507 3300	
33.5	Series 2	2	105505 3350		2	105507 3350	
34	Series 2	2	105505 3400		2	105507 3400	
35	Series 2	2	105505 3500		2	105507 3500	
36	Series 3	2	105605 3600		2	105607 3600	
37	Series 3	2	105605 3700		2	105607 3700	
38	Series 3	2	105605 3800		2	105607 3800	
39	Series 3	2	105605 3900		2	105607 3900	
40	Series 3	2	105605 4000		2	105607 4000	
41	Series 3	2	105605 4100		2	105607 4100	
42	Series 3	2	105605 4200		2	105607 4200	
43	Series 3	2	105605 4300		2	105607 4300	
44	Series 3	2	105605 4400		2	105607 4400	
45	Series 3	2	105605 4500		2	105607 4500	
46	Series 3	2	105605 4600		2	105607 4600	
47	Series 3	2	105605 4700		2	105607 4700	
48	Series 4	1	105705 4800		1	105707 4800	
49	Series 4	1	105705 4900		1	105707 4900	
50	Series 4	1	105705 5000		1	105707 5000	
51	Series 4	1	105705 5100		1	105707 5100	
52	Series 4	1	105705 5200		1	105707 5200	
53	Series 4	1	105705 5300		1	105707 5300	
54	Series 4	1	105705 5400		1	105707 5400	
55	Series 4	1	105705 5500		1	105707 5500	
56	Series 4	1	105705 5600		1	105707 5600	
57	Series 4	1	105705 5700		1	105707 5700	
58	Series 4	1	105705 5800		1	105707 5800	
59	Series 4	1	105705 5900		1	105707 5900	
60	Series 4	1	105705 6000		1	105707 6000	
61	Series 4	1	105705 6100		1	105707 6100	
62	Series 4	1	105705 6200		1	105707 6200	
63	Series 4	1	105705 6300		1	105707 6300	
64	Series 4	1	105705 6400		1	105707 6400	
65	Series 4	1	105705 6500		1	105707 6500	
			1142			1142	

Cutting inserts T-A® Original Flat Bottom 180°

HSS TiN Vc/fz 382 – 384

- **Diameter 9.5-65 mm**
- **For producing a flat-bottomed bore in existing bore**
- Suitable for carrier tools T-A® Original, series Y to 4
- Also suitable for flat countersinks (only with short holder)
- **Cutting material: HSS Super Cobalt, TiN-coated**





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

D mm	Suitable for holder		art.no.	€
9.5	Series Y	2	105125 0950	
10	Series Y	2	105125 1000	
10.2	Series Y	2	105125 1020	
10.5	Series Y	2	105125 1050	
10.8	Series Y	2	105125 1080	
11	Series Y	2	105125 1100	
11.5	Series Z	2	105225 1150	
12	Series Z	2	105225 1200	
12.5	Series Z	2	105225 1250	
13	Series 0	2	105325 1300	
13.5	Series 0	2	105325 1350	
14	Series 0	2	105325 1400	
14.5	Series 0	2	105325 1450	
15	Series 0	2	105325 1500	
15.5	Series 0	2	105325 1550	
16	Series 0	2	105325 1600	
16.5	Series 0	2	105325 1650	
17	Series 0	2	105325 1700	
17.5	Series 0	2	105325 1750	
18	Series 1	2	105430 1800	
18.5	Series 1	2	105430 1850	
19	Series 1	2	105430 1900	
19.5	Series 1	2	105430 1950	
20	Series 1	2	105430 2000	
20.5	Series 1	2	105430 2050	
21	Series 1	2	105430 2100	
21.5	Series 1	2	105430 2150	
22	Series 1	2	105430 2200	
22.5	Series 1	2	105430 2250	
23	Series 1	2	105430 2300	
23.5	Series 1	2	105430 2350	
24	Series 1	2	105430 2400	
24.5	Series 2	2	105530 2450	
25	Series 2	2	105530 2500	
25.5	Series 2	2	105530 2550	
26	Series 2	2	105530 2600	
26.5	Series 2	2	105530 2650	
27	Series 2	2	105530 2700	
27.5	Series 2	2	105530 2750	
28	Series 2	2	105530 2800	
28.5	Series 2	2	105530 2850	
29	Series 2	2	105530 2900	

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D mm	Suitable for holder		art.no.	€
29.5	Series 2	2	105530 2950	
30	Series 2	2	105530 3000	
30.5	Series 2	2	105530 3050	
31	Series 2	2	105530 3100	
31.5	Series 2	2	105530 3150	
32	Series 2	2	105530 3200	
32.5	Series 2	2	105530 3250	
33	Series 2	2	105530 3300	
33.5	Series 2	2	105530 3350	
34	Series 2	2	105530 3400	
34.5	Series 2	2	105530 3450	
35	Series 2	2	105530 3500	
36	Series 3	2	105530 3600	
37	Series 3	2	105530 3700	
38	Series 3	2	105530 3800	
39	Series 3	2	105530 3900	
40	Series 3	2	105530 4000	
41	Series 3	2	105530 4100	
42	Series 3	2	105530 4200	
43	Series 3	2	105530 4300	
45	Series 3	2	105530 4500	
46	Series 3	2	105530 4600	
47	Series 3	2	105530 4700	
48	Series 4	1	105530 4800	
49	Series 4	1	105530 4900	
50	Series 4	1	105530 5000	
51	Series 4	1	105530 5100	
52	Series 4	1	105530 5200	
53	Series 4	1	105530 5300	
54	Series 4	1	105530 5400	
55	Series 4	1	105530 5500	
56	Series 4	1	105530 5600	
57	Series 4	1	105530 5700	
58	Series 4	1	105530 5800	
59	Series 4	1	105530 5900	
60	Series 4	1	105530 6000	
61	Series 4	1	105530 6100	
62	Series 4	1	105530 6200	
63	Series 4	1	105530 6300	
64	Series 4	1	105530 6400	
65	Series 4	1	105530 6500	

1142

Modular system for cutting inserts

- Modular cutting insert head
- Compatible with TA-Original cutting inserts
- Base holder and extension usable with the VortexDrill system

Modular system for cutting inserts

D min./max.	L mm	D1 mm	art.no.	€
48 mm - 65 mm	60	13	105081 4865	
64 mm - 77 mm	80	16	105081 6477	
76 mm - 90 mm	80	22	105081 7690	
90 mm - 100 mm	90	27	105081 9010	
100 mm - 114 mm	90	32	105081 1011	



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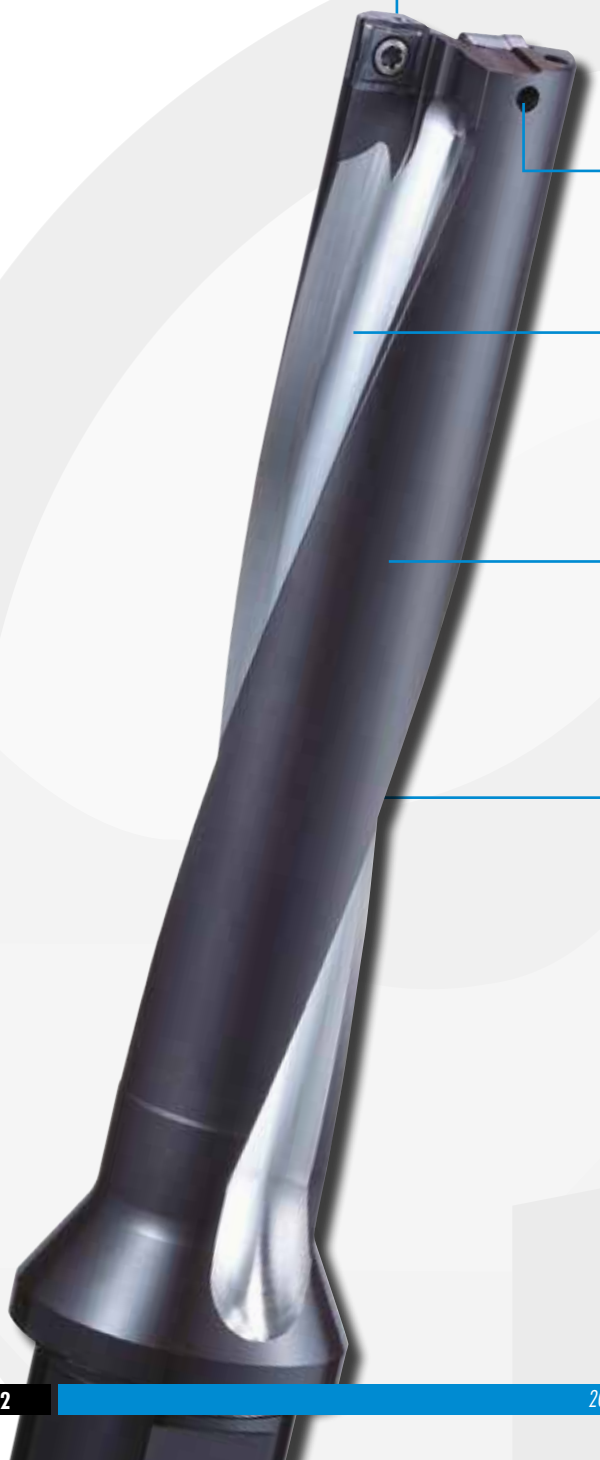
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INDEXABLE INSERT DRILLS PD

The PHOENIX PD features an optimised substrate geometry with increased stability, improved chip removal and reduced cutting forces, making it best suited for a wide range of applications in the ISO P, M, K and N material groups. It uses the latest cutting materials for the inserts, offers maximum tool life and ensures high process reliability and performance.



Wide range of applications in steel, stainless steel, cast iron and aluminium alloys



1. High efficiency thanks to 4 effective cutting edges per indexable insert
2. Internal coolant supply
3. Chip space surface finish for improved chip removal
4. Optimised substrate geom-etry for increased stability and
5. Available tool lengths 2xD, 3xD, 4xD and 5xD, diameter 12-63 mm

Indexable inserts solid drill bits PHOENIX PD

Werks-norm | 2xD | 3xD | 4xD | 5xD | Vc/fz

387

- Optimised substrate geometry for increased stability, improved chip removal and reduced cutting forces
- **Available in tool lengths of 2xD, 3xD, 4xD and 5xD**
- **Diameter 12-63mm**
- **Wide range of applications in steel, stainless steel, cast iron and aluminium materials**
- Short chips due to additional chip breaker in the chip flute
- **High efficiency thanks to 4 effective cutting edges per indexable insert** (from Ø 15 mm)
- Same indexable insert can be used as centre and periphery plate
- **With internal coolant supply**
- **Please note:** Supplied without clamping key (Torx-Plus), please order separately.

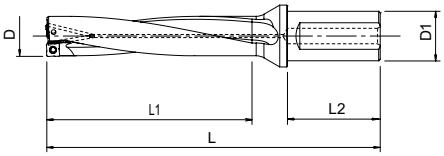
Range expanded

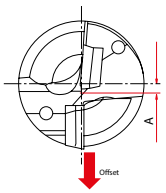
P2D - 2xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.25 mm; Ø 21-49 mm > 0/+0.3 mm; Ø 50-63 mm > 0/+0.35 mm

D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
12	87	24	50	20	0.4	12.8	XCMT 031904ER	A1	B1	124202 0120	
12.5	88	25	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124202 0125	
13	89	26	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124202 0130	
13.5	90	27	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124202 0135	
14	91	28	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124202 0140	
14.5	92	29	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124202 0145	
15	95	30	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124202 0150	
15.5	96	31	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124202 0155	
16	97	32	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124202 0160	
16.5	98	33	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124202 0165	
17	102	34	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124202 0170	
17.5	109	35	56	25	0.5	18.5	XCMT 052404ER	A2	B1	124202 0175	
18	110	36	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124202 0180	
18.5	111	37	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124202 0185	
19	112	38	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124202 0190	
19.5	113	39	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124202 0195	
20	114	40	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124202 0200	
20.5	115	41	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124202 0205	
21	121	42	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124202 0210	
21.5	122	43	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124202 0215	
22	123	44	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124202 0220	
22.5	124	45	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124202 0225	
23	125	46	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124202 0230	
23.5	130	47	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124202 0235	
24	131	48	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124202 0240	
24.5	132	49	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124202 0245	
25	133	50	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124202 0250	
25.5	134	51	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124202 0255	
26	135	52	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124202 0260	
26.5	136	53	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124202 0265	
27	137	54	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124202 0270	
28	139	56	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124202 0280	
28.5	140	57	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124202 0285	
29	141	58	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124202 0290	
30	143	60	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124202 0300	
31	155	62	70	32	0.8	32.6	XCMT 094008ER	A5	B4	124202 0310	
32	157	64	70	40	0.6	33.2	XCMT 094008ER	A5	B4	124202 0320	
33	159	66	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124202 0330	
33.5	160	67	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124202 0335	
34	161	68	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124202 0340	
35	163	70	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124202 0350	
36	165	72	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124202 0360	
37	167	74	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124202 0370	
38	169	76	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124202 0380	







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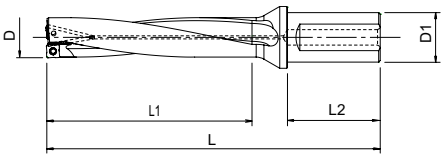
D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
39	178	78	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124202 0390	
40	180	80	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124202 0400	
41	182	82	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124202 0410	
42	184	84	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124202 0420	
43	186	86	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124202 0430	
44	188	88	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124202 0440	
45	190	90	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124202 0450	
46	192	92	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124202 0460	
47	194	94	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124202 0470	
48	196	96	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124202 0480	
49	198	98	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124202 0490	
50	200	100	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124202 0500	
51	202	102	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124202 0510	
52	204	104	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124202 0520	
53	206	106	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124202 0530	
54	208	108	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124202 0540	
55	210	110	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124202 0550	
56	212	112	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124202 0560	
57	214	114	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124202 0570	
58	216	116	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124202 0580	
59	218	118	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124202 0590	
60	220	120	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124202 0600	
61	222	122	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124202 0610	
62	224	124	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124202 0620	
63	226	126	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124202 0630	

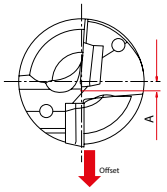
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P3D - 3xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.25 mm; Ø 21-49 mm > 0/+0.3 mm; Ø 50-63 mm > 0/+0.35 mm







D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
12	99	36	50	20	0.4	12.8	XCMT 031904ER	A1	B1	124203 0120	
12.5	100.5	37.5	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124203 0125	
12.7	101.1	38.1	50	20	0.3	13.3	XCMT 031904ER	A1	B1	124203 0127	
13	102	39	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124203 0130	
13.5	103.5	40.5	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124203 0135	
14	105	42	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124203 0140	
14.5	106.5	43.5	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124203 0145	
15	110	45	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124203 0150	
15.5	112	47	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124203 0155	
16	113	48	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124203 0160	
16.5	115	50	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124203 0165	
17	119	51	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124203 0170	
17.5	121	53	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124203 0175	
18	128	54	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124203 0180	
18.5	130	56	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124203 0185	
19	131	57	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124203 0190	
19.5	133	59	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124203 0195	
20	134	60	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124203 0200	
20.5	136	62	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124203 0205	
21	142	63	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124203 0210	
21.5	144	65	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124203 0215	
22	145	66	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124203 0220	
22.5	147	68	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124203 0225	
23	148	69	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124203 0230	
23.5	154	71	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124203 0235	
24	155	72	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124203 0240	
24.5	157	74	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124203 0245	
25	158	75	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124203 0250	
25.5	160	77	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124203 0255	
26	161	78	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124203 0260	

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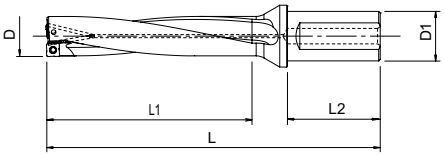
D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
26.5	163	80	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124203 0265	
27	164	81	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124203 0270	
28	167	84	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124203 0280	
28.5	169	86	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124203 0285	
29	170	87	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124203 0290	
30	173	90	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124203 0300	
31	186	93	70	32	0.8	32.6	XCMT 094008ER	A5	B4	124203 0310	
32	189	96	70	32	0.6	33.2	XCMT 094008ER	A5	B4	124203 0320	
33	192	99	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124203 0330	
33.5	194	101	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124203 0335	
34	195	102	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124203 0340	
35	198	105	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124203 0350	
36	201	108	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124203 0360	
37	204	111	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124203 0370	
38	207	114	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124203 0380	
39	217	117	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124203 0390	
40	220	120	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124203 0400	
41	223	123	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124203 0410	
42	226	126	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124203 0420	
43	229	129	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124203 0430	
44	232	132	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124203 0440	
45	235	135	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124203 0450	
46	238	138	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124203 0460	
47	241	141	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124203 0470	
48	244	144	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124203 0480	
49	247	147	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124203 0490	
50	250	150	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124203 0500	
51	253	153	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124203 0510	
52	256	156	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124203 0520	
53	259	159	70	40	0.7	55.4	XCMT 145612ER	A7	B6	124203 0530	
54	262	162	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124203 0540	
55	265	165	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124203 0550	
56	268	168	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124203 0560	
57	271	171	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124203 0570	
58	274	174	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124203 0580	
59	277	177	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124203 0590	
60	280	180	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124203 0600	
61	283	183	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124203 0610	
62	286	186	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124203 0620	
63	289	189	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124203 0630	

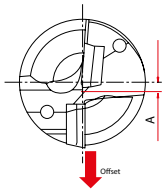
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P4D - 4xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.3 mm; Ø 21-49 mm > 0/+0.4 mm; Ø 50-63 mm > 0/+0.5 mm

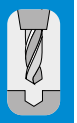






D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
12	111	48	50	20	0.4	12.8	XCMT 031904ER	A1	B1	124204 0120	
12.5	113	50	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124204 0125	
13	115	52	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124204 0130	
13.5	117	54	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124204 0135	
14	119	56	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124204 0140	
14.5	121	58	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124204 0145	
15	125	60	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124204 0150	
15.5	127	62	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124204 0155	
16	129	64	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124204 0160	
16.5	131	66	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124204 0165	
17	136	68	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124204 0170	
17.5	138	70	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124204 0175	
18	146	72	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124204 0180	
18.5	148	74	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124204 0185	
19	150	76	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124204 0190	

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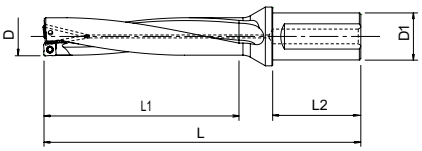
D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
19.5	152	78	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124204 0195	
20	154	80	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124204 0200	
20.5	156	82	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124204 0205	
21	163	84	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124204 0210	
21.5	165	86	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124204 0215	
22	167	88	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124204 0220	
22.5	169	90	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124204 0225	
23	171	92	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124204 0230	
23.5	177	94	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124204 0235	
24	179	96	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124204 0240	
24.5	181	98	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124204 0245	
25	183	100	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124204 0250	
25.5	185	102	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124204 0255	
26	187	104	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124204 0260	
26.5	189	106	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124204 0265	
27	191	108	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124204 0270	
28	195	112	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124204 0280	
28.5	197	114	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124204 0285	
29	199	116	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124204 0290	
30	203	120	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124204 0300	
31	207	124	60	32	0.8	32.6	XCMT 094008ER	A5	B4	124204 0310	
32	211	128	60	32	0.6	33.2	XCMT 094008ER	A5	B4	124204 0320	
33	225	132	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124204 0330	
33.5	227	134	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124204 0335	
34	229	136	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124204 0340	
35	233	140	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124204 0350	
36	237	144	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124204 0360	
37	241	148	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124204 0370	
38	245	152	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124204 0380	
39	256	156	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124204 0390	
40	260	160	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124204 0400	
41	264	164	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124204 0410	
42	268	168	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124204 0420	
43	272	172	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124204 0430	
44	276	176	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124204 0440	
45	280	180	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124204 0450	
46	284	184	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124204 0460	
47	288	188	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124204 0470	
48	292	192	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124204 0480	
49	296	196	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124204 0490	
50	300	200	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124204 0500	
51	304	204	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124204 0510	
52	308	208	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124204 0520	
53	312	212	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124204 0530	
54	316	216	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124204 0540	
55	320	220	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124204 0550	
56	324	224	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124204 0560	
57	328	228	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124204 0570	
58	332	232	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124204 0580	
59	336	236	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124204 0590	
60	340	240	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124204 0600	
61	344	244	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124204 0610	
62	348	248	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124204 0620	
63	352	252	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124204 0630	

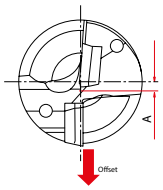
1169

P5D - 5xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.3 mm; Ø 21-49 mm > 0/+0.4 mm; Ø 50-63 mm > 0/+0.5 mm







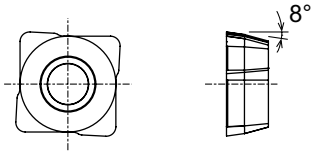
D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
12	123	60	50	20	0.4	12.8	XCMT 031904ER	A1	B1	124205 0120	
12.5	125.5	62.5	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124205 0125	
13	128	65	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124205 0130	
13.5	130.5	67.5	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124205 0135	
14	133	70	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124205 0140	
14.5	135.5	72.5	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124205 0145	
15	140	75	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124205 0150	
15.5	143	78	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124205 0155	
16	145	80	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124205 0160	
16.5	148	83	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124205 0165	
17	153	85	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124205 0170	
17.5	156	88	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124205 0175	
18	164	90	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124205 0180	
18.5	167	93	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124205 0185	
19	169	95	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124205 0190	
19.5	172	98	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124205 0195	
20	174	100	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124205 0200	
20.5	177	103	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124205 0205	
21	184	105	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124205 0210	
21.5	187	108	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124205 0215	
22	189	110	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124205 0220	
22.5	192	113	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124205 0225	
23	194	115	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124205 0230	
23.5	201	118	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124205 0235	
24	203	120	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124205 0240	
24.5	206	123	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124205 0245	
25	208	125	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124205 0250	
25.5	211	128	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124205 0255	
26	213	130	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124205 0260	
26.5	216	133	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124205 0265	
27	218	135	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124205 0270	
28	223	140	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124205 0280	
28.5	226	143	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124205 0285	
29	228	145	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124205 0290	
30	233	150	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124205 0300	
31	238	155	60	32	0.8	32.6	XCMT 094008ER	A5	B4	124205 0310	
32	243	160	60	32	0.6	33.2	XCMT 094008ER	A5	B4	124205 0320	
33	258	165	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124205 0330	
33.5	261	168	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124205 0335	
34	263	170	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124205 0340	
35	268	175	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124205 0350	
36	273	180	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124205 0360	
37	278	185	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124205 0370	
38	283	190	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124205 0380	
39	295	195	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124205 0390	
40	300	200	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124205 0400	
41	305	205	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124205 0410	
42	310	210	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124205 0420	
43	315	215	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124205 0430	
44	320	220	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124205 0440	
45	325	225	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124205 0450	
46	330	230	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124205 0460	
47	335	235	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124205 0470	
48	340	240	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124205 0480	
49	345	245	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124205 0490	
50	350	250	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124205 0500	
51	355	255	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124205 0510	
52	360	260	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124205 0520	

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D mm	L mm	L1 mm	L2 mm	D1 mm	Max. adjustment range mm	D max. mm	suitable indexable inserts			art.no.	€
53	365	265	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124205 0530	
54	370	270	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124205 0540	
55	375	275	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124205 0550	
56	380	280	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124205 0560	
57	385	285	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124205 0570	
58	390	290	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124205 0580	
59	395	295	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124205 0590	
60	400	300	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124205 0600	
61	405	305	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124205 0610	
62	410	310	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124205 0620	
63	415	315	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124205 0630	
											1169

Indexable cutting inserts





ISO designation	ISO MP -DM XP9020			ISO K -DR XP1010			ISO N -DN CK110		
		art.no.	€		art.no.	€		art.no.	€
XCMT 031904ER	10	124210 1904		10	124211 1904		10	124212 1904	
XCMT 042204ER	10	124210 2204		10	124211 2204		10	124212 2204	
XCMT 052404ER	10	124210 2404		10	124211 2404		10	124212 2404	
XCMT 062706ER	10	124210 2706		10	124211 2604		10	124212 2604	
XCMT 073106ER	10	124210 3106		10	124211 3106		10	124212 3106	
XCMT 083508ER	10	124210 3508		10	124211 3508		10	124212 3508	
XCMT 094008ER	10	124210 4008		10	124211 4008		10	124212 4008	
XCMT 104608ER	10	124210 4608		10	124211 4608		10	124212 4608	
XCMT 125010ER	10	124210 5010		10	124211 5010		10	124212 5010	
XCMT 135212ER	10	124210 5212		10	124211 5212		10	124212 5212	
XCMT 145612ER	10	124210 5612		10	124211 5612		10	124212 5612	
XCMT 165912ER	10	124210 5912		10	124211 5912		10	124212 5912	
		1170			1170			1170	

Spare parts

Screw			TORX PLUS		
	art.no.	€		art.no.	€
A1	124215 0003		B1	703054 0060	
A2	124215 0004		B2	703054 0070	
A3	124215 0006		B3	703054 0080	
A4	124215 0007		B4	703054 0090	
A5	124215 0008		B5	703054 0150	
A6	124215 0010		B6	703054 0200	
A7	124215 0013				
	1169			7114	

Premium partner

OSG Corporation is the world's largest manufacturer of shank tools. Founded in 1938, OSG has a long-standing reputation for providing total cutting tool solutions throughout the manufacturing industry.

OSG is the No. 1 player in the Japanese cutting tool market and holds a leading position worldwide with a production, sales and technical network in 33 countries.

OSG

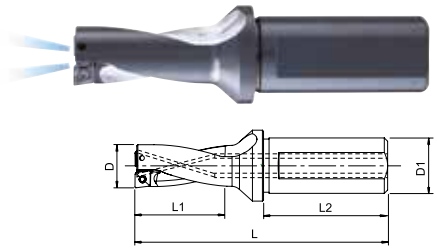
shaping your dreams

Indexable inserts for flat drills PDZ

Werks-norm | 2xD | 3xD | 386

- High precision finishing on flute improves rigidity, chip ejection and reduces cutting force
- Wide range of applications
- including drilling, boring, counterboring, inclined surface drilling, and more
- With internal coolant supply
- Same indexable insert can be used as centre and periphery plate
- Please note: Supplied without clamping key (Torx-Plus), please order separately.

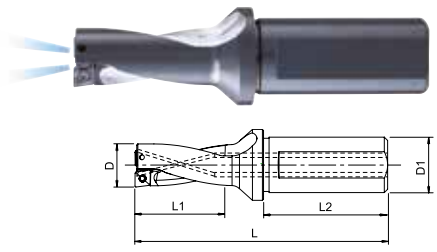
PDZ 2xD



D mm	L mm	L1 mm	L4 mm	D1 mm	suitable indexable inserts	2xD art.no.	€
16	97	32	50	20	ZPNT050204EN	124230 1600	
16.5	98	33	50	20	ZPNT050204EN	124230 1650	
17	102	34	50	20	ZPNT050204EN	124230 1700	
17.5	109	35	56	25	ZPNT050204EN	124230 1750	
18	110	36	56	25	ZPNT050204EN	124230 1800	
18.5	111	37	56	25	ZPNT050204EN	124230 1850	
19	112	38	56	25	ZPNT060204EN	124230 1900	
19.5	113	39	56	25	ZPNT060204EN	124230 1950	
20	114	40	56	25	ZPNT060204EN	124230 2000	
21	121	42	56	25	ZPNT060204EN	124230 2100	
22	123	44	56	25	ZPNT060204EN	124230 2200	
23	125	46	56	25	ZPNT070304EN	124230 2300	
24	127	48	56	25	ZPNT070304EN	124230 2400	
25	129	50	56	25	ZPNT070304EN	124230 2500	
26	135	52	60	32	ZPNT070304EN	124230 2600	
27	137	54	60	32	ZPNT080304EN	124230 2700	
28	139	56	60	32	ZPNT080304EN	124230 2800	
29	141	58	60	32	ZPNT080304EN	124230 2900	
30	143	60	60	32	ZPNT080304EN	124230 3000	
31	145	62	60	32	ZPNT080304EN	124230 3100	
32	147	64	60	32	ZPNT090404EN	124230 3200	
33	159	66	70	40	ZPNT090404EN	124230 3300	
34	161	68	70	40	ZPNT090404EN	124230 3400	
35	163	70	70	40	ZPNT100408EN	124230 3500	
36	165	72	70	40	ZPNT100408EN	124230 3600	
37	167	74	70	40	ZPNT100408EN	124230 3700	
38	169	76	70	40	ZPNT100408EN	124230 3800	
39	178	78	70	40	ZPNT130508EN	124230 3900	
40	180	80	70	40	ZPNT130508EN	124230 4000	
41	182	82	70	40	ZPNT130508EN	124230 4100	
42	184	84	70	40	ZPNT130508EN	124230 4200	
43	186	86	70	40	ZPNT130508EN	124230 4300	

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PDZ 3xD



D mm	L mm	L1 mm	L4 mm	D1 mm	suitable indexable inserts	3xD art.no.	€
16	113	48	50	20	ZPNT050204EN	124231 1600	
16.5	115	49.5	50	20	ZPNT050204EN	124231 1650	
17	119	51	50	20	ZPNT050204EN	124231 1700	
17.5	127	52.5	56	25	ZPNT050204EN	124231 1750	
18	128	54	56	25	ZPNT050204EN	124231 1800	
18.5	130	55.5	56	25	ZPNT050204EN	124231 1850	
19	131	57	56	25	ZPNT060204EN	124231 1900	
19.5	133	58.5	56	25	ZPNT060204EN	124231 1950	
20	134	60	56	25	ZPNT060204EN	124231 2000	
21	142	63	56	25	ZPNT060204EN	124231 2100	
22	145	66	56	25	ZPNT060204EN	124231 2200	
23	148	69	56	25	ZPNT070304EN	124231 2300	
24	151	72	56	25	ZPNT070304EN	124231 2400	

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D mm	L mm	L1 mm	L4 mm	D1 mm	suitable indexable inserts	**3xD** art.no.	€
25	154	75	56	25	ZPNT070304EN	124231 2500	
26	161	78	60	32	ZPNT070304EN	124231 2600	
27	164	81	60	32	ZPNT080304EN	124231 2700	
28	167	84	60	32	ZPNT080304EN	124231 2800	
29	170	87	60	32	ZPNT080304EN	124231 2900	
30	173	90	60	32	ZPNT080304EN	124231 3000	
31	176	93	60	32	ZPNT080304EN	124231 3100	
32	179	96	60	32	ZPNT090404EN	124231 3200	
33	192	99	70	40	ZPNT090404EN	124231 3300	
34	195	102	70	40	ZPNT090404EN	124231 3400	
35	198	105	70	40	ZPNT100408EN	124231 3500	
36	201	108	70	40	ZPNT100408EN	124231 3600	
37	204	111	70	40	ZPNT100408EN	124231 3700	
38	207	114	70	40	ZPNT100408EN	124231 3800	
39	217	117	70	40	ZPNT130508EN	124231 3900	
40	220	120	70	40	ZPNT130508EN	124231 4000	
41	223	123	70	40	ZPNT130508EN	124231 4100	
42	226	126	70	40	ZPNT130508EN	124231 4200	
43	229	129	70	40	ZPNT130508EN	124231 4300	

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Indexable cutting inserts

ISO H K M N P S



ISO designation	**XP8030** art.no.	€
ZPNT050204EN	124232 0504	
ZPNT060204EN	124232 0604	
ZPNT070304EN	124232 0704	
ZPNT080304EN	124232 0804	
ZPNT090404EN	124232 0904	
ZPNT100408EN	124232 1008	
ZPNT130508EN	124232 1308	

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INDEXABLE INSERT DRILLS SCS AND SCC

Established in 1916, Palbit is one of the most experienced tool manufacturers in Europe. Although initially focussed on the mining industry and extracting copper and zinc, as well as the development and production of mining tools, since 1952 the company has concentrated on manufacturing carbide tools.

Today, Palbit offers a wide production range, from powder manufacturing and indexable insert pressing, to the manufacture of support tools. As a full-service provider, the company facilitates standard and custom-made special solutions in machining technology.



Wide range of applications in the ISO material groups P, M, K and S

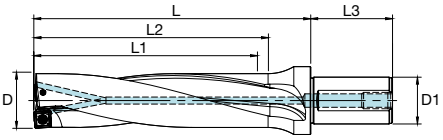


1. Diameter 13 - 80 mm
2. Surface-hardened carrier tools
3. Optimised chip space geometry and cutting-edge positions for stable drilling
4. Available tool lengths of 3 x D and 4 x D

palbit Indexable inserts solid drill bits SCS 3D/4D

3xD 4xD Vc/fz 393

- Surface-hardened carrier tools
- **Available tool lengths of 3xD and 4xD**
- **Diameter 13-50 mm**
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- **Suitable indexable cutting inserts SPKX**





SCS 3D - 3xD

- Bore tolerances: Ø 13-21.5 mm > -0.1/+0.15 mm; Ø 22-50 mm > -0.12/+0.2 mm

Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 13020-3D	13	39	42	62	20	50	SPKX 050204	A6	B1	124403 0130	
SCS 13520-3D	13.5	41	44	64	20	50	SPKX 050204	A6	B1	124403 0135	
SCS 14020-3D	14	42	45	65	20	50	SPKX 050204	A6	B1	124403 0140	
SCS 14520-3D	14.5	44	47	67	20	50	SPKX 050204	A6	B1	124403 0145	
SCS 15020-3D	15	45	48	68	20	50	SPKX 050204	A6	B1	124403 0150	
SCS 15525-3D	15.5	47	50	75	25	56	SPKX 060204	A1	B2	124403 0155	
SCS 16025-3D	16	48	51	76	25	56	SPKX 060204	A1	B2	124403 0160	
SCS 16525-3D	16.5	50	53	78	25	56	SPKX 060204	A1	B2	124403 0165	
SCS 17025-3D	17	51	54	79	25	56	SPKX 060204	A1	B2	124403 0170	
SCS 17525-3D	17.5	53	56	81	25	56	SPKX 060204	A1	B2	124403 0175	
SCS 18025-3D	18	54	57	82	25	56	SPKX 060204	A1	B2	124403 0180	
SCS 18525-3D	18.5	56	59	84	25	56	SPKX 060204	A1	B2	124403 0185	
SCS 19025-3D	19	57	60	85	25	56	SPKX 060204	A1	B2	124403 0190	
SCS 19525-3D	19.5	59	62	87	25	56	SPKX 060204	A1	B2	124403 0195	
SCS 20025-3D	20	60	63	88	25	56	SPKX 060204	A1	B2	124403 0200	
SCS 20525-3D	20.5	62	65	90	25	56	SPKX 060204	A1	B2	124403 0205	
SCS 21025-3D	21	63	66	91	25	56	SPKX 060204	A1	B2	124403 0210	
SCS 21525-3D	21.5	65	68	93	25	56	SPKX 060204	A1	B2	124403 0215	
SCS 22032-3D	22	66	69	99	32	60	SPKX 07T308	A2	B3	124403 0220	
SCS 22532-3D	22.5	68	71	101	32	60	SPKX 07T308	A2	B3	124403 0225	
SCS 23032-3D	23	69	72	102	32	60	SPKX 07T308	A2	B3	124403 0230	
SCS 23532-3D	23.5	71	74	104	32	60	SPKX 07T308	A2	B3	124403 0235	
SCS 24032-3D	24	72	75	105	32	60	SPKX 07T308	A2	B3	124403 0240	
SCS 24532-3D	24.5	74	77	107	32	60	SPKX 07T308	A2	B3	124403 0245	
SCS 25032-3D	25	75	78	108	32	60	SPKX 07T308	A2	B3	124403 0250	
SCS 25532-3D	25.5	77	80	110	32	60	SPKX 07T308	A2	B3	124403 0255	
SCS 26032-3D	26	78	81	111	32	60	SPKX 07T308	A2	B3	124403 0260	
SCS 26532-3D	26.5	80	83	113	32	60	SPKX 07T308	A2	B3	124403 0265	
SCS 27032-3D	27	81	84	114	32	60	SPKX 07T308	A2	B3	124403 0270	
SCS 27532-3D	27.5	83	86	116	32	60	SPKX 07T308	A2	B3	124403 0275	
SCS 28032-3D	28	84	87	117	32	60	SPKX 090408	A3	B4	124403 0280	
SCS 28532-3D	28.5	86	89	119	32	60	SPKX 090408	A3	B4	124403 0285	
SCS 29032-3D	29	87	90	120	32	60	SPKX 090408	A3	B4	124403 0290	
SCS 29532-3D	29.5	89	93	123	32	60	SPKX 090408	A3	B4	124403 0295	
SCS 30032-3D	30	90	95	125	32	60	SPKX 090408	A3	B4	124403 0300	
SCS 31032-3D	31	93	98	128	32	60	SPKX 090408	A3	B4	124403 0310	
SCS 32032-3D	32	96	101	131	32	60	SPKX 090408	A3	B4	124403 0320	
SCS 33032-3D	33	99	104	134	32	60	SPKX 090408	A3	B4	124403 0330	
SCS 34040-3D	34	102	107	142	40	70	SPKX 110408	A4	B4	124403 0340	
SCS 35040-3D	35	105	110	145	40	70	SPKX 110408	A4	B4	124403 0350	
SCS 36040-3D	36	108	113	148	40	70	SPKX 110408	A4	B4	124403 0360	
SCS 37040-3D	37	111	116	151	40	70	SPKX 110408	A4	B4	124403 0370	
SCS 38040-3D	38	114	119	154	40	70	SPKX 110408	A4	B4	124403 0380	
SCS 39040-3D	39	117	122	157	40	70	SPKX 110408	A4	B4	124403 0390	
SCS 40040-3D	40	120	125	160	40	70	SPKX 110408	A4	B4	124403 0400	
SCS 41040-3D	41	123	128	163	40	70	SPKX 110408	A4	B4	124403 0410	
SCS 42040-3D	42	126	131	166	40	70	SPKX 140512	A5	B5	124403 0420	

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Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 43040-3D	43	129	134	169	40	70	SPKX 140512	A5	B5	124403 0430	
SCS 44040-3D	44	132	137	172	40	70	SPKX 140512	A5	B5	124403 0440	
SCS 45040-3D	45	135	140	175	40	70	SPKX 140512	A5	B5	124403 0450	
SCS 46040-3D	46	138	143	178	40	70	SPKX 140512	A5	B5	124403 0460	
SCS 47040-3D	47	141	146	181	40	70	SPKX 140512	A5	B5	124403 0470	
SCS 48040-3D	48	144	149	184	40	70	SPKX 140512	A5	B5	124403 0480	
SCS 49040-3D	49	147	152	187	40	70	SPKX 140512	A5	B5	124403 0490	
SCS 50040-3D	50	150	155	190	40	70	SPKX 140512	A5	B5	124403 0500	

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SCS 4D - 4xD

- Bore tolerances: Ø 13-21.5 mm > -0.15/+0.2 mm; Ø 22-50 mm > -0.15/+0.25 mm

Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 13020-4D	13	52	55	75	20	50	SPKX 050204	A6	B1	124404 0130	
SCS 13520-4D	13.5	54	57	77	20	50	SPKX 050204	A6	B1	124404 0135	
SCS 14020-4D	14	56	59	79	20	50	SPKX 050204	A6	B1	124404 0140	
SCS 14520-4D	14.5	58	61	81	20	50	SPKX 050204	A6	B1	124404 0145	
SCS 15020-4D	15	60	63	83	20	50	SPKX 050204	A6	B1	124404 0150	
SCS 15525-4D	15.5	62	65	90	25	56	SPKX 060204	A1	B2	124404 0155	
SCS 16025-4D	16	64	67	92	25	56	SPKX 060204	A1	B2	124404 0160	
SCS 16525-4D	16.5	66	69	94	25	56	SPKX 060204	A1	B2	124404 0165	
SCS 17025-4D	17	68	71	96	25	56	SPKX 060204	A1	B2	124404 0170	
SCS 17525-4D	17.5	70	73	98	25	56	SPKX 060204	A1	B2	124404 0175	
SCS 18025-4D	18	72	75	100	25	56	SPKX 060204	A1	B2	124404 0180	
SCS 18525-4D	18.5	74	77	102	25	56	SPKX 060204	A1	B2	124404 0185	
SCS 19025-4D	19	76	79	104	25	56	SPKX 060204	A1	B2	124404 0190	
SCS 19525-4D	19.5	78	81	106	25	56	SPKX 060204	A1	B2	124404 0195	
SCS 20025-4D	20	80	83	108	25	56	SPKX 060204	A1	B2	124404 0200	
SCS 20525-4D	20.5	82	85	110	25	56	SPKX 060204	A1	B2	124404 0205	
SCS 21025-4D	21	84	87	112	25	56	SPKX 060204	A1	B2	124404 0210	
SCS 21525-4D	21.5	86	89	114	25	56	SPKX 060204	A1	B2	124404 0215	
SCS 22032-4D	22	88	91	121	32	60	SPKX 07T308	A2	B3	124404 0220	
SCS 22532-4D	22.5	90	93	123	32	60	SPKX 07T308	A2	B3	124404 0225	
SCS 23032-4D	23	92	95	125	32	60	SPKX 07T308	A2	B3	124404 0230	
SCS 23532-4D	23.5	94	97	127	32	60	SPKX 07T308	A2	B3	124404 0235	
SCS 24032-4D	24	96	99	129	32	60	SPKX 07T308	A2	B3	124404 0240	
SCS 24532-4D	24.5	98	101	131	32	60	SPKX 07T308	A2	B3	124404 0245	
SCS 25032-4D	25	100	103	133	32	60	SPKX 07T308	A2	B3	124404 0250	
SCS 25532-4D	25.5	102	105	135	32	60	SPKX 07T308	A2	B3	124404 0255	
SCS 26032-4D	26	104	107	137	32	60	SPKX 07T308	A2	B3	124404 0260	
SCS 26532-4D	26.5	106	109	139	32	60	SPKX 07T308	A2	B3	124404 0265	
SCS 27032-4D	27	108	111	141	32	60	SPKX 07T308	A2	B3	124404 0270	
SCS 27532-4D	27.5	110	113	143	32	60	SPKX 07T308	A2	B3	124404 0275	
SCS 28032-4D	28	112	115	145	32	60	SPKX 090408	A3	B4	124404 0280	
SCS 28532-4D	28.5	114	117	147	32	60	SPKX 090408	A3	B4	124404 0285	
SCS 29032-4D	29	116	120	150	32	60	SPKX 090408	A3	B4	124404 0290	
SCS 29532-4D	29.5	118	123	153	32	60	SPKX 090408	A3	B4	124404 0295	
SCS 30032-4D	30	120	125	155	32	60	SPKX 090408	A3	B4	124404 0300	
SCS 31032-4D	31	124	129	159	32	60	SPKX 090408	A3	B4	124404 0310	
SCS 32032-4D	32	128	133	163	32	60	SPKX 090408	A3	B4	124404 0320	
SCS 33032-4D	33	132	137	167	32	60	SPKX 090408	A3	B4	124404 0330	
SCS 34040-4D	34	136	141	176	40	70	SPKX 110408	A4	B4	124404 0340	
SCS 35040-4D	35	140	145	180	40	70	SPKX 110408	A4	B4	124404 0350	
SCS 36040-4D	36	144	149	184	40	70	SPKX 110408	A4	B4	124404 0360	
SCS 37040-4D	37	148	153	188	40	70	SPKX 110408	A4	B4	124404 0370	
SCS 38040-4D	38	152	157	192	40	70	SPKX 110408	A4	B4	124404 0380	
SCS 39040-4D	39	156	161	196	40	70	SPKX 110408	A4	B4	124404 0390	
SCS 40040-4D	40	160	165	200	40	70	SPKX 110408	A4	B4	124404 0400	
SCS 41040-4D	41	164	169	204	40	70	SPKX 110408	A4	B4	124404 0410	
SCS 42040-4D	42	168	173	208	40	70	SPKX 140512	A5	B5	124404 0420	
SCS 43040-4D	43	172	177	212	40	70	SPKX 140512	A5	B5	124404 0430	

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Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 44040-4D	44	176	181	216	40	70	SPKX 140512	A5	B5	124404 0440	
SCS 45040-4D	45	180	185	220	40	70	SPKX 140512	A5	B5	124404 0450	
SCS 46040-4D	46	184	189	224	40	70	SPKX 140512	A5	B5	124404 0460	
SCS 47040-4D	47	188	193	228	40	70	SPKX 140512	A5	B5	124404 0470	
SCS 48040-4D	48	192	197	232	40	70	SPKX 140512	A5	B5	124404 0480	
SCS 49040-4D	49	196	201	236	40	70	SPKX 140512	A5	B5	124404 0490	
SCS 50040-4D	50	200	205	240	40	70	SPKX 140512	A5	B5	124404 0500	
										1173	

Spare parts

	Screw art.no.	€
A1	321099 0004	
A2	321099 0006	
A3	321099 0010	
A4	321099 0017	
A5	321099 0411	
A6	321099 0524	
	3160	

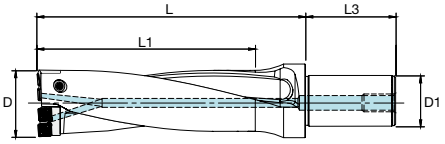
	TORX art.no.	€
B1	703053 0060	
B2	703053 0070	
B3	703053 0080	
B4	703053 0150	
B5	703053 0200	
	7114	

palbit Indexable inserts solid drill bits with cartridge system SCC 3D/4D



393

- Surface-hardened carrier tools
- **Available tool lengths of 3xD and 4xD**
- **Diameter 50-80 mm**
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications
- Good chip control and reduced cutting forces
- **Suitable indexable cutting inserts SPKX**
- Supplied with inner and outer cartridge





SCC 3D - 3xD

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	art.no.	€
SCC 505540-3D	50-55	165	205	40	70	SPKX 090408	124413 5055	
SCC 556040-3D	55-60	180	220	40	70	SPKX 090408	124413 5560	
SCC 606540-3D	60-65	195	235	40	70	SPKX 110408	124413 6065	
SCC 657040-3D	65-70	210	250	40	70	SPKX 110408	124413 6570	
SCC 707540-3D	70-75	225	265	40	70	SPKX 110408	124413 7075	
SCC 758040-3D	75-80	240	278	40	70	SPKX 140512	124413 7580	
							1173	

SCC 4D - 4xD

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	art.no.	€
SCC 505540-4D	50-55	220	260	40	70	SPKX 090408	124414 5055	
SCC 556040-4D	55-60	240	280	40	70	SPKX 090408	124414 5560	
SCC 606540-4D	60-65	260	300	40	70	SPKX 110408	124414 6065	
SCC 657040-4D	65-70	280	320	40	70	SPKX 110408	124414 6570	
SCC 707540-4D	70-75	300	340	40	70	SPKX 110408	124414 7075	
SCC 758040-4D	75-80	320	358	40	70	SPKX 140512	124414 7580	
							1173	

SCC cartridges

- Inner cartridge **SCC-I**, outer cartridge **SCC-O**

Designation	D mm	suitable indexable inserts	SCC-I inner cartridge art.no.	€	SCC-O outer cartridge art.no.	€
SCC 050055	50-55	SPKX 090408	124410 5055		124411 5055	
SCC 055060	55-60	SPKX 090408	124410 5560		124411 5560	
SCC 060065	60-65	SPKX 110408	124410 6065		124411 6065	
SCC 065070	65-70	SPKX 110408	124410 6570		124411 6570	
SCC 070075	70-75	SPKX 110408	124410 7075		124411 7075	
SCC 075080	75-80	SPKX 140512	124410 7580		124411 7580	
			3160		3160	



Spare parts

	Screw art.no.	€
A1	321099 0010	
A2	321099 0017	
A3	321099 0411	
	3160	

	TORX art.no.	€
B1	703053 0150	
B2	703053 0200	
	7114	

palbit Indexable cutting inserts SPKX

- Carbide indexable cutting inserts, positive 11°
- **PH6920** PVD-coated (TiAlN)
  Fine grain carbide for universal applications, good toughness and wear resistance
- **PH6930** PVD-coated (TiAlN)
  Superfine grain carbide for applications under unstable machine conditions at moderate cutting speeds
- **PHC930** PVD-coated (TiAlN+TiN)
  Fine grain carbide for universal applications at high cutting speeds

		ISO K M P S			ISO K M P S			ISO P	
ISO designation		**PH6920** art.no.	€		**PH6930** art.no.	€		**PHL930** art.no.	€
SPKX 05T104	10	124512 0105							
SPKX 050204	10	124512 0005		10	124513 0005				
SPKX 060204	10	124512 0006		10	124513 0006		10	124515 0006	
SPKX 070308	10	124512 0107							
SPKX 07T308	10	124512 0007		10	124513 0007		10	124515 0007	
SPKX 090308	10	124512 0109							
SPKX 090408	10	124512 0009		10	124513 0009		10	124515 0009	
SPKX 110408	10	124512 0011		10	124513 0011		10	124515 0011	
SPKX 140512	10	124512 0014		10	124513 0014		10	124515 0014	
		1171			1171			1171	



PH6920, PH6930

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INDEXABLE INSERT DRILLS TDS AND TDC

Established in 1916, Palbit is one of the most experienced tool manufacturers in Europe. Although initially focussed on the mining industry and extracting copper and zinc, as well as the development and production of mining tools, since 1952 the company has concentrated on manufacturing carbide tools.

Today, Palbit offers a wide production range, from powder manufacturing and indexable insert pressing, to the manufacture of support tools. As a full-service provider, the company facilitates standard and custom-made special solutions in machining technology.



Suitable for WCKX (VORTEX system) indexable cutting inserts



1. Diameter 13 - 80 mm
2. Drilling depths up to 3 x D
3. Soft cutting for lower power requirement
4. Good chip control and reduced cutting forces

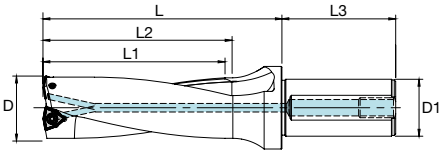
palbit Indexable inserts solid drill bits TDS 3D



390

- Surface-hardened carrier tools
- **Drilling depths up to 3xD**
- **Diameter 13-58 mm**
- Soft cutting for lower power requirement
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications in structural steel and stainless steels
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- Bore tolerances:
  Ø 13-21.5 mm > -0.1/+0.15 mm, Ø 22-50 mm > -0.12/+0.2 mm, Ø 50-58 mm > -0.15/+0.25 mm
- **Suitable indexable cutting inserts WCKX**





Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
TDS 13020-3D	13	39	42	62	20	50	WCKX 02T104	A6	B1	124303 0130	
TDS 13520-3D	13.5	41	44	64	20	50	WCKX 02T104	A6	B1	124303 0135	
TDS 14020-3D	14	42	45	65	20	50	WCKX 02T104	A6	B1	124303 0140	
TDS 14520-3D	14.5	44	47	67	20	50	WCKX 02T104	A6	B1	124303 0145	
TDS 15020-3D	15	45	48	68	20	50	WCKX 02T104	A6	B1	124303 0150	
TDS 15520-3D	15.5	47	50	70	20	50	WCKX 02T104	A6	B1	124303 0155	
TDS 16025-3D	16	48	51	76	25	56	WCKX 030204	A1	B2	124303 0160	
TDS 16525-3D	16.5	50	53	78	25	56	WCKX 030204	A1	B2	124303 0165	
TDS 17025-3D	17	51	54	79	25	56	WCKX 030204	A1	B2	124303 0170	
TDS 17525-3D	17.5	53	56	81	25	56	WCKX 030204	A1	B2	124303 0175	
TDS 18025-3D	18	54	57	82	25	56	WCKX 030204	A1	B2	124303 0180	
TDS 18525-3D	18.5	56	59	84	25	56	WCKX 030204	A1	B2	124303 0185	
TDS 19025-3D	19	57	60	85	25	56	WCKX 030204	A1	B2	124303 0190	
TDS 19525-3D	19.5	59	62	87	25	56	WCKX 030204	A1	B2	124303 0195	
TDS 20025-3D	20	60	63	88	25	56	WCKX 030204	A1	B2	124303 0200	
TDS 20525-3D	20.5	62	65	90	25	56	WCKX 040204	A2	B3	124303 0205	
TDS 21025-3D	21	63	66	91	25	56	WCKX 040204	A2	B3	124303 0210	
TDS 21525-3D	21.5	65	68	93	25	56	WCKX 040204	A2	B3	124303 0215	
TDS 22025-3D	22	66	69	94	25	56	WCKX 040204	A2	B3	124303 0220	
TDS 22525-3D	22.5	68	71	96	25	56	WCKX 040204	A2	B3	124303 0225	
TDS 23025-3D	23	69	72	97	25	56	WCKX 040204	A2	B3	124303 0230	
TDS 23525-3D	23.5	71	74	99	25	56	WCKX 040204	A2	B3	124303 0235	
TDS 24025-3D	24	72	75	100	25	56	WCKX 040204	A2	B3	124303 0240	
TDS 24525-3D	24.5	74	77	102	25	56	WCKX 040204	A2	B3	124303 0245	
TDS 25025-3D	25	75	78	103	25	56	WCKX 040204	A2	B3	124303 0250	
TDS 25532-3D	25.5	77	80	110	32	60	WCKX 050308	A5	B3	124303 0255	
TDS 26032-3D	26	78	81	111	32	60	WCKX 050308	A5	B3	124303 0260	
TDS 26532-3D	26.5	80	83	113	32	60	WCKX 050308	A5	B3	124303 0265	
TDS 27032-3D	27	81	84	114	32	60	WCKX 050308	A5	B3	124303 0270	
TDS 27532-3D	27.5	83	86	116	32	60	WCKX 050308	A5	B3	124303 0275	
TDS 28032-3D	28	84	87	117	32	60	WCKX 050308	A5	B3	124303 0280	
TDS 28532-3D	28.5	86	89	119	32	60	WCKX 050308	A5	B3	124303 0285	
TDS 29032-3D	29	87	90	120	32	60	WCKX 050308	A5	B3	124303 0290	
TDS 29532-3D	29.5	89	92	122	32	60	WCKX 050308	A5	B3	124303 0295	
TDS 30032-3D	30	90	93	123	32	60	WCKX 050308	A5	B3	124303 0300	
TDS 31032-3D	31	93	96	126	32	60	WCKX 06T308	A3	B4	124303 0310	
TDS 32032-3D	32	96	99	129	32	60	WCKX 06T308	A3	B4	124303 0320	
TDS 33032-3D	33	99	102	132	32	60	WCKX 06T308	A3	B4	124303 0330	
TDS 34032-3D	34	102	105	135	32	60	WCKX 06T308	A3	B4	124303 0340	
TDS 35032-3D	35	105	108	138	32	60	WCKX 06T308	A3	B4	124303 0350	
TDS 36032-3D	36	108	111	141	32	60	WCKX 06T308	A3	B4	124303 0360	
TDS 37032-3D	37	111	114	144	32	60	WCKX 06T308	A3	B4	124303 0370	
TDS 38032-3D	38	114	117	147	32	60	WCKX 06T308	A3	B4	124303 0380	
TDS 39032-3D	39	117	120	150	32	60	WCKX 06T308	A3	B4	124303 0390	
TDS 40032-3D	40	120	123	153	32	60	WCKX 06T308	A3	B4	124303 0400	
TDS 41032-3D	41	123	126	156	32	60	WCKX 06T308	A3	B4	124303 0410	

1173

Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
TDS 42040-3D	42	126	129	164	40	70	WCKX 080408	A4	B4	124303 0420	
TDS 43040-3D	43	129	132	167	40	70	WCKX 080408	A4	B4	124303 0430	
TDS 44040-3D	44	132	135	170	40	70	WCKX 080408	A4	B4	124303 0440	
TDS 45040-3D	45	135	138	173	40	70	WCKX 080408	A4	B4	124303 0450	
TDS 46040-3D	46	138	141	176	40	70	WCKX 080408	A4	B4	124303 0460	
TDS 47040-3D	47	141	144	179	40	70	WCKX 080408	A4	B4	124303 0470	
TDS 48040-3D	48	144	147	182	40	70	WCKX 080408	A4	B4	124303 0480	
TDS 49040-3D	49	147	150	185	40	70	WCKX 080408	A4	B4	124303 0490	
TDS 50040-3D	50	150	153	188	40	70	WCKX 080408	A4	B4	124303 0500	
TDS 51040-3D	51	153	156	191	40	70	WCKX 080408	A4	B4	124303 0510	
TDS 52040-3D	52	156	159	194	40	70	WCKX 080408	A4	B4	124303 0520	
TDS 53040-3D	53	159	162	197	40	70	WCKX 080408	A4	B4	124303 0530	
TDS 54040-3D	54	162	165	200	40	70	WCKX 080408	A4	B4	124303 0540	
TDS 55040-3D	55	165	168	203	40	70	WCKX 080408	A4	B4	124303 0550	
TDS 56040-3D	56	168	171	206	40	70	WCKX 080408	A4	B4	124303 0560	
TDS 57040-3D	57	171	174	209	40	70	WCKX 080408	A4	B4	124303 0570	
TDS 58040-3D	58	174	177	212	40	70	WCKX 080408	A4	B4	124303 0580	
										1173	

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321099 0004		B1	703053 0060	
A2	321099 0005		B2	703053 0070	
A3	321099 0010		B3	703053 0080	
A4	321099 0016		B4	703053 0150	
A5	321099 0047				
A6	321099 0298				
	3160			7114	

palbit Indexable inserts solid drill bits with cartridge system TDC 3D

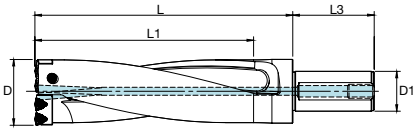
3xD Vc/fz 390

- Surface-hardened carrier tools
- **Drilling depths up to 3xD**
- **Diameter 59-80 mm**
- Soft cutting for lower power requirement
- Wide range of applications in structural steel and stainless steels
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- **Suitable indexable cutting inserts WCKX**
- Supplied with inner and outer cartridge



TDC 3D

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	art.no.	€
TDC 596540-3D	59-65	195	235	40	70	WCKX 06T308	124313 5965	
TDC 657040-3D	65-70	210	250	40	70	WCKX 06T308	124313 6570	
TDC 707540-3D	70-75	225	265	40	70	WCKX 06T308	124313 7075	
TDC 758040-3D	75-80	240	280	40	70	WCKX 06T308	124313 7580	
							1173	



TDC cartridges

- Inner cartridge **TDC-I**, outer cartridge **TDC-O**

Designation	D mm	suitable indexable inserts	TDC-I inner cartridge art.no.	€	TDC-O outer cartridge art.no.	€
TDC 059065	59-65	WCKX 06T308	124310 5965		124311 5965	
TDC 065070	65-70	WCKX 06T308	124310 6570		124311 6570	
TDC 070075	70-75	WCKX 06T308	124310 7075		124311 7075	
TDC 075080	75-80	WCKX 06T308	124310 7580		124311 7580	
			3160		3160	



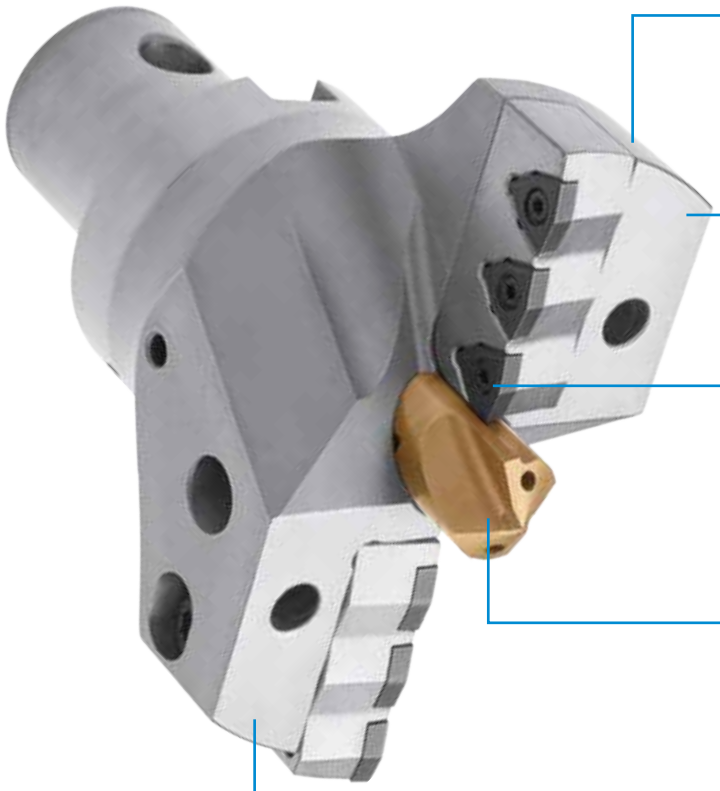
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321099 0010		B1	703053 0150	
	3160			7114	

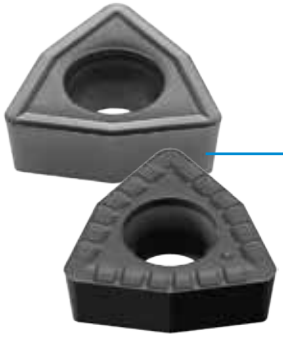
VORTEX DRILL DRILLING SYSTEM

palbit Established in 1916, Palbit is one of the most experienced tool manufacturers in Europe. Although initially focussed on the mining industry and extracting copper and zinc, as well as the development and production of mining tools, since 1952 the company has concentrated on manufacturing carbide tools.

Today, Palbit offers a wide production range, from powder manufacturing and indexable insert pressing, to the manufacture of support tools. As a full-service provider, the company facilitates standard and custom-made special solutions in machining technology.



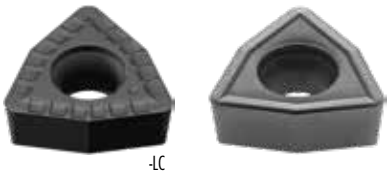
1. Machining of bore holes from Ø 45 to 180 mm
2. Drilling depths up to 10 x D (modular design)
3. Indexable cutting inserts in 2 geometries, PVD-coated
4. Pilot drill bit HSS-E-PM
5. Supports with increased stability and reduced cutting forces



6. Wide range of applications in steel, stainless steel, cast iron and aluminium alloys

palbit Indexable cutting inserts WCKX

- Carbide indexable cutting inserts, positive 7°
- **PH6920** - PVD-coated (TiAlN) fine grain carbide for universal applications. Good toughness and wear resistance.
- **PH6930** - PVD-coated (TiAlN) superfine grain carbide for applications under unstable machine conditions at average cutting speeds.
- **Recommendation:** Chip breaker LC specially designed for machining low-carbon steels


-LC

ISO designation		ISO P M K S PH6920 art.no.	€		ISO P M K S PH6930 art.no.	€		ISO P LC PH6920 art.no.	€		ISO P LC PH6930 art.no.	€
WCKX 02T104	10	124522 0002		10	124523 0002							
WCKX 030204	10	124522 0003		10	124523 0003							
WCKX 040204	10	124522 0004		10	124523 0004							
WCKX 050308	10	124522 0005		10	124523 0005		10	124532 0005		10	124533 0005	
WCKX 06T308	10	124522 0006		10	124523 0006		10	124532 0006		10	124533 0006	
WCKX 080408	10	124522 0008		10	124523 0008							
		1171			1171			1171			1171	

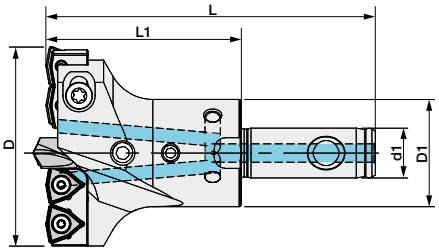
palbit Indexable inserts drilling system VORTEX DRILL

10xD | Vc/fz

398 – 401

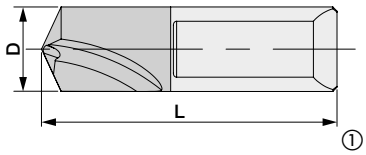
- **Machining of bore holes from Ø 45 to 180 mm**
- Drilling in a single work step without centring and pre-drilling
- The modular design allows efficient use through possible diameter bridging of up to 10 mm.
- Variable drilling depths of up to 10 x D due to holder system with pluggable extensions
- **Internal coolant supply**
- **Suitable indexable cutting inserts WCKX**
- Supplied with inner and outer cartridge

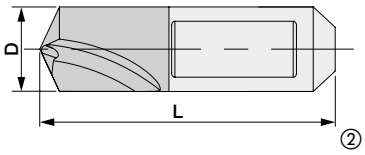




Boring head MDO 10D

Designation	D mm	D min./max. mm	L1 mm	d1 mm	D1 mm	L mm	suitable indexable inserts	Number of index. inserts			art.no.	€
MDO 04505013	50	45 - 50 mm	50	13	28	85	WCKX 030204	2+2	A1	B1	104503 4550	
MDO 05005513	55	50 - 55 mm	50	13	28	85	WCKX 030204	2+2	A1	B1	104503 5055	
MDO 05506016	60	55 - 60 mm	60	16	32	100	WCKX 040204	2+2	A2	B2	104503 5560	
MDO 06006516	65	60 - 65 mm	60	16	32	100	WCKX 050308	2+2	A5	B2	104503 6065	
MDO 06507016	70	65 - 70 mm	60	16	32	100	WCKX 050308	2+2	A5	B2	104503 6570	
MDO 07007522	75	70 - 75 mm	70	22	40	115	WCKX 050308	2+2	A5	B2	104503 7075	
MDO 07508022	80	75 - 80 mm	70	22	40	115	WCKX 06T308	2+2	A3	B3	104503 7580	
MDO 08008522	85	80 - 85 mm	70	22	40	115	WCKX 06T308	2+2	A3	B3	104503 8085	
MDO 08509027	90	85 - 90 mm	70	27	48	120	WCKX 06T308	2+2	A3	B3	104503 8590	
MDO 09009527	95	90 - 95 mm	70	27	48	120	WCKX 06T308	2+2	A3	B3	104503 9095	
MDO 09510027	100	95 - 100 mm	70	27	48	120	WCKX 06T308	2+2	A3	B3	104503 9510	
MDO 10010532	105	100 - 105 mm	80	32	58	130	WCKX 050308	3+3	A5	B2	104503 1005	
MDO 10511032	110	105 - 110 mm	80	32	58	130	WCKX 06T308	3+3	A3	B3	104503 0511	
MDO 11011532	115	110 - 115 mm	80	32	58	130	WCKX 06T308	3+3	A3	B3	104503 1015	
MDO 11512040	120	115 - 120 mm	90	40	70	145	WCKX 06T308	3+3	A3	B3	104503 1520	
MDO 12012540	125	120 - 125 mm	90	40	70	145	WCKX 06T308	3+3	A3	B3	104503 2025	
MDO 12513040	130	125 - 130 mm	90	40	70	145	WCKX 06T308	3+3	A3	B3	104503 2530	
MDO 13013540	135	130 - 135 mm	90	40	70	145	WCKX 06T308	3+3	A3	B3	104503 3035	
MDO 13514040	140	135 - 140 mm	90	40	70	145	WCKX 06T308	3+3	A3	B3	104503 3540	
MDO 14015050	150	140 - 150 mm	100	50	80	160	WCKX 080408	3+3	A4	B3	104503 1415	
MDO 15016050	160	150 - 160 mm	100	50	80	160	WCKX 080408	3+3	A4	B3	104503 1516	
MDO 16017050	170	160 - 170 mm	100	50	80	160	WCKX 080408	3+3	A4	B3	104503 1617	
MDO 17018050	180	170 - 180 mm	100	50	80	160	WCKX 080408	3+3	A4	B3	104503 1718	
											1173	





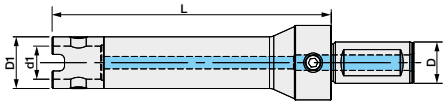


Pilot drill bit MDP

- Point angle 118°
- **Cutting material:** HSS, TiN-coated
- with internal cooling

Designation	D mm	L mm	Suitable for	art.no.	€
MDP 3510	10	35	MDO 45-55 mm	104519 0010	
MDP 3812	12	38	MDO 55-75 mm	104519 0012	
MDP 4516	16	45	MDO 75-100 mm	104519 0016	
MDP 4520	20	45	MDO 100-120 mm	104519 0020	
MDP 5625	25	56	MDO 120-160 mm	104519 0025	
MDP 6830	30	68	MDO 160-180 mm	104519 0030	

3160



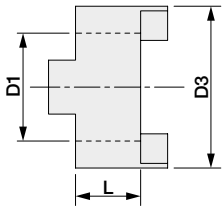


Holding fixture MDS

- **Please note:** Supplied without follower ring, please order separately!

Designation	D mm	d1 mm	D1 mm	L mm	art.no.	€
MDS 32115130	32	13	28	115	104513 1301	
MDS 32200130	32	13	28	200	104513 1302	
MDS 32300130	32	13	28	300	104513 1303	
MDS 40125160	40	16	32	125	104513 1601	
MDS 40200160	40	16	32	200	104513 1602	
MDS 40300160	40	16	32	300	104513 1603	
MDS 40148220	40	22	40	148	104513 2201	
MDS 40200220	40	22	40	200	104513 2202	
MDS 40300220	40	22	40	300	104513 2203	
MDS 40168270	40	27	48	168	104513 2701	
MDS 40300270	40	27	48	300	104513 2702	
MDS 40186320	40	32	58	186	104513 3201	
MDS 40300320	40	32	58	300	104513 3202	
MDS 50186400	50	40	70	186	104513 4001	
MDS 50300400	50	40	70	300	104513 4002	
MDS 50184500	50	50	80	184	104513 5001	

1173





Follower ring MDR

Designation	D3 mm	D1 mm	L mm	art.no.	€
MDR 1028	28	13	10	104520 0013	
MDR 1032	32	16	10	104520 0016	
MDR 1240	40	22	12	104520 0022	
MDR 1248	48	27	12	104520 0027	
MDR 1458	58	32	14	104520 0032	
MDR 1470	70	40	14	104520 0040	
MDR 1680	80	50	16	104520 0050	

3160

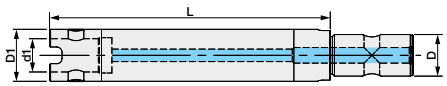
Spare parts

	Screw art.no.	€
A1	321099 0004	
A2	321099 0005	
A3	321099 0010	
A4	321099 0016	
A5	321099 0047	

3160

	TORX art.no.	€
B1	703053 0070	
B2	703053 0080	
B3	703053 0150	

7114



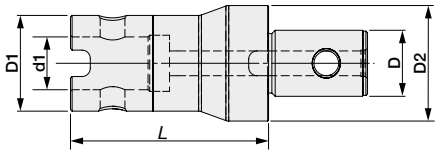


Extension MDE

- **Please note:** Supplied without follower ring, please order separately!

Designation	D mm	d1 mm	D1 mm	L mm	art.no.	€
MDE 13115280	13	13	28	115	104514 1301	
MDE 13150280	13	13	28	150	104514 1302	
MDE 13200280	13	13	28	200	104514 1303	
MDE 13300280	13	13	28	300	104514 1304	
MDE 16115320	16	16	32	115	104514 1601	
MDE 16200320	16	16	32	200	104514 1602	
MDE 16300320	16	16	32	300	104514 1603	
MDE 22113400	22	22	40	113	104514 2201	
MDE 22200400	22	22	40	200	104514 2202	
MDE 22300400	22	22	40	300	104514 2203	
MDE 27113480	27	27	48	113	104514 2701	
MDE 27200480	27	27	48	200	104514 2702	
MDE 27300480	27	27	48	300	104514 2703	
MDE 32186580	32	32	58	186	104514 3201	
MDE 32300580	32	32	58	300	104514 3202	
MDE 40186700	40	40	70	186	104514 4001	
MDE 40300700	40	40	70	300	104514 4002	
MDE 40500700	40	40	70	500	104514 4003	
MDE 50204800	50	50	80	204	104514 5001	
MDE 50300800	50	50	80	300	104514 5002	
MDE 50500800	50	50	80	500	104514 5003	

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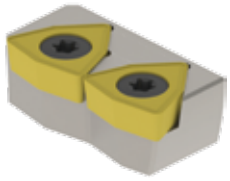




Reducer MDM

Designation	d1 mm	D mm	Drill Ø mm	D1 mm	d2 mm	L mm	art.no.	€
MDM 16100130	13	16	32	28	32	100	104521 1613	
MDM 22100160	16	22	40	32	40	100	104521 2216	
MDM 27100220	22	27	48	40	48	100	104521 2722	
MDM 32100130	13	32	58	28	58	100	104521 3213	
MDM 32100160	16	32	58	32	58	100	104521 3216	
MDM 32100220	22	32	58	40	58	100	104521 3222	
MDM 32100270	27	32	58	48	58	100	104521 3227	
MDM 40100320	32	40	70	58	70	100	104521 4032	
MDM 50080130	13	50	80	28	80	80	104521 5013	
MDM 50080160	16	50	80	32	80	80	104521 5016	
MDM 50080220	22	50	80	40	80	80	104521 5022	
MDM 50080270	27	50	80	48	80	80	104521 5027	
MDM 50080320	32	50	80	58	80	80	104521 5032	
MDM 50150400	40	50	80	70	80	150	104521 5040	

1173



Boring head cartridges MDC

- Inner cartridge **MDC-I**, outer cartridge **MDC-O**
  < Ø 100 mm 2 indexable cutting inserts per cartridge
  > Ø 100 mm 3 indexable cutting inserts per cartridge

Designation	D min./max. mm	suitable indexable inserts	Number of index. inserts	Suitable for	**MDC-I inner cartridge** art.no.	€	**MDC-O outer cartridge** art.no.	€
MDC 045050	45 - 50 mm	WCKX 030204	2	MDO 04505013	104517 4550		104518 4550	
MDC 050055	50 - 55 mm	WCKX 030204	2	MDO 05005513	104517 5055		104518 5055	
MDC 055060	55 - 60 mm	WCKX 040204	2	MDO 05506016	104517 5560		104518 5560	
MDC 060065	60 - 65 mm	WCKX 050308	2	MDO 06006516	104517 6065		104518 6065	
MDC 065070	65 - 70 mm	WCKX 050308	2	MDO 06507016	104517 6570		104518 6570	
MDC 070075	70 - 75 mm	WCKX 050308	2	MDO 07007522	104517 7075		104518 7075	
MDC 075080	75 - 80 mm	WCKX 06T308	2	MDO 07508022	104517 7580		104518 7580	
MDC 080085	80 - 85 mm	WCKX 06T308	2	MDO 08008522	104517 8085		104518 8085	
MDC 085090	85 - 90 mm	WCKX 06T308	2	MDO 08509027	104517 8590		104518 8590	
MDC 090095	90 - 95 mm	WCKX 06T308	2	MDO 09009527	104517 9095		104518 9095	
MDC 095100	95 - 100 mm	WCKX 06T308	2	MDO 09510027	104517 9510		104518 9510	
MDC 100105	100 - 105 mm	WCKX 050308	3	MDO 10010532	104517 1005		104518 1005	
MDC 105110	105 - 110 mm	WCKX 06T308	3	MDO 10511032	104517 0511		104518 0511	
MDC 110115	110 - 115 mm	WCKX 06T308	3	MDO 11011532	104517 1115		104518 1115	
MDC 115120	115 - 120 mm	WCKX 06T308	3	MDO 11512040	104517 1520		104518 1520	
MDC 120125	120 - 125 mm	WCKX 06T308	3	MDO 12012540	104517 2025		104518 2025	
MDC 125130	125 - 130 mm	WCKX 06T308	3	MDO 12513040	104517 2530		104518 2530	
MDC 130135	130 - 135 mm	WCKX 06T308	3	MDO 13013540	104517 3035		104518 3035	
MDC 135140	135 - 140 mm	WCKX 06T308	3	MDO 13514040	104517 3540		104518 3540	
MDC 140150	140 - 150 mm	WCKX 080408	3	MDO 14015050	104517 1415		104518 1415	
MDC 150160	150 - 160 mm	WCKX 080408	3	MDO 15016050	104517 1516		104518 1516	
MDC 160170	160 - 170 mm	WCKX 080408	3	MDO 16017050	104517 1617		104518 1617	
MDC 170180	170 - 180 mm	WCKX 080408	3	MDO 17018050	104517 1718		104518 1718	
					3160		3160	

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Solid drilling with 5 KW drive power Ø 100 mm

1 Drilling depths of up to 15 x D thanks to holding fixture system with pluggable extensions



2 Machining of bore holes from Ø 49 to 270 mm

3 The offset blade arrangement and the interrupted cutting edge of the roughing blade ensures that the cutting forces are distributed uniformly to both blades.

4 Centre bit ensures stable guidance of the boring head

SARA® SARADRILL solid drilling tool

HSS-E PM | 15xD | TiN | Vc/fz | 385

- **Machining of bore holes from Ø 49 to 270 mm**
- **For machines with low drive power**
- Low-vibration, equipment-friendly machining with up to 50 % less drive power
- Drilling in a single operation without centring and pre-drilling
- No front face planing required
- Cost-efficient boring system, since differences in diameter of up to 30 mm can be machined with one boring head by changing the cutting edges
- Variable drilling depths of up to 15 x D due to holding fixture system with pluggable extensions
- Internal coolant supply directly to the cutting edge, no high-pressure pump required
- For rotating tools, the coolant is supplied via a coolant ring
- Short chips due to chip-separating grooves in the roughing blade, no chip removal, even with extremely deep bores
- Also for use on vertically operating machines
- Low tool costs as wear is limited to the cutting edges and centre bit
- Unproblematic regrinding of the centre bit and the cutting edges (in pairs) using the grinding fixture or the tool grinding machine
- **Cutting material:**
  Cutting edge **HSS-E-PM ASP30, ASP30 TiN**
  HSS centre bit
- For use on all machine tools as a rotating or stationary tool especially for machining large bore diameters on machines with low drive power
- **Caution:** Not suitable for boring out existing holes!



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	104550....	●	●	●	○	○							●		○				
	104555....	●	●	●	○	○							●		○				

Boring head

Designation	D mm	art.no.	€
A1-55	49 - 55	104501 0055	
A2-65	55 - 65	104501 0065	
B-80	65 - 80	104501 0080	
C-100	80 - 100	104501 0100	
D-120	100 - 120	104501 0120	
E-150	120 - 150	104501 0150	
F-180	150 - 180	104501 0180	
G-210	180 - 210	104501 0210	
H-240	210 - 240	104501 0240	
I-270	240 - 270	104501 0270	

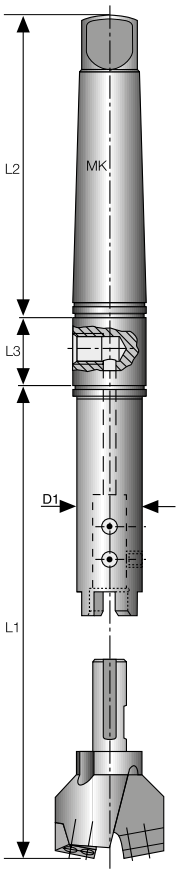
1118



Boring bar with Morse taper shank

Designation	L1 mm	L2 mm	L3 mm	D1 mm	Shank	art.no.	€
A1/A2	200	158	30	29	MT 4	104505 0055	
B-80	200	158	30	35	MT 4	104505 0080	
C-100	200	158	30	38	MT 4	104505 0100	
D-120	200	192	30	45	MT 5	104505 0120	
E-150	200	192	30	55	MT 5	104505 0150	
F-180	200	192	30	65	MT 5	104505 0180	
G-210	200	192	30	75	MT 5	104505 0210	
H-240	200	267	40	85	MT 6	104505 0240	
I-270	200	267	40	95	MT 6	104505 0270	

1118



Extension

- 150 mm and 300 mm

Designation	D1 mm	150 mm art.no.	€	300 mm art.no.	€
A1/A2	29	104510 0055		104515 0055	
B-80	35	104510 0080		104515 0080	
C-100	38	104510 0100		104515 0100	
D-120	45	104510 0120		104515 0120	
E-150	55	104510 0150		104515 0150	
F-180	65	104510 0180		104515 0180	
G-210	75	104510 0210		104515 0210	
H-240	85	104510 0240		104515 0240	
I-270	95	104510 0270		104515 0270	
		1118		1118	



Carbide guide

- For use with extremely deep bores

Designation	D mm	art.no.	€
B-80	65 - 70	104520 0070	
B-80	70 - 80	104520 0080	
C-100 / D-120	80 - 120	104520 0120	
		1118	

Designation	D mm	art.no.	€
E-150 / F-180	120 - 180	104520 0180	
G-210 / H-240 / I-270	180 - 270	104520 0270	
		1118	



Centre bit

Designation	D mm	art.no.	€
A1-55 to D-120	49 - 120 (12)	104530 0012	
E-150 to I-270	120 - 270 (20)	104530 0020	
		1119	



Coolant ring

- Compl. with coupling, grip bar and circlips

Designation	D mm	Shank	art.no.	€
A1-55 to C-100	49 - 100	MT 4	104540 0001	
D-120 to G-210	100 - 210	MT 5	104540 0002	
H-240 to I-270	210 - 270	MT 6	104540 0003	
			1118	



Replacement clamps

- For boring heads (prices per set of 2 heads)

Designation	art.no.	€
A1-55	104570 0001	
A2-65	104570 0002	
B-80	104570 0003	
C-100	104570 0004	
D-120	104570 0005	
E-150	104570 0006	
F-180	104570 0007	
G-210	104570 0008	
H-240	104570 0009	
I-270	104570 0010	
	1118	



Drilling with 100 mm diameter into solid material with just 5 KW of drive power?

Use SARADRILL of course

Working example of a user of SARADRILL

Workpiece:	Compression cylinder
Material:	1.7225, 42CrMo4V
Hole:	Diameter 100 mm, depth 200 mm
Machine:	Milling machine
Feed rate f:	0.18 mm/rev
Cutting speed Vc:	18 m/min

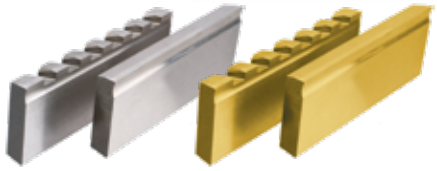
Drive power: approx. 4.5 KW

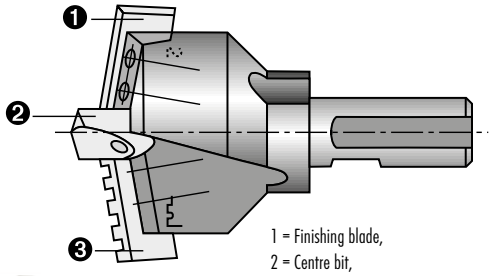
Result: 65% savings in working time



SARADRILL cutting edge

- **For SARADRILL** solid drilling tools
- The cutting edges are delivered in pairs, i.e. 1 roughing blade and 1 finishing blade.
- **Note for machining blind holes:**
  The finishing blade can be adjusted from 3 to 10 mm, depending on the size of the drill head, to machine intermediate dimensions. (Not permissible for machining through-holes!)
- **Caution: The cutting edges may only be replaced in pairs to prevent the risk of breakage!**
- Prices per pair (1 roughing blade and 1 finishing blade)





1 = Finishing blade,
2 = Centre bit,
3 = Roughing blade

D mm	Designation	art.no.	€	TiN art.no.	€
49	A1-55	104550 0049		104555 0049	
50	A1-55	104550 0050		104555 0050	
51	A1-55	104550 0051		104555 0051	
52	A1-55	104550 0052		104555 0052	
53	A1-55	104550 0053		104555 0053	
54	A1-55	104550 0054		104555 0054	
55	A1-55,A2-65	104550 0055		104555 0055	
56	A2-65	104550 0056		104555 0056	
57	A2-65	104550 0057		104555 0057	
58	A2-65	104550 0058		104555 0058	
59	A2-65	104550 0059		104555 0059	
60	A2-65	104550 0060		104555 0060	
61	A2-65	104550 0061		104555 0061	
62	A2-65	104550 0062		104555 0062	
63	A2-65	104550 0063		104555 0063	
64	A2-65	104550 0064		104555 0064	
65	A2-65,B-080	104550 0065		104555 0065	
66	B- 80	104550 0066		104555 0066	
67	B- 80	104550 0067		104555 0067	
68	B- 80	104550 0068		104555 0068	
69	B- 80	104550 0069		104555 0069	
70	B- 80	104550 0070		104555 0070	
71	B- 80	104550 0071		104555 0071	
72	B- 80	104550 0072		104555 0072	
73	B- 80	104550 0073		104555 0073	
74	B- 80	104550 0074		104555 0074	
75	B- 80	104550 0075		104555 0075	
76	B- 80	104550 0076		104555 0076	
77	B- 80	104550 0077		104555 0077	
78	B- 80	104550 0078		104555 0078	
79	B- 80	104550 0079		104555 0079	
80	B- 80,C- 100	104550 0080		104555 0080	
81	C-100	104550 0081		104555 0081	
82	C-100	104550 0082		104555 0082	
83	C-100	104550 0083		104555 0083	
84	C-100	104550 0084		104555 0084	
85	C-100	104550 0085		104555 0085	
86	C-100	104550 0086		104555 0086	
87	C-100	104550 0087		104555 0087	
88	C-100	104550 0088		104555 0088	
89	C-100	104550 0089		104555 0089	
90	C-100	104550 0090		104555 0090	
91	C-100	104550 0091		104555 0091	
92	C-100	104550 0092		104555 0092	
93	C-100	104550 0093		104555 0093	
94	C-100	104550 0094		104555 0094	
95	C-100	104550 0095		104555 0095	
		1119		1119	

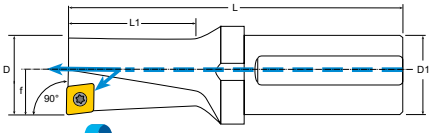
D mm	Designation	art.no.	€	TiN art.no.	€
96	C-100	104550 0096		104555 0096	
97	C-100	104550 0097		104555 0097	
98	C-100	104550 0098		104555 0098	
99	C-100	104550 0099		104555 0099	
100	C-100,D- 120	104550 0100		104555 0100	
101	D-120	104550 0101		104555 0101	
102	D-120	104550 0102		104555 0102	
103	D-120	104550 0103		104555 0103	
104	D-120	104550 0104		104555 0104	
105	D-120	104550 0105		104555 0105	
106	D-120	104550 0106		104555 0106	
107	D-120	104550 0107		104555 0107	
108	D-120	104550 0108		104555 0108	
109	D-120	104550 0109		104555 0109	
110	D-120	104550 0110		104555 0110	
111	D-120	104550 0111		104555 0111	
112	D-120	104550 0112		104555 0112	
113	D-120	104550 0113		104555 0113	
114	D-120	104550 0114		104555 0114	
115	D-120	104550 0115		104555 0115	
116	D-120	104550 0116		104555 0116	
117	D-120	104550 0117		104555 0117	
118	D-120	104550 0118		104555 0118	
119	D-120	104550 0119		104555 0119	
120	D-120	104550 0120		104555 0120	
120	E-150	104550 1120		104555 1120	
125	E-150	104550 0125		104555 0125	
130	E-150	104550 0130		104555 0130	
135	E-150	104550 0135		104555 0135	
140	E-150	104550 0140		104555 0140	
145	E-150	104550 0145		104555 0145	
150	E-150	104550 0150		104555 0150	
150	F-180	104550 1150		104555 1150	
155	F-180	104550 0155		104555 0155	
160	F-180	104550 0160		104555 0160	
165	F-180	104550 0165		104555 0165	
170	F-180	104550 0170		104555 0170	
180	F-180,G-210	104550 0180		104555 0180	
190	G-210	104550 0190		104555 0190	
200	G-210	104550 0200		104555 0200	
210	G-210,H-240	104550 0210		104555 0210	
220	H-240	104550 0220		104555 0220	
230	H-240	104550 0230		104555 0230	
240	H-240,I-270	104550 0240		104555 0240	
250	I-270	104550 0250		104555 0250	
260	I-270	104550 0260		104555 0260	
270	I-270	104550 0270		104555 0270	
		1119		1119	

SARA SARAcut 2.0 drilling and turning tool

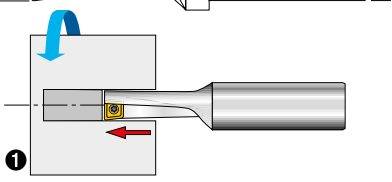


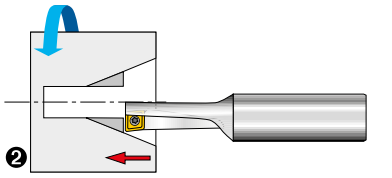
402

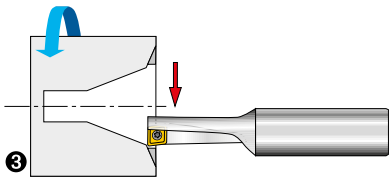


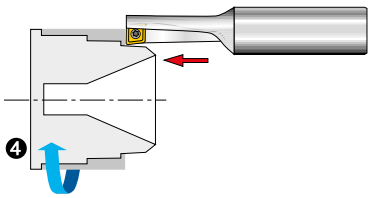


- **Drilling and turning with one tool**
- **Multifunctional:**
  solid drilling with a level-bottomed drill (drawing 1)
  Turning internal contours (drawing 2)
  Turning flat contours (drawing 3)
  Turning external contours (drawing 4)
  (note change of rotational direction)
- Reduced storage of tools and indexable inserts, as well as reduced tooling times
- Reduction of tool costs
- Reduced programming effort and expense
- **Solves the problem of tool location shortages**
- **3 geometries for a wide range of applications**:
  129300.... SP300, for steel materials, stainless steel and special alloys (ISO P, M, S)
  129350.... SP350, for steel and cast materials (ISO P, K)
  129400.... SW200, for non-ferrous materials (ISO N)









1.5 x D

D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right art.no.	€	Left art.no.	€
8	7.85	8.3	80	12	4	12	XPNT 0402	A1	B1	129101 0080		129102 0080	
10	9.85	10.5	90	15	5	12	XPNT 0502	A2	B1	129101 0100		129102 0100	
12	11.85	12.5	100	18	6	16	XPNT 0602	A3	B2	129101 0120		129102 0120	
14	13.85	14.5	110	21	7	16	XPNT 0703	A4	B3	129101 0140		129102 0140	
16	15.85	16.5	125	24	8	20	XPNT 0803	A5	B4	129101 0160		129102 0160	
18	17.85	18.5	135	27	9	25	XPNT 0904	A5	B4	129101 0180		129102 0180	
20	19.8	20.5	150	30	10	25	XPNT 1004	A6	B5	129101 0200		129102 0200	
25	24.8	25.8	180	37.5	12.5	32	XPNT 1305	A7	B6	129101 0250		129102 0250	
32	31.8	33	200	48	16	40	XPNT 1706	A7	B6	129101 0320		129102 0320	
										1122		1122	

2.25 x D

D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right art.no.	€	Left art.no.	€
8	7.85	8.3	60	18	4	10	XPNT 0402	A1	B1	129201 0080		129202 0080	
10	9.85	10.5	69.5	22.5	5	12	XPNT 0502	A2	B1	129201 0100		129202 0100	
12	11.85	12.5	78	27	6	16	XPNT 0602	A3	B2	129201 0120		129202 0120	
14	13.85	14.5	83.5	31.5	7	16	XPNT 0703	A4	B3	129201 0140		129202 0140	
16	15.85	16.5	94	36	8	20	XPNT 0803	A5	B4	129201 0160		129202 0160	
18	17.85	18.5	109.5	40.5	9	25	XPNT 0904	A5	B4	129201 0180		129202 0180	
20	19.8	20.5	111	45	10	25	XPNT 1004	A6	B5	129201 0200		129202 0200	
25	24.8	25.8	129	56.5	12.5	32	XPNT 1305	A7	B6	129201 0250		129202 0250	
32	31.8	33	158	72	16	40	XPNT 1706	A7	B6	129201 0320		129202 0320	
										1122		1122	

Spare parts

	Screw art.no.	€		TORX PLUS art.no.	€
A1	129380 0618		B1	705145 0006	
A2	129380 0620		B2	705145 0007	
A3	129380 0722		B3	705145 0008	
A4	129380 0825		B4	705145 0009	
A5	129380 0930		B5	705145 0015	
A6	129380 1535		B6	705145 0020	
A7	129380 2045				

1123

Indexable inserts XPET

- ground and polished



ISO N

ISO designation		SW200 art.no.	€
XPET 050204 FN	10	129400 0001	
XPET 060204 FN	10	129400 0002	
XPET 070304 FN	10	129400 0003	
XPET 080304 FN	10	129400 0004	
XPET 090404 FN	10	129400 0005	
XPET 100404 FN	10	129400 0006	
XPET 130504 FN	10	129400 0007	
XPET 170608 FN	10	129400 0008	
		1123	

XPNT indexable inserts

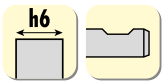
- **XPNT 0402:** right holder = right indexable insert ER,
  left holder = left indexable insert EL



ISO P M S — ISO P K

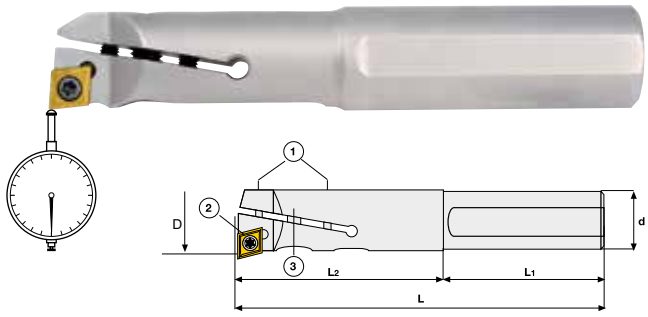
ISO designation		SP300 art.no.	€		SP350 art.no.	€
XPNT 040204 EL	10	129300 0002		10	129350 0002	
XPNT 040204 ER	10	129300 0001		10	129350 0001	
XPNT 050204 EN	10	129300 0003		10	129350 0003	
XPNT 060204 EN	10	129300 0004		10	129350 0004	
XPNT 070304 EN	10	129300 0005		10	129350 0005	
XPNT 080304 EN	10	129300 0006		10	129350 0006	
XPNT 090404 EN	10	129300 0007		10	129350 0007	
XPNT 100404 EN	10	129300 0008		10	129350 0008	
XPNT 100408 EN	10	129300 0009		10	129350 0009	
XPNT 130504 EN	10	129300 0010		10	129350 0010	
XPNT 130508 EN	10	129300 0011		10	129350 0011	
XPNT 170608 EN	10	129300 0012		10	129350 0012	
		1123			1123	

ATORN Adjustable precision boring bars



- Nickel-plated version
- Adjusting range 2 - 5 mm
- **For ISO indexable cutting inserts CCMT and CCGT**
- Cost-efficient alternative to spindle tools
- **Other diameters and versions available on request**

The cost-efficient alternative to spindle tools



1 = adjusting screw, 2 = indexable insert screw, 3 = counter screw

D min. mm	D max. mm	L mm	L4 mm	L1 mm	L2 mm	L1 mm	D1 mm	suitable indexable inserts			art.no.	€
10	12	100	70	70	30	30	10	CC..06	A1	B1	323001 1012	
12	15	105	70	65	40	30	12	CC..06	A1	B1	323001 1215	
15	20	110	60	60	50	50	16	CC..06	A1	B1	323001 1520	
20	25	120	60	60	60	60	20	CC..06	A1	B1	323001 2025	
25	30	140	70	70	70	70	25	CC..09	A2	B2	323001 2530	
30	35	160	70	70	90	90	25	CC..09	A2	B2	323001 3035	
35	40	170	70	70	100	100	32	CC..09	A2	B2	323001 3540	
40	45	190	70	70	120	120	32	CC..09	A2	B2	323001 4045	
45	50	220	70	70	150	150	32	CC..09	A2	B2	323001 4550	

3104

For ISO indexable inserts, please refer to the "Turning" section

Regulation screw

Designation	Suitable for shaft diameter mm	art.no.	€
RE 1	10-15	323002 0002	
RE 2	15-20	323002 0003	
RE 3	20-25	323002 0004	
RE 4	25-30	323002 0005	
RE 5	30-35	323002 0006	
RE 6	35-40	323002 0007	
RE 7	40-45	323002 0008	
RE 8	45-50	323002 0009	

3106



Counter screw

Designation	Suitable for shaft diameter mm	art.no.	€
BL 0	10-12	323003 0001	
BL 1	12-15	323003 0002	
BL 2	15-20	323003 0003	
BL 3	25-30	323003 0004	
BL 4	25-30	323003 0005	
BL 5	30-35	323003 0006	
BL 6	35-40	323003 0007	
BL 7	40-45	323003 0008	
BL 8	45-50	323003 0009	

3106



Spare parts

	Screw art.no.	€
A1	262551 0025	
A2	262551 0035	

3106

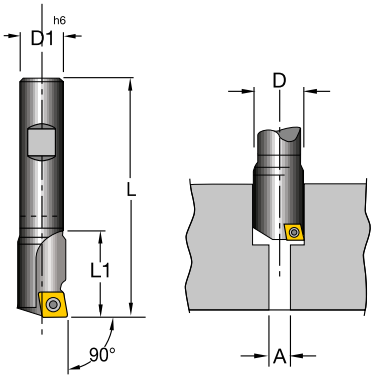
	TORX art.no.	€
B1	703053 0080	
B2	703053 0150	

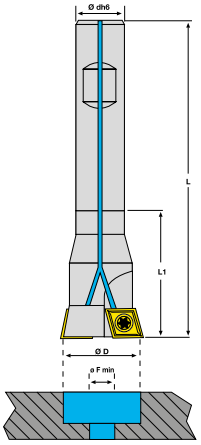
7114

ATORN Core and countersink drill



- **With internal cooling**
- For countersinking and drilling
- Counterbores for producing countersinks for cylinder head screws, countersinks, sealing surfaces
- Fixed dimension spiral countersink for drilling pre-machined or cast bores
- **The diameter to be drilled must not be smaller than dimension A!**
- **Bore tolerances:** For countersinks according to DIN 74 (H13)
- For ISO indexable inserts, please refer to the "Turning" section









Core and countersink drill bits with one indexable insert housing

D mm	L mm	L1 mm	D1 mm	Pre-drill min. Ø mm	suitable indexable inserts			art.no.	€
10	85	15	12	4	CC..06	A1	B1	164003 0100	
11	85	15	12	4	CC..06	A1	B1	164003 0110	
12	85	18	12	4	CC..06	A1	B1	164003 0120	
13	85	23	12	4	CC..06	A1	B1	164003 0130	
14	85	23	12	5	CC..06	A1	B1	164003 0140	
15	85	30	12	5	CC..06	A1	B1	164003 0150	
16	85	30	12	5	CC..06	A1	B1	164003 0160	
17	95	30	16	6	CC..09	A2	B2	164003 0170	
18	95	40	16	6	CC..09	A2	B2	164003 0180	
19	95	40	16	6	CC..09	A2	B2	164003 0190	
20	95	40	16	5	CC..09	A2	B2	164003 0200	
21	95	42	16	5	CC..09	A2	B2	164003 0210	
22	95	42	16	6	CC..09	A2	B2	164003 0220	
23	95	42	16	6	CC..09	A2	B2	164003 0230	
24	95	42	16	6	CC..09	A2	B2	164003 0240	
25	95	42	16	8	CC..09	A2	B2	164003 0250	
26	120	56	20	8	CC..09	A2	B2	164003 0260	
27	120	56	20	8	CC..09	A2	B2	164003 0270	
28	120	56	20	10	CC..09	A2	B2	164003 0280	
29	120	56	20	10	CC..09	A2	B2	164003 0290	
30	120	56	20	10	CC..09	A2	B2	164003 0300	
31	120	56	20	12	CC..09	A2	B2	164003 0310	
32	120	56	20	12	CC..09	A2	B2	164003 0320	
33	120	56	20	12	CC..09	A2	B2	164003 0330	

1132

Core and countersink drill bits with two indexable insert housings

D mm	L mm	L1 mm	D1 mm	Pre-drill min. Ø mm	suitable indexable inserts			art.no.	€
16	92	30	12	5	CC..06	A1	B1	164005 0016	
17	94	32	16	6	CC..06	A1	B1	164005 0017	
18	97	41	16	7	CC..06	A1	B1	164005 0018	
19	100	41	16	8	CC..06	A1	B1	164005 0019	
20	102	41	16	9	CC..06	A1	B1	164005 0020	
21	105	41	16	10	CC..06	A1	B1	164005 0021	
22	110	41	16	11	CC..06	A1	B1	164005 0022	
23	112	41	16	12	CC..06	A1	B1	164005 0023	
24	115	41	16	13	CC..06	A1	B1	164005 0024	
25	120	40	16	8	CC..09	A2	B2	164005 0025	
26	125	55	20	9	CC..09	A2	B2	164005 0026	
27	128	55	20	10	CC..09	A2	B2	164005 0027	
28	130	55	20	11	CC..09	A2	B2	164005 0028	
29	132	55	20	12	CC..09	A2	B2	164005 0029	
30	134	55	20	13	CC..09	A2	B2	164005 0030	
31	136	55	20	14	CC..09	A2	B2	164005 0031	
32	138	55	20	15	CC..09	A2	B2	164005 0032	
33	140	55	20	16	CC..09	A2	B2	164005 0033	
34	140	60	25	16	CC..09	A2	B2	164005 0034	
35	140	60	25	17	CC..09	A2	B2	164005 0035	
36	140	60	25	18	CC..09	A2	B2	164005 0036	
37	140	60	25	19	CC..09	A2	B2	164005 0037	
38	140	60	25	20	CC..09	A2	B2	164005 0038	
39	140	60	25	21	CC..09	A2	B2	164005 0039	
40	140	60	25	22	CC..09	A2	B2	164005 0040	
41	140	60	25	23	CC..09	A2	B2	164005 0041	
42	140	60	25	24	CC..09	A2	B2	164005 0042	

1132

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	
A2	320901 2502	

3106

	TORX	
	art.no.	€
B1	703053 0080	
B2	703053 0150	

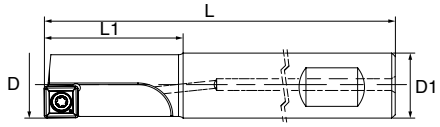
7114

palbit Core and countersink drill

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- **with internal cooling**
- for countersinking and drilling
- flat countersinks for producing countersinks for cylinder head screws, countersinks, sealing surfaces
- Fixed dimension spiral countersink for drilling pre-machined or cast bores
- **The diameter of the hole to be drilled must not be smaller than Dimension A!**
- **suitable indexable cutting inserts SPKX**





D mm	L1 mm	L mm	D1 mm	A mm	suitable indexable inserts			art.no.	€
10	30	100	10	3	SPKX 05T104	A5	B1	124700 0100	
11	30	100	12	3	SPKX 05T104	A5	B1	124700 0110	
13	30	100	16	4	SPKX 060204	A1	B2	124700 0130	
14	30	120	16	4	SPKX 060204	A1	B2	124700 0140	
17	35	120	20	5	SPKX 070308	A2	B3	124700 0170	
18	35	140	20	5	SPKX 070308	A2	B3	124700 0180	
20	40	140	20	6	SPKX 090308	A3	B4	124700 0200	
21	40	150	25	6	SPKX 090308	A3	B4	124700 0210	
25	40	150	25	7	SPKX 110408	A4	B4	124700 0250	
									2174

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	321099 0004		B1	703053 0060	
A2	321099 0006		B2	703053 0070	
A3	321099 0009		B3	703053 0080	
A4	321099 0014		B4	703053 0150	
A5	321099 0524				
	3160			7114	

	ISO KMPS			ISO KMPS			ISO P		
ISO designation		PH6920 art.no.	€		PH6930 art.no.	€		PHL930 art.no.	€
SPKX 05T104	10	124512 0105							
SPKX 060204	10	124512 0006		10	124513 0006		10	124515 0006	
SPKX 070308	10	124512 0107							
SPKX 090308	10	124512 0109							
SPKX 110408	10	124512 0011		10	124513 0011		10	124515 0011	
		1171			1171			1171	



PH6920, PH6930

Premium partner

PALBIT is represented on five continents with an extensive sales network and serves a large number of customers in over 60 countries with state-of-the-art tool technology for a wide range of applications. Since 1 January 2019, the PALBIT brand has been exclusively distributed in Germany by SARTORIUS.

palbit® CUTTING TOOLS SOLUTIONS

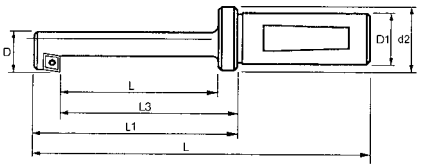
ATORN 180° reverse countersink

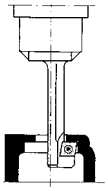
DIN 6535 HE | Vc/fz | 408

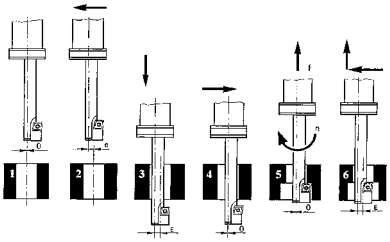
- For rotating use with stationary workpieces
- **For ISO indexable cutting inserts (CPMT or CCM and CCG)**
- With internal cooling, (Ø15 and Ø18 without internal cooling)
- Straight shank with clamping surface (Whistle notch)
- D5 = maximum countersink diameter

1. Positioning: pay attention to the cutting edge position!
2. Move from the centre to the cutting edge opposite "E".
3. Move eccentrically through the bore.
4. Move back to the centre.
5. Reverse countersink with speed "N" and feed "F".
6. Move from the centre to the cutting edge opposite "E" and retract from the hole.









D mm	D min. mm	L mm	d2 mm	L1 mm	L3 mm	l mm	D1 mm	E mm	suitable indexable inserts			art.no.	€
15	8.5	105	25	55	42	35	20	3.50	CPMT05T1..	A1	B1	152501 0150	
18	10.5	112	25	62	47	40	20	4	CC..06	A2	B2	152501 0180	
20	13	117	25	67	52	45	20	3.75	CC..06	A2	B2	152501 0200	
24	15	122	25	72	57	50	20	4.75	CC..06	A2	B2	152501 0240	
26	17	132	25	82	67	60	20	5	CC..06	A2	B2	152501 0260	
30	19	142	25	92	77	65	20	6	CC..06	A2	B2	152501 0300	
33	21	152	25	102	82	75	20	6.5	CC..09	A3	B3	152501 0330	
36	23	173	25	113	93	85	32	7	CC..09	A3	B3	152501 0360	
40	25	183	40	123	103	95	32	8	CC..09	A3	B3	152501 0400	
43	30	183	40	123	103	95	32	7	CC..09	A3	B3	152501 0430	
48	33	223	40	163	143	135	32	8	CC..09	A3	B3	152501 0480	
53	36	210	-	140	-	110	40	9	CC..12	A3	B3	152501 0530	
57	39	220	-	150	-	120	40	9.5	CC..12	A3	B3	152501 0570	
66	45	245	-	165	-	135	50	11	CC..12	A3	B3	152501 0660	
78	52	265	-	185	-	155	50	12.5	CC..12	A3	B3	152501 0760	

1132

Spare parts

	Screw art.no.	€
A1	152599 0001	
A2	262551 0025	
A3	320901 2502	

3106

	TORX art.no.	€
B1	703053 0060	
B2	703053 0080	
B3	703053 0150	

7114

ATORN Indexable cutting inserts for reverse countersinks

- Carbide indexable cutting inserts, positive 7°
- **HC4635** - PVD-coated for universal applications

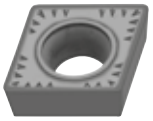
For further ISO indexable inserts, please refer to the "Turning" section

CPMT 05T104

- For reverse countersink 180°

ISO designation		ISO P M K HC 4635 art.no.	€
CPMT 05T104	10	331260 0032	

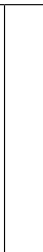
1132



CPMT

Overview of threads

	Hand tap											
												
Brand	ATORN	ATORN	SARA	ATORN	ATORN	SARA	ATORN	SARA	ATORN	ATORN	ATORN	ATORN
Thread	M	M	M	M-LH	M	M	MF	MF	BSW	G	UNC	UNF
ISO application area	P K N	P M K N	P	P K	P K N	P M K	P K N	P	P K N	P K N	P K N	P K N
Type	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole
Range	M1 - M42	M2 - M20	M2 - M52	M4 - M20	M2 - M12	M3 - M16	M4 - M36	M3 - M36	W1/8"-W3/4"	G1/8"-G3/4"	3-48-7/8"-9	4-48 5/8"-18
Tolerance	6H	6H	6H	6H	6H	6H	6H	6H			2B	2B
Set	3-pcs.	3-pcs.	3-pcs.	3-pcs.	3-pcs.	3-pcs.	2-pcs.	2-pcs.	3-pcs.	2-pcs.	3-pcs.	2-pcs.
DIN	352	352	352	352	352	352	2181	2181	351	5157	351	2181
Cutting material	HSS	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS
Surface treatment	blank	Blank	Blank	blank	Nitrided	Vapour-treated	blank	Blank	Blank	Blank	Blank	blank
Item number	130130....	130126....	130101....	130134....	130135....	130110....	130139....	130105....	130142....	130143....	130140....	130141....
Catalogue page	**290**	**290**	**290**	**292**	**292**	**292**	**291**	**291**	**293**	**293**	**294**	**294**

	Machine tap											
												
Brand	ATORN	ATORN	ATORN					ATORN	ATORN			
Thread	M	M	M	M	M	M	M	M	M	M	M	M
ISO application area	P M N	P M K N	P M K N	P M N	P M S N	P M S N	P M S N	P M K	N	N	S	S
Type	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole
Range	M1 - M30	M3 - M16	M3 - M20	M1 - M24	M2 - M16	M3 - M16	M3 - M16	M4 - M20	M3 - M12	M2 - M10	M3 - M12	M3 - M12
Tolerance	6H	6H	6H	6H	6HX	6HX	6HX	6H	6H	6H	6H	6H
DIN	371/376	Factory standard	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371	371/376	371/376
Chamfer (form)	B	B	B	B	B	B	B	B	B	B	B	B
Possible thread depth	3xD	3xD	3xD	2.5xD	3xD	3xD	3xD	3xD	3xD	3xD	2xD	2xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E-PM
Coating/surface treatment	Vap. / TiN	Vapour-treated	TiAlN	Vapour-treated	TiCN	TiCN	TiCN	TiCN	Blank	Blank	TiCN	HR
Type	UNI	UNI	ULTRA-HL	S-POT	A-POT	A-POT	A-OIL-POT		ALU	AL-POT	V-TI-POT	WHR-NI-POT
Info		Long				Weldon	IC					
Item number	134700....	134785....	134755....	133875....	133450....	133495....	133456...	132001....	134127....	133035....	133085....	133918....
Catalogue page	**237**	**238**	**240**	**251**	**247**	**248**	**249**	**232**	**244**	**261**	**255**	**260**

	Machine tap											
												
Brand	ATORN	ATORN				ATORN	ATORN	ATORN	ATORN		ATORN	
Thread	M	M	M	M	M	M	M	M	M	M	M	M
ISO application area	M	M	P M K S N	P M S N	P M K N	P M K S N	P M K S N	P M K N	P M	P M K S N	H	P H
Type	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Blind-hole/through-hole	Blind-hole/through-hole
Range	M2 - M20	M3 - M16	M2 - M20	M2 - M36	M2 - M16	M3 - M20	M3 - M20	M3 - M24	M3 - M16	M2 - M20	M3 - M16	M3 - M12
Tolerance	6H	6H	6HX	6H	6G	6H	6H	6H	6H	6HX	6HX	6HX
DIN	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	B	B	B	B	B	B	B	B	B	B	D	C
Possible thread depth	3xD	3xD	3xD	2.5xD	2.5xD	3xD	3xD	3xD	3xD	2.5xD	1.5xD	1.5xD
Cutting material	HSS-E	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM
Coating/surface treatment	Vapour-treated	TiN	CrN	Vapour-treated	Vapour-treated	Blank	TiCN	TiN	TiCN	TiCN	TiCN	TiCN
Type	VA	VA	CC-POT	VA-POT	VA-POT					Z-POT		V-XPM-HAT
Info								Synchro		Synchro		
Item number	134130....	134131....	133040....	133015....	133020....	134135....	134137....	135385....	134196....	133045....	135165....	133255....
Catalogue page	**243**	**243**	**255**	**257**	**258**	**241**	**241**	**245**	**242**	**262**	**246**	**263**

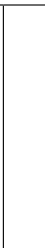
	Machine tap											
												
Brand	ATORN	DIC	ATORN	ATORN	ATORN	DIC	DIC	DIC	DIC	DIC	DIC	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M
ISO application area	H	H	P M N	P M K N	P M K N	P M N	P M N	P M S N	P M S N	P M S N	P M S N	P M K
Type	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole
Range	M3 - M16	M3 - M12	M1 - M30	M3 - M16	M3 – M20	M1 - M24	M3 - M16	M2 - M24	M3 - M16	M6 - M56	M3 - M16	M1 – M30
Tolerance	6H	6HX	6H	6H	6H	6H	6H	6HX	6HX	6HX	6HX	6HX
DIN	WN	WN	371/376	Factory standard	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	D	C	C	C	C	C	E	C	C	C	E	C
Possible thread depth	1.5xD	1.5xD	2.5xD	2.5xD	2xD	2.5xD	2.5xD	2xD	2xD	2.5xD	2xD	2,5xD
Cutting material	Solid carbide	Solid carbide	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM
Coating/surface treatment	TiCN	TiCN	Vap. / TiN	Vapour-treated	TiAlN	Vapour-treated	Vapour-treated	TiCN	TiCN	TiCN	TiCN	Blank
Type		VX-OT	UNI	UNI	ULTRA-HL	S-SFT	S-SFT	A-SFT	A-SFT	A-OIL-SFT	A-SFT	ULTRA-HL
Info				Long			Form E	Synchro	Weldon	IC	Form E	
Item number	135170....	133250....	134710....	134780....	134750....	133865....	133867...	133400....	133490....	133410/15....	133570....	132009....
Catalogue page	**246**	**263**	**236**	**238**	**240**	**251**	**250**	**247**	**248**	**249**	**250**	**227**

	Machine tap											
												
Brand	ATORN	ATORN	ATORN	DIC	ATORN	ATORN	DIC	DIC	DIC	DIC	DIC	DIC
Thread	M	M	M	M	M	M	M	M	M	M	M	M
ISO application area	P M K	P M K	N	N	M	M	S	S	P M K S N	M S	M S	M S
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole
Range	M2 - M30	M3 - M20	M2 - M12	M1.6 - M10	M2 - M20	M3 - M16	M3 - M12	M3 - M12	M2 - M36	M2 - M24	M6 - M24	M2 - M20
Tolerance	6GX, 7GX, 6H+0,1	6H	6H	6H	6H	6H	6H	6H	6HX	6HX	6HX	6HX
DIN	371/376	371/376	371/376	371	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	C	C	C	C	C	C	C	C	C	C	C	C
Possible thread depth	2,5xD	2,5xD	2.5xD	2.5xD	2.5xD	2.5xD	2xD	2xD	3xD	2xD	2xD	3xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-V3	HSS-E-PM	HSS-E-PM	HSS-E-PM
Coating/surface treatment	TiCN	TiCN	Blank	Blank	Vapour-treated	TiN	TiCN	HR	CrN	TiN	TiN	TiN
Type	ULTRA-HL	ULTRA-HL	ALU	AL-SFT	VA	VA	V-TI-SFT	WHR-NI-SFT	CC-SFT	M-SFT-DUPLEX	M-OIL-SFT-DUPLEX	M-LT-SFT-DUPLEX
Info		Left-hand thread										
Item number	132012/13/14	132017....	134195....	133145....	134225....	134226....	133195....	133917....	133106....	133912....	133913....	133919....
Catalogue page	**229**	**228**	**244**	**261**	**243**	**243**	**259**	**260**	**254**	**252**	**252**	**253**

	Machine tap											
												
Brand	DIC	DIC	ATORN	ATORN	ATORN	ATORN	DIC	ATORN	ATORN	DIC	DIC	DIC
Thread	M	M	M	M	M	M	M	MF	MF	MF	MF	MF
ISO application area	P M S N	P M S N	P M S	P M K S N	P M K S N	P	P M K S N	P M K N	P M K	P M K N	P M K N	P M S N
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole
Range	M2 - M36	M2 - M16	M3 - M16	M3 – M20	M3 - M16	M3 - M24	M3 – M20	M8 - M20	M3 - M40	M3 - M24	M6 - M24	M6 - M24
Tolerance	6H	6G	6H	6H	6H	6H	6H	6H	6H	6H	6GX	6HX
DIN	371/376	371/376	371/376	371/376	371/376	371/376	371/376	374	374	374	374	374
Chamfer (form)	C	C	C	C	C	C	C	B	B	B	B	B
Possible thread depth	2.5xD	2.5xD	3xD	2.5xD	2.5xD	2.5xD	2.5xD	3xD	3xD	2.5xD	3xD	2.5xD
Cutting material	HSS-E-V3	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM
Coating/surface treatment	Vapour-treated	Vapour-treated	TiCN	blank	TiCN	TiN	TiCN	Vapour-treated	Blank	Vapour-treated	Vapour-treated	TiCN
Type	VA-SFT	VA-SFT					Z-SFT	Universal		S-POT	S-POT	A-POT
Info						Synchro	Synchro					
Item number	133125....	133130....	134193....	134230....	134233....	135350....	133155....	134765....	135255....	133975....	133972....	133460....
Catalogue page	**256**	**258**	**242**	**241**	**241**	**245**	**262**	**264**	**266**	**270**	**271**	**267**

	Machine tap											
												
Brand												
Thread	MF	MF	MF	MF	M	MF	MF	MF	MF	MF	G	G
ISO application area	P M S N	P M K N	P M K	M S	M S	P M K	P M K N	P M S N	P M S N	P M S N	P M K N	P M K N
Type	Through-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole
Range	M6 - M24	M8 - M20	M5 - M30	M6 - M24	M8 - M20	M6 - M20	M3 - M24	M6 - M24	M6 - M24	M6 - M24	⅛ inch - 1 ¼ inch	⅛ inch - 1 inch
Tolerance	6GX	6H	6H	6HX	6HX	6H	6H	6GX	6HX	6GX		
DIN	374	374	374	374	371/376	374	374	374	374	374	5156	5156
Chamfer (form)	B	C	C	C	C	C	C	C	C	C	B	B
Possible thread depth	2.5xD	2xD	1.5xD	2xD	2xD	3xD	2.5xD	2.5xD	2xD	2.5xD	3xD	2.5xD
Cutting material	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM
Coating/surface treatment	TiCN	Vapour-treated	Vapour-treated	TiN	TiN	Vap. / TiN	Vapour-treated	Vapour-treated	TiCN	TiCN	Vapour-treated	TiCN
Type	A-POT	Universal		M-SFT-DUPLEX	M-OIL-SFT-DUPLEX		S-SFT	S-SFT	A-SFT	A-SFT	Universal	A-POT
Info												
Item number	133971....	134760....	135280....	133911....	133901....	135285....	133965....	133974....	133420....	133973....	134775....	133900....
Catalogue page	**268**	**264**	**265**	**269**	**269**	**265**	**270**	**271**	**267**	**268**	**272**	**273**

	Machine tap											
												
Brand												
Thread	G	G	G	G	G	UNC	UNC	UNC	UNF	UNF	UNF	NPT
ISO application area	P M K N	P M K N	P M S N	P M K N	M S	P M K N	P M K N	M S	P M K N	P M K N	M S	P M K
Type	Through-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole	Blind-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Blind-hole/through-hole
Range	⅛ inch - 1 inch	⅛ inch - 1 ¼ inch	⅛ inch - 1 inch	⅛ inch - 1 inch	⅛ inch - 1 inch	¼ inch - 1 inch	¼ inch - 1 inch	N2 - 1"	¼ inch - 1 inch	¼ inch - 1 inch	N - 1"	1/16 inch - 1 inch
Tolerance						2B	2B	2BX	2B	2B	2BX	-
DIN	5156	5156	5156	5156	5156	371/376	371/376	2184	Factory standard	Factory standard	2184	WN
Chamfer (form)	B	C	C	C	C	B	C	C	B	C	C	C
Possible thread depth	2.5xD	2xD	2xD	2xD	2xD	3xD	2.5xD	2xD	2xD	2xD	2xD	1.5xD
Cutting material	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E
Coating/surface treatment	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	TiN	Vapour-treated	Vapour-treated	TiN	Vapour-treated	Vapour-treated	TiN	Blank
Type	S-POT	Universal	A-SFT	S-SFT	M-SFT-DUPLEX	UNI	UNI		UNI	UNI		
Info												
Item number	133987....	134770....	133860....	133986....	133914....	134795....	134790....	133902	134796....	134791....	133903	135345....
Page	**274**	**272**	**273**	**274**	**275**	**276**	**276**	**277**	**278**	**278**	**279**	**280**

	Machine tap						Forming taps				
											
Brand											
Thread	PG	M	M	M	M	M	M	M	M	M	M
ISO application area	P	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M K S N	P M N	P M N	P M K S N	P M N
Type	Through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole
Range	7 - 29	M1 - M20	M2 - M12	M3 - M12	M3 - M12	M3 - M20	M3 - M12	M1 - M30	M5 - M30	M2 - M12	M1 - M24
Tolerance	-	6HX	6GX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX
DIN	40430	2174	2174	2174	2174	2174	371/376	2174	2174	371	2174
Chamfer (form)	B	C	C	C	C	C	C	C	C	C	C
Possible thread depth	3xD	1xD	1xD	3xD	3xD	2xD	2xD	2.5xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-PM
Coating/surface treatment	Blank	TiN	TiN	TiN	TiAlN	TiCN	TiCN	TiCN	TiCN	TiCN	TiN
Type								S-XPF	S-OIL-XPF	V-NRT-B	M-NRT
Info				with oil grooves	With oil grooves	with oil grooves	with oil grooves	With oil grooves	Coolant bore		
Item number	135380....	135405....	135450....	135240....	135245....	135460....	134194....	133920....	133925....	133320....	133340....
Page	**280**	**281**	**281**	**282**	**282**	**282**	**283**	**284**	**284**	**283**	**282**

	Forming taps					
						
Brand		ATORN			ATORN	
Thread	M	MF	MF	M	G	G
ISO application area	M S	P M K S N	P M N	P M N	P M S N	P M N
Type	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole
Range	M5 - M16	M6 - M24	M4 - M22	M8 - M24	1/16" - 3/4"	1/16" - 3/4"
Tolerance	6HX	6HX	6HX	6HX		
DIN	2174	2174	2174	2174	2189	2189
Chamfer (form)	E	C	C	C	C	C
Possible thread depth	2.5xD	2.5xD	2.5xD	2.5xD	2xD	2.5xD
Cutting material	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM
Coating/surface treatment	TiN	TiN	TiCN	TiCN	TiN	TiN
Type	M-OIL-NRT		S-XPF	S-OIL-XPF		M-NRT
Info		with oil grooves	With oil grooves	Coolant bore	With oil grooves	
Item number	133344....	135480....	133930....	133935....	135495....	133346....
Page	**283**	**286**	**287**	**287**	**288**	**288**

ATORN® The ISO colour ring system

ATORN taps and thread formers are marked with coloured rings in accordance with the ISO colour code according to their **main area of use**. The respective secondary applications are specified in the catalogue.

Steel up to 1,000 N/mm²

Stainless steel

GG, GGG

Aluminium and copper alloys, long-chipping materials

Titanium and nickel alloys

Hard steel up to 62 HRc

Steel | **up to 1,400 N/mm²**

Steel | **Stainless steel**



ATORN Universal thread tap

M | 60° | HSS-E PM | DIN 371/376 | Typ U | C 2-3 | TiCN

- **ISO metric thread**
- Form C, 2-3 thread chamfer, for blind-hole thread
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM**
- Possible thread depth 2.5 x D
- **For universal application**

material — ● very well suited ○ well suited

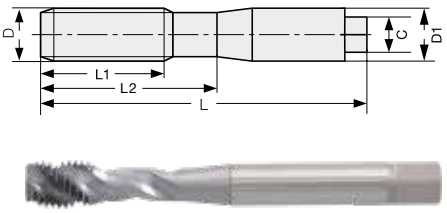
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
20	14	10	8	9			18	7	5	6	22	22					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

DIN 376 / 371

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	132009 0010	
M 1.1	0.25	40	5	-	2.5	2.1	0.85	132009 0011	
M 1.2	0.25	40	5	-	2.5	2.1	0.95	132009 0012	
M 1.4	0.3	40	6	-	2.5	2.1	1.1	132009 0014	
M 1.6	0.35	40	7	-	2.5	2.1	1.25	132009 0016	
M 1.7	0.35	40	8	-	2.5	2.1	1.35	132009 0017	
M 1.8	0.35	40	8	-	2.5	2.1	1.45	132009 0018	
M 2	0.4	45	3	10	2.8	2.1	1.6	132009 0020	
M 2.2	0.45	45	4	11	2.8	2.1	1.75	132009 0022	
M 2.3	0.4	45	4	12	2.8	2.1	1.9	132009 0023	
M 2.5	0.45	50	4	13	2.8	2.1	2.05	132009 0025	
M 2.6	0.45	50	4	13	2.8	2.1	2.15	132009 0026	
M 3	0.5	56	5	18	3.5	2.7	2.5	132009 0030	
M 3.5	0.6	56	5	20	4	3	2.9	132009 0035	
M 4	0.7	63	7.3	21	4.5	3.4	3.3	132009 0040	
M 4.5	0.75	70	6	25	6	4.9	3.75	132009 0045	
M 5	0.8	70	8.3	25	6	4.9	4.2	132009 0050	
M 6	1	80	8	30	6	4.9	5	132009 0060	
M 7	1	80	8	30	7	5.5	6	132009 0070	
M 8	1.25	90	10	35	8	6.2	6.8	132009 0080	
M 10	1.5	100	12	39	10	8	8.5	132009 0100	
M 12	1.75	110	19.9	-	9	7	10.2	132009 0120	
M 14	2	110	22	-	11	9	12	132009 0140	
M 16	2	110	23.8	-	12	9	14	132009 0160	
M 18	2.5	125	25	-	14	11	15.5	132009 0180	
M 20	2.5	140	32.8	-	16	12	17.5	132009 0200	
M 22	2.5	140	25	-	18	14.5	19.5	132009 0220	
M 24	3	160	30	-	18	14.5	21	132009 0240	
M 27	3	160	30	-	20	16	24	132009 0270	
M 30	3.5	180	35	-	22	18	26.5	132009 0300	

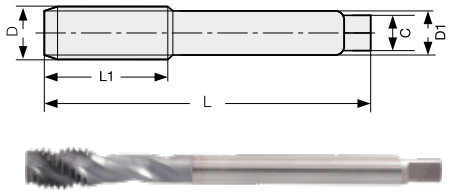
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DIN 376 overflow shank

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M3	0.5	56	4	2.2	-	2.5	132010 0030	
M4	0.7	63	5.5	2.8	2.1	3.3	132010 0040	
M5	0.8	70	6.5	3.5	2.7	4.2	132010 0050	
M6	1	80	8	4.5	3.4	5	132010 0060	
M8	1.25	90	10	6	4.9	6.8	132010 0080	
M10	1.5	100	12	7	5.5	8.5	132010 0100	

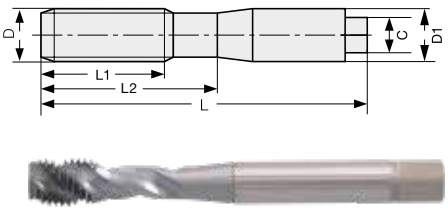
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Form E short chamfer

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	**6HX** art.no.	€
M 2	0.4	45	3	10	2.8	2.1	1.6	132011 0020	
M 3	0.5	56	4	18	3.5	2.7	2.5	132011 0030	
M 4	0.7	63	5.5	21	4.5	3.4	3.3	132011 0040	
M 5	0.8	70	6.4	25	6	4.9	4.2	132011 0050	
M 6	1	80	8	30	6	4.9	5	132011 0060	
M 8	1.25	90	10	35	8	6.2	6.8	132011 0080	
M 10	1.5	100	12	39	10	8	8.5	132011 0100	
M 12	1.75	110	14	-	9	7	10.2	132011 0120	
M 14	2	110	16	-	11	9	12	132011 0140	
M 16	2	110	16	-	12	9	14	132011 0160	
M 20	2.5	140	25	-	16	12	17.5	132011 0200	
M 24	3	160	30	-	18	14.5	21	132011 0240	

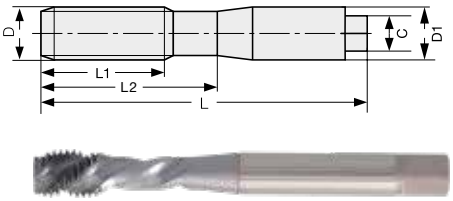
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left-cutting LH

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	**6HX** art.no.	€
M3	0.5	56	5	18	3.5	2.7	2.5	132017 0030	
M4	0.7	63	7.3	21	4.5	3.4	3.3	132017 0040	
M5	0.8	70	8.3	25	6	4.9	4.2	132017 0050	
M6	1.0	80	8	30	6	4.9	5	132017 0060	
M8	1.25	90	10	35	8	6.2	6.8	132017 0080	
M10	1.5	100	12	39	10	8	8.5	132017 0100	
M12	1.75	110	19.9	-	9	7	10.2	132017 0120	
M14	2.0	110	22	-	11	9	12	132017 0140	
M16	2.0	110	23.8	-	12	9	14	132017 0160	
M20	2.5	140	32.8	-	16	12	17.5	132017 0200	
M24	3.0	160	30	-	18	14.5	21	132017 0240	

1185



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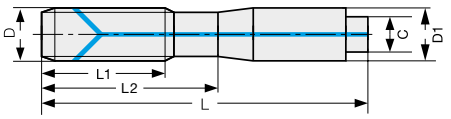
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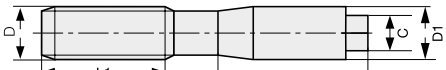
Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M6	1	80	8	30	6	4.9	5	132037 0060	
M8	1.25	90	10	35	8	6.2	6.8	132037 0080	
M10	1.5	100	12	39	10	8	8.5	132037 0100	
M12	1.75	110	14	-	9	7	10.2	132037 0120	
M14	2	110	16	-	11	9	12	132037 0140	
M16	2	110	16	-	12	9	14	132037 0160	
M20	2.5	140	25	-	16	12	17.5	132037 0200	
M24	3	160	30	-	18	14.5	21	132037 0240	
								1185	





Oversize cut 6GX / 7GX / 6H+0.1

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	6GX art.no.	€	7GX art.no.	€	6H+0,1 art.no.	€
M2	0.4	45	3	10	2.8	2.1	1.6	132012 0020		132013 0020			
M3	0.5	56	4	18	3.5	2.7	2.5	132012 0030		132013 0030		132014 0030	
M4	0.7	63	5.5	21	4.5	3.4	3.3	132012 0040		132013 0040		132014 0040	
M5	0.8	70	6.5	25	6	4.9	4.2	132012 0050		132013 0050		132014 0050	
M6	1.0	80	8	30	6	4.9	5.0	132012 0060		132013 0060		132014 0060	
M8	1.25	90	10	35	8	6.2	6.8	132012 0080		132013 0080		132014 0080	
M10	1.5	100	12	39	10	8	8.5	132012 0100		132013 0100		132014 0100	
M12	1.75	110	14.0	-	9	7	10.2	132012 0120		132013 0120		132014 0120	
M14	2.0	110	16	-	11	9	12	132012 0140					
M16	2.0	110	16.0	-	12	9	14	132012 0160		132013 0160		132014 0160	
M20	2.5	140	25	-	16	12	17.5	132012 0200					
M24	3.0	160	30	-	18	14.5	21	132012 0240					
								1185		1185		1185	

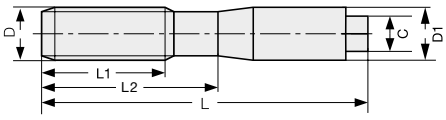




Extra long DIN 371/376



Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M3	0.5	100	4	18	3.5	2.7	2.5	132015 0030	
M4	0.7	125	5.6	21	4.5	3.4	3.3	132015 0040	
M5	0.8	160	6.4	25	6	4.9	4.2	132015 0050	
M6	1	160	8	30	6	4.9	5	132015 0060	
M8	1.25	180	13	35	8	6.2	6.8	132015 0080	
M10	1.5	200	12	39	10	8	8.5	132015 0100	
M12	1.75	200	14	-	9	7	10.2	132015 0120	
M14	2	200	16	-	11	9	12	132015 0140	
M16	2	200	16	-	12	9	14	132015 0160	
M20	2.5	200	25	-	16	12	17.5	132015 0200	
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ATORN Extra long DIN 371/376

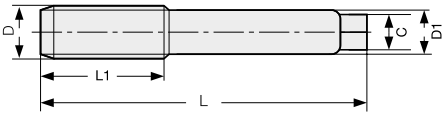
MF | 60° | HSS-E PM | DIN 374 | ISO 6HX | Typ U | C 2-3 | TiCN

- **ISO fine metric thread**
- Form C, 2-3 thread chamfer, for blind-hole thread
- Constructional dimensions DIN 374
- **Cutting material HSS-E-PM**
- Possible thread depth 2.5 x D
- **For universal application**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			●	○	○	○	○	○					
		20	14	10	8	9			18	7	5	6	22	22					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Standard fine thread

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
MF 2.5	0.35	56	4	2.2	-	2.15	132021 0253	
MF 2.6	0.35	56	4	2.2	-	2.25	132021 0263	
MF 3	0.35	56	4	2.2	-	2.65	132021 0303	
MF 3.5	0.35	56	5	2.5	2.1	3.15	132021 0353	
MF 4	0.35	63	5.6	2.8	2.1	3.65	132021 0403	
MF 4	0.5	63	5.8	2.8	2.1	3.5	132021 0405	
MF 4.5	0.5	70	6.2	3.5	2.7	4	132021 0455	
MF 5	0.5	70	6.2	3.5	2.7	4.5	132021 0505	
MF 6	0.5	80	8	4.5	3.4	5.5	132021 0605	
MF 6	0.75	80	8	4.5	3.4	5.25	132021 0607	
MF 6.5	0.75	80	8	5.5	4.3	5.75	132021 0657	
MF 7	0.5	80	8	5.5	4.3	6.5	132021 0705	
MF 8	0.75	80	8	6	4.9	7.2	132021 0807	
MF 8	1	90	10	6	4.9	7	132021 0810	
MF 9	1	90	10	7	5.5	8	132021 0910	
MF 10	1	90	10	7	5.5	9	132021 1010	
MF 10	1.25	100	12	7	5.5	8.8	132021 1012	
MF 10	0.75	90	10	7	5.5	9.2	132021 1075	
MF 11	1	90	12	8	6.2	10	132021 1110	
MF 12	0.5	100	12	9	7	11.5	132021 1205	
MF 12	0.75	100	12	9	7	11.2	132021 1207	
MF 12	1	100	12	9	7	11	132021 1210	
MF 12	1.25	100	12	9	7	10.8	132021 1212	
MF 12	1.5	100	14	9	7	10.5	132021 1215	
MF 13	1	100	12	11	9	12	132021 1310	
MF 14	1.5	100	16	11	9	12.5	132021 1415	
MF 16	1.5	100	16	12	9	14.5	132021 1615	
MF 18	1	110	16	14	11	17	132021 1810	
MF 18	1.5	110	17	14	11	16.5	132021 1815	
MF 20	1.5	125	16	16	12	18.5	132021 2015	
MF 22	1.5	125	16	18	14.5	20.5	132021 2215	
MF 24	1.5	140	17	18	14.5	22.5	132021 2415	
MF 26	1.5	140	25	18	14.5	24.5	132021 2615	
MF 30	1.5	150	33	22	18	28.5	132021 3015	





1185

ATORN Universal thread tap

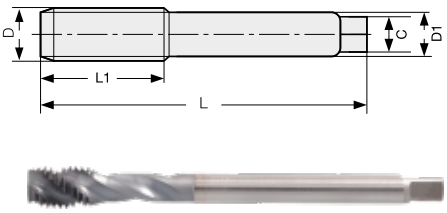
G | 55° | HSS-E PM | DIN 371/376 | ISO 6HX | Typ U | C 2-3 | TiCN

- **Whitworth thread**
- Form C, 2-3 thread chamfer, for blind-hole thread
- Constructional dimensions DIN 371
- **Cutting material HSS-E-PM**
- Possible thread depth 2.5 x D
- **For universal application**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			●	○	○	○	○	○					
		20	14	10	8	9			18	7	5	6	22	22					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Standard Whitworth

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
G 1/16	28	90	9.1	6	4.9	6.8	132028 0116	
G 1/8	28	90	14.5	7	5.5	8.8	132028 0108	
G 1/4	19	100	22	11	9	11.8	132028 0104	
G 3/8	19	100	22	12	9	15.25	132028 0308	
G 1/2	14	125	25	16	12	19	132028 0102	
G 5/8	14	125	25	18	14.5	21	132028 0508	
G 3/4	14	140	32.9	20	16	24.5	132028 0304	
G 1	11	160	36.2	25	20	30.75	132028 1000	
							1185	



Form E short chamfer

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
G 1/8	28	90	14.5	7	5.5	8.8	132030 0108	
G 1/4	19	100	22	11	9	11.8	132030 0104	
G 3/8	19	100	22	12	9	15.25	132030 0308	
G 1/2	14	125	25	16	12	19	132030 0102	
G 3/4	14	140	12.2	20	16	24.5	132030 0304	
G 1	11	160	15.2	25	20	30.75	132030 1000	
							1185	

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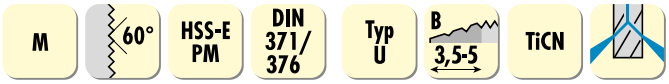
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ATORN Universal thread tap



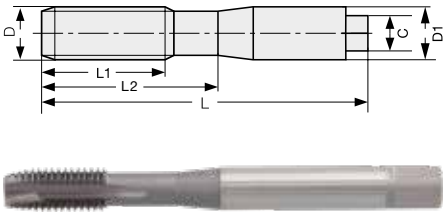
- **ISO metric thread**
- Form B, 3.5-5 thread chamfer, for through-hole thread
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM**
- Possible thread depth 3 x D
- **For universal application**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			●	○	○	○	○	○					
		20	14	10	8	9			18	7	5	6	22	22					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Standard

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	132001 0010	
M 1.1	0.25	40	5	-	2.5	2.1	0.85	132001 0011	
M 1.2	0.25	40	5	-	2.5	2.1	0.95	132001 0012	
M 1.4	0.3	40	7	-	2.5	2.1	1.1	132001 0014	
M 1.6	0.35	40	8	-	2.5	2.1	1.25	132001 0016	
M 1.7	0.35	40	8	-	2.5	2.1	1.35	132001 0017	
M 1.8	0.35	40	8	-	2.5	2.1	1.45	132001 0018	
M 2	0.4	45	8	-	2.8	2.1	1.6	132001 0020	
M 2.2	0.45	45	9	-	2.8	2.1	1.75	132001 0022	
M 2.3	0.4	45	9	-	2.8	2.1	1.9	132001 0023	
M 2.5	0.45	50	9	-	2.8	2.1	2.05	132001 0025	
M 2.6	0.45	50	9	-	2.8	2.1	2.15	132001 0026	
M 3	0.5	56	11	18	3.5	2.7	2.5	132001 0030	
M 3.5	0.6	56	12	20	4	3	2.9	132001 0035	
M 4	0.7	63	13	21	4.5	3.4	3.3	132001 0040	
M 4.5	0.75	70	16	25	6	4.9	3.75	132001 0045	
M 5	0.8	70	16	25	6	4.9	4.2	132001 0050	
M 6	1	80	19	30	6	4.9	5	132001 0060	
M 7	1	80	19	30	7	5.5	6	132001 0070	
M 8	1.25	90	22	35	8	6.2	6.8	132001 0080	
M 10	1.5	100	24	39	10	8	8.5	132001 0100	
M 12	1.75	110	28	-	9	7	10.2	132001 0120	
M 14	2	110	30	-	11	9	12	132001 0140	
M 16	2	110	32	-	12	9	14	132001 0160	
M 18	2.5	125	34	-	14	11	15.5	132001 0180	
M 20	2.5	140	34	-	16	12	17.5	132001 0200	
M 22	2.5	140	34	-	18	14.5	19.5	132001 0220	
M 24	3	160	38	-	18	14.5	21	132001 0240	
M 27	3	160	38	-	20	16	24	132001 0270	
M 30	3.5	180	45	-	22	18	26.5	132001 0300	

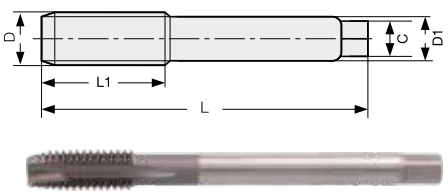
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DIN 376 overflow shank

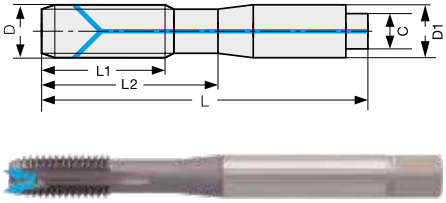
Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
M 3	0.5	56	11	2.2		2.5	132002 0030	
M 4	0.7	63	13	2.8	2.1	3.3	132002 0040	
M 5	0.8	70	16	3.5	2.7	4.2	132002 0050	
M 6	1	80	19	4.5	3.4	5	132002 0060	
M 8	1.25	90	22	6	4.9	6.8	132002 0080	
M 10	1.5	100	24	7	5.5	8.5	132002 0100	

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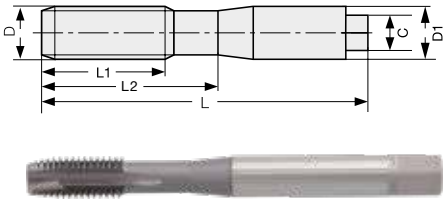
with internal cooling

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	**6HX** art.no.	€
M 6	1	80	19	30	6	4.9	5	132036 0060	
M 8	1.25	90	22	35	8	6.2	6.8	132036 0080	
M 10	1.5	100	24	39	10	8	8.5	132036 0100	
M 12	1.75	110	28	-	9	7	10.2	132036 0120	
M 14	2	110	30	-	11	9	12	132036 0140	
M 16	2	110	32	-	12	9	14	132036 0160	
M 20	2.5	140	34	-	16	12	17.5	132036 0200	
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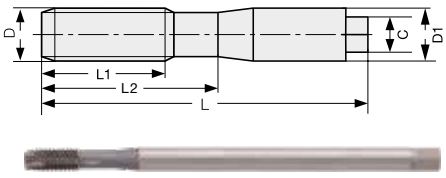
Oversize cut 6GX / 7GX / 6H+0.1

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	**6GX** art.no.	€	**7GX** art.no.	€	**6H+0,1** art.no.	€
M 2	0.4	45	8	10	2.8	2.1	1.6	132003 0020		132004 0020			
M 3	0.5	56	11	18	3.5	2.7	2.5	132003 0030		132004 0030		132005 0030	
M 4	0.7	63	13	21	4.5	3.4	3.3	132003 0040		132004 0040		132005 0040	
M 5	0.8	70	16	25	6	4.9	4.2	132003 0050		132004 0050		132005 0050	
M 6	1.0	80	19	30	6	4.9	5	132003 0060		132004 0060		132005 0060	
M 8	1.25	90	22	35	8	6.2	6.8	132003 0080		132004 0080		132005 0080	
M 10	1.5	100	24	39	10	8	8.5	132003 0100		132004 0100		132005 0100	
M 12	1.75	110	28.5	-	9	7	10.2	132003 0120		132004 0120		132005 0120	
M 14	2	110	30	-	11	9	12	132003 0140					
M 16	2.0	110	32	-	12	9	14	132003 0160		132004 0160		132005 0160	
M 20	2.5	140	34	-	16	12	17.5	132003 0200					
M 24	3	160	38	-	18	14.5	21	132003 0240					
								1185		1185		1185	



Extra long DIN 371/376

Nominal diameter mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	**6HX** art.no.	€
M 3	0.5	100	11	18	3.5	2.7	2.5	132006 0030	
M 4	0.7	125	13	21	4.5	3.4	3.3	132006 0040	
M 5	0.8	160	16	25	6	4.9	4.2	132006 0050	
M 6	1	160	19	30	6	4.9	5	132006 0060	
M 8	1.25	180	22	35	8	6.2	6.8	132006 0080	
M 10	1.5	200	24	39	10	8	8.5	132006 0100	
M 12	1.75	200	28	-	9	7	10.2	132006 0120	
M 14	2	200	30	-	11	9	12	132006 0140	
M 16	2	200	32	-	12	9	14	132006 0160	
M 20	2.5	200	34	-	16	12	17.5	132006 0200	
								1185	



ATORN Universal thread tap

MF | 60° | HSS-E PM | DIN 374 | ISO 6HX | Typ U | B 3,5-5 | TiCN

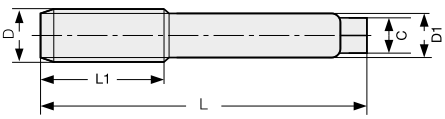
- **ISO 6HX fine metric thread**
- Form B, 3.5-5 thread chamfer, for through-hole thread
- Constructional dimensions DIN 371
- **Cutting material HSS-E-PM**
- Possible thread depth 3 x D
- **For universal application**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20	● 14	○ 10	● 8	● 9			● 18	○ 7	○ 5	○ 6	○ 22	○ 22					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Standard fine thread

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
MF 2.5	0.35	56	8	2.2	-	2.15	132018 0253	
MF 2.6	0.35	56	8	2.2	-	2.25	132018 0263	
MF 3	0.35	56	8	2.2	-	2.65	132018 0303	
MF 3.5	0.35	56	9	2.5	2.1	3.15	132018 0353	
MF 4	0.35	63	10	2.8	2.1	3.65	132018 0403	
MF 4	0.5	63	10	2.8	2.1	3.5	132018 0405	
MF 4.5	0.5	70	12	3.5	2.7	4	132018 0450	
MF 5	0.5	70	16	3.5	2.7	4.5	132018 0505	
MF 6	0.5	80	14	4.5	3.4	5.5	132018 0605	
MF 6	0.75	80	14	4.5	3.4	5.25	132018 0607	
MF 6.5	0.75	80	14	5.5	4.3	5.75	132018 0650	
MF 7	0.5	80	14	5.5	4.3	6.5	132018 0705	
MF 8	0.75	80	22	6	4.9	7.2	132018 0807	
MF 8	1	90	22	6	4.9	7	132018 0810	
MF 9	1	90	22	7	5.5	8	132018 0910	
MF 10	1	90	20	7	5.5	9	132018 1001	
MF 10	1.25	100	24	7	5.5	8.8	132018 1012	
MF 10	0.75	90	20	7	5.5	9.2	132018 1075	
MF 11	1	90	20	8	6.2	10	132018 1110	
MF 12	0.5	100	22	9	7	11.5	132018 1205	
MF 12	0.75	100	22	9	7	11.2	132018 1207	
MF 12	1	100	22	9	7	11	132018 1210	
MF 12	1.25	100	22	9	7	10.8	132018 1212	
MF 12	1.5	100	22	9	7	10.5	132018 1215	
MF 13	1	100	22	11	9	12	132018 1310	
MF 14	1.5	100	22	11	9	12.5	132018 1415	
MF 16	1.5	100	22	12	9	14.5	132018 1615	
MF 18	1	110	25	14	11	17	132018 1810	
MF 18	1.5	110	26.2	14	11	16.5	132018 1815	
MF 20	1.5	125	25	16	12	18.5	132018 2015	
MF 22	1.5	125	25	18	14.5	20.5	132018 2215	
MF 24	1.5	140	29.8	18	14.5	22.5	132018 2415	
MF 26	1.5	140	30.4	18	14.5	24.5	132018 2615	
MF 30	1.5	150	30.4	22	18	28.5	132018 3015	

1185





ATORN Universal thread tap Universal thread tap

G | 55° | HSS-E PM | DIN 5156 | ISO 6HX | Typ U | B 3,5-5 | TiCN

- **Whitworth thread**
- Form C, 3.5-5 thread chamfer, for through-hole thread
- Constructional dimensions DIN 371
- **Cutting material HSS-E-PM**
- Possible thread depth 3 x D
- **For universal application**

material

● very well suited
○ well suited

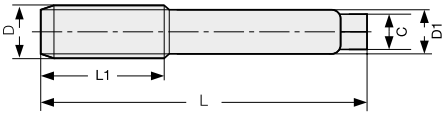
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●			●	○	○	○	○	○					
20	14	10	8	9			18	7	5	6	22	22					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard Whitworth

Nominal diameter mm	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	6HX art.no.	€
G 1/16	28	90	20	7	4.9	6.8	132026 0116	
G 1/8	28	90	20	7	5.5	8.8	132026 0108	
G 1/4	19	100	22	11	9	11.8	132026 0104	
G 3/8	19	100	22	12	9	15.3	132026 0308	
G 1/2	14	125	25	16	12	19	132026 0102	
G 5/8	14	125	25	18	14.5	21	132026 0508	
G 3/4	14	140	28	20	16	24.5	132026 0304	
G 1	11	160	30	25	20	30.75	132026 1000	

1185





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ATORN Universal machine taps

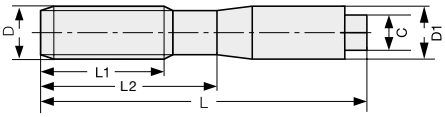
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | TiN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, for blind-hole threads
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- Possible thread depth 2.5 x D
- **for universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	vaporised art.no.	€	TiN art.no.	€
M1	0.25	40	5	-	2.5	2.1	0.75	134710 0010			
M1.2	0.25	40	5	-	2.5	2.1	0.95	134710 0012			
M1.4	0.3	40	7	-	2.5	2.1	1.1	134710 0014			
M1.6	0.35	40	8	-	2.5	2.1	1.25	134710 0016			
M1.7	0.35	40	8	-	2.5	2.1	1.35	134710 0017			
M1.8	0.35	40	8	-	2.5	2.1	1.45	134710 0018			
M2	0.4	45	8	-	2.8	2.1	1.6	134710 0020			
M2.2	0.45	45	9	-	2.8	2.1	1.75	134710 0022			
M2.3	0.4	45	9	-	2.8	2.1	1.9	134710 0023			
M2.5	0.45	50	9	-	2.8	2.1	2.05	134710 0025			
M2.6	0.45	50	9	-	2.8	2.1	2.15	134710 0026			
M3	0.5	56	10	18	3.5	2.7	2.5	134710 0030		134715 0030	
M4	0.7	63	12	21	4.5	3.4	3.3	134710 0040		134715 0040	
M5	0.8	70	14	25	6	4.9	4.2	134710 0050		134715 0050	
M6	1	80	16	30	6	4.9	5	134710 0060		134715 0060	
M8	1.25	90	18	35	8	6.2	6.8	134710 0080		134715 0080	
M10	1.5	100	20	39	10	8	8.5	134710 0100		134715 0100	
M12	1.75	110	22	-	9	7	10.2	134710 0120		134715 0120	
M16	2	110	28	-	12	9	14	134710 0160		134715 0160	
M20	2.5	140	32	-	16	12	17.5	134710 0200		134715 0200	
M24	3	160	30	-	18	14.5	21	134710 0240			
M27	3	160	30	-	20	16	24	134710 0270			
M30	3.5	180	35	-	22	18	26.5	134710 0300			
								1127		1127	





Set

Number of pieces pc.	Contents	vaporised art.no.	€
7	1 machine thread tap each HSSE 13125 M3/M4/M5/M6/M8/M10/M12	134710 1000	
		1127	



ATORN Universal machine taps

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vap. | TiN | Vc/fz

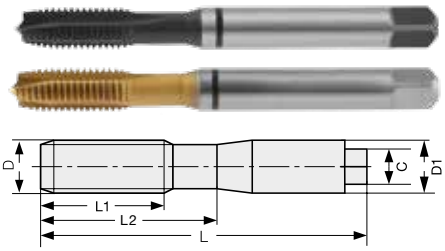
402 – 406

- Straight-fluted with spiral point
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D
- **for universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134700....	● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	134705....	● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	vaporised art.no.	€	TiN art.no.	€
M1	0.25	40	5	-	2.5	2.1	0.75	134700 0010			
M1.2	0.25	40	5	-	2.5	2.1	0.95	134700 0012			
M1.4	0.3	40	7	-	2.5	2.1	1.1	134700 0014			
M1.6	0.35	40	8	-	2.5	2.1	1.25	134700 0016			
M1.7	0.35	40	8	-	2.5	2.1	1.35	134700 0017			
M1.8	0.35	40	8	-	2.5	2.1	1.45	134700 0018			
M2	0.4	45	8	-	2.8	2.1	1.6	134700 0020			
M2.2	0.45	45	9	-	2.8	2.1	1.75	134700 0022			
M2.3	0.4	45	9	-	2.8	2.1	1.9	134700 0023			
M2.5	0.45	50	9	-	2.8	2.1	2.05	134700 0025			
M2.6	0.45	50	9	-	2.8	2.1	2.15	134700 0026			
M3	0.5	56	10	18	3.5	2.7	2.5	134700 0030		134705 0030	
M4	0.7	63	12	21	4.5	3.4	3.3	134700 0040		134705 0040	
M5	0.8	70	14	25	6	4.9	4.2	134700 0050		134705 0050	
M6	1	80	16	30	6	4.9	5	134700 0060		134705 0060	
M8	1.25	90	18	35	8	6.2	6.8	134700 0080		134705 0080	
M10	1.5	100	20	39	10	8	8.5	134700 0100		134705 0100	
M12	1.75	110	22	-	9	7	10.2	134700 0120		134705 0120	
M16	2	110	28	-	12	9	14	134700 0160		134705 0160	
M20	2.5	140	32	-	16	12	17.5	134700 0200		134705 0200	
M24	3	160	36	-	18	14.5	21	134700 0240			
M27	3	160	36	-	20	16	24	134700 0270			
M30	3.5	180	40	-	22	18	26.5	134700 0300			
								1127		1127	



Set

Number of pieces pc.	Contents	vaporised art.no.	€
7	1 machine thread tap each HSSE 13121 M3/M4/M5/M6/M8/M10/M12	134700 1000	
		1127	



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ATORN Universal machine taps, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz

402 – 406

- **Metric ISO 6H thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- Constructional dimensions similar to DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2.5 x D
- **For universal applications**

material — ● very well suited ○ well suited

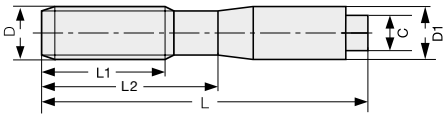
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	112	6	18	3.5	2.7	2.5	134780 0030	
M4	0.7	126	7	21	4.5	3.4	3.3	134780 0040	
M5	0.8	140	8	25	6	4.9	4.2	134780 0050	
M6	1	160	10	30	6	4.9	5	134780 0060	
M8	1.25	180	13	35	8	6.2	6.8	134780 0080	
M10	1.5	200	15	39	10	8	8.5	134780 0100	
M12	1.75	220	18	-	9	7	10.2	134780 0120	
M14	2	220	20	-	11	9	12	134780 0140	
M16	2	220	20	-	12	9	14	134780 0160	

1127



ATORN Universal machine taps, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | B 3,5-5 | 3xD | Vap. | Vc/fz

402 – 406

- Straight-fluted with spiral point
- Constructional dimensions similar to DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D
- **For universal applications**

material — ● very well suited ○ well suited

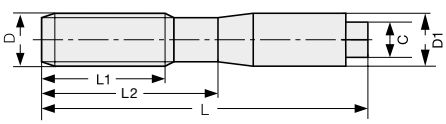
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	112	10	18	3.5	2.7	2.5	134785 0030	
M4	0.7	126	12	21	4.5	3.4	3.3	134785 0040	
M5	0.8	140	14	25	6	4.9	4.2	134785 0050	
M6	1	160	16	30	6	4.9	5	134785 0060	
M8	1.25	180	18	35	8	6.2	6.8	134785 0080	
M10	1.5	200	20	39	10	8	8.5	134785 0100	
M12	1.75	220	22	-	9	7	10.2	134785 0120	
M14	2	220	25	-	11	9	12	134785 0140	
M16	2	220	28	-	12	9	14	134785 0160	

1127



ATORN Universal machine tap sets

M | 60° | HSS-E | ISO 2 6H | 2,5xD | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H thread**
- Constructional dimensions similar to DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2.5 x D
- **For universal applications**


14-pcs.


70-pcs.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Number of pieces pc.	Contents	art.no.	€
14	14-pcs. set: M3-M12 through-hole and blind-hole thread (1 of each)	134712 1014	
70	70-pcs. set: M3-M12 through-hole and blind-hole thread (5 of each)	134712 1070	
		1127	

ATORN® The ISO colour ring system

ATORN taps and thread formers are marked with coloured rings in accordance with the ISO colour code according to their **main area of use**. The respective secondary applications are specified in the catalogue.

Steel up to 1,000 N/mm²

Stainless steel

GG, GGG

Aluminium and copper alloys, long-chipping materials

Titanium and nickel alloys

Hard steel up to 62 HRc

Steel | **up to 1,400 N/mm²**

Steel | **Stainless steel**



ATORN Universal machine tap ULTRA-HL

M | 60° | HSS-E | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiAlN | Vc/fz | 402 – 406

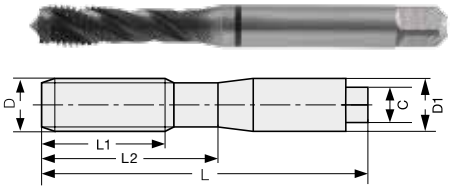
- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E, HSS-E-PM, Hardlube coating**
- Easy chip removal to the rear
- Possible thread depth 2xD
- **BALINIT® HARDLUBE**: The high level of hardness and temperature resistance of the TiAlN layer effectively protects cutting edges from wear, while the excellent sliding and lubricating properties of the WC/C ensure smooth chip flow. The result: Greater production reliability thanks to reliable, reproducible performance.

BALINIT® HARDLUBE

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134750....	● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	HSS-E art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.5	134750 0030	
M4	0.7	63	12	21	4.5	3.4	3.3	134750 0040	
M5	0.8	70	14	25	6	4.9	4.2	134750 0050	
M6	1	80	16	30	6	4.9	5	134750 0060	
M8	1.25	90	18	35	8	6.2	6.8	134750 0080	
M10	1.5	100	20	39	10	8	8.5	134750 0100	
M12	1.75	110	22	-	9	7	10.2	134750 0120	
M16	2	110	28	-	12	9	14	134750 0160	
M20	2.5	140	32	-	16	12	17.5	134750 0200	

1127



ATORN Universal machine tap ULTRA-HL

M | 60° | HSS-E | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiAlN | Vc/fz | 402 – 406

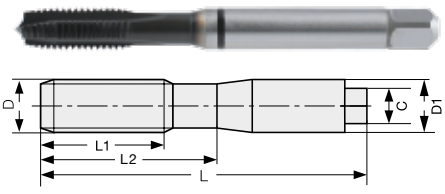
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E, HSS-E-PM, Hardlube coating**
- For through-hole threads
- Possible thread depth 3 x D
- **BALINIT® HARDLUBE**: The high level of hardness and temperature resistance of the TiAlN layer effectively protects cutting edges from wear, while the excellent sliding and lubricating properties of the WC/C ensure smooth chip flow. The result: Greater production reliability thanks to reliable, reproducible performance.

BALINIT® HARDLUBE

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134755....	● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	HSS-E art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.5	134755 0030	
M4	0.7	63	12	21	4.5	3.4	3.3	134755 0040	
M5	0.8	70	14	25	6	4.9	4.2	134755 0050	
M6	1	80	16	30	6	4.9	5	134755 0060	
M8	1.25	90	18	35	8	6.2	6.8	134755 0080	
M10	1.5	100	20	39	10	8	8.5	134755 0100	
M12	1.75	110	22	-	9	7	10.2	134755 0120	
M16	2	110	28	-	12	9	14	134755 0160	
M20	2.5	140	32	-	16	12	17.5	134755 0200	

1127



ATORN Machine tap

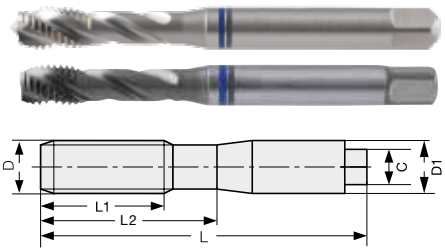
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiCN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**; **HSS-E, TiCN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D

Up to 1400 N/mm²

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134230....	● 13	● 10	● 8	○ 8			● 14	● 14	○ 4	○ 4			○ 18					
	134233....	● 18	● 18	● 13	○ 13			● 11	● 11	○ 4	○ 4			○ 20					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiCN art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	134230 0030		134233 0030	
M 4	0.7	63	7	21	4.5	3.4	3.30	134230 0040		134233 0040	
M 5	0.8	70	8	25	6	4.9	4.20	134230 0050		134233 0050	
M 6	1.0	80	10	30	6	4.9	5.00	134230 0060		134233 0060	
M 8	1.25	90	13	35	8	6.2	6.80	134230 0080		134233 0080	
M 10	1.5	100	15	39	10	8	8.50	134230 0100		134233 0100	
M 12	1.75	110	18	-	9	7	10.25	134230 0120		134233 0120	
M 16	2.0	110	20	-	12	9	14.00	134230 0160		134233 0160	
M 20	2.5	140	25	-	16	12	17.50	134230 0200		134233 0200	
								1127		1127	



ATORN Machine tap

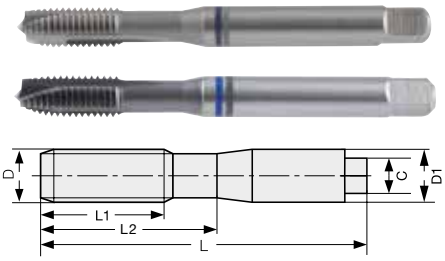
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- Straight-fluted
- With spiral point, type B, 3.5 to 5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**; **HSS-E, TiCN-coated**
- For through-hole threads
- Possible thread depth 3 x D

Up to 1400 N/mm²

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134135....	● 13	● 10	● 8	○ 8			● 14	● 14	○ 4	○ 4			○ 18					
	134137....	● 18	● 18	● 13	○ 13			● 11	● 11	○ 4	○ 4			○ 20					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiCN art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	134135 0030		134137 0030	
M 4	0.7	63	12	21	4.5	3.4	3.30	134135 0040		134137 0040	
M 5	0.8	70	14	25	6	4.9	4.20	134135 0050		134137 0050	
M 6	1.0	80	16	30	6	4.9	5.00	134135 0060		134137 0060	
M 8	1.25	90	18	35	8	6.2	6.80	134135 0080		134137 0080	
M 10	1.5	100	20	39	10	8	8.50	134135 0100		134137 0100	
M 12	1.75	110	22	-	9	7	10.25	134135 0120		134137 0120	
M 16	2.0	110	28	-	12	9	14.00	134135 0160		134137 0160	
M 20	2.5	140	32	-	16	12	17.50	134135 0200		134137 0200	
								1127		1127	



ATORN Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 3xD | TiCN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- 45°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For deep blind bore threads
- Easy chip removal to the rear
- Possible thread depth 3 x D

Ideal for steel and stainless steel

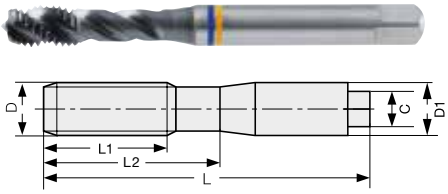
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 23	● 18	● 13	● 13	● 15	○ 10			○ 4									

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	134193 0305	
M 4	0.7	63	7	21	4.5	3.4	3.30	134193 0407	
M 5	0.8	70	8	25	6	4.9	4.20	134193 0508	
M 6	1.0	80	10	30	6	4.9	5.00	134193 0610	
M 8	1.25	90	13	35	8	6.2	6.80	134193 0812	
M 10	1.5	100	15	39	10	8	8.50	134193 1015	
M 12	1.75	110	18	-	9	7	10.25	134193 1217	
M 16	2.0	110	20	-	12	9	14.00	134193 1620	

1127



ATORN Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- Possible thread depth 3 x D

Ideal for steel and stainless steel

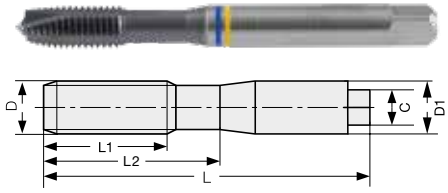
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 23	● 18	● 13	● 13	● 15	○ 10			○ 4									

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	134196 0305	
M 4	0.7	63	7	21	4.5	3.4	3.30	134196 0407	
M 5	0.8	70	8	25	6	4.9	4.20	134196 0508	
M 6	1.0	80	10	30	6	4.9	5.00	134196 0610	
M 8	1.25	90	13	35	8	6.2	6.80	134196 0812	
M 10	1.5	100	15	39	10	8	8.50	134196 1015	
M 12	1.75	110	18	-	9	7	10.25	134196 1217	
M 16	2.0	110	20	-	12	9	14.00	134196 1620	

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ATORN Machine tap

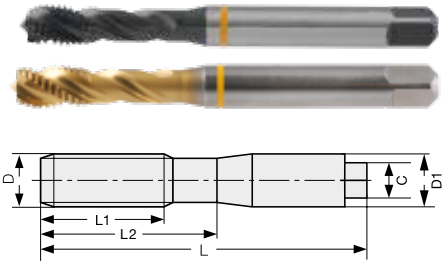
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H thread**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- For blind-hole threads, minimum thread relief grinding

For stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134225....				● 8	● 9	● 7												
	134226....				● 13	● 15	● 10												
	Cutting speed Vc m/min.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	vaporised art.no.	€	TiN art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	134225 0020			
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134225 0025			
M 3	0.5	56	6	18	3.5	2.7	2.50	134225 0030		134226 0030	
M 4	0.7	63	7	21	4.5	3.4	3.30	134225 0040		134226 0040	
M 5	0.8	70	8	25	6	4.9	4.20	134225 0050		134226 0050	
M 6	1.0	80	10	30	6	4.9	5.00	134225 0060		134226 0060	
M 8	1.25	90	13	35	8	6.2	6.80	134225 0080		134226 0080	
M 10	1.5	100	15	39	10	8	8.50	134225 0100		134226 0100	
M 12	1.75	110	18	-	9	7	10.25	134225 0120		134226 0120	
M 16	2.0	110	20	-	11	9	14.00	134225 0160		134226 0160	
M 20	2.5	140	25	-	16	12	17.50	134225 0200			
								1127		1127	



ATORN Machine tap

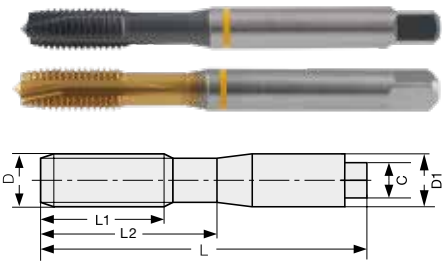
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H thread**
- Straight-fluted
- With spiral point, Form B, 3.5 to 5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- For through-hole threads

For stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	134130....				● 8	● 9	● 7												
	134131....				● 13	● 15	● 10												
	Cutting speed Vc m/min.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	vaporised art.no.	€	TiN art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	134130 0020			
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134130 0025			
M 3	0.5	56	10	18	3.5	2.7	2.50	134130 0030		134131 0030	
M 4	0.7	63	12	21	4.5	3.4	3.30	134130 0040		134131 0040	
M 5	0.8	70	14	25	6	4.9	4.20	134130 0050		134131 0050	
M 6	1.0	80	16	30	6	4.9	5.00	134130 0060		134131 0060	
M 8	1.25	90	18	35	8	6.2	6.80	134130 0080		134131 0080	
M 10	1.5	100	20	39	10	8	8.50	134130 0100		134131 0100	
M 12	1.75	110	22	-	9	7	10.25	134130 0120		134131 0120	
M 16	2.0	110	28	-	12	9	14.00	134130 0160		134131 0160	
M 20	2.5	140	32	-	16	12	17.50	134130 0200			
								1127		1127	



ATORN Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 2,5xD | Vc/fz | 402 – 406

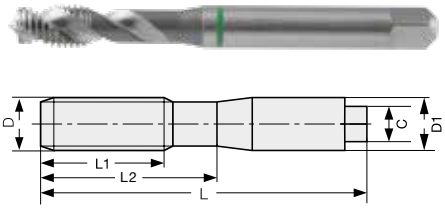
- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, 45° spiral-fluted
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind bore threads, with enlarged chip space
- Possible thread depth 2.5 x D

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 30	● 18	● 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	134195 0020	
M 3	0.5	56	6	18	3.5	2.7	2.50	134195 0030	
M 4	0.7	63	7	21	4.5	3.4	3.30	134195 0040	
M 5	0.8	70	8	25	6	4.9	4.20	134195 0050	
M 6	1.0	80	10	30	6	4.9	5.00	134195 0060	
M 8	1.25	90	13	35	8	6.2	6.80	134195 0080	
M 10	1.5	100	15	39	10	8	8.50	134195 0100	
M 12	1.75	110	18	-	9	7	10.25	134195 0120	

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ATORN Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 402 – 406

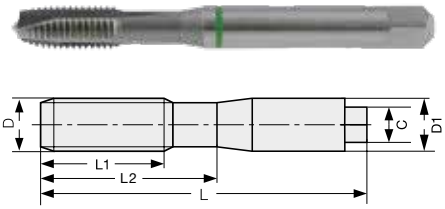
- **ISO 6H metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- With enlarged chip space
- The spiral point ensures strong chip removal to the front
- Possible thread depths 3xD

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 30	● 18	● 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	134127 0030	
M 4	0.7	63	12	21	4.5	3.4	3.30	134127 0040	
M 5	0.8	70	14	25	6.0	4.9	4.20	134127 0050	
M 6	1.0	80	16	30	6.0	4.9	5.00	134127 0060	
M 8	1.25	90	18	35	8.0	6.2	6.80	134127 0080	
M 10	1.5	100	20	39	10.0	8.0	8.50	134127 0100	
M 12	1.75	110	22	-	9.0	7.0	10.25	134127 0120	

1127



ATORN Synchronised machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Synchro | C 2-3 | 40° | 2,5xD | TiN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2 to 3-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, TiN-coated**
- For blind-hole threads
- Minimal thread relief grinding
- Possible thread depth 2.5 x D
- Suitable for CNC machining centres with synchro tap chucks

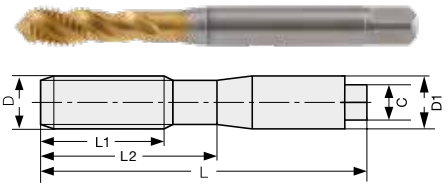
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 16	● 12	○ 9	○ 9	○ 7	○ 10	● 29	● 16				● 18	● 18	● 15	○ 14			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	6	18	3.5	2.7	2.5	135350 0030	
M4	0.7	63	7.5	21	4.5	3.4	3.3	135350 0040	
M5	0.8	70	8.5	25	6	4.9	4.2	135350 0050	
M6	1	80	11	30	6	4.9	5	135350 0060	
M8	1.25	90	14	35	8	6.2	6.8	135350 0080	
M10	1.5	100	16	39	10	8	8.5	135350 0100	
M12	1.75	110	18.5	-	9	7	10.2	135350 0120	
M14	2	110	20	-	11	9	12	135350 0140	
M16	2	110	20	-	12	9	14	135350 0160	
M18	2.5	125	25	-	14	11	15.5	135350 0180	
M20	2.5	140	25	-	16	12	17.5	135350 0200	
M24	3	160	30	-	18	14.5	21	135350 0240	

1127



ATORN Synchronised machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Synchro | B 3,5-5 | 3xD | TiN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks

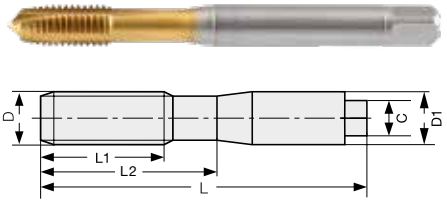
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 16	● 12	○ 9	○ 9	○ 7	○ 10	● 29	● 16				● 18	● 18	● 15	○ 14			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.5	135385 0030	
M4	0.7	63	12	21	4.5	3.4	3.3	135385 0040	
M5	0.8	70	14	25	6	4.9	4.2	135385 0050	
M6	1	80	16	30	6	4.9	5	135385 0060	
M8	1.25	90	17	35	8	6.2	6.8	135385 0080	
M10	1.5	100	20	39	10	8	8.5	135385 0100	
M12	1.75	110	24	-	9	7	10.2	135385 0120	
M14	2	110	26	-	11	9	12	135385 0140	
M16	2	110	26	-	12	9	14	135385 0160	
M18	2.5	125	30	-	14	11	15.5	135385 0180	
M20	2.5	140	32	-	16	12	17.5	135385 0200	
M24	3	160	36	-	18	14.5	21	135385 0240	

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ATORN Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | D 3,5-5 | | 1,5xD | | TiCN | Vc/fz

402 – 406

Hard machining < 55 HRC

- **ISO 6HX metric thread**
- Type D, 3.5 to 5-thread chamfer, for blind bore and through-hole threads
- Similar to DIN 371 = up to M10, similar to DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- Possible thread depth 1.5xD

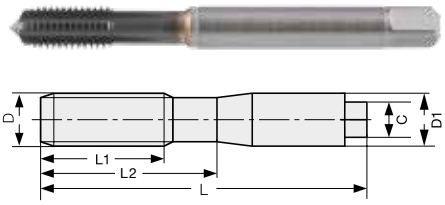
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 3		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.50	135165 0030	
M4	0.7	63	12	21	4.5	3.4	3.30	135165 0040	
M5	0.8	70	14	25	6	4.9	4.20	135165 0050	
M6	1	80	16	30	6	4.9	5.1	135165 0060	
M8	1.25	90	18	35	8	6.2	6.9	135165 0080	
M10	1.5	100	20	39	10	8	8.6	135165 0100	
M12	1.75	110	22	-	12	9	10.4	135165 0120	
M16	2.0	110	28	-	12	9	14.00	135165 0160	

1127



ATORN Machine tap

M | 60° | VHM | DIN 371 | D 3,5-5 | | 1,5xD | | TiCN | Vc/fz

402 – 406

Hard machining ≥ 60 HRC

- **ISO 6H metric thread**
- Type D, 3.5 to 5-thread chamfer, for blind bore and through-hole threads
- Similar to DIN 371
- **Cutting material: superfine grain solid carbide, TiCN-coated**
- Possible thread depth 1.5xD

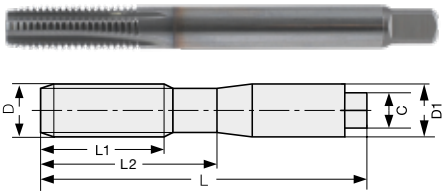
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 5	● 4	● 2

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	12	18	3.5	2.7	2.6	135170 0030	
M4	0.7	63	14	21	4.5	3.4	3.4	135170 0040	
M5	0.8	70	17	25	6	4.9	4.3	135170 0050	
M6	1	80	20	30	6	4.9	5.1	135170 0060	
M8	1.25	90	20	35	8	6.2	6.9	135170 0080	
M10	1.5	100	24	39	10	8	8.6	135170 0100	
M12	1.75	110	28	-	12	9	10.4	135170 0120	

1127



A-SFT machine tap

M | 60° | HSS-E PM | C 2-3 | 45° | TiCN | Vc/fz | 402 – 406

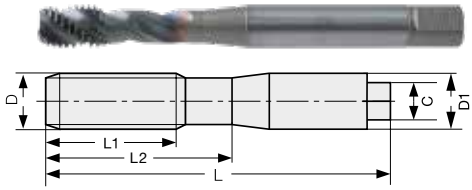
- **ISO 6HX metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **additional versions available**

Accelerated chip removal due to irregular twisted flute

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●				○			○	○	○				
38	35	19	14	14				8			25	25	25				

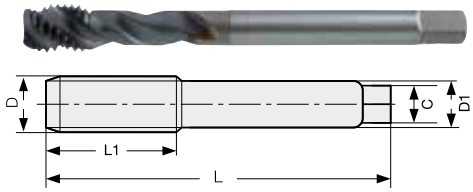
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	3.2	-	2.8	2.1	1.60	133400 0020	
M 2.5	0.45	50	3.6	-	2.8	2.1	2.10	133400 0025	
M 3	0.5	56	4	18	3.5	2.7	2.50	133400 0030	
M 4	0.7	63	5.6	21	4.5	3.4	3.30	133400 0040	
M 5	0.8	70	6.4	25	6	4.9	4.20	133400 0050	
M 6	1.0	80	8	30	6	4.9	5.00	133400 0060	
M 8	1.25	90	10	35	8	6.2	6.80	133400 0080	
M 10	1.5	100	12	39	10	8	8.50	133400 0100	

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	14	-	9	7	10.30	133405 0120	
M 14	2.0	110	16	-	11	9	12.00	133405 0140	
M 16	2.0	110	16	-	12	9	14.00	133405 0160	
M 18	2.5	125	25	-	14	11	15.50	133405 0180	
M 20	2.5	140	25	-	16	12	17.50	133405 0200	
M 22	2.5	140	25	-	18	14.5	19.50	133405 0220	
M 24	3.0	160	30	-	18	14.5	21.00	133405 0240	

1128

A-POT machine tap

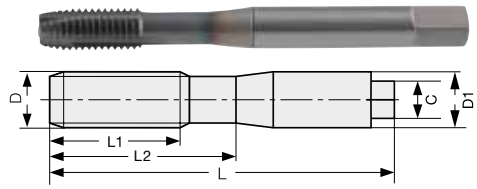
M | 60° | HSS-E PM | B 3,5-5 | TiCN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **additional versions available**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●				○			○	○	○				
38	35	19	14	14				8			25	25	25				

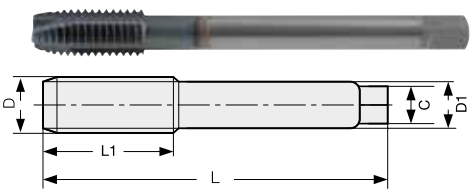
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	133450 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.10	133450 0025	
M 3	0.5	56	11	18	3.5	2.7	2.50	133450 0030	
M4	0.7	63	13	21	4.5	3.4	3.30	133450 0040	
M 5	0.8	70	16	25	6	4.9	4.20	133450 0050	
M 6	1.0	80	19	30	6	4.9	5.00	133450 0060	
M 8	1.25	90	22	35	8	6.2	6.80	133450 0080	
M 10	1.5	100	24	39	10	8	8.50	133450 0100	

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	28	-	9	7	10.25	133455 0120	
M 14	2.0	110	30	-	11	9	12.00	133455 0140	
M 16	2.0	110	32	-	12	9	14.00	133455 0160	
M 18	2.5	125	34	-	14	11	15.50	133455 0180	
M 20	2.5	140	34	-	16	12	17.50	133455 0200	
M 22	2.5	140	34	-	18	14.5	19.50	133455 0220	
M 24	3.0	160	38	-	18	14.5	21.00	133455 0240	

1128

A-SFT machine tap, with Weldon clamping surface

M | 60° | HSS-E PM | C 2-3 | 45° | TiCN | Vc/fz | 402 – 406

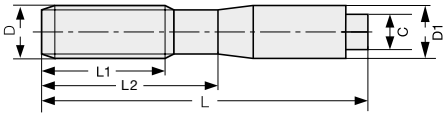
- **Metric ISO 6HX thread**
- 45°, spiral-fluted
- Form C, 2.5-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **Additional versions available**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	6	4.9	2.5	133490 0030	
M 4	0.7	63	5.6	21	6	4.9	3.3	133490 0040	
M 5	0.8	70	6.4	25	6	4.9	4.2	133490 0050	
M 6	1.0	80	8	30	6	4.9	5	133490 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133490 0080	
M 10	1.5	100	12	39	10	8	8.5	133490 0100	
M 12	1.75	110	14	46	12	9	10.3	133490 0120	
M 14	2.0	110	16	49	14	11	12	133490 0140	
M 16	2.0	110	16	56	16	12	14	133490 0160	

1128

A-POT machine tap, with Weldon clamping surface

M | 60° | HSS-E PM | B 3,5-5 | TiCN | Vc/fz | 402 – 406

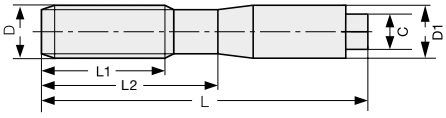
- **Metric ISO 6HX thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **Additional versions available**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	18	6	4.9	2.5	133495 0030	
M 4	0.7	63	13	21	6	4.9	3.3	133495 0040	
M 5	0.8	70	16	25	6	4.9	4.2	133495 0050	
M 6	1	80	19	30	6	4.9	5	133495 0060	
M 8	1.25	90	22	35	8	6.2	6.8	133495 0080	
M 10	1.5	100	24	39	10	8	8.5	133495 0100	
M 12	1.75	110	28	46	12	9	10.25	133495 0120	
M 14	2	110	30	49	14	11	12	133495 0140	
M 16	2	110	32	56	16	12	14	133495 0160	

1128

A-OIL-SFT machine tap, with internal cooling

M | 60° | HSS-E PM | C 2-3 | 45° | 45° | TiCN | Vc/fz | 402 – 406

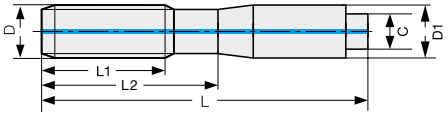
- **ISO2 6HX metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **With internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	1.0	80	8	30	6	4.9	5	133410 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133410 0080	
M 10	1.5	100	12	39	10	8	8.5	133410 0100	
M 12	1.75	110	14	-	9	7	10.2	133415 0120	
M 14	2.0	110	16	-	11	9	12	133415 0140	
M 16	2.0	110	16	-	12	9	14	133415 0160	
M 18	2.5	125	25	-	14	11	15.5	133415 0180	
M 20	2.5	140	25	-	16	12	17.5	133415 0200	
M 22	2.5	140	25	-	18	14.5	19.5	133415 0220	
M 24	3.0	160	30	-	18	14.5	21	133415 0240	

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D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 27	3.0	160	36	-	20	16	24	133415 0270	
M 30	3.5	180	42	-	22	18	26.5	133415 0300	
M 33	3.5	180	42	-	25	20	29.5	133415 0330	
M 36	4.0	200	48	-	28	22	32	133415 0360	
M 39	4.0	200	48	-	32	24	35	133415 0390	
M 42	4.5	200	54	-	32	24	37.5	133415 0420	
M 45	4.5	220	54	-	36	29	40.5	133415 0450	
M 48	5.0	250	60	-	36	29	43	133415 0480	
M 52	5.0	250	60	-	40	32	47	133415 0520	
M 56	5.5	250	66	-	40	32	50.5	133415 0560	

1128

A-OIL-POT machine tap, with internal cooling

M | 60° | HSS-E PM | B 3,5-5 | TiCN | Vc/fz | 402 – 406

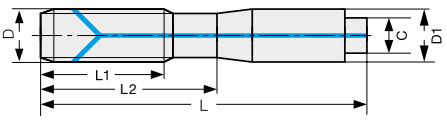
- **ISO2 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **With internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





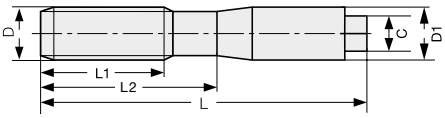
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	1.0	80	19	30	6	4.9	5	133456 0060	
M 8	1.25	90	22	35	8	6.2	6.8	133456 0080	
M 10	1.5	100	24	39	10	8	8.5	133456 0100	
M 12	1.75	110	29	-	9	7	10.2	133456 0120	
M 14	2.0	110	30	-	11	9	12	133456 0140	
M 16	2.0	110	32	-	12	9	14	133456 0160	
M 18	2.5	125	34	-	14	11	15.5	133456 0180	
M 20	2.5	140	34	-	16	12	17.5	133456 0200	
M 22	2.5	140	34	-	18	14.5	19.5	133456 0220	
M 24	3.0	160	38	-	18	14.5	21	133456 0240	

1128

Machine tap A-SFT, with short chamfer

M | 60° | HSS-E PM | E 1,5-2 | 45° | TiCN | Vc/fz | 402 – 406

- **Metric ISO 6HX thread**
- 40° spiral-fluted
- **With short chamfer Form E, 1.5-thread chamfer**
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	3.5	2.7	2.5	133570 0030	
M 4	0.7	63	5.6	21	4.5	3.4	3.3	133570 0040	
M 5	0.8	70	6.4	25	6	4.9	4.2	133570 0050	
M 6	1.0	80	8	30	6	4.9	5	133570 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133570 0080	
M 10	1.5	100	12	39	10	8	8.5	133570 0101	
M 12	1.75	110	14	-	9	7	10.25	133570 1217	
M 14	2.0	110	16	-	11	9	12	133570 1402	
M 16	2.0	110	16	-	12	9	14	133570 0162	

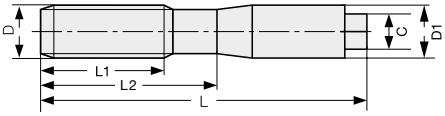
1128

Machine tap S-SFT, with short chamfer

M | 60° | HSS-E | ISO 2 6H | E 1,5-2 | 40° | 2,5xD | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H thread**
- 40° spiral-fluted
- **With short chamfer Form E, 1.5-thread chamfer**
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads





material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				

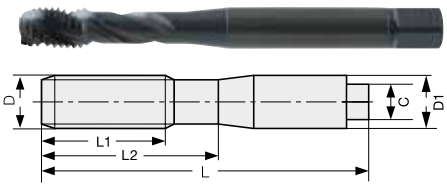
Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	3.5	2.7	2.5	133867 0030	
M 4	0.7	63	5.6	21	4.5	3.4	3.3	133867 0040	
M 5	0.8	70	6.4	25	6	4.9	4.2	133867 0050	
M 6	1	80	8	30	6	4.9	5	133867 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133867 0080	
M 10	1.5	100	12	39	10	8	8.5	133867 0100	
M 12	1.75	110	14	-	9	7	10.2	133867 0120	
M 14	2	110	16	-	11	9	12	133867 0140	
M 16	2	110	16	-	12	9	14	133867 0160	

1128

S-SFT machine tap

M | 60° | HSS-E | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 402 – 406



- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	133865 0010	
M 1.1	0.25	40	5	-	2.5	2.1	0.85	133865 0011	
M 1.2	0.25	40	5	-	2.5	2.1	0.95	133865 0012	
M 1.4	0.3	40	6	-	2.5	2.1	1.1	133865 0014	
M 1.6	0.35	40	7	-	2.5	2.1	1.25	133865 0016	
M 1.7	0.35	40	8	-	2.5	2.1	1.35	133865 0017	
M 1.8	0.35	40	8	-	2.5	2.1	1.45	133865 0018	
M 2	0.4	45	4	10	2.8	2.1	1.6	133865 0020	
M 2.2	0.45	45	5	11	2.8	2.1	1.75	133865 0022	
M 2.3	0.4	45	4	12	2.8	2.1	1.9	133865 0023	
M 2.5	0.45	50	4.5	13	2.8	2.1	2.05	133865 0025	
M 2.6	0.45	50	4.5	13	2.8	2.1	2.15	133865 0026	
M 3	0.5	56	5	18	3.5	2.7	2.5	133865 0030	
M 3.5	0.6	56	6	20	4	3	2.9	133865 0035	
M 4	0.7	63	7	21	4.5	3.4	3.3	133865 0040	

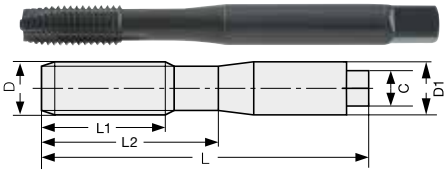
1128

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4.5	0.75	70	7.5	25	6	4.9	3.7	133865 0045	
M 5	0.8	70	8	25	6	4.9	4.2	133865 0050	
M 5.5	0.9	80	9	30	6	4.9	4.6	133865 0055	
M 6	1	80	10	30	6	4.9	5	133865 0060	
M 7	1	80	10	30	7	5.5	6	133865 0070	
M 8	1.25	90	13	35	8	6.2	6.8	133865 0080	
M 10	1.5	100	15	39	10	8	8.5	133865 0100	
M 12	1.75	110	18	-	9	7	10.2	133865 0120	
M 14	2	110	20	-	11	9	12	133865 0140	
M 16	2	110	20	-	12	9	14	133865 0160	
M 18	2.5	125	25	-	14	11	15.5	133865 0180	
M 20	2.5	140	25	-	16	12	17.5	133865 0200	
M 22	2.5	140	25	-	18	14.5	19.5	133865 0220	
M 24	3	160	30	-	18	14.5	21	133865 0240	

1128

S-POT machine tap

M | 60° | HSS-E | ISO 2 6H | B 3,5-5 | 2,5xD | Vap. | Vc/fz | 402 – 406



- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	133875 0010	
M 1.1	0.25	40	5	-	2.5	2.1	0.85	133875 0011	
M 1.2	0.25	40	5	-	2.5	2.1	0.95	133875 0012	
M 1.4	0.3	40	7	-	2.5	2.1	1.1	133875 0014	
M 1.6	0.35	40	8	-	2.5	2.1	1.25	133875 0016	
M 1.7	0.35	40	8	-	2.5	2.1	1.35	133875 0017	
M 1.8	0.35	40	8	-	2.5	2.1	1.45	133875 0018	
M 2	0.4	45	8	-	2.8	2.1	1.6	133875 0020	
M 2.2	0.45	45	9	-	2.8	2.1	1.75	133875 0022	
M 2.3	0.4	45	9	-	2.8	2.1	1.9	133875 0023	
M 2.5	0.45	50	9	-	2.8	2.1	2.05	133875 0025	
M 2.6	0.45	50	9	-	2.8	2.1	2.15	133875 0026	
M 3	0.5	56	11	18	3.5	2.7	2.5	133875 0030	
M 3.5	0.6	56	12	20	4	3	2.9	133875 0035	
M 4	0.7	63	13	21	4.5	3.4	3.3	133875 0040	

1128

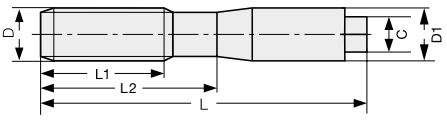
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4.5	0.75	70	16	25	6	4.9	3.7	133875 0045	
M 5	0.8	70	16	25	6	4.9	4.2	133875 0050	
M 5.5	0.9	80	17	30	5	4.9	4.6	133875 0055	
M 6	1	80	19	30	6	4.9	5	133875 0060	
M 7	1	80	19	30	7	5.5	6	133875 0070	
M 8	1.25	90	22	35	8	6.2	6.8	133875 0080	
M 9	1.25	90	19	35	9	7	7.8	133875 0090	
M 10	1.5	100	24	39	10	8	8.5	133875 0100	
M 12	1.75	110	28	-	9	7	10.2	133875 0120	
M 14	2	110	30	-	11	9	12	133875 0140	
M 16	2	110	32	-	12	9	14	133875 0160	
M 18	2.5	125	34	-	14	11	15.5	133875 0180	
M 20	2.5	140	34	-	16	12	17.5	133875 0200	
M 22	2.5	140	34	-	18	14.5	19.5	133875 0220	
M 24	3	160	38	-	18	14.5	21	133875 0240	

1128

Machine thread tap M-SFT-DUPLEX

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 6HX | C 2-3 | 50° | 2,5xD | TiN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- 50° spiral-fluted
- Type C, 2.5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				● 9	● 9	● 9			● 5	● 3	● 3							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	3.2	10	2.8	2.1	1.6	133912 0020	
M 2.5	0.45	50	3.6	13	2.8	2.1	2.05	133912 0025	
M 3	0.5	56	4	18	3.5	2.7	2.5	133912 0030	
M 4	0.7	63	5.6	21	4.5	3.4	3.3	133912 0040	
M 5	0.8	70	6.4	25	6	4.9	4.2	133912 0050	
M 6	1	80	8	30	6	4.9	5	133912 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133912 0080	
M 10	1.5	100	12	39	10	8	8.5	133912 0100	
M 12	1.75	110	14	-	9	7	10.25	133912 0120	
M 14	2	110	16	-	11	9	12	133912 0140	
M 16	2	110	16	-	12	9	14	133912 0160	
M 18	2.5	125	25	-	14	11	15.5	133912 0180	
M 20	2.5	140	25	-	16	12	17.5	133912 0200	
M 22	2.5	140	25	-	18	14.5	19.5	133912 0220	
M 24	3	160	30	-	18	14.5	21	133912 0240	

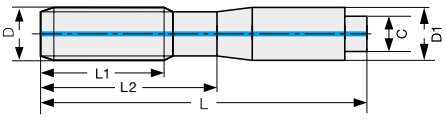
1128



Machine tap M-OIL-SFT-DUPLEX

M | HSS-E PM | DIN 371/376 | ISO 6HX | C 2-3 | 50° | TiN | 402 – 406

- **Metric ISO-6HX fine thread**
- 50° spiral-fluted
- Form C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				● 9	● 9	● 9			● 4	● 2	● 2							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 6	1	80	8	30	6	4.9	5	133913 0060	
M 8	1.25	90	10	35	8	6.2	6.8	133913 0080	
M 10	1.5	100	12	39	10	8	8.5	133913 0100	
M 12	1.75	110	14	-	9	7	10.25	133913 0120	
M 14	2	110	16	-	11	9	12	133913 0140	
M 16	2	110	16	-	12	9	14	133913 0160	
M 18	2.5	125	20	-	14	11	15.5	133913 0180	
M 20	2.5	140	20	-	16	12	17.5	133913 0200	
M 22	2.5	140	20	-	18	14.5	19.5	133913 0220	
M 24	3	160	24	-	18	14.5	21	133913 0240	

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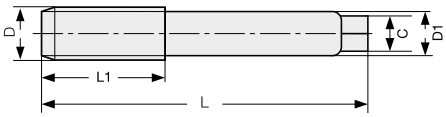


Machine tap M-LT-SFT-DUPLEX

M | HSS-E PM | ISO 6HX | C 2-3 | 50° | TiN | 402 – 406



- **Metric ISO-6HX thread**
- **Extra long shank**
- 50° spiral-fluted
- Form C, 2.5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					9	9	9			4	2	2							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 2	0.4	80	3.2	12	2.8	2.1	1.6	133919 0020	
M 2.5	0.45	100	3.6	15.5	2.8	2.1	2.05	133919 0025	
M 3	0.5	100	4	21	3.5	3	2.5	133919 0030	
M 4	0.7	125	5.6	25	4.5	3	3.3	133919 0040	
M 5	0.8	160	6.4	30	6	4.9	4.2	133919 0050	
M 6	1	160	8	36	6	4.9	5	133919 0060	
M 6	1	160	8	-	4.5	3.4	5	133919 0061	
M 8	1.25	180	10	43	8	6.2	6.8	133919 0080	
M 8	1.25	180	10	-	6	4.9	6.8	133919 0081	
M 10	1.5	200	12	49	10	8	8.5	133919 0100	
M 10	1.5	200	12	-	7	5.5	8.5	133919 0101	
M 12	1.75	200	14	-	9	7	10.2	133919 0120	
M 14	2	200	16	-	11	9	12	133919 0140	
M 16	2	200	16	-	12	9	14	133919 0160	
M 18	2.5	200	20	-	14	11	15.5	133919 0180	
M 20	2.5	200	20	-	16	12	17.5	133919 0200	

1128

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CC-SFT machine tap

M | 60° | C 2-3 | 45° | 45° | | CrN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- **For stainless steel, aluminium and steel**
- Controllable chips
- For better thread surfaces
- Low machining temperature
- Improved service life
- **For blind bore threads up to 3xD**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- **Material: HSS-E V3, CrN-coated**
- UNC, UNF and Whitworth thread taps available on request



Chips from a conventional tap



Chips from the CC-SFT

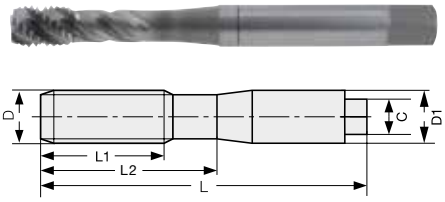


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		●	●	●	○	○				●	○	○				
	Cutting speed Vc m/min.	23	18		13	15	10	19	19				45	20	15				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	133106 0020	
M 2.5	0.45	50	10	-	2.8	2.1	2.1	133106 0025	
M 3	0.5	56	12	-	3.5	2.7	2.5	133106 0030	
M 4	0.7	63	16	-	4.5	3.4	3.3	133106 0040	
M 5	0.8	70	20	-	6.0	4.9	4.2	133106 0050	
M 6	1.0	80	24	-	6.0	4.9	5.0	133106 0060	
M 8	1.25	90	11	35	8.0	6.2	6.8	133106 0080	
M 10	1.5	100	14	39	10.0	8.0	8.5	133106 0100	

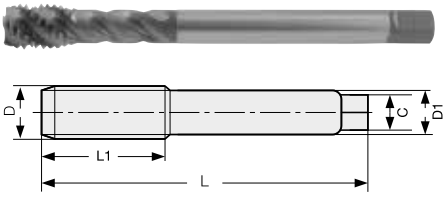
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DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	16	9	7	10.3	133107 0120	
M 14	2.0	110	18	11	9	12	133107 0140	
M 16	2.0	110	18	12	9	14	133107 0160	
M 18	2.5	125	23	14	11	15.5	133107 0180	
M 20	2.5	140	23	16	12	17.5	133107 0200	
M 24	3.0	160	27	18	14.5	21	133107 0240	
M 30	3.5	180	32	22	18	26.5	133107 0300	
M 36	4.0	200	36	28	22	32	133107 0360	

1128



CC-POT machine tap

M | 60° | HSS-E | DIN 371/376 | B 3,5-5 | CrN | Vc/fz

402 – 406

- **Metric ISO 6HX thread**
- **For stainless steel, aluminium and steel**
- Controllable chips
- For better thread surfaces
- Low machining temperature
- Improved service life
- **For through-hole threads**
- Straight-fluted
- 4-thread chamfer
- **Material: HSS-E V3, CrN-coated**
- UNC, UNF and Whitworth thread taps available on request

material — ● very well suited ○ well suited

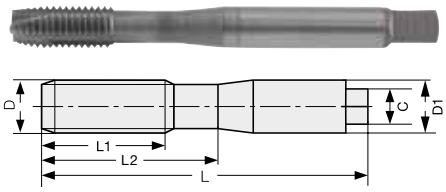
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	○		●	●	●	○	○				●	○	○				
23	18		13	15	10	19	19				45	20	15				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	2.8	-	2.1	1.6	133040 0020	
M 2.5	0.45	50	9	2.8	-	2.1	2.1	133040 0025	
M 3	0.5	56	12	3.5	18	2.7	2.5	133040 0030	
M 4	0.7	63	16	4.5	21	3.4	3.3	133040 0040	
M 5	0.8	70	20	6.0	25	4.9	4.2	133040 0050	
M 6	1.0	80	24	6.0	30	4.9	5.0	133040 0060	
M 8	1.25	90	35	8.0	35	6.2	6.8	133040 0080	
M 10	1.5	100	39	10.0	39	8.0	8.5	133040 0100	

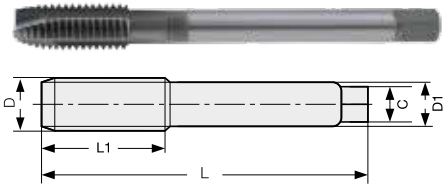
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	28	-	9	7	10.3	133041 0120	
M 14	2.0	110	30	-	11	9	12	133041 0140	
M 16	2.0	110	32	-	12	9	14	133041 0160	
M 18	2.5	125	34	-	14	11	15.5	133041 0180	
M 20	2.5	140	34	-	16	12	17.5	133041 0200	
M 24	3.0	160	38	-	18	14.5	21	133041 0240	
M 30	3.5	180	45	-	22	18	26.5	133041 0300	

1128



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VA-SFT machine tap

M | 60° | ISO 2 6H | C 2-3 | 40° | Vap. | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material: ● very well suited ○ well suited

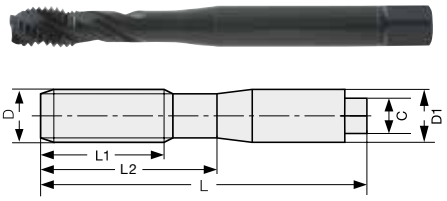
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 13	● 10		● 8	● 9	○ 7				○ 4		○ 30		○ 11				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	2.8	-	2.1	1.6	133125 0020	
M 2.2	0.45	45	9	2.8	-	2.1	1.7	133125 0022	
M 2.5	0.45	50	9	2.8	-	2.1	2.1	133125 0025	
M 3	0.5	56	5	3.5	18	2.7	2.5	133125 0030	
M 3.5	0.6	56	6	4.0	20	3.0	2.9	133125 0035	
M 4	0.7	63	7	4.5	21	3.4	3.3	133125 0040	
M 5	0.8	70	8	6.0	25	4.9	4.2	133125 0050	
M 6	1.0	80	10	6.0	30	4.9	5.0	133125 0060	
M 8	1.25	90	13	8.0	35	6.2	6.8	133125 0080	
M 10	1.5	100	15	10.0	39	8.0	8.5	133125 0100	

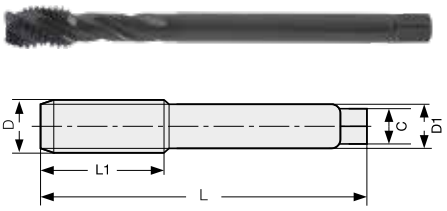
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	2.2	-	-	2.5	133135 0030	
M 4	0.7	63	7	2.8	-	2.1	3.3	133135 0040	
M 5	0.8	70	8	3.5	-	2.7	4.2	133135 0050	
M 6	1.0	80	10	4.5	-	3.4	5.0	133135 0060	
M 8	1.25	90	13	6.0	-	4.9	6.8	133135 0080	
M 10	1.5	100	15	7.0	-	5.5	8.5	133135 0100	
M 12	1.75	110	18	9.0	-	7	10.25	133135 0120	
M 14	2.0	110	20	11.0	-	9	12.0	133135 0140	
M 16	2.0	110	20	12.0	-	9	14.0	133135 0160	
M 18	2.5	125	25	14.0	-	11	15.5	133135 0180	
M 20	2.5	140	25	16.0	-	12.0	17.5	133135 0200	
M 22	2.5	140	25	18.0	-	14.5	19.5	133135 0220	
M 24	3.0	160	30	18.0	-	14.5	21.0	133135 0240	
M 27	3.0	160	30	20.0	-	16.0	24.0	133135 0270	
M 30	3.5	180	35	22.0	-	18.0	26.5	133135 0300	
M 33	3.5	180	35	25.0	-	20	29.5	133135 0330	
M 36	4.0	200	40	28.0	-	22	32.0	133135 0360	

1128



VA-POT machine tap

M | 60° | ISO 2 6H | B 3,5-5 | Vap. | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material — ● very well suited ○ well suited

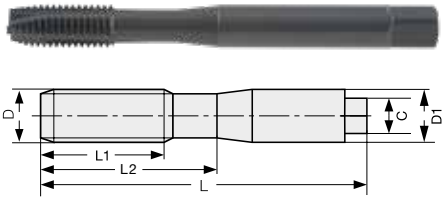
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●		●	●	○				○		○		○				
13	10		8	9	7				4		30		11				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	133015 0020	
M 2.2	0.45	45	9	-	2.8	2.1	1.7	133015 0022	
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133015 0025	
M 3	0.5	56	11	18	3.5	2.7	2.5	133015 0030	
M 3.5	0.6	56	11	20	4.0	3	2.9	133015 0035	
M 4	0.7	63	13	21	4.5	3.4	3.3	133015 0040	
M 5	0.8	70	16	25	6.0	4.9	4.2	133015 0050	
M 6	1.0	80	19	30	6.0	4.9	5.0	133015 0060	
M 8	1.25	90	22	35	8.0	6.2	6.8	133015 0080	
M 10	1.5	100	24	39	10.0	8.0	8.5	133015 0100	

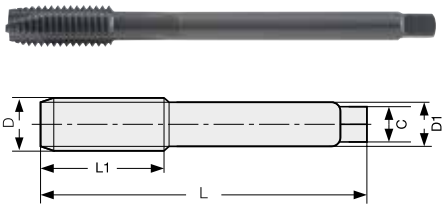
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	-	2.2	-	2.5	133025 0030	
M 4	0.7	63	13	-	2.8	2.1	3.3	133025 0040	
M 5	0.8	70	16	-	3.5	2.7	4.2	133025 0050	
M 6	1.0	80	19	-	4.5	3.4	5.0	133025 0060	
M 8	1.25	90	22	-	6.0	4.9	6.8	133025 0080	
M 10	1.5	100	24	-	7.0	5.5	8.5	133025 0100	
M 12	1.75	110	29	-	9.0	7.0	10.25	133025 0120	
M 14	2.0	110	30	-	11.0	9.0	12.0	133025 0140	
M 16	2.0	110	32	-	12.0	9.0	14.0	133025 0160	
M 18	2.5	125	34	-	14.0	11.0	15.5	133025 0180	
M 20	2.5	140	34	-	16.0	12.0	17.5	133025 0200	
M 22	2.5	140	34	-	18.0	14.5	19.5	133025 0220	
M 24	3.0	160	38	-	18.0	14.5	21.0	133025 0240	
M 27	3.0	160	38	-	20.0	16.0	24.0	133025 0270	
M 30	3.5	180	45	-	22.0	18.0	26.5	133025 0300	
M 36	4.0	200	56	-	28.0	22.0	32.0	133025 0360	

1128



VA-SFT machine tap, tolerance 6G

M | 60° | ISO 3 6G | C 2-3 | 40° | Vap. | Vc/fz | 402 – 406

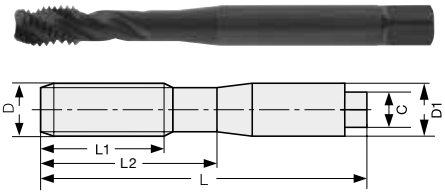
- **ISO 6G metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 13	● 10		● 8	● 9	○ 7				○ 4		○ 30		○ 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

DIN 371

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	2.8	-	2.1	1.6	133130 0020	
M 2.5	0.45	50	9	2.8	-	2.1	2.1	133130 0025	
M 3	0.5	56	5	3.5	18	2.7	2.5	133130 0030	
M 4	0.7	63	7	4.5	21	3.4	3.3	133130 0040	
M 5	0.8	70	8	6.0	25	4.9	4.2	133130 0050	
M 6	1.0	80	10	6.0	30	4.9	5.0	133130 0060	
M 8	1.25	90	13	8.0	35	6.2	6.8	133130 0080	
M 10	1.5	100	15	10.0	39	8	8.5	133130 0100	

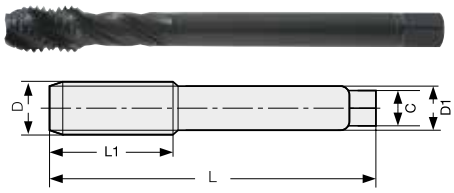
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	18	9	-	7	10.25	133140 0120	
M 14	2.0	110	20	11	-	9	12.0	133140 0140	
M 16	2.0	110	20	12	-	9	14.0	133140 0160	

1128



VA-POT machine tap, tolerance 6G

M | 60° | ISO 3 6G | B 3,5-5 | Vap. | Vc/fz | 402 – 406

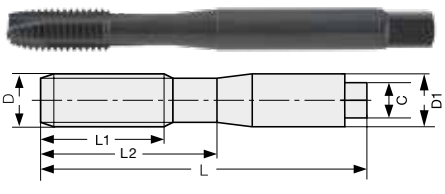
- **ISO 6G metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 13	● 10		● 8	● 9	○ 7				○ 4		○ 30		○ 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	133020 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133020 0025	
M 3	0.5	56	11	18	3.5	2.7	2.5	133020 0030	
M 4	0.7	63	13	21	4.5	3.4	3.3	133020 0040	
M 5	0.8	70	16	25	6.0	4.9	4.2	133020 0050	
M 6	1.0	80	19	30	6.0	4.9	5.0	133020 0060	
M 8	1.25	90	22	35	8.0	6.2	6.8	133020 0080	
M 10	1.5	100	24	39	10.0	8.0	8.5	133020 0100	

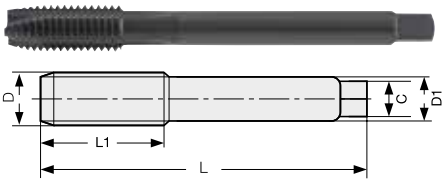
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	29	9.0	-	7.0	10.25	133030 0120	
M 14	2.0	110	30	11.0	-	9.0	12.0	133030 0140	
M 16	2.0	110	32	12.0	-	9.0	14.0	133030 0160	

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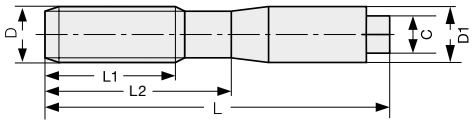


Machine thread tap V-TI-SFT

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 10° | 2xD | TiCN | Vc/fz

402 – 406

- **ISO 6H metric thread**
- 10° spiral-fluted
- Type B, 2.5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, V-coated (TiCN)**
- For blind-hole threads
- **For titanium alloys**



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
									● 4									
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	-	11	3.5	2.7	2.5	133195 0030	
M 4	0.7	63	-	14	4.5	3.4	3.3	133195 0040	
M 5	0.8	70	-	17	6.0	4.9	4.2	133195 0050	
M 6	1.0	80	-	21	6.0	4.9	5.0	133195 0060	
M 8	1.25	90	-	28	8.0	6.2	6.8	133195 0080	
M 10	1.5	100	-	35	10.0	8.0	8.5	133195 0100	
M 12	1.75	110	18	-	10.0	8.0	10.3	133196 0120	

1128

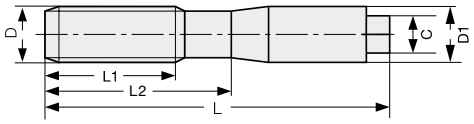


Machine thread tap V-TI-POT

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 2xD | TiCN | Vc/fz

402 – 406

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, V-coated (TiCN)**
- For through-hole threads
- **For titanium alloys**



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
									● 5									
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	12	-	3.5	2.7	2.5	133085 0030	
M 4	0.7	63	16	-	4.5	3.4	3.3	133085 0040	
M 5	0.8	70	19	-	6.0	4.9	4.2	133085 0050	
M 6	1.0	80	23	-	6.0	4.9	5.0	133085 0060	
M 8	1.25	90	30	-	8.0	6.2	6.8	133085 0080	
M 10	1.5	100	38	-	10.0	8.0	8.5	133085 0100	
M 12	1.75	110	28	-	10.0	8.0	10.3	133090 0120	

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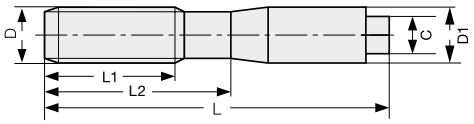


Machine thread tap WHR-NI-SFT

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 10° | 2xD | Vc/fz

402 – 406

- **ISO 6H metric thread**
- 10° spiral-fluted
- Type B, 2.5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, HR coated**
- For blind-hole threads
- **For nickel-based alloys** (Inconel 718)



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
										● 2	● 2							
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	-	11	3.5	2.7	2.5	133917 0030	
M 4	0.7	63	-	14	4.5	3.4	3.3	133917 0040	
M 5	0.8	70	-	18	6	4.9	4.2	133917 0050	
M 6	1.0	80	-	21	6	4.9	5.0	133917 0060	
M 8	1.25	90	-	28	8	6.2	6.8	133917 0080	
M 10	1.5	100	-	35	10	8	8.5	133917 0100	
M 12	1.75	110	18	-	10	8	10.3	133917 0120	

1128

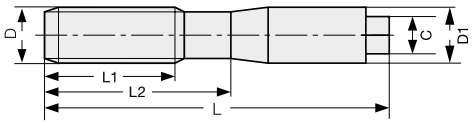


Machine thread tap WHR-NI-POT

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 2xD | Vc/fz

402 – 406

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, HR coated**
- For through-hole threads
- **For nickel-based alloys** (Inconel 718)



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
										● 3	● 3							
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	12	-	3.5	2.7	2.5	133918 0030	
M 4	0.7	63	16	-	4.5	3.4	3.3	133918 0040	
M 5	0.8	70	19	-	6	4.9	4.2	133918 0050	
M 6	1.0	80	23	-	6	4.9	5.0	133918 0060	
M 8	1.25	90	30	-	8	6.2	6.8	133918 0080	
M 10	1.5	100	38	-	10	8	8.5	133918 0100	
M 12	1.75	110	28	-	10	8	10.3	133918 0120	

1128



AL-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | ISO 2 6H | C 2,5 | 50° | 2,5xD | Vc/fz

402 – 406

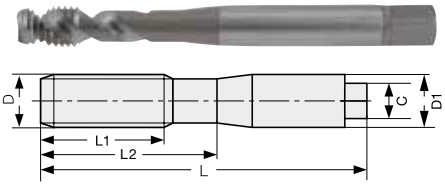
- **ISO 6H metric thread**
- 50°, spiral-fluted with spiral point
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3**

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 30	● 18	● 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1.6	0.35	40	8	-	2.5	2.1	1.25	133145 0016	
M 2	0.4	45	8	-	2.8	2.1	1.6	133145 0020	
M 2.2	0.45	45	9	-	2.8	2.1	1.7	133145 0022	
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133145 0025	
M 3	0.5	56	5	18	3.5	2.7	2.5	133145 0030	
M 3.5	0.6	56	6	20	4.0	3.0	2.9	133145 0035	
M 4	0.7	63	7	21	4.5	3.4	3.3	133145 0040	
M 5	0.8	70	8	25	6.0	4.9	4.2	133145 0050	
M 6	1.0	80	10	30	6.0	4.9	5.0	133145 0060	
M 8	1.25	90	13	35	8.0	6.2	6.8	133145 0080	
M 10	1.5	100	15	39	10.0	8.0	8.5	133145 0100	

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AL-POT machine tap

M | 60° | ISO 2 6H | B 3,5-5 | Vc/fz

402 – 406

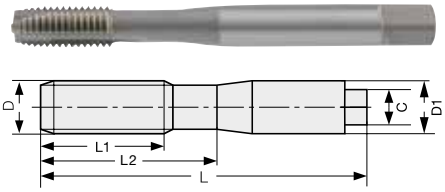
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3**

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 30	● 18	● 11				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	133035 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133035 0025	
M 3	0.5	56	11	18	3.5	2.7	2.5	133035 0030	
M 4	0.7	63	13	21	4.5	3.4	3.3	133035 0040	
M 5	0.8	70	16	25	6	4.9	4.2	133035 0050	
M 6	1.0	80	19	30	6	4.9	5.0	133035 0060	
M 8	1.25	90	22	35	8	6.2	6.8	133035 0080	
M 10	1.5	100	24	39	10	8	8.5	133035 0100	

1128



Synchronised machine tap Z-SFT

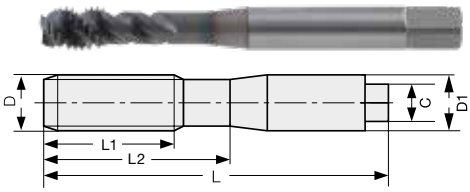
M | 60° | PM | ISO 2 6H | Synchro | C 2-3 | 50° | 50° | TiCN | Vc/fz | 402 – 406

- **ISO 6H metric thread**
- 50°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 23	● 18	○ 13	● 13	● 15	● 10			○ 8			○ 45	○ 20	○ 15				

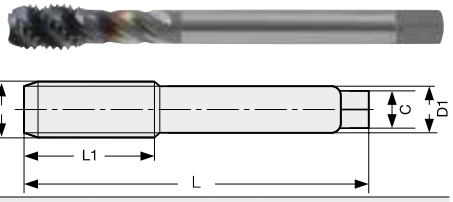
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	3.5	18	2.7	2.5	133155 0030	
M 4	0.7	63	7	4.5	21	3.4	3.3	133155 0040	
M 5	0.8	70	8	6.0	25	4.9	4.2	133155 0050	
M 6	1.0	80	10	6.0	30	4.9	5.0	133155 0060	
M 8	1.25	90	13	8.0	35	6.2	6.75	133155 0080	
M 10	1.5	100	15	10.0	39	8.0	8.5	133155 0100	

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DIN 376

D mm	Pitch mm	L mm	L1 mm	L2 mm	C mm	Tapping hole Ø mm	D1 mm	art.no.	€
M 12	1.75	110	18	-	7	10.25	9	133160 0120	
M 14	2.0	110	20	-	9	12.0	11	133160 0140	
M 16	2.0	110	20	-	9	14.0	12	133160 0160	
M 18	2.5	125	25	-	11	15.5	14	133160 0180	
M 20	2.5	140	25	-	12	17.5	16	133160 0200	
M 24	3.0	160	30	-	14.5	21	18	133160 0240	
M 30	3.5	180	35	-	18	26.5	22	133160 0300	

1128

Synchronised machine tap Z-POT

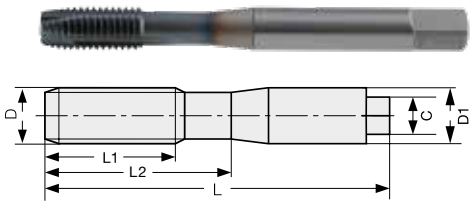
M | 60° | PM | Synchro | B 3,5-5 | TiCN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 23	● 18	○ 13	● 13	● 15	● 10			○ 10			○ 45	○ 20	○ 15				

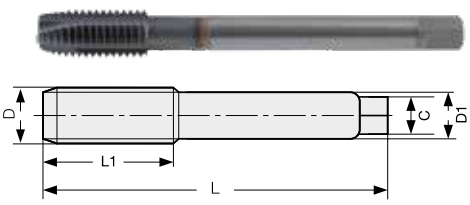
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	133045 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133045 0025	
M 3	0.5	56	11	18	3.5	2.7	2.5	133045 0030	
M 4	0.7	63	13	21	4.5	3.4	3.3	133045 0040	
M 5	0.8	70	16	25	6.0	4.9	4.2	133045 0050	
M 6	1.0	80	19	30	6.0	4.9	5.0	133045 0060	
M 8	1.25	90	22	35	8.0	6.2	6.75	133045 0080	
M 10	1.5	100	24	39	10.0	8.0	8.5	133045 0100	

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DIN 376

D mm	Pitch mm	L mm	D1 mm	L1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	9	29	7	10.25	133050 0120	
M 14	2.0	110	11	30	9	12.0	133050 0140	
M 16	2.0	110	12	32	9	14.0	133050 0160	
M 18	2.5	125	14	34	11	15.5	133050 0180	
M 20	2.5	140	16	34	12	17.5	133050 0200	

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V-XPM-HT machine tap

M | 60° | XPM | Werks-norm | C 2-3 | TiCN | Vc/fz | 402 – 406

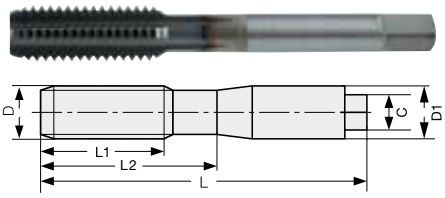
Hard machining < 55 HRC

- **ISO 6HX metric thread**
- Straight-fluted
- Type C, 2.5-thread chamfer
- For blind-hole and through-hole threads
- **Cutting material: XPM powder (Co10 + V5), TiCN-coated (V)**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 23	● 18	● 13													● 7		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

D mm	Pitch mm	L mm	L1 mm	D1 mm	L2 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	46	11	3.5	19	2.7	2.5	133255 0030	
M 4	0.7	52	13	4.5	21	3.4	3.3	133255 0040	
M 5	0.8	60	16	6.0	24	4.9	4.2	133255 0050	
M 6	1.0	62	19	6.0	29	4.9	5.0	133255 0060	
M 8	1.25	70	22	6.0	-	4.9	6.8	133255 0080	
M 10	1.5	75	24	7.0	-	5.5	8.5	133255 0100	
M 12	1.75	82	29	9.0	-	7.0	10.25	133255 0120	

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VX-OT machine tap

M | 60° | VHM | Werks-norm | C 2-3 | TiCN | Vc/fz | 402 – 406

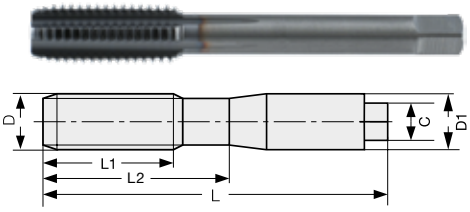
Hard machining ≥ 60 HRC

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type C, 2.5-thread chamfer
- For blind-hole and through-hole threads
- **Cutting material: superfine grain solid carbide, TiCN-coated (V)**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																		● 4	● 2
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
								133250 0030	
M 4	0.7	52	13	21	4.5	3.4	3.3	133250 0040	
M 5	0.8	60	16	24	6.0	4.9	4.2	133250 0050	
M 6	1.0	62	19	29	6.0	4.9	5.0	133250 0060	
M 8	1.25	70	22	-	6.0	4.9	6.8	133250 0080	
M 10	1.5	75	24	-	7.0	5.5	8.5	133250 0100	
M 12	1.75	82	29	-	9.0	7.0	10.25	133250 0120	

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ATORN Universal machine taps

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz

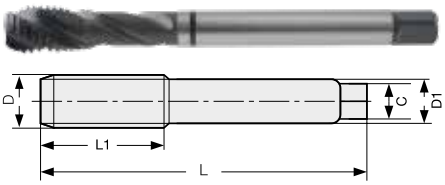
402 – 406

- **Metric ISO 6H fine thread**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 8	1	90	22	6	4.9	7	134760 0810	
MF 10	1	90	20	7	5.5	9	134760 1010	
MF 10	1.25	100	24	7	5.5	8.8	134760 1012	
MF 12	1	100	22	9	7	11	134760 1210	
MF 12	1.25	100	22	9	7	10.8	134760 1212	
MF 12	1.5	100	22	9	7	10.5	134760 1215	
MF 14	1	100	22	11	9	13	134760 1410	
MF 14	1.5	100	22	11	9	12.5	134760 1415	
MF 16	1	100	22	12	9	15	134760 1610	
MF 16	1.5	100	22	12	11	14.5	134760 1615	
MF 18	1.5	110	25	14	12	16.5	134760 1815	
MF 18	2	125	34	14	12	16	134760 1820	
MF 20	1	125	25	16	12	19	134760 2010	
MF 20	1.5	125	25	16	12	18.5	134760 2015	

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ATORN Universal machine taps

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | Vap. | Vc/fz

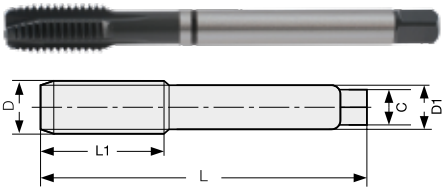
402 – 406

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point
- Type B, 3.5 to 5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 8	1	90	22	6	4.9	7	134765 0810	
MF 10	1	90	20	7	5.5	9	134765 1010	
MF 10	1.25	100	24	7	5.5	8.8	134765 1012	
MF 12	1	100	22	9	7	11	134765 1210	
MF 12	1.25	100	22	9	7	10.8	134765 1212	
MF 12	1.5	100	22	9	7	10.5	134765 1215	
MF 14	1	100	22	11	9	13	134765 1410	
MF 14	1.5	100	22	11	9	12.5	134765 1415	
MF 16	1	100	22	12	9	15	134765 1610	
MF 16	1.5	100	22	12	11	14.5	134765 1615	
MF 18	1.5	110	25	14	12	16.5	134765 1815	
MF 18	2	125	34	14	12	16	134765 1820	
MF 20	1	125	25	16	12	19	134765 2010	
MF 20	1.5	125	25	16	12	18.5	134765 2015	

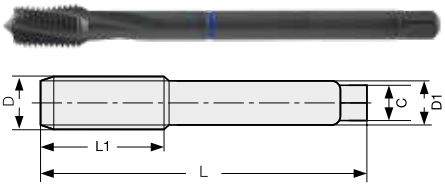
1127



ATORN Machine tap, weak-spiralled

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 15° | 1,5xD | Vap. | Vc/fz | 402 – 406

- **ISO 6H fine-pitch metric thread**
- 15° RH, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Easy chip removal to the rear
- Possible thread depth 1.5xD



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 13	● 13		○ 8	○ 9			○ 14										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 5	0.5	70	5	3.5	2.7	4.50	135280 0505	
MF 6	0.75	80	8	4.5	3.4	5.20	135280 0607	
MF 8	0.75	80	8	6.0	4.9	7.20	135280 0807	
MF 8	1	90	11	6.0	4.9	7.00	135280 0810	
MF 10	1	90	11	7.0	5.5	9.00	135280 1010	
MF 10	1.25	100	14	7.0	5.5	8.80	135280 1012	
MF 12	1	100	11	9.0	7.0	11.00	135280 1210	
MF 12	1.25	100	16	9.0	7.0	10.80	135280 1212	
MF 12	1.5	100	16	9.0	7.0	10.50	135280 1215	
MF 14	1	100	11	11.0	9.0	13.00	135280 1410	
MF 14	1.5	100	15	11.0	9.0	12.50	135280 1415	
MF 16	1	100	11	12.0	9.0	15.00	135280 1610	

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D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 16	1.5	100	15	12.0	9.0	14.50	135280 1615	
MF 18	1.5	110	16	14.0	11.0	16.50	135280 1815	
MF 20	1.5	125	16	16.0	12.0	18.50	135280 2015	
MF 22	1.5	125	16	18.0	14.5	20.50	135280 2215	
MF 24	1.5	140	16	18.0	14.5	22.50	135280 2415	
MF 24	2	140	22	18.0	14.5	22.00	135280 2420	
MF 26	1.5	140	20	18.0	14.5	24.50	135280 2615	
MF 27	1.5	140	20	20.0	16.0	25.50	135280 2715	
MF 27	2	140	28	20.0	16.0	25.00	135280 2720	
MF 28	1.5	140	20	20.0	16.0	26.50	135280 2815	
MF 30	1.5	150	20	22.0	18.0	28.50	135280 3015	
MF 30	2	150	20	22.0	18.0	28.00	135280 3020	

1127

ATORN Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 402 – 406

- **ISO 6H fine-pitch metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- For blind-hole threads
- Strong chip removal to the rear
- Minimal thread relief grinding
- Possible thread depth 3 x D

Up to 1000 N/mm²

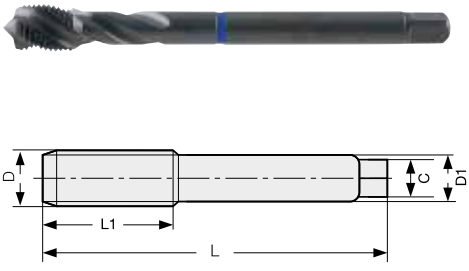
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
135285....																	
● 16	● 11		○ 9	○ 8			○ 16				● 18	○ 18	● 15	○ 14			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	**vaporised** art.no.	€
MF 6	0.75	80	8	4.5	3.4	5.2	135285 0607	
MF 8	1	90	11	6	4.9	7	135285 0810	
MF 10	1	90	11	7	5.5	9	135285 1010	
MF 10	1.25	100	14	7	5.5	8.8	135285 1012	
MF 12	1.25	100	16	9	7	10.8	135285 1212	
MF 12	1.5	100	16	9	7	10.5	135285 1215	
MF 14	1.5	100	15	11	9	12.5	135285 1415	
MF 16	1.5	100	15	12	9	14.5	135285 1615	
MF 18	1.5	110	16	14	11	16.5	135285 1815	
MF 20	1.5	125	16	16	12	18.5	135285 2015	

1127



ATORN Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 402 – 406

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point, Form B, 3.5 to 5-thread chamfer
- **Cutting material: HSS-E; HSS-E, TiN-coated**
- For through-hole threads
- The spiral point ensures strong chip removal to the front

Up to 1000 N/mm²

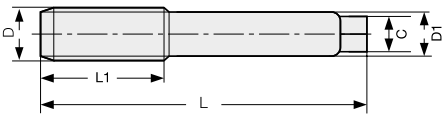
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
135255....	● 16	● 11		○ 9	○ 8			○ 16				● 18	○ 18	● 15	○ 14			
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 3	0.35	56	7	2.2	-	2.65	135255 0335	
MF 4	0.5	63	8	2.8	2.1	3.5	135255 0405	
MF 5	0.5	70	10	3.5	2.7	4.5	135255 0505	
MF 6	0.5	80	13	4.5	3.4	5.5	135255 0605	
MF 6	0.75	80	13	4.5	3.4	5.2	135255 0607	
MF 7	0.75	80	13	5.5	4.3	6.2	135255 0675	
MF 8	0.5	80	14	6	4.9	7.5	135255 0805	
MF 8	0.75	80	14	6	4.9	7.2	135255 0807	
MF 8	1	90	17	6	4.9	7	135255 0810	
MF 9	1	90	17	7	5.5	8	135255 0910	
MF 10	0.75	90	17	7	5.5	9.2	135255 1007	
MF 10	1	90	17	7	5.5	9	135255 1010	
MF 10	1.25	100	20	7	5.5	8.8	135255 1012	
MF 11	1	90	20	8	6.2	10	135255 1110	
MF 12	1	100	20	9	7	11	135255 1210	
MF 12	1.25	100	20	9	7	10.8	135255 1212	
MF 12	1.5	100	20	9	7	10.5	135255 1215	
MF 14	1	100	20	11	9	13	135255 1410	
MF 14	1.25	100	20	11	9	12.8	135255 1412	
MF 14	1.5	100	20	11	9	12.5	135255 1415	
MF 15	1	100	20	12	9	14	135255 1510	
MF 15	1.5	100	20	12	9	13.5	135255 1515	
MF 16	1	100	22	12	9	15	135255 1610	
MF 16	1.5	100	22	12	9	14.5	135255 1615	
MF 18	1	110	25	14	11	17	135255 1810	
MF 18	1.5	110	25	14	11	16.5	135255 1815	
MF 18	2	125	30	14	11	16	135255 1820	
MF 20	1	125	25	16	12	19	135255 2010	
MF 20	1.5	125	25	16	12	18.5	135255 2015	
MF 20	2	140	32	16	12	18	135255 2020	
MF 22	1	125	25	18	14.5	21	135255 2210	
MF 22	1.5	125	25	18	14.5	20.5	135255 2215	
MF 22	2	140	32	18	14.5	20	135255 2220	
MF 24	1	140	28	18	14.5	23	135255 2410	
MF 24	1.5	140	28	18	14.5	22.5	135255 2415	
MF 24	2	140	28	18	14.5	22	135255 2420	
MF 26	1.5	140	28	18	14.5	24.5	135255 2615	
MF 27	1.5	140	28	20	16	25.5	135255 2715	
MF 27	2	140	28	20	16	25	135255 2720	
MF 30	1.5	150	28	22	18	28.5	135255 3015	
MF 30	2	150	28	22	18	28	135255 3020	
MF 32	1.5	150	28	22	18	30.5	135255 3215	
MF 33	1.5	160	28	25	20	31.5	135255 3315	
MF 35	1.5	170	30	28	22	33.5	135255 3515	
MF 36	1.5	170	30	28	22	34.5	135255 3615	
MF 38	1.5	170	30	28	22	36.5	135255 3815	
MF 40	1.5	170	30	32	24	38.5	135255 4015	





1127

A-SFT machine tap

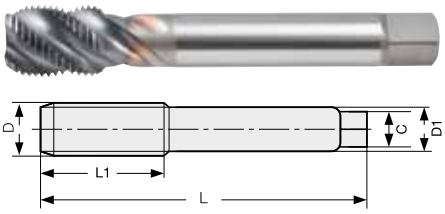
MF | 60° | HSS-E PM | C 2-3 | 45° | 45° | TiCN | Vc/fz | 402 – 406

- **ISO2 6HX fine-pitch metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	8	4.5	3.4	5.2	133420 0675	
MF 8	0.75	80	8	6	4.9	7.2	133420 0875	
MF 8	1.0	90	10	6	4.9	7	133420 0810	
MF 10	1.0	90	10	7	5.5	9	133420 1010	
MF 10	1.25	100	12	7	5.5	8.8	133420 1012	
MF 12	1.0	100	12	9	7	11	133420 1210	
MF 12	1.25	100	12	9	7	10.8	133420 1212	
MF 12	1.5	100	14	9	7	10.5	133420 1215	
MF 14	1.5	100	16	11	9	12.5	133420 1415	
MF 16	1.5	100	16	12	9	14.5	133420 1615	
MF 18	1.5	110	16	14	11	16.5	133420 1815	
MF 20	1.5	125	16	16	12	18.5	133420 2015	
MF 22	1.5	125	16	18	14.5	20.5	133420 2215	
MF 24	1.5	140	16	18	14.5	22.5	133420 2415	

1128



A-POT machine tap

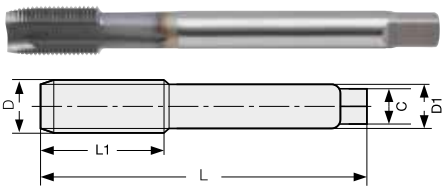
MF | 60° | HSS-E PM | B 3,5-5 | TiCN | Vc/fz | 402 – 406

- **Metric ISO2 6HX fine thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	14	4.5	3.4	5.2	133460 0675	
MF 8	0.75	80	18	6	4.9	7.2	133460 0875	
MF 8	1.0	90	22	6	4.9	7	133460 0810	
MF 10	1.0	90	20	7	5.5	9	133460 1010	
MF 10	1.25	100	24	7	5.5	8.8	133460 1012	
MF 12	1.0	100	22	9	7	11	133460 1210	
MF 12	1.25	100	22	9	7	10.8	133460 1212	
MF 12	1.5	100	22	9	7	10.5	133460 1215	
MF 14	1.5	100	22	11	9	12.5	133460 1415	
MF 16	1.5	100	22	12	9	14.5	133460 1615	
MF 18	1.5	110	25	14	11	16.5	133460 1815	
MF 20	1.5	125	25	16	12	18.5	133460 2015	
MF 22	1.5	125	25	18	14.5	20.5	133460 2215	
MF 24	1.5	140	28	18	14.5	22.5	133460 2415	

1128



Machine tap A-SFT 6GX

MF | 60° | HSS-E PM | DIN 374 | ISO 3 6G | C 2-3 | 45° | 2,5xD | TiCN | Vc/fz

402 – 406

- **Metric ISO3-6GX fine thread**
- 45° spiral-fluted
- Form C, 2.5-thread chamfer
- Dimensions DIN 374
- **Cutting material HSS-E-PM, TiCN-coated**
- for basic thread

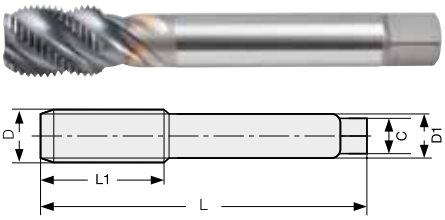
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	● 19	● 14	○ 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	8	4.5	3.4	5.2	133973 0607	
MF 8	0.75	80	8	6	4.9	7.2	133973 0807	
MF 8	1	90	10	6	4.9	7	133973 0810	
MF 10	1	90	10	7	5.5	9	133973 1010	
MF 10	1.25	100	12	7	5.5	8.8	133973 1012	
MF 12	1	100	12	9	7	11	133973 1210	
MF 12	1.25	100	12	9	7	10.8	133973 1212	
MF 12	1.5	100	14	9	7	10.5	133973 1215	
MF 14	1.5	100	16	11	9	12.5	133973 1415	
MF 16	1.5	100	16	12	9	14.5	133973 1615	
MF 18	1.5	110	16	14	11	16.5	133973 1815	
MF 20	1.5	125	16	16	12	18.5	133973 2015	
MF 22	1.5	125	16	18	14.5	20.5	133973 2215	
MF 24	1.5	140	16	18	14.5	22.5	133973 2415	

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Machine tap A-POT 6GX

MF | 60° | HSS-E PM | DIN 374 | ISO 3 6G | B 3,5-5 | TiCN | Vc/fz

402 – 406

- **Metric ISO3-6GX fine thread**
- straight-fluted with spiral point
- Form B, 4-thread chamfer
- DIN 374 construction dimensions
- **Cutting material HSS-E-PM, TiCN-coated**
- For through-hole threads

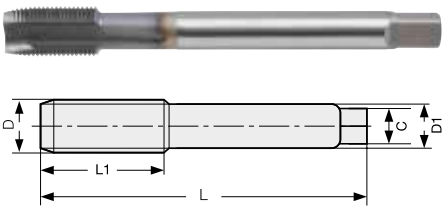
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	● 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	14	4.5	3.4	5.2	133971 0607	
MF 8	0.75	80	18	6	4.9	7.2	133971 0807	
MF 8	1	90	22	6	4.9	7	133971 0810	
MF 10	1	90	20	7	5.5	9	133971 1010	
MF 10	1.25	90	24	7	5.5	8.8	133971 1012	
MF 12	1	90	22	9	7	11	133971 1210	
MF 12	1.25	90	22	9	7	10.8	133971 1212	
MF 12	1.5	90	22	9	7	10.5	133971 1215	
MF 14	1.5	90	22	11	9	12.5	133971 1415	
MF 16	1.5	100	22	12	9	14.5	133971 1615	
MF 18	1.5	100	25	14	11	16.5	133971 1815	
MF 20	1.5	140	25	16	12	18.5	133971 2015	
MF 22	1.5	140	25	18	14.5	20.5	133971 2215	
MF 24	1.5	140	28	18	14.5	22.5	133971 2415	

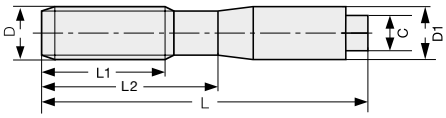
1128



Machine tap M-SFT-DUPLEX

MF | HSS-E PM | DIN 374 | ISO 6HX | C 2-3 | 50° | TiN | 402 – 406

- **Metric ISO-6HX fine thread**
- 50° spiral-fluted
- Form C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			9	9	9			4	2	2							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



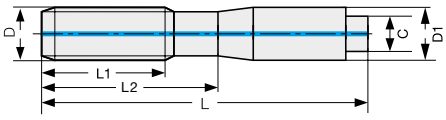
D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	8	-	4.5	3.4	5.2	133911 0607	
MF 6	0.5	80	8	-	4.5	3.4	5.5	133911 0605	
MF 8	1	90	10	-	6	4.9	7	133911 0810	
MF 8	0.75	80	10	-	6	4.9	7.2	133911 0807	
MF 10	1.25	100	12	-	7	5.5	8.8	133911 1012	
MF 10	1	90	12	-	7	5.5	9	133911 1010	
MF 12	1.5	100	14	-	9	7	10.2	133911 1215	
MF 12	1.25	100	14	-	9	7	10.8	133911 1212	
MF 12	1	100	14	-	9	7	11	133911 1210	
MF 14	1.5	100	16	-	11	9	12.5	133911 1415	
MF 16	1.5	100	16	-	12	9	14.5	133911 1615	
MF 18	1.5	110	20	-	14	11	16.5	133911 1815	
MF 20	1.5	125	20	-	16	12	18.5	133911 2015	
MF 22	1.5	125	20	-	18	14.5	20.5	133911 2215	
MF 24	1.5	140	24	-	18	14.5	22.5	133911 2415	

1128

Machine tap M-OIL-SFT-DUPLEX

MF | HSS-E PM | DIN 371/376 | ISO 6HX | C 2-3 | 50° | TiN | 402 – 406

- **Metric ISO 6HX fine thread**
- **Internal cooling** through the centre
- 50° spiral-fluted
- Form C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			9	9	9			4	2	2							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 8	1	90	10	-	6	4.9	7	133901 0810	
MF 10	1.25	100	12	-	7	5.5	8.8	133901 1012	
MF 10	1	90	12	-	7	5.5	9	133901 1010	
MF 12	1.5	100	14	-	9	7	10.5	133901 1215	
MF 14	1.5	100	16	-	11	9	12.5	133901 1415	
MF 16	1.5	100	16	-	12	9	14.5	133901 1615	
MF 18	1.5	110	20	-	14	11	16.5	133901 1815	
MF 20	1.5	125	20	-	16	12	18.5	133901 2015	

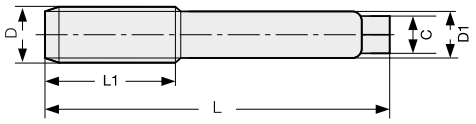
1128

S-SFT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H fine thread**
- 40°, spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads





material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 3	0.35	56	4	2.2	-	2.65	133965 0303	
MF 4	0.5	63	5.6	2.8	2.1	3.5	133965 0405	
MF 5	0.5	70	6.4	3.5	2.7	4.5	133965 0505	
MF 6	0.5	80	8	4.5	3.4	5.5	133965 0605	
MF 6	0.75	80	8	4.5	3.4	5.2	133965 0607	
MF 8	0.75	80	10	6	4.9	7.2	133965 0807	
MF 8	1	90	10	6	4.9	7	133965 0810	
MF 9	1	90	10	7	5.5	8	133965 0910	
MF 10	0.75	90	12	7	5.5	9.2	133965 1007	
MF 10	1	90	12	7	5.5	9	133965 1010	
MF 10	1.25	100	12	7	5.5	8.8	133965 1012	
MF 11	1	90	12	8	6.2	10	133965 1110	
MF 12	1	100	14	9	7	11	133965 1210	
MF 12	1.25	100	14	9	7	10.8	133965 1212	
MF 12	1.5	100	14	9	7	10.5	133965 1215	
MF 14	1	100	16	11	9	13	133965 1410	

1128

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 14	1.25	100	16	11	9	12.8	133965 1412	
MF 14	1.5	100	16	11	9	12.5	133965 1415	
MF 16	1	100	16	12	9	15	133965 1610	
MF 16	1.5	100	16	12	9	14.5	133965 1615	
MF 18	1	110	20	14	11	17	133965 1810	
MF 18	1.5	110	20	14	11	16.5	133965 1815	
MF 20	1	125	20	16	12	19	133965 2010	
MF 20	1.5	125	20	16	12	18.5	133965 2015	
MF 20	2	140	20	16	12	18	133965 2020	
MF 22	1	125	20	18	14.5	21	133965 2210	
MF 22	1.5	125	20	18	14.5	20.5	133965 2215	
MF 22	2	140	20	18	14.5	20	133965 2220	
MF 24	1	140	20	18	14.5	23	133965 2410	
MF 24	1.5	140	24	18	14.5	22.5	133965 2415	
MF 24	2	140	24	18	14.5	22	133965 2420	

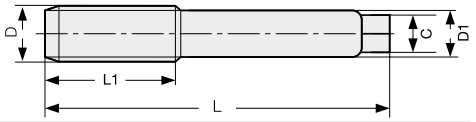
1128

S-POT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 2,5xD | Vap. | Vc/fz | 402 – 406

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads





material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 3	0.35	56	9	2.2	-	2.65	133975 0303	
MF 4	0.5	63	10	2.8	2.1	3.5	133975 0405	
MF 5	0.5	70	12	3.5	2.7	4.5	133975 0505	
MF 6	0.5	80	14	4.5	3.4	5.5	133975 0605	
MF 6	0.75	80	14	4.5	3.4	5.2	133975 0607	
MF 8	0.75	80	18	6	4.9	7.2	133975 0807	
MF 8	1	90	22	6	4.9	7	133975 0810	
MF 9	1	90	22	7	5.5	8	133975 0910	
MF 10	0.75	90	20	7	5.5	9.2	133975 1007	
MF 10	1	90	20	7	5.5	9	133975 1010	
MF 10	1.25	100	24	7	5.5	8.8	133975 1012	
MF 11	1	90	20	8	6.2	10	133975 1110	
MF 12	1	100	22	9	7	11	133975 1210	
MF 12	1.25	100	22	9	7	10.8	133975 1212	
MF 12	1.5	100	22	9	7	10.5	133975 1215	
MF 14	1	100	22	11	9	13	133975 1410	

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D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
MF 14	1.25	100	22	11	9	12.8	133975 1412	
MF 14	1.5	100	22	11	9	12.5	133975 1415	
MF 16	1	100	22	12	9	15	133975 1610	
MF 16	1.5	100	22	12	9	14.5	133975 1615	
MF 18	1	110	25	14	11	17	133975 1810	
MF 18	1.5	110	25	14	11	16.5	133975 1815	
MF 20	1	125	25	16	12	19	133975 2010	
MF 20	1.5	125	25	16	12	18.5	133975 2015	
MF 20	2	140	34	16	12	18	133975 2020	
MF 22	1	125	25	18	14.5	21	133975 2210	
MF 22	1.5	125	25	18	14.5	20.5	133975 2215	
MF 22	2	140	34	18	14.5	20	133975 2220	
MF 24	1	140	28	18	14.5	23	133975 2410	
MF 24	1.5	140	28	18	14.5	22.5	133975 2415	
MF 24	2	140	28	18	14.5	22	133975 2420	

1128

Machine tap S-SFT 6GX

MF | 60° | HSS-E | DIN 374 | ISO 3 6G | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz

402 – 406

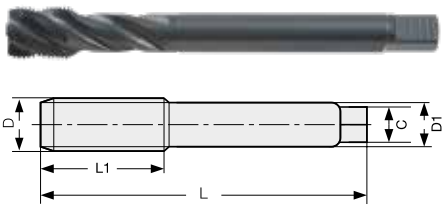
- **Metric ISO3-6GX fine thread**
- 40° spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material HSS-E, vapour-treated**
- For through-hole threads

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	8	4.5	3.4	5.2	133974 0607	
MF 8	0.75	80	8	6	4.9	7.2	133974 0807	
MF 8	1	90	10	6	4.9	7	133974 0810	
MF 10	1	90	10	7	5.5	9	133974 1010	
MF 10	1.25	100	12	7	5.5	8.8	133974 1012	
MF 12	1	100	12	9	7	11	133974 1210	
MF 12	1.25	100	12	9	7	10.8	133974 1212	
MF 12	1.5	100	14	9	7	10.5	133974 1215	
MF 14	1.5	100	16	11	9	12.5	133974 1415	
MF 16	1.5	100	16	12	9	14.5	133974 1615	
MF 18	1.5	110	16	14	11	16.5	133974 1815	
MF 20	1.5	125	16	16	12	18.5	133974 2015	
MF 22	1.5	125	16	18	14.5	20.5	133974 2215	
MF 24	1.5	140	16	18	14.5	22.5	133974 2415	



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Machine tap S-POT 6GX

MF | 60° | HSS-E | DIN 374 | ISO 3 6G | B 3,5-5 | 3xD | Vap. | Vc/fz

402 – 406

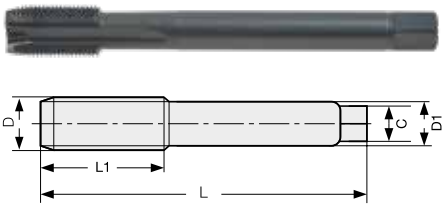
- **Metric ISO3-6GX fine thread**
- straight-fluted with spiral point
- Form B, 4-thread chamfer
- **Cutting material HSS-E, vapour-treated**
- For through-hole threads

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 20	● 13	○ 11	● 12	● 12	○ 7		○ 13						○ 15				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch mm	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
MF 6	0.75	80	14	4.5	3.4	5.2	133972 0607	
MF 8	0.75	80	18	6	4.9	7.2	133972 0807	
MF 8	1	90	22	6	4.9	7	133972 0810	
MF 10	1	90	20	7	5.5	9	133972 1010	
MF 10	1.25	100	24	7	5.5	8.8	133972 1012	
MF 12	1	100	22	9	7	11	133972 1210	
MF 12	1.25	100	22	9	7	10.8	133972 1212	
MF 12	1.5	100	22	9	7	10.5	133972 1215	
MF 14	1.5	100	22	11	9	12.5	133972 1415	
MF 16	1.5	100	22	12	9	14.5	133972 1615	
MF 18	1.5	110	25	14	11	16.5	133972 1815	
MF 20	1.5	125	25	16	12	18.5	133972 2015	
MF 22	1.5	125	25	18	14.5	20.5	133972 2215	
MF 24	1.5	140	28	18	14.5	22.5	133972 2415	



1128

ATORN Universal machine taps

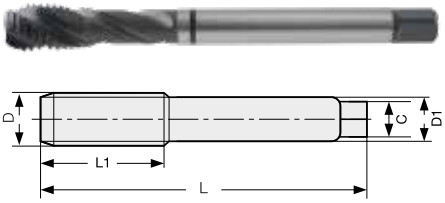
G | 55° | HSS-E | DIN 5156 | C 2-3 | 40° | 2,5xD | Vap. | i Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.7	134770 0018	
G 1/4"	19	100	22	11	9	11.8	134770 0014	
G 3/8"	19	100	22	12	9	15.3	134770 0038	
G 1/2"	14	125	25	16	12	19	134770 0012	
G 3/4"	14	140	28	20	16	24.5	134770 0034	
G 1"	11	160	30	25	20	30.75	134770 0100	
G 1 1/4"	11	170	30	32	24	39.5	134770 0114	

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ATORN Universal machine taps

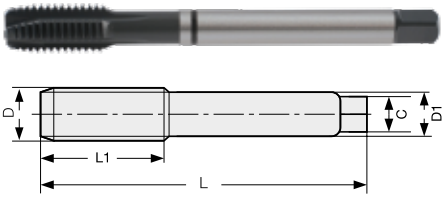
G | 55° | HSS-E | DIN 5156 | B 3,5-5 | 3xD | Vap. | i Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Type B, 3.5-5 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.7	134775 0018	
G 1/4"	19	100	22	11	9	11.8	134775 0014	
G 3/8"	19	100	22	12	9	15.3	134775 0038	
G 1/2"	14	125	25	16	12	19	134775 0012	
G 3/4"	14	140	28	20	16	24.5	134775 0034	
G 1"	11	160	30	25	20	30.75	134775 0100	
G 1 1/4"	11	170	30	32	24	39.5	134775 0114	

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A-SFT machine tap

G | 55° | HSS-E PM | ISO 2 6H | C 2-3 | 45° | TiCN | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads

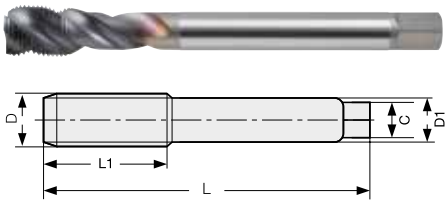
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8	28	90	20	7	5.5	8.8	133860 0018	
G 1/4	19	100	22	11	9	11.8	133860 0014	
G 3/8	19	100	22	12	9	15.3	133860 0038	
G 1/2	14	125	25	16	12	19	133860 0012	
G 5/8	14	125	25	18	14.5	21	133860 0058	
G 3/4	14	140	28	20	16	24.5	133860 0034	
G 7/8	14	150	28	22	18	28	133860 0078	
G 1	11	160	30	25	20	30.75	133860 0111	

1128



A-POT machine tap

G | 55° | HSS-E PM | ISO 2 6H | B 3,5-5 | TiCN | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads

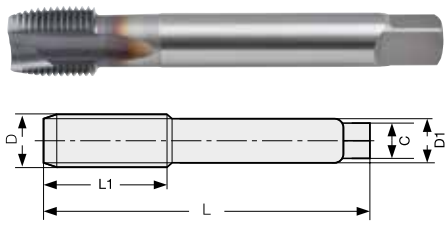
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 38	● 35	○ 19	● 14	● 14				○ 8			○ 25	○ 25	○ 25				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8	28	90	20	7	5.5	8.8	133900 0018	
G 1/4	19	100	22	11	9	11.8	133900 0014	
G 3/8	19	100	22	12	9	15.3	133900 0038	
G 1/2	14	125	25	16	12	19	133900 0012	
G 5/8	14	125	25	18	14.5	21	133900 0058	
G 3/4	14	140	28	20	16	24.5	133900 0034	
G 7/8	14	150	28	22	18	28	133900 0078	
G 1	11	160	30	25	20	31	133900 0111	

1128



S-SFT machine tap

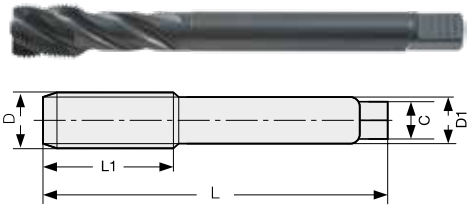
G | 55° | HSS-E | DIN 5156 | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●	○		○						○				
		20	13	11	12	12	7		13						15				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8	28	90	20	7	5.5	8.8	133986 0018	
G 1/4	19	100	22	11	9	11.8	133986 0014	
G 3/8	19	100	22	12	9	15.3	133986 0038	
G 1/2	14	125	25	16	12	19	133986 0012	
G 5/8	14	125	25	18	14.5	21	133986 0058	
G 3/4	14	140	28	20	16	24.5	133986 0034	
G 7/8	14	150	28	22	18	28	133986 0078	
G 1	11	160	30	25	20	31	133986 0010	

1128



S-POT machine tap

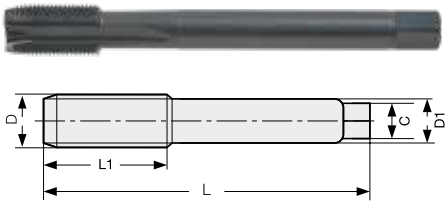
G | 55° | HSS-E | B 3,5-5 | Vap. | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●	○		○						○				
		20	13	11	12	12	7		13						15				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8	28	90	20	7	5.5	8.8	133987 0018	
G 1/4	19	100	22	11	9	11.8	133987 0014	
G 3/8	19	100	22	12	9	15.3	133987 0038	
G 1/2	14	125	25	16	12	19	133987 0012	
G 5/8	14	125	25	18	14.5	21	133987 0058	
G 3/4	14	140	28	20	16	24.5	133987 0034	
G 7/8	14	150	28	22	18	28	133987 0078	
G 1	11	160	30	25	20	31	133987 0010	

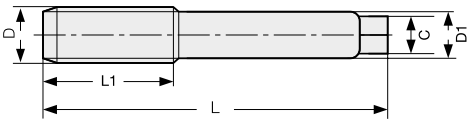
1128



Machine thread tap M-SFT-DUPLEX

G | 55° | HSS-E PM | DIN 5156 | C 2-3 | 50° | 2xD | TiN | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- 50° spiral-fluted
- Type C, 2.5 thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material HSS-E-PM, TiN coating**
- For blind-hole threads
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 9	● 9	● 9			● 5	● 3	● 3							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	C	D1 mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	5.5	7	8.8	133914 0018	
G 1/4"	19	100	22	9	11	11.8	133914 0019	
G 3/8"	19	100	22	9	12	15.3	133914 0038	
G 1/2"	14	125	25	12	16	19	133914 0012	
G 5/8"	14	125	25	14.5	18	21	133914 0058	
G 3/4"	14	140	28	16	20	24.5	133914 0034	
G 7/8"	14	150	28	18	22	28.25	133914 0078	
G 1"	11	160	30	20	25	31	133914 0111	

1128



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ATORN Universal machine taps

UNC | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz

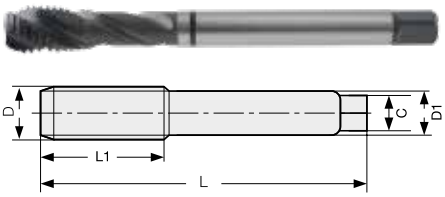
402 – 406

- **UNC thread, unified national standard coarse-pitch thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- Constructional dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			●				●		○				
	Cutting speed Vc m/min.	18	12	8	8	8			15				18		13				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	13	7	5.5	5.2	134790 0001	
5/16"	18	90	14	8	6.2	6.6	134790 0002	
3/8"	16	100	16	9	7	8	134790 0003	
7/16"	14	100	17	8	6.2	9.4	134790 0004	
1/2"	13	110	20	9	7	10.8	134790 0005	
5/8"	11	110	22	12	9	13.6	134790 0006	
3/4"	10	125	25	14	11	16.5	134790 0007	
7/8"	9	140	27	18	14.5	19.5	134790 0008	
1"	8	160	30	20	16	22.3	134790 0009	

1127



ATORN Universal machine taps

UNC | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | | 3xD | Vap. | Vc/fz

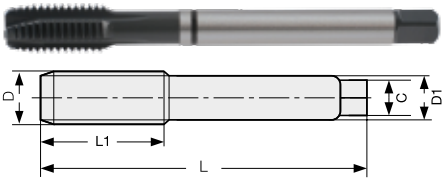
402 – 406

- **UNC thread, unified national standard coarse-pitch thread**
- Form B, 3.5-5 thread chamfer
- Straight-fluted with spiral point
- Constructional dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●			●				●		○				
	Cutting speed Vc m/min.	18	12	8	8	8			15				18		13				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	17	7	5.5	5.2	134795 0001	
5/16"	18	90	20	8	6.2	6.6	134795 0002	
3/8"	16	100	22	9	7	8	134795 0003	
7/16"	14	100	22	8	6.2	9.4	134795 0004	
1/2"	13	110	25	9	7	10.8	134795 0005	
5/8"	11	110	27	12	9	13.6	134795 0006	
3/4"	10	125	30	14	11	16.5	134795 0007	
7/8"	9	140	32	18	14.5	19.5	134795 0008	
1"	8	160	36	20	16	22.3	134795 0009	

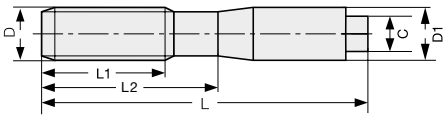
1127



Machine tap M-SFT-DUPLEX

UNC | HSS-E PM | C 2-3 | 50° | TiN | 402 – 406

- **UNC thread, standard coarse thread**
- 50° spiral-fluted
- Form C, 2.5-thread chamfer, for blind-hole threads
- Construction dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material HSS-E-PM, TiN coating**
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 9	● 9	● 9			● 4	● 2	● 2							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



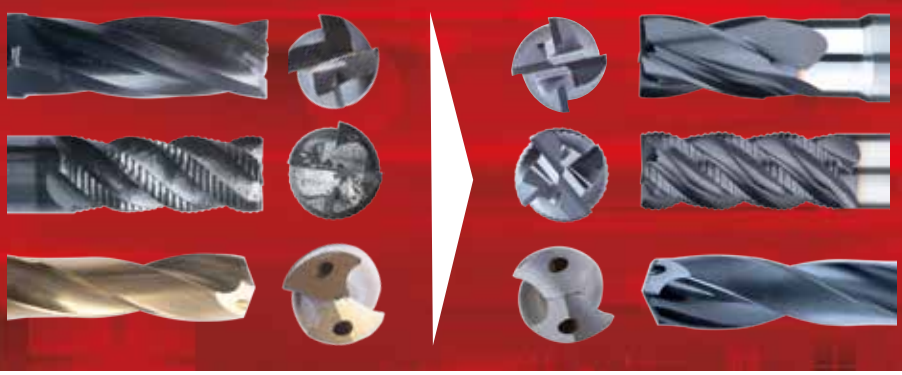
D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
Nr. 2	56	45	3.6	11	2.8	2.1	1.85	133902 0256	
Nr. 3	48	50	3.6	13	2.8	2.1	2.10	133902 0348	
Nr. 4	40	56	5.1	18	3.5	2.7	2.35	133902 0440	
Nr. 5	40	56	5.1	18	3.5	2.7	2.65	133902 0540	
Nr. 6	32	56	6.4	20	4	3	2.85	133902 0632	
Nr. 8	32	63	6.4	21	4.5	3.4	3.50	133902 0832	
Nr. 10	24	70	8.5	25	6	4.9	3.90	133902 1024	
Nr. 12	24	80	8.5	30	6	4.9	4.50	133902 1224	
1/4"	20	80	10.2	30	7	5.5	5.10	133902 1420	
5/16"	18	90	11.3	35	8	6.2	6.60	133902 5161	
3/8"	16	100	12.7	39	10	8	8.00	133902 3816	
7/16"	14	100	14.5	-	8	6.2	9.40	133902 7161	
1/2"	13	110	15.6	-	9	7	10.80	133902 1213	
9/16"	12	110	16.9	-	11	9	12.30	133902 9161	
5/8"	11	110	18.5	-	12	9	13.50	133902 5811	
3/4"	10	125	25.4	-	14	11	16.50	133902 3410	
7/8"	9	140	28.2	-	18	14.5	19.50	133902 0789	
1"	8	160	31.8	-	18	14.5	22.25	133902 0018	

1128

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ATORN Universal machine taps

UNF | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz

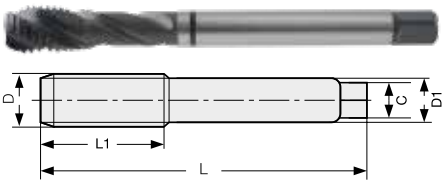
402 – 406

- **UNF thread, unified national standard fine-pitch thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	10	7	5.5	5.5	134791 0001	
5/16"	24	90	10	8	6.2	6.9	134791 0002	
3/8"	24	100	10	9	7	8.5	134791 0003	
7/16"	20	100	13	8	6.2	9.9	134791 0004	
1/2"	20	100	13	9	7	11.5	134791 0005	
5/8"	18	100	15	12	9	14.5	134791 0006	
3/4"	16	110	17	14	11	17.5	134791 0007	
7/8"	14	125	17	18	14.5	20.4	134791 0008	
1"	12	140	20	18	14.5	23.25	134791 0009	

1127



ATORN Universal machine taps

UNF | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | 3xD | Vap. | Vc/fz

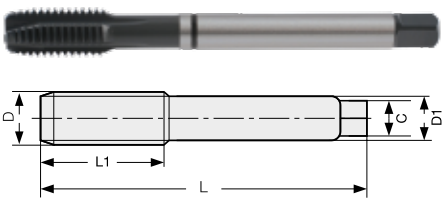
402 – 406

- **UNF thread, unified national standard fine-pitch thread**
- Form B, 3.5-5 thread chamfer
- Straight-fluted with spiral point
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 12	○ 8	● 8	● 8			● 15				● 18		○ 13				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	17	7	5.5	5.5	134796 0001	
5/16"	24	90	18	8	6.2	6.9	134796 0002	
3/8"	24	100	18	9	7	8.5	134796 0003	
7/16"	20	100	22	8	6.2	9.9	134796 0004	
1/2"	20	100	22	9	7	11.5	134796 0005	
5/8"	18	100	22	12	9	14.5	134796 0006	
3/4"	16	110	26	14	11	17.5	134796 0007	
7/8"	14	125	26	18	14.5	20.4	134796 0008	
1"	12	140	28	18	14.5	23.3	134796 0009	

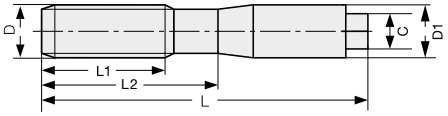
1127



Machine tap M-SFT-DUPLEX

UNF | HSS-E PM | C 2-3 | 50° | TiN | 402 – 406

- **UNF thread, standard coarse thread**
- 50° spiral-fluted
- Form C, 2.5-thread chamfer, for blind-hole threads
- Construction dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material HSS-E-PM, TiN coating**
- **For materials that are difficult to machine** (1.4841, 1.4404, 1.4545, 1.4542, 1.4548, Super Duplex 1.4410, Inconel 625)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 9	● 9	● 9			● 4	● 2	● 2							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



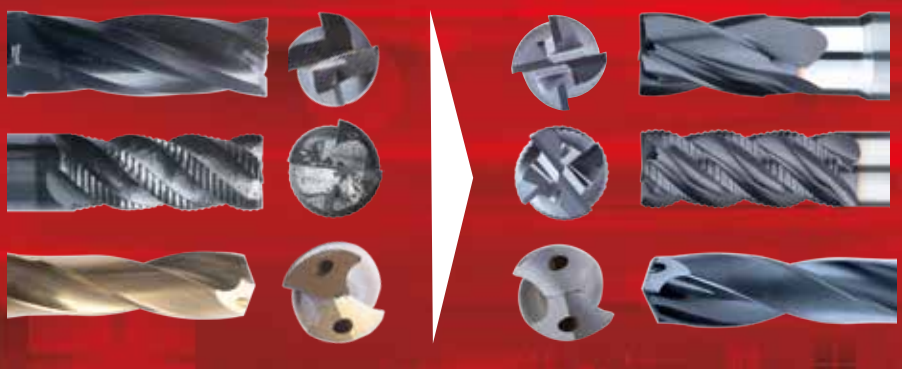
D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
Nr. 2	64	45	3.6	11	2.8	2.1	1.85	133903 0264	
Nr. 3	56	50	3.6	13	2.8	2.1	2.15	133903 0356	
Nr. 4	48	56	5.1	18	3.5	2.7	2.40	133903 0448	
Nr. 5	44	56	5.1	18	3.5	2.7	2.70	133903 0544	
Nr. 6	40	56	6.4	20	4	3	2.95	133903 0640	
Nr. 8	36	63	6.4	21	4.5	3.4	3.50	133903 0836	
Nr. 10	32	70	8.5	25	6	4.9	4.10	133903 1032	
Nr. 12	28	80	8.5	30	6	4.9	4.60	133903 1228	
1/4"	28	80	10.2	30	7	5.5	5.50	133903 1428	
5/16"	24	90	11.3	35	8	6.2	6.90	133903 5162	
3/8"	24	90	12.7	35	10	8	8.50	133903 3824	
7/16"	20	100	14.5	-	8	6.2	9.90	133903 7162	
1/2"	20	100	15.6	-	9	7	11.50	133903 1220	
9/16"	18	100	16.9	-	11	9	13.00	133903 9161	
5/8"	18	100	18.5	-	12	9	14.50	133903 5818	
3/4"	16	110	25.4	-	14	11	17.50	133903 3416	
7/8"	14	125	28.2	-	18	14.5	20.40	133903 7814	
1"	12	140	31.8	-	18	14.5	23.25	133903 0112	

1128

RESHARPENING AND COATING SERVICE

COMPLETE PROFESSIONAL RECONDITIONING OF YOUR CUTTING TOOLS WITH IMPRESSIVE BEFORE AND AFTER

- **Only the best for your tools!**
- **Up to 85% cost savings thanks to resharpening**
- **Reduced storage and capital costs**
- **Shorter turnaround times with maximum productivity and process reliability**
- **Latest coating technology**



ATORN Machine tap

NPT | 60° | HSS-E | C 2-3 | 1xD | Vc/fz | 402 – 406

- **American national standard tapered pipe thread, NPT 60°**
- Straight-fluted
- Form C, 2 to 3-thread chamfer
- **Cutting material: HSS-E**
- for blind bore and through-hole threads
- Possible thread depth 1.5xD
- Taper reamer suitable for conical tapping holes (taper 1:16) available on request

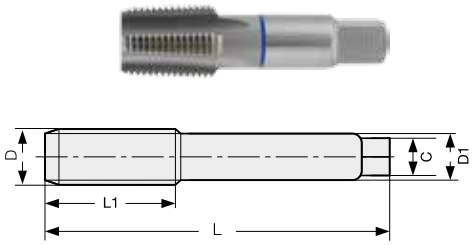
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●		○	○			○				●	○	●				
16	11		8	8			14				18	18	15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
NPT 1/16"	27	56	14	6	4.9	6.10	135345 0001	
NPT 1/8"	27	63	15	7	5.5	8.5	135345 0002	
NPT 1/4"	18	63	21	11	9	11.1	135345 0003	
NPT 3/8"	18	70	21	12	9	14.5	135345 0004	
NPT 1/2"	14	80	27	16	12	17.75	135345 0005	
NPT 3/4"	14	100	27	20	16	23	135345 0006	
NPT 1"	11.5	110	32	25	20	29	135345 0007	

1127



ATORN Machine tap

PG | 80° | HSS | DIN 40430 | ISO 2 6H | C 2-3 | 1,5xD | Vc/fz | 402 – 406

- **Reinforced straight pipe thread 80°**
- Straight-fluted
- **Without spiral point**
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads

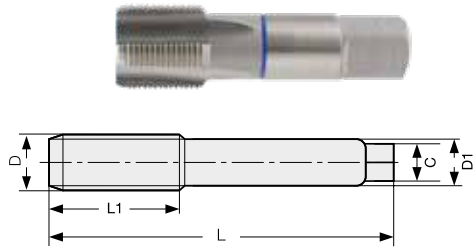
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●		○				○				●	●	●				
16	12		9				16				18	18	15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
PG 7	20	70	22	9	7	11.4	135380 0070	
PG 9	18	70	22	12	9	14	135380 0090	
PG 11	18	80	22	14	11	17.25	135380 0110	
PG 13.5	18	80	22	16	12	19	135380 0135	
PG 16	18	80	22	18	14.5	21.25	135380 0160	
PG 21	16	90	22	22	18	27	135380 0210	
PG 29	16	100	25	28	22	35.5	135380 0290	

1127



ATORN Machine forming taps

M | 60° | HSS-E | DIN 2174 | ISO 2 6H | C 2-3 | 1xD | TiN | Vc/fz | 402 – 406

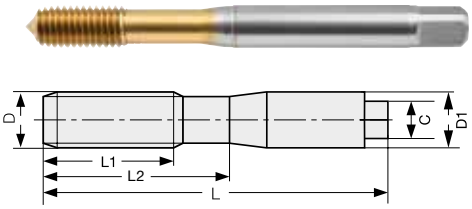
- **Metric ISO 6HX thread**
- Form C, 2-3 thread chamfer
- without oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 34	● 27	● 10	● 19	● 22	● 15		○ 29	○ 6	● 6		● 68	● 26	● 20				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	4	-	2.5	2.1	0.90	135405 0010	
M 1.2	0.25	40	4.8	-	2.5	2.1	1.10	135405 0012	
M 1.4	0.3	40	5.6	-	2.5	2.1	1.25	135405 0014	
M 1.6	0.35	40	6.4	-	2.5	2.1	1.45	135405 0016	
M 1.8	0.35	40	7.2	-	2.5	2.1	1.65	135405 0018	
M 2	0.4	45	8	-	2.8	2.1	1.85	135405 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.30	135405 0025	
M 3	0.5	56	11	18	3.5	2.7	2.75	135405 0030	
M 3.5	0.6	56	12	20	4	3	3.25	135405 0035	
M 4	0.7	63	13	21	4.5	3.4	3.65	135405 0040	
M 5	0.8	70	16	25	6	4.9	4.60	135405 0050	
M 6	1.0	80	19	30	6	4.9	5.55	135405 0060	
M 8	1.25	90	22	35	8	6.2	7.40	135405 0080	
M 10	1.5	100	24	39	10	8	9.30	135405 0100	
M 12	1.75	110	24	-	9	7	11.20	135405 0120	
M 14	2.0	110	26	-	11	9	13.10	135405 0140	
M 16	2.0	110	26	-	12	9	15.10	135405 0160	
M 20	2.5	140	32	-	16	12	18.90	135405 0200	



1127

ATORN Machine forming taps tolerance 6GX

M | 60° | HSS-E | DIN 2174 | ISO 3 6G | C 2-3 | 1xD | TiN | Vc/fz | 402 – 406

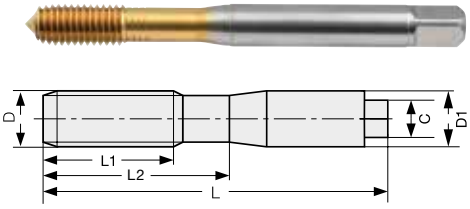
- **Metric ISO-6GX thread**
- Form C, 2-3 thread chamfer
- without oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 34	● 27	● 10	● 19	● 22	● 15		○ 29	○ 6	● 6		● 68	● 26	● 20				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.85	135450 0020	
M 2.5	0.45	50	9	-	2.8	2.1	2.30	135450 0025	
M 3	0.5	56	11	18	3.5	2.7	2.75	135450 0030	
M 3.5	0.6	56	12	20	4	3	3.25	135450 0035	
M 4	0.7	63	13	21	4.5	3.4	3.65	135450 0040	
M 5	0.8	70	16	25	6	4.9	4.60	135450 0050	
M 6	1.0	80	19	30	6	4.9	5.55	135450 0060	
M 8	1.25	90	22	35	8	6.2	7.40	135450 0080	
M 10	1.5	100	24	39	10	8	9.30	135450 0100	
M 12	1.75	110	24	-	9	7	11.20	135450 0120	



1127

ATORN Machine forming taps

M | 60° | HSS-E | DIN 2174 | ISO 2 6H | C 2-3 | 3xD | TiN | TiAlN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN; HSS-E TiAlN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %
- Possible thread depth 3 x D

With oil grooves

material — ● very well suited ○ well suited

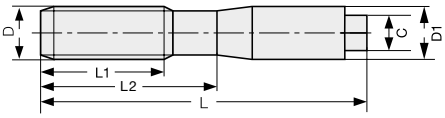
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
135240....	● 30	● 25	● 10	● 10	● 7	● 15		○ 29		○ 6		● 38	● 26	● 20				
135245....	● 34	● 27	○ 12	● 19	● 22	● 15		○ 29		○ 6		● 68	○ 30	○ 23				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
M 3	0.5	56	10	18	3.5	2.7	2.75	135240 0030		135245 0030	
M 4	0.7	63	12	21	4.5	3.4	3.65	135240 0040		135245 0040	
M 5	0.8	70	14	25	6	4.9	4.60	135240 0050		135245 0050	
M 6	1.0	80	16	30	6	4.9	5.55	135240 0060		135245 0060	
M 8	1.25	90	18	35	8	6.2	7.40	135240 0080		135245 0080	
M 10	1.5	100	20	39	10	8	9.30	135240 0100		135245 0100	
M 12	1.75	110	24	-	9	7	11.10	135240 0120		135245 0120	
								1127		1127	


TiN


TiAlN



ATORN Machine forming taps

M | 60° | HSS-E PM | DIN 2174 | ISO 2 6H | C 2-3 | 2xD | TiCN | Vc/fz | 402 – 406

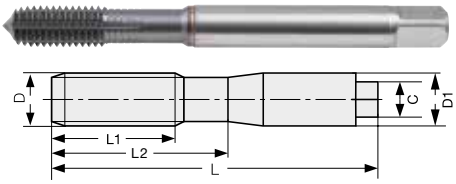
- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E-PM TiCN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

material — ● very well suited ○ well suited

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 34	● 27	○ 10	● 19	● 22	● 15		○ 29	○ 6	● 6		● 68	○ 26	○ 20				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	18	3.5	2.7	2.75	135460 0030	
M 4	0.7	63	13	21	4.5	3.4	3.65	135460 0040	
M 5	0.8	70	16	25	6	4.9	4.60	135460 0050	
M 6	1.0	80	19	30	6	4.9	5.55	135460 0060	
M 8	1.25	90	22	35	8	6.2	7.40	135460 0080	
M 10	1.5	100	24	39	10	8	9.30	135460 0100	
M 12	1.75	110	24	-	9	7	11.20	135460 0120	
M 16	2.0	110	26	-	12	9	15.10	135460 0160	
M 20	2.5	140	32	-	16	12	18.90	135460 0200	
								1127	



ATORN Machine forming taps

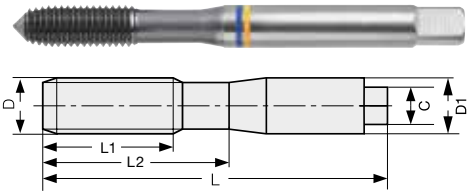
M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 2xD | TiCN | Vc/fz | 402 – 406

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM TiCN**
- For blind-hole and through-hole threads
- For steel, hardened and tempered steels, and chemically stable steels
- Possible thread depth 2xD

Ideal for steel and stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●		●	●	●		○		○		●		○				
		34	27		19	22	15		29		8		68		23				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.75	134194 0305	
M 4	0.7	63	12	21	4.5	3.4	3.65	134194 0407	
M 5	0.8	70	14	25	6	4.9	4.60	134194 0508	
M 6	1.0	80	16	30	6	4.9	5.55	134194 0610	
M 8	1.25	90	18	35	8	6.2	7.40	134194 0812	
M 10	1.5	100	20	39	10	8	9.30	134194 1015	
M 12	1.75	110	22	-	9	7	11.10	134194 1217	



1127

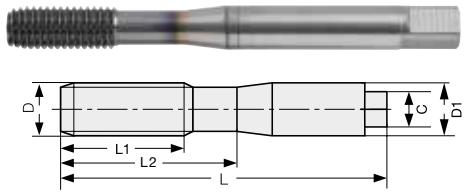
V-NRT-B machine forming tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6HX | C 2 | 2,5xD | TiCN | Vc/fz | 402 – 406

- **Metric ISO 6HX thread**
- Type C, 2-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E TiCN**
- **Also available in Tolerance 6GX version**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●		●	●	●		○		○		●	○	○				
		34	27		19	22	15		29		6		68	30	23				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	8	2.8	2.1	1.85	133320 0020	
M 2.2	0.45	45	9	8	2.8	2.1	2.00	133320 0022	
M 2.5	0.45	50	9	9	2.8	2.1	2.30	133320 0025	
M 3	0.5	56	11	18	3.5	2.7	2.75	133320 0030	
M 3.5	0.6	56	13	20	4.0	3.0	3.25	133320 0035	
M 4	0.7	63	13	21	4.5	3.4	3.65	133320 0040	
M 5	0.8	70	16	25	6.0	4.9	4.60	133320 0050	
M 6	1.0	80	19	30	6.0	4.9	5.55	133320 0060	
M 8	1.25	90	22	35	8.0	6.2	7.40	133320 0080	
M 10	1.5	100	24	39	10.0	8.0	9.30	133320 0100	
M 12	1.75	110	29	-	9.0	7.0	11.20	133330 0120	



1128

S-XPF and S-OIL-XPF machine forming taps

M | 60° | HSS-E | C 2-3 | TiCN | Vc/fz

402 – 406

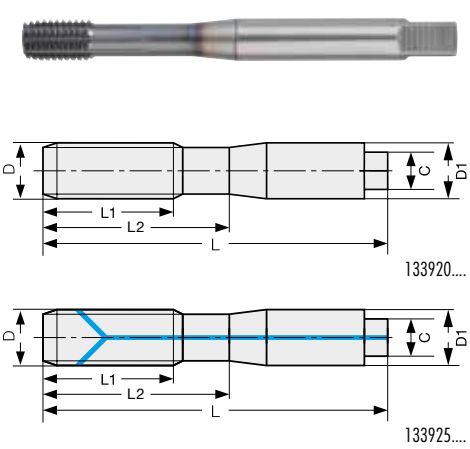
- **Metric ISO 6HX thread**
- ISO 2/4HX where ≤ M1.4
- Form C, 2.5-thread chamfer
- With oil grooves ≥ M3
- 133925.... with radial coolant outlet

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 28	● 28		● 14	● 14	● 14						● 35		● 20				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	With internal cooling art.no.	€
M 1	0.25	40	4	-	2.5	2.1	0.90	133920 0010			
M 1.2	0.25	40	4.8	-	2.5	2.1	1.10	133920 0012			
M 1.4	0.3	40	5.6	-	2.5	2.1	1.26	133920 0014			
M 1.6	0.35	40	6.4	-	2.5	2.1	1.45	133920 0016			
M 2	0.4	45	8	-	2.8	2.1	1.85	133920 0020			
M 2.5	0.45	50	9	-	2.8	2.1	2.30	133920 0025			
M 3	0.5	56	11	18	3.5	2.7	2.75	133920 0030			
M 4	0.7	63	13	21	4.5	3.4	3.65	133920 0040			
M 5	0.8	70	16	25	6	4.9	4.65	133920 0050		133925 0050	
M 6	1.0	80	19	30	6	4.9	5.55	133920 0060		133925 0060	
M 8	1.25	90	22	35	8	6.2	7.40	133920 0080		133925 0080	
M 10	1.5	100	24	39	10	8	9.30	133920 0100		133925 0100	
M 12	1.75	110	17	-	9	7	11.20	133920 0120		133925 0120	
M 14	2.0	110	20	-	11	9	13.10	133920 0140		133925 0140	
M 16	2.0	110	20	-	12	9	15.10	133920 0160		133925 0160	
M 18	2.5	125	20	-	14	11	16.90	133920 0180		133925 0180	
M 20	2.5	140	20	-	16	12	18.90	133920 0200		133925 0200	
M 22	2.5	140	20	-	18	14.5	20.80	133920 0220		133925 0220	
M 24	3.0	160	24	-	18	14.5	22.50	133920 0240		133925 0240	
M 27	3.0	160	18	-	20	16	25.50	133920 0270		133925 0270	
M 30	3.5	180	21	-	22	18	28.20	133920 0300		133925 0300	
								1128		1128	



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Machine forming tap M-NRT

M | 60° | HSS-E PM | DIN 2174 | ISO 6HX | C 2-3 | 2,5xD | TiN | Vc/fz

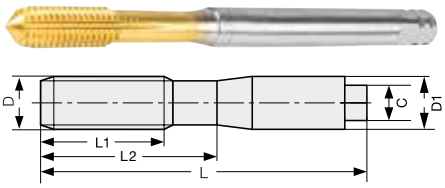
402 – 406

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- For blind bore and through-hole threads
- **HSSE-PM TiN cutting material**
- For steels, stainless steel and aluminium alloys

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●		●	●	●						●	●					
		25	25		9	9	6						25	15					
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M1	0.25	40	5.5	-	2.5	2.1	0.89	133340 0010	
M1.4	0.3	40	7	-	2.5	2.1	1.27	133340 0014	
M1.6	0.35	40	8	-	2.5	2.1	1.44	133340 0016	
M2	0.4	45	9	-	2.8	2.1	1.82	133340 0020	
M2.5	0.45	50	9	14	2.8	2.1	2.3	133340 0025	
M3	0.5	56	10	18	3.5	2.7	2.8	133340 0030	
M3.5	0.6	56	11	20	4	3	3.25	133340 0035	
M4	0.7	63	12	21	4.5	3.4	3.7	133340 0040	
M4.5	0.75	70	14	25	6	4.9	4.15	133340 0045	
M5	0.8	70	14	25	6	4.9	4.65	133340 0050	
M5.5	0.9	80	14	30	6	4.9	5.1	133340 0055	
M6	1	80	16	30	6	4.9	5.55	133340 0060	
M7	1	80	16	30	7	5.5	6.55	133340 0070	
M8	1.25	90	18	35	8	6.2	7.45	133340 0080	
M9	1.25	90	18	35	9	7	8.45	133340 0090	
M10	1.5	100	20	39	10	8	9.35	133340 0100	
M11	1.5	100	22	-	8	6.5	10.35	133340 0110	
M12	1.75	110	24	-	9	7	11.2	133340 0120	
M14	2	110	25	-	11	9	13.1	133340 0140	
M16	2	110	27	-	12	9	15.1	133340 0160	
M18	2.5	125	32	-	14	11	16.8	133340 0180	
M20	2.5	140	32	-	16	12	18.8	133340 0200	
M22	2.5	140	32	-	18	14.5	20.8	133340 0220	
M24	3	160	36	-	18	14.5	22.6	133340 0240	

1128



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Machine forming tap M-OIL-NRT Form E

M | 60° | HSS-E PM | DIN 2174 | ISO 6HX | E 1,5-2 | 2,5xD | TiN | Vc/fz

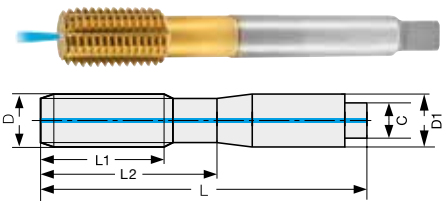
402 – 406

- ISO 6HX metric thread
- Type E, 1.5-thread chamfer
- For blind bore and through-hole threads
- HSSE-PM TiN cutting material
- For steels, stainless steel and aluminium alloys

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25	● 25		● 9	● 9	● 6						● 25	● 15					
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
M5	0.8	70	14	25	6	4.9	4.65	133344 0050	
M6	1	80	16	30	6	4.9	5.55	133344 0060	
M8	1.25	90	18	35	8	6.2	7.45	133344 0080	
M10	1.5	100	20	39	10	8	9.35	133344 0100	
M12	1.75	110	24	-	9	7	11.2	133344 0120	
M14	2	110	25	-	11	9	13.1	133344 0140	
M16	2	110	27	-	12	9	15.1	133344 0160	

1128



ATORN Machine forming taps

MF | 60° | HSS-E | DIN 2174 | ISO 2 6H | C 2-3 | 3xD | TiN | Vc/fz

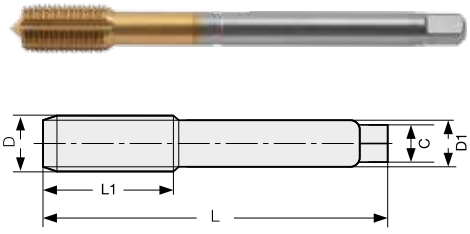
402 – 406

- **Metric ISO 6HX fine thread**
- Form C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %
- Possible thread depth 2.5 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30	● 25	● 10	● 10	● 7	● 15		○ 29				● 38	● 26	● 20				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	0.75	80	30	4.5	3.4	5.65	135480 0675	
M 8	0.75	90	30	6	4.9	7.65	135480 0875	
M 8	1	90	35	6	4.9	7.55	135480 0810	
M 10	1	100	35	7	5.5	9.55	135480 1010	
M 10	1.25	100	39	7	5.5	9.4	135480 1012	
M 12	1	100	40	9	7	11.55	135480 1210	
M 12	1.25	100	40	9	7	11.4	135480 1212	
M 12	1.5	100	40	9	7	11.3	135480 1215	
M 14	1	100	40	11	9	13.55	135480 1410	
M 14	1.5	100	40	11	9	13.3	135480 1415	
M 16	1	100	44	12	9	15.55	135480 1610	
M 16	1.5	100	44	12	9	15.3	135480 1615	
M 18	1	110	44	14	11	17.55	135480 1810	
M 18	1.5	110	44	14	11	17.3	135480 1815	
M 20	1	125	44	16	12	19.55	135480 2010	
M 20	1.5	125	44	16	12	19.3	135480 2015	
M 22	1.5	125	44	18	14.5	21.3	135480 2215	
M 24	1.5	140	48	18	14.5	23.3	135480 2415	

1127



S-XPF and S-OIL-XPF machine forming taps

MF | 60° | HSS-E | C 2-3 | TiCN | Vc/fz

402 – 406

- **Metric ISO 6HX fine thread**
- Form C, 2.5-thread chamfer
- With oil grooves
- **Cutting material: HSS-E, TiCN**
- For blind-hole and through-hole threads
- 133935.... with radial coolant outlet

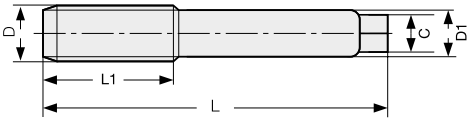


material: ● very well suited ○ well suited

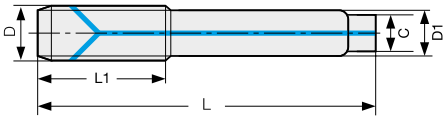
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 28	● 28		● 14	● 14	● 14						● 35		● 20				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	With internal cooling art.no.	€
M 4	0.5	63	8	4.5	3.4	3.80	133930 0405			
M 5	0.5	70	8	6	4.9	4.80	133930 0505			
M 6	0.5	80	8	6	4.9	5.80	133930 0605			
M 6	0.75	80	8	6	4.9	5.70	133930 0607			
M 8	0.5	80	10	6	4.9	7.80	133930 0805			
M 8	0.75	80	10	6	4.9	7.70	133930 0807			
M 8	1.0	90	10	6	4.9	7.55	133930 0810		133935 0810	
M 10	1.0	90	12	7	5.5	9.55	133930 1010		133935 1010	
M 10	1.25	100	12	7	5.5	9.40	133930 1012		133935 1012	
M 12	1.0	100	15	9	7	11.60	133930 1210		133935 1210	
M 12	1.25	100	15	9	7	11.40	133930 1212		133935 1212	
M 12	1.5	100	15	9	7	11.30	133930 1215		133935 1215	
M 14	1.0	100	15	11	9	13.60	133930 1410		133935 1410	
M 14	1.25	100	15	11	9	13.40	133930 1412		133935 1412	
M 14	1.5	100	15	11	9	13.30	133930 1415		133935 1415	
M 16	1.0	100	15	12	9	15.60	133930 1610		133935 1610	
M 16	1.5	100	15	12	9	15.30	133930 1615		133935 1615	
M 18	1.0	110	15	14	11	17.60	133930 1810		133935 1810	
M 18	1.5	110	15	14	11	17.30	133930 1815		133935 1815	
M 20	1.0	125	15	16	12	19.60	133930 2010		133935 2010	
M 20	1.5	125	15	16	12	19.30	133930 2015		133935 2015	
M 22	1.5	125	15	18	14.5	21.30	133930 2215		133935 2215	
M 24	1.5	140	15	18	14.5	23.30	133930 2415		133935 2415	
							1128		1128	



133930....



133935....

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ATORN Machine forming taps

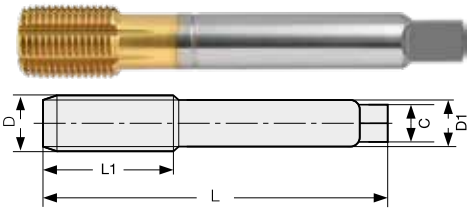
G | 55° | HSS-E | C 2-3 | 3xD | TiN | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- DIN 2189
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30	● 25	● 10	● 10	● 7	● 15				○ 6		● 38	● 26	● 20				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/16″	28	90	18	6	4.9	7.3	135495 0116	
G 1/8″	28	90	18	7	5.5	9.3	135495 0018	
G 1/4″	19	100	20	11	9	12.5	135495 0014	
G 3/8″	19	100	22	12	9	16	135495 0038	
G 1/2″	14	125	25	16	12	20	135495 0012	
G 3/4″	14	140	28	20	16	25.5	135495 0034	

1127



Machine forming tap M-NRT

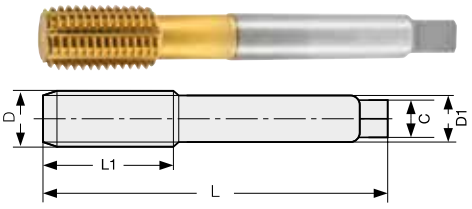
G | 55° | HSS-E PM | C 2-3 | 2,5xD | TiN | Vc/fz | 402 – 406

- **Whitworth pipe thread, 55°**
- DIN 2189
- Type C, 2-3 thread chamfer
- With oil grooves
- For blind bore and through-hole threads
- **HSSE-PM TiN cutting material**
- For general steels, stainless steel and aluminium alloys

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25	● 25		● 9	● 9	● 6						● 25	● 15					
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D	Pitch TPI	L mm	L1 mm	D1 mm	C	Tapping hole Ø mm	art.no.	€
G1/8″	28	90	18	7	5.5	9.25	133346 0018	
G1/4″	19	100	22	11	9	12.5	133346 0014	
G3/8″	19	100	22	12	9	16	133346 0038	
G1/2″	14	125	25	16	12	20	133346 0012	
G5/8″	14	125	25	18	14.5	22	133346 0058	
G3/4″	14	140	28	20	16	25.5	133346 0034	

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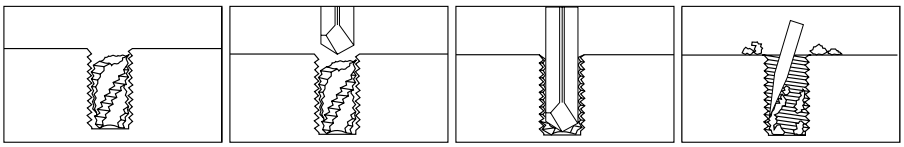


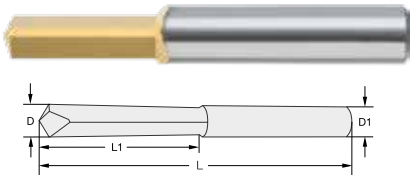
ATORN Solid carbide tap drill-out tool

VHM | Werks-norm | Typ H | TiN | Vc/fz | 403

Coated design

- Drill bit for extracting broken-off taps
- For drilling stellites and heat-treated steels (58 – 68 HRC)
- Straight shank
- **Cutting material: solid carbide, TiN-coated**





material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 11	● 11

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

for thread	D mm	L1 mm	L mm	D1 mm	art.no.	€
M3	2.5	10	38	3	114075 2025	53,60
M4	3.3	14	46	4	114075 2033	62,40
M5	4.2	19	50	5	114075 2042	72,50
M6	5	23	50	6	114075 2050	84,60
M8	6.8	23	60	8	114075 2068	105,50
M10	8.5	25	80	10	114075 2085	152,–
M12	10.2	35	80	12	114075 2102	238,–

1132



7 pcs. set

for thread	Contents	art.no.	€
M3 | M4 | M5 | M6 | M8 | M10 | M12	Solid carbide tap extractor Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2 (1 of each)	114075 2120	729,–

1132

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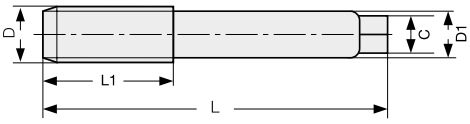


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ATORN SARA® Hand taps

M | 60° | HSS | DIN 352 | ISO 2 6H

- **ISO metric thread, DIN 13**
- **Cutting material: HSS**
- For through-hole and blind bore threads
- 3 pcs set comprising taper tap, second tap and bottom tap





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130130....	●	●		○			○	○				●	○	●	○			
	130101....	●	●					○	○				○	○	○				

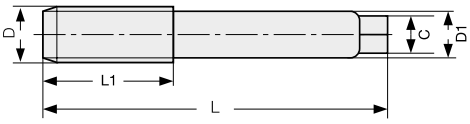
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN 3-pcs. set art.no.	€	SARA® 3-pcs. set art.no.	€
M 1	0.25	32	5.5	2.5	2.1	130130 0010			
M 1.2	0.25	32	5.5	2.5	2.1	130130 0012			
M 1.4	0.3	32	7	2.5	2.1	130130 0014			
M 1.6	0.35	32	8	2.5	2.1	130130 0016			
M 1.7	0.35	32	8	2.5	2.1	130130 0017			
M 1.8	0.35	32	8	2.5	2.1	130130 0018			
M 2	0.4	36	10	2.8	2.1	130130 0020		130101 0020	
M 2.2	0.45	36	11	2.8	2.1			130101 0022	
M 2.3	0.4	36	11	2.8	2.1	130130 0023		130101 0023	
M 2.5	0.45	40	12	2.8	2.1	130130 0025		130101 0025	
M 2.6	0.45	40	12	2.8	2.1	130130 0026		130101 0026	
M 3	0.5	40	12	3.5	2.7	130130 0030		130101 0030	
M 3.5	0.6	45	14	4	3	130130 0035		130101 0035	
M 4	0.7	45	14	4.5	3.4	130130 0040		130101 0040	
M 4.5	0.75	45	14	4.5	3.4			130101 0045	
M 4.5	0.75	50	14	6	4.9	130130 0045			
M 5	0.8	48	16	6	4.9			130101 0050	
M 5	0.8	50	16	6	4.9	130130 0050			
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN 3-pcs. set art.no.	€	SARA® 3-pcs. set art.no.	€
M 6	1	50	18	6	4.9	130130 0060		130101 0060	
M 7	1	50	18	6	4.9	130130 0070		130101 0070	
M 8	1.25	56	22	6	4.9	130130 0080		130101 0080	
M 9	1.25	63	22	7	5.5	130130 0090		130101 0090	
M 10	1.5	70	25	7	5.5	130130 0100		130101 0100	
M 11	1.5	70	25	8	6.2	130130 0110		130101 0110	
M 12	1.75	75	30	9	7	130130 0120		130101 0120	
M 14	2	80	32	11	9	130130 0140		130101 0140	
M 16	2	80	32	12	9	130130 0160		130101 0160	
M 18	2.5	95	40	14	11	130130 0180		130101 0180	
M 20	2.5	95	40	16	12	130130 0200		130101 0200	
M 22	2.5	100	40	18	14.5			130101 0220	
M 24	3	110	50	18	14.5	130130 0240		130101 0240	
M 27	3	110	50	20	16			130101 0270	
M 30	3.5	132	56	22	18			130101 0300	
M 33	3.5	132	56	25	20			130101 0330	
M 36	4	150	63	28	22	130130 0360		130101 0360	
M 42	4.5	150	63	32	24	130130 0420			
						1125		1133	

ATORN Hand taps

M | 60° | HSS-E | DIN 352 | ISO 2 6H | A 6-8 | D 3,5-5 | C 2-3

- **ISO metric thread, DIN 13**
- **Cutting material: HSS**
- For through-hole and blind bore threads
- 3 pcs set comprising taper tap, second tap and bottom tap




Taper tap Form A


Second tap Form D


Bottom tap Form C

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

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	3-pcs. set art.no.	€	Taper tap art.no.	€	Second tap art.no.	€	Third tap art.no.	€
M 2	0.4	36	10	2.8	2.1	1.6	130126 0020		130127 0020		130128 0020		130129 0020	
M 2.5	0.45	40	12	2.8	2.1	2.05	130126 0025		130127 0025		130128 0025		130129 0025	
M 3	0.5	40	12	3.5	2.5	2.5	130126 0030		130127 0030		130128 0030		130129 0030	
M 3.5	0.6	45	14	4	2.9	2.9	130126 0035		130127 0035		130128 0035		130129 0035	
M 4	0.7	45	14	4.5	3.3	3.3	130126 0040		130127 0040		130128 0040		130129 0040	
M 5	0.8	50	16	6	4.2	4.2	130126 0050		130127 0050		130128 0050		130129 0050	
M 6	1	56	18	6	5	5	130126 0060		130127 0060		130128 0060		130129 0060	
M 8	1.25	63	22	6	6.8	6.8	130126 0080		130127 0080		130128 0080		130129 0080	
M 10	1.5	70	25	7	8.5	8.5	130126 0100		130127 0100		130128 0100		130129 0100	
M 12	1.75	75	30	9	10.2	10.2	130126 0120		130127 0120		130128 0120		130129 0120	
M 16	2	80	32	12	14	14	130126 0160		130127 0160		130128 0160		130129 0160	
M 20	2.5	95	40	16	17.5	17.5	130126 0200		130127 0200		130128 0200		130129 0200	
							1125		1125		1125		1125	

ATORN Hand tap set

M | 60° | HSS | HSS-E | DIN 352 | ISO 2 6H



- **For DIN 13 metric thread**
- For through-hole and blind bore threads
- **21 pcs**, with case, M3 - 12
- **Cutting material: HSS and HSS-E**
- Consisting of DIN 352 taper tap, second tap and bottom tap

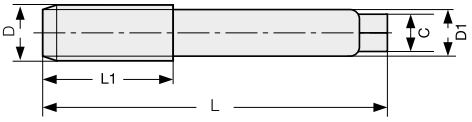
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130130....	●	●		○			○	○				●	○	●	○			
	130126....	●	●		●	●	○	○	○				○	○	○				

Number of pieces pc.	Contents	HSS art.no.	€	HSSE art.no.	€
21	3 hand tap each (rough/medium/finished tap) M3/M4/M5/M6/M8/M10/M12	130130 1001		130126 1001	
		1125		1125	

ATORN SARA® Hand taps

MF | 60° | HSS | DIN 2181 | ISO 2 6H

- **ISO 6H fine-pitch metric thread, DIN 13**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130139....	●	●		○			○	○				●	●	●	○			
	130105....	●	●					○	○				○	○	○				

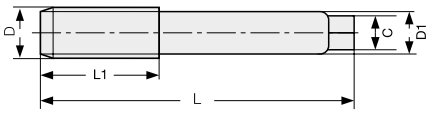
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN art.no.	€	SARA® art.no.	€
M 3	0.35	40	9	3.5	2.7			130105 0005	
M 3.5	0.35	45	10	4	3			130105 0006	
M 4	0.5	45	10	4.5	3.4	130139 0007		130105 0007	
M 5	0.5	50	12	6	4.9	130139 0009		130105 0009	
M 6	0.5	50	12	6	4.9	130139 0054			
M 6	0.75	50	12	6	4.9	130139 0010		130105 0010	
M 7	0.75	50	14	6	4.9	130139 0011		130105 0011	
M 8	0.5	50	16	6	4.9	130139 0055			
M 8	0.75	50	16	6	4.9	130139 0013		130105 0013	
M 8	1	56	16	6	4.9	130139 0012		130105 0012	
M 9	1	63	16	7	5.5			130105 0014	
M 10	0.75	63	16	7	5.5			130105 0017	
M 10	0.75	68	16	7	5.5	130139 0017			
M 10	1	63	16	7	5.5	130139 0016		130105 0016	
M 10	1.25	70	20	7	5.5	130139 0015		130105 0015	
M 11	1	63	16	8	6.2			130105 0018	
M 12	0.75	63	20	9	7			130105 0022	
M 12	1	63	20	9	7			130105 0021	
M 12	1	70	20	9	7	130139 0021			
M 12	1.25	63	20	9	7			130105 0020	
M 12	1.25	70	20	9	7	130139 0020			
M 12	1.5	70	20	9	7	130139 0019			
M 12	1.5	75	20	9	7			130105 0019	
M 14	1	70	20	11	9	130139 0025		130105 0025	
M 14	1.25	70	20	11	9	130139 0024		130105 0024	
M 14	1.5	70	20	11	9	130139 0023		130105 0023	
M 15	1	70	20	12	9	130139 0027		130105 0027	
M 15	1.5	70	20	12	9			130105 0026	
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN art.no.	€	SARA® art.no.	€
M 16	1	70	20	12	9	130139 0030		130105 0030	
M 16	1.25	70	20	12	9			130105 0029	
M 16	1.5	70	20	12	9	130139 0028		130105 0028	
M 18	1	80	20	14	11	130139 0032		130105 0032	
M 18	1.5	80	20	14	11	130139 0031		130105 0031	
M 20	1	80	22	16	12	130139 0034		130105 0034	
M 20	1.5	80	22	16	12	130139 0033		130105 0033	
M 22	1	80	22	18	14.5			130105 0036	
M 22	1.5	80	22	18	14.5	130139 0035		130105 0035	
M 24	1	80	22	18	14.5			130105 0039	
M 24	1	90	22	18	14.5	130139 0039			
M 24	1.5	80	22	18	14.5			130105 0038	
M 24	1.5	90	22	18	14.5	130139 0038			
M 24	2	80	22	18	14.5			130105 0037	
M 24	2	90	22	18	14.5	130139 0037			
M 25	1.5	80	22	18	14.5			130105 0041	
M 26	1.5	80	22	18	14.5			130105 0042	
M 27	1.5	90	22	20	16			130105 0044	
M 27	2	90	22	20	16	130139 0043		130105 0043	
M 28	1.5	90	22	20	16			130105 0046	
M 28	2	90	22	20	16			130105 0045	
M 30	1.5	90	22	22	18	130139 0048		130105 0048	
M 30	2	90	22	22	18	130139 0047		130105 0047	
M 32	1.5	90	22	22	18			130105 0050	
M 36	1.5	100	25	28	22	130139 0056			
M 36	2	100	25	28	22			130105 0052	
M 36	3	150	63	28	22			130105 0051	
						1125		1133	

ATORN SARA® Hand taps

M | 60° | HSS-E | DIN 352 | ISO 2 6H | Nit. | Vap.

- **ISO metric thread DIN 13**
- **Cutting material: HSS-E, nitrided; HSS-E vapour-treated**
- For through-hole and blind-hole threads
- 3-pcs. set consisting of taper tap, second tap and bottom tap
- Up to M12 (inclusive), taper tap with pilot pin





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130135....	○	○	●	○			○	●	○	○	○	○	○	○				
	130110....	●	●	○	○			●	○										

HSS-E

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN Nitrided art.no.	€	SARA® vaporised art.no.	€
M 2	0.4	36	12	2.8	2.1	130135 0020			
M 3	0.5	40	12	3.5	2.7	130135 0030		130110 0030	
M 4	0.7	45	14	4.5	3.4	130135 0040		130110 0040	
M 5	0.8	48	16	6	4.9			130110 0050	
M 5	0.8	50	16	6	4.9	130135 0050			
M 6	1	50	18	6	4.9	130135 0060		130110 0060	
M 8	1.25	56	22	6	4.9	130135 0080		130110 0080	
M 10	1.5	70	25	7	5.5	130135 0100		130110 0100	
M 12	1.75	75	30	9	7	130135 0120		130110 0120	
M 14	2	80	32	11	9	130135 0140		130110 0140	
M 16	2	80	32	12	9	130135 0160		130110 0160	
						1125		1133	

ATORN Hand tap, left-hand thread

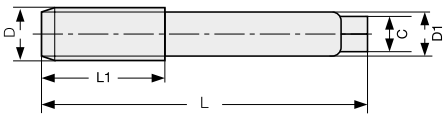
M-LH | 60° | HSS | DIN 352 | ISO 2 6H

- **ISO left-hand metric thread, DIN 13**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads



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

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4 - LH	0.7	45	14	4.5	3.4	3.3	130134 0040	
M 5 - LH	0.8	50	16	6	4.9	4.2	130134 0050	
M 6 - LH	1	50	18	6	4.9	5	130134 0060	
M 8 - LH	1.25	56	22	6	4.9	6.8	130134 0080	
M 10 - LH	1.5	70	25	7	5.5	8.5	130134 0100	
M 12 - LH	1.75	75	30	9	7	10.2	130134 0120	
M 14 - LH	2	80	32	11	9	12	130134 0140	
M 16 - LH	2	80	32	12	9	14	130134 0160	
M 20 - LH	2.5	95	40	16	12	17.5	130134 0200	
							1125	



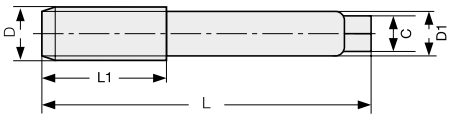
ATORN Hand taps

BSW | 55° | HSS | DIN 351 | ISO 2 6H



- **Whitworth thread, DIN 11**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request
- **Note:** For Whitworth threads in accordance with BSW standard BS 84 in medium tolerance zone.

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



D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
W 1/8"	40	40	12	3.5	2.7	2.5	130142 0002	
W 5/32"	32	45	14	4.5	3.4	3.2	130142 0003	
W 3/16"	24	50	14	6	4.9	3.6	130142 0004	
W 7/32"	24	50	16	6	4.9	4.5	130142 0005	
W 1/4"	20	50	18	6	4.9	5.1	130142 0006	
W 5/16"	18	56	22	6	4.9	6.5	130142 0007	
W 3/8"	16	70	22	7	5.5	7.9	130142 0008	
W 1/2"	12	75	30	9	7	10.5	130142 0010	
W 5/8"	11	80	32	12	9	13.5	130142 0012	
W 3/4"	10	95	40	14	11	16.5	130142 0013	

1125

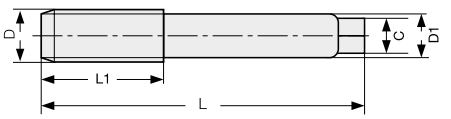
ATORN Hand taps

G | 55° | HSS | DIN 5157 | ISO 2 6H



- **Whitworth pipe thread, DIN 5157**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request
- **Note:** For straight pipe threads, DIN-ISO 228/1

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



D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	63	20	7	5.5	8.8	130143 0001	
G 1/4"	19	70	22	11	9	11.8	130143 0002	
G 3/8"	19	70	22	12	9	15.25	130143 0003	
G 1/2"	14	80	22	16	12	19	130143 0004	
G 3/4"	14	90	22	20	16	24.5	130143 0006	

1125

ATORN Hand taps

UNC | 60° | HSS | DIN 2181 | DIN 352 | 2 B

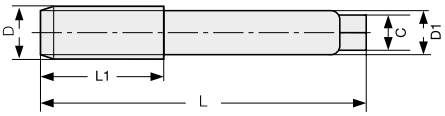
- **UNC (unified national standard coarse-pitch thread)**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads



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

D	Pitch	D mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	3-pcs. set art.no.	€
UNC 3	48	2.52	40	9	2.8	2.1	2.1	130140 0001	
UNC 4	40	2.85	40	11	3.5	2.7	2.35	130140 0002	
UNC 5	40	3.18	40	11	3.5	2.7	2.65	130140 0003	
UNC 6	32	3.51	45	12	4	3	2.85	130140 0004	
UNC 8	32	4.17	45	13	4.5	3.4	3.5	130140 0005	
UNC 10	24	4.83	50	14	6	4.9	3.9	130140 0006	
UNC 1/4	20	6.35	50	16	6	4.9	5.1	130140 0007	
UNC 5/6	18	7.94	56	18	6	4.9	6.6	130140 0008	
UNC 3/8	16	9.53	70	20	7	5.5	8	130140 0009	
UNC 7/16	14	11.11	75	22	8	6.2	9.4	130140 0010	
UNC 1/2	13	12.70	75	25	9	7	10.8	130140 0011	
UNC 5/8	11	15.88	80	30	12	9	13.5	130140 0012	
UNC 3/4	10	19.05	95	33	14	11	16.5	130140 0013	
UNC 7/8	9	22.23	100	35	18	14.5	19.5	130140 0014	

1125



ATORN Hand taps

UNF | 60° | HSS | DIN 2181 | 2 B

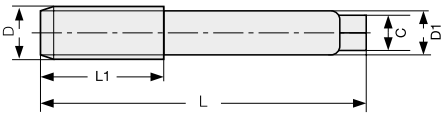
- **UNF (unified national standard fine-pitch thread)**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads



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

D	Pitch	D mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	2-piece set art.no.	€
UNF 4	48	2.85	40	10	3.5	2.7	2.4	130141 0001	
UNF 6	40	3.51	45	11	4	3	2.95	130141 0002	
UNF 8	36	4.17	45	12	4.5	3.4	3.5	130141 0003	
UNF 10	32	4.83	50	14	6	4.9	4.1	130141 0004	
UNF 12	28	5.49	50	16	6	4.9	4.6	130141 0005	
UNF 1/4	28	6.35	50	17	6	4.9	5.5	130141 0006	
UNF 5/16	24	7.94	56	17	6	4.9	6.9	130141 0007	
UNF 3/8	24	9.53	63	18	7	5.5	8.5	130141 0008	
UNF 7/16	20	11.11	63	20	8	6.2	9.9	130141 0009	
UNF 1/2	20	12.70	63	20	9	7	11.5	130141 0010	
UNF 9/16	18	14.29	70	20	11	9	12.9	130141 0011	
UNF 5/8	18	15.88	70	20	12	9	14.5	130141 0012	

1125



Helicoil®plus thread technology

The system

Thread inserts create very durable connections in metallic materials with low strength and have proven their value in practice for over 50 years. These stainless steel thread inserts of tried and tested quality made from rhombic profile wire are formed into a flexible coil. Following fitting, the tang can be broken off at the notch (predetermined break point) if through-hole threads are required.

The latest generation of this technology is called HELICOIL®plus. Thanks to its optimised design, HELICOIL®plus has now been made significantly easier to fit. This is ensured by the insertion area, allowing HELICOIL®plus to be positioned and turned in like a screw. There is no longer any need for the tool sleeve with pilot cartridge which has been standard until now. All that is required is an installation mandrel to screw it in, the dimensions of which are comparable to that of a tap. However existing tools with the established design can still be used.



The technology

HELICOIL®plus thread inserts are characterised by high resistance to wear, low thread friction in narrow tolerances, high surface quality and resistance to corrosion and heat. The performance limits determined by the nut thread and the strength of the material are increased by the internationally established HELICOIL® thread technology. They are also characterised by their optimal design. Similar to a screw, thread inserts are simply screwed in using the installation mandrel. The significantly extended range of usable tools that results from this allows installation times to be reduced by up to 20% compared to existing procedures.



The thread insert with precision-formed, rhombic profile runs freely turn by turn. The result is a true-to-gauge female thread that can be used on both sides. The dimensional accuracy of the ISO thread meets DIN 13 6H, and 4H for special requirements.



The applications

HELICOIL®plus provides high-strength threads by transferring the forces from flank to flank in the holding thread. The system is extremely reliable, has German and international patents pending and is available worldwide. HELICOIL®plus provides finished thread inserts according to standard material and quality regulations. They are the basis for the national norm, aerospace standards, military standards and also for the in-house standards of leading large-scale users.



Construction element

Wherever materials with low shear strength (e.g. aluminium, aluminium-magnesium alloys and fibre-reinforced plastics) are used, HELICOIL® plus is indispensable for thread reinforcement. This includes in particular the mechanical and systems engineering sectors, the car industry, electrical and medical technology and the aerospace industry. Thread reinforcement prevents wear of the nut thread, even with frequent use. HELICOIL®plus facilitates development of series components, miniaturisation and lightweight structures. The strength required is provided by thread reinforcement with HELICOIL®plus.

Recycling of rejects and thread repair

HELICOIL® plus thread inserts are approved throughout the world for economical and long-lasting repairs to damaged or worn threads.

Along with the repair of valuable individual components, the systems also makes it possible for large series components that have been rejected because of faults to flow back into the production process.





HELICOIL plus thread repair kits

Vc/fz

402

- Contents for each coil thread:
- **HELICOIL plus** thread inserts in three lengths (1xD, 1.5xD and 2xD)
- Twist drill bits, hand taps made from HSS, installation mandrels and tang breakers **up to M12**
- From M3 to M6, 60 **HELICOIL** inserts in a repair pack, in 3 lengths (20 of each)
- From M8 to M16, 30 **HELICOIL** inserts in a repair pack, in 3 lengths (10 of each)



137065 0001



137065 0002

Repair packs with metric thread inserts

Suitable for thread	Drill Ø mm	art.no.	€
M3	3.2	137060 0003	
M4	4.2	137060 0004	
M5	5.2	137060 0005	
M6	6.3	137060 0006	
M8	8.4	137060 0008	
M10	10.5	137060 0010	
M12	12.5	137060 0012	
M14	14.5	137060 0014	
M16	16.5	137060 0016	

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Repair kits with metric thread inserts

- Contents: **HELICOIL** plus thread inserts
- Various dimensions and lengths
- Twist drill bits and **HELICOIL** hand taps made from HSS
- **HELICOIL** installation mandrels, tang break-off tool

Suitable for thread	Number inserts	art.no.	€
M 5 - M 12	230	137065 0001	
M6 | M8 | M10	132	137065 0002	

1149

Small refill packs



Suitable for thread	Contents	1 x D art.no.	€	1,5 x D art.no.	€	2 x D art.no.	€
M3	20	137061 0003		137062 0003		137063 0003	
M4	20	137061 0004		137062 0004		137063 0004	
M5	20	137061 0005		137062 0005		137063 0005	
M6	20	137061 0006		137062 0006		137063 0006	
M8	10	137061 0008		137062 0008		137063 0008	
M10	10	137061 0010		137062 0010		137063 0010	
M12	10	137061 0012		137062 0012		137063 0012	
M14	10	137061 0014		137062 0014		137063 0014	
M16	10	137061 0016		137062 0016		137063 0016	

1149 1149 1149

Large refill packs



Suitable for thread	Contents	1 x D art.no.	€	1,5 x D art.no.	€	2 x D art.no.	€
M3	100			137062 0103			
M4	100	137061 0104		137062 0104		137063 0104	
M5	100	137061 0105		137062 0105		137063 0105	
M6	100	137061 0106		137062 0106		137063 0106	
M8	100	137061 0108		137062 0108		137063 0108	
M10	100	137061 0110		137062 0110		137063 0110	
M12	100	137061 0112		137062 0112		137063 0112	
M16	100	137061 0116		137062 0116		137063 0116	
M20	100	137061 0120		137062 0120			

1149 1149 1149

Accessories

Suitable for thread	Hand taps art.no.	€	Installation mandrel art.no.	€	Tang break-off tool art.no.	€
M3	137066 0003		137067 0003		137068 0003	
M4	137066 0004		137067 0004		137068 0004	
M5	137066 0005		137067 0005		137068 0005	
M6	137066 0006		137067 0006		137068 0006	
M8	137066 0008		137067 0008		137068 0008	
M10	137066 0010		137067 0010		137068 0010	
M12	137066 0012		137067 0012		137068 0012	
M16	137066 0016		137067 0016			

1149 1149 1149



Hand taps



Installation mandrel



Tang break-off tool

Overview of threading dies

	Threading dies									
										
Brand	ATORN	SARA	ATORN	SARA	ATORN	SARA	ATORN	ATORN	SARA	ATORN
Thread	M	M	M-LH	M-LH	M	M	M	MF	MF	MF-LH
ISO application area	P M N	P M N	P M N	P M N	P M N	P M N	P M K N	P M N	P M N	P M N
Range	M2.5 - M36	M2.5 - M36	M3 – M20	M3 – M20	M2 - M24	M2 - M24	M3 - M12	M2 - M50	M2 - M36	M8 - M20
Tolerance	6g	6g	6g	6g	6g	6g	6g	6g	6g	6g
DIN	22568	22568	22568	22568	22568	22568	Factory standard	22568	22568	22568
Cutting material	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E vap.	HSS	HSS	HSS
Type/info			Left-hand thread	Left-hand thread			One size fits all			Left-hand thread
Item number	136001....	136004....	136010....	136014....	136005....	136045....	136105....	136015....	136016....	136025....
Catalogue page	**298**	**298**	**299**	**299**	**299**	**299**	**300**	**301**	**301**	**302**

	Threading dies			
				
Brand	ATORN	ATORN	ATORN	ATORN
Thread	MF	BSW	G	UNF
ISO application area	P M N	P M N	P M N	P M N
Range	M5 - M30	BSW1/8" - BSW5/8"	G1/8" - G2"	UNF No.4 - UNF 5/8"
Tolerance	6g	BS 84 medium	A	2A
DIN	22568	22568	22568	22568
Cutting material	HSS-E	HSS	HSS	HSS
Type/info				
Item number	136020....	136035....	136040....	136050....
Catalogue page	**302**	**303**	**303**	**303**

Thread cutting sets from page 304



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ATORN SARA® Threading dies

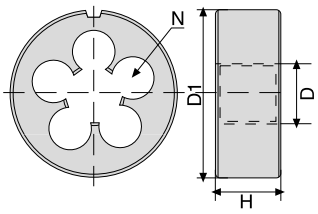
M | 60° | HSS | DIN 22568 | DIN 13 6g | i Vc/fz | 403

- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	136001....	●												●					
	136004....	●	○		○	○							○		○				

D mm	Pitch mm	External Ø mm	Height mm	N	ATORN art.no.	€	SARA art.no.	€
M 2.5	0.45	16	5	3	136001 0025		136004 0025	
M 2.6	0.45	16	5	3	136001 0026		136004 0026	
M 3	0.5	20	5	3	136001 0030		136004 0030	
M 3.5	0.6	20	5	3	136001 0035		136004 0035	
M 4	0.7	20	5	3	136001 0040		136004 0040	
M 4.5	0.75	20	7	4	136001 0045		136004 0045	
M 5	0.8	20	7	4	136001 0050		136004 0050	
M 6	1	20	7	4	136001 0060		136004 0060	
M 7	1	25	9	4	136001 0070		136004 0070	
M 8	1.25	25	9	4	136001 0080		136004 0080	
M 9	1.25	25	9	4	136001 0090		136004 0090	
M 10	1.5	30	11	4	136001 0100		136004 0100	
M 11	1.5	30	11	4	136001 0110		136004 0110	
M 12	1.75	38	14	4	136001 0120		136004 0120	
M 14	2	38	14	4	136001 0140		136004 0140	
M 16	2	45	18	4	136001 0160		136004 0160	
M 18	2.5	45	18	5	136001 0180		136004 0180	
M 20	2.5	45	18	5	136001 0200		136004 0200	
M 22	2.5	55	22	5	136001 0220		136004 0220	
M 24	3	55	22	5	136001 0240		136004 0240	
M 27	3	65	25	5	136001 0270		136004 0270	
M 30	3.5	65	25	6	136001 0300		136004 0300	
M 33	3.5	65	25	6	136001 0330		136004 0330	
M 36	4	65	25	7	136001 0360		136004 0360	
					1126		1158	





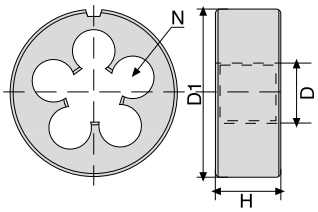
ATORN SARA® Left-hand threading die

M-LH | 60° | HSS | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For ISO left-hand metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

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





D mm	Pitch mm	External Ø mm	Height mm	N	ATORN art.no.	€	SARA® art.no.	€
M 3-LH	0.5	20	5	4	136010 0030		136014 0030	
M 4-LH	0.7	20	5	4	136010 0040		136014 0040	
M 5-LH	0.8	20	7	4	136010 0050		136014 0050	
M 6-LH	1	20	7	4	136010 0060		136014 0060	
M 8-LH	1.25	25	9	4	136010 0080		136014 0080	
M 10-LH	1.5	30	11	4	136010 0100		136014 0100	
M 12-LH	1.75	38	14	4	136010 0120		136014 0120	
M 14-LH	2	38	14	4	136010 0140		136014 0140	
M 16-LH	2	45	18	4	136010 0160		136014 0160	
M 20-LH	2.5	45	18	5	136010 0200		136014 0200	
					1126		1158	

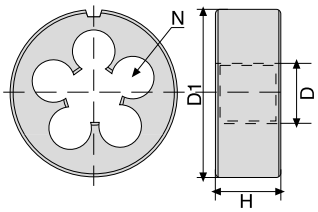
ATORN SARA® Threading dies

M | 60° | HSS-E | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For DIN 13 metric ISO thread**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance field 6 g
- **Cutting material HSS-E** (136005.... lapped and nitrided)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	136005....		●	●	●	●				●	●	●		●					
	136045....	●	●	○	●	○							○		○				





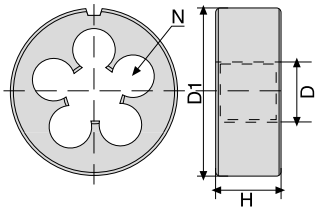
D mm	Pitch mm	External Ø mm	Height mm	N	ATORN art.no.	€	SARA® art.no.	€
M 2	0.4	16	5	4	136005 0020		136045 0020	
M 3	0.5	20	5	4	136005 0030		136045 0030	
M 4	0.7	20	5	4	136005 0040		136045 0040	
M 5	0.8	20	7	4	136005 0050		136045 0050	
M 6	1	20	7	4	136005 0060		136045 0060	
M 8	1.25	25	9	5	136005 0080		136045 0080	
M 10	1.5	30	11	5	136005 0100		136045 0100	
M 12	1.75	38	14	5	136005 0120		136045 0120	
M 14	2	38	14	5	136005 0140		136045 0140	
M 16	2	45	18	5	136005 0160		136045 0160	
M 18	2.5	45	18	5	136005 0180		136045 0180	
M 20	2.5	45	18	5	136005 0200		136045 0200	
M 24	3	55	22	6	136005 0240		136045 0240	
					1126		1158	

SARA® Threading die in one size

M | 60° | HSS-E | Werks-norm | DIN 13 6g | Vap. | Vc/fz | 403

- **Threading dies 25 x 9 mm**
- **For DIN 13 ISO metric thread**
- Two-sided spiral point for good chip removal
- Larger chamfer diameter, chamfering of the bolt not necessary
- Thread lapped for smoother, burr-free cutting edges
- **Cutting material: HSS-E, vapour-treated**
- Increased surface hardness (nitriding process)
- Particularly suitable for mechanical applications due to the one-size-fits-all design

Suitable for threading die holder 25 x 9 mm



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

D mm	Pitch mm	D1 mm	Height mm	N	art.no.	€
M 3	0.5	25	9	3	136105 0030	
M 4	0.7	25	9	3	136105 0040	
M 5	0.8	25	9	4	136105 0050	
M 6	1.0	25	9	4	136105 0060	
M 8	1.25	25	9	4	136105 0080	
M 10	1.5	25	9	5	136105 0100	
M 12	1.75	25	9	5	136105 0120	
					1158	





Sets

Contents	art.no.	€
Threading dies M 3 - 4 - 5 - 6 - 8 - 10 - 12 (1 of each)	136105 0312	
	1158	

SARA® Threading die set

M | 60° | HSS | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- Tolerance zone 6g
- **Cutting material: HSS**
- In a steel case

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

Contents	art.no.	€
HSS, 1 threading die each M 3 | M 4 | M 5 | M 6 | M 8 | M 10 | M 12, incl. threading die holder	139120 0002	
	1158	



139120 0002

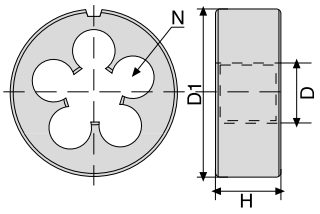
ATORN SARA® Threading dies

MF | 60° | HSS | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g, M2 x 0.25 = 6h, without spiral point
- **Cutting material: HSS**
- * Without spiral point

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	136015....	●												●					
	136016....	●	○		○	○							○		○				





D mm	Pitch mm	External Ø mm	Height mm	N	ATORN art.no.	€	SARA® art.no.	€
M 2*	0.25	16	5	4	136015 0001			
M 3	0.35	20	5	4	136015 0006		136016 0006	
M 4	0.35	20	5	4	136015 0008		136016 0008	
M 5	0.5	20	5	4	136015 0010		136016 0010	
M 6	0.5	20	5	4	136015 0011		136016 0011	
M 6	0.75	20	7	4	136015 0012		136016 0012	
M 7	0.75	25	9	4	136015 0013		136016 0013	
M 8	0.5	25	9	5	136015 0014		136016 0014	
M 8	0.75	25	9	4	136015 0015		136016 0015	
M 8	1	25	9	4	136015 0016		136016 0016	
M 9	1	25	9	5	136015 0018		136016 0018	
M 10	0.75	30	11	5	136015 0020		136016 0020	
M 10	1	30	11	5	136015 0021		136016 0021	
M 10	1.25	30	11	4	136015 0022		136016 0022	
M 11	1	30	11	5	136015 0023		136016 0023	
M 12	1	38	10	5	136015 0025		136016 0025	
M 12	1.25	38	10	4	136015 0026		136016 0026	
M 12	1.5	38	10	4	136015 0027		136016 0027	
M 14	1	38	10	5	136015 0031		136016 0031	
M 14	1.25	38	10	5	136015 0032		136016 0032	
M 14	1.5	38	10	5	136015 0033		136016 0033	
M 15	1	38	10	5	136015 0034		136016 0034	
M 16	1	45	14	5	136015 0036		136016 0036	
M 16	1.5	45	14	5	136015 0037		136016 0037	
M 18	1	45	14	5	136015 0038		136016 0038	
M 18	1.5	45	14	5	136015 0039		136016 0039	
					1126		1158	

D mm	Pitch mm	External Ø mm	Height mm	N	ATORN art.no.	€	SARA® art.no.	€
M 20	1	45	14	6	136015 0041		136016 0041	
M 20	1.5	45	14	6	136015 0042		136016 0042	
M 20	2	45	14	6	136015 0043		136016 0043	
M 22	1	55	16	6	136015 0044		136016 0044	
M 22	1.5	55	16	6	136015 0045		136016 0045	
M 22	2	55	16	5	136015 0046		136016 0046	
M 24	1	55	16	6	136015 0047		136016 0047	
M 24	1.5	55	16	6	136015 0048		136016 0048	
M 24	2	55	16	6	136015 0049		136016 0049	
M 25	1.5	55	16	6	136015 0051		136016 0051	
M 26	1.5	55	16	6	136015 0052		136016 0052	
M 27	2	65	18	6	136015 0055		136016 0055	
M 28	1.5	65	18	6	136015 0057		136016 0057	
M 30	1.5	65	18	6	136015 0060		136016 0060	
M 30	2	65	18	6	136015 0061		136016 0061	
M 32	1.5	65	18	7	136015 0062		136016 0062	
M 33	2	65	18	7	136015 0065		136016 0065	
M 34	1.5	65	18	7	136015 0066		136016 0066	
M 35	1.5	65	18	8	136015 0067		136016 0067	
M 36	1.5	65	18	8	136015 0068		136016 0068	
M 36	2	65	18	8	136015 0069		136016 0069	
M 36	3	65	25	7	136015 0070		136016 0070	
M 40	1.5	75	20	8	136015 0075			
M 42	1.5	75	20	8	136015 0078			
M 45	1.5	90	22	7	136015 0082			
M 50	1.5	90	22	8	136015 0088			
					1126		1158	

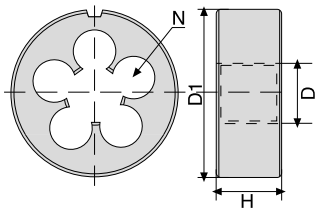
ATORN Left-hand threading die

MF | 60° | HSS | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For left-hand ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

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





D	Pitch mm	External Ø mm	Height mm	N	art.no.	€
MF8	0.75	25	9	4	136025 0009	
MF8	1	25	9	4	136025 0010	
MF10	1	30	11	5	136025 0015	
MF12	1.5	38	10	4	136025 0019	
MF14	1.5	38	10	4	136025 0020	
MF16	1.5	45	14	4	136025 0022	
MF20	1.5	45	14	5	136025 0025	

1126

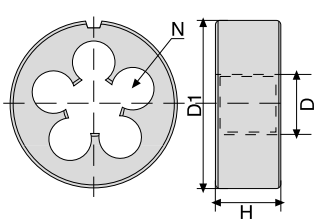
ATORN Threading dies

MF | 60° | HSS-E | DIN 22568 | DIN 13 6g | Vc/fz | 403

- **For metric ISO fine threads DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance field 6 g
- **Cutting material HSS-E** (lapped and nitrided)

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





D	Pitch mm	External Ø mm	Height mm	N	art.no.	€
MF5	0.5	20	5	4	136020 0010	
MF6	0.75	20	7	4	136020 0012	
MF8	0.75	25	9	4	136020 0015	
MF10	1	30	11	5	136020 0021	
MF12	1	38	10	5	136020 0025	
MF12	1.5	38	10	5	136020 0027	
MF14	1.5	38	10	5	136020 0033	
MF16	1.5	45	14	5	136020 0037	
MF18	1.5	45	14	5	136020 0039	
MF20	1.5	45	14	6	136020 0042	
MF22	1.5	55	16	6	136020 0045	
MF24	1.5	55	16	6	136020 0048	
MF30	1.5	65	18	6	136020 0060	

1126

ATORN Threading dies

BSW | G | 55° | HSS | DIN 22568 | DIN/EN 24231 | Vc/fz | 403

- **for BS 84 Whitworth threads or DIN/EN/ISO 228 part 1 Whitworth pipe threads**
- Closed, pre-slotted shape
- From 1/8'' with two-sided spiral point for clean and easy chip removal in the cutting direction
- **Cutting material: HSS**

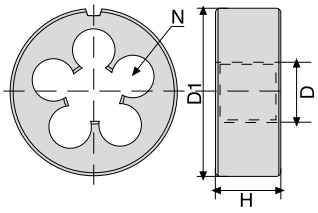
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	136035....	●											●						
	136040....	●												●					

BS 84 Whitworth thread, medium tolerance zone

D	Pitch	External Ø mm	Height mm	N	art.no.	€
BSW 1/8''	40	20	5	3	136035 0003	
BSW 5/32''	32	20	7	4	136035 0004	
BSW 7/32''	24	20	7	4	136035 0006	
BSW 1/4''	20	20	7	4	136035 0007	
BSW 5/16''	18	25	9	4	136035 0008	
BSW 3/8''	16	30	11	4	136035 0009	
BSW 1/2''	12	38	14	4	136035 0011	
BSW 5/8''	11	45	18	4	136035 0013	

1126





Whitworth pipe thread, DIN/EN/ISO 228 part 1 in tolerance zone A

D	Pitch	External Ø mm	Height mm	N	art.no.	€
G 1/8"	28	30	11	5	136040 0001	
G 1/4"	19	38	10	5	136040 0002	
G 3/8"	19	45	14	5	136040 0003	
G 1/2"	14	45	14	6	136040 0004	
G 3/4"	14	55	16	6	136040 0006	
G 1"	11	65	18	7	136040 0008	
G 1 1/2"	11	90	22	8	136040 0012	
G 2"	11	105	22	9	136040 0014	

1126

ATORN Threading dies

UNF | 60° | HSS | DIN 22568 | Vc/fz | 403

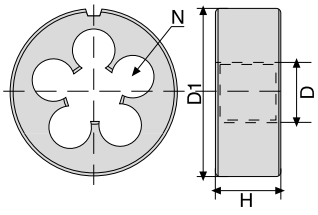
- **For UNF (American unified national standard fine-pitch) threads**
- Closed, pre-slotted shape
- From no. 5 with two-sided spiral point for clean and easy chip removal in the cutting direction
- **Cutting material: HSS**
- Note: For cutting true-to-gauge threads in tolerance zone 2A
- * Without spiral point

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

D	Pitch	External Ø mm	Height mm	N	art.no.	€
UNF No. 4*	48	16	5	4	136050 0005	
UNF No. 8	36	20	7	4	136050 0008	
UNF No. 10	32	20	7	4	136050 0009	
UNF No. 12	28	20	7	4	136050 0010	
UNF 1/4"	28	20	7	4	136050 0011	
UNF 5/16"	24	25	9	4	136050 0012	
UNF 3/8"	24	30	11	4	136050 0013	
UNF 7/16"	20	30	11	5	136050 0014	
UNF 1/2"	20	38	10	5	136050 0015	
UNF 9/16"	18	38	10	5	136050 0016	
UNF 5/8"	18	45	14	5	136050 0017	

1126





SARA® Thread cutting tool set, M3 - M12

M | 60° | HSS | DIN 352 | 403

- Contents: 1 set of DIN 352 hand taps for each size, M3-4-5-6-8-10-12, 3 pcs per set
  1 threading die DIN 223/EN 22568, M3-4-5-6-8-10-12 in each size:
  1 adjustable tap wrench in sizes 1 + 2
  1 threading die holder (DIN 225) in each size: 20x5, 20x7, 25x9, 30x11, 38x14
  1 of each core drill (roll-milled) Ø 2.5 | 3.3 | 4.2 | 5.0 | 6.8 | 8.5 | 10.2 mm
  Thread pitch gauge and screw extractor
- **Cutting material: HSS**

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



Contents	art.no.	€
Thread cutting tools M3 - M12	137120 0012	
	1158	

SARA® Thread cutting tool set, M3 - M20

M | 60° | HSS | DIN 352 | 403

- Contents: 1 set of DIN 352 hand taps for each size, M3-4-5-6-8-10-12-14-16-18-20, 3 pcs per set
  1 threading die DIN 223/EN 22568, M3-4-5-6-8-10-12-14-16-18-20 in each size:
  1 adjustable tap wrench in sizes 1 + 3
  1 threading die holder in each size: 20x5, 20x7, 25x9, 30x11, 38x14, 45x18
  Thread pitch gauge + screwdriver
- **Cutting material: HSS**

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



Contents	art.no.	€
Thread cutting tools M3 - M20	137130 0020	
	1158	

SARA® Single operation tap set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H | B 3,5-5 | 403

- **For metric threads, M3 - M12**
- DIN 338 tapping hole twist drill bit
- Tap wrench
- In a steel case
- **Cutting material: HSS**

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



Contents	art.no.	€
Single operation tap DIN 352: M 3-4-5-6-8-10-12 (1 of each), 1 tap wrench DIN 1814 size 1 1/2 adjustable, Twist drill bit DIN 338 roll-milled: 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm (1 of each)	150140 0063	
	1133	



SARA® Machine tap extensions



- **Threading in workpieces with extremely deep female threads or for threading directly along cast walls, edges, interfering edges of equipment etc.**
- The front end of the extension is designed as a collet. Tightening a knurled clamping nut will clamp the collet and/or the tap. Torque is transferred via the square end. The rear end of the extension is DIN-compliant so that the tap extensions can be clamped in quick-change inserts just like taps or other thread-cutting equipment.
- **Special dimensions available on request**
- For use on CNC machines and traditional threading attachments
- No cost-intensive taps with special lengths
- No spare parts required
- The extension and standard tap combination is precise and easy to handle



Standard version

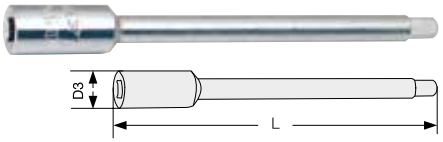
Straight shank

Type	D1 mm	Insert shank square mm	l4 mm	D3 mm	C mm	d4 mm	L4 mm	L mm	art.no.	€
TE1 / TE1IK	2.8	2.1	22	6	4.9	6.1	60	130	138002 0001	
TE1L	2.8	2.1	22	6	4.9	6.1	70	230	138002 0002	
TE2 / TE2IK	3.5	2.7	23	6	4.9	7.5	60	130	138002 0003	
TE2L	3.5	2.7	23	6	4.9	7.5	70	230	138002 0004	
TE3 / TE3IK	4.5	3.4	23	6	4.9	8.4	60	130	138002 0005	
TE3L	4.5	3.4	23	6	4.9	8.4	70	230	138002 0006	
TE4 / TE4IK	6	4.9	26	7	5.5	12.1	60	130	138002 0007	
TE4L / TE4LIK	6	4.9	26	8	6.2	12.1	70	230	138002 0008	
TE5 / TE5IK	7	5.5	26	8	6.2	12.1	60	130	138002 0009	
TE5L / TE5LIK	7	5.5	26	8	6.2	12.1	70	230	138002 0010	
TE6 / TE6IK	8	6.2	30	8	6.2	13	60	130	138002 0011	
TE6L / TE6LIK	8	6.2	30	8	6.2	13	80	230	138002 0012	
TE7 / TE7IK	9	7	31	10	8	15	60	130	138002 0013	
TE7L / TE7LIK	9	7	31	10	8	15	80	230	138002 0014	
TE8 / TE8IK	10	8	33	10	8	15	60	130	138002 0015	
TE8L / TE8LIK	10	8	33	10	8	15	80	230	138002 0016	
TE9 / TE9IK	11	9	36	12	9	18	90	130	138002 0017	
TE9L / TE9LIK	11	9	36	12	9	18	90	230	138002 0018	
TE10 / TE10IK	12	9	36	12	9	18	90	130	138002 0019	
TE10L / TE10LIK	12	9	36	12	9	18	90	230	138002 0020	
TE11 / TE11IK	14	11	40	14	11	22	90	200	138002 0021	
TE11L / TE11LIK	14	11	40	14	11	22	90	330	138002 0022	
TE12 / TE12IK	16	12	41	16	12	22	90	200	138002 0023	
TE12L / TE12LIK	16	12	41	16	12	22	90	330	138002 0024	
TE13 / TE13IK	18	14.5	43	18	14.5	26	100	200	138002 0025	
TE13L / TE13LIK	18	14.5	43	18	14.5	26	100	330	138002 0026	
TE14 / TE14IK	20	16	52	20	16	28	100	200	138002 0027	
TE14L / TE14LIK	20	16	52	20	16	28	100	330	138002 0028	
TE15 / TE15IK	22	18	55	22	18	30	100	200	138002 0029	
TE15L / TE15LIK	22	18	55	22	18	30	100	330	138002 0030	
TE16 / TE16IK	25	20	56	25	20	35	100	200	138002 0031	
TE16L / TE16LIK	25	20	56	25	20	35	100	330	138002 0032	
TE17 / TE17IK	28	22	58	28	22	40	100	200	138002 0033	
TE17L / TE17LIK	28	22	58	28	22	40	100	330	138002 0034	
TE18 / TE18IK	32	24	60	32	24	44	100	200	138002 0035	
TE18L / TE18LIK	32	24	60	32	24	44	100	330	138002 0036	

1166

SARA® Hand tap extension

- For extending taps and other tools with square end in accordance with DIN 10
- DIN 377
- Hardened and ground



Insert shank square mm	Suitable for thread	L mm	D3 mm	art.no.	€
2.1	M 1 - 2.6	60	6	138015 0021	
2.4		70	6	138015 0024	
2.7	M 3	80	7	138015 0027	
3.0	M 3.5	90	7	138015 0030	
3.4	M 4	95	8	138015 0034	
3.8		100	9	138015 0038	
4.3		105	10	138015 0043	
4.9	M 4.5 - 8	110	11	138015 0049	
5.5	M 9 - 10	115	12	138015 0055	
6.2	M 11	120	14	138015 0062	
				1158	

Insert shank square mm	Suitable for thread	L mm	D3 mm	art.no.	€
7.0	M 12	125	15	138015 0070	
8.0		125	17	138015 0080	
9.0	M 13 - 16	130	19	138015 0090	
10.0		140	21	138015 0100	
11.0	M 18	150	23	138015 0110	
12.0	M 20	155	25	138015 0120	
14.5	M 22 - 24	175	29	138015 0145	
16.0	M 27	180	30	138015 0160	
18.0	M 30	200	33	138015 0180	
20.0	M 33	220	33	138015 0200	
				1158	

ATORN Tool holder with ratchet

- Two-jaw chuck with square holding fixture
- **All-steel design**, chrome-plated
- Especially suitable for thread cutting in areas that are difficult to access
- Long version (0250 and 0300)
- 138110 .... with ratchet and centering eye for perpendicular cutting



with centring lug

L mm	Insert shank square mm	Suitable for thread	art.no.	€
85	2.0 - 5.0	M 3 - M 10	138110 0085	
250	2.0 - 5.0	M 3 - M 10	138110 0250	
100	4.5 - 8.0	M 5 - M 12	138110 0100	
300	4.5 - 8.0	M 5 - M 12	138110 0300	
			1126	

ATORN Tap wrench, adjustable

DIN 1814

- Adjustable tap wrench in accordance with DIN 1814
- **Tool body made of zinc die-casting alloy with increased tensile strength**
- **Clamping jaws made of tool steel: precision-eroded and hardened**
- Up to 120 % higher torque compared to conventional holding tools
- Handles refined by burnishing-nitriding process, can be unscrewed on one side
- Handle with working hole to increase leverage
- Guide slot for stabilising the jaw
- Holding of tools with square

Reinforced version



Model	Insert shank square mm	L mm	art.no.	€
0	2.0 - 5.0	125	138120 0001	
1	2.0 - 6.0	180	138120 0002	
1 1/2	2.5 - 8.0	180	138120 0003	
2	4.0 -9.0	280	138120 0004	
			1126	

Model	Insert shank square mm	L mm	art.no.	€
3	4.9 - 12.0	375	138120 0005	
4	5.5 - 16.0	500	138120 0006	
5	7.0 - 20.0	750	138120 0007	
6	9.0 - 25.0	1000	138120 0008	
			1126	

ATORN All-steel tap wrench with center eye

DIN 1814

- Adjustable tap wrench in accordance with DIN 1814
- **High-strength tool body made of stainless steel with centring lug for perpendicular cutting**
- **Clamping jaws made of tool steel: precision-eroded and hardened**
- Handles refined by burnishing-nitriding process, can be unscrewed on one side
- Working hole to hold spindle toggle for maximum traction
- Holding of tools with square

With centring lug for perpendicular cutting



Model	Insert shank square mm	L mm	art.no.	€
0	2.0 - 5.0	125	138121 0001	
1	2.0 - 6.0	180	138121 0002	
1 1/2	2.5 - 8.0	180	138121 0003	
2	4.0 - 9.0	280	138121 0004	
3	4.9 - 12.0	375	138121 0005	
			1126	

Model	Insert shank square mm	L mm	art.no.	€
4	5.5 - 16.0	500	138121 0006	
5	7.0 - 20.0	750	138121 0007	
6	9.0 - 25.0	1000	138121 0008	
7	16.0 - 32.0	1250	138121 0009	
8	16.0 - 40.0	1250	138121 0010	
			1126	

ATORN Threading die holder

DIN 22568

- For threading dies in accordance with DIN EN 22568 (DIN 225)
- **Tool body made of fine die-cast zinc in accordance with DIN 1743**
- Four attachment screws for small diameters, five screws for larger diameters
- Burnished attachment screws with a 90° pointed tip, for centring in the threading die
- Handles refined by burnishing-nitriding process with fine knurling for increased grip
- **Revised support structure for increased load capacity**

Reinforced version



D mm	Height mm	Suitable for min./max. diameter	L mm	art.no.	€
16	5	M 1 - 2.6	160	138130 0001	
20	5	M 3 - 4	195	138130 0002	
20	7	M 4.5 - 6	195	138130 0003	
25	9	M 7 - 9	215	138130 0004	
30	11	M 10 - 11	260	138130 0005	
38	10	MF 12 - 15	315	138130 0016	
38	14	M 12 - 14	315	138130 0006	
				1126	

D mm	Height mm	Suitable for min./max. diameter	L mm	art.no.	€
45	14	MF 16 - 20	445	138130 0014	
45	18	M 16 - 20	445	138130 0007	
55	16	MF 22 - 26	495	138130 0012	
55	22	M 22 - 24	495	138130 0008	
65	18	MF 27 - 36	630	138130 0017	
65	25	M 27 - 36	630	138130 0009	
				1126	

Overview of countersink and deburring tools

	Countersink											
												
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	BECK	ATORN	ATORN	ATORN	SARA	SARA	BECK
Countersink angle	60°	60°	60°	60°	60°	60°	90°	90°	90°	90°	90°	90°
ISO application area	P M K S N	P M K S N	P M K N	P M K N	P	P M K S N	P M K S N	P M K S N	P M K S N	P M K N	P M K N	P M K S N
Diameter	6.3 - 25	6.3 - 25	6.3 - 25	6.3 - 25	25 - 63	6.3 - 25	6.3 - 40	6.3 - 40	6.3 - 31	6.3 - 31	6.3 - 31	4.3 - 31
Shank	Straight	3F-shank	Straight	Straight	MT	Straight	Straight	3F-shank	Straight	3F-shank	3F-shank	Straight
DIN	334C	334C	334C	334C	334D	WN	335C	335C	335C	335C	335C	335C
Number of cutting edges	3	3	3	3	3	3	3	3	3	3	3	3
Cutting material	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS
Coating	TiAlN	TiAlN	Blank	TiN		ZrN	TiAlN	TiAlN	TiAlN	Blank	TiN	ZrN
Type/info	Spiralled	Spiralled				EUC-Speed	Spiralled	Spiralled	Spiralled	ADVANCED	ADVANCED	EUC-Speed
Item number	150275....	150276....	150130....	150131....	150135....	150174....	150272....	150273....	150274....	150270....	150271....	150170....
Catalogue page	**310**	**310**	**310**	**310**	**311**	**311**	**312**	**312**	**312**	**313**	**313**	**315**

	Countersink											
												
Brand	BECK	BECK	BECK	ATORN	ATORN	SARA	SARA	ATORN	SARA	ATORN	SARA	ATORN
Countersink angle	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°
ISO application area	P M K S N	P M K S N H	P M K S N	P M K S	P M K N	P M K N	P M K N	P M K N	P M K N	P M K N	P M K N H	P M K N
Diameter	4.3 - 31	6.3 - 31	6.3 - 31	10.4 - 31	4.3 - 40	4.3 - 40	4.3 - 31	5.3 - 31	5.3 - 31	6.3 - 31	4.3 - 25	20.5 - 80
Shank	3F-shank	Straight	Str., long	Straight	Straight	Straight	Straight	Straight	Straight	Straight	Straight	MT
DIN	335C	335C	335C	WN	335C	335C	335C	335C	335C	WN	WN	335D
Number of cutting edges	3	3	3	4/5	3	3	3	3	3	3	3	3
Cutting material	HSS	Solid carbide	HSS	HSS-E	HSS	HSS	HSS	HSS-E	HSS-E	HSS	Solid carbide	HSS
Coating	ZrN	ZrN	ZrN		Blank/TiN/TiAlN		TiN				TiAlN	
Type/info	EUC-Speed	EUC-Speed	EUC-Speed	ENORMplus						(Extra-)long		
Item number	150172....	150171....	150173....	150163....	150101....	150201....	150205....	150111....	150211....	150104....	150166....	150115....
Catalogue page	**317**	**317**	**317**	**315**	**314**	**314**	**314**	**316**	**316**	**315**	**318**	**318**

	Countersink			Flat countersinks		Combi countersinks	
							
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	GRAMLING Tools	NOGA
Countersink angle	90°	90°	90°	180°	180°	180°	45°
ISO application area	P M K N	P M K N	P M K N	P M K N	P M K S N	P M K N	P M K N
Diameter	5 - 50	10 - 35	10 - 35	6 - 20	6 - 20	7 - 66	3 - 25
Shank	Straight	Straight	Straight	Straight	Straight	Str. / MT	Straight
DIN	WN	WN	WN	373	373	WN	WN
Number of cutting edges	1	1	1	3	3	4	1
Cutting material	HSS-E	HSS-E	HSS-E	HSS	HSS-E	HSS	HSS
Coating		Blank	TiN				Blank
Type/info						Model 0, 1, 2	
Item number	150155....	150145....	150146....	150501....	150506....	151010....	155002
Catalogue page	**319**	**319**	**319**	**321**	**321**	**322**	**326**

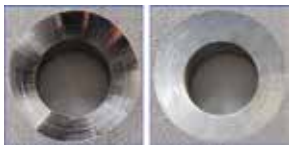
ATORN Taper and deburring countersinks, spiralled

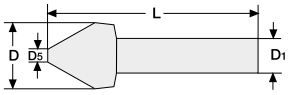
HSS-E | 60° | Z 3 | TiAlN | Vc/fz | 407

- Universal geometry with 3 spiralled cutting edges and unequal pitch
- **Cutting material HSSE, TiAlN-coated**
- **Low vibration and smooth running**
- Clearly reduced feed and radial forces
- **Round and chatter-free countersinks**
- Wide range of applications
- **Versions:**
  150275 - with straight shank
  150276 - with 3 clamping surfaces on the shank to prevent slipping in the drill chuck (optimal for hand drills)

Spiralised cutting edges







material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	○	○		○	○	○				
		40	20	15	18	15	10	25	25	12	9		50	35	90				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Single

● Feed f steel < 1000 N/mm² mm/rev

D mm	D5 mm	D1 mm	L mm	Z	Straight shank art.no.	€	3-face shank art.no.	€
6.3	1.6	5	45	3	150275 0063		150276 0063	
8	2	6	50	3	150275 0080		150276 0080	
10	2.5	6	50	3	150275 0100		150276 0100	
12.5	3.2	8	56	3	150275 0125		150276 0125	
16	4	10	63	3	150275 0160		150276 0160	
20	5	10	67	3	150275 0200		150276 0200	
25	6.3	10	71	3	150275 0250		150276 0250	
					1165		1165	



Straight shank



3-face shank



1502750001

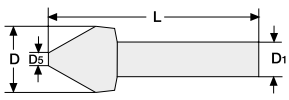
Sets, 6-pcs.

Contents	Straight shank art.no.	€	3-face shank art.no.	€
6.3 | 8.0 | 10.0 | 12.5 | 16.0 | 20.0 mm	150275 0001		150276 0001	
	1165		1165	

ATORN Taper and deburring countersinks

HSS | 60° | Z 3 | TiN | Vc/fz | 407

- DIN 334C
- 3 cutting edges
- **Cutting material: HSS; HSS, TiN-coated**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○		○	○				●	●	●				
		30	20	10	8	8		11	15				70	40	60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f steel < 1000 N/mm² mm/rev

D mm	D5 mm	D1 mm	L mm	Z	art.no.	€	TiN art.no.	€
6.3	1.6	5	45	3	150130 0063		150131 0063	
8	2	6	50	3	150130 0080		150131 0080	
10	2.5	6	50	3	150130 0100		150131 0100	
12.5	3.2	8	56	3	150130 0125		150131 0125	
16	4	10	63	3	150130 0160		150131 0160	
20	5	10	67	3	150130 0200		150131 0200	
25	6.3	10	71	3	150130 0250		150131 0250	
					1129		1129	





ATORN Taper and deburring countersinks with MT shank

HSS | 60° | Z 3 | Vc/fz | 407

- DIN 334D
- 3 cutting edges
- **Cutting material: HSS**

material

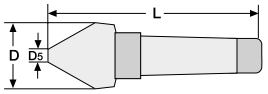
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		○	●				●	●	●				
	30	20	10	10	8		11	15				70	40	60				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	Shank	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
25	6.3	MK 2	112	3	0.16	150135 0250	
31.5	10	MK 2	118	3	0.16	150135 0315	
40	12.5	MK 3	150	3	0.16	150135 0400	
50	16	MK 3	160	3	0.20	150135 0500	
63	20	MK 4	190	3	0.20	150135 0630	

1129





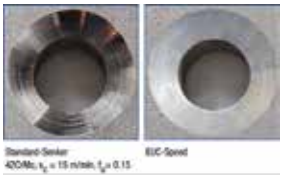
BECK MAPAL GROUP Taper and deburring countersink EUC-Speed 60°

HSS | Werks-norm | 60° | ZrN | 407

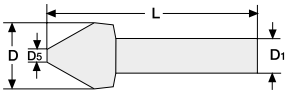
- Geometry with very unequal pitch (EU pitch)
- **High degree of smoothness**
- Prepared cutting edges
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- Special coating



Very unequal pitch



Optimised countersink



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		●	●	○			○		○				
	36	30	12	10	10		14	12	10			42		42				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	**With straight shank** art.no.	€
6.3	1.6	5	45	0.08	150174 0063	
8	2	6	50	0.10	150174 0080	
10	2.5	6	50	0.10	150174 0100	
12.5	3.2	8	56	0.12	150174 0125	
16	4	10	63	0.14	150174 0160	
20	5	10	67	0.18	150174 0200	
25	6.3	10	71	0.18	150174 0250	

1165



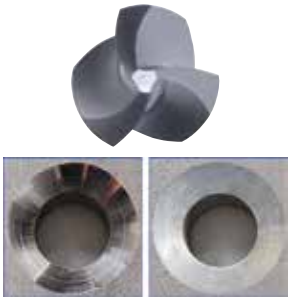
Straight shank

ATORN Taper and deburring countersinks, spiralled

HSS-E | Werks-norm | 90° | Z 3 | TiAlN | Vc/fz | 407

Spiralised cutting edges

- Universal geometry with 3 spiralled cutting edges and unequal pitch
- **Cutting material HSSE, TiAlN-coated**
- **Low vibration and smooth running**
- Clearly reduced feed and radial forces
- **Round and chatter-free countersinks**
- Wide range of applications
- **Versions:**
  150272 - with straight shank
  150273 - with 3 clamping surfaces on the shank to prevent slipping in the drill chuck (optimal for hand drills)
  150274 - with extended shank to bridge interfering contours



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 40	● 20	● 15	● 18	● 15	○ 10	● 25	● 25	○ 12	○ 9		○ 50	○ 35	○ 90				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Single

●

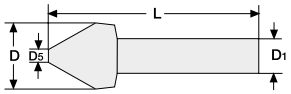
D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	Straight shank art.no.	€	3-face shank art.no.	€
6.3	1.5	5	45	3	0.06	150272 0063		150273 0063	
8	2	6	50	3	0.06	150272 0080		150273 0080	
8.3	2	6	50	3	0.09	150272 0083		150273 0083	
10	2.5	6	50	3	0.09	150272 0100		150273 0100	
10.4	2.5	6	50	3	0.09	150272 0104		150273 0104	
11.5	2.8	8	56	3	0.09	150272 0115		150273 0115	
12.4	2.8	8	56	3	0.12	150272 0124		150273 0124	
15	3.2	10	60	3	0.12	150272 0150		150273 0150	
16.5	3.2	10	60	3	0.16	150272 0165		150273 0165	
19	3.5	10	63	3	0.16	150272 0190		150273 0190	
20.5	3.5	10	63	3	0.16	150272 0205		150273 0205	
23	3.8	10	67	3	0.16	150272 0230		150273 0230	
25	3.8	10	67	3	0.16	150272 0250		150273 0250	
31	4.2	12	71	3	0.16	150272 0310		150273 0310	
40	10	12	75	3	0.16	150272 0400		150273 0400	
						1165		1165	



Straight shank



3-face shank



Sets

Contents	Straight shank art.no.	€	3-face shank art.no.	€
6.3 | 10.4 | 16.5 | 20.5 | 25.0 mm	150272 0002		150273 0002	
6.3 | 8.3 | 10.4 | 12.4 | 16.5 | 20.5 mm	150272 0001		150273 0001	
	1165		1165	



1502720001



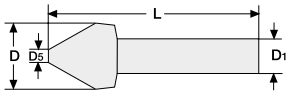
1502720002

Long version

●

D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.3	1.5	5	104	3	0.06	150274 0063	
8.3	2	6	105	3	0.09	150274 0083	
10.4	2.5	6	107	3	0.09	150274 0104	
12.4	2.8	8	108	3	0.12	150274 0124	
16.5	3.2	10	111	3	0.16	150274 0165	
20.5	3.5	10	114	3	0.16	150274 0205	
25	3.8	10	118	3	0.16	150274 0250	
31	4.2	12	140	3	0.16	150274 0310	
						1165	



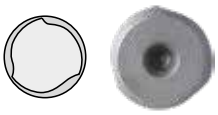


SARA® ADVANCED taper and deburring countersinks

HSS | DIN 335C | 90° | TiN | Vc/fz | 407

Patented shank and irregular pitch

- 3 cutting edges
- **HSS and HSS TiN cutting material**
- New cutting edge geometry prevents uneven wear of the cutting edges
- High degree of wear resistance and hot hardness for maximum service life
- High true running accuracy with considerably reduced force application
- **Patented shank to stop rotation of the countersink in the drill chuck with optimum torque transfer** (from ∅ 8.3 mm)



material

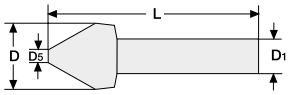
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 24	● 13	○ 7	○ 7	○ 8	○ 8	○ 11	○ 10				○ 60	○ 35	○ 33				
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

Single

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€
6.3	1.5	5	45	0.08	150270 0063		150271 0063	
8.3	2	6	50	0.10	150270 0083		150271 0083	
10.4	2.5	6	50	0.10	150270 0104		150271 0104	
12.4	2.8	8	56	0.12	150270 0124		150271 0124	
16.5	3.2	10	60	0.14	150270 0165		150271 0165	
20.5	3.5	10	63	0.18	150270 0205		150271 0205	
25	3.8	10	67	0.22	150270 0250		150271 0250	
31	4.2	12	71	0.22	150270 0310		150271 0310	
					1165		1165	









150271 1000

Sets

Contents	art.no.	€	TiN art.no.	€
6.3 mm | 8.3 mm | 10.4 mm | 12.4 mm | 16.5 mm | 20.5 mm	150270 1000		150271 1000	
6.3 mm | 10.4 mm | 16.5 mm | 20.5 mm | 25 mm	150270 2000		150271 2000	
	1165		1165	

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ATORN SARA® Taper and deburring countersinks

HSS | DIN 335C | Werks-norm | 90° | 90° | Z 3 | TiN | TiAlN | Vc/fz | 407

- 3 cutting edges
- Radially relief-ground
- **Cutting material: HSS, HSS TiN, HSS TiAlN**
- For countersinking and deburring
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

material

● very well suited
○ well suited

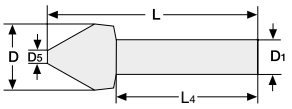
	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
ATORN	● 30	○ 20	○ 10	○ 8	○ 8	○ 8	○ 11	○ 15				○ 70	○ 40	○ 60				
SARA	● 24	● 13	○ 7	○ 7	○ 8	○ 8	○ 10	○ 10				○ 60	○ 35	○ 33				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.









Individual

D mm	D5 mm	D1 mm	L mm	L4 mm	Z	● Feed f steel < 1000 N/mm² mm/rev	ATORN art.no.	€	SARA® art.no.	€	ATORN TiN art.no.	€	SARA® TiN art.no.	€	ATORN art.no.	€
4.3	1.3	4	40	28	3	0.04	150101 0043		150201 0043		150105 0043		150205 0043		150136 0043	
5.0	1.5	4	40	28	3	0.04	150101 0050		150201 0050		150105 0050		150205 0050		150136 0050	
5.3	1.5	4	40	28	3	0.06	150101 0053		150201 0053		150105 0053		150205 0053		150136 0053	
5.8	1.5	5	45	28	3	0.06	150101 0058		150201 0058		150105 0058		150205 0058		150136 0058	
6.0	1.5	5	45	28	3	0.06	150101 0060		150201 0060		150105 0060		150205 0060		150136 0060	
6.3	1.5	5	45	28	3	0.06	150101 0063		150201 0063		150105 0063		150205 0063		150136 0063	
7.0	1.8	6	50	36	3	0.06	150101 0070		150201 0070		150105 0070		150205 0070		150136 0070	
7.3	1.8	6	50	36	3	0.06	150101 0073		150201 0073		150105 0073		150205 0073		150136 0073	
8.0	2	6	50	36	3	0.06	150101 0080		150201 0080		150105 0080		150205 0080		150136 0080	
8.3	2	6	50	36	3	0.09	150101 0083		150201 0083		150105 0083		150205 0083		150136 0083	
9.4	2.2	6	50	36	3	0.09	150101 0094		150201 0094		150105 0094		150205 0094		150136 0094	
10.0	2.5	6	50	36	3	0.09	150101 0100		150201 0100		150105 0100		150205 0100		150136 0100	
10.4	2.5	6	50	36	3	0.09	150101 0104		150201 0104		150105 0104		150205 0104		150136 0104	
11.5	2.8	8	56	36	3	0.09	150101 0115		150201 0115		150105 0115		150205 0115		150136 0115	
12.4	2.8	8	56	36	3	0.12	150101 0124		150201 0124		150105 0124		150205 0124		150136 0124	
13.4	2.9	8	56	36	3	0.12	150101 0134		150201 0134		150105 0134		150205 0134		150136 0134	
15.0	3.2	10	60	40	3	0.12	150101 0150		150201 0150		150105 0150		150205 0150		150136 0150	
16.5	3.2	10	60	40	3	0.16	150101 0165		150201 0165		150105 0165		150205 0165		150136 0165	
19.0	3.5	10	63	40	3	0.16	150101 0190		150201 0190		150105 0190		150205 0190		150136 0190	
20.5	3.5	10	63	40	3	0.16	150101 0205		150201 0205		150105 0205		150205 0205		150136 0205	
23.0	3.8	10	67	40	3	0.16	150101 0230		150201 0230		150105 0230		150205 0230		150136 0230	
25.0	3.8	10	67	40	3	0.16	150101 0250		150201 0250		150105 0250		150205 0250		150136 0250	
28.0	4	12	71	40	3	0.16	150101 0280		150201 0280						150136 0280	
30.0	4.2	12	71	40	3	0.16	150101 0300								150136 0300	
31.0	4.2	12	71	45	3	0.16	150101 0310		150201 0310		150105 0310		150205 0310		150136 0310	
40.0	10	15	75	40	3	0.16	150101 0400		150201 0400						150136 0400	
							1129		1168		1129		1168			


150110 0001


150112 0001


150112 0002


150114 0001

Sets

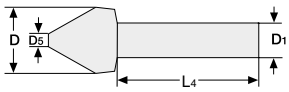
Contents	Z	ATORN art.no.	€	SARA® art.no.	€	ATORN TiN art.no.	€	SARA® TiN art.no.	€	ATORN TiAlN art.no.	€
1 piece each 6.3 | 8.3 | 10.4 | 12.4 | 16.5 | 20.5 mm	3	150110 0001		150201 0001		150112 0001		150205 0001		150114 0001	
1 piece each 10.4 | 16.5 | 20.5 | 25.0 mm	3	150110 0002				150112 0002					
1 piece each 8.0 | 10.0 | 11.5 | 15.0 mm	3	150110 0003				150112 0003					
		1129		1168		1129		1168		1129	

Extra-long shank, similar to DIN 335C

- 40, 50 and 63 mm diameters available on request


150102 0063

D mm	D5 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	ATORN L4 = 100 mm art.no.	€	ATORN L4 = 150 mm art.no.	€
6.3	1.5	5	3	0.06	150104 0063		150102 0063	
8.3	2	6	3	0.09	150104 0083		150102 0083	
10.4	2.5	6	3	0.09	150104 0104		150102 0104	
12.4	2.8	8	3	0.12	150104 0124		150102 0124	
15.0	3.2	10	3	0.12	150104 0150		150102 0150	
16.5	3.2	10	3	0.16	150104 0165		150102 0165	
20.5	3.5	10	3	0.16	150104 0205		150102 0205	
25.0	3.8	10	3	0.16	150104 0250		150102 0250	
31.0	4.2	12	3	0.16	150104 0310		150102 0310	
					1129		1129	



Sets, extra-long shank, similar to DIN 335C

Contents	Z	ATORN L4 = 100 mm art.no.	€	ATORN L4 = 150 mm art.no.	€
1 piece each 6.3 | 8.3 | 10.4 | 12.4 | 16.5 | 20.5 mm	3	150116 0001		150113 0001	
		1129		1129	



ATORN ENORMplus deburring countersink

HSS-E | Werks-norm | 90° | Z 4 | Z 5 | Vc/fz | 407

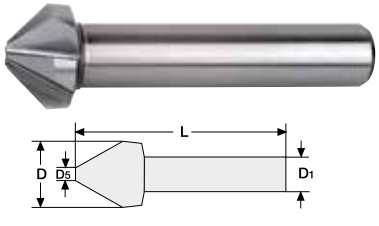
- **Cutting material: HSS-E**
- Application: especially for materials that are difficult to machine, such as Hardox 400, Creusabro, Inconel, Nimonic, Hastelloy, Monel, titanium and titanium alloys

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	●	●			○	●	●	●	○	○	○				
	35	25	15	12	10			20	12	12	12	70	40	60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 mm	L mm	D5 mm	Feed f steel < 1400 N/mm² mm/rev	Z	art.no.	€
10.4	6	50	4	0.03	4	150163 1040	
12.4	8	56	4	0.03	5	150163 1240	
16.5	10	60	4.5	0.04	5	150163 1650	
20.5	10	63	5	0.05	5	150163 2050	
25	10	67	5.5	0.06	5	150163 2500	
31	12	71	6	0.06	5	150163 3100	
						1129	



ATORN SARA® Taper and deburring countersinks

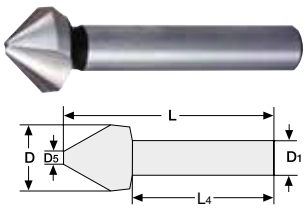
HSS-E | DIN 335C | Werks-norm | 90° | Z 3 | Vc/fz | 407

- 3 cutting edges
- Radially relief-ground
- **HSS-E cutting material**
- For countersinking and deburring
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 24	● 13	○ 7	○ 7	○ 8	○ 8	○ 11	○ 10				○ 60	○ 35	○ 33				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Single

D mm	D1 mm	L mm	L4 mm	D5 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN art.no.	€	SARA® art.no.	€
5.3	4	40	28	1.5	0.07	150111 0053		150211 0053	
6.3	5	45	28	1.5	0.08	150111 0063		150211 0063	
8	6	50	36	2	0.1	150111 0080		150211 0080	
8.3	6	50	36	2	0.1	150111 0083		150211 0083	
9.4	6	50	36	2.2	0.11	150111 0094		150211 0094	
10	6	50	36	2.5	0.12	150111 0100		150211 0100	
10.4	6	50	36	2.5	0.12	150111 0104		150211 0104	
12.4	8	56	36	2.8	0.13	150111 0124		150211 0124	
15	10	60	40	3.2	0.14	150111 0150		150211 0150	
16.5	10	60	40	3.2	0.14	150111 0165		150211 0165	
20.5	10	63	40	3.5	0.16	150111 0205		150211 0205	
25	10	67	40	3.8	0.18	150111 0250		150211 0250	
31	12	71	45	4.2	0.21	150111 0310		150211 0310	
						1129		1168	





Sets

Contents	ATORN art.no.	€	SARA® art.no.	€
1 piece each 6.3 | 8.3 | 10.4 | 12.4 | 16.5 | 20.5 mm	150117 0001		150211 0001	
	1129		1168	

RESHARPENING AND COATING SERVICE

COMPLETE PROFESSIONAL RECONDITIONING OF YOUR CUTTING TOOLS WITH IMPRESSIVE BEFORE AND AFTER

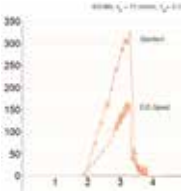
- Only the best for your tools!
- Up to 85% cost savings thanks to resharpening
- Reduced storage and capital costs
- Shorter turnaround times with maximum productivity and process reliability
- Latest coating technology



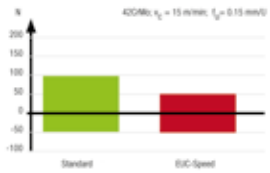
BECK MAPAL GROUP | Taper and deburring countersink EUC-Speed 90°

HSS | VHM | DIN 335C | Werks-norm | 90° | Z 3 | ZrN | Vc/fz | 407 –408

- Geometry with very unequal pitch (EU pitch)
- **High degree of smoothness**
- Precision design
- Prepared cutting edges
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- Special coating
- **Shank tolerances:**
  HSS h9
  Solid carbide h6 (suitable for hydraulic expansion and shrink fit chucks)
- **Versions:**
  150170 - HSS with straight shank, Tolerance h9
  150171 - Solid carbide, Tolerance h6 (suitable for hydraulic expansion and shrink fit chucks)
  150172 - HSS with 3 clamping surfaces on the shank to stop rotation of the countersink in the drill chuck with optimum torque transfer
  150173 - HSS with extended straight shank, Tolerance h9



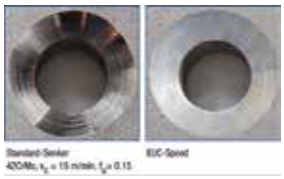
50% reduced axial force



25% reduced radial force



very unequal pitch



optimised countersink

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
150170.... 150172.... 150173....	● 36	● 30	○ 12	○ 10	○ 10		● 14	● 12	○ 10			○ 42		○ 42				
150171....	● 60	● 50	● 40	● 30	● 30	○ 25	● 35	● 45	● 15	● 15	○ 15	● 80	● 60	● 70		○ 8		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Individual

●

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	HSS with straight shank art.no.	€	HSS with 3-face shank art.no.	€	Solid carbide with straight shank art.no.	€
4.3	1.3	4	40	0.06	150170 0043		150172 0043			
6.3	1.5	5	45	0.08	150170 0063		150172 0063		150171 0063	
8.3	2	6	50	0.10	150170 0083		150172 0083		150171 0083	
10.4	2.5	6	50	0.10	150170 0104		150172 0104		150171 0104	
12.4	2.8	8	56	0.12	150170 0124		150172 0124		150171 0124	
16.5	3.2	10	60	0.14	150170 0165		150172 0165		150171 0165	
20.5	3.5	10	63	0.18	150170 0205		150172 0205		150171 0205	
25	3.8	10	67	0.18	150170 0250		150172 0250		150171 0250	
31	4.2	12	71	0.22	150170 0310		150172 0310		150171 0310	
					1165		1165		1165	



150170....



150172....



150171....

Sets, 5-pcs.

Contents	HSS with straight shank art.no.	€	HSS with 3-face shank art.no.	€
1 x 6.3 mm | 1 x 10.4 mm | 1 x 16.5 mm | 1 x 20.5 mm | 1 x 25 mm	150170 1000		150172 1000	
	1165		1165	



150170 1000

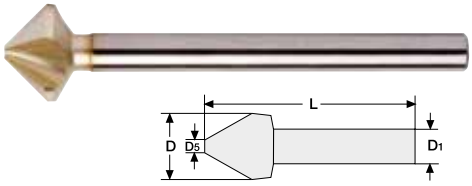


150172 1000

With extended shank

●

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	HSS art.no.	€
6.3	1.5	5	104	0.08	150173 0063	
8.3	2	6	105	0.10	150173 0083	
10.4	2.5	6	107	0.10	150173 0104	
12.4	2.8	8	108	0.12	150173 0124	
16.5	3.2	10	111	0.14	150173 0165	
20.5	3.5	10	114	0.18	150173 0205	
25	3.8	10	118	0.18	150173 0250	
31	4.2	12	140	0.22	150173 0310	
					1165	



SARA® Solid carbide deburring countersink

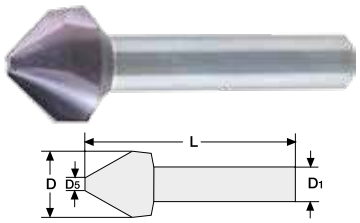
VHM | Werks-norm | 90° | Z 3 | TiAlN | Vc/fz | 408

- 3 cutting edges, radially relief-ground
- **Cutting material: solid carbide TiAlN**
- Made entirely of solid carbide
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●		●	●				●	●	●	○	○		
		40	33	14	22	23		19	17				80	53	60	8	8		
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.3	1.5	4	40	0.05	150166 0430	
6.3	2.0	5	45	0.06	150166 0630	
8.3	2.0	6	50	0.07	150166 0830	
10.4	2.5	6	50	0.08	150166 1040	
12.4	2.8	8	56	0.08	150166 1240	
16.5	3.2	10	60	0.14	150166 1650	
20.5	3.5	10	63	0.16	150166 2050	
25.0	3.8	10	67	0.18	150166 2500	

1165



ATORN Taper and deburring countersinks

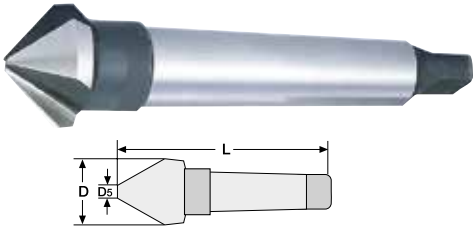
HSS | 90° | Z 3 | Vc/fz | 407

- 3 cutting edges
- Morse taper shank
- **Cutting material: HSS**
- Chatter-free countersinking and deburring

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○	○	○	○				●	●	●				
		30	20	10	10	8	8	10	15				70	40	60				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D5 mm	Shank	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
20.5	3.5	MT 2	100	0.16	150115 0205	
25	3.8	MT 2	106	0.16	150115 0250	
28	4	MT 2	112	0.16	150115 0280	
30	4.2	MT 2	112	0.16	150115 0300	
31	4.2	MT 2	112	0.18	150115 0310	
34	4.5	MT 2	118	0.18	150115 0340	
37	4.8	MT 2	118	0.18	150115 0370	
40	10	MT 3	140	0.18	150115 0400	
50	14	MT 3	150	0.2	150115 0500	
63	16	MT 4	180	0.2	150115 1630	
80	22	MT 4	190	0.2	150115 1800	

1129



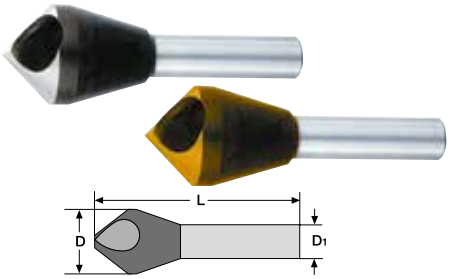
ATORN Taper and deburring countersinks

HSS-E | Werks-norm | 90° | Z 1 | TiN | Vc/fz | 407

- With cross-hole and straight shank
- Chip removal due to slanted bore in the shank direction, light spiral point
- **Cutting material: HSS-E; HSS-E, TiN-coated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○	○	○	○	○			●	●	●				
	Cutting speed Vc m/min.	30	20	10	8	7	8	12	15	8			70	40	60				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	for Ø mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€
10	2 - 5	45	6	0.04	150145 0025		150146 0025	
14	5 - 10	56	6	0.08	150145 0510		150146 0510	
21	10 - 15	67	10	0.11	150145 1015		150146 1015	
28	15 - 20	90	12	0.15	150145 1520		150146 1520	
35	20 - 25	106	15	0.16	150145 2025		150146 2025	
					1129		1129	



ATORN Taper and deburring countersinks

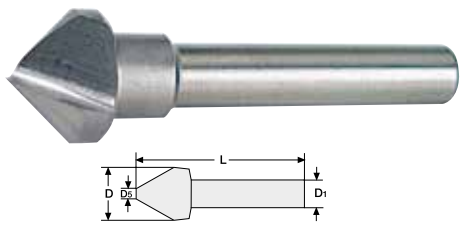
HSS-E | Werks-norm | 90° | Z 1 | Vc/fz | 407

- With one cutting edge, large chip chamber, type A
- Axial-radial conical surface relief grinding
- Straight shank, from Ø 15 mm with offset shank
- **Cutting material: HSS-E**

One cutting edge

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○	○	○	○	○			●	●	●				
	Cutting speed Vc m/min.	30	20	10	8	7	8	12	15	8			70	40	50				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	D5 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5	1	50	5	0.07	150155 0050	
10	1	60	10	0.12	150155 0100	
15	2	65	10	0.14	150155 0150	
20	2	73	10	0.16	150155 0200	
25	2	80	10	0.18	150155 0250	
30	3	82	12	0.2	150155 0300	
40	3	92	12	0.25	150155 0400	
50	3	100	12	0.30	150155 0500	
					1129	



SARA® 90° countersink bits

HSS | DIN 335C | 90° | Z 3

- **Deburring, chamfering and countersinking**
- DIN 335 Form C
- Bit shank drive DIN 3126
- **Form C 6.3** hexagonal connector, 6.35 mm (1/4")
- 3 cutting edges



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

Single

D mm	for thread	L mm	art.no.	€
6.3	M3	31	150140 0083	
8.3	M4	31	150140 0104	
10.4	M5	34	150140 0124	
12.4	M6	35	150140 0165	
16.5	M8	40	150140 0205	
20.5	M10	41	150141 0001	
			1133	



8-pcs. set

Contents	art.no.	€
In plastic box: 6.3-8.3-10.4-12.4-16.5-20.5 mm incl. handle, bit holder and cutting paste	150130 0001	
	1133	

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Counterbores

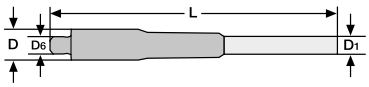
HSS | HSS-E | DIN 373 | Z 3

- 3 cutting edges
- Spiral-fluted
- With straight shank
- Fixed pilot pin
- For countersinks in accordance with DIN 74 part 2, type H, J, K
- For screws according to DIN 912, DIN 6912, DIN 6984 and DIN 84
- **Cutting material: HSS-E, HSS-E**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	HSS	● 30	○ 20	○ 10	○ 10	○ 10		○ 15	○ 15				○ 80	○ 70	○ 40				
	HSS-E	● 30	● 20	○ 10	○ 10	○ 10		○ 15	● 15	○ 7			● 80	● 70	● 45				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



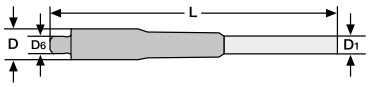
With through-hole pin, fine-grade



D mm	D6 mm	for thread	D1 mm	L mm	SARA HSS art.no.	€	ATORN HSS-E art.no.	€
6	3.2	M3	5	71	150501 0001			
6.5	3.2	M3	5	71			150506 0001	
8	4.3	M4	5	71	150501 0003		150506 0003	
10	5.3	M5	8	80	150501 0005		150506 0005	
11	6.4	M6	8	80	150501 0007		150506 0007	
15	8.4	M8	12.5	100	150501 0009		150506 0009	
18	10.5	M10	12.5	100	150501 0011		150506 0011	
20	13	M12	12.5	100	150501 0013		150506 0013	
					1129		1129	



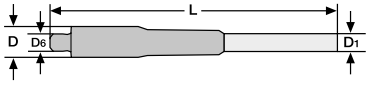
With through-hole pin, medium-grade



D mm	D6 mm	for thread	D1 mm	L mm	SARA HSS art.no.	€	ATORN HSS-E art.no.	€
6	3.4	M3	5	71	150501 0002			
6.5	3.4	M3	5	71			150506 0002	
8	4.5	M4	5	71	150501 0004		150506 0004	
10	5.5	M5	8	80	150501 0006		150506 0006	
11	6.6	M6	8	80	150501 0008		150506 0008	
15	9	M8	12.5	100	150501 0010		150506 0010	
18	11	M10	12.5	100	150501 0012		150506 0012	
20	13.5	M12	12.5	100	150501 0014		150506 0014	
					1129		1129	



With tapping hole pin



D mm	D6 mm	for thread	D1 mm	L mm	SARA HSS art.no.	€	ATORN HSS-E art.no.	€
6	2.5	M3	5	71	150505 0006			
6.5	2.5	M3	5	71			150507 0006	
8	3.3	M4	5	71	150505 0008		150507 0008	
10	4.2	M5	8	80	150505 0010		150507 0010	
11	5	M6	8	80	150505 0011		150507 0011	
15	6.8	M8	12.5	100	150505 0015		150507 0015	
18	8.5	M10	12.5	100	150505 0018		150507 0018	
20	10.2	M12	12.5	100	150505 0020		150507 0020	
					1129		1129	

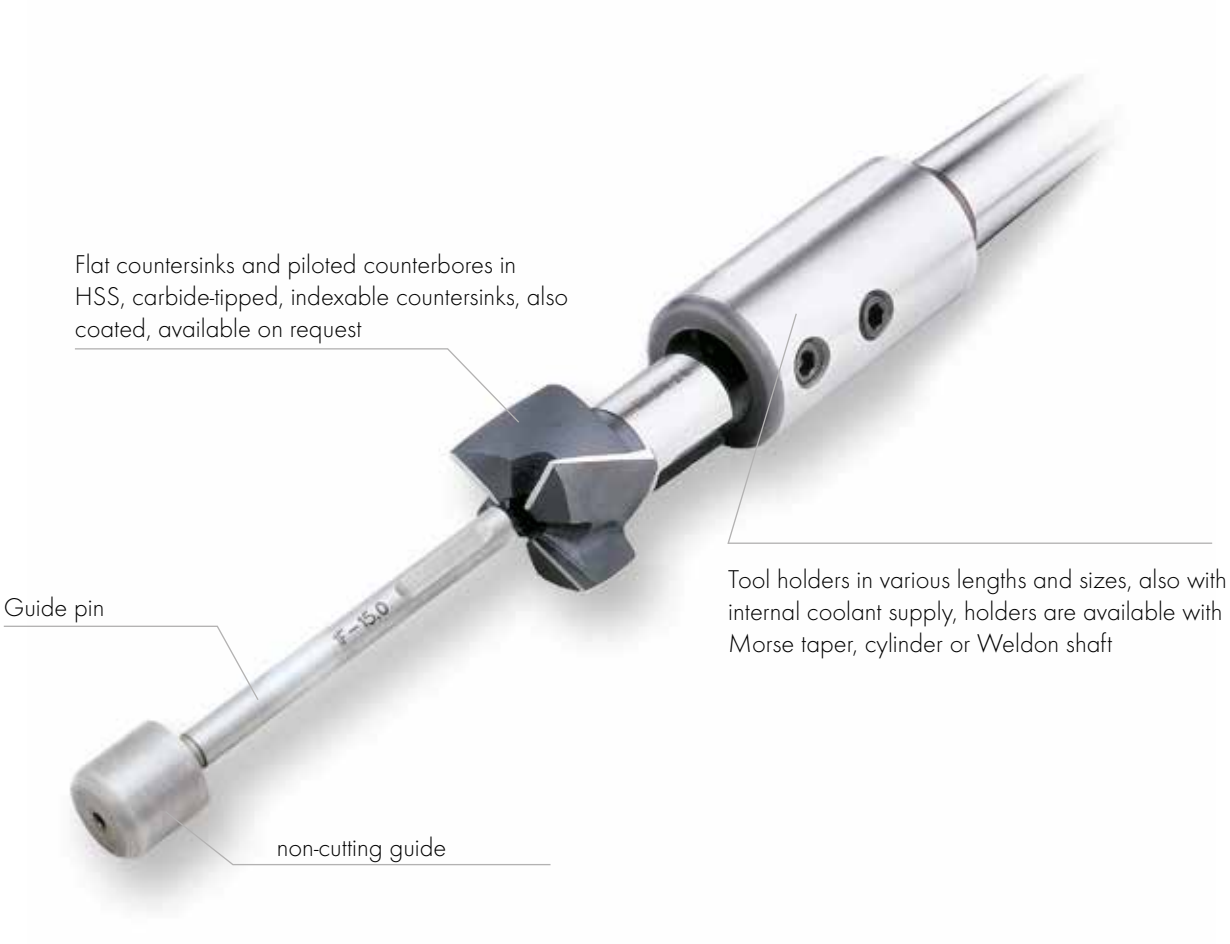
Sets

- Contents: 1 unit each Counterbore for screws M3-M10 = 6-part

Designation	SARA HSS art.no.	€	ATORN HSS-E art.no.	€
Through-hole, fine-grade	150511 0002		150512 0002	
Through-hole, medium-grade	150511 0003		150512 0003	
Tapping hole	150511 0001		150512 0001	
	1129		1129	



150511 0002



THE GRANDLUND SYSTEM

Granlund's unique tool system for pointed and piloted counterbores helps you to increase your productivity and reduce your costs.
The tool holders, piloted counterbores, insert drills and guide pins can be combined to suit all machine types and applications. You can easily assemble 1.5 million special tools with 1,300 parts.

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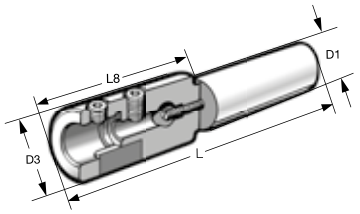
GRANLUND Tools

GRANLUND Tools Combination counterbores

HSS | Werks-norm | 22° | Z 4

- Just 3 holder sizes required to cover a countersink range of 7 - 66 mm (on request up to 84 mm).
- Any countersink and pilot pin combination possible within the same holder size.
- Tight bore and shank tolerances ensure a high degree of true-running accuracy.
- Countersink and pin are fastened quickly and securely with just one screw. An additional stud safety catch prevents countersinks from twisting.
- Combine elements to produce countersinks for DIN screws and to machine stepped bores or non-standard countersinks
- 4 cutting edges





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○		○	○				○	○	○				
		23	18	13	15	15		30	30				110	95	45				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Combination counterbore holder

Model	D1 mm	Shank	D min./max.	L mm	D3 mm	A mm	Suitable for shaft diameter mm	art.no.	€
0	10x50		7-16.5 mm	92	18	42	10	150005 0001	
0		MK 1	7-16.5 mm	111	18	42	10	150005 0002	
0		MK 2	7-16.5 mm	132	18	57	10	150005 0008	
1	12x65		14-27.5 mm	120	24	55	14	150005 0003	
1		MK 1	14-27.5 mm	123	24	55	14	150005 0004	
1		MK 2	14-27.5 mm	137	24	55	14	150005 0009	
2		MK 2	24-66 mm	155	34.5	75	22	150005 0005	
2		MK 3	24-66 mm	174	34.5	75	22	150005 0006	
								1130	



150005 0008 150005 0003



151001 0001



151001 0002



151001 0003

Combination counterbore sets

Model	Contents	Suitable for holder	Z	art.no.	€
OP M4-M8	8.0 mm | 9.0 mm | 10.0 mm | 11.0 mm | 12.0 mm | 13.0 mm | 14.0 mm | 15.0 mm	Modell 0 MK2	4	151001 0001	
1P M8-M14	14.0 mm | 15.0 mm | 16.0 mm | 18.0 mm | 20.0 mm | 22.0 mm | 24.0 mm	Modell 1 MK2	4	151001 0002	
2P M14-M24	24.0 mm | 26.0 mm | 28.0 mm | 30.0 mm | 32.0 mm | 33.0 mm | 34.0 mm | 36.0 mm | 40.0 mm	Modell 2 MK3	4	151001 0003	
				1130	

Counterbore model 0



- Countersink range 7 - 16.5 mm
- Cutting length 19 mm
- Shank Ø 10 mm

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
7.0	0.1	4	151010 0070	
7.5	0.1	4	151010 0075	
8.0	0.1	4	151010 0080	
8.5	0.1	4	151010 0085	
9.0	0.1	4	151010 0090	
9.5	0.1	4	151010 0095	
10.0	0.1	4	151010 0100	
10.5	0.1	4	151010 0105	
11.0	0.1	4	151010 0110	
11.5	0.1	4	151010 0115	

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
12.0	0.1	4	151010 0120	
12.5	0.1	4	151010 0125	
13.0	0.1	4	151010 0130	
13.5	0.1	4	151010 0135	
14.0	0.2	4	151010 0140	
14.5	0.2	4	151010 0145	
15.0	0.2	4	151010 0150	
15.5	0.2	4	151010 0155	
16.0	0.2	4	151010 0160	
16.5	0.2	4	151010 0165	

1130

Pilot pin, hardened and ground, model 0



- Fixed pilot pin
- Total length 59 mm
- Shank Ø 4 mm

D mm	art.no.	€
4.0	151025 0040	
4.5	151025 0045	
5.0	151025 0050	
5.5	151025 0055	
6.0	151025 0060	
6.5	151025 0065	
7.0	151025 0070	
7.5	151025 0075	
8.0	151025 0080	
8.5	151025 0085	
9.0	151025 0090	
9.5	151025 0095	
10.0	151025 0100	
10.5	151025 0105	
11.0	151025 0110	
11.5	151025 0115	

1130

Counterbore model 1



- Countersink range 14 - 27.5 mm
- Cutting length 22 mm
- Shank Ø 14 mm

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
14.0	0.2	4	151015 0140	
14.5	0.2	4	151015 0145	
15.0	0.2	4	151015 0150	
15.5	0.2	4	151015 0155	
16.0	0.2	4	151015 0160	
16.5	0.2	4	151015 0165	
17.0	0.2	4	151015 0170	
17.5	0.2	4	151015 0175	
18.0	0.2	4	151015 0180	
18.5	0.2	4	151015 0185	
19.0	0.2	4	151015 0190	
19.5	0.2	4	151015 0195	
20.0	0.2	4	151015 0200	
20.5	0.2	4	151015 0205	

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
21.0	0.2	4	151015 0210	
21.5	0.2	4	151015 0215	
22.0	0.2	4	151015 0220	
22.5	0.2	4	151015 0225	
23.0	0.2	4	151015 0230	
23.5	0.2	4	151015 0235	
24.0	0.3	4	151015 0240	
24.5	0.3	4	151015 0245	
25.0	0.3	4	151015 0250	
25.5	0.3	4	151015 0255	
26.0	0.3	4	151015 0260	
26.5	0.3	4	151015 0265	
27.0	0.3	4	151015 0270	
27.5	0.3	4	151015 0275	

1130

Pilot pin, hardened and ground, model 1



- Fixed pilot pin
- Total length 79 mm
- Shank Ø 6 mm

D mm	art.no.	€
7.0	151030 0070	
7.5	151030 0075	
8.0	151030 0080	
8.5	151030 0085	
9.0	151030 0090	
9.5	151030 0095	
10.0	151030 0100	
10.5	151030 0105	
11.0	151030 0110	
11.5	151030 0115	
12.0	151030 0120	
12.5	151030 0125	
13.0	151030 0130	
13.5	151030 0135	
14.0	151030 0140	
14.5	151030 0145	
15.0	151030 0150	
15.5	151030 0155	
16.0	151030 0160	
16.5	151030 0165	
17.0	151030 0170	
17.5	151030 0175	
18.0	151030 0180	

1130



Counterbore model 2

- Countersink range 24 - 66 mm
- Cutting length 27 mm
- Shank Ø 22mm

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
24.0	0.3	4	151020 0240	
24.5	0.3	4	151020 0245	
25.0	0.3	4	151020 0250	
25.5	0.3	4	151020 0255	
26.0	0.3	4	151020 0260	
26.5	0.3	4	151020 0265	
27.0	0.3	4	151020 0270	
27.5	0.3	4	151020 0275	
28.0	0.3	4	151020 0280	
28.5	0.3	4	151020 0285	
29.0	0.3	4	151020 0290	
30.0	0.3	4	151020 0300	
30.5	0.3	4	151020 0305	
31.0	0.3	4	151020 0310	
32.0	0.3	4	151020 0320	
33.0	0.3	4	151020 0330	
34.0	0.3	4	151020 0340	
35.0	0.3	4	151020 0350	
36.0	0.3	4	151020 0360	
37.0	0.3	4	151020 0370	
38.0	0.3	4	151020 0380	
39.0	0.3	4	151020 0390	
40.0	0.3	4	151020 0400	

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	Z	art.no.	€
41.0	0.3	4	151020 0410	
42.0	0.3	4	151020 0420	
43.0	0.3	4	151020 0430	
44.0	0.3	4	151020 0440	
45.0	0.3	4	151020 0450	
46.0	0.3	4	151020 0460	
47.0	0.3	4	151020 0470	
48.0	0.3	4	151020 0480	
49.0	0.3	4	151020 0490	
50.0	0.3	4	151020 0500	
51.0	0.3	4	151020 0510	
52.0	0.3	4	151020 0520	
53.0	0.3	4	151020 0530	
54.0	0.3	4	151020 0540	
55.0	0.3	4	151020 0550	
56.0	0.3	4	151020 0560	
58.0	0.3	4	151020 0580	
60.0	0.3	4	151020 0600	
62.0	0.3	4	151020 0620	
64.0	0.3	4	151020 0640	
65.0	0.3	4	151020 0650	
66.0	0.3	4	151020 0660	

1130

Pilot pin, hardened and ground, model 2



- Fixed pilot pin (*= rotating pilot pin)
- Total length 105 mm
- Shank Ø 10 mm

D mm	art.no.	€
11.5	151035 0115	
12.0	151035 0120	
12.5	151035 0125	
13.0	151035 0130	
13.5	151035 0135	
14.0	151035 0140	
14.5	151035 0145	
15.0	151035 0150	
16.0	151035 0160	
17.0	151035 0170	
18.0	151035 0180	
19.0	151035 0190	
20.0	151035 0200	
21.0	151035 0210	
22.0	151035 0220	
23.0	151035 0230	
24.0	151035 0240	
25.0	151035 0250	
26.0	151035 0260	
27.0	151035 0270	
28.0	151035 0280	
29.0	151035 0290	
30.0	151035 0300	
33.0*	151035 0330	
35.0*	151035 0350	
38.0*	151035 0380	
40.0*	151035 0400	

1130

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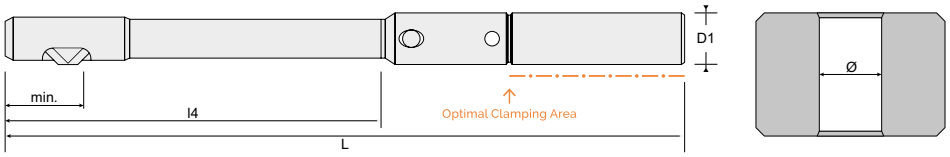
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409

- Machine deburring system for **front and rear** Deburring of bores in **a single pass**.
- Can be used on all stationary machines.
- 1 set consists of 1x base body, 1x deburring blade and one fastening screw.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 45	● 35	● 25	● 20	● 20	● 15	● 30	● 35	● 10	● 10	● 10	● 60	● 60	● 45		● 20	○ 15	○ 15
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



Complete set

Designation	Insert diameter mm	D1 mm	l4 mm	Min. length of application area mm	L mm	art.no.	€
Complete set	3	8	29	9.3	85	155002 0030	
Complete set	3.5	8	29	9.3	85	155002 0035	
Complete set	4	8	43	12.2	90	155002 0040	
Complete set	4.5	8	43	12.2	90	155002 0045	
Complete set	5	8	53	13.2	115	155002 0050	
Complete set	5.5	8	53	13.2	115	155002 0055	
Complete set	6	8	53	11.6	115	155002 0060	
Complete set	6.5	8	53	11.6	115	155002 0065	
Complete set	7	10	53	11.6	115	155002 0070	
Complete set	7.5	10	53	11.6	115	155002 0075	
Complete set	8	10	53	11.6	115	155002 0080	
Complete set	8.5	10	53	11.6	115	155002 0085	
Complete set	9	10	53	11.6	115	155002 0090	
Complete set	9.5	10	53	11.6	115	155002 0095	
Complete set	10	10	80	13.3	125	155002 0100	
Complete set	11	12	80	13.3	125	155002 0110	
Complete set	11.5	12	80	13.3	125	155002 0115	
Complete set	12	12	80	13.3	125	155002 0120	
Complete set	12.5	12	80	13.3	125	155002 0125	
Complete set	10.5	12	80	13.3	125	155002 0150	

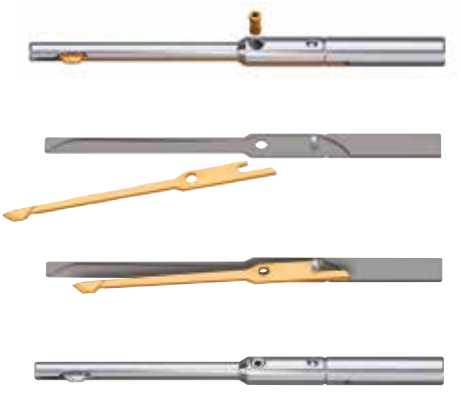
1177



Base body

Designation	Insert diameter mm	D1 mm	l4 mm	Min. length of application area mm	L mm	art.no.	€
Holder	3	8	29	9.3	85	155002 0300	
Holder	3.5	8	29	9.3	85	155002 0350	
Holder	4	8	43	12.2	90	155002 0400	
Holder	4.5	8	43	12.2	90	155002 0450	
Holder	5	8	46	13.2	90	155002 0500	
Holder	5.5	8	46	13.2	90	155002 0550	
Holder	6	8	53	11.6	115	155002 0600	
Holder	6.5	8	53	11.6	115	155002 0650	
Holder	7	10	53	11.6	115	155002 0700	
Holder	7.5	10	53	11.6	115	155002 0750	
Holder	8	10	53	11.6	115	155002 0800	
Holder	8.5	10	53	11.6	115	155002 0850	
Holder	9	10	53	11.6	115	155002 0900	
Holder	9.5	10	80	13.3	125	155002 0950	
Holder	10	10	80	13.3	125	155002 1000	
Holder	10.5	12	80	13.3	125	155002 1050	
Holder	11	12	80	13.3	125	155002 1100	
Holder	11.5	12	80	13.3	125	155002 1150	

1177



Designation	Insert diameter mm	D1 mm	l4 mm	Min. length of application area mm	L mm	art.no.	€
Holder	12	12	80	13.3	125	155002 1200	
Holder	12.5	12	80	13.3	125	155002 1250	
Holder	13	16	80	13.3	125	155002 1300	
Holder	13.5	16	80	13.3	125	155002 1350	
Holder	14	16	80	13.3	125	155002 1400	
Holder	14.5	16	80	13.3	125	155002 1450	
Holder	15	16	80	13.3	125	155002 1500	
Holder	15.5	16	80	13.3	125	155002 1550	
Holder	16	16	80	13.3	125	155002 1600	
Holder	16.5	16	80	13.3	125	155002 1650	
Holder	17	16	80	13.3	125	155002 1700	
Holder	17.5	16	80	13.3	125	155002 1750	
Holder	18	16	80	13.3	125	155002 1800	
Holder	18.5	16	80	13.3	125	155002 1850	
Holder	19	16	80	13.3	125	155002 1900	
Holder	19.5	20	80	13.3	125	155002 1950	
Holder	20	20	80	13.3	125	155002 2000	
Holder	20.5	20	80	13.3	125	155002 2050	
Holder	21	20	80	13.3	125	155002 2100	
Holder	21.5	20	80	13.3	125	155002 2150	
Holder	22	20	80	13.3	125	155002 2200	
Holder	22.5	25	80	13.3	125	155002 2250	
Holder	23	25	80	13.3	125	155002 2300	
Holder	23.5	25	80	13.3	125	155002 2350	
Holder	24	25	80	13.3	125	155002 2400	
Holder	24.5	25	80	13.3	125	155002 2450	
Holder	25	25	80	13.3	125	155002 2500	
						1177	

Deburring knife

Insert diameter mm	Designation	art.no.	€
3.0 - 4.5	Blade	155002 0345	
5.0 - 25.0	Blade	155002 0525	
		1177	



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Overview of reamers

	Hand reamers		Machine reamers							
										
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Diameter	1.5 - 40	1.5 - 50	1.5 - 20	2 - 12	2 - 10	3 - 20	1 - 12.03	3 - 50	12 - 30	1 - 20
ISO application area	P K N	P N	P K N	P K N	P K N	P K N	P K N	P K N	P K N	P M K N
Tolerance	H7		H7	H7	H7	H7	0/+0.003	H7	H7	H7
DIN	206	9	212	WN	WN	212	212	208	WN	WN
Shank	Straight	Straight	Straight	Straight	Straight	Straight	Straight	MT	MT	Straight
Cutting material	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	Solid carbide
Coating										
Helix angle	6°		10°	10°	10°	9°	7 - 8°	9°	10°	9°
Type/info		1:50		Long	Extra-long	NC	1/100		Long, extra-long	NC
Item number	160101....	160140....	161001....	161002....	161003....	161010....	161030....	161005....	161006....	163005....
Catalogue page	**329**	**330**	**331**	**331**	**331**	**332**	**333**	**334**	**334**	**335**

	Machine reamers	High-performance reamers		Exchangeable reamers	
					
Brand	SARA	SARA	SARA	ATORN	ATORN
Diameter	0.6 - 13.05	4 - 20	4 - 20	10 - 40	10 - 40
ISO application area	P K N	P K	P K	P M K	P M K
Tolerance	0/+0.003/+0.004/+0.005	H7	H7	H7	H7
DIN	WN	WN	WN	WN	WN
Shank	Straight	Straight	Straight	Straight	Straight
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating		TiAlN	TiAlN	TiAlN	TiAlN
Helix angle	10°	7°			
Type/info	1/100	Coolant bore	Coolant bore	Through-hole	Basic hole
Item number	163002....	163510....	163512....	163610....	163612....
Catalogue page	**336**	**337**	**337**	**338**	**339**

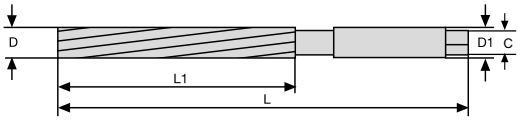


ATORN Hand reamers

HSS | DIN 206 | H7 | 6° | Z 4 | Z 6 | Z 8+



- **Type B for H7 fit**
- Right-hand cutting, manufacturing tolerances in accordance with DIN 1420
- Spiral-fluted, long chamfer along 1/4 of the cutting edge length
- Even ridge count with irregular pitch for chatter-free bore reaming
- Straight shank and square end
- **Cutting material: HSS**
- For reaming through-holes



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

D mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
1.5	1.5	20	41	1.12	4	160101 0015	
2	2.0	25	50	1.6	4	160101 0020	
2.5	2.5	29	58	2	4	160101 0025	
3	3.0	31	62	2.4	6	160101 0030	
3.5	3.5	35	71	2.7	6	160101 0035	
4	4.0	38	76	3	6	160101 0040	
4.5	4.5	41	81	3.4	6	160101 0045	
5	5.0	44	87	3.8	6	160101 0050	
5.5	5.5	47	93	4.50	6	160101 0055	
6	6.0	47	93	4.9	6	160101 0060	
7	7.0	54	107	5.5	6	160101 0070	
8	8.0	58	115	6.2	6	160101 0080	
9	9.0	62	124	7	6	160101 0090	
10	10.0	66	133	8	6	160101 0100	
11	11.0	71	142	9	8	160101 0110	
12	12.0	76	152	9	8	160101 0120	
13	13.0	76	152	10	8	160101 0130	
14	14.0	81	163	11	8	160101 0140	

1134

D mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
15	15.0	81	163	12	8	160101 0150	
16	16.0	87	175	12	8	160101 0160	
17.0	17.0	87	175	12.50	8	160101 0170	
18	18.0	93	188	14.5	8	160101 0180	
19.0	19.0	93	188	14.00	8	160101 0190	
20	20.0	100	201	16	10	160101 0200	
22	22.0	107	215	18	10	160101 0220	
24	24.0	115	231	18	10	160101 0240	
25	25.0	115	231	20	10	160101 0250	
26.0	26.0	115	231	20.00	10	160101 0260	
28.0	28.0	124	247	22.40	10	160101 0280	
30	30.0	124	247	24	10	160101 0300	
32	32.0	133	265	24	12	160101 0320	
34.0	34.0	142	284	28.00	12	160101 0340	
35	35.0	142	284	29	12	160101 0350	
36.0	36.0	142	284	28.00	12	160101 0360	
38.0	38.0	152	305	31.50	12	160101 0380	
40	40.0	152	305	32	12	160101 0400	

1134

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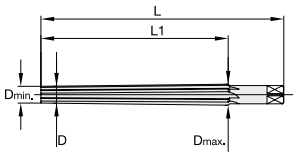
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ATORN Hand taper reamers

HSS | DIN 9 | Z 3 | Z 4 | Z 5 | Z 6 | Z 8+





Form A

- **1:50 taper for taper pins**
- **Type A** Straight-fluted (type B available on request)
- Shank design: straight with square end
- For taper pins according to DIN EN 22339, DIN 258, DIN EN 28737 and DIN EN 28736
- For output bores, we recommend conical pin-hole drill no. 101025....
- ∅ 13 mm and ∅ 14 mm, non-DIN
- * These dimensions are not included in the standard

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

D mm	D min. mm	D max. mm	L mm	L1 mm	Z	art.no.	€
1.5	1.5	12.0	57	37	3	160140 0015	
1.60*	1.50	2.24	57	37	4	160140 0016	
2	1.5	12.0	68	48	3	160140 0020	
2.5	1.5	12.0	68	48	4	160140 0025	
3	1.5	12.0	80	58	5	160140 0030	
3.50*	3.40	4.90	100	75	5	160140 0035	
4	1.5	12.0	93	68	5	160140 0040	
4.50*	4.40	6.14	115	87	5	160140 0045	
5	1.5	12.0	100	73	5	160140 0050	
5.50*	5.40	7.78	150	119	6	160140 0055	
6	1.5	12.0	135	105	6	160140 0060	
6.50*	6.40	8.78	150	119	6	160140 0065	
7.00*	6.90	9.72	177	141	6	160140 0070	
8	1.5	12.0	180	145	6	160140 0080	
9.00*	8.90	12.16	205	163	6	160140 0090	
10	1.5	12.0	215	175	6	160140 0100	
12	1.5	12.0	255	210	8	160140 0120	
13.00*	12.86	16.74	240	194	8	160140 0130	
14.00*	13.86	17.74	240	194	8	160140 0140	
16.00	15.80	20.40	280	230	8	160140 0160	
20.00	19.80	24.80	310	250	10	160140 0200	
25.00	24.70	30.70	370	300	10	160140 0250	
30.00	29.70	36.10	400	320	12	160140 0300	
40.00	39.70	46.50	430	340	12	160140 0400	
50.00	49.70	56.90	460	360	14	160140 0500	

1134

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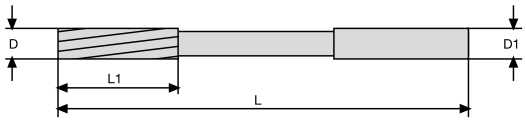
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ATORN Machine reamers

HSS-E | DIN 212 | Werks-norm | H7 | 9° | 10° | h8 | Z 3 | Z 4 | Z 6 | Z 8+ | Vc/fz | 410

- Type B with offset shank up to Ø 2.8 mm
- Type D with offset shank up to Ø 2.9 mm
- **For H7 fit**
- Right-hand cutting, straight shank
- Manufacturing tolerances in accordance with DIN 1420
- Ground chip-space version
- **Cutting material: HSS-E**
- For reaming through-holes



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 9	● 7	○ 5				● 9	● 9				○ 18	○ 18	○ 10				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard version

- Available on request: Ø 0.90 mm to Ø 12.05 mm in 0.01 mm increments



D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.5	8	40	1.5	3	0.10	161001 0015	
2.0	11	49	2.0	4	0.10	161001 0020	
2.5	14	57	2.5	4	0.10	161001 0025	
3.0	15	61	3.0	6	0.10	161001 0030	
3.5	18	70	3.5	6	0.10	161001 0035	
4.0	19	75	4.0	6	0.10	161001 0040	
4.5	21	80	4.5	6	0.10	161001 0045	
5.0	23	86	5.0	6	0.10	161001 0050	
6.0	26	93	5.6	6	0.13	161001 0060	
7.0	31	109	7.1	6	0.13	161001 0070	
8.0	33	117	8.0	6	0.13	161001 0080	

1134

D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.0	36	125	9.0	6	0.15	161001 0090	
10.0	38	133	10.0	6	0.15	161001 0100	
11.0	41	142	10.0	6	0.15	161001 0110	
12.0	44	151	10.0	6	0.20	161001 0120	
13.0	44	151	10.0	8	0.20	161001 0130	
14.0	47	160	12.5	8	0.20	161001 0140	
15.0	50	162	12.5	8	0.20	161001 0150	
16.0	52	170	12.5	8	0.20	161001 0160	
17.0	54	175	14.0	8	0.25	161001 0170	
18.0	56	182	14.0	8	0.25	161001 0180	
20.0	60	195	16.0	8	0.25	161001 0200	

1134

Long, company standard



D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	14	65	2	6	0.1	161002 0020	
3	14	90	3	6	0.1	161002 0030	
4	16	105	4	6	0.1	161002 0040	
5	16	115	5	6	0.1	161002 0050	

1135

D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	16	130	6	6	0.1	161002 0060	
8	18	160	8	6	0.1	161002 0080	
10	20	190	10	6	0.13	161002 0100	
12	20	210	12	6	0.15	161002 0120	

1135

Extra-long, company standard



D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	20	80	2	6	0.1	161003 0020	
3	30	120	3	6	0.1	161003 0030	
4	30	160	4	6	0.1	161003 0040	
5	30	200	5	6	0.1	161003 0050	

1135

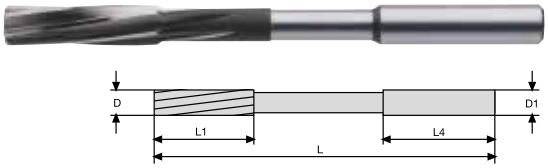
D mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	35	250	6	6	0.1	161003 0060	
8	35	250	8	6	0.13	161003 0080	
10	35	250	10	6	0.15	161003 0100	

1135

ATORN NC machine reamers

HSS-E | DIN 212 | H7 | 9° | h6 | Z 6 | Z 8+ | Vc/fz | 410

- **For H7 fit**
- Right-hand cutting
- **Cutting material: HSS-E**
- Straight shank without square end
- Form D: spiral-fluted with offset shank
- **To ensure maximum true running accuracy for use in hydraulic expansion chucks** and high-precision chucks, these reamers are delivered with **even shank diameters** suitable
- for reaming through-holes and blind holes
- **Also available in TiN-coated version**



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 12	● 9	○ 7	● 8	○ 7		● 9	● 11	○ 5	○ 5	○ 5	● 17	● 17	● 17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Single

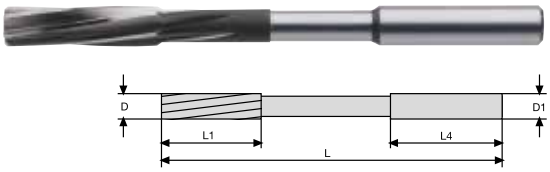
D mm	D1 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	1	34	5,5	19	3	0,1	161010 0010	
1,1	1	36	6,5	20,5	3	0,1	161010 0011	
1,2	1	38	8	21,5	3	0,1	161010 0012	
1,3	1	38	8	21,5	3	0,1	161010 0013	
1,4	2	40	8	22	3	0,1	161010 0014	
1,5	2	40	8	22	3	0,1	161010 0015	
1,6	2	43	9	23	3	0,1	161010 0016	
1,7	2	43	9	23	3	0,1	161010 0017	
1,8	2	46	10	24	4	0,1	161010 0018	
1,9	2	46	10	24	4	0,1	161010 0019	
2	2	49	11	25	4	0,1	161010 0020	
2,1	2	49	11	25	4	0,1	161010 0021	
2,2	3	53	12	28	4	0,1	161010 0022	
2,3	3	53	12	28	4	0,1	161010 0023	
2,4	3	57	14	28	4	0,1	161010 0024	
2,5	3	57	14	28	4	0,1	161010 0025	
2,6	3	57	14	28	4	0,1	161010 0026	
2,7	3	61	15	28	4	0,1	161010 0027	
3	3	61	15	28	6	0,1	161010 0030	
3,5	4	70	18	28	6	0,1	161010 0035	
4	4	75	19	28	6	0,1	161010 0040	
4,5	5	80	21	28	6	0,1	161010 0045	
5	5	86	23	28	6	0,1	161010 0050	
5,5	6	93	26	36	6	0,1	161010 0055	
6	6	93	26	36	6	0,1	161010 0060	
6,5	6	101	28	36	6	0,1	161010 0065	
7	8	109	31	36	6	0,1	161010 0070	
8	8	117	33	36	6	0,1	161010 0080	
9	10	125	36	40	6	0,13	161010 0090	
10	10	133	38	40	6	0,15	161010 0100	
11	10	142	41	40	6	0,15	161010 0110	
12	10	151	44	40	6	0,15	161010 0120	
14	14	160	47	45	8	0,15	161010 0140	
15	14	162	50	45	8	0,2	161010 0150	
16	14	170	52	45	8	0,2	161010 0160	
18	14	182	56	45	8	0,2	161010 0180	
20	16	195	60	48	8	0,25	161010 0200	

1134

ATORN 1/100 NC machine reamers

HSS-E | Werks-norm | H7 | 9° | h6 | Z 3 | Z 4 | Z 6 | Vc/fz | 410

- With straight shank and 9° left-hand twist, ground chip space
- Form B up to Ø 2.03 mm with end-to-end shank and centring point on both sides
- Form D from Ø 2.98-12.03 mm with offset shank
- Manufacturing tolerances: Nominal dimensions = 0/+ 0.003 mm



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 12	● 9	○ 7	● 8	○ 7		● 9	● 11	○ 5	○ 5	○ 5	● 17	● 17	● 17				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Specify nominal dimension D in mm as a four digit figure:

- e.g. 0.72 mm = 0072, 5.14 mm = 0514, 11.00 mm = 1100

D mm	D1 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	**161030....** €
1	1	34	5.5	19	3	0.08	
1.98 - 2.03	2	49	11	25	4	0.09	
2.98 - 2.99	3	61	15	28	6	0.1	
3 - 3.03	3	61	15	28	6	0.1	
3.98 - 4.03	4	75	19	28	6	0.1	
4.98 - 5.03	5	86	23	28	6	0.1	
5.98 - 6	6	93	26	36	6	0.1	
6.01	6	101	28	36	6	0.1	
6.02 - 6.03	6	101	28	36	6	0.12	
6.98 - 7.03	8	109	31	36	6	0.12	
7.98 - 8	8	117	33	36	6	0.12	
8.01 - 8.03	8	117	33	36	6	0.13	
9.98 - 10.03	10	133	38	40	6	0.13	
11.98 - 12.03	10	151	44	40	6	0.15	
							1135

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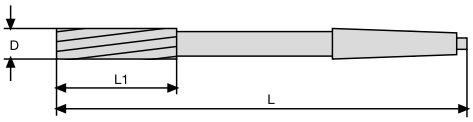
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ATORN Machine reamer with MT shank

HSS-E | DIN 208 | Werks-norm | H7 | B | 9° | 10° | Z 6 | Z 8+ | Vc/fz | 410

- **Type B for H7 fit**
- Right-hand cutting
- **Morse taper**
- Spiral-fluted, short 45° chamfer
- Even ridge count with irregular pitch for chatter-free bore reaming
- **Cutting material: HSS-E**
- For reaming through-holes, chip removal in the cutting direction, suitable for blind bores due to short chamfer



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 12	● 9	○ 7	● 8	○ 7		● 9	● 11	○ 5	○ 5	○ 5	● 17	● 17	● 17				
		Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											

Standard version, DIN 208



- 9° left-hand twist

D mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	15	112	MT 1	6	0.1	161005 0030	
4	19	125	MT 1	6	0.1	161005 0040	
5	23	133	MT 1	6	0.1	161005 0050	
6	26	138	MT 1	6	0.1	161005 0060	
7	31	150	MT 1	6	0.1	161005 0070	
8	33	156	MT 1	6	0.1	161005 0080	
9	36	162	MT 1	6	0.15	161005 0090	
10	38	168	MT 1	6	0.13	161005 0100	
11	41	175	MT 1	6	0.15	161005 0110	
12	44	182	MT 1	6	0.15	161005 0120	
13	44	182	MT 1	8	0.15	161005 0130	
14	47	189	MT 1	8	0.15	161005 0140	
15	50	204	MT 2	8	0.15	161005 0150	
16	52	210	MT 2	8	0.2	161005 0160	
17	54	214	MT 2	8	0.2	161005 0170	
18	56	219	MT 2	8	0.2	161005 0180	

1134

D mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
19	58	223	MT 2	8	0.2	161005 0190	
20	60	228	MT 2	8	0.2	161005 0200	
21.0	62	232	MT 2	8	0.25	161005 0210	
22	64	237	MT 2	8	0.2	161005 0220	
23.0	66	241	MT 2	8	0.25	161005 0230	
24	68	268	MT 3	10	0.25	161005 0240	
25	68	268	MT 3	10	0.25	161005 0250	
26	70	273	MT 3	10	0.25	161005 0260	
28	71	277	MT 3	10	0.25	161005 0280	
30	73	281	MT 3	10	0.25	161005 0300	
32	77	317	MT 4	12	0.3	161005 0320	
34.0	78	321	MT 4	12	0.30	161005 0340	
35.0	78	321	MT 4	12	0.30	161005 0350	
36.0	79	325	MT 4	12	0.35	161005 0360	
38.0	81	329	MT 4	12	0.35	161005 0380	
40.0	81	329	MT 4	12	0.35	161005 0400	

1134

Long, company standard type D



- 10° left-hand twist

D mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14	22	245	MT 1	8	0.15	161006 0140	
15	22	260	MT 2	8	0.15	161006 0150	
16	25	260	MT 2	8	0.15	161006 0160	
18	25	260	MT 2	8	0.2	161006 0180	
20	28	270	MT 2	8	0.2	161006 0200	

1134

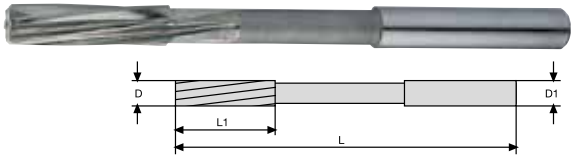
D mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22	28	280	MT 2	8	0.25	161006 0220	
24	32	300	MT 3	8	0.25	161006 0240	
26	32	330	MT 3	10	0.25	161006 0260	
30	36	350	MT 3	10	0.25	161006 0300	

1134

ATORN NC machine reamers

VHM | DIN 212 | H7 | 9° | h6 | Z 3 | Z 4 | Z 6 | Z 8+ | Vc/fz | 410

- **Similar to DIN 212/8093**
- **For H7 fit**
- **NC shank for use in hydraulic expansion chucks and high-precision collet chucks**
- Form D
- Straight shank, spiral-fluted, right-hand cutting
- **Up to Ø 13.0 mm solid carbide, from Ø 14 mm with steel shank**
- For reaming through-holes
- Also suitable for blind bores



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18	● 15	● 12	● 10	○ 8		● 10	● 12	● 8	○ 6	● 8	● 20	● 20	● 20				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

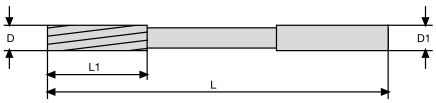
D mm	D1 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	1	34	6	3	0.15	163005 0010	
1.2	1	34	6	3	0.15	163005 0012	
1.4	2	40	8	3	0.15	163005 0014	
1.5	2	40	8	3	0.15	163005 0015	
1.6	2	43	9	3	0.15	163005 0016	
1.7	2	43	9	4	0.15	163005 0017	
1.8	2	46	10	4	0.15	163005 0018	
1.9	2	46	10	4	0.15	163005 0019	
2	2	49	11	4	0.15	163005 0020	
2.1	2	49	11	4	0.15	163005 0021	
2.2	3	53	12	4	0.15	163005 0022	
2.3	3	53	12	4	0.15	163005 0023	
2.4	3	57	14	4	0.15	163005 0024	
2.5	3	57	14	4	0.15	163005 0025	
2.6	3	57	15	4	0.15	163005 0026	
2.7	3	57	15	4	0.15	163005 0027	
2.8	3	61	15	6	0.15	163005 0028	
2.9	3	61	15	6	0.15	163005 0029	
3	3	61	15	6	0.15	163005 0030	
3.1	4	65	16	6	0.15	163005 0031	
3.2	4	65	16	6	0.15	163005 0032	
3.3	4	65	16	6	0.15	163005 0033	
3.4	4	70	18	6	0.15	163005 0034	
3.5	4	70	18	6	0.15	163005 0035	
3.6	4	70	18	6	0.15	163005 0036	
3.7	4	70	18	6	0.15	163005 0037	
3.8	4	75	19	6	0.15	163005 0038	
3.9	4	75	19	6	0.15	163005 0039	
4	4	75	19	6	0.15	163005 0040	
4.1	4	75	19	6	0.15	163005 0041	
4.2	4	80	21	6	0.15	163005 0042	
4.3	5	80	21	6	0.15	163005 0043	
4.4	5	80	21	6	0.15	163005 0044	
4.5	5	80	21	6	0.15	163005 0045	
4.6	5	80	21	6	0.15	163005 0046	
4.7	5	80	21	6	0.15	163005 0047	
4.8	5	80	23	6	0.15	163005 0048	
4.9	5	86	23	6	0.15	163005 0049	
5	5	86	23	6	0.15	163005 0050	
5.1	5	86	23	6	0.15	163005 0051	
5.2	5	86	23	6	0.15	163005 0052	
5.3	6	93	26	6	0.15	163005 0053	
5.4	6	93	26	6	0.15	163005 0054	
5.5	6	93	26	6	0.18	163005 0055	
5.6	6	93	26	6	0.18	163005 0056	
5.7	6	93	26	6	0.18	163005 0057	
5.8	6	93	26	6	0.18	163005 0058	
5.9	6	93	26	6	0.18	163005 0059	
6	6	93	26	6	0.18	163005 0060	
6.1	6	101	28	6	0.18	163005 0061	
6.2	6	101	28	6	0.18	163005 0062	
6.3	6	101	28	6	0.18	163005 0063	
6.4	6	101	28	6	0.18	163005 0064	
6.5	6	101	28	6	0.18	163005 0065	
6.6	6	101	28	6	0.18	163005 0066	
6.7	6	109	31	6	0.18	163005 0067	
6.8	8	109	31	6	0.18	163005 0068	
6.9	8	109	31	6	0.18	163005 0069	
7	8	109	31	6	0.18	163005 0070	
7.1	8	109	31	6	0.18	163005 0071	
7.2	8	109	31	6	0.18	163005 0072	
7.3	8	109	31	6	0.18	163005 0073	
7.4	8	109	31	6	0.18	163005 0074	
7.5	8	109	31	6	0.18	163005 0075	
7.6	8	117	33	6	0.18	163005 0076	
7.7	8	117	33	6	0.18	163005 0077	
7.8	8	117	33	6	0.18	163005 0078	
7.9	8	117	33	6	0.18	163005 0079	
8	8	117	33	6	0.18	163005 0080	
8.1	8	117	33	6	0.18	163005 0081	
8.2	8	117	33	6	0.18	163005 0082	
8.3	8	117	33	6	0.18	163005 0083	
8.4	8	117	33	6	0.18	163005 0084	
8.5	8	117	33	6	0.18	163005 0085	
8.6	10	125	36	6	0.18	163005 0086	
8.7	10	125	36	6	0.18	163005 0087	
8.8	10	125	36	6	0.18	163005 0088	
8.9	10	125	36	6	0.18	163005 0089	
9	10	125	36	6	0.20	163005 0090	
9.1	10	125	36	6	0.2	163005 0091	
9.2	10	125	36	6	0.2	163005 0092	
9.3	10	125	36	6	0.2	163005 0093	
9.4	10	125	36	6	0.2	163005 0094	
9.5	10	125	36	6	0.2	163005 0095	
9.6	10	133	38	6	0.2	163005 0096	
9.7	10	133	38	6	0.2	163005 0097	
9.8	10	133	38	6	0.2	163005 0098	
9.9	10	133	38	6	0.2	163005 0099	
10	10	133	38	6	0.20	163005 0100	
11	10	142	41	6	0.20	163005 0110	
12	10	151	44	6	0.25	163005 0120	
13	10	151	44	8	0.25	163005 0130	
14	12.5	160	47	8	0.25	163005 0140	
15	12.5	162	50	8	0.25	163005 0150	
16	12.5	170	52	8	0.25	163005 0160	
17	14	175	54	8	0.30	163005 0170	
18	14	182	56	8	0.30	163005 0180	
19	16	189	58	8	0.30	163005 0190	
20	16	195	60	8	0.30	163005 0200	

SARA® 1/100 solid carbide machine reamers

VHM | Werks-norm | 10° | Z 4 | Z 6 | Vc/fz | 410

- **sim. to DIN 212**
- **Type B, type D from Ø 3.76 mm**
- 10° left-hand twist, right-hand cutting, straight shank
- **1/100 pitch**
- **Tolerances:**
  Ø 0.60 to 3.00 mm +0/+ 0.003
  Ø 3.01 to 6.00 mm +0/+ 0.004
  Ø 6.01 to 13.05 mm +0/+ 0.005
- **Cutting material: solid carbide K15F (Ø > 13.97 with carbide head)**
- For through-holes





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 13	● 10	● 8	○ 13	○ 10		● 9	● 10				○ 20	● 20	○ 25				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

Specify nominal dimension D in mm as a four digit figure:

- e.g. 0.72 mm = 0072, 5.14 mm = 0514, 11.00 mm = 1100

D mm	L mm	L1 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	163002.... €
0.60 - 0.69	33	7	= D	4	0.15	
0.70 - 0.79	33	7	= D	4	0.15	
0.80 - 0.94	33	7	= D	4	0.15	
0.95 - 1.05	33	7	= D	4	0.15	
1.06 - 1.44	40	10	= D	4	0.15	
1.45 - 1.55	40	10	= D	4	0.15	
1.56 - 1.79	43	11	= D	4	0.15	
1.80 - 1.94	49	12	= D	4	0.15	
1.95 - 2.05	49	12	= D	4	0.15	
2.06 - 2.36	49	12	= D	4	0.15	
2.37 - 2.94	57	18	= D	6	0.15	
2.95 - 3.05	57	18	= D	6	0.15	
3.06 - 3.35	57	18	= D	6	0.15	
3.36 - 3.75	57	18	= D	6	0.15	
3.76 - 4.25	75	19	4.0	6	0.15	
4.26 - 4.75	80	21	4.5	6	0.15	
4.76 - 5.00	86	23	5.0	6	0.15	
5.01 - 5.30	86	23	5.0	6	0.18	
5.31 - 5.80	93	26	5.5	6	0.18	
5.81 - 5.94	101	28	6.0	6	0.18	
5.95 - 6.05	101	28	6.0	6	0.18	
6.06 - 6.70	101	28	6.0	6	0.18	
6.71 - 7.55	109	31	7.0	6	0.18	
7.56 - 7.94	117	33	8.0	6	0.18	
7.95 - 8.05	117	33	8.0	6	0.18	
8.06 - 8.55	117	33	8.0	6	0.18	
8.56 - 8.99	125	36	9.0	6	0.18	
9.00 - 9.55	125	36	9.0	6	0.2	
9.56 - 9.94	133	38	10	6	0.2	
9.95 - 10.05	133	38	10	6	0.2	
10.06 - 11.05	133	38	10	6	0.2	
11.06 - 11.30	133	38	10	6	0.2	
11.31 - 11.94	151	44	12	6	0.2	
11.95 - 11.99	151	44	12	6	0.2	
12.00 - 12.05	151	44	12	6	0.25	
12.06 - 13.05	151	44	12	6	0.25	

1136

SARA® Solid carbide high-performance reamers

VHM | Werks-norm | 10° | Z 4 | Z 6 | Z 8+ | TiAlN | Vc/fz | 412

- **Manufacturing tolerances: H7 in accordance with DIN 1420**
- Right-hand cutting, **with internal cooling**
- **Cutting material: solid carbide, TiAlN-coated**
- NC shank for use directly in hydraulic expansion chucks and high-precision collet chucks
- Tight h6 tool shank tolerance for a high level of true running accuracy
- Version with linear flutes, coolant exits on the face side, for blind holes
- Version with 10° left-hand twist, lateral coolant outlet on the cutting edges, for through-holes
- **Other versions for machining stainless steels, aluminium, copper, zinc and Cu/Zn/Mg alloys, as well as hardened steels up to 65 HRC available on request**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 153	● 140	● 120				● 110	● 88										
Cutting speed Vc m/min.																		

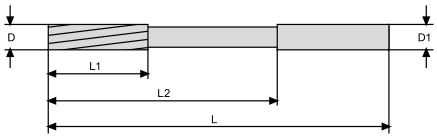
Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f

D mm	D1 mm	L mm	L1 mm	L2 mm	Z	steel < 1000 N/mm² mm/rev	For through-holes art.no.	€	For blind holes art.no.	€
4	4	75	12	47	4	0.30	163510 0400		163512 0400	
4.5	6	75	12	39	4	0.30	163510 0450		163512 0450	
5	6	75	12	39	4	0.40	163510 0500		163512 0500	
5.5	6	75	16	39	4	0.40	163510 0550		163512 0550	
6	6	75	16	39	4	0.40	163510 0600		163512 0600	
6.5	8	100	16	64	6	0.40	163510 0650		163512 0650	
7	8	100	16	64	6	0.70	163510 0700		163512 0700	
7.5	8	100	16	64	6	0.70	163510 0750		163512 0750	
8	8	100	16	64	6	0.70	163510 0800		163512 0800	
8.5	10	100	19	60	6	0.70	163510 0850		163512 0850	
9	10	100	19	60	6	0.70	163510 0900		163512 0900	
9.5	10	120	19	80	6	0.80	163510 0950		163512 0950	
10	10	120	19	80	6	0.80	163510 1000		163512 1000	
10.5	12	120	19	75	6	0.80	163510 1050		163512 1050	
11	12	120	19	75	6	0.80	163510 1100		163512 1100	
11.5	12	120	19	75	6	0.80	163510 1150		163512 1150	
12	12	120	19	75	6	0.80	163510 1200		163512 1200	
13	14	120	19	75	6	0.80	163510 1300		163512 1300	
14	14	135	22	90	6	0.80	163510 1400		163512 1400	
15	16	135	22	87	6	0.80	163510 1500		163512 1500	
16	16	135	22	87	6	0.80	163510 1600		163512 1600	
17	18	145	22	97	8	0.80	163510 1700		163512 1700	
18	18	145	22	97	8	0.80	163510 1800		163512 1800	
19	20	145	22	95	8	0.80	163510 1900		163512 1900	
20	20	145	22	95	8	1.00	163510 2000		163512 2000	
							1155		1155	







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ATORN High-performance exchangeable head reamers

VHM | Werks-norm | H7 | TiAlN | Vc/fz | 413

- Modular reaming tool system
- **Diameter 10-40 mm**
- **For through-holes and blind bores**
- **Cutting material: solid carbide, TiAlN-coated**
- **With internal coolant supply**
- Particularly efficient from machining diameters of 20 mm
- Flexible machining depths thanks to various holder lengths
- Faster and more secure tool changes without new tool calibration
- **2 geometries available:**
  ST - for steel and cast iron (ISO P, K)
  VA - for stainless steels (ISO M)
- **Other designs for the efficient machining of aluminium, titanium, CFRP/GFRP, and hardened materials available on request**

Modular system

material

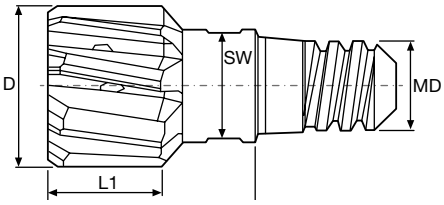
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
163610....	● 160	● 160	● 160				● 110	● 120										
163620....				● 40	● 35	○ 28												
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Through-hole

- Left-handed twist 10°
- Radial coolant outlet
- **From Ø 28 mm use exchangeable head holder with enlarged planar support (MD = 16*)**

D mm	MD	L mm	L1 mm	Number of teeth pc.	Wr. width	Tightening torque N-m	ST art.no.	€	VA art.no.	€
10	6	18	10	6	6 mm	5	163610 1000		163620 1000	
11	8	20	10	6	8 mm	12.5	163610 1100		163620 1100	
12	8	20	10	6	8 mm	12.5	163610 1200		163620 1200	
13	10	22	10	6	10 mm	15	163610 1300		163620 1300	
14	10	22	12	6	10 mm	15	163610 1400		163620 1400	
15	10	22	12	6	10 mm	15	163610 1500		163620 1500	
16	10	22	12	6	10 mm	15	163610 1600		163620 1600	
17	10	22	12	8	10 mm	15	163610 1700		163620 1700	
18	12	26	14	8	13 mm	20	163610 1800		163620 1800	
19	12	26	14	8	13 mm	20	163610 1900		163620 1900	
20	12	26	14	8	13 mm	20	163610 2000		163620 2000	
21	12	26	14	8	13 mm	20	163610 2100		163620 2100	
22	16	26	14	8	16 mm	25	163610 2200		163620 2200	
23	16	26	14	8	16 mm	25	163610 2300		163620 2300	
24	16	26	14	8	16 mm	25	163610 2400		163620 2400	
25	16	26	14	8	16 mm	25	163610 2500		163620 2500	
26	16	26	14	8	16 mm	25	163610 2600		163620 2600	
27	16	26	14	8	16 mm	25	163610 2700		163620 2700	
28	16*	26	14	8	24 mm	25	163610 2800		163620 2800	
29	16*	26	14	8	24 mm	25	163610 2900		163620 2900	
30	16*	26	14	8	24 mm	25	163610 3000		163620 3000	
31	16*	30	14	8	24 mm	25	163610 3100		163620 3100	
32	16*	30	14	8	24 mm	25	163610 3200		163620 3200	
33	16*	30	14	8	24 mm	25	163610 3300		163620 3300	
34	16*	30	14	8	24 mm	25	163610 3400		163620 3400	
35	16*	30	14	8	24 mm	25	163610 3500		163620 3500	
36	16*	30	14	8	24 mm	25	163610 3600		163620 3600	
37	16*	30	14	8	24 mm	25	163610 3700		163620 3700	
38	16*	30	14	8	24 mm	25	163610 3800		163620 3800	
39	16*	30	14	8	24 mm	25	163610 3900		163620 3900	
40	16*	30	14	8	24 mm	25	163610 4000		163620 4000	
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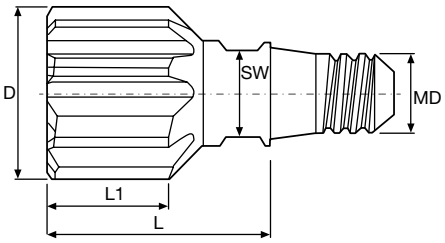




Blind hole

- Straight-fluted
- Axial coolant outlet
- **From Ø 33 mm use exchangeable head holder with enlarged planar support (MD = 16*)**





D mm	MD	L mm	L1 mm	Number of teeth pc.	Wr. width	Tightening torque N-m	ST art.no.	€	VA art.no.	€
10	6	18	10	6	6 mm	5	163612 1000		163622 1000	
11	6	20	10	6	6 mm	5	163612 1100		163622 1100	
12	6	20	10	6	6 mm	5	163612 1200		163622 1200	
13	6	22	12	6	6 mm	5	163612 1300		163622 1300	
14	6	22	12	6	6 mm	5	163612 1400		163622 1400	
15	8	22	12	6	8 mm	12.5	163612 1500		163622 1500	
16	8	22	12	6	8 mm	12.5	163612 1600		163622 1600	
17	10	22	12	8	10 mm	15	163612 1700		163622 1700	
18	10	26	14	8	10 mm	15	163612 1800		163622 1800	
19	10	26	14	8	10 mm	15	163612 1900		163622 1900	
20	10	26	14	8	10 mm	15	163612 2000		163622 2000	
21	12	26	14	8	13 mm	20	163612 2100		163622 2100	
22	12	26	14	8	13 mm	20	163612 2200		163622 2200	
23	12	26	14	8	13 mm	20	163612 2300		163622 2300	
24	12	26	14	8	13 mm	20	163612 2400		163622 2400	
25	16	26	14	8	16 mm	25	163612 2500		163622 2500	
26	16	26	14	8	16 mm	25	163612 2600		163622 2600	
27	16	26	14	8	16 mm	25	163612 2700		163622 2700	
28	16	26	14	8	16 mm	25	163612 2800		163622 2800	
29	16	26	14	8	16 mm	25	163612 2900		163622 2900	
30	16	26	14	8	16 mm	25	163612 3000		163622 3000	
31	16	30	14	8	16 mm	25	163612 3100		163622 3100	
32	16	30	14	8	16 mm	25	163612 3200		163622 3200	
33	16*	30	14	8	24 mm	25	163612 3300		163622 3300	
34	16*	30	14	8	24 mm	25	163612 3400		163622 3400	
35	16*	30	14	8	24 mm	25	163612 3500		163622 3500	
36	16*	30	14	8	24 mm	25	163612 3600		163622 3600	
37	16*	30	14	8	24 mm	25	163612 3700		163622 3700	
38	16*	30	14	8	24 mm	25	163612 3800		163622 3800	
39	16*	30	14	8	24 mm	25	163612 3900		163622 3900	
40	16*	30	14	8	24 mm	25	163612 4000		163622 4000	
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Exchangeable head holder

- Straight version
- Internal coolant supply
- **MD = 16* exchangeable head holder with enlarged planar support**



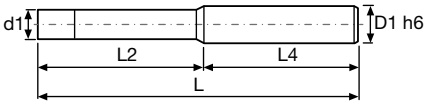
163630 1204



163630 0602



163630 1204



D mm	MD	D1 mm	L mm	L2 mm	L4 mm	Tightening torque N-m	art.no.	€
7.8	6	10	60	20	40	5	163630 0601	
7.8	6	10	85	45	40	5	163630 0602	
7.8	6	10	150	110	40	5	163630 0603	
9.8	8	12	70	25	45	12.5	163630 0801	
9.8	8	12	90	45	45	12.5	163630 0802	
9.8	8	12	150	105	45	12.5	163630 0803	
11.8	10	16	70	22	48	15	163630 1001	
11.8	10	16	90	42	48	15	163630 1002	
11.8	10	16	150	102	48	15	163630 1003	
15.8	12	16	80	32	48	20	163630 1201	
15.8	12	16	105	57	48	20	163630 1202	
15.8	12	16	150	102	48	20	163630 1203	
15.8	12	16	200	152	48	20	163630 1204	
19.8	16	25	90	34	56	25	163630 1611	
19.8	16	25	120	64	56	25	163630 1612	
19.8	16	25	200	144	56	25	163630 1613	
19.8	16	25	250	194	56	25	163630 1614	
26.0	16*	25	90	34	56	25	163630 1601	
26.0	16*	25	120	64	56	25	163630 1602	
26.0	16*	25	200	144	56	25	163630 1603	
26.0	16*	25	250	194	56	25	163630 1604	

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Assembly key



Wr. width	L mm	Width mm	art.no.	€
6 mm	75	2.3	163631 0006	
8 mm	92	2.8	163631 0008	
10 mm	100	3.8	163631 0010	
13 mm	135	3.8	163631 0013	
16 mm	145	4.8	163631 0016	
24 mm	215	4.8	163631 0024	

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Open-end snap-in spanner

- For torque wrenches





Wr. width	Insert shank square	Width mm	art.no.	€
6 mm	9 x 12 mm	2.3	163632 0006	
8 mm	9 x 12 mm	2.8	163632 0008	
10 mm	9 x 12 mm	3.8	163632 0010	
13 mm	9 x 12 mm	3.8	163632 0013	
16 mm	9 x 12 mm	4.8	163632 0016	
24 mm	14 x 18 mm	4.8	163632 0024	

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Press-polish tools

Press polishing is a process that can be used in surface finishing to produce smooth and hardened surfaces with a high contact ratio and good running properties on metallic workpieces without machining.

All machinable metals up to a hardness of approx. 45 HRc are suitable for burnishing. The starting point is a pre-machined workpiece. Its required preparation dimension depends on the material, geometry and surface finish.

Application
Press-polishing tools can be used on all machine tools with rotating drive, such as drilling machines, lathes, milling machines, machining centres, boring mills, etc., as a rotating or also as a stationary tool.

Application data
The rolling speeds are Vc = 60 to 150 m/min. These values can be exceeded or undercut without affecting the rolling result. Only the machining times change. The feed rates are calculated from the formula f=0.025 x D. If through-hole tools with self-feed are used on machine tools with machine feed, the forced feed must be selected at least 10 % higher than the self-feed of the tools calculated from the formula f=0.025 x D.

Lubrication
Thin-bodied oils or greasy emulsions should be used for lubrication. Chips or impurities should be kept away from the surfaces to be rolled.

Preparation
The allowance for press polishing must always be determined in relation to the peak-to-valley height during preparation and is at most the value of the pre-machining peak-to-valley height.

Advantages
Roughnesses below 0.5 mm Ra are achieved. Improvement of surface strength up to 30 %. Load-bearing ratios up to over 95 % and minimum surface friction coefficients.

Technology
Press polishing is carried out under high specific pressure loads using polished rollers that roll on the surface to produce a plastic deformation, as it were. The rolling process is divided into the rolling-in and plasticising zone and the smoothing zone (see Fig. 1).

Initially, the rollers only act on the machining tips of the surface, resulting in very small contact areas and very high surface forces. The course of the resulting lines of force causes a levelling of the roughness peaks and a lifting of the valleys (see Fig. 2).

The contact area between the roller and the workpiece surface increases continuously and the surface pressure decreases continuously. The plasticising process thus turns into a uniform smoothing process. Fears that the existing roughness peaks will be bent over and superimposed during press polishing are unfounded. The undistorted surface tactile section shown in Fig. 3 demonstrates this.



The diameter change that takes place during press polishing is essentially dependent on the pre-machining roughness depth. Since the surface is usually completely levelled, the diameter dimension changes by approximately the amount of the initial roughness depth (see Fig. 4). Determining the pre-machining diameter is thus possible without any problems.

Available tools for press polishing

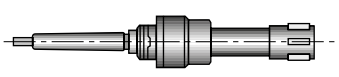
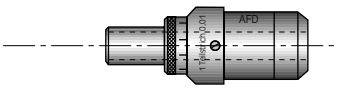
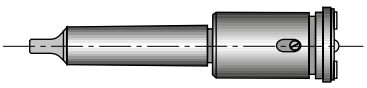
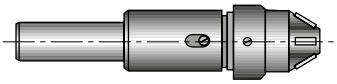
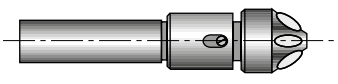
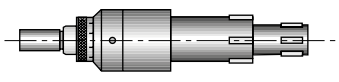
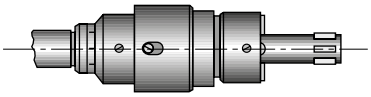
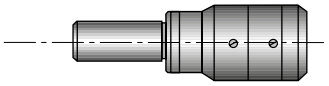
	**Through-holes** **Blind holes** **IFD**
	**Continuous shafts** **Shafts with switch** **AFO**
	**Plane surfaces** **FDP**
	**Tapered holes** **FDK**
	**Spherical calottes** **KWW**
	**Staged drill holes** **IFD/ST**
	**Holes with plane surface** **IFD/FDP**
	**Outer cone** **NFDK**

Fig. 1

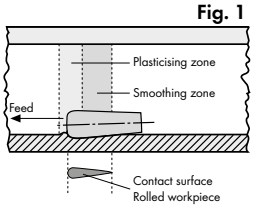


Fig. 2

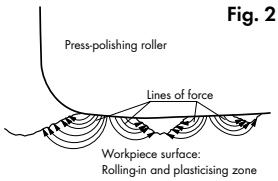


Fig. 3

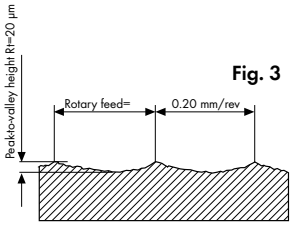
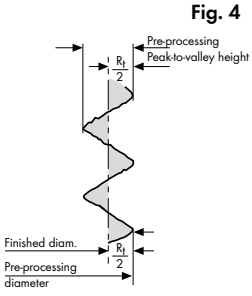


Fig. 4



D'ANDREA®

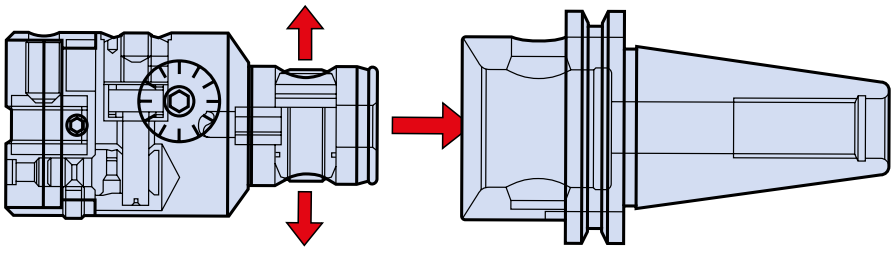
MHD modular tool system, spindle tool

The Modulhard'andrea MHD is a high-precision and flexible modular tool system designed for various machining applications.

The MHD coupling is the strength of the Modulhard'andrea: it is available in 11 sizes and guarantees the interchangeability of the system elements, including arbours, extensions, reducers and tool holder adapters.

The wide range of spindle tools completes the MHD line with a large selection of drill-out and boring tool heads.







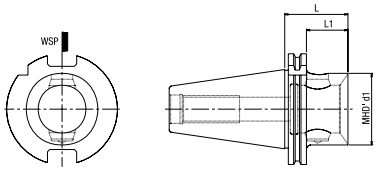




D'ANDREA® MHD base holding fixtures

- **Case-hardened steel, hardened and ground to tolerance AT3.**
- ISO 40 taper recommended exclusively for sizes MHD-50 and MHD-63
- For heavy milling work and bores with a depth of more than 250 mm and greater than 125 mm in Ø, an MHD-80 base holding fixture should be used.
- Base holding fixtures in special designs or with **planar support** are available **on request**.

DIN 69871 AD, ISO 7388/1

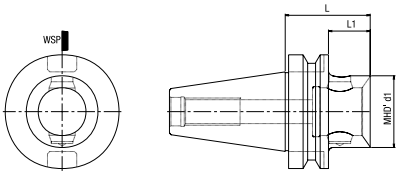


Shank style	Type	D	L mm	L1 mm	Weight kg	art.no.	€
ISO 40	DIN69871-A40 MHD'50,48	50	48	29	0.9	372001 0002	
ISO 40	DIN69871-A40 MHD'63,80	63	80	-	1.5	372001 0003	
ISO 50	DIN69871-A50 MHD'50,48	50	48	28	2.7	372001 0007	
ISO 50	DIN69871-A50 MHD'63,56	63	56	37	2.8	372001 0008	
ISO 50	DIN69871-A50 MHD'80,62	80	62	43	3.4	372001 0009	

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MAS 403 BT

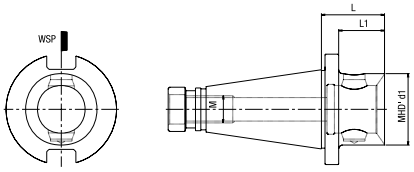


Shank style	Type	D	L mm	L1 mm	Weight kg	art.no.	€
ISO 30	MAS403-BT30 MHD 50,60	50	60	-	0.7	372005 0001	
ISO 40	MAS403-BT40 MHD 50,48	50	48	21	0.9	372005 0003	
ISO 40	MAS403-BT40 MHD 63,66	63	66	-	1.2	372005 0004	
ISO 50	MAS403-BT50 MHD 50,66	50	66	28	3.5	372005 0008	

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DIN 2080-A, „OTT"

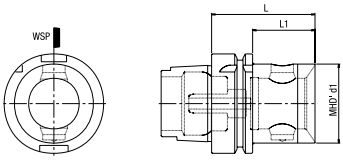


Shank style	Type	D	L mm	L1 mm	Thread diameter	Weight kg	art.no.	€
ISO 40	DIN2080-A40 MHD'50,48	50	48	36.5	16	0.9	372009 0001	
ISO 50	DIN2080-A50 MHD'50,48	50	48	33	24	2.6	372009 0006	
ISO 50	DIN2080-A50 MHD'63,56	63	56	41	24	2.7	372009 0007	
ISO 50	DIN2080-A50 MHD'80,60	80	60	45	24	3.2	372009 0008	

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DIN 69893-A, HSK



Type	D	L mm	L1 mm	Weight kg	art.no.	€
HSK-A63 MHD'50,66	50	66	40	0.9	372017 0002	

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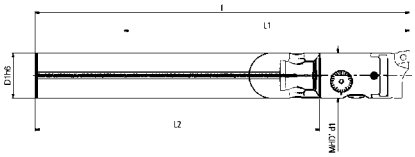


D'ANDREA® BMD solid carbide MHD base holding fixture, straight

- Due to the use of solid carbide MHD base holding fixtures, different machining depths can be achieved.
- Straight shank for use in hydraulic expansion chucks or power chucks

Line boring up to 10xD





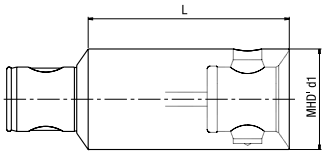
Type	D	D1 mm	L mm	L1 mm	L2 mm	Weight kg	art.no.	€
BMD 16/16,110	16	16	144	100	110	0.3	372010 1611	
BMD 16/16,140	16	16	174	125	140	0.4	372010 1614	
BMD 16/16,170	16	16	204	160	170	0.5	372010 1617	
BMD 20/20,135	20	20	175	125	135	0.6	372010 2013	
BMD 20/20,175	20	20	210	160	170	0.75	372010 2017	
BMD 20/20,210	20	20	250	200	210	0.9	372010 2021	
BMD 25/25,160	25	25	210	160	160	1.0	372010 2516	
BMD 25/25,205	25	25	255	200	205	1.3	372010 2520	
BMD 25/25,255	25	25	305	250	255	1.6	372010 2525	
BMD 32/32,195	32	32	258	200	195	2.1	372010 3219	
BMD 32/32,250	32	32	313	250	250	2.8	372010 3225	
BMD 32/32,315	32	32	378	320	315	3.5	372010 3231	

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D'ANDREA® MHD extensions PR

- The use of MHD extensions allows different machining depths to be achieved; various extensions are available for any MHD size.





Type	D	L mm	Weight kg	art.no.	€
PR 16,25	16	25	0.04	372201 1625	
PR 20,32	20	32	0.07	372201 2032	
PR 25,25	25	25	0.09	372201 2525	
PR 25,40	25	40	0.15	372201 2540	
PR 32,32	32	32	0.2	372201 3232	
PR 32,50	32	50	0.3	372201 3250	
PR 40,40	40	40	0.4	372201 4040	

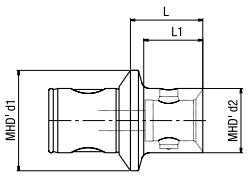
1138

Type	D	L mm	Weight kg	art.no.	€
PR 40,63	40	63	0.6	372201 4063	
PR 50,50	50	50	1.1	372201 5050	
PR 50,80	50	80	1.5	372201 5080	
PR 50,100	50	100	0.7	372201 5010	
PR 63,100	63	100	1.4	372201 6310	
PR 63,125	63	125	2.2	372201 6312	

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D'ANDREA® MHD reducers RD

- Reducers permit the use of elements for smaller MHD sizes.
- This makes the MHD system even more flexible.
- Greater rigidity is achieved by using smaller MHD tools in larger holding fixtures.





D	d4	L1 mm	L mm	Weight kg	Type	art.no.	€
20	16	16	20	0.05	RD 20/16,20	372203 2016	
25	16	15	20	0.07	RD 25/16,20	372203 2516	
25	20	20	25	0.08	RD 25/20,25	372203 2520	
32	16	18	24	0.15	RD 32/16,24	372203 3216	
32	20	20	25	0.15	RD 32/20,25	372203 3220	
32	25	23	28	0.15	RD 32/25,28	372203 3225	
40	16	17	24	0.18	RD 40/16,24	372203 4016	
40	20	20	26	0.20	RD 40/20,26	372203 4020	
40	25	22	28	0.25	RD 40/25,28	372203 4025	
40	32	27	32	0.30	RD 40/32,32	372203 4032	
50	16	15	24	0.40	RD 50/16,24	372203 5016	

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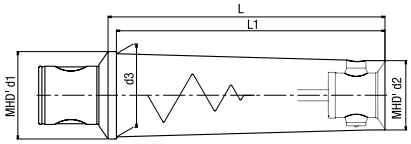
D	d4	L1 mm	L mm	Weight kg	Type	art.no.	€
50	16	32	40	0.20	RD 50/16,40	372203 5116	
50	20	18	26	0.40	RD 50/20,26	372203 5020	
50	20	62	70	0.30	RD 50/20,70	372203 5120	
50	25	21	28	0.40	RD 50/25,28	372203 5025	
50	25	80	87	0.60	RD 50/25,87	372203 5125	
50	32	25	32	0.45	RD 50/32,32	372203 5032	
50	32	80	87	0.75	RD 50/32,87	372203 5132	
50	40	30	36	0.50	RD 50/40,36	372203 5040	
50	40	80	87	0.90	RD 50/40,87	372203 5140	
63	50	34	40	0.90	RD 63/50,40	372203 6250	
80	63	52	60	1.70	RD 80/63,60	372203 8063	

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D'ANDREA® MHD reducers RAV

- **Low vibration**



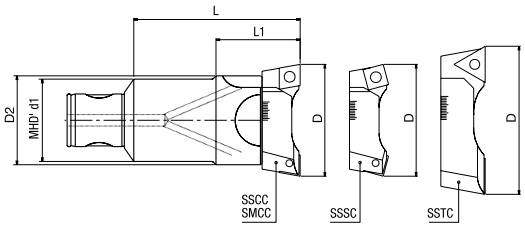


Type	D	d4	D3 mm	L1 mm	L mm	Weight kg	art.no.	€
RAV 50/16,74	50	16	17.5	65	74	0.4	372204 5016	
RAV 50/20,93	50	20	21.5	85	93	0.5	372204 5020	
RAV 50/25,117	50	25	27	110	117	0.8	372204 5025	
RAV 50/32,144	50	32	35	138	144	1.4	372204 5032	
RAV 50/40,176	50	40	47	170	176	2.5	372204 5040	
RAV 63/50,220	63	50	60	214	220	5.6	372204 6042	
RAV 80/63,280	80	63	77	272	280	10.6	372204 8042	

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D'ANDREA® MHD two-flute boring bars TS

- Rigid design, spline surfaces between the insert holders
- Constant distance between the insert holder clamping screw and the cutting edge
- **Note:** when using only one insert holder, protective plug PT should be fitted (optional)
- Chamfer rings (AS) available on request





TS Ø 18 - 200

Type	D min./max.	D	Drill Ø mm	L mm	L1 mm	suitable for jaw width	suitable indexable inserts	Weight kg	art.no.	€
TS 16/16	18 - 22 mm	16	16	34	-	S...16	CC	0.05	372603 1616	
TS 20/20	22 - 28 mm	20	20	40	-	S...20	CC	0.09	372603 2020	
TS 25/25	28 - 38 mm	25	25	50	-	S...25	CC	0.20	372603 2525	
TS 32/32	35.5 - 50 mm	32	32	63	-	S...32-33	SC	0.35	372603 3232	
TS 40/40	50 - 68 mm	40	40	80	-	S...40-41	SC	0.70	372603 4040	
TS 50/50	68 - 90 mm	50	55	100	50	S...50	SC	1.5	372603 5050	
TS 50/63	90 - 120 mm	50	72	80	60	S...63	TC	2.0	372603 5063	
TS 63/63	90 - 120 mm	63	72	125	63	S...63	TC	3.0	372603 6363	
TS 80/80	120 - 160 mm, 160 - 200 mm	80	95	140	75	S...80 S...90	TC	5.3	372603 8080	

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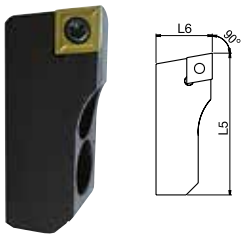
D'ANDREA® MHD insert holder SSCC / SMCC / SSSC

- For twin-cutter boring bars
- Type SSTC insert holders available on request

SSCC

Type	D min./max.	L2 mm	L mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
SSCC 16	18 - 22 mm	8	15	CC.. 0602..	TS25	T 08	372610 0016	
SSCC 20	22 - 28 mm	9.5	19	CC.. 0602..	TS25	T 08	372610 0020	
SSCC 25	28 - 38 mm	12.5	23	CC.. 0602..	TS25	T 08	372610 0025	
SSCC 32	38 - 50 mm	15	32	CC.. 0602..	TS25	T 08	372610 0032	
SSCC 33	38 - 50 mm	15	32	CC.. 09T3..	TS4	T 15	372610 0033	
SSCC 40	50 - 68 mm	19	40	CC.. 09T3..	TS4	T 15	372610 0040	
SSCC 41	50 - 68 mm	19	40	CC.. 1204..	TS5	T 25	372610 0041	
SSCC 50	68 - 90 mm	22	54	CC.. 1204..	TS5	T 25	372610 0050	
SSCC 63	90 - 120 mm	27	70.5	CC.. 1204..	TS5	T 25	372610 0063	
SSCC 80	120 - 160 mm	32	94.5	CC.. 1204..	TS5	T 25	372610 0080	
SSCC 90	160 - 500 mm	32	130	CC.. 1204..	TS5	T 25	372610 0090	

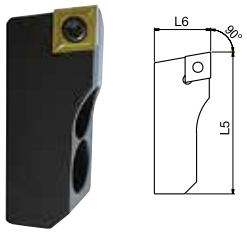
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SMCC

Type	D min./max.	L2 mm	L mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
SMCC 25	28 - 38 mm	12.3	23	CC.. 0602..	TS25	T 08	372612 0025	
SMCC 32	38 - 50 mm	14.8	32	CC.. 0602..	TS25	T 08	372612 0032	
SMCC 33	38 - 50 mm	14.8	32	CC.. 09T3..	TS4	T 15	372612 0033	
SMCC 40	50 - 68 mm	18.7	40	CC.. 09T3..	TS4	T 15	372612 0040	
SMCC 41	50 - 68 mm	18.7	40	CC.. 1204..	TS5	T 25	372612 0041	
SMCC 50	68 - 90 mm	21.7	54	CC.. 1204..	TS5	T 25	372612 0050	
SMCC 63	90 - 120 mm	26.7	70.5	CC.. 1204..	TS5	T 25	372612 0063	
SMCC 80	120 - 160 mm	31.7	94.5	CC.. 1204..	TS5	T 25	372612 0080	
SMCC 90	160 - 500 mm	31.7	130	CC.. 1204..	TS5	T 25	372612 0090	

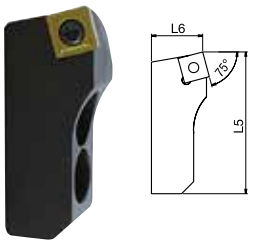
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SSSC

Type	D min./max.	L2 mm	L mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
SSSC 32	38 - 50 mm	15	32.5	SC.. 09T3..	TS4	T 15	372614 0032	
SSSC 40	50 - 68 mm	19	40	SC.. 09T3..	TS4	T 15	372614 0040	
SSSC 50	68 - 90 mm	22	54	SC.. 1204..	TS5	T 25	372614 0050	
SSSC 63	90 - 120 mm	27	70.5	SC.. 1204..	TS5	T 25	372614 0063	
SSSC 80	120 - 160 mm	32	94.5	SC.. 1204..	TS5	T 25	372614 0080	
SSSC 90	160 - 500 mm	32	130	SC.. 1204..	TS5	T 25	372614 0090	

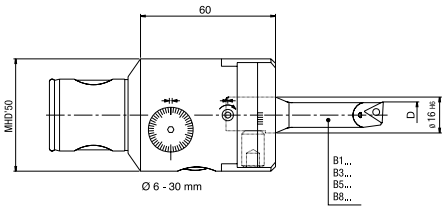
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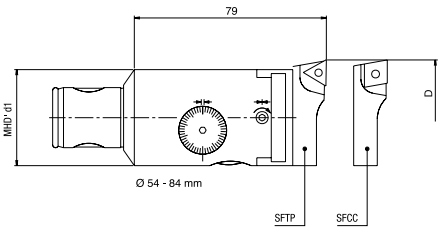


D'ANDREA® MHD micrometric boring bar system

Vc/fz 416

- TRM boring heads and micrometric boring bars ensure a tolerance of IT6 with an optimum surface finish quality.
- Settings with a radial correction of 1µm can easily be read off the Vernier scale and executed directly on the machine.







TRM 50/50 high-precision boring head, Ø 6 - 84 mm

Type	D min./max.	L mm	Weight kg	suitable for jaw width	art.no.	€
TRM 50/50	6 - 84 mm	60	1.0	SF50	372801 5050	

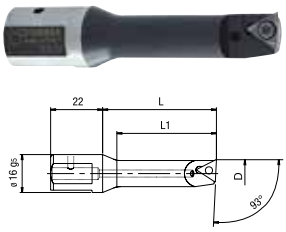
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Boring bar

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	D min./max.	L mm	L1 mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
B3,06	6 - 8 mm	29	21	WCGT 0201..	TS 21	T 06	372807 0006	
B3,08	8 - 10 mm	36	28	WCGT 0201..	TS 21	T 06	372807 0008	
B3,10	10 - 12 mm	43	35	TPGX 0902..	CS250T	T 08	372807 0010	
B3,11	11 - 13 mm	48	40	TPGX 0902..	CS250T	T 08	372807 0011	
B3,12	12 - 14 mm	48	42	TPGX 0902..	CS250T	T 08	372807 0012	
B3,14	14 - 16 mm	52	50	TPGX 0902..	CS250T	T 08	372807 0014	
B3,16	16 - 18 mm	58	50	TPGX 0902..	CS250T	T 08	372807 0016	
B3,18	18 - 22 mm	63	-	TPGX 0902..	CS250T	T 08	372807 0018	
B3,22	22 - 30 mm	68	-	TPGX 0902..	CS250T	T 08	372807 0022	

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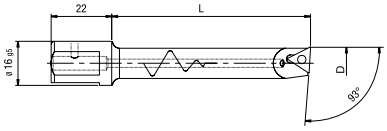
Low-vibration boring bar

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	D min./max.	L mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
B5,06	6 - 8 mm	36	WCGT 0201..	TS21	T 06	372808 0006	
B5,08	8 - 10 mm	45	WCGT 0201..	TS21	T 06	372808 0008	
B5,10	10 - 12 mm	60	TPGX 0902..	CS250T	T 08	372808 0010	
B5,12	12 - 14 mm	72	TPGX 0902..	CS250T	T 08	372808 0012	
B5,14	14 - 16 mm	84	TPGX 0902..	CS250T	T 08	372808 0014	
B5,16	16 - 18 mm	96	TPGX 0902..	CS250T	T 08	372808 0016	

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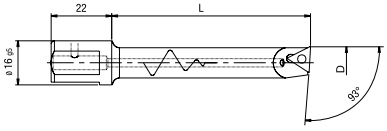
Solid carbide boring bar (approx. 8xD)

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	D min./max.	L mm	suitable indexable inserts	Suitable for screw	Suitable for width across flats	art.no.	€
B8,06	6 - 8 mm	45	WCGT 0201..	TS21	T 06	372809 0006	
B8,08	8 - 10 mm	60	WCGT 0201..	TS21	T 06	372809 0008	
B8,10	10 - 12 mm	75	TPGX 0902..	CS250T	T 08	372809 0010	
B8,12	12 - 14 mm	90	TPGX 0902..	CS250T	T 08	372809 0012	
B8,14	14 - 16 mm	105	TPGX 0902..	CS250T	T 08	372809 0014	
B8,16	16 - 18 mm	120	TPGX 0902..	CS250T	T 08	372809 0016	

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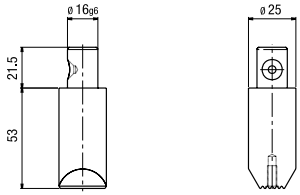


P 25.63 base holder

Type	Suitable for	Weight kg	art.no.	€
P 25,63	SFTP 25 & SFTP 32	0.3	372815 2563	

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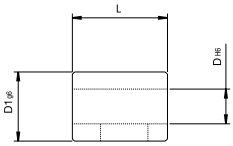
Reducing bushes, straight

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	L mm	Internal diameter mm	D1 mm	art.no.	€
D08,16	22	8	16	370620 0008	

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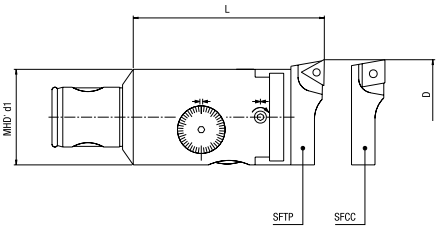


TRM high-precision boring head, Ø 18 - 63

Type	D min./max.	D	L mm	suitable for jaw width	Weight kg	art.no.	€
TRM 16/16	18 - 23 mm	16	34	SF16	0.05	372810 1616	
TRM 20/20	22 - 29 mm	20	40	SF20	0.1	372810 2020	
TRM 25/25	28 - 38 mm	25	50	SF25	0.2	372810 2525	
TRM 32/32	35.5 - 50 mm	32	63	SF32	0.35	372810 3232	
TRM 40/40	48 - 63 mm	40	80	SF40	0.7	372810 4040	

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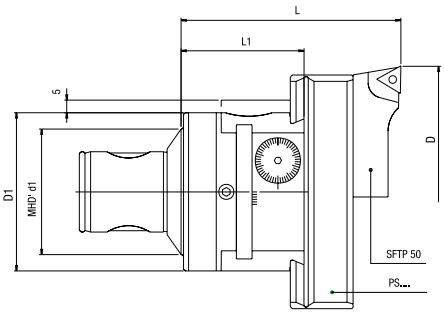


TRM high-precision boring head, Ø 77 - 500

Type	D min./max.	D	D1 mm	L mm	L1 mm	suitable for jaw width	Weight kg	art.no.	€
TRM 50/63	77 - 100 mm, 95 - 125 mm	50	63	87.5	49	11.30 , 12.30	1.7 / 1.8	372832 5063	
TRM 63/63	77 - 100 mm , 95 - 125 mm	63	63	87.5	49	11.30 , 12.30	2.0 / 2.1	372832 6363	
TRM 50/80	95 - 140 mm , 140 - 160 mm	50	80	96.5	58	12.30 , 13.30	2.6 / 2.8	372832 5080	
TRM 80/80	95 - 140 mm, 140 - 160 mm	80	80	96.5	58	12.30 , 13.30	3.1 / 3.3	372832 8080	
TRM 80/125	135 - 210 mm, 205 - 310 mm, 305 - 410 mm, 405 - 500 mm	80	125	114	63	11.40 , 12.40 , 13.40 , 14.40	7.2 / 8.1 / 9.2 / 10.3	372832 8012	

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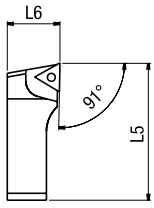
SFTP insert holder

- For TRM high-precision boring head

Type	D min./max.	L2 mm	L mm	Suitable for screw	suitable indexable inserts	Suitable for width across flats	art.no.	€
SFTP 25	28 - 38 mm	10	26.5	CS250T	TPGX 0902..	T 08	372825 0025	
SFTP 32	35.5 - 50 mm	11.5	34.5	CS250T	TPGX 0902..	T 08	372825 0032	
SFTP 40	48 - 63 mm	14	44	CS300890T	TPGX 1103..	T 08	372825 0040	
SFTP 50	54 - 84 mm	19	52	CS300890T	TPGX 1103..	T 08	372825 0050	

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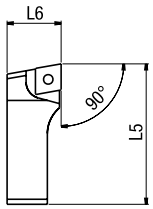
SFCC insert holder

- For TRM high-precision boring head

Type	D min./max.	L2 mm	L mm	Suitable for screw	suitable indexable inserts	Suitable for width across flats	art.no.	€
SFCC 16	18 - 23 mm	8	17	TS25	CC.. 0602..	T 08	372827 0016	
SFCC 20	22 - 29 mm	8.5	21	TS25	CC.. 0602..	T 08	372827 0020	
SFCC 25	28 - 38 mm	10	26.5	TS25	CC.. 0602..	T 08	372827 0025	
SFCC 32	35.5 - 50 mm	11.5	34.5	TS4	CC.. 0602..	T 15	372827 0032	
SFCC 40	48 - 63 mm	14	44	TS4	CC.. 09T3..	T 15	372827 0040	
SFCC 50	54 - 84 mm	19	52	TS4	CC.. 09T3..	T 15	372827 0050	

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D'ANDREA® MHD base holder



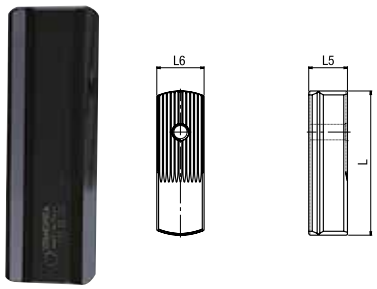
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PS base holder

- For TRM high-precision boring heads (insert holder SF.. 50)

Type	L mm	L2 mm	Weight kg	Thickness	art.no.	€
PS 31,24	75	24	0.2	14.5	372835 3124	
PS 11,30	75	30.5	0.4	25	372835 1130	
PS 12,30	93	30.5	0.5	25	372835 1230	
PS 13,30	135	30,5	0.7	25	372835 1330	
PS 11,40	133	40	1.5	40	372835 1140	
PS 12,40	200	40	2.4	40	372835 1240	
PS 13,40	300	40	3.5	40	372835 1340	
PS 14,40	400	40	4.6	40	372835 1440	

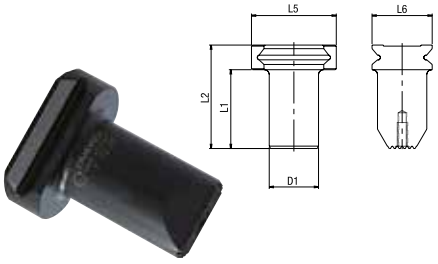
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P.. base holder

Type	suitable indexable inserts	D1 mm	L1 mm	L mm	L2 mm	Weight kg	art.no.	€
P 02,30	SFCC/SFTP 25-32	25	40	43	30.5	0.3	372820 0230	
P 03,30	SFCC/SFTP 25-32	25	70	43	30.5	0.4	372820 0330	
P 04,30	SFCC/SFTP 25-32	27	115	43	30.5	0.7	372820 0430	
P 02,40	SFCC/SFTP 32-40	32	69	56	40	0.7	372820 0240	
P 03,40	SFCC/SFTP 32-40	32	114	56	40	1.0	372820 0340	
P 04,40	SFCC/SFTP 32-40	38	189	56	40	2.0	372820 0440	

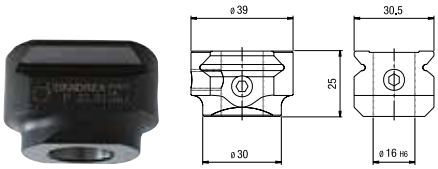
1138



P 20.30 base holder

Type	Suitable for holder mm	Weight kg	art.no.	€
P 20,30	06, 08, 11, 16, 22 mm	0.2	372837 2030	

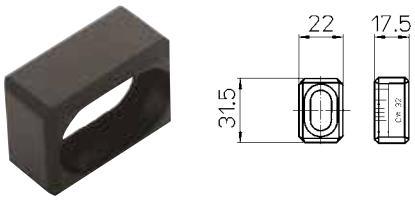
1138



CW 32 counterweight

Type	art.no.	€
CW 32	372836 0032	

1138



D'ANDREA® Modular tool system, Ø 6-110 mm



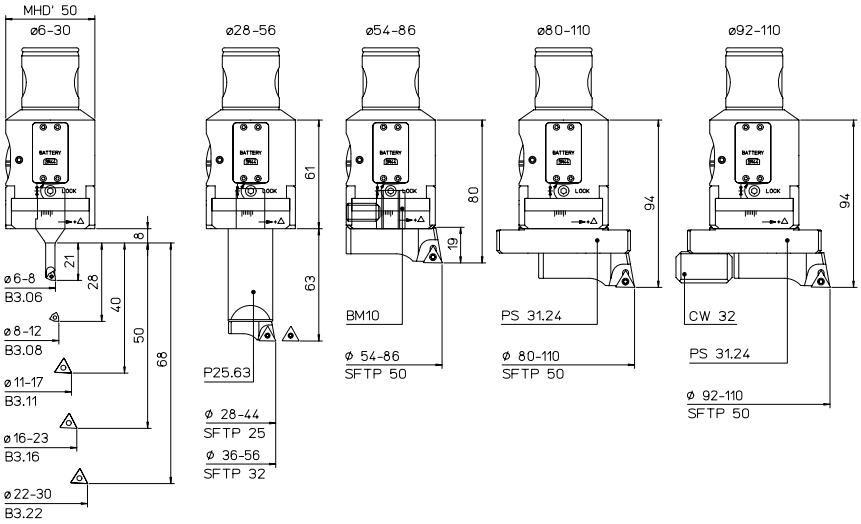
417

- **modular MHD interface**
- Multifunctional button for the functions "On", "Reset" and switching between "mm/inch"
- **Display resolution Ø 0.002 mm**
- Energy-saving function, automatic display switch-off and saving last value after 30 seconds
- Internal coolant supply
- **Protection class IP67**



Ø 6-110 mm

Contents	art.no.	€
1 TRE 50/50: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) 1 P25.63 SFTP25 / SFTP32 / SFTP50 (1 of each) 1 PS 31.24 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L 1 CW32	373002 0001	1138



D'ANDREA® Modular tool system, Ø 6-108 mm



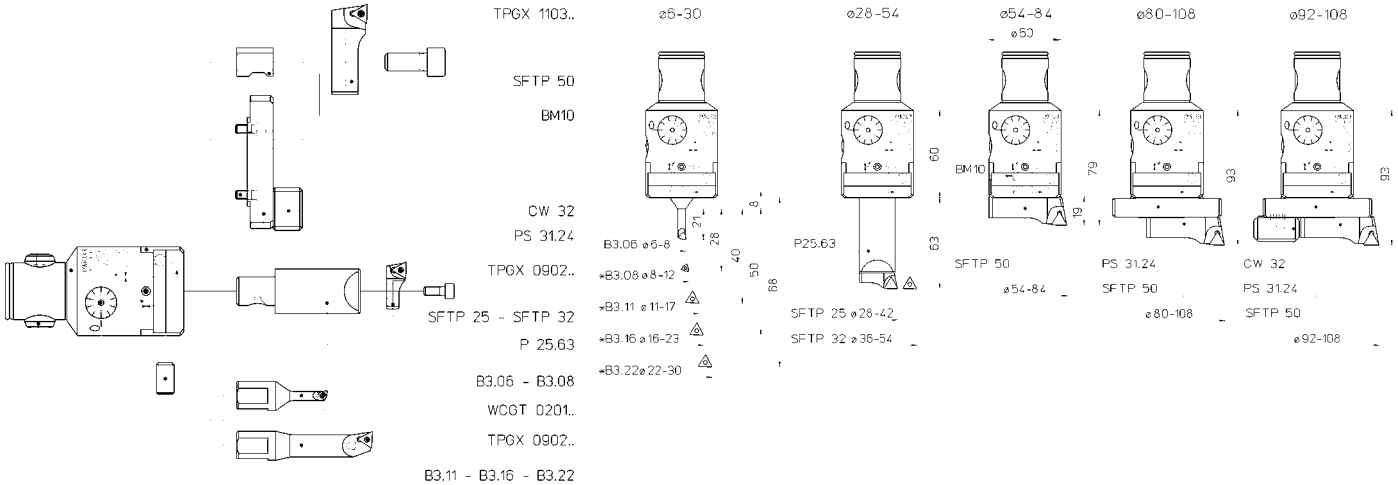
417

- **K01 and TRM 50/50 sets**



Ø 6 - 108 mm

Contents	art.no.	€
1 TRM 50/50: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) 1 P25.63 SFTP25 / SFTP32 / SFTP50 (1 of each) 1 PS 31.24 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L 1 CW32	373001 0001	1138



D'ANDREA® Modular tool system, Ø 6-125 mm



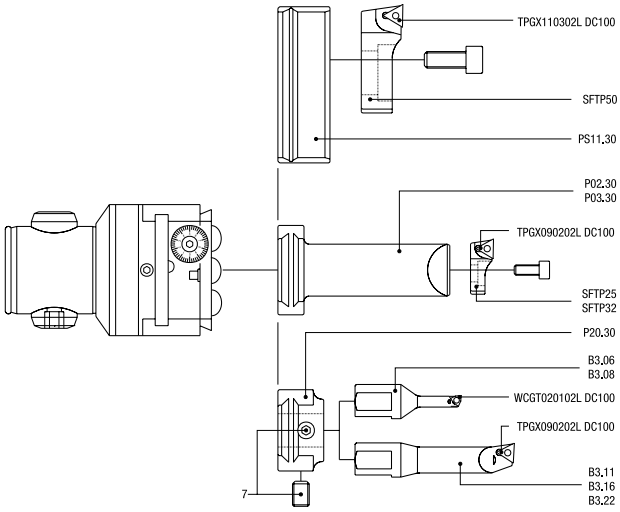
373001 0003

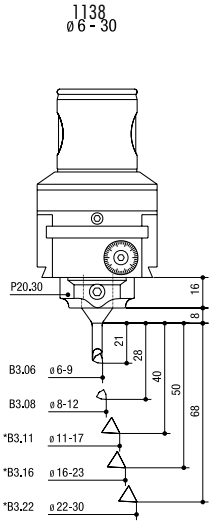
Vc/fz 417

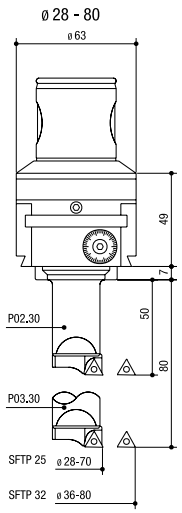
- **K01, TRM 50/63 and TRM 63/63 sets**

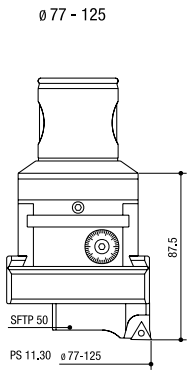
Ø 6 - 125 mm

Contents	art.no.	€
1 TRM 50/63: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) P20.30 / P02.30 / P03.30 (1 of each) 1 PS 11.30 SFTP25 / SFTP32/ SFTP50 (1 of each) 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L	373001 0002	
1 TRM 63/63: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each), P20.30 / P02.30 / P03.30, 1 PS 11.30 (1 of each), SFTP25 / SFTP32/ SFTP50 (1 of each), 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0003	









D'ANDREA® Modular tool system, Ø 6-220 mm



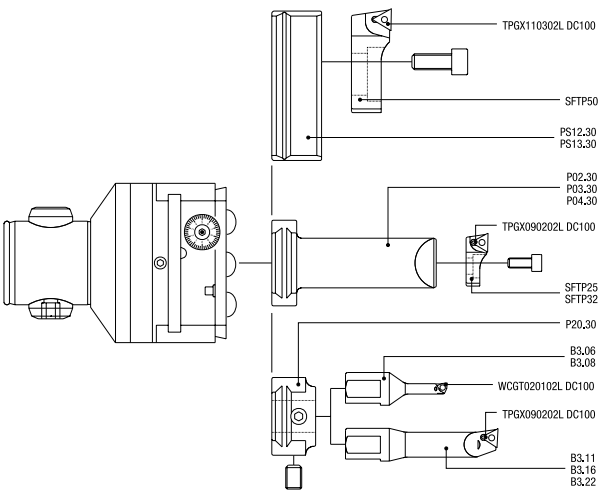
373001 0005

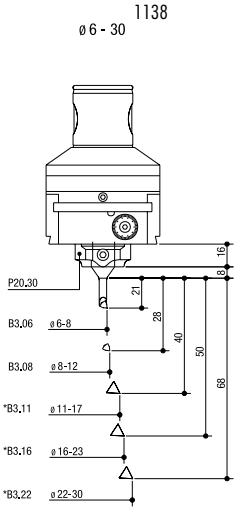
Vc/fz 417

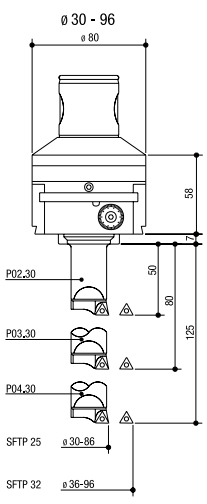
- **K01, TRM 50/80 and TRM 80/80 sets**

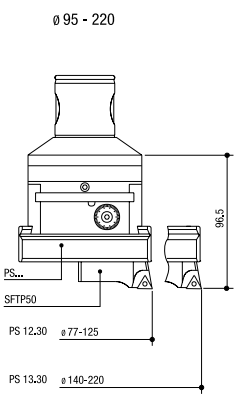
Ø 6 - 220 mm

Contents	art.no.	€
1 TRM 50/80: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) P20.30 / P02.30 (1 of each) P03.30 / P04.30 (1 of each) PS 12.30 / PS13.30 (1 of each) SFTP25 / SFTP32 / SFTP50 (1 of each) 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L	373001 0004	
1 TRM 80/80: B3.06 / B3.08 / B3.11/ B3.16 / B3.22 (1 of each), P20.30 / P02.30(1 of each), P03.30 / P04.30 (1 of each), PS 12.30 / PS 13.30 (1 of each), SFTP25 / SFTP32 / SFTP50 (1 of each), 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0005	









D'ANDREA® ISO indexable cutting inserts

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Indexable inserts for reaming and line boring

- **DP 300** uncoated,
  roughing and finishing, low-carbon steel, stainless steel
- **DK 100** uncoated,
  roughing and finishing, aluminium alloys, cast iron
- **DC 100** uncoated,
  finishing, alloyed steel, cast iron
- **DC 100T** coated,
  finishing, alloyed steel, stainless steel, cast iron
- **D25 CBN** cubic boron nitride (one corner tipped),
  finishing, steel with a hardness over 50 HRC and for interrupted cutting
- **D20 MDC** diamond,
  finishing, aluminium alloys, non-ferrous metals
- **DP 100R** coated,
  roughing, low-carbon steel, stainless steel

WCGT

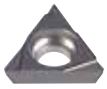
- Cermet

ISO designation		ISO P K **Cermet, DC 100** art.no.	€
WCGT 020102 L	10	373503 0569	
WCGT 020104 L	10	373503 0669	
		1138	



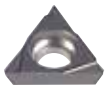
TPGX

ISO designation		ISO P M **DP 300** art.no.	€		ISO N K **DK 100** art.no.	€		ISO P K **Cermet, DC 100** art.no.	€
TPGX 090202 L	10	373507 2004		10	373507 2010		10	373507 2069	
TPGX 090204 L	10	373507 2104		10	373507 2110		10	373507 2169	
TPGX 110302 L	10	373507 2304		10	373507 2310		10	373507 2369	
TPGX 110304 L	10	373507 2404		10	373507 2410		10	373507 2469	
		1138			1138			1138	



TPGX

ISO designation		ISO P M K **Cermet, DC 100T** art.no.	€		ISO P H **D25 CBN** art.no.	€		ISO N **D20 MDC, diamond** art.no.	€
TPGX 090202 L	10	373507 2071		1	373507 2073		1	373507 2075	
TPGX 090204 L	10	373507 2171		1	373507 2173		1	373507 2175	
TPGX 110302 L	10	373507 2371		1	373507 2373		1	373507 2375	
TPGX 110304 L	10	373507 2471		1	373507 2473		1	373507 2475	
		1138			1138			1138	



CCMT

- CVD coated

ISO designation		ISO P K **DP 100 R** art.no.	€
CCMT 09T308	10	373509 3729	
CCMT 120404	10	373509 4029	
CCMT 120408	10	373509 4129	
		1138	



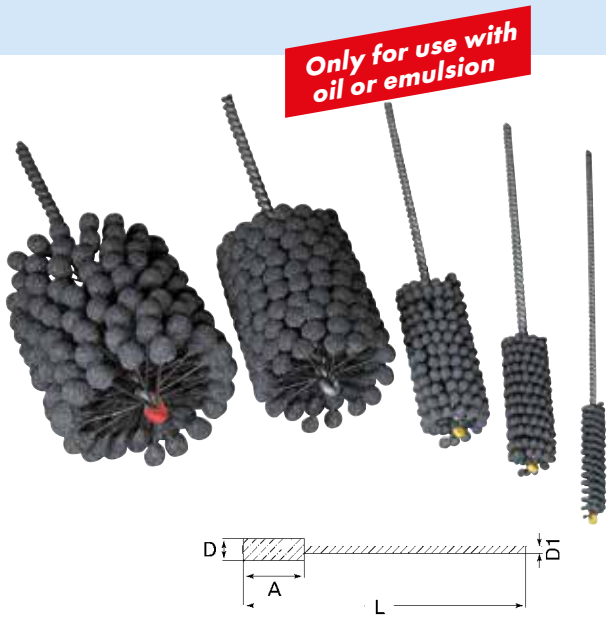
Clamping screws

Designation	Length x width	Suitable for width across flats	suitable indexable inserts		art.no.	€
TS 21	M 2 x 0.4	T06	WCGT 0201..	1	373205 0001	
CS 250 T	M 2.5 x 0.45	T08	TPGX 0902..	10	373205 0002	
CS 300890 T	M 3 x 0.5	T08	TPGX 1103..	10	373205 0003	
TS 4	M 4 x 0.7	T15	CCMT 09T3.. SCMT 09T3..	10	373205 0005	
TS 5	M 5 x 0.8	T25	CCMT 1204.. SCMT 1204..	10	373205 0006	
					1138	



osborn Novoflex-B honing tool

- Robust, self-centring honing tool for smooth grinding processes
- Flexible brush design ensures ideal adjustment of the abrasive balls to the surface
- For chamfering and finishing
- Can also be used in non-circular bores
- For use on hand-held drills, honing machines and automatic machines
- For a uniform, fine-ground surface
- Silicon carbide, SiC
- Recommended speed: 350 to 700 rpm



D mm	Bore hole Ø mm	A mm	L mm	D1 mm	**Grain 120** art.no.	€	**Grain 180** art.no.	€
9	8	50	200	3.7	627004 0009		627005 0009	
10	9	50	200	3.7	627004 0010		627005 0010	
11	10	60	200	3.7	627004 0011		627005 0011	
12	11	60	200	3.7	627004 0012		627005 0012	
13	12	60	200	3.7	627004 0013		627005 0013	
15.5	14	60	200	3.7	627004 0155		627005 0155	
18	16	60	200	4.6	627004 0018		627005 0018	
20	18	60	200	4.6	627004 0020		627005 0020	
22	20	70	200	4.6	627004 0022		627005 0022	
25	22	70	200	4.6	627004 0025		627005 0025	
27	24	70	200	5.1	627004 0027		627005 0027	
28	25	70	200	5.1	627004 0028		627005 0028	
30	27	70	200	5.1	627004 0030		627005 0030	
32	29	70	200	5.1	627004 0032		627005 0032	
35	32	70	200	5.1	627004 0035		627005 0035	
38	35	70	200	5.7	627004 0038		627005 0038	
41	38	70	200	5.7	627004 0041		627005 0041	
45	41	70	200	5.7	627004 0045		627005 0045	
48	45	70	200	5.7	627004 0048		627005 0048	
51	48	70	200	6.5	627004 0051		627005 0051	
54	51	70	200	6.5	627004 0054		627005 0054	
57	54	70	200	6.5	627004 0057		627005 0057	
60	57	70	200	7.3	627004 0060		627005 0060	
64	60	70	200	7.3	627004 0064		627005 0064	
					6120		6120	



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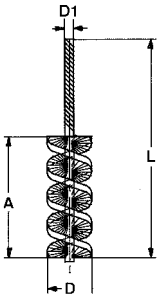


osborn Cylindrical tube brush with grinding bristles

- For internal machining of bores and finishing non-ferrous metals, steel and cast-iron parts
- Silicon carbide, SiC
- Particularly suitable for deburring transverse bores, control components, O-ring recesses and straight bores
- We recommend bristles that are 10 - 15 % wider than the bore
- For cleaning, smoothing, deburring
- Unit prices when purchased in packs



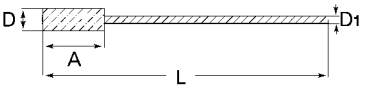
D mm	A mm	L mm	D1 mm	Grain 320 art.no.	€	Grain 120 art.no.	€	Grain 80 art.no.	€
6	50	125	3.0	625001 0006		625002 0006			
8	50	125	3.0	625001 0008		625002 0008			
10	50	125	4.0	625001 0010		625002 0010		625003 0010	
13	50	125	4.0	625001 0013		625002 0013		625003 0013	
16	50	125	5.0	625001 0016		625002 0016		625003 0016	
19	65	125	5.0	625001 0019		625002 0019		625003 0019	
22	65	125	5.5	625001 0022		625002 0022		625003 0022	
25	65	125	5.5	625001 0025		625002 0025		625003 0025	
32	65	125	6.0	625001 0032		625002 0032		625003 0032	
38	65	125	6.0	625001 0038		625002 0038		625003 0038	
50	65	125	6.0	625001 0050		625002 0050		625003 0050	
				6120		6120		6120	





osborn HELITUF® interior brush

- Particularly suitable for cleaning and deburring threaded bores
- Also for brushing edges and longitudinal recesses e.g. for keyways
- Twist-fastened, crimped genuine OSBORN wire, Ø 0.13 mm
- **HELITUF®** brushes are very dense internal brushes for mechanical and manual use
- For cleaning, deburring, brushing
- Unit prices when purchased in packs





Individual

- Dimension D refers to the bore diameter



D mm	A mm	L mm	D1 mm	art.no.	€
8	25	89	approx. 3.18	626001 0008	
10	25	89	approx. 3.18	626001 0010	
13	25	89	approx. 3.18	626001 0013	
16	25	89	approx. 3.18	626001 0016	
22	25	89	approx. 3.18	626001 0022	
29	25	89	approx. 3.18	626001 0029	
				6120	

Set

- 12 brushes, 2 holders



Contents	art.no.	€
Set of brushes: diameter 10, 11, 13, 14, 16, 18, 19, 21, 22, 24, 25, 29 mm	626002 1000	
	6120	

Holder

- Tapered shank hole on one side and either an external or internal thread on the other
- Can be used singly or screwed together up to an overall length of 225 mm including the brush



D1 mm	L mm	Type	art.no.	€
5	90	Male thread	627002 0005	
6	90	Female thread	627002 0006	
			6120	

DRILLING TOOLS
TECHNICAL

Cutting data

Usage recommendations

Machining notes

Type descriptions

Systems overviews

Tapping hole tables

Tolerances

Fits



Centring drills and Step centring drills HSS-E




- Please adjust these guideline values according to clamping operation and machine set-up!

100101....
100141....
100109....
100103....
100104....
100107....
100105....
102214....
102215....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm				
							2	3	6	10	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Structural steel	700 - 950	Ck45	1.1191	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Tempering steel	500 - 950	42 CrMo4	1.7225	15 - 25	22 - 40	0,05	0,07	0,14	0,21	0,28
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Tempering steel	950 -1300	43CrMo4	1.3563	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	15 - 25	20 - 35	0,08	0,1	0,2	0,3	0,4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	10 - 15	15 - 20	0,06	0,07	0,15	0,25	0,35
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 90	70 - 90	0,1	0,12	0,18	0,3	0,35
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	35 - 50	40 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Thermoplastic		PVC		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45
	Thermoset		Melamin		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 6	8 - 12	0,03	0,05	0,1	0,16	0,22

ATORN Solid carbide centring drills



- Please adjust these guideline values according to clamping operation and machine set-up!

100501....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						2	3	6	10	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	70 - 80	0,1	0,12	0,22	0,33	0,45
	Unalloyed structural steel	Up to 700	St-52	1.0052	70 - 80	0,1	0,12	0,22	0,33	0,45
	Structural steel	700 - 950	Ck45	1.1191	60 - 75	0,1	0,12	0,22	0,33	0,45
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 75	0,1	0,12	0,22	0,33	0,45
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	50 - 60	0,07	0,08	0,15	0,23	0,31
	Tempering steel	950 -1300	43CrMo4	1.3563	25 - 40	0,06	0,07	0,13	0,2	0,27
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	25 - 40	0,06	0,07	0,13	0,2	0,27
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	25 - 40	0,06	0,07	0,13	0,2	0,27
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 30	0,06	0,08	0,15	0,2	0,3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 -30	0,06	0,08	0,15	0,2	0,3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 60	0,1	0,12	0,22	0,33	0,45
	Ductile iron	Up to 280 HB	GGG 60	0.7060	35 - 50	0,08	0,1	0,17	0,3	0,4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 150	0,12	0,15	0,2	0,25	0,4
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	70 - 90	0,12	0,15	0,2	0,25	0,4
	Thermoplastic		PVC		150 - 200	0,13	0,15	0,25	0,4	0,5
	Thermoset		Melamin		150 - 200	0,13	0,15	0,25	0,4	0,5
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 30	0,06	0,08	0,15	0,2	0,3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 25	0,05	0,07	0,13	0,2	0,27

ATORN NC spotting drill HSS-E



- Please adjust these guideline values according to clamping operation and machine set-up!

100130....
100131....
100120....

100121....
100132....
100122....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm					
							2	3	6	10	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4	0,45
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4	0,45
	Structural steel	700 - 950	Ck45	1.1191	25 - 30	35 - 50	0,08	0,1	0,2	0,3	0,4	0,45
	Tempering steel	500 - 950	42 CrMo4	1.7225	25 - 30	35 - 50	0,08	0,1	0,2	0,3	0,4	0,45
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	15 - 25	22 - 40	0,05	0,07	0,14	0,21	0,28	0,33
	Tempering steel	950 -1300	43CrMo4	1.3563	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	15 - 25	20 - 35	0,08	0,1	0,2	0,3	0,4	0,45
	Ductile iron	Up to 280 HB	GGG 60	0.7060	10 - 15	15 - 20	0,06	0,07	0,15	0,25	0,35	0,4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 90	70 - 90	0,1	0,12	0,18	0,3	0,35	0,4
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	35 - 50	40 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Thermoplastic		PVC		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45	0,5
	Thermoset		Melamin		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45	0,5
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 6	8 - 12	0,03	0,05	0,1	0,16	0,22	0,27

ATORN Solid carbide NC spotting drill





- Please adjust these guideline values according to clamping operation and machine set-up!

100540....
100550....
100560....
100570....
100571....

100572....
100580....
100581....
100582....
100583....

100584....
100585....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm					
							2	3	6	10	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 100	100 - 120	0,1	0,12	0,22	0,33	0,45	0,5
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 100	100 - 120	0,1	0,12	0,22	0,33	0,45	0,5
	Structural steel	700 - 950	Ck45	1.1191	60 - 90	80 - 110	0,1	0,12	0,22	0,33	0,45	0,5
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 90	80 - 110	0,1	0,12	0,22	0,33	0,45	0,5
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	55 - 75	60 - 80	0,07	0,08	0,15	0,23	0,31	0,36
	Tempering steel	950 -1300	43CrMo4	1.3563	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25 - 50	30 - 60	0,06	0,08	0,15	0,2	0,3	0,35
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25 - 50	30 - 60	0,06	0,08	0,15	0,2	0,3	0,35
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	80 - 100	80 - 90	0,1	0,12	0,22	0,33	0,45	0,5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 90	70 - 90	0,08	0,1	0,17	0,3	0,4	0,45
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Thermoplastic		PVC		100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Thermoset		Melamin		100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 35	30 - 40	0,06	0,08	0,15	0,2	0,3	0,35
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25 - 35	30 - 40	0,05	0,07	0,13	0,18	0,27	0,32
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25 - 35	30 - 40	0,05	0,07	0,13	0,18	0,27	0,32

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101055....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	35	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
P	Structural steel	700 - 950	Ck45	1.1191	30	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	12	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	12	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	40	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	30	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	36	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	25	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	36	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
N	Thermoset		Melamine		20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	8	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	8	0.03 - 004	0.04 - 0.06	0.06 - 0.08	0.08 - 0.11	0.1 - 0.13





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ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101051....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	22	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	15	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	18	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	45	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	32	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	50	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	10	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	5	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.13

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EX-SUS-GDS/GDR Twist drill bit



114045.... 114050....

- Please adjust these guideline values according to clamping operation and machine set-up!
- Cutting data for application with coolant and for drilling depths up to 3 x D

Cutting speed correction factor:
Drilling depth 4 x D = 0.9
5 x D = 0.8
6 x D = 0.8

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						1	2	3	4	5	6	8
P	Machining steel	Up to 700	9 SMn 28	1.0715	32 - 40	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24
	Unalloyed structural steel	Up to 700	St-52	1.0052	32 - 40	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15-20	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.15 - 0.18	0.2 - 0.24
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	15-20	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.15 - 0.18	0.2 - 0.24
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	63 -100	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	63 -100	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	25 - 50	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 50	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	32 - 40	0.2 - 0.28	0.24 - 0.34	0.27 - 0.39	0.29 - 0.43	0.32 - 0.49	0.34 - 0.52
	Unalloyed structural steel	Up to 700	St-52	1.0052	32 - 40	0.2 - 0.28	0.24 - 0.34	0.27 - 0.39	0.29 - 0.43	0.32 - 0.49	0.34 - 0.52
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15-20	0.25 - 0.3	0.3 - 0.36	0.35 - 0.45	0.37 - 0.5	0.39 - 0.54	0.4 - 0.56
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	15-20	0.25 - 0.3	0.3 - 0.36	0.35 - 0.45	0.37 - 0.5	0.39 - 0.54	0.4 - 0.56
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	63 - 100	0.2 - 0.55	0.24 - 0.66	0.27 - 0.74	0.3 - 0.83	0.32 - 0.94	0.36 - 1
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	63 - 100	0.2 - 0.55	0.24 - 0.66	0.27 - 0.74	0.3 - 0.83	0.32 - 0.94	0.36 - 1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	25 - 50	0.2 - 0.25	0.24 - 0.3	0.26 - 0.34	0.27 - 0.37	0.29 - 0.41	0.3 - 0.44
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 50	0.2 - 0.25	0.24 - 0.3	0.26 - 0.34	0.27 - 0.37	0.29 - 0.41	0.3 - 0.44

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ATORN Twist drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!


101080....


101505.... 101501....


101001.... 101060....
101005.... 101405....
101035....


102101.... 102102....
102103....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	16	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101006.... 101063....
101036.... 101700....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	14	0.06 - 0.08	0.8 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101008.... 101038....
101010.... 101605....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Structural steel	700 - 950	Ck45	1.1191	18	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	14	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	6	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.12

ATORN Mini twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101075....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						0.05 - 0.2	0.25 - 0.45	0.5 - 0.7	0.75 - 0.95	1 - 1.5
P	Machining steel	Up to 700	9 SMn 28	1.0715	16	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Unalloyed structural steel	Up to 700	St-52	1.0052	21	0.005 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Structural steel	700 - 950	Ck45	1.1191	18	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Cast steel	Up to 950	GS 40	1.0416	18	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	14	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	14	0.002 - 0.004	0.005 - 0.007	0.008 - 0.014	0.015 - 0.028	0.029 - 0.04
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6	0.002 - 0.004	0.005 - 0.007	0.008 - 0.014	0.015 - 0.028	0.029 - 0.04
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6	0.003 - 0.006	0.007 - 0.010	0.011 - 0.018	0.019 - 0.033	0.036 - 0.046
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	26	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	22	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Ductile iron	Up to 280 HB	GGG 60	0.7060	18	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	18	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.05 - 0.06
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	22	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	22	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Thermoplastic		PVC		18	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Thermoset		Melamine		16	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101012....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	47	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	42	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	26	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	17	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	23	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	59	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	47	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	52	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	23	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	91	0.12 - 0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	47	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	30	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Thermoset		Melamine		28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101014....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	36	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
P	Structural steel	700 - 950	Ck45	1.1191	32	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	13	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	45	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101016....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	8	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	3	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101017....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
N	Thermoplastic		PVC		25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32

ATORN KSB-5 Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- The specified values apply for insert up to 5 x D

101095....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	45 - 55	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	35 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	25 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Cast steel	Up to 950	GS 40	1.0416	25 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	23 - 40	0.04 - 0.08	0.06 - 0.1	0.1 - 0.14	0.12 - 0.15	0.14 - 0.16
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	18 - 25	0.04 - 0.08	0.06 - 0.1	0.1 - 0.14	0.12 - 0.15	0.14 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	10 - 16	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.14 - 0.16	0.15 - 0.18
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	10 - 12	0.03 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.13	0.12 - 0.15
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	40 - 50	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30 - 50	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70 - 80	0. - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 80	0. - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101061....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	14	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	8	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	22	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101062....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	12	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN Deep-hole drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101070....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	9	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	8	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	18	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	20	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	14	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	45	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	22	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Thermoplastic		PVC		18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25

High-performance deep-hole drill bit TDXL

- Please adjust these guideline values according to clamping operation and machine set-up!

101099.... 101100.... 101101....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						1.6 - 2	3 - 4	5 - 6	8 - 10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 24	0.016 - 0.05	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 24	0.016 - 0.05	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	18 - 22	0.016 - 0.04	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16 - 20	0.01 - 0.04	0.02 - 0.1	0.03 - 0.13	0.06 - 0.2	0.12 - 0.3
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	8 - 12	0.016 - 0.04	0.03 - 0.09	0.05 - 0.13	0.06 - 0.18	0.12 - 0.26
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	18 - 24	0.03 - 0.05	0.06 - 0.13	0.1 - 0.19	0.16 - 0.32	0.24 - 0.38
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	16 - 20	0.01 - 0.06	0.02 - 0.1	0.03 - 0.15	0.05 - 0.25	0.07 - 0.3

ATORN Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101507....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.2 - 0.32	0.32 - 0.38
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	14	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.3 - 0.32	0.32 - 0.38
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	10	0.12 - 0.16	0.16 - 0.2	0.2 - 0.24	0.24- 0.26	0.26 - 0.3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70	0.3 - 0.4	0.4-0.5	0.5 - 0.6	0.6 - 0.65	0.65 - 0.7
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	36	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.3 - 0.32	0.32 - 0.38
	Thermoplastic		PVC		25	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	6	0.1 - 0.13	0.13 - 0.16	0.16 - 0.18	0.18 - 0.19	0.19 - 0.22

ATORN Twist drill bit (drilling bush)



- Please adjust these guideline values according to clamping operation and machine set-up!

101601....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 8	8.1 - 16	16.1 - 25	25.1 - 40	40.1 - 50
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.5 - 0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Structural steel	700 - 950	Ck45	1.1191	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Cast steel	Up to 950	GS 40	1.0416	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	12	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	28	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	22	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Ductile iron	Up to 280 HB	GGG 60	0.7060	22	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	18	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.25	0.25 - 0.4	0.4 - 0.63	0.63 - 0.8	0.8 - 1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	34	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5
	Thermoplastic		PVC		22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Thermoset		Melamine		14	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5

ATORN Core drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101515....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 14	14.1 - 20	20.1 - 40
P	Machining steel	Up to 700	9 SMn 28	1.0715	25 - 28	0.07	0.1	0.12	0.18	0.22
	Unalloyed structural steel	Up to 700	St-52	1.0052	26 - 30	0.07	0.1	0.12	0.18	0.22
	Structural steel	700 - 950	Ck45	1.1191	25 - 28	0.07	0.1	0.12	0.18	0.22
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	6 - 10	0.03	0.04	0.06	0.08	0.01
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	2-5	0.03	0.04	0.06	0.08	0.01
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	3 - 6	0.03	0.04	0.06	0.08	0.01
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	4 - 10	0.03	0.04	0.06	0.08	0.01
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	10 - 18	0.07	0.1	0.12	0.18	0.22
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	9 - 13	0.05	0.08	0.1	0.15	0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	25 - 40	0.07	0.1	0.12	0.18	0.22
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	10 - 30	0.07	0.1	0.12	0.18	0.22
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	10 - 30	0.07	0.1	0.12	0.18	0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	10 - 30	0.07	0.1	0.12	0.18	0.22
	Thermoplastic		PVC		20 - 30	0.07	0.1	0.12	0.18	0.22
	Thermoset		Melamine		15 - 25	0.05	0.08	0.1	0.15	0.18

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ATORN Solid carbide micro drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111550....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						0.1 - 1	1.1 - 1.5	1.6 - 2	2.1 - 3
P	Machining steel	Up to 700	9 SMn 28	1.0715	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Unalloyed structural steel	Up to 700	St-52	1.0052	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Structural steel	700 - 950	Ck45	1.1191	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Cast steel	Up to 950	GS 40	1.0416	50 - 70	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 60	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 25	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 35	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 - 35	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 100	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	150 - 220	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 160	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80 - 130	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80 - 130	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Thermoplastic		PVC		20 - 60	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Thermoset		Melamine		20 - 55	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Graphite		C8000		60 - 95	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	10 - 30	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10 - 30	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075

ATORN Solid carbide twist drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



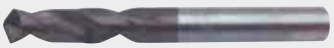
111005....



111010....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Cast steel	Up to 950	GS 40	1.0416	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	60	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	200	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.44	0.44 - 0.55
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Thermoplastic		PVC		40	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Thermoset		Melamine		50	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Graphite		C8000		80	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Hardened materials up to 64 HRc		100Cr6	1.2067	10	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16

ATORN Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111009....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	78	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	32	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	32	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	117	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	156	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	234	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	156	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Thermoplastic		PVC		52	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		65	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Graphite		C8000		104	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	26	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.22

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SARA® HPC-UNI solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111603....
111607....
111612....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm								
						With IC	3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	115	135	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	95	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	90	95	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	60	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	70	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 -1400	X 38 CrMoV 5 1	1.2343	45	50	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X 10 Cr 13	1.4006	36	36	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X 12 CrMoS 17	1.4104	45	52	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	100 - 400	GG 25	0.6025	125	125	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	36	40	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	400 - 800	GGG 60	0.7060	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	350 - 700	GTS 55	0.8155	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	210	250	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	145	180	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	145	180	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	215	250	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	28	32	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	28	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	32	45	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20	28	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

ATORN High performance drill SOLID CARBIDE-ULTRA N PRO



- Please adjust these guideline values according to clamping operation and machine set-up.

111411....

ISO	Materials group	Strength/ Hardness N/mm²	Material chemical example	Material number	Cutting speed Vc m/min	Feed rate f in mm/rev in relation to drill diameter in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
N	Al. alloys, long-chipping	up to 500	AlMg 3	3.3535	350 - 370	0.08 - 0.13	0.13 - 0.25	0.25 - 0.36	0.36 - 0.50	0.50 - 0.54	0.54 - 0.62
	Al. alloys, short-chipping	up to 500	G-AlSi 12	3.2581	380 - 400	0.09 - 0.14	0.14 - 0.26	0.26 - 0.37	0.37 - 0.52	0.52 - 0.56	0.56 - 0.63
	Copper alloy (bronze) long-chipping	up to 1200	CuSn4	2.1016	190 - 210	0.06 - 0.11	0.11 - 0.23	0.23 - 0.34	0.34 - 0.45	0.45 - 0.50	0.50 - 0.52
	Copper alloy (bronze), short-chipping	up to 850	CuNi12Zn24	2.0730	210 - 230	0.07 - 0.12	0.12 - 0.24	0.24 - 0.36	0.36 - 0.47	0.47 - 0.51	0.51 - 0.53
	Copper alloy (brass) long-chipping	up to 600	Cu ZN 20	2.0250	210 - 230	0.06 - 0.11	0.11 - 0.23	0.23 - 0.34	0.34 - 0.45	0.45 - 0.50	0.50 - 0.52
	Copper alloy (brass), short-chipping	up to 600	Cu Zn 39 Pb 3	2.0381	260 - 280	0.07 - 0.12	0.12 - 0.24	0.24 - 0.36	0.36 - 0.47	0.47 - 0.51	0.51 - 0.53
	Thermoplastic		PVC		100 - 120	0.05 - 0.10	0.10 - 0.21	0.21 - 0.32	0.32 - 0.43	0.43 - 0.47	0.47 - 0.50
	Thermosetting plastic		Melamine		70 - 80	0.05 - 0.10	0.10 - 0.21	0.21 - 0.32	0.32 - 0.43	0.43 - 0.47	0.47 - 0.50
	Fibre-reinforced plastics		CFRP, GFRP								
	Graphite		C8000								
	Composite materials		Honeycomp								

Solid carbide high-performance drill bit HARD 3D / 5D



- Please adjust these guideline values according to clamping operation and machine set-up!

111536....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	16 - 28	0,03 - 0,06	0,06 - 0,08	0,08 - 0,09	0,09 - 0,11	0,11 - 0,13	0,13 - 0,15
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	10 - 16	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1
	Hardened materials up to 64 HRc		100Cr6	1.2067	8 - 14	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1

ATORN TiAlNplus HPC solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111566....
111567....
111562....

111563....
111573....

Solid carbide high-performance drill bit

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm								
						3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	145	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	110	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	110	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	75	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	55	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	55	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	155	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	180	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	270	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	25	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

111564....
111565....

111568....
111569....

Solid carbide high-performance drill bit with internal cooling

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm								
						3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	120	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	120	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	65	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	160	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	50	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	310	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	325	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	55	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	35	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

ATORN Ultra-M solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111549....

111551....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									
						3	4	5	6	8	10	12	16	18	20
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	80	0.080	0.1	0.1	0.125	0.16	0.2	0.2	0.25	0.28	0.315
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.05	0.063	0.063	0.08	0.1	0.125	0.125	0.125	0.14	0.16
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.04	0.05	0.05	0.063	0.08	0.1	0.1	0.125	0.14	0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0.04	0.05	0.05	0.063	0.08	0.1	0.1	0.125	0.14	0.16

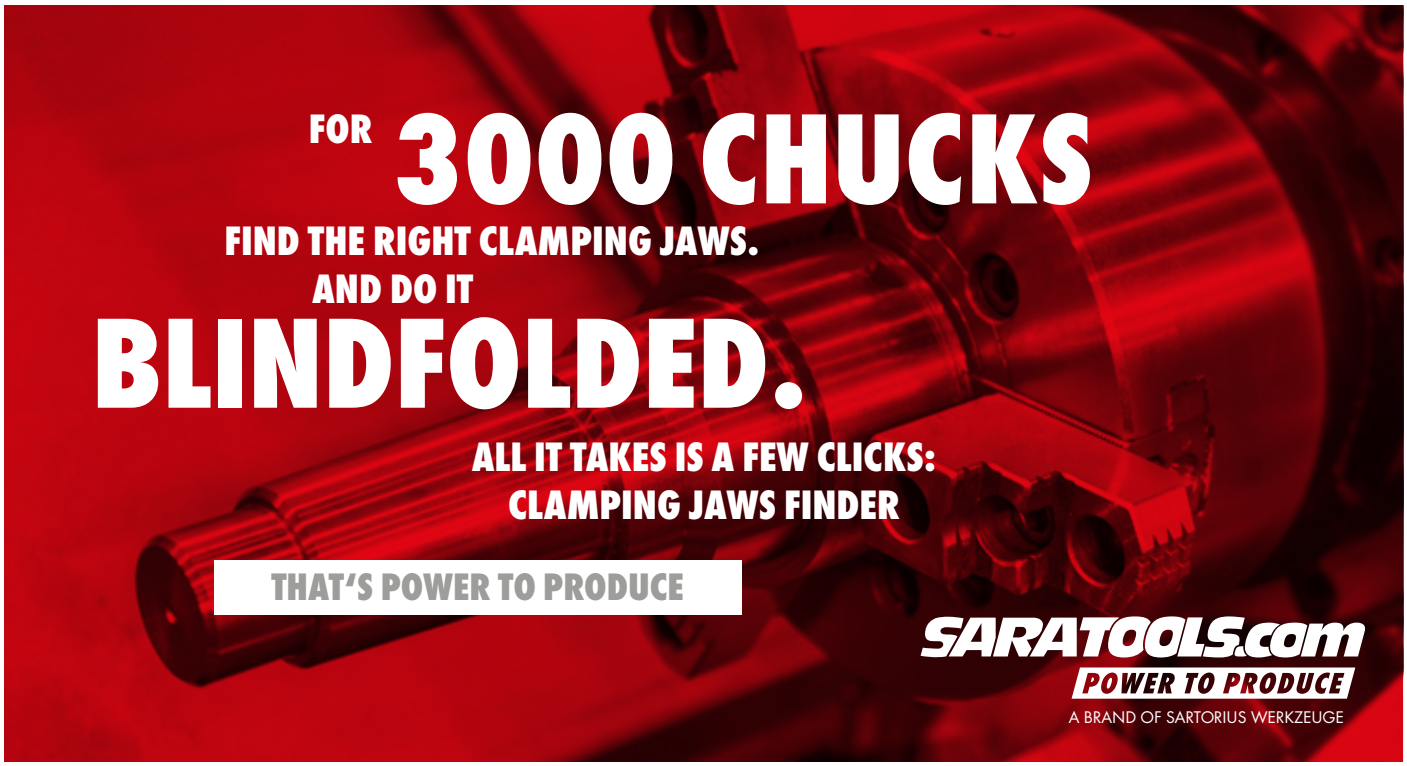
ATORN Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111012....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	100	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	30	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	30	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	115	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	100	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	155	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	235	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	155	0.1 - 0.16	0.16 - 0.2	0.22 - 0.25	0.25 - 0.32	0.32 - 0.4
	Thermoplastic		PVC		65	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		50	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2



ATORN TiAlNplus HPC 8D solid carbide high-performance drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



111570....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	145	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Unalloyed structural steel	Up to 700	St-52	1.0052	145	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	125	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Cast steel	Up to 950	GS 40	1.0416	120	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	65	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	210	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Ductile iron	Up to 280 HB	GGG 60	0.7060	160	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	130	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	310	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	125	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	55	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	35	0.03 - 0.04	0.04 - 0.63	0.63 - 0.1	0.08 - 0.1	0.1 - 0.13

ATORN TiAlNplus HPC 12D solid carbide high-performance drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



111572....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	90	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Cast steel	Up to 950	GS 40	1.0416	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Ductile iron	Up to 280 HB	GGG 60	0.7060	90	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	150	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN Solid carbide deep drill bits TiAlNplus HPC 16D/20D

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**



111574.... 111575....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5 - 8	8 - 10	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Structural steel	700 – 950	Ck45	1.1191	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Cast steel	Up to 950	GS 40	1.0416	80 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
P	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	80 - 110	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, ferr./marten.	500 – 950	X10 Cr13	1.4006	50 - 70	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, austenitic	500 – 950	X5 CrNi 18 10	1.4301	40 - 70	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35

ATORN Solid carbide deep drill bits TiAlNplus HPC 25D/30D

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**

111576.... 111577....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5 - 8	8 - 10	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Unalloyed structural steel	Up to 700	St-52	1.0052	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Structural steel	700 – 950	Ck45	1.1191	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
P	Cast steel	Up to 950	GS 40	1.0416	70 - 90	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
P	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	60 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50 - 90	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, ferr./marten.	500 – 950	X10 Cr13	1.4006	40 - 60	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, austenitic	500 – 950	X5 CrNi 18 10	1.4301	30 - 60	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35

ATORN Solid carbide flat drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



111709.... 111710....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter range in mm				
						3 - 5	5.1 – 8	8.1 – 12	12.1 – 16	16.1 – 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	100	0.15	0.2	0.22	0.3	0.35
P	Unalloyed structural steel	Up to 700	St-52	1.0052	90	0.15	0.2	0.22	0.3	0.35
P	Structural steel	700 – 950	Ck45	1.1191	70	0.13	0.18	0.27	0.27	0.34
P	Cast steel	Up to 950	GS 40	1.0416	80	0.15	0.2	0.22	0.30	0.34
P	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	70	0.13	0.18	0.27	0.27	0.34
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70	0.13	0.18	0.27	0.27	0.34
M	Stainless steel, ferr./marten.	500 – 950	X 5 CrNi 18 10	1.4301	40	0.07	0.1	0.11	0.15	0.18
M	Stainless steel, austenitic	500 – 950	X 12 CrMoS 17	1.4104	25	0.06	0.08	0.1	0.14	0.16
M	Duplex	500 – 950	X 10 Cr 13	1.4006	25	0.06	0.08	0.1	0.14	0.16
K	Grey cast iron	100 – 400	GG 25	0.6025	90	0.15	0.2	0.22	0.3	0.34
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	80	0.15	0.2	0.22	0.3	0.34
K	Ductile iron	400 – 800	GGG 60	0.7060	80	0.15	0.2	0.22	0.3	0.34
K	Malleable cast iron	350 – 700	GTS 55	0.8155	80	0.15	0.2	0.22	0.3	0.34
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	220	0.15	0.2	0.2	0.26	0.32
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.15	0.2	0.2	0.26	0.32
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	120	0.15	0.2	0.18	0.24	0.28
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	120	0.15	0.2	0.18	0.24	0.28
N	Thermoplastic		PVC		100	0.07	0.1	0.12	0.14	0.2
N	Thermoset		Melamine		-	0.07	0.1	0.12	0.14	0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.08	0.09	0.13	0.15
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.09	0.13	0.15
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.05	0.07	0.08	0.11	0.13

ADO solid carbide deep-hole drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**

111715....
111716....
111717....
111718....
111726....

10 x D - 30 x D

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						3	4	5	6	8	10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 125	0,06 - 0,12	0,08 - 0,16	0,1 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 125	0,06 - 0,12	0,08 - 0,16	0,1 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Structural steel	700 – 950	Ck45	1.1191	60 - 125	0,06 - 0,12	0,08 - 0,16	0,1 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 125	0,06 - 0,12	0,08 - 0,16	0,1 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 90	0,06 - 0,11	0,08 - 0,14	0,1 - 0,17	0,12 - 0,21	0,16 - 0,24	0,20 - 0,30	0,24 - 0,40
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	60 - 90	0,06 - 0,11	0,08 - 0,14	0,1 - 0,17	0,12 - 0,21	0,16 - 0,24	0,20 - 0,30	0,24 - 0,40
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 80	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40 - 80	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 125	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,20 - 0,35	0,24 - 0,42

40 x D, 50 x D

111719....
111720....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						3	4	5	6	8	10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Structural steel	700 – 950	Ck45	1.1191	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Tempering steel	950 -1300	43CrMo4	1.3563	60 -90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	60 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 70	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40 - 70	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 100	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 100	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,16 - 0,28	0,20 - 0,30	0,21 - 0,30

ADO-MICRO solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111721....
111722....
111723....
111724....
111725....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						0,7	1	1,5	2
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Structural steel	700 – 950	Ck45	1.1191	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Tempering steel	500 - 950	42 CrMo4	1.7225	20 - 60	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Tempering steel	950 -1300	43CrMo4	1.3563	20 - 40	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	20 - 40	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 70	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 - 70	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	20 - 60	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30 - 50	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	30 - 70	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40 - 60	0,011 - 0,018	0,015 - 0,025	0,023 - 0,038	0,03 - 0,05
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 15	0,004 - 0,014	0,005 - 0,02	0,008 - 0,03	0,01 - 0,04

ATORN HIGH FEED 5D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111585....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	110 - 150	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 160	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Structural steel	700 – 950	Ck45	1.1191	110 - 150	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 130	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Cast steel	Up to 950	GS 40	1.0416	90 - 125	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,6
	Alloyed case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 130	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,6
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 100	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	100 - 130	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	40 - 80	0,06 - 0,15	0,15 - 0,2	0,2 - 0,35	0,35 - 0,4	0,4 - 0,46	0,46 - 0,51
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	85 - 130	0,2 - 0,32	0,32 - 0,38	0,38 - 0,55	0,55 - 0,65	0,65 - 0,7	0,7 - 0,75
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 80	0,05 - 0,12	0,12 - 0,16	0,16 - 0,27	0,27 - 0,35	0,35 - 0,45	0,45 - 0,5
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	75 - 115	0,15 - 0,29	0,29 - 0,35	0,35 - 0,5	0,5 - 0,6	0,6 - 0,65	0,65 - 0,7

ATORN Solid carbide drill reamer



- Please adjust these guideline values according to clamping operation and machine set-up!

111701....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 – 8	8.1 – 12	12.1 – 16	16.1 – 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	65	0.15	0.18	0.24	0.37	0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	70	0.15	0.18	0.24	0.37	0.4
	Structural steel	700 – 950	Ck45	1.1191	55	0.15	0.18	0.24	0.37	0.4
	Cast steel	Up to 950	GS 40	1.0416	50	0.15	0.18	0.24	0.37	0.4
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	55	0.15	0.18	0.24	0.37	0.4
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	55	0.15	0.18	0.24	0.37	0.4
K	Grey cast iron	100 – 400	GG 25	0.6025	60	0.15	0.18	0.24	0.37	0.4
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	50	0.15	0.18	0.24	0.37	0.4
	Ductile iron	400 – 800	GGG 60	0.7060	50	0.15	0.18	0.24	0.37	0.4
	Malleable cast iron	350 – 700	GTS 55	0.8155	50	0.15	0.18	0.24	0.37	0.4

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HYP-HPO-3D / 5D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111628.... 111629....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						3	4	5	6	8	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	100 - 150	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
	Unalloyed structural steel	Up to 700	St-52	1.0052	100 - 150	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
	Structural steel	700 - 950	Ck45	1.1191	80 - 120	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
	Tempering steel	500 - 950	42 CrMo4	1.7225	70 - 110	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	50 - 60	0,07 - 0,11	0,08 - 0,13	0,10 - 0,15	0,12 - 0,18	0,14 - 0,22	0,15 - 0,25
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 60	0,07 - 0,11	0,08 - 0,13	0,10 - 0,15	0,12 - 0,18	0,14 - 0,22	0,15 - 0,25
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	50 - 60	0,07 - 0,11	0,08 - 0,13	0,10 - 0,15	0,12 - 0,18	0,14 - 0,22	0,15 - 0,25
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50 - 60	0,07 - 0,11	0,08 - 0,13	0,10 - 0,15	0,12 - 0,18	0,14 - 0,22	0,15 - 0,25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 50	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40 - 50	0,09 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,20	0,16 - 0,24	0,18 - 0,27
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 200	0,12 - 0,15	0,13 - 0,18	0,15 - 0,22	0,18 - 0,25	0,20 - 0,30	0,23 - 0,33
	Ductile iron	Up to 280 HB	GGL-NiCr 35 2	0.6678	100 - 150	0,12 - 0,15	0,13 - 0,18	0,15 - 0,22	0,18 - 0,25	0,20 - 0,30	0,23 - 0,33
	Malleable cast iron	Up to 280 HB	GGG 60	0.7060	100 - 150	0,12 - 0,15	0,13 - 0,18	0,15 - 0,22	0,18 - 0,25	0,20 - 0,30	0,23 - 0,33
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 110	0,09 - 0,20	0,10 - 0,24	0,12 - 0,28	0,14 - 0,34	0,16 - 0,38	0,18 - 0,45
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120 - 220	0,09 - 0,28	0,10 - 0,38	0,12 - 0,40	0,14 - 0,48	0,16 - 0,53	0,18 - 0,63
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	50 - 90	0,02 - 0,03	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,08	0,05 - 0,10
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	50 - 90	0,02 - 0,03	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,08	0,05 - 0,10
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	50 - 90	0,02 - 0,03	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,08	0,05 - 0,10
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	50 - 90	0,02 - 0,03	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,08	0,05 - 0,10
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15 - 25	0,05 - 0,09	0,06 - 0,10	0,08 - 0,12	0,09 - 0,15	0,12 - 0,20	0,13 - 0,23
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 25	0,05 - 0,09	0,06 - 0,10	0,08 - 0,12	0,09 - 0,15	0,12 - 0,20	0,13 - 0,23
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	15 - 25	0,05 - 0,09	0,06 - 0,10	0,08 - 0,12	0,09 - 0,15	0,12 - 0,20	0,13 - 0,23
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	15 - 25	0,03 - 0,05	0,04 - 0,06	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,07 - 0,10
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	15 - 20	0,03 - 0,05	0,04 - 0,06	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,07 - 0,10

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	100 - 150	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Unalloyed structural steel	Up to 700	St-52	1.0052	100 - 150	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Structural steel	700 - 950	Ck45	1.1191	80 - 120	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Tempering steel	500 - 950	42 CrMo4	1.7225	70 - 110	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	50 - 60	0,17 - 0,26	0,18 - 0,30	0,20 - 0,32	0,23 - 0,33	0,25 - 0,35
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 60	0,17 - 0,26	0,18 - 0,30	0,20 - 0,32	0,23 - 0,33	0,25 - 0,35
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	50 - 60	0,17 - 0,26	0,18 - 0,30	0,20 - 0,32	0,23 - 0,33	0,25 - 0,35
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50 - 60	0,17 - 0,26	0,18 - 0,30	0,20 - 0,32	0,23 - 0,33	0,25 - 0,35
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 50	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40 - 50	0,20 - 0,30	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 200	0,25 - 0,38	0,30 - 0,43	0,35 - 0,50	0,38 - 0,55	0,40 - 0,63
	Ductile iron	Up to 280 HB	GGL-NiCr 35 2	0.6678	100 - 150	0,25 - 0,38	0,30 - 0,43	0,35 - 0,50	0,38 - 0,55	0,40 - 0,63
	Malleable cast iron	Up to 280 HB	GGG 60	0.7060	100 - 150	0,25 - 0,38	0,30 - 0,43	0,35 - 0,50	0,38 - 0,55	0,40 - 0,63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 110	0,20 - 0,53	0,22 - 0,57	0,25 - 0,61	0,28 - 0,63	0,28 - 0,68
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120 - 220	0,20 - 0,75	0,22 - 0,81	0,25 - 0,85	0,28 - 0,90	0,30 - 0,98
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	50 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,18	0,12 - 0,20	0,20 - 0,28
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	50 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,18	0,12 - 0,20	0,20 - 0,28
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	50 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,18	0,12 - 0,20	0,20 - 0,28
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	50 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,18	0,12 - 0,20	0,20 - 0,28
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15 - 25	0,14 - 0,24	0,15 - 0,26	0,16 - 0,26	0,18 - 0,28	0,20 - 0,30
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 25	0,14 - 0,24	0,15 - 0,26	0,16 - 0,26	0,18 - 0,28	0,20 - 0,30
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	15 - 25	0,14 - 0,24	0,15 - 0,26	0,16 - 0,26	0,18 - 0,28	0,20 - 0,30
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	15 - 25	0,09 - 0,12	0,10 - 0,13	0,10 - 0,13	0,12 - 0,16	0,14 - 0,18
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	15 - 20	0,09 - 0,12	0,10 - 0,13	0,10 - 0,13	0,12 - 0,16	0,14 - 0,18

ADO-SUS-3D/5D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111613.... 111615....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						3	4	5	6	7	8	9	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 90	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 100	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 100	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	30 - 60	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.12 - 0.18	0.14 - 0.21	0.16 - 0.24	0.18 - 0.27	0.2 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20-50	0.05 - 0.09	0.06 - 0.12	0.08 - 0.15	0.09 - 0.18	0.11 - 0.21	0.12 - 0.24	0.14 - 0.27	0.15 - 0.3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20-50	0.05 - 0.09	0.06 - 0.12	0.08 - 0.15	0.09 - 0.18	0.11 - 0.21	0.12 - 0.24	0.14 - 0.27	0.15 - 0.3

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						11	12	13	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 100	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 100	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	30 - 60	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20-50	0.15 - 0.3	0.16 - 0.3	0.18 - 0.33	0.19 - 0.35	0.22 - 0.36	0.24 - 0.38	0.27 - 0.4
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20-50	0.15 - 0.3	0.16 - 0.3	0.18 - 0.33	0.19 - 0.35	0.22 - 0.36	0.24 - 0.38	0.27 - 0.4

ADF-2D solid carbide flat drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111711.... 111713....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						2	3	4	6	8	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 100	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 100	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	30 - 90	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 40	0.01 - 0.04	0.015 - 0.06	0.02 - 0.08	0.03 - 0.12	0.04 - 0.16	0.05 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 120	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 200	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 200	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 30	0.01 - 0.03	0.015 - 0.045	0.02 - 0.06	0.03 - 0.09	0.04 - 0.12	0.05 - 0.15

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 100	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 100	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	30 - 90	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 40	0.06 - 0.24	0.07 - 0.28	0.08 - 0.32	0.09 - 0.36	0.1 - 0.4
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 120	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 200	0.06 - 0.36	0.07 - 0.42	0.08 - 0.48	0.09 - 0.54	0.1 - 0.60
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 200	0.06 - 0.36	0.07 - 0.42	0.08 - 0.48	0.09 - 0.54	0.1 - 0.60
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 30	0.06 - 0.18	0.07 - 0.21	0.08 - 0.24	0.09 - 0.27	0.1 - 0.3

ATORN Solid carbide short step drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

102202....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.1	0.15	0.190	0.21
	Unalloyed structural steel	Up to 700	St-52	1.0052	75	0.1	0.15	0.190	0.21
	Structural steel	700 - 950	Ck45	1.1191	60	0.1	0.12	0.153	0.17
	Cast steel	Up to 950	GS 40	1.0416	60	0.18	0.24	0.37	0.34
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	60	0.1	0.12	0.153	0.17
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60	0.1	0.12	0.153	0.17
M	Stainless steel, ferr./marten.	500 - 950	X 10 Cr 13	1.4006	25	0.08	0.11	0.143	0.16
	Stainless steel, austenitic	500 - 950	X 12 CrMoS 17	1.4104	30	0.09	0.12	0.16	0.18
K	Grey cast iron	100 - 400	GG 25	0.6025	70	0.18	0.24	0.37	0.34
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	60	0.18	0.24	0.37	0.34
	Ductile iron	400 - 800	GGG 60	0.7060	60	0.18	0.24	0.37	0.34
	Malleable cast iron	350 - 700	GTS 55	0.8155	60	0.18	0.24	0.37	0.34
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	200	0.14	0.2	0.28	0.32
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.14	0.2	0.28	0.32
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80	0.11	0.18	0.247	0.28
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80	0.11	0.18	0.247	0.28
	Thermoplastic		PVC		40	0.08	0.14	0.18	0.2
	Thermoset		Melamine		40	0.08	0.14	0.18	0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.1	0.133	0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.1	0.133	0.15
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.1	0.12	0.153	0.17



102211....

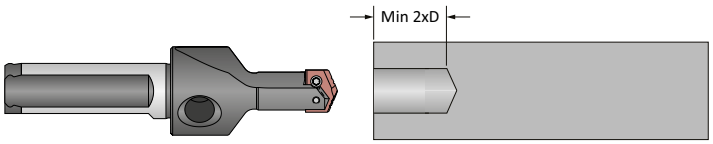
ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm		
						3 - 5	5.1 - 8	8.1 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.1	0.125	0.18
	Unalloyed structural steel	Up to 700	St-52	1.0052	75	0.1	0.125	0.18
	Structural steel	700 - 950	Ck45	1.1191	60	0.1	0.11	0.145
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	60	0.1	0.11	0.145
	Cast steel	Up to 950	GS 40	1.0416	60	0.18	0.21	0.29
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60	0.1	0.11	0.145
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25	0.08	0.095	0.135
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25	0.08	0.095	0.135
K	Grey cast iron	100 - 400	GG 25	0.6025	70	0.18	0.21	0.29
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	60	0.18	0.21	0.29
	Ductile iron	400 - 800	GGG 60	0.7060	60	0.18	0.21	0.29
	Malleable cast iron	350 - 700	GTS 55	0.8155	60	0.18	0.21	0.29
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	200	0.14	0.17	0.26
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.14	0.17	0.26
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80	0.110	0.145	0.23
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80	0.110	0.145	0.23
	Thermoplastic	40 - 70	PVC		40	0.08	0.11	0.17
	Thermoset	20 - 40	Melamine		40	0.08	0.11	0.17
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.125

Machining notes drilling system T-A®

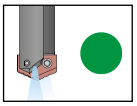
- Please adjust these guideline values according to clamping operation and machine set-up!
- **Note:** Tool breakage can cause serious damage. Without support bushings, please pre-drill a pilot bore 2-3xD deep with a short holder. The rotational speed of the tool outside the component may not exceed 50 rpm.

1. **Pilot bore**
   100 % rpm
   100 % mm/rev

Pre-drill a pilot bore of at least 2xD deep using the AMEC® pilot drill bit.
Use a short AMEC® pilot drill bit with an equal or greater point angle.

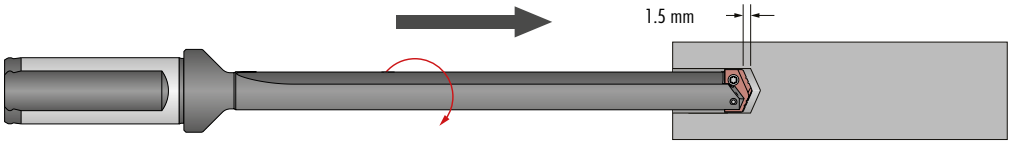


With cooling

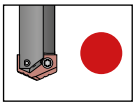


2. **Insert the deep-hole drill bit into the pilot bore**
   50 rpm max
   300 mm/min

Position the AMEC® deep-hole drill bit up to 1.5 mm from the root of the pilot bore with max. 50 rpm (clockwise rotation) and with a feed of 300 mm/min.

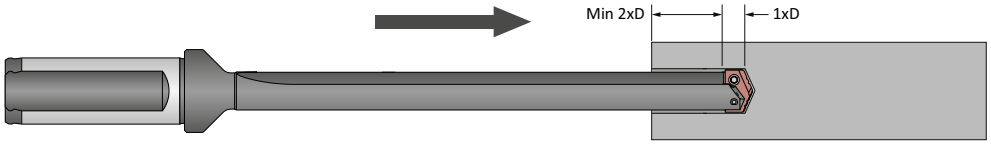


Without cooling

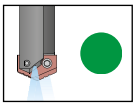


3. **Deep-hole drilling - Between-drilling**
   50 % rpm
   75 % mm/rev

Drill 1xD beyond the root of the pilot bore. Reduce cutting speed by 50 % and reduce feed by 25 %. At least 1 seconds' dwell time is required prior to further machining to reach full speed (prevents vibration).

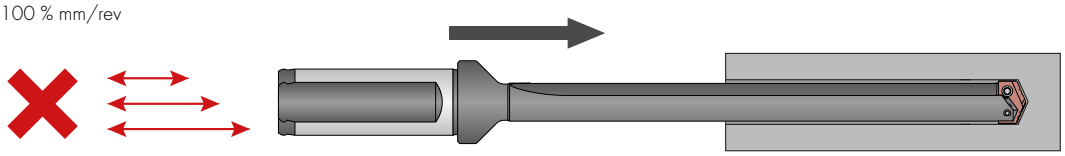


With cooling

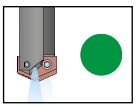


4. **Deep-hole drilling bit - Blind hole**
   100 % rpm
   100 % mm/rev

Drill to the full depth using the recommended cutting data.
Clamping cycles not recommended.

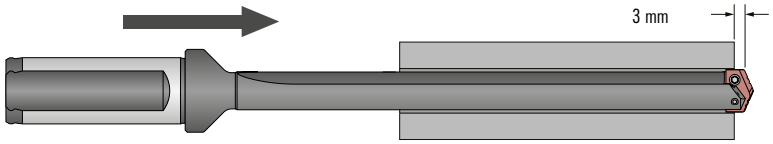


With cooling

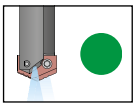


5. **Deep-hole drilling bit - Through-hole**
   50 % rpm
   75 % mm/rev

Only for through-holes:
Reduce cutting speed by 50 % and reduce feed by 25 % before exit.
Use no more than 3 mm beyond the full diameter.

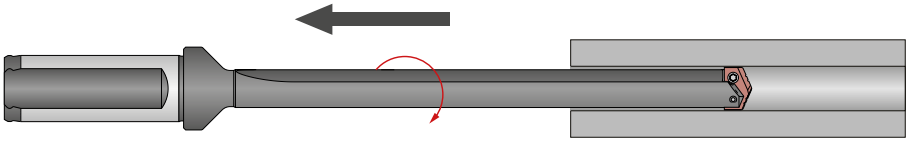


With cooling

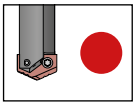


6. **Retracting the drill bit**
   50 rpm max

Reduction of the rotational speed to **max. 50 rpm** before the AMEC® drill bit is retracted from the hole.



Without cooling



Drilling system T-A Pro™


105990....

- Please adjust these guideline values according to clamping operation and machine set-up!

HSS

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						11,10 - 12,69	12,70 - 17,64	17,65 - 24,37	24,38 - 35,04	35,05 - 47,80
P	Machining steel	Up to 700	9 SMn 28	1.0715	125 - 145	0,15 - 0,18	0,24 - 0,26	0,32 - 0,34	0,40 - 0,42	0,50 - 0,52
	Unalloyed structural steel	Up to 700	St-52	1.0052	85 - 120	0,15 - 0,18	0,24 - 0,26	0,32 - 0,34	0,40 - 0,42	0,50 - 0,52
	Structural steel	700 - 950	Ck45	1.1191	100 - 125	0,10 - 0,15	0,18 - 0,23	0,23 - 0,30	0,30 - 0,38	0,41 - 0,48
	Tempering steel	500 - 950	42 CrMo4	1.7225	90 - 105	0,10 - 0,15	0,18 - 0,23	0,23 - 0,30	0,30 - 0,38	0,41 - 0,48
	Tempering steel	950 -1300	43CrMo4	1.3563	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	50 - 85	0,10 - 0,13	0,23 - 0,25	0,25 - 0,28	0,28 - 0,30	0,30 - 0,33
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	70 - 85	0,07 - 0,09	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	25 - 35	0,10 - 0,13	0,12 - 0,14	0,13 - 0,15	0,14 - 0,16	0,15 - 0,18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 185	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 150	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120 - 150	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	185 - 335	0,13 - 0,23	0,18 - 0,33	0,25 - 0,43	0,33 - 0,51	0,41 - 0,61
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	185 - 335	0,19 - 0,21	0,32 - 0,34	0,40 - 0,42	0,46 - 0,51	0,55 - 0,56
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	50 - 60	0,04 - 0,06	0,07 - 0,09	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	50 - 60	0,04 - 0,06	0,07 - 0,09	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	100 - 135	0,17 - 0,19	0,29 - 0,31	0,40 - 0,42	0,50 - 0,52	0,60 - 0,61
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	100 - 135	0,17 - 0,19	0,29 - 0,31	0,40 - 0,42	0,50 - 0,52	0,60 - 0,61
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15 - 20	0,07 - 0,09	0,15 - 0,18	0,18 - 0,20	0,20 - 0,25	0,25 - 0,30
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 20	0,07 - 0,09	0,15 - 0,18	0,18 - 0,20	0,20 - 0,25	0,25 - 0,30
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 30	0,10 - 0,13	0,18 - 0,20	0,20 - 0,23	0,20 - 0,25	0,30 - 0,36
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	15 - 30	0,05 - 0,08	0,13 - 0,15	0,18 - 0,20	0,20 - 0,23	0,25 - 0,30

Multiplier for cutting speed and feed for various tool lengths (Factor 0,8)

	Extra-short	3xD	5xD	7xD	10xD	12xD	15xD
Cutting speed	See table	See table	See table	0,8	0,8	0,7	0,7
Feed	See table	See table	See table	0,8	0,8	0,7	0,7

Coolant recommendation

	Extra-short, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
Series	Coolant pressure (bar)	Flow rate (l/min)	Coolant pressure (bar)	Flow rate (l/min)	Coolant pressure (bar)	Flow rate (l/min)
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

Drilling system T-A Pro™



- Please adjust these guideline values according to clamping operation and machine set-up!

105980....
105982....
105984....
105986....

Carbide inserts

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						11,10 - 12,69	12,70 - 17,64	17,65 - 24,37	24,38 - 35,04	35,05 - 47,80
P	Machining steel	Up to 700	9 SMn 28	1.0715	125 - 145	0,15 - 0,18	0,24 - 0,26	0,32 - 0,34	0,40 - 0,42	0,50 - 0,52
	Unalloyed structural steel	Up to 700	St-52	1.0052	85 - 120	0,15 - 0,18	0,24 - 0,26	0,32 - 0,34	0,40 - 0,42	0,50 - 0,52
	Structural steel	700 - 950	Ck45	1.1191	100 - 125	0,10 - 0,15	0,18 - 0,23	0,23 - 0,30	0,30 - 0,38	0,41 - 0,48
	Tempering steel	500 - 950	42 CrMo4	1.7225	90 - 105	0,10 - 0,15	0,18 - 0,23	0,23 - 0,30	0,30 - 0,38	0,41 - 0,48
	Tempering steel	950 -1300	43CrMo4	1.3563	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	55 - 65	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26	0,29 - 0,31
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	50 - 85	0,10 - 0,13	0,23 - 0,25	0,25 - 0,28	0,28 - 0,30	0,30 - 0,33
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	70 - 85	0,07 - 0,09	0,09 - 0,11	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	25 - 35	0,10 - 0,13	0,12 - 0,14	0,13 - 0,15	0,14 - 0,16	0,15 - 0,18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 185	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 150	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120 - 150	0,10 - 0,18	0,15 - 0,30	0,18 - 0,41	0,23 - 0,51	0,30 - 0,61
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	185 - 335	0,13 - 0,23	0,18 - 0,33	0,25 - 0,43	0,33 - 0,51	0,41 - 0,61
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	185 - 335	0,19 - 0,21	0,32 - 0,34	0,40 - 0,42	0,46 - 0,51	0,55 - 0,56
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	50 - 60	0,04 - 0,06	0,07 - 0,09	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	50 - 60	0,04 - 0,06	0,07 - 0,09	0,14 - 0,16	0,19 - 0,21	0,24 - 0,26
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	100 - 135	0,17 - 0,19	0,29 - 0,31	0,40 - 0,42	0,50 - 0,52	0,60 - 0,61
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	100 - 135	0,17 - 0,19	0,29 - 0,31	0,40 - 0,42	0,50 - 0,52	0,60 - 0,61
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15 - 20	0,07 - 0,09	0,15 - 0,18	0,18 - 0,20	0,20 - 0,25	0,25 - 0,30
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 20	0,07 - 0,09	0,15 - 0,18	0,18 - 0,20	0,20 - 0,25	0,25 - 0,30
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 30	0,10 - 0,13	0,18 - 0,20	0,20 - 0,23	0,20 - 0,25	0,30 - 0,36
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	15 - 30	0,05 - 0,08	0,13 - 0,15	0,18 - 0,20	0,20 - 0,23	0,25 - 0,30

Multiplier for cutting speed and feed for various tool lengths (Factor 0,8)

	Extra-short	3xD	5xD	7xD	10xD	12xD	15xD
Cutting speed	See table	See table	See table	0,8	0,8	0,7	0,7
Feed	See table	See table	See table	0,8	0,8	0,7	0,7

Coolant recommendation

	Extra-short, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
Series	Coolant pressure (bar)	Flow rate (l/min)	Coolant pressure (bar)	Flow rate (l/min)	Coolant pressure (bar)	Flow rate (l/min)
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

HSS cutting inserts, Series Y to 2



- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						9.5 - 12.95	12.98 - 17.53	17.53 - 24.38	24.41 - 35
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.15	0.23	0.33	0.41
	Unalloyed structural steel	Up to 700	St-52	1.0052	56	0.15	0.25	0.33	0.38
	Structural steel	700 - 950	Ck45	1.1191	66	0.13	0.2	0.3	0.38
	Tempering steel	500 - 950	42 CrMo4	1.7225	56	0.13	0.2	0.3	0.38
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	59	0.15	0.23	0.33	0.41
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	23	0.1	0.18	0.23	0.28
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30	0.1	0.18	0.25	0.3
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	29	0.15	0.2	0.28	0.3
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	34	0.18	0.23	0.3	0.36
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	82	0.2	0.3	0.41	0.51
	Ductile iron	Up to 280 HB	GGG 60	0.7060	66	0.15	0.23	0.33	0.43
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	44	0.13	0.18	0.25	0.28
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	12	0.1	0.15	0.2	0.25
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	14	0.1	0.18	0.23	0.28

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	x 0.90	x 0.85	x 0.80	x 0.75
Feed	See table	See table	See table	See table	See table	x 0.95	x 0.90	x 0.90

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Carbide cutting inserts, Series Y to 2



105146....
105241....

105341....
105446....
105546....

- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						9.5 - 12.5	13 - 17.5	17.86 - 24	25 - 35
P	Machining steel	Up to 700	9 SMn 28	1.0715	108	0.15	0.23	0.33	0.41
	Unalloyed structural steel	Up to 700	St-52	1.0052	87	0.15	0.25	0.33	0.38
	Structural steel	700 - 950	Ck45	1.1191	80	0.13	0.2	0.3	0.38
	Tempering steel	500 - 950	42 CrMo4	1.7225	87	0.13	0.2	0.3	0.38
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	95	0.15	0.23	0.33	0.41
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	56	0.1	0.18	0.23	0.28
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	59	0.1	0.18	0.25	0.3
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	56	0.15	0.2	0.28	0.3
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	73	0.18	0.23	0.3	0.36
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	152	0.2	0.3	0.38	0.48
	Ductile iron	Up to 280 HB	GGG 60	0.7060	131	0.15	0.23	0.3	0.38
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	102	0.13	0.18	0.25	0.28
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	29	0.1	0.15	0.2	0.25
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	37	0.1	0.18	0.23	0.28

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	-	-	-	-
Feed	See table	See table	See table	See table	-	-	-	-

HSS cutting inserts, Series 3 to 8



- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm		
						35 - 47.8	47.85 - 65	66 - 114.48
P	Machining steel	Up to 700	9 SMn 28	1.0715	79	0.46	0.53	0.61
P	Unalloyed structural steel	Up to 700	St-52	1.0052	57	0.41	0.48	0.61
P	Structural steel	700 - 950	Ck45	1.1191	68	0.41	0.48	0.56
P	Tempering steel	500 - 950	42 CrMo4	1.7225	59	0.38	0.43	0.51
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	64	0.43	0.48	0.56
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	24	0.3	0.41	0.46
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	32	0.3	0.38	0.43
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	32	0.3	0.36	0.46
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	36	0.36	0.41	0.51
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	22	0.3	0.36	0.46
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	84	0.61	0.69	0.76
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	68	0.46	0.53	0.61
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	47	0.28	0.36	0.41
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	-	0.56	0.64	0.64
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	-	0.56	0.64	0.64
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15	0.25	0.3	0.3
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	12	0.25	0.3	0.3
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	13	0.3	0.38	0.38
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	29	0.3	0.41	0.46
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	14	0.25	0.3	0.4

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	x 0.90	x 0.85	x 0.80	x 0.75
Feed	See table	See table	See table	See table	See table	x 0.95	x 0.90	x 0.90

CHT Indexable inserts-NC spotting drill bits



- Please adjust these guideline values according to clamping operation and machine set-up!

100800....
100801....
100802....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth
					PH7920	SOMT 11T308
P	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 150	0,04 - 0,08
P	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 120	0,03 - 0,07
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60 - 100	0,03 - 0,06
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	100 - 150	0,04 - 0,07
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	80 - 120	0,03 - 0,06
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	50 - 90	0,03 - 0,06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90 - 150	0,05 - 0,1
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	80 - 120	0,05 - 0,08
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 110	0,04 - 0,08

ATORN ETD 840 Indexable insert drill bit



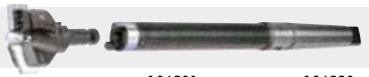
- Please adjust these guideline values according to clamping operation and machine set-up!

106003....

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ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min 3 x D	Cutting speed Vc m/min 5 x D	Cutting speed Vc m/min 7 x D	Feed f in mm/rev in relation to drill bit diameter in mm			
								8 - 12	12 - 20	20 - 31.5	31.5 - 40
P	Machining steel	Up to 700	9 SMn 28	1.0715	100 - 110	100 - 105	85 - 100	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
P	Unalloyed structural steel	Up to 700	St-52	1.0052	100 - 110	100 - 105	85 - 100	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
P	Structural steel	700 - 950	Ck45	1.1191	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Tempering steel	500 - 950	42 CrMo4	1.7225	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Cast steel	Up to 950	GS 40	1.0416	85 - 100	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Tempering steel	950 -1300	43CrMo4	1.3563	70 - 80	50 - 55	35 - 45	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	55 - 60	50 - 55	35 - 45	0.125 - 0.16	0.16 - 0.25	0.25 - 0.315	0.315 - 0.4
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	30 - 35	25 - 30	25 - 30	0.125 - 0.16	0.16 - 0.25	0.25 - 0.315	0.315 - 0.4
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	30 - 40	30 - 35	25 - 30	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25 - 35	20 - 30	20 - 25	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 210	120 - 200	120 - 180	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 155	120 - 145	120 - 135	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 130	100 - 120	100 - 110	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	220 - 300	210 - 270	200 - 260	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220 - 280	200 - 260	200 - 250	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Thermoplastic		PVC		200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Thermoset		Melamine		200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 40	30 - 35	25 - 30	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25 - 35	30 - 35	25 - 30	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 25	20 - 22	18 - 22	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25

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- Please adjust these guideline values according to clamping operation and machine set-up!

104501....

104550....
104555....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						49 - 65	65 - 100	100 - 150	150 - 210	210-270
P	Machining steel	Up to 700	9 SMn 28	1.0715	25 - 35	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Unalloyed structural steel	Up to 700	St-52	1.0052	25 - 35	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Structural steel	700 - 950	Ck45	1.1191	18 - 22	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Cast steel	Up to 950	GS 40	1.0416	25 - 30	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	15 - 25	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	15 - 25	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	15-20	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	10 - 12	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	20- 25	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	20- 25	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	50 - 70	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2

Indexable drill inserts PDZ



- Please adjust these guideline values according to clamping operation and machine set-up.
- **Additional cutting value information at www.sartorius-werkzeuge.de**

124230....
124231....

ISO	Materials group	Strength/ Hardness N/mm²	Material chemical example	Material number	Cutting speed Vc m/min	Feed values in mm / rev in relation to the drill diameter in mm						
						16 - 16.5	17 - 18.5	19 - 20	21 - 24	25 - 28	29 - 33	34 - 43
P	Machining steel	up to 700	9 SMn 28	1.0715	150 - 250	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
P	Structural steel	700-950	Ck45	1.1191	100 - 220	0.04 - 0.14	0.04 - 0.16	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.08 - 0.3	0.08 - 0.35
P	Tempering steel	950-1300	43CrMo4	1.3563	80 - 180	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Stainless steel, austenitic	500-950	X 5 CrNi 18 10	1.4301	80 - 180	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
K	Grey cast iron	up to 260 HB	GG 25	0.6025	150 - 280	0.04 - 0.14	0.04 - 0.16	0.04 - 0.2	0.08 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.35
K	Ductile iron	up to 280 HB	GGG 60	0.7060	100 - 220	0.04 - 0.12	0.04 - 0.14	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.06 - 0.25	0.08 - 0.25
N	Al. alloys, long-chipping	up to 500	AlMg 3	3.3535	100 - 800	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
N	Al. alloys, short-chipping	up to 500	G-AlSi 12	3.2581	100 - 800	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 60	0.02 - 0.06	0.03 - 0.06	0.03 - 0.06	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

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PHOENIX PD Indexable inserts solid drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

124202.... 124203....
124204.... 124205....

2 x D, 3 x D

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,12	0.04 – 0.14	0.04 - 0.16	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.08 - 0.3	0.08 - 0.35
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,14	0.04 - 0.14	0.04 - 0.16	0.04 - 0.2	0.08 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,1	0.04 - 0.12	0.04 - 0.14	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.08 - 0.25	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.03 - 0.06	0.03 - 0.06	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

4 x D

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,1	0.04 - 0.14	0.04 - 0.16	0.04 - 0.18	0.04 - 0.15	0.06 - 0.25	0.08 - 0.25	0.08 - 0.3
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,1	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,1	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,12	0.04 - 0.14	0.04 - 0.16	0.04 - 0.2	0.04 - 0.15	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.25	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.2	0.04 - 0.2	0.04 - 0.3	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.2	0.04 - 0.2	0.04 - 0.3	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.2	0.08 - 0.2	0.08 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

5 x D

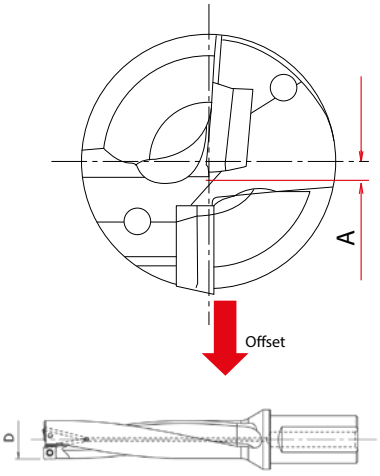
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,09	0.04 - 0.09	0.04 - 0 .12	0.04 - 0.14	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.25
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.22
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.22
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.09	0.04 - 0.1	0.06 - 0.15	0.06 - 0.18	0.06 - 0.2
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.09	0.04 - 0.1	0.06 - 0.15	0.06 - 0.18	0.06 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,09	0.04 - 0.09	0.04 - 0.12	0.04 - 0.12	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.15	0.08 - 0.15	0.08 - 0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.06 - 0.08	0.06 - 0.08	0.06 - 0.08
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

Solid drill bit radial adjustment

D mm	D + A Offset mm	D Max. mm
12	0,4	12,8
12,5	0,4	13,3
12,7	0,3	13,3
13	0,3	13,6
13,5	0,2	13,9
14	0,2	14,4
14,5	0,1	14,7
15	0,4	15,8
15,5	0,3	16,1
16	0,3	16,6
16,5	0,3	17,1
17	0,6	18,2
17,5	0,5	18,5
18	0,5	19
18,5	0,4	19,3
19	0,6	20,2
19,5	0,5	20,5
20	0,4	20,8
20,5	0,4	21,3
21	1	23
21,5	0,9	23,3
22	0,8	23,6
22,5	0,7	23,9
23	0,5	24
23,5	0,4	24,3
24	0,3	24,6
24,5	0,2	24,9
25	1,1	27,2
25,5	0,9	27,3
26	0,8	27,6

D mm	D + A Offset mm	D Max. mm
26,5	0,7	27,9
27	0,6	28,2
28	0,3	28,6
28,5	0,2	28,9
29	1,3	31,6
30	1,1	32,2
31	0,8	32,6
32	0,6	33,2
33	0,3	33,6
33,5	0,2	33,9
34	1,1	36,2
35	0,8	36,6
36	0,8	37,6
37	0,6	38,2
38	0,3	38,6
39	1,0	41,0
40	0,9	41,8
41	0,8	42,6
42	0,6	43,2
43	0,5	44,0
44	0,3	44,6
45	0,9	46,8
46	0,8	47,6
47	0,7	48,4
48	0,5	49,0
49	0,3	49,6
50	1,1	52,2
51	1,0	53,0
52	0,8	53,6
53	0,7	54,4

D mm	D + A Offset mm	D Max. mm
54	0,6	55,2
55	0,4	55,8
56	0,1	56,2
57	1,1	59,2
58	1,0	60,0
59	0,9	60,8
60	0,8	61,6
61	0,6	62,2
62	0,4	62,8
63	0,2	63,4



palbit Core and countersink drill SPOT FACE



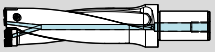
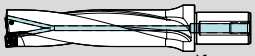
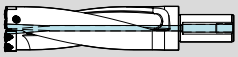
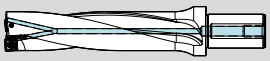
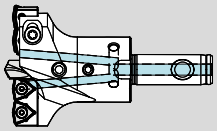
- Please adjust these guideline values according to clamping operation and machine set-up!

124700....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min ◄ Wear resistance Toughness ► PH6920	PH6930	PHC930
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	160 - 240	160 - 240
P	Unalloyed structural steel	Up to 700	St-52	1.0052	180 - 250	160 - 240	160 - 240
P	Structural steel	700 - 950	Ck45	1.1191	160 - 220	140 - 200	140 - 200
P	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	140 - 200	140 - 200
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160 - 220	140 - 200	140 - 200
P	Tempering steel	950 -1300	43CrMo4	1.3563	160 - 220	140 - 200	140 - 200
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	160 - 220	140 - 200	140 - 200
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	130 - 180	110 - 160	110 - 160
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	170 - 230	140 - 210	140 - 210
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	140 - 180	120 - 190	120 - 190
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	140 - 180	120 - 190	120 - 190
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	150 - 220	150 - 220
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	130 - 200	110 - 180	110 - 180
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	110 - 180	110 - 180

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth SPKX 05...	SPKX 06...	SPKX 07...	SPKX 09...	SPKX 11...
P	Machining steel	bis 700	9 SMn 28	1.0715	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
P	Unalloyed structural steel	bis 700	St-52	1.0052	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
P	Structural steel	700 - 950	Ck45	1.1191	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Case-hardened steel	bis 1200	16 MnCr 5	1.7131	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0,06 - 0,10	0,08-0,15	0,10 - 0,20	0,12 - 0,23	0,12 - 0,26
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,20
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,20
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,04 - 0,08	0,05 - 0,11	0,06 - 0 ,13	0,07 - 0,14	0,08 - 0,19
K	Grey cast iron	bis 260 HB	GG 25	0.6025	0,06 - 0,12	0,08 - 0,16	0,12 - 0,20	0,15 - 0,25	0,15 - 0,30
K	Alloyed grey cast iron	bis 310 HB	GGL-NiCr 35 2	0.6678	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,25
K	Ductile iron	bis 280 HB	GGG 60	0.7060	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,25

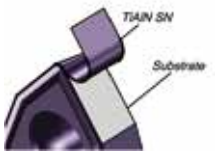
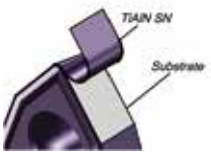
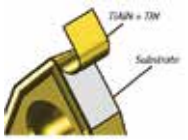
palbit Overview of drilling systems

	Diameter (mm)									
	03	12	20	32	50	60	70	80	110	180
Jet Drill						SCC (3D-4D)  L1 max. = 320 mm				
			SCS (3D-4D)  L1 max. = 200 mm							
							TDC 3D  L1 max. = 240 mm			
				TDS 3D  L1 max. = 174 mm						
Vortex Drill						 L1 max. = 900 mm				

palbit Type descriptions

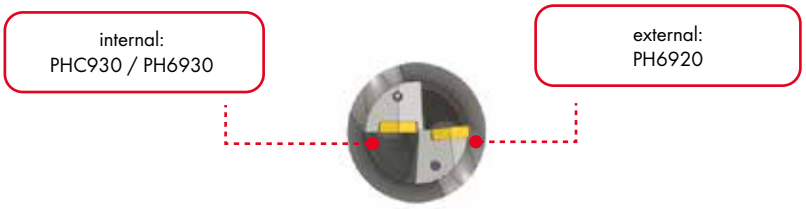
- Carbide, coated

PVD types

PH6920 (P10-P35) (M10-M25) (K10-K30) (S10-S30)  PVD-coated (TiAlN), fine grade carbide for universal applications. Good toughness and wear resistance.	PH6930 (P20-P40) (M20-M30) (K20-K40) (S20-S40)  PVD-coated (TiAlN) superfine grain carbide for applications under unstable machine conditions at average cutting speeds.	PHC930 (P20-P40) (M20-M30) (K20-K40) (S20-S40)  PVD-coated (TiAlN+TiN), fine grain carbide type for general machining of steel, stainless steel, cast iron and superalloys with high cutting speeds.

Type recommendation

- **Note:** The recommendation applies to steel, high-alloy steels and heat-resistant steels.



palbit TDS/TDC Indexable inserts solid drill bit



Cutting data recommendations

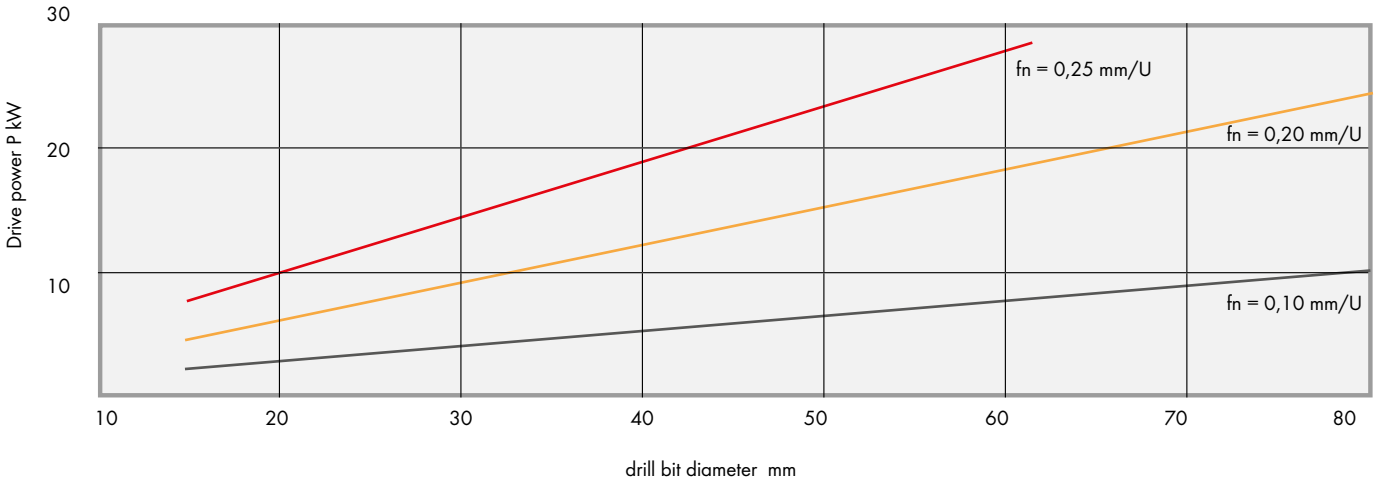
124303.... 124313....

- Please adjust these guideline values according to clamping operation and machine set-up!

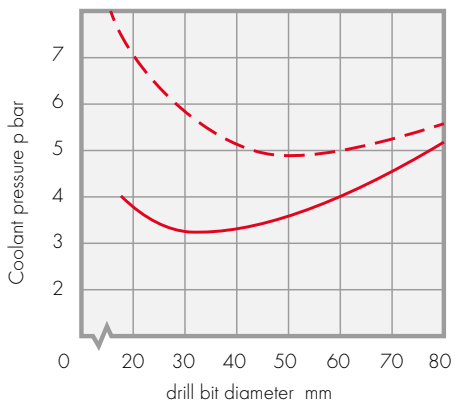
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						13 - 15,5	16 - 20	20,5 - 25	25,5 -30	31 - 41	42 - 58	59 - 80
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 260	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Structural steel	700 - 950	Ck45	1.1191	180 - 260	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tempering steel	500 - 950	42 CrMo4	1.7225	150 - 240	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tempering steel	950 -1300	43CrMo4	1.3563	120 - 240	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 220	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	150 - 220	0,04 - 0,08	0,05 - 0,09	0,06 - 0,12	0,07 - 0,13	0,08 - 0,16	0,10 - 0,20	0,08 - 0,16
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	150 - 220	0,04 - 0,08	0,05 - 0,09	0,06 - 0,12	0,07 - 0,13	0,08 - 0,16	0,10 - 0,20	0,08 - 0,16
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 250	0,05 - 0,11	0,07 - 0,13	0,08 - 0,12	0,10 - 0,18	0,14 - 0,26	0,18 - 0,35	0,14 - 0,26
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 200	0,05 - 0,11	0,06 - 0,13	0,07 - 0,12	0,08 - 0,18	0,14 - 0,26	0,18 - 0,35	0,14 - 0,26
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300 - 380	0,04 - 0,06	0,05 - 0,07	0,06 - 0,08	0,07 - 0,09	0,10 - 0,14	0,12 - 0,17	0,10 - 0,14
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	260 - 330	0,04 - 0,06	0,05 - 0,07	0,06 - 0,08	0,07 - 0,09	0,10 - 0,14	0,12 - 0,17	0,10 - 0,14
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40 - 80	0,03 - 0,05	0,04 - 0,06	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,07 - 0,13	0,06 - 0,10
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,03 - 0,05	0,04 - 0,06	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,07 - 0,13	0,06 - 0,10

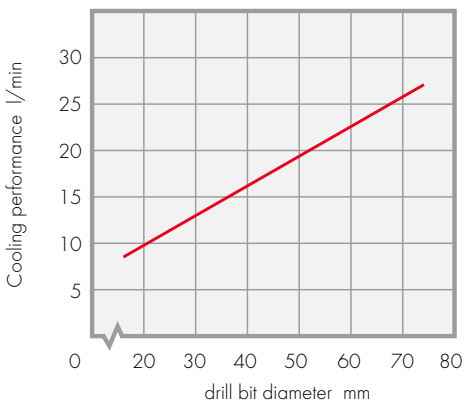
Power requirement

- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min
- For cast iron machining, the power requirement is approx. 30 % lower



Coolant recommendation





palbit Solid drill bit radial adjustment TDS/TDC

D mm	Solid drill bit radial adjustment	D max. mm
13,00	1,50	16,00
13,50	1,50	16,50
14,00	1,50	17,00
14,50	1,50	17,50
15,00	1,50	18,00
15,50	1,50	18,50
16,00	1,50	19,00
16,50	1,50	19,50
17,00	1,50	20,00
17,50	1,50	20,50
18,00	1,40	20,80
18,50	1,30	21,10
19,00	1,20	21,40
20,00	1,00	22,00
21,00	1,60	24,20
22,00	1,50	25,00
23,00	1,25	25,50
24,00	1,00	26,00
25,00	0,80	26,60
26,00	2,50	31,00
27,00	2,20	31,40
28,00	2,10	32,20
29,00	1,80	32,60
30,00	1,50	33,00
31,00	3,50	38,00
32,00	3,20	38,40

D mm	Solid drill bit radial adjustment	D max. mm
33,00	3,00	39,00
34,00	2,80	39,60
35,00	2,50	40,00
36,00	2,30	40,60
37,00	2,00	41,00
38,00	1,80	41,60
39,00	1,50	42,00
40,00	1,20	42,40
41,00	1,00	43,00
42,00	4,20	50,40
43,00	4,00	51,00
44,00	3,70	51,40
45,00	3,50	52,00
46,00	3,30	52,60
47,00	3,00	53,00
48,00	2,70	53,40
49,00	2,50	54,00
50,00	2,20	54,40
51,00	2,00	55,00
52,00	1,80	55,60
53,00	1,50	56,00
54,00	1,20	56,40
55,00	0,80	56,60
56,00	0,60	57,20
58,00	0,40	58,80

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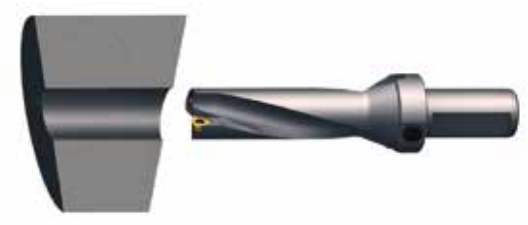
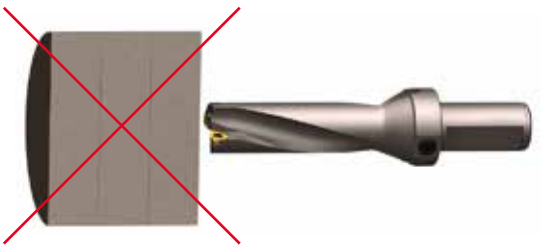
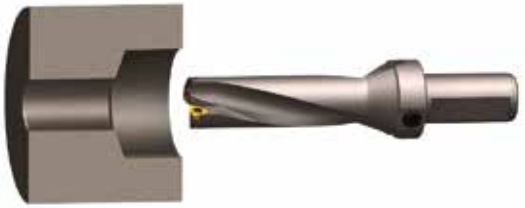




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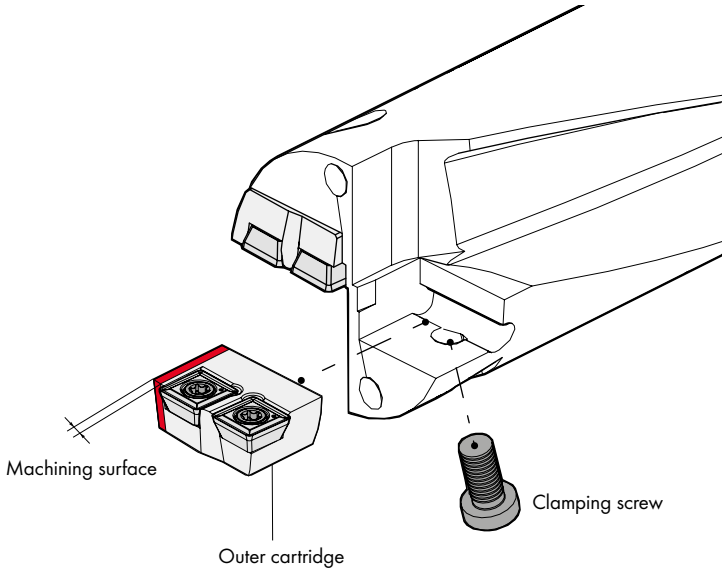
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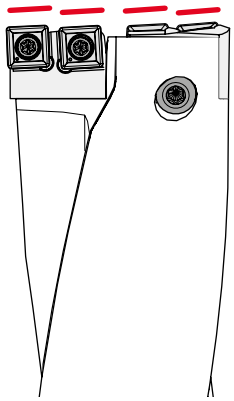
palbit Machining notes TDS/TDC

Application	Description
Drilling on inclined surfaces 	Drilling of an inclined surface is possible up to a 30° incline without reducing the cutting parameters. Reduce feed force by 50 % on the incline for angles between 30° and 40°.
Interrupted cutting 	For reliable drilling, reduce cutting force and feed by 30 % for the greatest possible stability of machine and clamp.
Bundled drilling 	Series TDS and TDS drill bits are not suitable for this, as they create a disc in the bore diameter when exiting the material which prevents the drilling of subsequent material. Attention: In through-hole drilling these discs also occur upon exit. With a fixed drill bit and rotating workpiece, these can fly out uncontrolled from the workpiece. Please use enclosed machines and wear adequate occupational safety equipment.
Drilling 	For drilling tasks with TDS and TSC Series, turn the drill bit in the direction of the indexable cutting inserts. Observe the wear on the outer cutting edges, the greater chip volume can shorten the change intervals.

palbit Cartridge system

- **Diameter adjustment 5 mm**
- Loosen clamping screw on the outer cartridge and dismantle cartridge
- Cartridge is shortened on the outer diameter to the desired drill diameter
- Deburr shortened cartridge
- Press cartridge against the contact surface when screwing tight





palbit SCS/SCC Indexable inserts solid drill bit



Cutting data recommendations

- Please adjust these guideline values according to clamping operation and machine set-up!

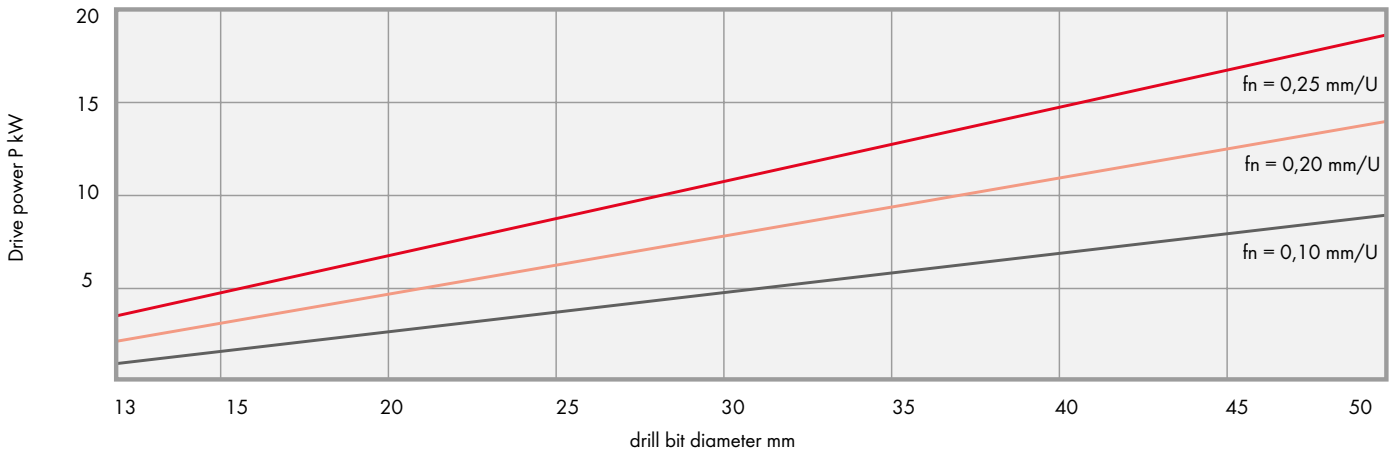
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124404.... 124414....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						13 - 15	15,5 - 21,5	22 - 27,5	28 - 33	34 - 41
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
	Structural steel	700 - 950	Ck45	1.1191	180 - 250	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	0,06 - 0,12	0,08 - 0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,24
	Tempering steel	950 -1300	43CrMo4	1.3563	150 - 220	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,12 - 0,22	0,12 - 0,23
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 180	0,06 - 0,10	0,08 - 0,15	0,10 - 0,20	0,12 - 0,23	0,12 - 0,24
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	170 - 240	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,17
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	170 - 240	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,17
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	0,06 - 0,12	0,08 - 0,16	0,12 - 0,20	0,15 - 0,25	0,16 - 0,28
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,23
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	330 - 380	0,06 - 0,14	0,08 - 0,15	0,10 - 0,20	0,12 - 0,22	0,14 - 0,23
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	330 - 380	0,06 - 0,14	0,08 - 0,15	0,10 - 0,20	0,12 - 0,22	0,14 - 0,23
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 60	0,05 - 0,10	0,06 - 0,14	0,08 - 0,18	0,10 - 0,22	0,12 - 0,22
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,05 - 0,10	0,06 - 0,14	0,08 - 0,18	0,10 - 0,22	0,12 - 0,22

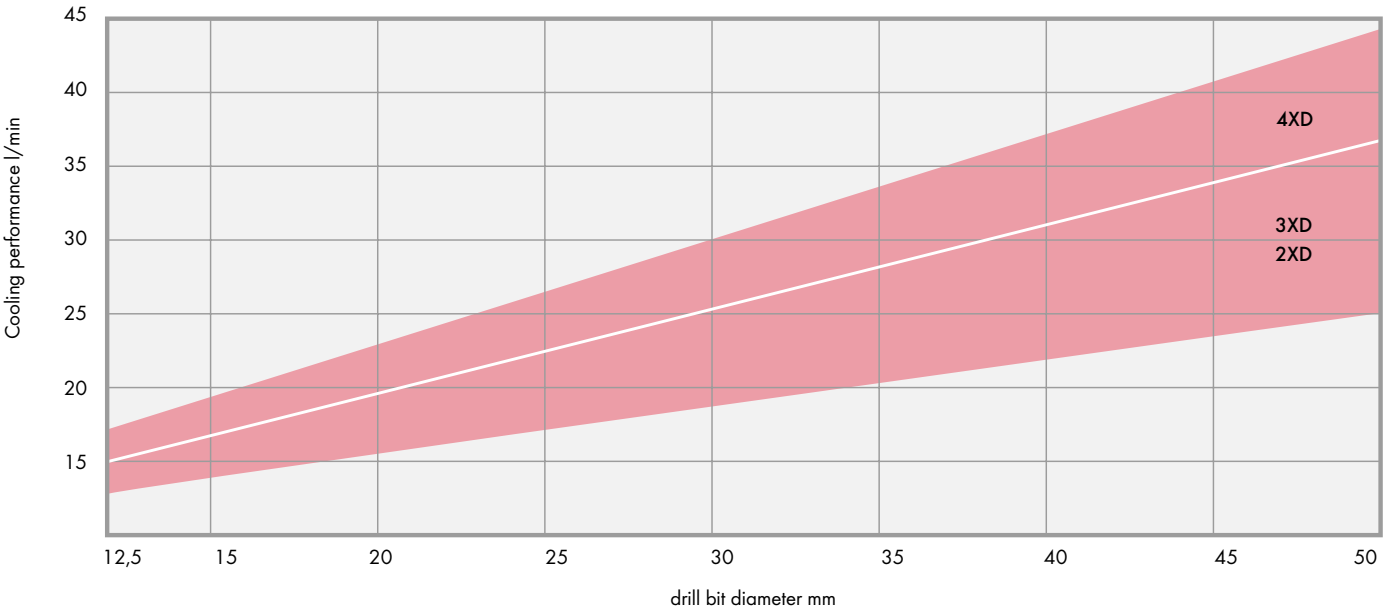
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						42 - 50	50 - 60	60 - 75	75 - 80
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	0,08 - 0,16	0,06 - 0,12	0,08 - 0,12	0,08 - 0,12
	Structural steel	700 - 950	Ck45	1.1191	180 - 250	0,08 - 0,16	0,06 - 0,12	0,08 - 0,12	0,08 - 0,12
	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	0,13 - 0,25	0,10 - 0,14	0,12 - 0,18	0,11 - 0,18
	Tempering steel	950 -1300	43CrMo4	1.3563	150 - 220	0,13 - 0,24	0,08 - 0,15	0,10 - 0,18	0,10 - 0,18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 180	0,13 - 0,25	0,08 - 0,14	0,09 - 0,15	0,09 - 0,14
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	170 - 240	0,11 - 0,19	0,06 - 0,13	0,08 - 0,15	0,08 - 0,14
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	170 - 240	0,11 - 0,19	0,06 - 0,13	0,08 - 0,15	0,08 - 0,14
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	0,18 - 0,30	0,12 - 0,20	0,15 - 0,20	0,15 - 0,20
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	0,16 - 0,25	0,10 - 0,15	0,09 - 0,18	0,10 - 0,18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	330 - 380	0,15 - 0,26	0,14 - 0,20	0,14 - 0,23	0,15 - 0,23
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	330 - 380	0,15 - 0,26	0,14 - 0,20	0,14 - 0,23	0,15 - 0,23
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 60	0,14 - 0,24	0,10 - 0,15	0,10 - 0,15	0,10 - 0,15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,14 - 0,24	0,10 - 0,15	0,10 - 0,15	0,10 - 0,15

Power requirement

- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min
- For cast iron machining, the power requirement is approx. 30 % lower



Coolant recommendation





palbit Solid drill bit radial adjustment SCS

D mm	Solid drill bit radial adjustment	D max mm
13	0,50	14,0
14	0,50	15,0
15	0,50	16,0
16	0,50	17,0
17	0,50	18,0
18	0,50	19,0
19	0,50	20,0
20	0,50	21,0
21	0,25	21,5
22	0,50	23,0
23	0,50	24,0
24	0,50	25,0
25	0,50	26,0
26	0,25	26,5
27	0,25	27,5
28	0,50	29,0
29	0,50	30,0
30	0,50	31,0
31	0,25	31,5

D mm	Solid drill bit radial adjustment	D max mm
32	0,25	32,5
33	0,25	33,5
34	0,50	35,0
35	0,50	36,0
36	0,50	37,0
37	0,50	38,0
38	0,50	39,0
39	0,50	40,0
40	0,25	40,5
41	0,25	41,5
42	0,50	43,0
43	0,50	44,0
44	0,50	45,0
45	0,50	46,0
46	0,50	47,0
47	0,50	48,0
48	0,25	48,5
49	0,25	49,5
50	0,25	50,5

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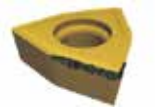


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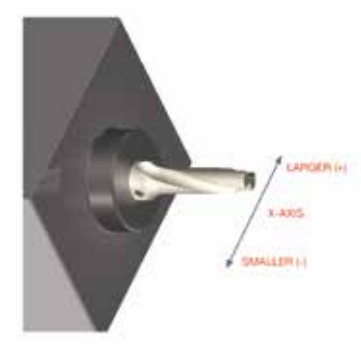
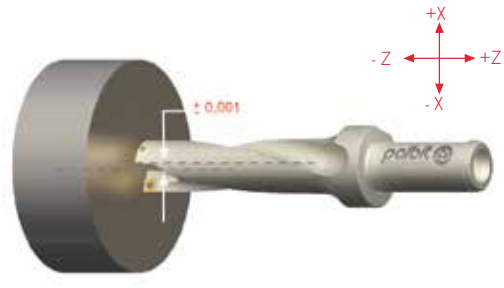
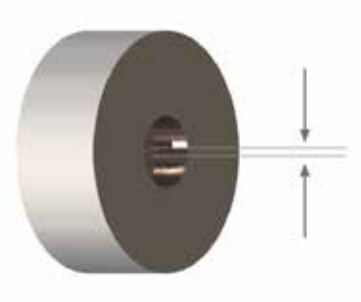
palbit Troubleshooting

- **Note:** When drilling through-holes, a disc is created when the drill bit exits. With a fixed drill bit and rotating workpiece, these can be forced out. Protect the operator and personnel with adequate occupational safety equipment. When the drill bit exits the material, a small recess is created as the pilot drill bit is no longer in the cut.

Problem	Corrective measures
Nicks 	Use on lathes: • Check machine settings • If the tool clamping cannot be improved, reduce feed by 30 % • If machine or tool clamping is unstable, reduce feed by 30 % **Note:** Types can be mixed for optimal machining. **Example:** PH6930 on inner and PH6920 on outer insert seat
Sub-optimal chip removal 	• Increase pressure and flow of coolant • Increase cutting speed by 20 %
Increased wear 	• Increase pressure and flow of coolant • Reduce cutting speed by 20 % • Choose a more wear-resistant model
Poor bore quality 	• Increase pressure and volume of coolant for better chip removal • Increase cutting speed by up to 20 % • Improve workpiece and tool clamping, alternatively reduce feed rate **Note**: High cutting speeds and low feed rates achieve better surfaces.

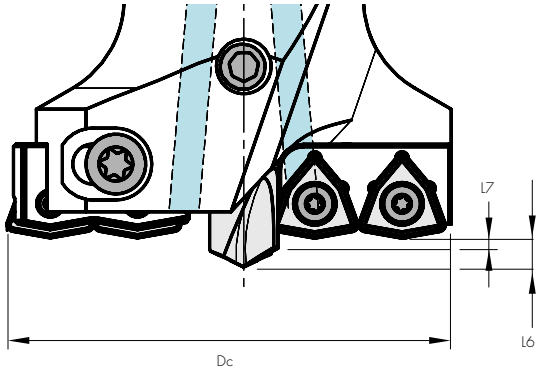
palbit Turning work with indexable inserts solid drill bits

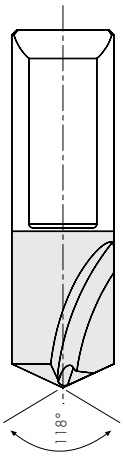
- Notes for use on lathes

Application	Description
Axis alignment 	The cutting edge of the indexable cutting insert must be parallel to the x-axis of the machine in order to change the bore dimensions by moving the tool. To do this, a surface is applied to the tool shank which runs parallel to the cutting edge. The tool alignment can be oriented towards this.
Cutting edge orientation 	The outermost cutting edge of the drill bit should be in the (+) direction of the x-axis to allow offset drilling. The inner cutting edge should point towards the operator.
Test bore 	Please perform a test bore of approx. 5 mm deep to check the setting before producing the finished bore. The setting range is between 0.2 mm and 0.7 mm.

palbit Settings pilot drill bit VORTEX DRILL

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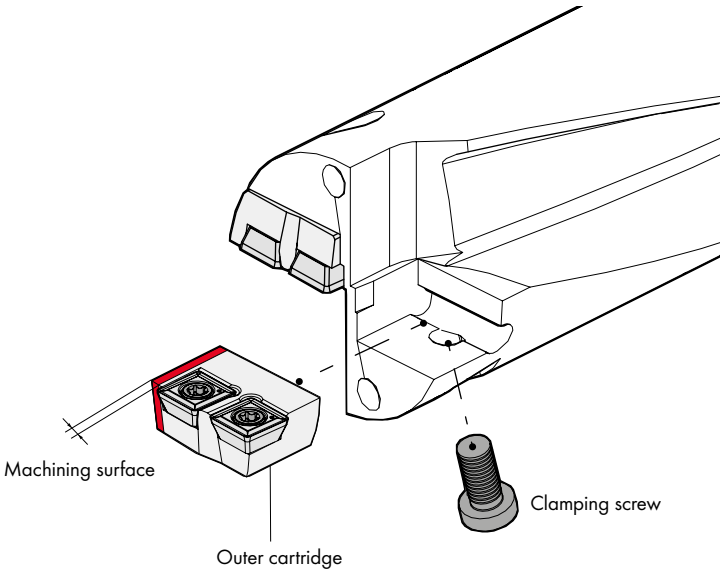


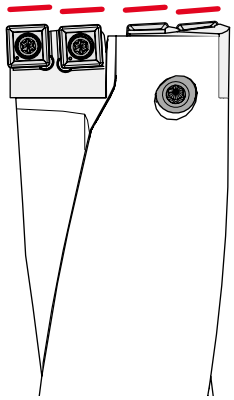


Dc mm	2-4 x D		4-6 x D		> 6 x D	
	L7	L6	L7	L6	L7	L6
45-55	1.6	4.0	1.8	4.2	2.0	4.4
55-75	1.8	5.4	2.0	5.6	2.2	5.8
75-100	2.2	6.5	2.5	6.8	2.8	7.1
100-120	2.4	7.7	2.8	8.1	3.2	8.5
120-170	3.2	9.9	3.6	10.3	4.0	10.7
170-180	3.5	12.2	3.9	12.6	4.3	13.0

palbit Cartridge system

- **Diameter adjustment 5 mm**
- Loosen clamping screw on the outer cartridge and dismantle cartridge
- Cartridge is shortened on the outer diameter to the desired drill diameter
- Deburr shortened cartridge
- Press cartridge against the contact surface when screwing tight





palbit Cutting data recommendations VORTEX DRILL



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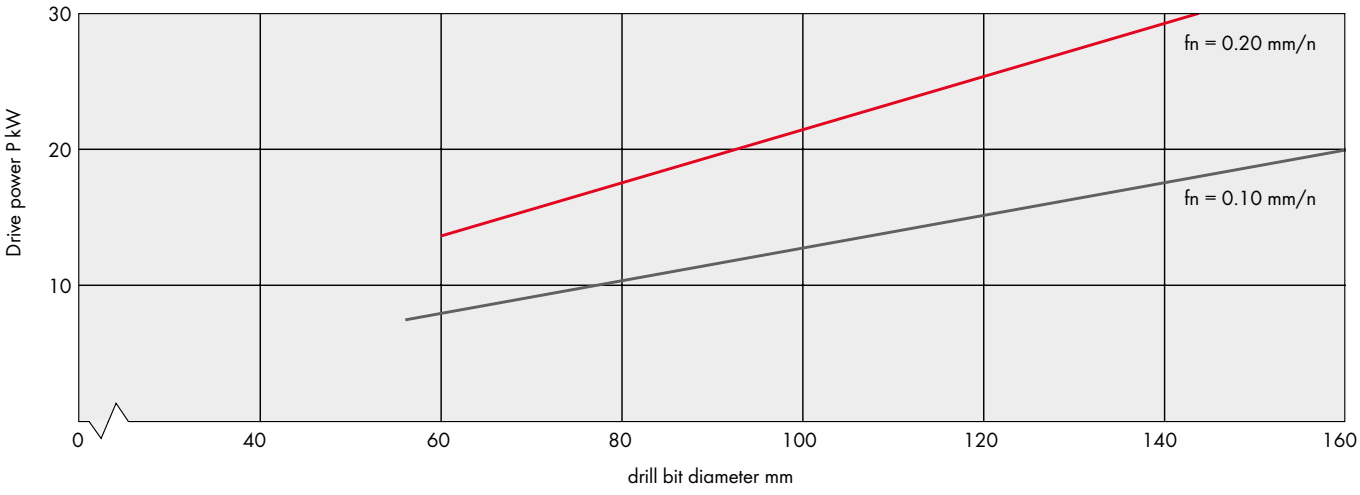
- Please adjust these guideline values according to clamping operation and machine set-up!

Cutting speed and feed

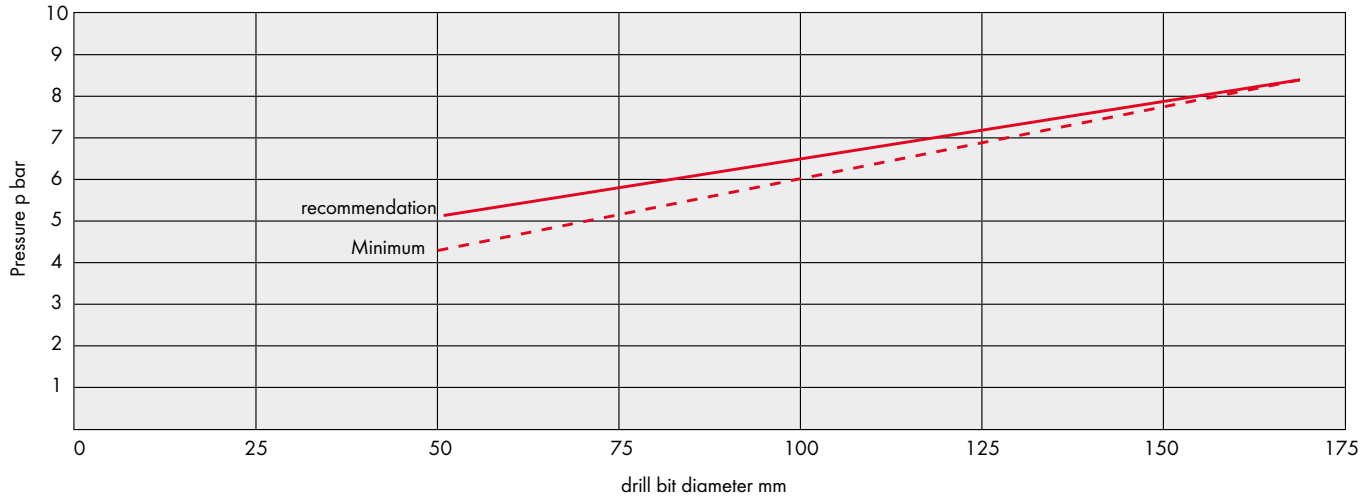
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev based on the tool diameter in mm						
						Ø 45 - 55	Ø 55 - 60	Ø 60 - 75	Ø 75 - 100	Ø 100 - 105	Ø 105 - 150	Ø 150 - 180
P	Machining steel	Up to 700	9 SMn 28	1.0715	120 - 180	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 180	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
	Structural steel	700 - 950	Ck45	1.1191	110 - 170	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,12 - 0,18	0,08 - 0,12	0,10 - 0,14
	Tempering steel	500 - 950	42 CrMo4	1.7225	110 - 170	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,12 - 0,18	0,08 - 0,12	0,10 - 0,14
	Cast steel	Up to 950	GS 40	1.0416	100 - 160	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 130	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
	Tempering steel	950 -1300	43CrMo4	1.3563	90 - 130	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 100	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 100	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 110	0,04 - 0,07	0,04 - 0,11	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,06 - 0,12	0,08 - 0,14
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 110	0,04 - 0,07	0,04 - 0,11	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,06 - 0,12	0,08 - 0,14
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 180	0,07 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,18	0,12 - 0,22	0,08 - 0,16	0,10 - 0,18
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120 - 180	0,07 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,18	0,12 - 0,22	0,08 - 0,16	0,10 - 0,18
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 180	0,04 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,25	0,12 - 0,26	0,08 - 0,16	0,10 - 0,25
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 170	0,04 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,25	0,12 - 0,26	0,08 - 0,16	0,10 - 0,25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15

Power requirement

- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min



Coolant recommendation

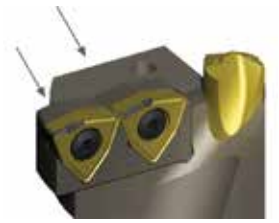
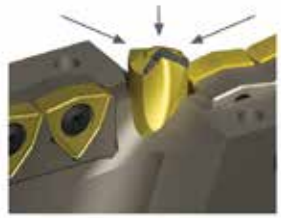
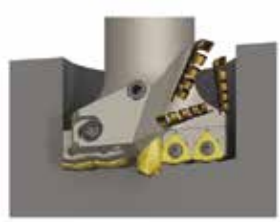


palbit Machining notes VORTEX DRILL

Incorrect	Correct	Description
		No spot drilling is necessary on flat surfaces. For centring holes, the centring drill bit must be smaller than the pilot drill bit.
		Boring into an inclined surface is possible up to an 8° incline. Boring through an inclined surface is possible up to a 4° incline. For greater inclines, the incline and/or uneven surface must be face milled in advance.
		VORTEX drill bits are not recommended for drilling. Use Integrex drill bits for large diameters. Use solid carbide drill bits for small diameters. The solid carbide drill bit is centred using the centring hole of the pilot drill bit.
		VORTEX drill bits are not recommended. Note: Material residues are generated when boring through-holes. With a fixed drill bit and rotating workpiece, the centrifugal force can cause these material residues to fly out uncontrolled from the chuck. Use enclosed machines and wear adequate occupational safety equipment.

palbit Troubleshooting VORTEX DRILL

- **Note:** When drilling through-holes, a disc is created when the drill bit exits. With a fixed drill bit and rotating workpiece, these can be forced out. Protect the operator and personnel with adequate occupational safety equipment. When the drill bit exits the material, a small recess is created as the pilot drill bit is no longer in the cut.

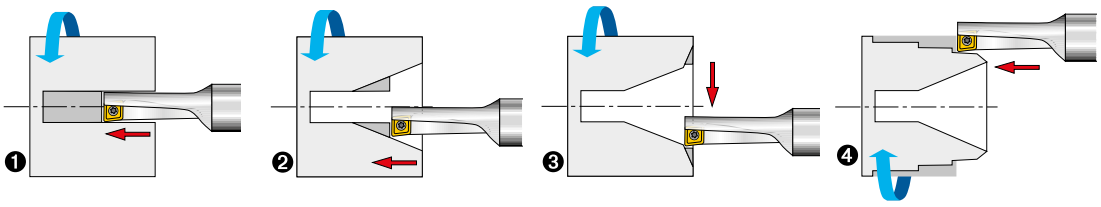
Problem	Corrective measure
Nicks on the pilot drill bit 	Use on lathes: • Check tool centring, realign machine if necessary • Check and/or improve workpiece and tool clamping
Nicks on the indexable cutting insert 	• Use tougher model • Reduce feed by 20 % • Check and/or improve workpiece and tool clamping
Excessive pilot drill bit wear 	• Use coated pilot drill bit • Increase pressure and flow of coolant • Reduce cutting speed by 20 % • Choose a more wear-resistant model
Sub-optimal chip breaking 	• Increase cutting speed by 20 % and reduce feed by 20 %
Sub-optimal chip removal, poor bore quality 	• Increase pressure and volume of coolant for better chip removal • Increase speed by up to 20 %

SARA® SARAcut 2.0 Drilling and turning tool



- Please adjust these guideline values according to clamping operation and machine set-up!

129101.... 129102....
129201.... 129202....



ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		Feed f in mm/rev in relation to drill bit diameter in mm			
					SP 300	SP 350	8 -10 - 12	14 - 16	18 - 20	25 - 32
P	Unalloyed structural steel	Up to 700	St-52	1.0052	50 - 230	70 - 250	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
P	Tempering steel	500 - 950	42 CrMo4	1.7225	50 - 160	60 - 180	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50- 150	50 - 160	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 180	70 - 180	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	50 - 160	90 - 180	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90 - 180	90 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	90 - 180	110 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60-140	90 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70 - 1350	70 - 1350	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 1500	70 - 1500	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	70 - 360	70 - 360	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	70 - 360	70 - 360	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 90	30 - 110	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 80	10 - 50	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08

Taps and thread formers

- Please adjust these guideline values according to clamping operation and machine set-up!
- Vc formers = Vc + 30-50%
- *Solid carbide taps

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		Coolant
					Blank	Coated	
P	Machining steel	Up to 700	9 SMn 28	1.0715	10-15	15 - 25	Emulsion, cutting oil
P	Unalloyed structural steel	Up to 700	St-52	1.0052	10-15	15 - 25	Emulsion, cutting oil
P	Structural steel	700 - 950	Ck45	1.1191	10-15	15 - 25	Emulsion, cutting oil
P	Tempering steel	500 - 950	42 CrMo4	1.7225	2-5	5 - 10	Emulsion, cutting oil
P	Cast steel	Up to 950	GS 40	1.0416	10-15	15 - 25	Emulsion, cutting oil
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10-15	15 - 25	Emulsion, cutting oil
P	Tempering steel	950 -1300	43CrMo4	1.3563	2-5	5 - 10	Emulsion, cutting oil
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	3 - 5	5 - 8	Emulsion, cutting oil
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	8 - 10	10-15	Emulsion, cutting oil
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	3 - 5	5 - 8	Emulsion
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	3 - 5	5 - 8	Emulsion
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	3 - 5	5 - 8	Emulsion
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 12	12 - 20	Emulsion, dry
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	5 - 8	10 - 20	Emulsion, cutting oil
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	5 - 8	10 - 20	Emulsion, cutting oil
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	10-15	15-20	Emulsion, cutting oil
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	20 - 25	25 - 35	Emulsion, cutting oil
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	20 - 30	30 - 40	Emulsion, cutting oil
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	10-15	15-20	Emulsion, cutting oil
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	10-15	15-20	Emulsion, cutting oil
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	20 - 25	25 - 35	Emulsion, cutting oil
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	20 - 25	25 - 35	Emulsion, cutting oil
N	Thermoplastic		PVC		20 - 30	30 - 40	Cutting oil
N	Thermoset		Melamine		3 - 5	5 - 8	Dry
N	Fibre-reinforced plastics		CFRP, GFRP		2 - 4	4 - 6	Dry
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	2 - 4	4 - 6	Cutting oil
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	2 - 4	4 - 6	Cutting oil
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	2 - 4	4 - 6	Cutting oil
H	Hardened materials up to 55 HRc		X40Cr14	1.2083		1 - 3 (2 - 12)*	Cutting oil
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379		2 - 6*	Cutting oil
H	Hardened materials up to 64 HRc		100Cr6	1.2067		1 - 3*	Cutting oil

Repair of damaged or worn thread

Application
- Thread repair of damage or worn thread
- Thread reinforcement of materials with low shear strength, e.g. aluminium and magnesium alloys
- In mechanical, automotive, electrical and medical engineering

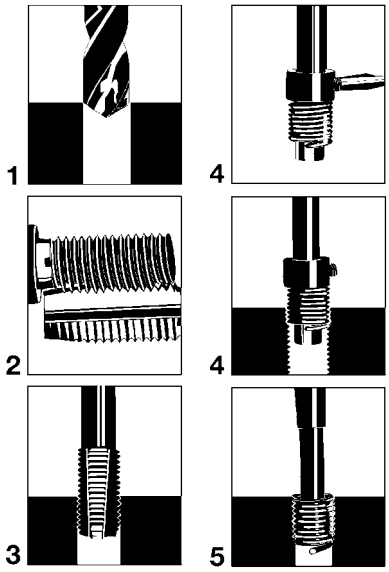
1 Drilling
Bore out damaged thread with twist drill bit.

2 Inspection
Inspect thread and threaded bolt for even thread and pitch.

3 Thread
Cut the holding thread into the bored-out hole using a special coil tap. The use of cutting oil is advisable.

4 Install thread insert
Place the insert on the tool and ensure the tang sits in the keyway opening. Correctly adjust using the adjusting ring. Gently screw-in the thread insert in the rotation direction. Do not turn against the running direction; the tang may break.

5 Break-off tang
After installation, remove the screwing tool and remove the tang using the tang breaker.

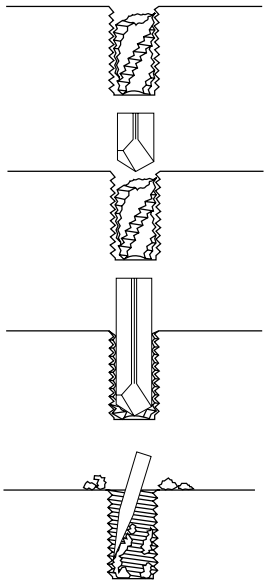


Solid carbide extractors for extracting damaged taps

Cutting data and comments

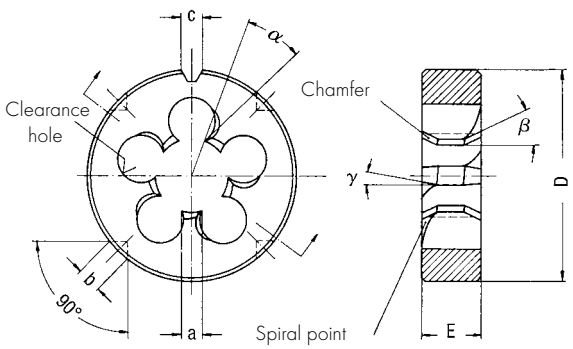
- Vc = ca. 12-25 m/min.
- Feed f = ca. 0.01-0.05 mm/rev

- Please ensure stable clamping!
- Please use high-quality lubricant!
- This tool should not be used to machine soft steels, aluminium alloys or other soft materials.
- The tool should be sharpened from time to time.



1. Position the drill bit on the centre of the damaged tap; please ensure that the workpiece and drill bit are securely clamped. If the head of the damaged tap protrudes from the workpiece, smooth the damaged surface to allow easier boring of the centre of the tap.
2. Perform initial centring at a low feed rate. Then retract the drill bit. Please use a little lubricant for this step.
3. Select the corresponding drill bit. Bore the hole with firm feed/speed. Pause the operation occasionally to remove chips. Please use lubricant of a sufficiently high quality.
4. If the bore is clean, the remaining tap can be easily removed using a scriber or a similar pointed tool; the thread cutting can then be continued.

Definitions and dimension explanations for threading dies

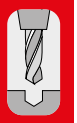


D External diameter (n. DIN, tolerance f10)
E Width
a Tooth width
c Groove width
b Diameter of the bore for retaining screw
α Rake angle
β Chamfer angle, half countersink angle
γ Spiral point angle

Threading die tolerances
We supply threading dies for the tolerance class "medium" as standard. Threading dies for other tolerance classes are available on request.

Tapping holes for taps

- Please adjust these guideline values according to clamping operation and machine set-up!



M Metric ISO standard thread / DIN 13

M	Pitch	Borehole mm
M 1	0,25	0,75
M 1,1	0,25	0,85
M 1,2	0,25	0,95
M 1,4	0,30	1,1
M 1,6	0,35	1,25
M 1,8	0,35	1,45
M 2	0,40	1,6
M 2,2	0,45	1,75
M 2,5	0,45	2,05
M 3	0,50	2,5
M 3,5	0,60	2,9
M 4	0,70	3,3
M 4,5	0,75	3,7
M 5	0,80	4,2
M 6	1,00	5
M 7	1,00	6
M 8	1,25	6,8
M 9	1,25	7,8
M 10	1,50	8,5
M 11	1,50	9,5
M 12	1,75	10,2
M 14	2,00	12
M 16	2,00	14
M 18	2,50	15,5
M 20	2,50	17,5
M 22	2,50	19,5
M 24	3,00	21
M 27	3,00	24
M 30	3,50	26,5
M 33	3,50	29,5
M 36	4,00	32
M 39	4,00	35
M 42	4,50	37,5
M 45	4,50	40,5
M 48	5,00	43
M 52	5,00	47
M 56	5,50	50,5
M 60	5,50	54,5
M 64	6,00	58
M 68	6,00	62

Rp Whitworth pipe thread DIN 2999

Rp	Number of threads to 1 inch	Borehole mm
Rp 1/8"	28	8,60
Rp 1/4"	19	11,50
Rp 3/8"	19	15,00
Rp 1/2"	14	18,50
Rp 3/4"	14	24,00
Rp 1"	11	30,25
Rp 1.1/4"	11	39,00
Rp 1.1/2"	11	44,85
Rp 2"	11	56,50

BSW British Standard Whitworth / BS 84

BSW	Number of threads to 1 inch	Borehole mm
1/4"	20	5,10
5/6"	18	6,50
3/8"	16	7,90
7/16"	14	9,20
1/2"	12	10,50
5/8"	11	13,50
3/4"	10	16,30
7/8"	9	19,25
1"	8	22,00
1.1/8"	7	24,75
1.1/4"	7	27,75
1.3/8"	6	30,20
1.1/2"	6	33,50
1.5/8"	5	35,50
1.3/4"	5	38,50
1.7/8"	4,5	41,50
2"	4,5	44,50
2.1/4"	4	50,00
2.1/2"	4	56,50
2.3/4"	3,5	62,00
3"	3,5	68,00

MF ISO fine-pitch metric thread / DIN 13

MF	Pitch	Borehole mm
M 2	0,25	1,75
M 2,2	0,25	1,95
M 2,5	0,35	2,15
M 3	0,35	2,65
M 3,5	0,35	3,15
M 4	0,5	3,50
M 5	0,5	4,50
M 6	0,5	5,50
M 6	0,75	5,20
M 8	0,75	7,20
M 10	0,75	9,20
M 12	0,75	11,20
M 8	1,00	7,00
M 10	1,00	9,00
M 12	1,00	11,00
M 14	1,00	13,00
M 16	1,00	15,00
M 18	1,00	17,00
M 20	1,00	19,00
M 22	1,00	21,00
M 24	1,00	23,00
M 26	1,00	25,00
M 28	1,00	27,00
M 30	1,00	29,00
M 10	1,25	8,80
M 12	1,25	10,80
M 14	1,25	12,80
M 12	1,50	10,50
M 14	1,50	12,50
M 16	1,50	14,50
M 18	1,50	16,50
M 20	1,50	18,50
M 22	1,50	20,50
M 24	1,50	22,50
M 26	1,50	24,50
M 27	1,50	25,50
M 28	1,50	26,50
M 30	1,50	28,50
M 32	1,50	30,50
M 33	1,50	31,50
M 36	1,50	34,50
M 38	1,50	36,50
M 40	1,50	38,50
M 42	1,50	40,50
M 45	1,50	43,50
M 48	1,50	46,50
M 50	1,50	48,50
M 52	1,50	50,50
M 18	2,00	16,00
M 20	2,00	18,00
M 22	2,00	20,00
M 24	2,00	22,00
M 27	2,00	25,00
M 28	2,00	26,00
M 30	2,00	28,00
M 32	2,00	30,00
M 33	2,00	31,00
M 36	2,00	34,00
M 39	2,00	37,00
M 40	2,00	38,00
M 42	2,00	40,00
M 45	2,00	43,00
M 48	2,00	46,00
M 50	2,00	48,00

UN American thread 8 and 12 Gg ANSI B 1.1

UN	Number of threads to 1 inch	Borehole mm
1.1/8"	8	25,50
1.1/4"	8	28,50
1.3/8"	8	31,75
1.1/2"	8	35,00
1.5/8"	8	38,00
1.3/4"	8	41,28
1.7/8"	8	44,50
2"	8	47,62
1.3/4"	12	42,50
2"	12	48,75

UNC American thread ANSI B 1.1

UNC	Number of threads to 1 inch	Borehole mm
Nr. 1	64	1,50
Nr. 2	56	1,80
Nr. 3	48	2,10
Nr. 4	40	2,30
Nr. 5	40	2,60
Nr. 6	32	2,80
Nr. 8	32	3,50
Nr. 10	24	3,90
Nr. 12	24	4,50
1/4"	20	5,20
5/16"	18	6,60
3/8"	16	8,00
7/16"	14	9,40
1/2"	13	10,80
9/16"	12	12,20
5/8"	11	13,60
3/4"	10	16,50
7/8"	9	19,50
1"	8	22,25
1.1/8"	7	25,00
1.1/4"	7	28,18
1.3/8"	6	30,75
1.1/2"	6	34,00
1.3/4"	5	39,50
2"	4,5	45,00
2.1/4"	4,5	51,50
2.1/2"	4	57,00
2.3/4"	4	63,50
3"	4	70,00

UNF American thread ANSI B 1.1

UNF	Number of threads to 1 inch	Borehole mm
Nr. 0	80	1,25
Nr. 1	72	1,55
Nr. 2	64	1,90
Nr. 3	56	2,10
Nr. 4	48	2,40
Nr. 5	44	2,70
Nr. 6	40	2,95
Nr. 8	36	3,50
Nr. 10	32	4,10
Nr. 12	28	4,70
1/4"	28	5,50
5/16"	24	6,90
3/8"	24	8,50
7/16"	20	9,90
1/2"	20	11,50
9/16"	18	12,90
5/8"	18	14,50
3/4"	16	17,50
7/8"	14	20,40
1"	12	23,25
1.1/8"	12	26,50
1.1/4"	12	29,50
1.3/8"	12	32,75
1.1/2"	12	36,00

UNEF American thread ANSI B 1.1

UNEF	Number of threads to 1 inch	Borehole mm
Nr. 12	32	4,75
1/4"	32	5,60
5/16"	32	7,20
3/8"	32	8,80
7/16"	28	10,30
1/2"	28	11,80
9/16"	24	13,30
5/8"	24	14,90
11/16"	24	16,50
3/4"	20	17,75
13/16"	20	19,40
7/8"	20	21,00
15/16"	20	22,50
1"	20	24,25
1.1/16"	18	25,50
1.1/8"	18	27,25
1.1/4"	18	30,40
1.5/16"	18	32,00
1.3/8"	18	33,50
1.1/2"	18	36,75

EG - M Metric ISO standard thread

EG - M	Pitch	Borehole mm
EG - M 2	0,40	2,10
EG - M 2,5	0,45	2,60
EG - M 3	0,50	3,20
EG - M 3,5	0,60	3,70
EG - M 4	0,70	4,20
EG - M 5	0,80	5,20
EG - M 6	1	6,30
EG - M 8	1,25	8,40
EG - M 10	1,50	10,40
EG - M 12	1,75	12,50
EG - M 14	2,00	14,50
EG - M 16	2,00	16,50
EG - M 18	2,50	18,75
EG - M 20	2,50	20,75
EG - M 22	2,50	22,75
EG - M 24	3,00	24,75
EG - M 30	3,50	31,00

EG - MF ISO fine-pitch metric thread

EG - MF	Pitch	Borehole mm
EG - M 8	1	8,30
EG - M 10	1	10,30
EG - M 10	1,25	10,30
EG - M 12	1,25	12,30
EG - M 12	1,50	12,50
EG - M 14	1,25	14,30
EG - M 14	1,50	14,50
EG - M 16	1,50	16,50
EG - M 18	1,50	18,50
EG - M 20	1,50	20,50
EG - M 22	1,50	22,50
EG - M 24	1,50	24,50

EG - UNC American thread ANSI B 1.1

EG - UNC	Number of threads to 1 inch	Borehole mm
Nr. 1	64	2,00
Nr. 2	56	2,40
Nr. 3	48	2,80
Nr. 4	40	3,10
Nr. 5	40	3,40
Nr. 6	32	3,80
Nr.8	32	4,50
Nr.10	24	5,30
Nr. 12	24	5,90
1/4"	20	6,80
5/16"	18	8,40
3/8"	16	10,00
7/16"	14	11,75
1/2"	13	13,30
9/16"	12	15,00
5/8"	11	16,50
3/4"	10	19,75
7/8"	9	23,00
1"	8	26,50

EG - UNF American thread ANSI B 1.1

EG-UNF	Number of threads to 1 inch	Borehole mm
Nr. 0	80	1,60
Nr. 1	72	2,00
Nr. 2	64	2,40
Nr. 3	56	2,70
Nr. 4	48	3,10
Nr. 5	44	3,40
Nr. 6	40	3,80
Nr. 8	36	4,40
Nr. 10	32	5,10
Nr.12	28	5,80
1/4"	28	6,60
5/16"	24	8,30
3/8"	24	9,80
7/16"	20	11,50
1/2"	20	13,10
9/16"	18	14,75
5/8"	18	16,27
3/4"	16	19,50
7/8"	14	22,75
1"	12	26,00

BSPT / Rc thread ISO 7 / 1 - Konizität 1:16				
BSPT	Number of threads to 1 inch	D Straight mm	D kon. mm	Bore length
Rc 1/8"	28	8,30	8,50	10,20
Rc 1/4"	19	11,10	11,35	15,70
Rc 3/8"	19	14,50	14,85	16,00
Rc 1/2"	14	18,10	18,50	21,50
Rc 3/4"	14	23,50	24,00	22,80
Rc 1"	11	29,75	30,15	27,30
Rc 1.1/4"	11	38,20	38,80	30,00
Rc 1.1/2"	11	44,00	44,70	30,00
Rc 2"	11	55,56	56,50	34,00

NPT / NPTF thread ANSI B 2.1 - Konizität 1:16				
NPT/ NPTF	Number of threads to 1 inch	D Straight mm	D kon. mm	Bore length
1/16"	27	6,25	6,40	12,10
1/8"	27	8,40	8,70	12,10
1/4"	18	11,10	11,40	17,50
3/8"	18	14,30	14,80	17,70
1/2"	14	17,90	18,30	23,00
3/4"	14	23,00	23,70	23,00
1"	11,5	29,00	29,70	27,40
1.1/4"	11,5	37,70	38,40	28,00
1.1/2"	11,5	44,00	44,50	28,40
2"	11,5	56,00	56,60	28,40

G - R pipe thread / DIN ISO 228		
G	Number of threads to 1 inch	Borehole mm
G 1/8"	28	8,70
G 1/4"	19	11,80
G 3/8"	19	15,25
G 1/2"	14	19,00
G 5/8"	14	21,00
G 3/4"	14	24,50
G 7/8"	14	28,25
G 1"	11	30,75
G 1.1/8"	11	35,50
G 1.1/4"	11	39,50
R*1.3/8"	11	41,67
G 1.1/2"	11	45,24
G 1.3/4"	11	51,00
G 2"	11	57,00
G 2.1/4"	11	63,10
G 2.1/2"	11	72,50
G 2.3/4"	11	79,00
G 3"	11	85,20
R*3.1/4"	11	91,50
G 3.1/2"	11	97,80
R 3.3/4"	11	104,00
G 4"	11	110,50

*not included in DIN ISO 228

Tr metric ISO trapezoidal thread DIN 103/7H		
Tr	Pitch	Borehole mm
Tr 10	2	8,10
Tr 12	3	9,20
Tr 14	3	11,20
Tr 14	4	10,50
Tr 16	4	12,25
Tr 18	4	14,25
Tr 20	4	16,25
Tr 22	5	17,25
Tr 24	5	19,25
Tr 28	5	23,25
Tr 30	6	24,25
Tr 32	6	26,25
Tr 36	6	30,25
Tr 38	7	31,25

Tapping holes for taps

- Please adjust these guideline values according to clamping operation and machine set-up!

M Metric ISO standard thread / DIN 13		
M	Pitch	Borehole mm
M 1,6	0,35	1,45 ± 0,02
M 2	0,40	1,80 ± 0,02
M 2,5	0,45	2,30 ± 0,02
M 3	0,50	2,75 ± 0,03
M 3,5	0,60	3,20 ± 0,03
M 4	0,70	3,65 ± 0,03
M 5	0,80	4,60 ± 0,03
M 6	1,00	5,55 ± 0,04
M 8	1,25	7,40 ± 0,04
M 10	1,50	9,30 ± 0,05
M 12	1,75	11,10 ± 0,05
M 14	2,00	13,10 ± 0,05
M 16	2,00	15,10 ± 0,05
M 18	2,50	16,90 ± 0,05
M 20	2,50	18,90 ± 0,05
M 22	2,50	20,90 ± 0,05
M 24	3,00	22,65 ± 0,05
M 27	3,00	25,65 ± 0,05

MF ISO fine-pitch metric thread / DIN 13		
MF	Pitch	Borehole mm
M 4	0,50	3,75 ± 0,03
M 5	0,50	4,75 ± 0,03
M 6	0,50	5,75 ± 0,03
M 6	0,75	5,65 ± 0,03
M 8	1,00	7,55 ± 0,04
M 10	1,00	9,55 ± 0,04
M 12	1,00	11,55 ± 0,04
M 14	1,00	13,55 ± 0,04
M 16	1,00	15,55 ± 0,04
M 10	1,25	9,40 ± 0,04
M 12	1,25	11,40 ± 0,04
M 14	1,25	13,40 ± 0,04
M 16	1,25	15,40 ± 0,04
M 12	1,50	11,30 ± 0,05
M 14	1,50	13,30 ± 0,05
M 16	1,50	15,30 ± 0,05
M 18	1,50	17,30 ± 0,05
M 20	1,50	19,30 ± 0,05
M 20	2,00	19,10 ± 0,05
M 22	2,00	21,10 ± 0,05
M 24	2,00	23,10 ± 0,05

G - R pipe thread / DIN ISO 228		
G	Number of threads to 1 inch	Borehole mm
G 1/8"	28	9,25 ± 0,04
G 1/4"	19	12,40 ± 0,04
G 3/8"	19	16,00 ± 0,04
G 1/2"	14	20,00 ± 0,05
G 5/8"	14	22,00 ± 0,05
G 3/4"	14	25,40 ± 0,05
G 7/8"	14	29,25 ± 0,05

UNC American thread ANSI B 1.1		
UNC	Number of threads to 1 inch	Borehole mm
Nr. 2	56	2,00 ± 0,02
Nr. 3	48	2,30 ± 0,03
Nr. 4	40	2,55 ± 0,03
Nr. 5	40	2,90 ± 0,03
Nr. 6	32	3,15 ± 0,03
Nr. 8	32	3,80 ± 0,03
Nr. 10	24	4,35 ± 0,03
1/4"	20	5,80 ± 0,04
5/16"	18	7,30 ± 0,05
3/8"	16	8,80 ± 0,05
7/16"	14	10,30 ± 0,05
1/2"	13	11,80 ± 0,05
9/16"	12	13,35 ± 0,05
5/8"	11	14,85 ± 0,05
3/4"	10	17,90 ± 0,05

UNF American thread ANSI B 1.1		
UNF	Number of threads to 1 inch	Borehole mm
Nr. 2	64	2,00 ± 0,02
Nr. 3	56	2,30 ± 0,02
Nr. 4	48	2,60 ± 0,03
Nr. 5	44	2,90 ± 0,03
Nr. 6	40	3,20 ± 0,03
Nr. 8	36	3,85 ± 0,03
Nr. 10	32	4,45 ± 0,03
Nr. 12	28	5,10 ± 0,03
1/4"	28	5,90 ± 0,04
5/16"	24	7,45 ± 0,04
3/8"	24	9,00 ± 0,04
7/16"	20	10,55 ± 0,04
1/2"	20	12,10 ± 0,04
9/16"	18	13,65 ± 0,05
5/8"	18	15,25 ± 0,05
3/4"	16	18,35 ± 0,05
7/8"	14	21,43 ± 0,05
1"	12	24,45 ± 0,05

EG - M Metric ISO standard thread		
EG - M	Pitch	Borehole mm
EG - M 2	0,40	2,35 ± 0,02
EG - M 2,5	0,45	2,90 ± 0,02
EG - M 3	0,50	3,45 ± 0,03
EG - M 3,5	0,60	4,00 ± 0,03
EG - M 4	0,70	4,60 ± 0,03
EG - M 5	0,80	5,70 ± 0,03
EG - M 6	1,00	6,85 ± 0,04
EG - M 8	1,25	9,05 ± 0,04
EG - M 10	1,50	11,25 ± 0,05
EG - M 12	1,75	13,50 ± 0,05
EG - M 14	2,00	15,70 ± 0,05
EG - M 16	2,00	17,70 ± 0,05
EG - M 18	2,50	20,10 ± 0,05
EG - M 20	2,50	22,10 ± 0,05
EG - M 22	2,50	24,10 ± 0,05
EG - M 24	3,00	26,50 ± 0,05

EG - MF ISO fine-pitch metric thread		
EG - MF	Pitch	Borehole mm
EG - M 8	1,00	8,85 ± 0,04
EG - M 10	1,00	10,85 ± 0,04
EG - M 12	1,00	12,85 ± 0,04
EG - M 14	1,00	14,85 ± 0,04
EG - M 10,25	1,25	11,05 ± 0,04
EG - M 12	1,25	13,05 ± 0,04
EG - M 14	1,25	15,05 ± 0,04
EG - M 12	1,50	13,25 ± 0,05
EG - M 14	1,50	15,25 ± 0,05
EG - M 16	1,50	17,25 ± 0,05
EG - M 18	1,50	19,25 ± 0,05
EG - M 20	1,50	21,25 ± 0,05
EG - M 20	2,00	21,70 ± 0,05
EG - M 22	2,00	23,75 ± 0,05
EG - M 24	2,00	25,75 ± 0,05

EG - UNC American thread ANSI B 1.1		
EG - UNC	Number of threads to 1 inch	Borehole mm
Nr. 2	56	2,70 ± 0,02
Nr. 3	48	3,00 ± 0,03
Nr. 4	40	3,35 ± 0,03
Nr. 5	40	3,70 ± 0,03
Nr. 6	32	4,20 ± 0,03
Nr. 8	32	4,85 ± 0,03
Nr. 10	24	5,70 ± 0,03
1/4"	20	7,45 ± 0,04
5/16"	18	9,10 ± 0,05
3/8"	16	10,80 ± 0,05
7/16"	14	12,65 ± 0,05
1/2"	13	14,30 ± 0,05
9/16"	12	16,10 ± 0,05
5/8"	11	17,86 ± 0,05
3/4"	10	21,20 ± 0,05

EG - UNF American thread ANSI B 1.1		
EG - UNF	Number of threads to 1 inch	Borehole mm
Nr. 2	64	2,50 ± 0,02
Nr. 3	56	2,90 ± 0,02
Nr. 4	48	3,30 ± 0,03
Nr. 5	44	3,65 ± 0,03
Nr. 6	40	4,00 ± 0,03
Nr. 8	36	4,75 ± 0,03
Nr. 10	32	5,50 ± 0,03
Nr. 12	28	6,25 ± 0,03
1/4"	28	7,05 ± 0,04
5/16"	24	8,80 ± 0,04
3/8"	24	10,40 ± 0,04
7/16"	20	12,20 ± 0,04
1/2"	20	13,75 ± 0,04
9/16"	18	15,50 ± 0,05
5/8"	18	17,07 ± 0,05
3/4"	16	20,40 ± 0,05
7/8"	14	23,75 ± 0,05
1"	12	27,20 ± 0,05

Core diameter-tolerance field for thread forming in accordance with DIN 13, Part 50

For strength reasons it is not necessary to maintain the core diameter tolerances of tolerance class 6H; tolerance class 7H satisfies the demand that the flank coverage of bolt and nut thread 0.32 x P should not be exceeded. Formed threads are normally stronger than cut threads due to the uninterrupted fibre orientation and the work hardening.

M Metric ISO standard thread

M	Pitch	Hole Ø	Core Ø 7H nut thread	
	mm	mm	min.	max.
M1	0.25	0.88	-	-
M1.1	0.25	0.98	-	-
M1.2	0.25	1.08	-	-
M1.4	0.30	1.25	-	-
M1.6	0.35	1.45	-	-
M1.7	0.35	1.55	-	-
M1.8	0.35	1.65	-	-
M2.0	0.40	1.80	-	-
M2.2	0.45	2.00	-	-
M2.3	0.40	2.10	-	-
M2.5	0.45	2.30	-	-
M2.6	0.45	2.40	-	-
M3.0	0.50	2.80	2.459	2.639
M3.5	0.60	3.25	2.850	3.050
M4.0	0.70	3.70	3.242	3.466
M4.5	0.75	4.15	3.688	3.924
M5.0	0.80	4.65	4.134	4.384
M6.0	1.00	5.55	4.917	5.217
M7.0	1.00	6.55	5.917	6.217
M8.0	1.25	7.40	6.647	6.982
M9.0	1.25	8.40	7.647	7.982
M10	1.50	9.25	8.376	8.751
M11	1.50	10.25	9.376	9.751
M12	1.75	11.20	10.106	10.531
M14	2.00	13.10	11.835	12.310
M16	2.00	15.10	13.835	14.310
M18	2.50	16.90	15.294	15.854
M20	2.50	18.90	17.294	17.854

MF Metric ISO fine thread

MF	Pitch	Hole Ø	Core Ø 7H nut thread	
	mm	mm	min.	max.
M5	0.50	4.75	4.459	4.639
M5.5	0.50	5.25	4.959	5.139
M6	0.75	5.65	5.188	5.424
M7	0.75	6.65	6.188	6.424
M8	0.75	7.65	7.188	7.424
M8	1.00	7.55	6.917	7.217
M9	0.75	8.65	8.188	8.424
M9	1.00	8.55	7.917	8.217
M10	0.75	9.65	9.188	9.424
M10	1.00	9.55	8.917	9.217
M10	1.25	9.40	8.647	8.982
M11	0.75	10.65	10.188	10.424
M11	1.00	10.55	9.917	10.217
M12	1.00	11.55	10.917	11.217
M12	1.25	11.40	10.647	10.982
M12	1.50	11.30	10.376	10.751
M14	1.00	13.55	12.917	13.217
M14	1.25	13.40	12.647	12.982
M14	1.50	13.30	12.376	12.751
M15	1.00	14.55	13.917	14.217
M15	1.50	14.30	13.376	13.751
M16	1.00	15.55	14.917	15.217
M16	1.50	15.30	14.376	14.751
M17	1.00	16.55	15.917	16.217
M17	1.50	16.30	15.376	15.751
M18	1.00	17.55	16.917	17.217
M18	1.50	17.30	16.376	16.751
M18	2.00	17.10	15.835	16.310
M20	1.00	19.55	18.917	19.217
M20	1.50	19.30	18.376	18.751
M22	1.50	21.30	20.376	20.751
M24	1.50	23.30	22.376	22.751

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HSS countersink



- Please adjust the guideline values according to clamping operation and machine set-up!

- **Recommended cutting data for coated HSS, as well as HSS-E countersinks:**
- The aforementioned values can be increased by approx. 10 and 20%.

150101....
150102....
150104....
150105....
150106....
150107....
150110....
150111....
150112....
150113....
150114....
150116....
150117....
150130....
150131....
150135....
150145....
150146....
150147....
150148....
150115....
150155....
150201....
150270....
150271....
150272....
150273....
150274....
150275....
150276....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 28	0.05 - 0.07	0.08 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 28	0.05 - 0.07	0.08 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Structural steel	700 - 950	Ck45	1.1191	10-15	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Cast steel	Up to 950	GS 40	1.0416	6 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10-15	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	5 - 8	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	5 - 8	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	5 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 14	0.04 - 0.05	0.05 - 0.1	0.1 - 0.14	0.14 - 0.18	0.18 - 0.22
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	6 - 10	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
	Ductile iron	Up to 280 HB	GGG 60	0.7060	8 - 12	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	8 - 12	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	40 - 80	0.08 - 0.11	0.1 - 0.14	0.12 - 0.16	0.16 - 0.22	0.2 - 0.25
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	20 - 50	0.06 - 0.09	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	35 - 50	0.06 - 0.09	0.09 - 0.12	0.12 - 0.16	0.12 - 0.16	0.16 - 0.24
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 40	0.08 - 0.11	0.1 - 0.14	0.12 - 0.16	0.16 - 0.22	0.2 - 0.25
	Thermoplastic		PVC		20 - 40	0.05 - 0.08	0.07 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Thermoset		Melamine		10 - 20	0.04 - 0.06	0.06 - 0.09	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16
	Graphite		C8000		3 - 6	Manual feed	Manual feed	Manual feed	Manual feed	Manual feed
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5 - 8	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	6 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18

ATORN ENORMplus Taper and deburring countersinks



- Please adjust these guideline values according to clamping operation and machine set-up!

150163....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						10.4	12.4	16.5	20.5	25 / 31
P	Cast steel	Up to 950	GS 40	1.0416	8 - 14	0.04	0.05	0.07	0.1	0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	6 - 12	0.03	0.03	0.04	0.05	0.06
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	8 - 11	0.04	0.06	0.08	0.1	0.12
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	10 - 17	0.06	0.08	0.1	0.12	0.15
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5 - 10	0.04	0.05	0.06	0.08	0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 12	0.07	0.1	0.12	0.15	0.18

ATORN Solid carbide taper and deburring countersink



150166....
150171....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						6	10	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 50	0.1	0.1	0.12	0.14	0.16
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 50	0.1	0.1	0.12	0.14	0.16
	Structural steel	700 - 950	Ck45	1.1191	25 - 40	0.06	0.08	0.14	0.16	0.18
	Cast steel	Up to 950	GS 40	1.0416	12 - 20	0.06	0.07	0.1	0.12	0.15
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	20 - 35	0.07	0.1	0.16	0.18	0.2
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	8 - 20	0.05	0.05	0.06	0.07	0.08
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	12 - 20	0.05	0.06	0.08	0.1	0.12
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	15 - 30	0.08	0.1	0.12	0.15	0.18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	12 - 25	0.07	0.1	0.12	0.15	0.18
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	10 - 20	0.05	0.07	0.1	0.12	0.14
	Ductile iron	Up to 280 HB	GGG 60	0.7060	12 - 22	0.06	0.08	0.11	0.14	0.16
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	12 - 22	0.06	0.08	0.11	0.14	0.16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 100	0.12	0.15	0.2	0.24	0.27
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	40 - 65	0.09	0.11	0.15	0.18	0.23
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 80	0.1	0.12	0.16	0.2	0.24
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 120	0.12	0.14	0.18	0.21	0.27
	Thermoplastic		PVC		30 - 65	0.12	0.14	0.17	0.2	0.25
	Thermoset		Melamine		15 - 35	0.1	0.12	0.15	0.18	0.24
	Graphite		C8000		5 - 10	Manual feed	Manual feed	Manual feed	Manual feed	Manual feed

ATORN Reverse countersink 180°



152501....

- Please adjust these guideline values according to clamping operation and machine set-up!

- For rotating use with stationary workpieces
- For ISO indexable cutting inserts (CPMT or CCM and CCG)
- With internal cooling, straight shank with clamping surface (Whistle-Notch)
  Ø15 and Ø 18 without internal cooling
  1. Positioning: pay attention to the cutting edge position!
  2. Move from the centre to the cutting edge opposite "E".
  3. Move eccentrically through the bore.
  4. Move back to the centre.
  5. Reverse countersink with rotational speed "N" and feed "F".
  6. Move from the centre to the cutting edge opposite "E" and retract from the hole.

Cutting speed Vc m/min	Feed F mm/rev
50 - 80	0.08 - 0.1

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NOGA UBURR Forward and reverse deburring tool

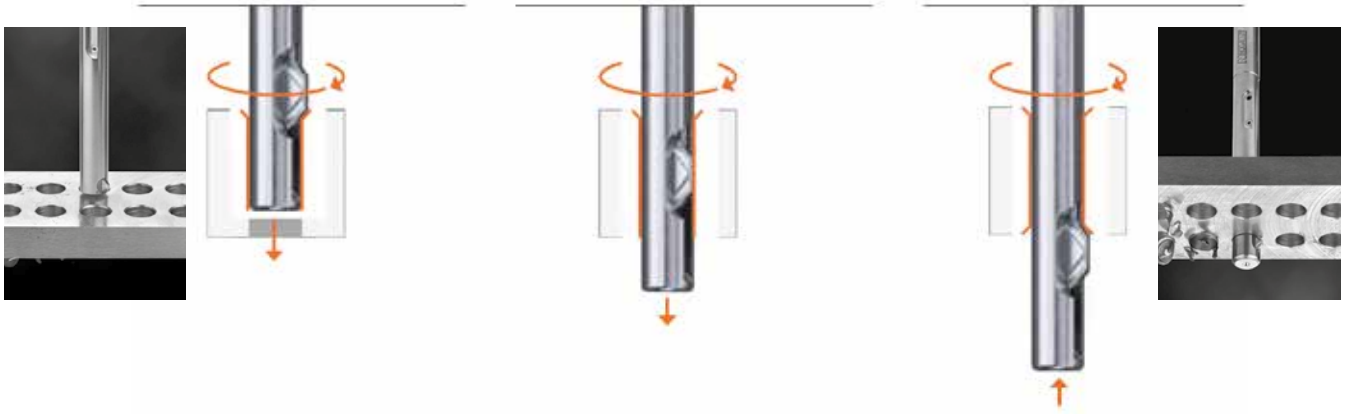


155002....

The UBURR removes the burr thanks to its flexible technology on the front.

The UBURR blade automatically moves into its pocket due to the pressure without damaging the surface of the hole.

The UBURR also removes the burr on the reverse side by simply retracting the spindle in the same direction and with the same cutting data as when retracting.



ISO	Materials group	Strength/ Hardness N/mm²	Material chemical example	Material number	HSS		HSS TiN coated	
					Vc m/min	FZ=mm/tooth	Vc m/min	FZ=mm/tooth
P	Machining steel	up to 700	9 SMn 28	1.0715	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Unalloyed structural steel	up to 700	St-52	1.0052	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Structural steel	700-950	Ck45	1.1191	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Tempering steel	500-950	42 CrMo4	1.7225	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Cast steel	up to 950	GS 40	1.0416	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Case-hardening steel	up to 1200	16 MnCr 5	1.7131	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Tempering steel	950-1300	43CrMo4	1.3563	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	25 - 45	0.05 - 0.1	45 - 65	0.05 - 0.1
M	Stainless steel, ferr./marten.	500-950	X10Cr13	1.4006	15 - 30	0.05 - 0.08	30 - 55	0.05 - 0.08
	Stainless steel, austenitic	500-950	X 5 CrNi 18 10	1.4301	15 - 30	0.05 - 0.08	30 - 55	0.05 - 0.08
	Duplex	700-950	x 2 CrNiMoN 22-5-3	1.4462	15 - 30	0.05 - 0.08	30 - 55	0.05 - 0.08
K	Grey cast iron	up to 260 HB	GG 25	0.6025	20 - 35	0.05 - 0.1	35 - 55	0.05 - 0.1
	alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	20 - 35	0.05 - 0.1	35 - 55	0.05 - 0.1
	Ductile iron	up to 280 HB	GGG 60	0.7060	20 - 35	0.05 - 0.1	35 - 55	0.05 - 0.1
	Malleable cast iron	up to 280 HB	GTS 55	0.8155	20 - 35	0.05 - 0.1	35 - 55	0.05 - 0.1
N	Al. alloys, long-chipping	up to 500	AlMg 3	3.3535	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Al. alloys, short-chipping	up to 500	G-AlSi 12	3.2581	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Copper alloy (bronze), long-chipping	up to 1200	CuSn4	2.1016	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Copper alloy (bronze), short-chipping	up to 850	CuNi12Zn24	2.0730	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Copper alloy (brass), long-chipping	up to 600	Cu ZN 20	2.0250	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Copper alloy (brass), short-chipping	up to 600	Cu Zn 39 Pb 3	2.0381	40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Thermoplastic		PVC		40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	Thermosetting plastic		Melamine		40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
	fibre-reinforced plastics		CFRP, GFRP		40 - 60	0.05 - 0.12	50 - 75	0.05 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	10 - 15	0.05 - 0.08	15 - 20	0.05 - 0.08
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10 - 15	0.05 - 0.08	15 - 20	0.05 - 0.08
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	10 - 15	0.05 - 0.08	15 - 20	0.05 - 0.08
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	15 - 30	0.05 - 0.08	20 - 35	0.05 - 0.08
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	15 - 30	0.05 - 0.08	20 - 35	0.05 - 0.08
	Hardened materials up to 64 HRC		100Cr6	1.2067	15 - 30	0.05 - 0.08	20 - 35	0.05 - 0.08

ATORN HSS-E machine reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

161001....
161002....
161003....
161005....
161006....
161010....
161035....
161020....

TIN-coated reamers

f up to 100% greater than uncoated reamers
Vc can be increased up to 50%

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									Coolant and lubricant
						5	8	10	15	20	25	30	40	50	
P	Machining steel	Up to 700	9 SMn 28	1.0715	8 - 10	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Mild steel:** Drilling oil emulsion, tallow, cutting oil
	Unalloyed structural steel	Up to 700	St-52	1.0052	10 - 12	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Tool steel, cast steel, tempering steel:** Rapeseed oil substitute
	Structural steel	700 - 950	Ck45	1.1191	6 - 8	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	
	Tempering steel	500 - 950	42 CrMo4	1.7225	6 - 10	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Alloyed steel:** Rapeseed oil substitute, cutting oil
	Cast steel	Up to 950	GS 40	1.0416	4 - 6	0.07	0.08	0.1	0.13	0.18	0.18	0.22	0.25	0.3	
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	4 - 6	0.08	0.1	0.1	0.15	0.2	0.25	0.3	0.35	0.4	**Heat-resistant and stainless steel:**Drilling oil
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 10	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45	Dry, rapeseed oil
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	4 - 6	0.12	0.15	0.17	0.2	0.25	0.25	0.3	0.35	0.4	
	Ductile iron	Up to 280 HB	GGG 60	0.7060	8 - 10	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45	Dry, drilling oil emulsion
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	6 - 8	0.15	0.18	0.2	0.2	0.25	0.3	0.35	0.4	0.4	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	15-20	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.45	Tough aluminium: Turpentine oil substitute and petroleum 4:5 Hardened aluminium: Rapeseed oil
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	10 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.4	Petroleum, turpentine oil
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.45	Drilling emulsion
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	10 - 12	0.2	0.25	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil, drilling oil emulsion
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	12 - 14	0.2	0.25	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Thermoplastic		PVC		6 - 10	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.6	Dry, compressed air, no water
	Thermoset		Melamine		4 - 6	0.2	0.25	0.3	0.35	0.4	0.45	0.45	0.5	0.5	

ATORN Solid carbide machine reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

163002....
163005....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									Coolant and lubricant
						5	8	10	15	20	25	30	40	50	
P	Machining steel	Up to 700	9 SMn 28	1.0715	10-15	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Mild steel:** Drilling oil emulsion, tallow, cutting oil
	Structural steel	700 - 950	Ck45	1.1191	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Tool steel, cast steel, tempering steel:** Rapeseed oil substitute
	Tempering steel	500 - 950	42 CrMo4	1.7225	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Alloyed steel:** Rapeseed oil substitute, cutting oil
	Cast steel	Up to 950	GS 40	1.0416	6 - 10	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4	**Heat-resistant and stainless steel:**Drilling oil
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	6 - 10	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 12	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	6 - 10	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	Dry, drilling oil emulsion
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Tough aluminium: Turpentine oil substitute and petroleum 4:5 Hardened aluminium: Rapeseed oil
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	20 - 30	0.3	0.36	0.4	0.45	0.5	0.5	0.55	0.6	0.7	Drilling emulsion
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil, drilling oil emulsion
	Thermoset		Melamine		15 - 25	0.3	0.36	0.4	0.45	0.5	0.5	0.55	0.6	0.7	Dry, compressed air, no water

Undersize for reaming (guide values)

Normally the pre-drilled hole is reamed in one operation, whereby the undersize values specified in the table below are recommended for the use of fixed reamers.

Materials group	Diameter range of the bore in mm				
	3 - 5	5 - 10	10 - 20	20 - 30	Over 30
Machining steel	0.1 - 0.2	0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5
Structural steel	0.1 - 0.2	0.2	0.2	0.3	0.3 - 0.4
Cast steel	0.1 - 0.2	0.2	0.2	0.2 - 0.3	0.3 - 0.4
Grey cast iron	0.1 - 0.2	0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5
Malleable cast iron	0.1 - 0.2	0.2	0.3	0.4	0.5
Copper	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5	0.5
Copper alloy (bronze, brass)	0.1 - 0.2	0.2	0.2 - 0.3	0.3	0.3 - 0.4
Al. alloy long-chipping	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5	0.5
Thermoset	0.1 - 0.2	0.3	0.4	0.4-0.5	0.5
Thermoplastic	0.1 - 0.2	0.2	0.2	0.3	0.3 - 0.4

The reaming allowance should be reduced for reamers with slotted bodies or inserted blades.

Pre- and post-reaming is performed for specific hole requirements and with particularly hard materials. Here, the table values below are reamed expediently in two equal parts.

Insufficient chip removal normally results in premature blunting because the teeth no longer cut, but simply press on the bore.

Fitting table for 1/100 machine reamers according to DIN 212



- Please adjust these guideline values according to clamping operation and machine set-up!

161030.... 163002....

Bore diameter in mm	C8	C9	C10	C11	CD7	D7	D8	D9	D10	D11	D12	E7	E8	E9	EF8	F7	F8	F9	F10	G6	G7	H5
1.0	1.07	1.07	1.08	1.10	1.04	1.02	1.03		1.04	1.06	1.08	1.02	1.02	1.03	1.02	1.01	1.01	1.02			1.01	1.00
2.0	2.07	2.07	2.08	2.10	2.04	2.02	2.03		2.04	2.06	2.08	2.02	2.02	2.03	2.02	2.01	2.01	2.02			2.01	2.00
3.0	3.07	3.07	3.08	3.10	3.04	3.02	3.03		3.04	3.06	3.08	3.02	3.02	3.03	3.02	3.01	3.01	3.02			3.01	3.00
4.0	4.08	4.09			4.05	4.04	4.04	4.05	4.06	4.08	4.10		4.03	4.04	4.03		4.02	4.03	4.04	4.01	4.01	4.00
5.0	5.08	5.09			5.05	5.04	5.04	5.05	5.06	5.08	5.10		5.04	5.04	5.03		5.02	5.03	5.04	5.01	5.01	5.00
6.0	6.08	6.09			6.05	6.04	6.04	6.05	6.06	6.08	6.10		6.04	6.04	6.03		6.02	6.03	6.04	6.01	6.01	6.00
7.0	7.09	7.10			7.06	7.05	7.05	7.06	7.08	7.10		7.03	7.05	7.05	7.03	7.02	7.03		7.05	7.01	7.01	7.00
8.0	8.09	8.10			8.06	8.05	8.05	8.06	8.08	8.10		8.03	8.05	8.05	8.03	8.02	8.03		8.05	8.01	8.01	8.00
9.0	9.09	9.10			9.06	9.05	9.05	9.06	9.08	9.10		9.03	9.05	9.05	9.03	9.02	9.03		9.05	9.01	9.01	9.00
10.0	10.09	10.1			10.06	10.05	10.05	10.06	10.08	10.1		10.03	10.05	10.05	10.03	10.02	10.03		10.05	10.01	10.01	10.00
11.0						11.06		11.08	11.10			11.04	11.06	11.06			11.03	11.04	11.06	11.01		11.00
12.0						12.06		12.08	12.10			12.04	12.06	12.06			12.03	12.04	12.06	12.01		12.00

Bore diameter in mm	H6	H7	H8	H9	H10	H11	H12	H13	J6	J7	J8	JS7	JS8	JS9	K6	K7	K8	M6	M7	M8	N6	N7
1.0	1.00		1.01		1.02	1.04	1.06	1.09	1.00	1.00	1.00	1.00	1.00	1.00			0.99			0.99	0.99	0.99
2.0	2.00		2.01		2.02	2.04	2.06	2.09	2.00	2.00	2.00	2.00	2.00	2.00			1.99			1.99	1.99	1.99
3.0	3.00		3.01		3.02	3.04	3.06	3.09	3.00	3.00	3.00	3.00	3.00	3.00			2.99			2.99	2.99	2.99
4.0	4.00		4.01	4.02	4.03	4.05	4.08		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.99		3.99	3.99	3.99
5.0	5.00		5.01	5.02	5.03	5.05	5.08		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.99		4.99	4.99	4.99
6.0	6.00		6.01	6.02	6.03	6.05	6.08		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.99		5.99	5.99	5.99
7.0	7.00	7.01	7.01	7.02	7.04	7.06	7.10		7.00	7.00	7.00	7.00	7.00			7.00	7.00	6.99	6.99	6.99		6.99
8.0	8.00	8.01	8.01	8.02	8.04	8.06	8.10		8.00	8.00	8.00	8.00	8.00			8.00	8.00	7.99	7.99	7.99		7.99
9.0	9.00	9.01	9.01	9.02	9.04	9.06	9.10		9.00	9.00	9.00	9.00	9.00			9.00	9.00	8.99	8.99	8.99		8.99
10.0	10.00	10.01	10.02	10.02	10.04	10.06	10.1		10.00	10.00	10.00	10.00	10.00			10.00	10.00	9.99	9.99	9.99		9.99
11.0		11.01	11.02	11.03	11.05	11.07			11.00	11.00	11.00	11.00	11.00			11.00	11.00	10.99	10.99	10.99		10.99
12.0		12.01	12.02	12.03	12.05	12.07			12.00	12.00	12.00	12.00	12.00			12.00	12.00	11.99	11.99	11.99		11.99

Bore diameter in mm	N8	P6	P7	P8	R6	R7	S6	S7	U6	U7	X7	X8	X9	Z7	Z8	Z9	Z10	ZA7	ZA8	ZB8	ZB9
1.0	0.99	0.99	0.99	0.99			0.98	0.98	0.98	0.98		0.97	0.97	0.97	0.97		0.96	0.96		0.95	0.95
2.0	1.99	1.99	1.99	1.99			1.98	1.98	1.98	1.98		1.97	1.97	1.97	1.97		1.96	1.96		1.95	1.95
3.0	2.99	2.99	2.99	2.99			2.98	2.98	2.98	2.98		2.97	2.97	2.97	2.97		2.96	2.96		2.95	2.95
4.0	3.99			3.98			3.98	3.98			3.97		3.96	3.96	3.96	3.95	3.95	3.96		3.94	3.94
5.0	4.99			4.98			4.98	4.98			4.97		4.96	4.96	4.96	4.95	4.95	4.96		4.94	4.94
6.0	5.99			5.98			5.98	5.98			5.97		5.96	5.96	5.96	5.95	5.95	5.96		5.94	5.94
7.0	6.99				6.98	6.98			6.97	6.97		6.96	6.95	6.96	6.95		6.94	6.94	6.94		6.92
8.0	7.99				7.98	7.98			7.97	7.97		7.96	7.95	7.96	7.95		7.94	7.94	7.94		7.92
9.0	8.99				8.98	8.98			8.97	8.97		8.96	8.95	8.96	8.95		8.94	8.94	8.94		8.92
10.0	9.99				9.98	9.98			9.97	9.97		9.96	9.95	9.96	9.95		9.94	9.94	9.94		9.92
11.0	10.99	10.98	10.98	10.97			10.97	10.97			10.96	10.95		10.95	10.94		10.93		10.93	10.90	10.90
12.0	11.99	11.98	11.98	11.97			11.97	11.97			11.96	11.95		11.95	11.94		11.93		11.93	11.90	11.90

SARA® Solid carbide high-performance reamers



163510....



163512....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						4	5	6	8	10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Structural steel	700 - 950	Ck45	1.1191	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 180	0.3	0.4	0.7	0.1	0.8	1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 180	0.3	0.4	0.7	0.1	0.8	1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 150	0.3	0.4	0.7	0.1	0.8	1
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 100	0.3	0.4	0.7	0.1	0.8	1
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 115	0.3	0.4	0.7	0.1	0.8	1

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ATORN High-performance exchangeable head reamers

The universal exchangeable heads are characterised by a complete and particularly user-friendly range. The joint means the exchangeable heads can be changed quickly and easily, and with high repetition precision. Meanwhile perfect hold with maximum stability and rigidity is achieved. The exchangeable head is tightened with a defined torque and requires a force-fitting and positive-fitting connection. High true running accuracy in conjunction with excellent rigidity are key features of this system.



Clean the taper, thread and flat surface of the exchangeable head using compressed air and a cloth.



Clean the taper, thread and flat surface of the exchangeable head mount using compressed air and a cloth.



Hand-tighten the exchangeable head clockwise in the exchangeable head mount. Then clamp the exchangeable head mount along with the tool in the machine mount.



Place the torque wrench as horizontal as possible on the exchangeable head and ensure the wrench surface is not tilted.



Tighten the exchangeable head using the torque wrench and the appropriate open-end snap-in spanner with the indicated tightening torque (see Table 'Exchangeable head tightening torque').



Result:
The gap between the exchangeable head and exchangeable head holder is closed and the connection is force-fitting and positive-fitting. The exchangeable head is now ready for use.

ATORN High-performance exchangeable head reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

Geometry ST

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	163610.... Feed rates in mm/rev based on the tool diameter in mm		163612....
						10 - 16	16 - 30	30 - 40
P	Unalloyed structural steel	Up to 700	St-52	1.0052	140 - 160	0,7 - 1	1 - 1,5	1,5 - 2
	Tempering steel	500 - 950	42 CrMo4	1.7225	120 - 160	0,7 - 1	1 - 1,5	1,5 - 2
	Cast steel	Up to 950	GS 40	1.0416	75 - 80	0,5 - 0,8	0,8 - 1,5	1,5 - 1,6
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 140	0,7 - 1	1 - 1,5	1,5 - 2
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 140	0,7 - 1	1 - 1,5	1,5 - 2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100 - 120	0,5 - 0,6	0,6 - 1,2	1,2 - 1,6
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 120	0,5 - 0,6	0,6 - 1,2	1,2 - 1,6
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 120	0,4 - 0,6	0,6 - 1,2	1,2 - 1,6

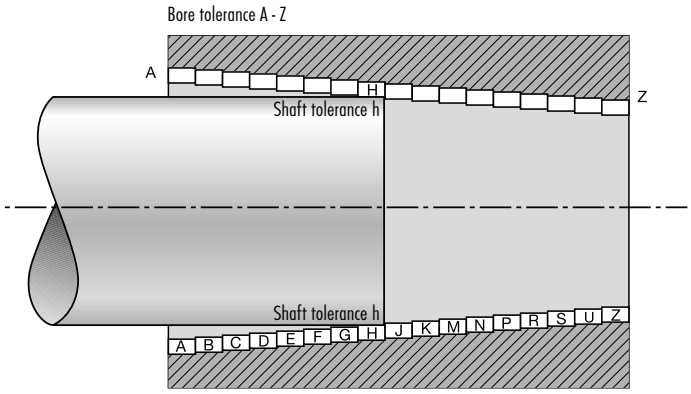
Geometry VA

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	163620.... Feed rates in mm/rev based on the tool diameter in mm		163622....
						10 - 16	16 - 30	30 - 40
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	35 - 40	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	35 - 40	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	25 - 30	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2

ISO standard shaft system fits

INFO

- (Excerpt from DIN 7155)
- **Nominal dimensions in µm (= 0.001 mm)**
- Maintain all shaft h-tolerances for system standard shaft. The maximum shaft dimension therefore goes up to the zero line and is equal to the nominal dimension. The smallest shaft dimension is smaller than its nominal value by the tolerance.
- All information is supplied without guarantee



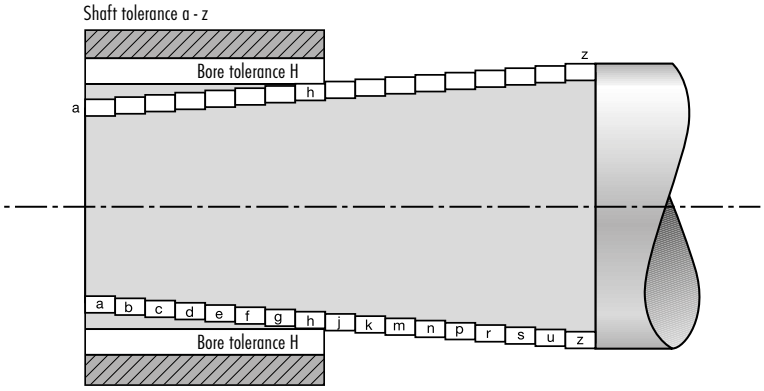
- Fitting type preferably according to DIN 7157
- (S = clearance fit)

Bores	Fitting type	Nominal dimension from ... to ... mm																		
		1 – 3	3 – 6	6 – 10	10 – 14	14 – 18	18 – 24	24 – 30	30 – 40	40 – 50	50 – 65	65 – 80	80 – 100	100 – 120	120 – 140	140 - 160	160 - 180	180 – 200	200 – 225	225 – 250
Shaft **h5**		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15		0 -18			0 -20		
P 6		-6 -12	-9 -17	-12 -21	-15 -26		-18 -31		-21 -37		-26 -45		-30 -52		-36 -61			-40 -70		
N 6		-4 -10	-5 -13	-7 -16	-9 -20		-11 -24		-12 -28		-14 -33		-16 -38		-20 -45			-22 -45		
M 6		-2 -8	-1 -9	-3 -12	-4 -15		-4 -17		-4 -20		-5 -24		-6 -28		-8 -33			-8 -37		
J 6		+3 -4	+5 -3	+5 -4	+6 -5		+8 -5		+10 -6		+13 -6		+16 -6		+18 -7			+22 -7		
H 6		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0		+25 0			+29 0		
Shaft **h6**		0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22		0 -25			0 -29		
S 7		-14 -24	-15 -25	-17 -32	-21 -39		-27 -48		-34 -59		-42 -72	-48 -78	-59 -93	-66 -101	-77 -117	-85 -125	-93 -133	-105 -151	-113 -159	-123 -169
R 7		-10 -20	-11 -23	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60	-32 -62	-38 -73	-41 -76	-48 -88	-50 -90	-53- 93	-60 -106	-63 -109	-67 -113
N 7		-4 -14	-4 -16	-4 -19	-5 -23		-7 -28		-8 -33		-9 -39		-10 -45		-12 -52			-14 -60		
M 7		-2 -12	0 -12	0 -15	0 -18		0 -21		0 -25		0 -30		0 -35		0 -40			0 -46		
K 7		+3 -6	+3 -9	+5 -10	+6 -12		+6 -15		+7 -18		+9 -21		+10 -25		+12 -28			+13 -33		
J 7		+3 -6	+6 -6	+8 -7	+10 -8		+12 -9		+14 -11		+18 -12		+22 -13		+26 -14			+30 -16		
H 7	**S**	+9 0	+12 0	+15 0	+18 0		+21 0		+25 0		+30 0		+35 0		+40 0			+46 0		
G 7	**S**	+12 +2	+16 4	+20 +5	+24 +6		+28 +7		+34 +9		+40 +10		+47 +12		+54 +14			+61 +15		
F 7		+16 +6	+22 +10	+28 +13	+34 +16		+41 +20		+50 +25		+60 +30		+71 +36		+83 +43			+96 +50		
Shaft **h9**		0 –25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
H 8	**S**	+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0		+63 0			+72 0		
H 11	**S**	+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
F 8	**S**	+20 +6	+28 +10	+35 +13	+43 +16		+53 +20		+64 +25		+76 +30		+90 +36		+106 +43			+122 +50		
E 9	**S**	+39 +14	+50 +20	+61 +25	+75 +32		+92 +40		+112 +50		+134 +60		+159 +72		+185 +85			+215 +100		
D 10	**S**	+60 +20	+78 +30	+98 +40	+120 +50		+149 +65		+180 +80		+220 +100		+260 +120		+305 +145			+355 +170		
C 11	**S**	+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +120	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	460 +210	+480 +230	+530 +240	+550 +260	+570 +280
Shaft **h11**		0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -160		0 -220		0 -250			- -290		
H 11	**S**	+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
D 11	**S**	+80 +20	+105 +30	+130 +40	+160 +50		+195 +65		+240 +80		+290 +100		+340 +120		+395 +145			+460 +170		
C 11	**S**	+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +120	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	+460 +210	+480 +230	+530 +240	+550 +260	+570 +280
A 11	**S**	+330 +270	+345 +270	+370 +280	+400 +290		+430 +300		+470 +310	+480 +320	+530 +340	+550 +360	+600 +380	+630 +410	+710 +460	+770 +520	+830 +580	+950 +660	+1030 +740	+1110 +820

ISO standard bore system fits

INFO

- (Excerpt from DIN 7154)
- **Nominal dimension in µm (= 0.001 mm)**
- In this system all bores are manufactured uniformly with an H-tolerance. The minimum bore dimension therefore goes precisely up to the zero line and is equal to the nominal dimension. The maximum dimension exceeds the zero line by the tolerance.
- All information is supplied without guarantee



- Fitting type preferably according to DIN 7157
- P = press fit
  S = clearance fit
  Ü = transition fit)

Shafts	Fitting type	Nominal dimension from ... to ... mm																				
		1 – 3	3 – 6	6 – 10	10 – 14	14 – 18	18 – 24	24 – 30	30 – 40	40 – 50	50 – 65	65 – 80	80 – 100	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200	200 – 225	225 – 250
Bore **H5**		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0		+25 0			+29 0		
p 5		+10 +6	+17 +12	+21 +15	+26 +18		+31 +22		+37 +26		+45 +32		+52 +37		+61 +43			+70 +50		
n 5		+8 +4	+13 +18	+16 +10	+20 +12		+24 +15		+28 +17		+33 +20		+38 +23		+45 +27			+51 +31		
k 6		+6 0	+9 -1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3		+28 +3			+33 +4		
j 6		+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9		+14 -11			+16 -13		
h 5		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15		0 -18			0 -20		
Bore **H6**		+10 0	+12 0	+15 0	+18 0		+21 0		+25 0		+30 0		+35 0		+40 0			+46 0		
s 6	**P**	+20 +14	+27 +19	+32 +23	+39 +28		+48 +35		+59 +43		+72 +35	+78 +59	+93 +71	+101 +79	+117 +92	+125 +100	+133 +108	+151 +122	+159 +130	+169 +140
r 6	**P**	+16 +10	+23 +15	+28 +19	+34 +23		+41 +28		+50 +34		+60 +41	+62 +43	+73 +51	+76 +54	+88 +63	+90 +65	+93 +68	+106 +77	+109 +80	+113 +84
n 6	**Ü**	+10 +4	+16 +8	+19 +10	+23 +12		+28 +15		+33 +17		+39 +20		+45 +23		+52 +27			+60 +31		
m 6		+8 +2	+12 +4	+15 +6	+18 +7		+21 +8		+25 +9		+30 +11		+35 +13		+40 +15			+46 +17		
k 6	**Ü**	+6 0	+9 -1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3		+28 +3			+33 +4		
j 6	**Ü**	+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9		+14 -11			+16 -13		
h 6	**S**	0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22		0 -25			0 -29		
g 6	**S**	-2 -8	-4 -12	-5 -14	-6 -17		-7 -20		-9 -25		-10 -29		-12 -34		-14 -39			-15 -44		
f 7	**S**	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71		-43 -83			-50 -96		
Bore **H9**		+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0		+63 0			+72 0		
x 8	**P**	+34 +20	+46 +28	+56 +34	+67 +40	+72 +45	+87 +54	+97 +64	+119 +80	+136 +97	+168 +122	+192 +146	+232 +178	+264 +210	+311 +248	+343 +280	+373 +310	+422 +350	+457 +385	+497 +425
x 8	**P**	-	-	-	-		-	+81 +48	+99 +60	+109 +70	+133 +87	+148 +102	+178 +124	+198 +144	+233 +170	+253 +190	+273 +210	+308 +236	+330 +258	+356 +284
h 9	**S**	0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
f 7	**S**	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71		-43 -83			-50 -96		
d 9	**S**	-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207		-145 -245			-170 -285		
Bore **H11**		+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
h 9	**S**	0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
h 11	**S**	0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -190		0 -220		0 -250			0 -290		
d 9	**S**	-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207		-145 -245			-170 -285		
d 9	**S**	-60 -120	-70 -145	-80 -170	-95 -205		-110 -240		-120 -280	-130 -290	-140 -330	-150 -340	-170 -390	-180 -400	-200 -450	-210 -460	-230 -480	-245 -530	-260 -550	-280 -570
c 11	**S**	-270 -330	-270 -345	-280 -370	-290 -400		-300 -430		-310 -470	-320 -480	-340 -530	-360 -550	-380 -600	-410 -630	-460 -710	-520 -770	-580 -830	-660 -950	-740 -1030	-870 -1110

Supplement to ISO standard bore system fits

INFO

- (Excerpt from DIN 7154)
- **Nominal dimension in µm (= 0.001 mm)**

	Shafts	Nominal dimension from ... to ... mm									
		1 – 3	3 – 6	6 – 10	10 – 18	18 – 30	30 – 50	50 – 80	80 – 120	120 – 180	180 – 250
External dimensions	d 11	-20 -80	-30 -105	-40 -130	-50 -160	-65 -195	-80 -240	-100 -290	-120 -340	-145 -395	-170 -460
	e 8	-14 -28	-20 -38	-25 -47	-32 -59	-40 -73	-50 -89	-60 -106	-72 -126	-85 -148	-100 -172
	f 9	-6 -31	-10 -40	-13 -49	-16 -59	-20 -72	-25 -87	-30 -104	-36 -123	-43 -143	-50 -165
	h 7	0 -10	0 -12	0 -15	0 -18	0 -21	0 -25	0 -30	0 -35	0 -40	0 -46
	h 8	0 -14	0 -18	0 -22	0 -27	0 -33	0 -39	0 -46	0 -54	0 -63	0 -72
	h 10	0 -40	0 -48	0 -58	0 -70	0 -84	0 -100	0 -120	0 -140	0 -160	0 -185
	h 12	0 -100	0 -120	0 -150	0 -180	0 -210	0 -250	0 -300	0 -350	0 -400	0 -460
	js 11	+30 -30	+38 -37	+45 -45	+55 -55	+65 -65	+80 -80	+95 -95	+110 -110	+125 -125	+145 -145
	js 14	+125 -125	+150 -150	+180 -180	+215 -215	+260 -260	+310 -310	+370 -370	+435 -435	+500 -500	+575 -575
	js 16	+300 -300	+375 -375	+450 -450	+550 -550	+650 -650	+800 -800	+950 -950	+1100 -1100	+1250 -1250	+1450 -1450
	k 10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0	+120 0	+140 0	+160 0	+185 0
	k 11	+60 0	+75 0	+90 0	+110 0	+130 0	+160 0	+190 0	-220 0	+250 0	+290 0
	k 12	+90 0	+120 0	+150 0	+180 0	+210 0	+250 0	+300 0	+350 0	+400 0	+460 0
	k 16	+600 0	+750 0	+900 0	+1100 0	+1300 0	+1600 0	+1900 0	+2200 0	+2500 0	2900 0

Guideline values for surface qualities

INFO

Roughness depth range Rz µm	Rt specification µm	complies with Ra value	ISO roughness classes	ISO 1302	Corner radius r (mm) and feed f (mm)			
					r = 0.4	r = 0.8	r = 1.2	r = 1.6
63 - 100	Rt 100	12.5 - 25	N 11	25.0	-	0.51	0.69	0.88
40 - 63	Rt 63	6.3-25	N 10	12.5	0.27	0.43	0.56	0.68
31.5 - 40	Rt 40	4.9 - 6.3	N 9	6.3	0.25	0.37	0.49	0.57
25 - 31.5	Rt 31.5	4.0 - 4.9	N 9	6.3	0.22	0.32	0.41	0.47
16 - 25	Rt 25	2.5 - 4.0	N 8	3.2	0.20	0.28	0.36	0.39
10 - 16	Rt 16	1.6 - 2.5	N 8	3.2	0.15	0.22	0.29	0.31
6.3 - 10	Rt 10	1.0 - 1.6	N 7	1.6	0.10	0.13	0.18	0.20

Calculation formula (theoretical value):

$$Rt = \frac{f^2}{8 \times r} \times 1000\ \mu m$$

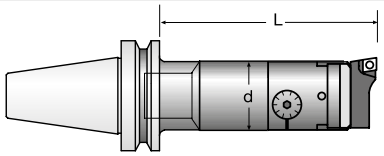
Rt = surface quality µm
f = feed mm/rev
r = corner radius mm

Feed calculation

$$f = \sqrt{\frac{Rt \times 8 \times r}{1000}}\ mm$$

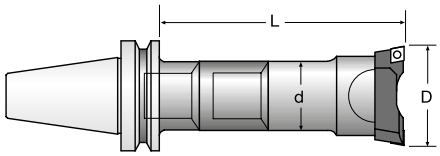
D'ANDREA® Modular tool system

- Please adjust these guideline values according to clamping operation and machine set-up!



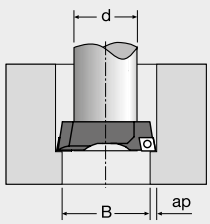
Cutting data for micrometric boring bars

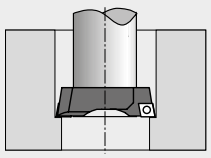
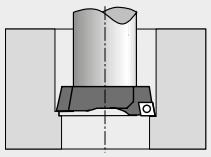
ISO	Materials group	Strength/ Hardness	Boring bars Dimensions L / d mm	Working conditions	Cutting speed Vc m/min	Feed f mm/rev		Indexable insert quality	Clamp depth ap mm
						r = 0.2 mm	r = 0.4 mm		
P	Carbon steel	≤ 200 HB	2.5	Good	200 - 300	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10 DP 300	0.1 - 0.25
			4	Normal	160 - 250	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
		> 200 HB	2.5	Good	160 - 250	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10	
			4	Normal	150 - 200	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 -100	0.05 - 0.08	-		
M	Stainless steel		2.5	Good	120 - 160	0.05 - 0.08	0.07 - 0.1	DP 300 LN 10	
			4	Normal	100 - 140	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
K	Cast iron		2.5	Good	120 - 160	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10 DK 100	
			4	Normal	100 - 140	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
N	Aluminium		2.5	Good	300 - 400	0.05 - 0.08	0.07 - 0.1	DK 100 D20 MDC Diamant	
			4	Normal	250- 350	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	100 - 150	0.05 - 0.08	-		
H	Hardened materials	> 50 HRc	2.5	Good	80-100	0.04 - 0.06	0.05 - 0.07	D25 CBN	
			4	Normal	50 - 100	0.04 - 0.06	0.05 - 0.07		



Cutting data for roughing operations with two-flute cutter boring bars

ISO	Materials group	Strength/ Hardness	Boring bars Dimensions L / d mm	Working conditions	Cutting speed Vc m/min			Feed f mm/rev		
					Ø < 38 mm	Ø 38-120 mm	Ø > 120 mm	r = 0.2 mm	r = 0.4 mm	r = 0.8 mm
P	Carbon steel	≤ 200 HB	2.5	Good	120-180	140 - 200	160 - 250	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	100 - 160	120-180	140 - 200	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	70 - 100	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	-
		> 200 HB	2.5	Good	100 - 160	120-180	140 - 200	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	80 - 140	100 - 160	120-180	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	-
M	Stainless steel		2.5	Good	80 - 110	90 - 120	100 - 140	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	70 - 100	80 - 110	90 - 120	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	-
K	Cast iron		2.5	Good	90 - 120	100 - 140	120 - 160	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	70 - 100	90 - 120	100 - 140	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	-
N	Aluminium		2.5	Good	160 - 250	200 - 300	250 - 350	-	0.3 - 0.5	0.4 - 0.6
			4	Normal	140 - 200	160 - 250	200 - 300	-	0.3 - 0.5	0.4 - 0.6
			6.3	Difficult	100 - 150	100 - 150	100 - 150	0.2 - 0.4	0.3 - 0.5	-

	Working area Ø mm	Max. clamp depth ap mm	
		Steel	Cast iron / aluminium
 It is advisable to start with hole Ø B ≥ boring bars Ø d .	18 - 28	1.5 - 2	2 - 2.5
	28 - 50	2 - 3	2.5 - 3.5
	50 - 68	3 - 4	3.5 - 5
	68 - 200	4 - 5	5 - 7
	200 - 500	5 -6	6 - 8

	Twin-cutter boring with equal bore diameter
	Twin-cutter boring with different bore diameters Attention: For boring bars with different bore Ø the pre-feed must be reduced by half in accordance with the table!