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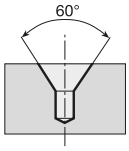
INFO

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		

ATORN® SARA® Centring drills

HSS | DIN 333 | A | 60° | h7

- 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



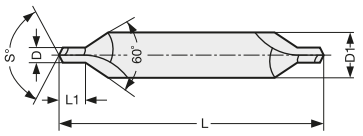


Fig. type A

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
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10					● 40-50				
	Cutting speed Vc m/min.																		

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

D k12 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® HSS	art.no.	€	SARA®	art.no.	€
0.5	3.15	25	0.6 - 0.9	0.05	5	**100101** 0050	3,41			
0.8	3.15	25	1.0 - 1.3	0.05	5	100101 0080	3,41	5	**100141** 0080	2,55
1	3.15	31	1.3 - 1.7	0.05	5	100101 0100	3,38	5	100141 0100	2,55
1.25	3.15	31	1.6 - 2.0	0.05	5	100101 0125	3,33	5	100141 0125	2,55
1.6	4	35	2.0 - 2.6	0.05	5	100101 0160	3,41	5	100141 0160	2,55
2	5	40	2.5 - 3.1	0.05	5	100101 0200	4,02	5	100141 0200	3,14
2.5	6.3	45	3.1 - 3.8	0.05	5	100101 0250	4,97	5	100141 0250	3,58
3.15	8	50	3.9 - 4.6	0.07	5	100101 0315	5,50	5	100141 0315	4,44
4	10	55	5.0 - 5.9	0.07	1	100101 0400	6,35	1	100141 0400	5,50
5	12.5	63	6.3 - 7.2	0.07	1	100101 0500	10,35	1	100141 0500	8,75
6.3	16	71	8.0 - 8.9	0.14	1	100101 0630	17,30	1	100141 0630	14,90
8	20	80	10.1 - 11.1	0.14	1	100101 0800	43,50	1	100141 0800	26,10
10	25	100	12.8 - 13.8	0.21	1	100101 1000	79,50	1	100141 1000	46,20
						1101			1102	



Set

Contents	ATORN® HSS art.no.	€	SARA® art.no.	€
3 units 1.6 x 4 mm; 3 units 3.15 x 8 mm; 3 units 2 x 5 mm; 2 units 4 x 10 mm; 3 units 2.5 x 6.3 mm; 1 unit 5 x 12.5 mm	**100109** 1015	76,50	**100111** 0001	59,90
	1101		1102	

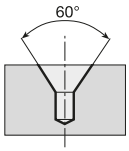


100109 1015

ATORN® SARA® Centring drills

HSS-E | DIN 333 | A | 60° | TiAlN

- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- 100109.... TiAlN-coated
  100149.... Bare surface



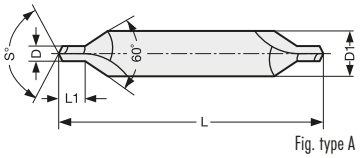


Fig. type A

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
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.																		

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

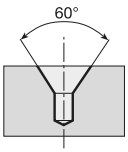
D k12 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN	art.no.	€	SARA® blank	art.no.	€
1	3.15	31	1.3 - 1.7	0.05	5	**100109** 0100	11,25	5	**100149** 0100	4,59
1.25	3.15	31	1.6 - 2.0	0.05	5	100109 0125	11,25	5	100149 0125	4,92
1.6	4	35	2.0 - 2.6	0.05	5	100109 0160	11,25	5	100149 0160	4,76
2	5	40	2.5 - 3.1	0.05	5	100109 0200	11,75	5	100149 0200	5,60
2.5	6.3	45	3.1 - 3.8	0.05	5	100109 0250	13,80	5	100149 0250	6,55
3.15	8	50	3.9 - 4.6	0.07	5	100109 0315	16,80	5	100149 0315	6,90
4	10	55	5.0 - 5.9	0.07	1	100109 0400	20,40	1	100149 0400	8,35
5	12.5	63	6.3 - 7.2	0.07	1	100109 0500	37,10	1	100149 0500	13,95
						1101			1102	



ATORN® Centring drills, long

HSS-E | Werks-norm | A | 60°

- 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



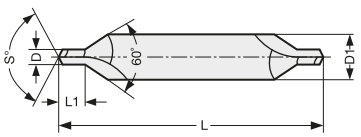


Fig. type A

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
		●	●	○	○	○		○	○	○			●	●	●				
		25-45	15-25	10-15	6-10	6-10		15-25	10-15	6-10			60-90	35-50	40-50				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



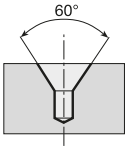
D k12 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		HSS-E art.no.	€
0.75	3.5	120	1.0 - 1.3	0.05	5	**100103** 0075	35,90
1	4	120	1.3 - 1.7	0.05	5	100103 0100	13,90
1.6	5	120	2.0 - 2.6	0.05	5	100103 0160	13,10
2	6	120	2.5 - 3.1	0.05	5	100103 0200	13,10
2.5	8	120	3.1 - 3.8	0.05	5	100103 0250	15,30
3.15	10	120	3.9 - 4.6	0.07	5	100103 0315	18,20
4	10	120	5.0 - 5.9	0.07	1	100103 0400	23,10
5	14	120	6.3 - 7.2	0.07	1	100103 0500	48,90

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ATORN® Centring drills, extra-long

HSS-E | Werks-norm | A | 60°

- 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



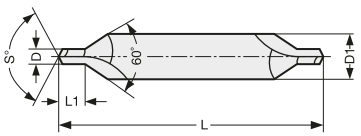


Fig. type A

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
		●	●	○	○	○		○	○	○			●	●	●				
		25-45	15-25	10-15	6-10	6-10		15-25	10-15	6-10			60-90	35-50	40-50				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



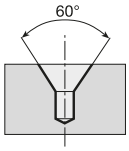
D k12 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		HSS-E art.no.	€
2	5	200	2.5 - 3.1	0.05	5	**100104** 0200	51,50
2.5	6.3	200	3.1 - 3.8	0.05	5	100104 0250	52,50
3.15	8	200	3.9 - 4.6	0.07	5	100104 0315	49,50
4	10	200	5.0 - 5.9	0.07	1	100104 0400	53,50

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ATORN® Centring drills

VHM | Werks-norm | A | 60°

- 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



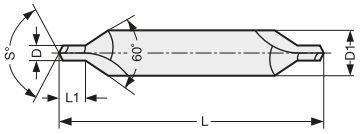


Fig. type A

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
		● 60-80	● 50-60	● 25-40	○ 20-30	○ 20-30	○ 15-25	● 50-60	● 35-50	○ 20-30	○ 20-25	○ 20-25	● 100-150	● 70-90	● 70-90		● 20-35		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f

D k12 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	3.15	31.5	1.3 - 1.7	0.06	**100501** 0100	34,90
1.25	3.15	31.5	1.6 - 2.0	0.06	100501 0125	34,90
1.6	4	35.5	2.0 - 2.6	0.06	100501 0160	36,60
2	5	40	2.5 - 3.1	0.06	100501 0200	40,90
2.5	6.3	45	3.1 - 3.8	0.06	100501 0250	46,–
3.15	8	50	3.9 - 4.6	0.07	100501 0315	55,50
4	10	56	5.0 - 5.9	0.07	100501 0400	66,50
5	12.5	63	6.3 - 7.2	0.07	100501 0500	98,50

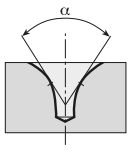
1103



ATORN® Centring drills with radius

HSS | DIN 333 | R | 60°

- 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 the workpiece
- Greater stability due to radial transition
- Reduces risk of breaking
- Spiral-fluted, bare surface



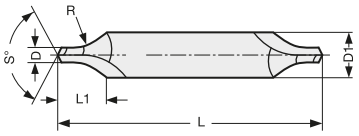


Fig. type R

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
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f

D k12 mm	D1 mm	R mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1	3.15	2.9	31	3.0 - 3.3	0.05	5	**100107** 0100	3,69
1.25	3.15	3.15	31	3.3 - 3.6	0.05	5	100107 0125	3,69
1.6	4	4	35	4.2 - 4.7	0.05	5	100107 0160	3,69
2	5	5	40	5.0 - 5.4	0.05	5	100107 0200	3,89
2.5	6.3	6.3	45	6.3 - 6.8	0.05	5	100107 0250	4,24
3.15	8	8	50	8.0 - 8.5	0.07	5	100107 0315	5,10
4	10	10	55	10.0 - 10.6	0.07	1	100107 0400	7,25
5	12.5	12.5	63	12.5 - 13.1	0.07	1	100107 0500	10,80
6.3	16	16	71	16.0 - 16.6	0.14	1	100107 0630	19,10

1101



ATORN® Centring drills with protected centre

HSS | DIN 333 | B | 60° 120°



- 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

● 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
	● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				

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 k12 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1	4	35	1.3 - 1.7	0.05	5	**100105** 0100	4,89
1.25	5	40	1.6 - 2.0	0.05	5	100105 0125	5,55
1.6	6.3	45	2.0 - 2.6	0.05	5	100105 0160	6,15
2	8	50	2.5 - 3.1	0.05	5	100105 0200	6,80
2.5	10	55	3.1 - 3.8	0.05	5	100105 0250	8,95
3.15	11.2	62	3.9 - 4.6	0.07	5	100105 0315	11,40
4	14	69	5.0 - 5.9	0.07	1	100105 0400	16,20
5	18	77	6.3 - 7.2	0.07	1	100105 0500	27,30
6.3	20	80	8.0 - 8.9	0.14	1	100105 0630	36,50

1101

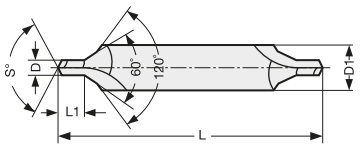
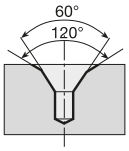
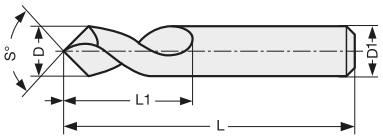


Fig. type B



ATORN® NC spotting drill

HSS-E | ISO 10898 | 90° | 120° | DIN 1835 A | TiN



- S° = point angle 90° or 120°
- Precision-ground point with slender chisel edge
- High stability due to short chip flutes
- For fast drilling on NC/CNC machines and machining centres with precise positioning

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
	● 25-45	● 15-25	○ 10-15	● 6-10	○ 6-10		○ 40-50	○ 30-40	○ 6-10	○ 5-6		● 60-90	● 35-50	● 40-50				

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





Short

● Feed f steel < 1000 N/mm² mm/rev

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	**90°** art.no.	€	**90°, TiN** art.no.	€	**120°** art.no.	€	**120°, TiN** art.no.	€
3	3	50	10	0.07	**100130** 0300	6,75	**100131** 0300	10,15	**100120** 0300	6,75	**100121** 0300	10,15
4	4	52	12	0.07	100130 0400	6,75	100131 0400	10,15	100120 0400	6,75	100121 0400	10,15
5	5	60	15	0.07	100130 0500	7,30	100131 0500	11,30	100120 0500	7,30	100121 0500	11,30
6	6	66	20	0.14	100130 0600	9,35	100131 0600	13,05	100120 0600	9,35	100121 0600	13,05
8	8	79	25	0.14	100130 0800	10,35	100131 0800	17,30	100120 0800	10,35	100121 0800	17,30
10	10	89	25	0.21	100130 1000	13,80	100131 1000	21,60	100120 1000	13,80	100121 1000	21,60
12	12	102	30	0.21	100130 1200	17,30	100131 1200	29,10	100120 1200	17,30	100121 1200	29,10
16	16	115	35	0.28	100130 1600	32,–	100131 1600	47,30	100120 1600	32,–	100121 1600	47,30
20	20	131	40	0.28	100130 2000	44,20	100131 2000	78,50	100120 2000	44,20	100121 2000	78,50
					1101		1101		1101		1101	



Set

Contents	**90°** art.no.	€
4-pcs.: 6, 8, 10 and 12 mm	**100130** 0001	47,50
	1101	

ATORN® NC spotting drill, long

HSS-E | Werks-norm | 90° | 120° | DIN 1835 A

- **Long version for machining with access problems**
- S° = point angle 90° or 120°
- Precision-ground point with slender chisel edge
- High stability due to short chip flutes
- For fast drilling on NC/CNC machines and machining centres with precise positioning



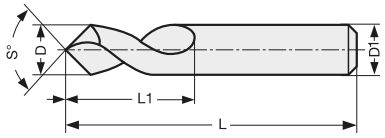
material — ● very well suited ○ well suited

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
● 25-45	● 15-25	○ 10-15	● 6-10	○ 6-10		○ 40-50	○ 30-40	○ 6-10	○ 5-6		● 60-90	● 35-50	● 40-50				

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 h6 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	90° €	120° art.no.	120° €
4	4	100	12	0.07	**100132** 0400	43,70	**100122** 0400	43,70
5	5	120	15	0.07	100132 0500	43,70	100122 0500	43,70
6	6	140	20	0.14	100132 0600	42,20	100122 0600	42,20
8	8	140	25	0.14	100132 0800	51,–	100122 0800	51,–
10	10	170	25	0.21	100132 1000	54,–	100122 1000	54,–
12	12	170	30	0.21	100132 1200	79,–	100122 1200	79,–
16	16	200	35	0.28	100132 1600	115,–	100122 1600	115,–
20	20	200	40	0.28	100132 2000	141,–	100122 2000	141,–
					1101		1101	



ATORN® Solid carbide NC spotting drill

VHM | Werks-norm | 90° | 120° | DIN 6535 HA

- S°= point angle 90° or 120°
- Spiral-fluted
- **Cutting material: solid carbide K10**
- For fast drilling on NC/CNC machines and machining centres with precise positioning



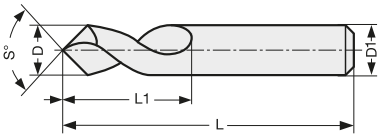
material — ● very well suited ○ well suited

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
● 60-100	● 55-75	● 30-50	○ 25-50	○ 25-50		● 80-100	● 60-90	○ 30-35	○ 25-35		● 100-180	● 100-180	● 90-120		○ 25-30		

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 h6 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	90° €	120° art.no.	120° €
5	5	62	14	0.07	**100520** 0500	22,70	**100530** 0500	22,70
6	6	66	16	0.13	100520 0600	23,50	100530 0600	23,50
8	8	79	21	0.13	100520 0800	33,20	100530 0800	33,20
10	10	89	25	0.20	100520 1000	47,10	100530 1000	47,10
12	12	102	30	0.20	100520 1200	61,–	100530 1200	61,–
16	16	115	37.5	0.27	100520 1600	113,–	100530 1600	113,–
20	20	131	45	0.27	100520 2000	200,–	100530 2000	200,–
					1103		1103	





... from Ø 0.2 mm

ATORN®
High quality for great performance

SARA® HPC NC spotting drill

VHM | Werks-norm | 90° | 120° | 142° | DIN 6535 HB | TiAlN

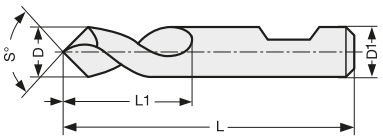
- S° = point angle 90°, 120° and 142°
- Straight shank with clamping surface in accordance with DIN6535-HB
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill's 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
		●	●	●	○	○	○	●	●	○	○	○	●	●	●		○		
		60-100	55-75	30-50	25-50	25-50	20-35	80-90	70-90	35-40	30-40	30-40	150-200	100-180	110-140		25-30		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● (Feed f steel < 1000 N/mm²)

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	90° €	120° art.no.	120° €	142° art.no.	142° €
3	3	38	8	0.07	**100540** 0300	24,20	**100550** 0300	24,20	**100560** 0300	24,20
4	4	50	10	0.07	100540 0400	24,20	100550 0400	24,20	100560 0400	24,20
5	5	50	13	0.07	100540 0500	24,20	100550 0500	24,20	100560 0500	24,20
6	6	57	13	0.13	100540 0600	33,–	100550 0600	33,–	100560 0600	33,–
8	8	63	19	0.13	100540 0800	41,20	100550 0800	41,20	100560 0800	41,20
10	10	66	20	0.20	100540 1000	56,50	100550 1000	56,50	100560 1000	56,50
12	12	73	22	0.20	100540 1200	69,–	100550 1200	69,–	100560 1200	69,–
16	16	82	24	0.27	100540 1600	122,50	100550 1600	122,50	100560 1600	122,50
20	20	92	30	0.27	100540 2000	205,–	100550 2000	205,–	100560 2000	205,–
					1167		1167		1167	



SARA® HPC NC spotting drill, extra-long

VHM | Werks-norm | 90° | 142° | DIN 6535 HA | TiAlN

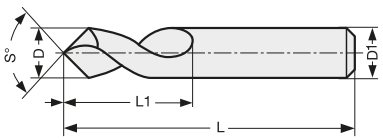
- S° = 90° and 142° point angle
- **Long design to bridge protruding contours**
- Straight shank DIN6535-HA
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines



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
		●	●	●	○	○	○	●	●	○	○	○	●	●	●		○		
		60-100	55-75	30-50	25-50	25-50	20-35	80-90	70-90	35-40	30-40	30-40	150-200	100-180	110-140		25-30		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● (Feed f steel < 1000 N/mm²)

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	90° €	142° art.no.	142° €
4	6	120	10	0.07	**100545** 0400	41,20	**100565** 0400	41,20
5	6	132	13	0.07	100545 0500	41,20	100565 0500	41,20
6	6	139	15	0.13	100545 0600	41,20	100565 0600	43,30
8	8	165	17	0.13	100545 0800	67,–	100565 0800	67,–
10	10	184	20	0.20	100545 1000	97,90	100565 1000	97,90
12	12	205	25	0.20	100545 1200	149,50	100565 1200	149,50
16	16	230	30	0.27	100545 1600	257,50	100565 1600	257,50
					1167		1167	

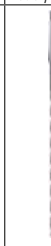


Overview of HSS / HSS-E / HSS-E-PM twist drills

	DIN 1897					Factory standard					DIN 1899	DIN 338	
Sorting by drilling depth and shank design													
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	GG	GG	SARA®	SARA®	ATORN®	ATORN®	SARA®	SARA®
Drilling depth	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	5 x D	5 x D	5 x D
Diameter range [mm]	1 - 25	1 - 12	1 - 20	1 - 13	1 - 14	1 - 20	1 - 12	2.5 - 6.0	3 - 6	13.5 - 25.0	0.05 - 1.50	1 - 16	0.4 - 16
Type	N	N	TLP	NV	TLP	EX-SUS	NEXUS	NV	NV	N	N	N	N
Point angle	118°	130°	130°	130°	130°	120° - 140°	120° - 140°	135°	135°	118°	118°	118°	118°
Cutting material	HSS	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-V3	HSS	HSS	HSS	HSS	HSS-E-PM	HSS	HSS
Coating, surface treatment	vap.	vap.		TiN	TiN	TiN	WDI™			vap.			
Item number	101050....	101055....	101052....	101051....	101085....	114045....	114046....	102310....	102320....	101080....	101075....	101001....	101002....
Catalogue page	10-11	10-12	10-12	10-12	10-14	10-15	10-16	10-18	10-18	10-18	10-19	10-20	10-20
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	●	●	●	●	●	○	○	○	●	●	●	●
Steel < 1400 N/mm²		○	○	●	●	○					●		
Stainless steel ferritic/martensitic		○	○	●	●	●	●				○		
Stainless steel austenitic		○	○	○	●	●	●				○		
Stainless steel duplex						○	●						
Cast iron GG/GTS	○	●	○	●	●					●	●	○	○
Cast iron GGG		○		●	●					○	○		
Titanium alloys						●							
Superalloys Fe/NiCo base < 30 HRc						○							
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si	○	○	○	○	●	●	●	○	○	○	○	○	○
Aluminium ≥ 8 % Si		○	○	○	●	●	●			○	○		
Copper Cu-alloy	○	○	○	○	●	●	●			○	○	○	○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc					○								
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													
Hardox 500													

	DIN 338												
Sorting by drilling depth and shank design													
Brand	ATORN®	SARA®	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	5 x D	5 x D
Diameter range [mm]	0.4 - 20.0	0.5 - 16	1 - 16	1 - 12	1 - 14	1 - 20	1 - 16	1 - 13	1 - 12	1 - 16	1 - 12	1 - 13	1 - 13
Type	N	N	N	TLP	W	N	N	N	TLP	TLP	TLP	N	NV
Point angle	118°	118°	118°	130°	130°	118°	130°	130°	130°	130°	130°	130°	135°
Cutting material	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating, surface treatment	vap.	vap.	TiN			vap.				TiN	TiAlN		vap.
Item number	101005....	101405....	101008....	101011....	101017....	101006....	101010....	101410....	101013....	101014....	101012....	101040....	101016....
Catalogue page	10-23	10-23	10-23	10-26	10-27	10-28	10-28	10-28	10-31	10-31	10-31	10-33	10-34
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●		●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●		●	●	●	●	●	●	●	●
Steel < 1400 N/mm²			○				○	○	○	○	●	○	○
Stainless steel ferritic/martensitic			○			○	●	○	○	○	●	●	●
Stainless steel austenitic			○			○	○	○		○	○	●	○
Stainless steel duplex													
Cast iron GG/GTS	○	○		●		●			●	○	●	●	○
Cast iron GGG				○		○			○	○	○	○	○
Titanium alloys			●				●	●				○	
Superalloys Fe/NiCo base < 30 HRc			○				○	○				○	
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si	○	○	○	○	●	○	○	○	○		○	○	○
Aluminium ≥ 8 % Si				○	●	○	○	○	○		○	○	○
Copper Cu-alloy	○	○	○	○	●	○	○	○	○		○	○	○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc													○
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													
Hardox 500													

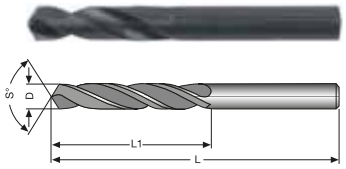
	DIN 338			Factory standard		DIN 340				DIN 1869	Factory standard	DIN 345	
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	GG	GG	ATORN	ATORN	ATORN	ATORN	ATORN	GG	SARA	ATORN
Drilling depth	5 x D	5 x D	5 x D	5 x D	5 x D	10 x D	10 x D	10 x D	10 x D	> 10 x D	10, 15, 20 x D	5 x D	5 x D
Diameter range [mm]	1 - 13	2 - 13	1 - 14	2 - 20	2 - 12	0.6 - 16.0	1 - 12	1 - 16	1 - 12	2 - 10	1.6 - 12	12 - 50	5 - 50
Type	VA	VA	TLP	EX-SUS	NEXUS	N	TLP	TLP	VA	TLP	TDXL	N	N
Point angle	130°	135°	130°	120° - 140°	120° - 140°	118°	130°	130°	130°	130°	120°	118°	118°
Cutting material	HSS-E	HSS-E	HSS-E-PM	HSS-E-V3	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS-E	HSS	HSS
Coating, surface treatment			TiN	TiN	WDI™	vap.	TiN	Nit.			WXL		vap.
Item number	101018....	101076....	101095....	114050....	114051....	101060....	101061....	101063....	101062....	101070....		101501....	101505....
Catalogue page	10-35	10-36	10-37	10-38	10-39	10-40	10-41	10-42	10-43	10-44	10-45	10-47	10-48
Material groups	Usage recommendations												
Steel < 700 N/mm²	○	●	●	●	●	●	●	●	○	●	●	●	●
Steel < 1000 N/mm²	○		●	●	○	●	●	●	○	●	●	●	●
Steel < 1400 N/mm²			●				○	○		○	●		
Stainless steel ferritic/martensitic	●	●	●	●	●			●	●				
Stainless steel austenitic	●	●	●	●	●			○	●				
Stainless steel duplex				○	●								
Cast iron GG/GTS			●			●	●	●		●	●	○	●
Cast iron GGG			●			○	○	○		○	●		○
Titanium alloys				●					●				
Superalloys Fe/NiCo base < 30 HRc									○				
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si		●	○	●	●	○	○	○	●	○		○	○
Aluminium ≥ 8 % Si		●	○	●	●	○	○	○		○			○
Copper Cu-alloy		●	○	●	●	○	○	○		○		○	○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc			○										
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													

	DIN 345		DIN 341	Factory standard	DIN 343	DIN 1898	DIN 8374	Factory standard		DIN 8039	Factory standard	DIN 8037
Sorting by drilling depth and shank design												
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	EUROBOOR	Milwaukee	Milwaukee	SARA
Drilling depth	5 x D	5 x D	10 x D	> 10 x D						5 x D		3 x D
Diameter range [mm]	12 - 35	12.5 - 23.0	10 - 50	8 - 25	7.8 - 40.0	1.5 - 12.0	M3 - M10	3 - 30.5	12 - 60	3 - 20	4 - 26	2 - 16
Type	N	VA	N	TLP	N			N			SDS-Plus	
Point angle	118°	130°	118°	130°		118°	90° / 180°					118°
Cutting material	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HM	HM	HM K10
Coating, surface treatment	vap.		vap.				vap.	TiN/vap.				
Item number	101507....	101605....	101601....	101700....	101515....	101025....				110130....	110140....	110501....
Catalogue page	10-49	10-49	10-50	10-51	10-52	10-52	10-53	10-54	10-55	10-56	10-56	10-57
Material groups												
Steel < 700 N/mm²	●	○	●	●	●	●	●	●	●			●
Steel < 1000 N/mm²	●	○	●	●	●	○	●	●	○			●
Steel < 1400 N/mm²	○	○		○				○				●
Stainless steel ferritic/martensitic	○	●		○		○		○	○			
Stainless steel austenitic	○	●		○					○			
Stainless steel duplex		○										
Cast iron GG/GTS	●		○	●	○	○	●	●	○			●
Cast iron GGG	○		○	○			○	○	○			●
Titanium alloys		○		○								○
Superalloys Fe/NiCo base < 30 HRc		○										
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8 % Si	○	○	○	○	○	○		○	●			●
Aluminium ≥ 8 % Si	○	○	○	○				○	○			●
Copper Cu-alloy	○	○	○	○	○	○		○				●
Graphite GRP/CFP/thermoset												○
Hardened steel < 55 HRc												●
Hardened steel < 60 HRc												○
Hardened steel ≥ 60 HRc												

ATORN® Twist drill bit

HSS | DIN 1897 | Typ N | 118° | 27° | h8 | 3xD | Vap. | Vc/fz | 10-245

- S°= point angle 118°
- **Vapour-treated** from ø 2.4 mm



HSS 118° point angle

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
		● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● steel

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		HSS, 118° art.no.	€
1.00	26	6	0.04	10	**101050** 0100	1,63
1.10	28	7	0.04	10	101050 0110	1,82
1.20	30	8	0.04	10	101050 0120	1,63
1.30	30	8	0.04	10	101050 0130	1,98
1.40	32	9	0.04	10	101050 0140	1,87
1.50	32	9	0.04	10	101050 0150	1,59
1.60	34	10	0.04	10	101050 0160	1,52
1.70	34	10	0.04	10	101050 0170	1,93
1.80	36	11	0.04	10	101050 0180	1,78
1.90	36	11	0.04	10	101050 0190	1,87
2.00	38	12	0.04	10	101050 0200	1,52
2.10	38	12	0.04	10	101050 0210	1,65
2.20	40	13	0.04	10	101050 0220	1,52
2.30	40	13	0.04	10	101050 0230	1,98
2.40	43	14	0.04	10	101050 0240	1,59
2.50	43	14	0.09	10	101050 0250	1,38
2.60	43	14	0.09	10	101050 0260	1,59
2.70	46	16	0.09	10	101050 0270	1,68
2.80	46	16	0.09	10	101050 0280	1,52
2.90	46	16	0.09	10	101050 0290	1,73
3.00	46	16	0.09	10	101050 0300	1,52
3.10	49	18	0.09	10	101050 0310	1,59
3.20	49	18	0.09	10	101050 0320	1,48
3.30	49	18	0.09	10	101050 0330	1,48
3.40	52	20	0.09	10	101050 0340	1,63
3.50	52	20	0.09	10	101050 0350	1,52
3.60	52	20	0.09	10	101050 0360	1,68
3.70	52	20	0.09	10	101050 0370	2,28
3.80	55	22	0.09	10	101050 0380	1,87
3.90	55	22	0.09	10	101050 0390	1,93
4.00	55	22	0.09	10	101050 0400	1,82
4.10	55	22	0.09	10	101050 0410	1,87
4.20	55	22	0.09	10	101050 0420	1,87
4.30	58	24	0.09	10	101050 0430	2,17
4.40	58	24	0.09	10	101050 0440	2,91
4.50	58	24	0.09	10	101050 0450	1,98
4.60	58	24	0.09	10	101050 0460	2,37
4.65	58	24	0.09	10	101050 1465	4,49
4.70	58	24	0.09	10	101050 0470	2,32
4.80	62	26	0.09	10	101050 0480	2,28
4.90	62	26	0.09	10	101050 0490	2,28
5.00	62	26	0.09	10	101050 0500	2,22
5.10	62	26	0.13	10	101050 0510	2,28
5.20	62	26	0.13	10	101050 0520	2,47
5.30	62	26	0.13	10	101050 0530	2,67
5.40	66	28	0.13	10	101050 0540	2,56
5.50	66	28	0.13	10	101050 0550	2,56
5.60	66	28	0.13	10	101050 0560	3,66
5.70	66	28	0.13	10	101050 0570	1,93
5.80	66	28	0.13	10	101050 0580	3,06
5.90	66	28	0.13	10	101050 0590	3,66
6.00	66	28	0.13	1	101050 0600	2,67
6.10	70	31	0.13	1	101050 0610	3,85
6.20	70	31	0.13	1	101050 0620	3,01
6.30	70	31	0.13	1	101050 0630	4,41
6.40	70	31	0.13	1	101050 0640	3,25
6.50	70	31	0.13	1	101050 0650	3,01
6.60	70	31	0.13	1	101050 0660	3,36
6.70	70	31	0.13	1	101050 0670	5,–
6.80	74	34	0.13	1	101050 0680	3,61

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● steel

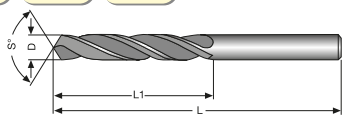
D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		HSS, 118° art.no.	€
6.90	74	34	0.13	1	101050 0690	4,49
7.00	74	34	0.13	1	101050 0700	3,61
7.10	74	34	0.13	1	101050 0710	4,54
7.20	74	34	0.13	1	101050 0720	4,99
7.30	74	34	0.13	1	101050 0730	5,65
7.40	74	34	0.13	1	101050 0740	4,59
7.50	74	34	0.13	1	101050 0750	4,05
7.70	79	37	0.13	1	101050 0770	7,–
7.80	79	37	0.13	1	101050 0780	5,25
7.90	79	37	0.13	1	101050 0790	5,10
8.00	79	37	0.13	1	101050 0800	4,64
8.10	79	37	0.19	1	101050 0810	5,25
8.20	79	37	0.19	1	101050 0820	5,30
8.30	79	37	0.19	1	101050 0830	7,40
8.40	79	37	0.19	1	101050 0840	7,20
8.50	79	37	0.19	1	101050 0850	5,25
8.60	84	40	0.19	1	101050 0860	8,50
8.70	84	40	0.19	1	101050 0870	7,75
8.80	84	40	0.19	1	101050 0880	8,–
8.90	84	40	0.19	1	101050 0890	24,60
9.00	84	40	0.19	1	101050 0900	5,60
9.10	84	40	0.19	1	101050 0910	10,80
9.20	84	40	0.19	1	101050 0920	8,55
9.30	84	40	0.19	1	101050 0930	8,20
9.40	84	40	0.19	1	101050 0940	10,80
9.50	84	40	0.19	1	101050 0950	6,20
9.60	89	43	0.19	1	101050 0960	9,75
9.70	89	43	0.19	1	101050 0970	9,85
9.80	89	43	0.19	1	101050 0980	8,90
10.00	89	43	0.19	1	101050 1000	6,45
10.20	89	43	0.19	1	101050 1020	7,10
10.50	89	43	0.19	1	101050 1050	7,45
11.00	95	47	0.19	1	101050 1100	8,65
11.50	95	47	0.19	1	101050 1150	14,45
11.80	95	47	0.19	1	101050 1180	23,90
12.00	102	51	0.19	1	101050 1200	10,–
12.50	102	51	0.23	1	101050 1250	18,10
13.00	102	51	0.23	1	101050 1300	11,35
13.50	107	54	0.23	1	101050 1350	13,15
13.80	107	54	0.23	1	101050 1380	40,30
14.00	107	54	0.23	1	101050 1400	13,10
14.50	111	56	0.23	1	101050 1450	14,40
15.00	111	56	0.23	1	101050 1500	15,–
15.50	115	58	0.23	1	101050 1550	24,–
15.75	115	58	0.23	1	101050 1575	25,10
16.00	115	58	0.23	1	101050 1600	15,90
16.50	119	60	0.28	1	101050 1650	34,40
17.00	119	60	0.28	1	101050 1700	37,–
17.50	123	62	0.28	1	101050 1750	40,30
17.75	123	62	0.28	1	101050 1775	59,–
18.00	123	62	0.28	1	101050 1800	36,70
18.50	127	64	0.28	1	101050 1850	44,20
19.00	127	64	0.28	1	101050 1900	40,20
19.50	131	66	0.28	1	101050 1950	59,50
19.75	131	66	0.28	1	101050 1975	76,50
20.00	131	66	0.28	1	101050 2000	46,60
21.00	136	68	0.28	1	101050 2100	49,30
22.00	141	70	0.28	1	101050 2200	46,60
25.00	151	75	0.28	1	101050 2500	58,–
27.00	162	81	0.28	1	101050 2700	220,–

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ATORN® Twist drill bit

HSS-E | DIN 1897 | Typ N | Typ TLP | Typ NV | 130° | 27° | h8 | 3xD | TiN | Vap. | Vc/fz | 10-245

- S°= point angle 130° (self-centring)
- 101055.... Type N, from Ø 2.4 mm, vapour-treated
  101052.... Type TLP, uncoated
  101051.... Type NV, 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....	● 30-35	● 25-32	○ 12-18	○ 12-16	○ 12-14		● 25-35	● 22-26				○ 50-60	○ 40-50	○ 30-60				
	101052....	● 28-35	● 22-30	○ 12-18	○ 10-14	○ 10-12		○ 28-32	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	101051....	● 35-40	● 30-35	● 12-20	● 14-18	○ 10-14		● 28-35	● 22-26				○ 50-60	○ 40-50	○ 30-60		○ 3-4		
	Cutting speed Vc m/min.																		

● Feed f steel < 1000 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Type N, vap. art.no.	€		Type TLP, blank art.no.	€		Type NV, TiN art.no.	€
1.00	26	6	0.04	10	**101055** 0100	2,26	10	**101052** 0100	2,75	10	**101051** 0100	6,15
1.10	28	7	0.04	10	101055 0110	2,26	10	101052 0110	4,97	10	101051 0110	6,60
1.20	30	8	0.04	10	101055 0120	2,09	10	101052 0120	4,97	10	101051 0120	6,75
1.30	30	8	0.04	10	101055 0130	2,09	10	101052 0130	4,97	10	101051 0130	6,65
1.40	32	9	0.04	10	101055 0140	2,09	10	101052 0140	3,60	10	101051 0140	6,65
1.50	32	9	0.04	10	101055 0150	2,09	10	101052 0150	2,80	10	101051 0150	6,55
1.60	34	10	0.04	10	101055 0160	2,64	10	101052 0160	2,80	10	101051 0160	6,55
1.70	34	10	0.04	10	101055 0170	2,64	10	101052 0170	4,92	10	101051 0170	6,55
1.80	36	11	0.04	10	101055 0180	2,64	10	101052 0180	3,65	10	101051 0180	6,50
1.90	36	11	0.04	10	101055 0190	2,64	10	101052 0190	7,45	10	101051 0190	6,50
2.00	38	12	0.04	10	101055 0200	2,64	10	101052 0200	2,91	10	101051 0200	5,60
2.10	38	12	0.04	10	101055 0210	2,71	10	101052 0210	4,92	10	101051 0210	6,45
2.20	40	13	0.04	10	101055 0220	2,71	10	101052 0220	2,96	10	101051 0220	6,45
2.30	40	13	0.04	10	101055 0230	2,71	10	101052 0230	4,92	10	101051 0230	6,60
2.40	43	14	0.04	10	101055 0240	2,71	10	101052 0240	2,96	10	101051 0240	6,55
2.50	43	14	0.09	10	101055 0250	2,71	10	101052 0250	2,96	10	101051 0250	6,35
2.60	43	14	0.09	10	101055 0260	2,71	10	101052 0260	2,96	10	101051 0260	6,65
2.70	46	16	0.09	10	101055 0270	2,71	10	101052 0270	3,01	10	101051 0270	6,65
2.80	46	16	0.09	10	101055 0280	2,71	10	101052 0280	3,01	10	101051 0280	6,65
2.90	46	16	0.09	10	101055 0290	2,71	10	101052 0290	3,33	10	101051 0290	6,65
3.00	46	16	0.09	10	101055 0300	2,71	10	101052 0300	2,96	10	101051 0300	6,05
3.10	49	18	0.09	10	101055 0310	2,80	10	101052 0310	3,01	10	101051 0310	6,60
3.20	49	18	0.09	10	101055 0320	2,80	10	101052 0320	3,01	10	101051 0320	6,60
3.30	49	18	0.09	10	101055 0330	2,80	10	101052 0330	3,07	10	101051 0330	6,60
3.40	52	20	0.09	10	101055 0340	2,80	10	101052 0340	3,38	10	101051 0340	7,10
3.50	52	20	0.09	10	101055 0350	2,80	10	101052 0350	3,33	10	101051 0350	6,15
3.60	52	20	0.09	10	101055 0360	3,27	10	101052 0360	3,38	10	101051 0360	7,10
3.70	52	20	0.09	10	101055 0370	3,27	10	101052 0370	3,70	10	101051 0370	7,10
3.80	55	22	0.09	10	101055 0380	3,27	10	101052 0380	3,70	10	101051 0380	7,10
3.90	55	22	0.09	10	101055 0390	3,27	10	101052 0390	5,75	10	101051 0390	7,10
4.00	55	22	0.09	10	101055 0400	3,56	10	101052 0400	3,60	10	101051 0400	6,45
4.10	55	22	0.09	10	101055 0410	4,18	10	101052 0410	3,70	10	101051 0410	6,80
4.20	55	22	0.09	10	101055 0420	4,18	10	101052 0420	3,70	10	101051 0420	6,80
4.30	58	24	0.09	10	101055 0430	4,18	10	101052 0430	3,75	10	101051 0430	8,05
4.40	58	24	0.09	10	101055 0440	4,56	10	101052 0440	4,02	10	101051 0440	8,05
4.50	58	24	0.09	10	101055 0450	4,56	10	101052 0450	3,70	10	101051 0450	6,75
4.60	58	24	0.09	10	101055 0460	4,56	10	101052 0460	6,–	10	101051 0460	8,45
4.70	58	24	0.09	10	101055 0470	4,56	10	101052 0470	5,60	10	101051 0470	8,50
4.80	62	26	0.09	10	101055 0480	4,67	10	101052 0480	5,90	10	101051 0480	8,55
4.90	62	26	0.09	10	101055 0490	4,67	10	101052 0490	4,76	10	101051 0490	8,55
5.00	62	26	0.09	10	101055 0500	4,67	10	101052 0500	3,86	10	101051 0500	7,25
5.10	62	26	0.13	10	101055 0510	4,48	10	101052 0510	4,02	10	101051 0510	8,85
5.20	62	26	0.13	10	101055 0520	5,10	10	101052 0520	9,55	10	101051 0520	8,95
5.30	62	26	0.13	10	101055 0530	5,10	10	101052 0530	4,39	10	101051 0530	9,10
5.40	66	28	0.13	10	101055 0540	4,92	10	101052 0540	9,65	10	101051 0540	9,90
5.50	66	28	0.13	10	101055 0550	5,10	10	101052 0550	4,23	10	101051 0550	7,70
5.60	66	28	0.13	10	101055 0560	5,20	10	101052 0560	6,70	10	101051 0560	9,90
5.70	66	28	0.13	10	101055 0570	5,20	10	101052 0570	6,45	10	101051 0570	9,90
5.80	66	28	0.13	10	101055 0580	5,20	10	101052 0580	4,76	10	101051 0580	9,90
5.90	66	28	0.13	10	101055 0590	5,85	10	101052 0590	6,75	10	101051 0590	9,90
					1104			1104			1104	


HSS-E 130° point angle


HSS-E type TLP


HSS-E TiN

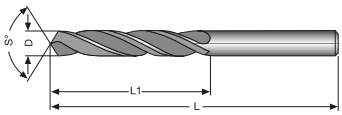
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Type N, vap. art.no.	€		Type TLP, blank art.no.	€		Type NV, TiN art.no.	€
6.00	66	28	0.13	10	101055 0600	5,85	1	101052 0600	4,76	10	101051 0600	8,10
6.10	70	31	0.13	1	101055 0610	5,85	1	101052 0610	5,35	1	101051 0610	12,85
6.20	70	31	0.13	1	101055 0620	5,85	1	101052 0620	4,60	1	101051 0620	12,85
6.30	70	31	0.13	1	101055 0630	6,25	1	101052 0630	9,35	1	101051 0630	12,85
6.40	70	31	0.13	1	101055 0640	6,25	1	101052 0640	9,75	1	101051 0640	13,05
6.50	70	31	0.13	1	101055 0650	6,55	1	101052 0650	5,20	1	101051 0650	10,25
6.60	70	31	0.13	1	101055 0660	6,80	1	101052 0660	7,–	1	101051 0660	13,–
6.70	70	31	0.13	1	101055 0670	6,95	1	101052 0670	7,–	1	101051 0670	13,30
6.80	74	34	0.13	1	101055 0680	6,95	1	101052 0680	7,–	1	101051 0680	14,–
6.90	74	34	0.13	1	101055 0690	6,95	1	101052 0690	7,–	1	101051 0690	14,–
7.00	74	34	0.13	1	101055 0700	7,55	1	101052 0700	7,–	1	101051 0700	12,35
7.10	74	34	0.13	1	101055 0710	7,55	1	101052 0710	9,30	1	101051 0710	15,60
7.20	74	34	0.13	1	101055 0720	7,55	1	101052 0720	7,45	1	101051 0720	15,50
7.30	74	34	0.13	1	101055 0730	7,55	1	101052 0730	8,50	1	101051 0730	15,50
7.40	74	34	0.13	1	101055 0740	7,55	1	101052 0740	10,80	1	101051 0740	15,50
7.50	74	34	0.13	1	101055 0750	7,55	1	101052 0750	7,20	1	101051 0750	12,70
7.60	79	37	0.13	1	101055 0760	8,05	1	101052 0760	10,80	1	101051 0760	17,70
7.70	79	37	0.13	1	101055 0770	8,05	1	101052 0770	10,85	1	101051 0770	17,20
7.80	79	37	0.13	1	101055 0780	8,05	1	101052 0780	9,50	1	101051 0780	17,20
7.90	79	37	0.13	1	101055 0790	8,05	1	101052 0790	11,75	1	101051 0790	17,20
8.00	79	37	0.13	1	101055 0800	8,60	1	101052 0800	7,60	1	101051 0800	13,30
8.10	79	37	0.18	1	101055 0810	8,60	1	101052 0810	7,90	1	101051 0810	17,90
8.20	79	37	0.18	1	101055 0820	8,60	1	101052 0820	7,90	1	101051 0820	17,90
8.30	79	37	0.18	1	101055 0830	8,60	1	101052 0830	7,90	1	101051 0830	17,90
8.40	79	37	0.18	1	101055 0840	9,15	1	101052 0840	9,10	1	101051 0840	17,90
8.50	79	37	0.18	1	101055 0850	9,15	1	101052 0850	8,–	1	101051 0850	15,60
8.60	84	40	0.18	1	101055 0860	9,40	1	101052 0860	9,20	1	101051 0860	18,40
8.70	84	40	0.18	1	101055 0870	9,40	1	101052 0870	9,20	1	101051 0870	18,40
8.80	84	40	0.18	1	101055 0880	10,25	1	101052 0880	10,80	1	101051 0880	18,40
8.90	84	40	0.18	1	101055 0890	10,25	1	101052 0890	11,85	1	101051 0890	19,20
9.00	84	40	0.18	1	101055 0900	10,25	1	101052 0900	9,50	1	101051 0900	15,40
9.10	84	40	0.18	1	101055 0910	10,55	1	101052 0910	9,75	1	101051 0910	24,30
9.20	84	40	0.18	1	101055 0920	10,55	1	101052 0920	13,15	1	101051 0920	24,30
9.30	84	40	0.18	1	101055 0930	11,20	1	101052 0930	10,15	1	101051 0930	24,30
9.40	84	40	0.18	1	101055 0940	11,20	1	101052 0940	10,15	1	101051 0940	24,30
9.50	84	40	0.18	1	101055 0950	11,20	1	101052 0950	9,75	1	101051 0950	21,70
9.60	89	43	0.18	1	101055 0960	12,–	1	101052 0960	13,30	1	101051 0960	26,40
9.70	89	43	0.18	1	101055 0970	12,–	1	101052 0970	13,75	1	101051 0970	26,40
9.80	89	43	0.18	1	101055 0980	12,50	1	101052 0980	11,20	1	101051 0980	26,40
9.90	89	43	0.18	1	101055 0990	12,50	1	101052 0990	13,65	1	101051 0990	26,40
10.00	89	43	0.18	1	101055 1000	12,50	1	101052 1000	11,65	1	101051 1000	19,40
10.20	89	43	0.18	1	101055 1020	12,90	1	101052 1020	14,80	1	101051 1020	25,80
10.50	89	43	0.18	1	101055 1050	13,90	1	101052 1050	14,80	1	101051 1050	25,20
11.00	95	47	0.18	1	101055 1100	13,90	1	101052 1100	17,20	1	101051 1100	25,20
11.50	95	47	0.18	1	101055 1150	15,30	1	101052 1150	17,20	1	101051 1150	26,80
11.80	95	47	0.18	1	101055 1180	16,70	1	101052 1180	24,60			
12.00	102	51	0.18	1	101055 1200	18,70	1	101052 1200	20,50	1	101051 1200	30,70
12.50	102	51	0.22	1	101055 1250	21,30	1	101052 1250	21,80	1	101051 1250	31,50
13.00	102	51	0.22	1	101055 1300	22,30	1	101052 1300	29,–	1	101051 1300	32,70
13.50	107	54	0.22	1	101055 1350	29,10	1	101052 1350	30,–	1	101051 1350	35,70
13.80	107	54	0.22	1	101055 1380	29,90						
14.00	107	54	0.22	1	101055 1400	27,80	1	101052 1400	31,80	1	101051 1400	36,30
14.50	111	56	0.22	1	101055 1450	29,30	1	101052 1450	33,40	1	101051 1450	38,80
15.00	111	56	0.22	1	101055 1500	30,–	1	101052 1500	33,60	1	101051 1500	38,80
15.50	115	58	0.22	1	101055 1550	33,70	1	101052 1550	38,90	1	101051 1550	50,50
15.75	115	58	0.22	1	101055 1575	43,90				1	101051 1575	52,–
16.00	115	58	0.22	1	101055 1600	35,40	1	101052 1600	39,80	1	101051 1600	54,50
16.50	119	60	0.28	1	101055 1650	68,–	1	101052 1650	62,50	1	101051 1650	77,50
17.00	119	60	0.28	1	101055 1700	66,–	1	101052 1700	51,–	1	101051 1700	74,50
17.50	123	62	0.28	1	101055 1750	67,–	1	101052 1750	54,–	1	101051 1750	71,50
17.75	123	62	0.28	1	101055 1775	88,50				1	101051 1775	85,50
18.00	123	62	0.28	1	101055 1800	70,–	1	101052 1800	69,–	1	101051 1800	82,–
18.50	127	64	0.28	1	101055 1850	85,50	1	101052 1850	70,50	1	101051 1850	92,–
19.00	127	64	0.28	1	101055 1900	87,–	1	101052 1900	70,–	1	101051 1900	89,50
19.50	131	66	0.28	1	101055 1950	94,50	1	101052 1950	89,50	1	101051 1950	101,–
19.75	131	66	0.28	1	101055 1975	99,–				1	101051 1975	101,–
20.00	131	66	0.28	1	101055 2000	89,–	1	101052 2000	81,–	1	101051 2000	96,50
					1104			1104			1104	

ATORN® KSB-3D twist drill

HSS-E PM | DIN 1897 | Typ TLP | 130° | 29° | 3xD | TiN | Vc/fz | 10-246





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

10

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
●	●	●	●	●		●	●				○	○	○		○		
40-45	32-40	18-25	12-18	10-12		40-50	32-45				60-70	50-60	30-60		4-5		

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

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.0	26	6	0.04	**101085** 0100	10,20
1.1	28	7	0.04	101085 0110	10,20
1.2	30	8	0.04	101085 0120	10,80
1.3	30	8	0.04	101085 0130	11,20
1.4	32	9	0.04	101085 0140	11,40
1.5	32	9	0.04	101085 0150	10,40
1.6	34	10	0.04	101085 0160	10,–
1.7	34	10	0.04	101085 0170	10,–
1.8	36	11	0.04	101085 0180	10,20
1.9	36	11	0.04	101085 0190	10,–
2.0	38	12	0.04	101085 0200	8,15
2.1	38	12	0.04	101085 0210	9,40
2.2	40	13	0.04	101085 0220	10,20
2.3	40	13	0.04	101085 0230	10,20
2.4	43	14	0.04	101085 0240	10,60
2.5	43	14	0.05	101085 0250	9,–
2.6	43	14	0.05	101085 0260	10,60
2.7	46	16	0.07	101085 0270	10,20
2.8	46	16	0.07	101085 0280	11,20
2.9	46	16	0.07	101085 0290	9,80
3.0	46	16	0.07	101085 0300	10,40
3.1	49	18	0.07	101085 0310	10,60
3.2	49	18	0.07	101085 0320	10,80
3.3	49	18	0.07	101085 0330	10,60
3.4	52	20	0.07	101085 0340	11,–
3.5	52	20	0.07	101085 0350	11,–
3.6	52	20	0.07	101085 0360	11,40
3.7	52	20	0.07	101085 0370	11,85
3.8	55	22	0.07	101085 0380	12,05
3.9	55	22	0.07	101085 0390	12,45
4.0	55	22	0.07	101085 0400	12,45
4.1	55	22	0.07	101085 0410	12,85
4.2	55	22	0.07	101085 0420	13,05
4.3	58	24	0.07	101085 0430	13,65
4.4	58	24	0.07	101085 0440	14,30
4.5	58	24	0.07	101085 0450	14,10
4.6	58	24	0.07	101085 0460	14,90
4.7	58	24	0.07	101085 0470	15,30
4.8	62	26	0.07	101085 0480	15,70
4.9	62	26	0.07	101085 0490	16,10
5.0	62	26	0.07	101085 0500	16,10
5.1	62	26	0.15	101085 0510	25,10
5.2	62	26	0.15	101085 0520	25,90
5.3	62	26	0.15	101085 0530	26,50
5.4	66	28	0.15	101085 0540	27,30
5.5	66	28	0.15	101085 0550	18,–
5.6	66	28	0.15	101085 0560	28,40

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.7	66	28	0.15	101085 0570	29,20
5.8	66	28	0.15	101085 0580	29,40
5.9	66	28	0.15	101085 0590	30,–
6.0	66	28	0.15	101085 0600	20,40
6.1	70	31	0.15	101085 0610	31,80
6.2	70	31	0.15	101085 0620	31,80
6.3	70	31	0.15	101085 0630	32,60
6.4	70	31	0.15	101085 0640	33,50
6.5	70	31	0.15	101085 0650	22,60
6.6	70	31	0.15	101085 0660	34,70
6.7	70	31	0.15	101085 0670	35,50
6.8	74	34	0.15	101085 0680	35,10
6.9	74	34	0.15	101085 0690	36,70
7.0	74	34	0.15	101085 0700	24,30
7.1	74	34	0.15	101085 0710	38,10
7.2	74	34	0.15	101085 0720	38,40
7.3	74	34	0.15	101085 0730	39,–
7.4	74	34	0.15	101085 0740	39,80
7.5	74	34	0.15	101085 0750	27,50
7.6	79	37	0.15	101085 0760	40,80
7.7	79	37	0.15	101085 0770	41,80
7.8	79	37	0.15	101085 0780	42,80
7.9	79	37	0.15	101085 0790	43,90
8.0	79	37	0.15	101085 0800	29,20
8.1	79	37	0.18	101085 0810	44,90
8.2	79	37	0.18	101085 0820	45,50
8.3	79	37	0.18	101085 0830	46,30
8.4	79	37	0.18	101085 0840	47,10
8.5	79	37	0.18	101085 0850	31,20
8.8	84	40	0.18	101085 0880	50,–
9.0	84	40	0.18	101085 0900	33,70
9.3	84	40	0.18	101085 0930	55,–
9.5	84	40	0.18	101085 0950	37,10
9.8	89	43	0.18	101085 0980	59,–
10.0	89	43	0.18	101085 1000	39,40
10.2	89	43	0.22	101085 1020	63,–
10.5	89	43	0.22	101085 1050	44,30
11.0	95	47	0.22	101085 1100	46,50
11.5	95	47	0.22	101085 1150	53,–
12.0	102	51	0.22	101085 1200	57,–
12.3	102	51	0.25	101085 1230	59,50
12.5	102	51	0.25	101085 1250	63,–
12.7	102	51	0.25	101085 1270	65,50
13.0	102	51	0.25	101085 1300	68,50
13.5	107	54	0.25	101085 1350	70,50
14.0	107	54	0.25	101085 1400	86,50

1106

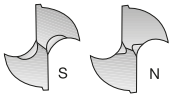
EX-SUS-GDS twist drill bit

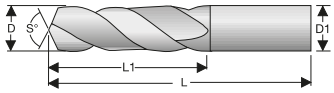
HSS-E V3 | Werks-norm | Typ VA | 120° | 130° | 140° | 35° -40° | 3xD | TiN | Vc/fz

10-247

- 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
		● 32-40	○ 30-35		● 15-20	● 13-18	○ 8-12			● 6-8			● 63-100	● 32-63	● 25-50				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 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	11,60
1.1	39	7	3	0.03	114045 0110	11,40
1.2	40	8	3	0.03	114045 0120	11,40
1.3	40	8	3	0.03	114045 0130	11,40
1.4	41	9	3	0.03	114045 0140	11,40
1.5	41	9	3	0.07	114045 0150	10,80
1.6	42	10	3	0.07	114045 0160	10,–
1.7	42	10	3	0.07	114045 0170	10,–
1.8	43	11	3	0.07	114045 0180	10,–
1.9	43	11	3	0.07	114045 0190	10,–
2.0	44	12	3	0.07	114045 0200	9,60
2.1	44	12	3	0.07	114045 0210	11,50
2.2	45	13	3	0.07	114045 0220	11,50
2.3	45	13	3	0.07	114045 0230	11,50
2.4	46	14	3	0.07	114045 0240	11,50
2.5	46	14	3	0.11	114045 0250	10,80
2.6	46	14	3	0.11	114045 0260	11,50
2.7	48	16	3	0.11	114045 0270	11,50
2.8	48	16	3	0.11	114045 0280	11,50
2.9	48	16	3	0.11	114045 0290	11,50
3.0	48	16	3	0.11	114045 0300	10,80
3.1	50	18	4	0.11	114045 0310	12,80
3.2	50	18	4	0.11	114045 0320	12,80
3.3	50	18	4	0.11	114045 0330	12,80
3.4	52	20	4	0.11	114045 0340	12,80
3.5	52	20	4	0.13	114045 0350	12,80
3.6	52	20	4	0.13	114045 0360	14,10
3.7	52	20	4	0.13	114045 0370	14,10
3.8	54	22	4	0.13	114045 0380	14,10
3.9	54	22	4	0.13	114045 0390	14,10
4.0	54	22	4	0.13	114045 0400	14,10
4.1	66	22	6	0.13	114045 0410	16,50
4.2	66	22	6	0.13	114045 0420	15,60
4.3	68	24	6	0.13	114045 0430	16,50
4.4	68	24	6	0.13	114045 0440	16,50
4.5	68	24	6	0.15	114045 0450	15,60
4.6	68	24	6	0.15	114045 0460	18,70
4.7	68	24	6	0.15	114045 0470	18,70
4.8	70	26	6	0.15	114045 0480	18,70
4.9	70	26	6	0.15	114045 0490	18,70
5.0	70	26	6	0.15	114045 0500	20,80
5.1	70	26	6	0.15	114045 0510	20,80
5.2	70	26	6	0.15	114045 0520	20,80

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D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.3	70	28	6	0.15	114045 0530	22,10
5.4	72	28	6	0.15	114045 0540	22,10
5.5	72	28	6	0.16	114045 0550	20,80
5.6	72	28	6	0.16	114045 0560	23,80
5.7	72	28	6	0.16	114045 0570	23,80
5.8	72	28	6	0.16	114045 0580	23,80
5.9	72	28	6	0.16	114045 0590	23,80
6.0	72	28	6	0.16	114045 0600	22,50
6.1	75	31	8	0.16	114045 0610	26,40
6.2	75	31	8	0.16	114045 0620	26,40
6.3	75	31	8	0.16	114045 0630	26,40
6.4	75	31	8	0.16	114045 0640	26,40
6.5	75	31	8	0.16	114045 0650	26,40
6.6	75	31	8	0.16	114045 0660	27,30
6.7	75	31	8	0.16	114045 0670	27,30
6.8	78	34	8	0.16	114045 0680	27,30
6.9	78	34	8	0.16	114045 0690	27,30
7.0	78	34	8	0.16	114045 0700	27,30
7.1	78	34	8	0.20	114045 0710	28,60
7.2	78	34	8	0.20	114045 0720	28,60
7.3	78	34	8	0.20	114045 0730	28,60
7.4	78	34	8	0.20	114045 0740	28,60
7.5	78	34	8	0.20	114045 0750	28,60
7.6	81	37	8	0.20	114045 0760	30,–
7.7	81	37	8	0.20	114045 0770	30,–
7.8	81	37	8	0.20	114045 0780	30,–
7.9	81	37	8	0.20	114045 0790	30,–
8.0	81	37	8	0.20	114045 0800	30,–
8.1	87	37	10	0.20	114045 0810	33,–
8.2	87	37	10	0.20	114045 0820	33,–
8.3	87	37	10	0.20	114045 0830	33,–
8.4	87	37	10	0.20	114045 0840	33,–
8.5	87	37	10	0.20	114045 0850	33,–
8.6	90	40	10	0.20	114045 0860	34,40
8.7	90	40	10	0.20	114045 0870	34,40
8.8	90	40	10	0.20	114045 0880	34,40
8.9	90	40	10	0.20	114045 0890	34,40
9.0	90	40	10	0.20	114045 0900	34,40
9.1	90	40	10	0.24	114045 0910	37,30
9.2	90	40	10	0.24	114045 0920	37,30
9.3	90	40	10	0.24	114045 0930	37,30
9.4	90	40	10	0.24	114045 0940	37,30
9.5	90	40	10	0.24	114045 0950	37,30

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Continued on next page >>>

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
9.6	93	43	10	0.24	114045 0960	39,30
9.7	93	43	10	0.24	114045 0970	39,30
9.8	93	43	10	0.24	114045 0980	39,30
9.9	93	43	10	0.24	114045 0990	39,30
10.0	93	43	10	0.24	114045 1000	39,30
10.1	100	43	12	0.24	114045 1010	48,80
10.2	100	43	12	0.24	114045 1020	48,80
10.3	100	43	12	0.24	114045 1030	48,80
10.4	100	43	12	0.24	114045 1040	48,80
10.5	100	43	12	0.24	114045 1050	48,80
10.6	100	43	12	0.24	114045 1060	53,40
10.7	104	47	12	0.24	114045 1070	53,40
10.8	104	47	12	0.24	114045 1080	53,40
10.9	104	47	12	0.24	114045 1090	53,40
11.0	104	47	12	0.24	114045 1100	53,40
11.1	104	47	12	0.29	114045 1110	57,40
11.2	104	47	12	0.29	114045 1120	57,40
11.3	104	47	12	0.29	114045 1130	57,40
11.4	104	47	12	0.29	114045 1140	57,40
11.5	104	47	12	0.29	114045 1150	57,40
11.6	104	47	12	0.29	114045 1160	61,50
11.7	104	47	12	0.29	114045 1170	61,50
11.8	104	47	12	0.29	114045 1180	61,50
11.9	108	51	12	0.29	114045 1190	61,50
12.0	108	51	12	0.29	114045 1200	61,50
12.1	108	51	12	0.29	114045 1210	71,20
12.2	108	51	12	0.29	114045 1220	71,20
12.3	108	51	12	0.29	114045 1230	71,20
12.4	108	51	12	0.29	114045 1240	71,20
12.5	108	51	12	0.29	114045 1250	71,20

1107

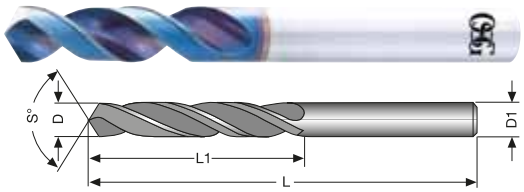
D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
12.6	108	51	12	0.29	114045 1260	75,40
12.7	108	51	12	0.29	114045 1270	75,40
12.8	108	51	12	0.29	114045 1280	75,40
12.9	108	51	12	0.29	114045 1290	75,40
13.0	108	51	12	0.29	114045 1300	75,40
13.5	114	54	16	0.33	114045 1350	114,10
14.0	114	54	16	0.33	114045 1400	114,10
14.5	116	56	16	0.33	114045 1450	131,20
15.0	116	56	16	0.33	114045 1500	131,20
15.5	118	58	16	0.36	114045 1550	141,30
16.0	118	58	16	0.36	114045 1600	141,30
16.5	126	60	20	0.36	114045 1650	148,30
17.0	126	60	20	0.36	114045 1700	148,30
17.5	128	62	20	0.40	114045 1750	161,90
18.0	128	62	20	0.40	114045 1800	161,90
18.5	130	64	20	0.40	114045 1850	183,80
19.0	130	64	20	0.40	114045 1900	183,80
19.5	132	66	20	0.43	114045 1950	190,30
20.0	132	66	20	0.43	114045 2000	190,30

1107

NEXUS-GDS twist drill

HSS-E | Werks-norm | Typ VA | 120° | 130° | 140° | 35°-40° | 3xD | TiAlN | Vc/fz | 10-247

- High spiral angle (35 - 40°) and unique flute shape reduce the cutting forces and the heat generated during machining
- **Short breakage chips even with tough materials such as stainless steel or copper**
- Shank design: straight
- S°= point angle: < Ø 2 mm = 140°, < Ø 4 mm = 130°, > Ø 4 mm = 120°
- **Cutting material: high-quality vanadium alloy HSS, WDI™-coated**
- Wear-resistant, suitable for a broad range of materials thanks to multi-layer 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
		● 40-60	○ 40-60		● 15-25	● 15-25	● 10-20						● 63-100	● 32-63	● 40-60				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.00	140	38	6	3	0.03	**114046** 0100	13,20
1.10	140	39	7	3	0.03	114046 0110	13,10
1.20	140	40	8	3	0.03	114046 0120	13,10
1.30	140	40	8	3	0.03	114046 0130	13,10
1.40	140	41	9	3	0.03	114046 0140	13,10
1.50	140	41	9	3	0.07	114046 0150	12,40
1.60	140	42	10	3	0.07	114046 0160	11,90
1.70	140	42	10	3	0.07	114046 0170	11,90
1.80	140	43	11	3	0.07	114046 0180	11,90

1107

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.81	140	43	11	3	0.07	114046 0181	22,60
1.83	140	43	11	3	0.07	114046 0183	22,60
1.90	140	43	11	3	0.07	114046 0190	11,90
2.00	130	44	12	3	0.07	114046 0200	11,30
2.10	130	44	12	3	0.07	114046 0210	13,10
2.11	130	44	12	3	0.07	114046 0211	22,60
2.13	130	45	13	3	0.07	114046 0213	22,60
2.20	130	45	13	3	0.07	114046 0220	13,10
2.28	130	45	13	3	0.07	114046 0228	22,60

1107

Continued on next page >>>

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.30	130	45	13	3	0.07	114046 0230	13,10
2.38	130	46	14	3	0.07	114046 0238	22,60
2.40	130	46	14	3	0.07	114046 0240	13,10
2.50	130	46	14	3	0.11	114046 0250	12,40
2.60	130	46	14	3	0.11	114046 0260	13,10
2.70	130	48	16	3	0.11	114046 0270	13,10
2.76	130	48	16	3	0.11	114046 0276	22,20
2.78	130	48	16	3	0.11	114046 0278	22,20
2.80	130	48	16	3	0.11	114046 0280	13,10
2.90	130	48	16	3	0.11	114046 0290	13,10
3.00	130	48	16	3	0.11	114046 0300	12,40
3.10	130	50	18	4	0.11	114046 0310	14,80
3.20	130	50	18	4	0.11	114046 0320	14,80
3.25	130	50	18	4	0.11	114046 0325	16,30
3.30	130	50	18	4	0.11	114046 0330	14,80
3.40	130	52	20	4	0.11	114046 0340	14,80
3.50	130	52	20	4	0.13	114046 0350	14,80
3.60	130	52	20	4	0.13	114046 0360	16,20
3.65	130	52	20	4	0.13	114046 0365	19,50
3.67	130	52	20	4	0.13	114046 0367	26,40
3.70	130	52	20	4	0.13	114046 0370	16,20
3.80	130	54	22	4	0.13	114046 0380	16,20
3.90	130	54	22	4	0.13	114046 0390	16,20
4.00	130	54	22	4	0.13	114046 0400	15,90
4.10	120	66	22	6	0.13	114046 0410	19,10
4.20	120	66	22	6	0.13	114046 0420	18,10
4.30	120	68	24	6	0.13	114046 0430	19,10
4.40	120	68	24	6	0.13	114046 0440	19,10
4.50	120	68	24	6	0.15	114046 0450	18,10
4.59	120	68	24	6	0.15	114046 0459	36,70
4.60	120	68	24	6	0.15	114046 0460	21,50
4.63	120	68	24	6	0.15	114046 0463	36,70
4.70	120	68	24	6	0.15	114046 0470	21,50
4.80	120	70	26	6	0.15	114046 0480	21,50
4.90	120	70	26	6	0.15	114046 0490	21,50
5.00	120	70	26	6	0.15	114046 0500	23,90
5.10	120	70	26	6	0.15	114046 0510	23,90
5.20	120	70	26	6	0.15	114046 0520	23,90
5.30	120	70	26	6	0.15	114046 0530	25,60
5.40	120	72	28	6	0.15	114046 0540	25,60
5.48	120	72	28	6	0.15	114046 0548	42,40
5.50	120	72	28	6	0.16	114046 0550	23,90
5.60	120	72	28	6	0.16	114046 0560	27,40
5.70	120	72	28	6	0.16	114046 0570	27,40

1107

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.80	120	72	28	6	0.16	114046 0580	27,40
5.90	120	72	28	6	0.16	114046 0590	27,40
6.00	120	72	28	6	0.16	114046 0600	26,–
6.10	120	75	28	6	0.16	114046 0610	30,20
6.20	120	75	31	6	0.16	114046 0620	30,20
6.30	120	75	31	6	0.16	114046 0630	30,20
6.40	120	75	31	6	0.16	114046 0640	30,20
6.50	120	75	31	8	0.16	114046 0650	30,20
6.60	120	75	31	8	0.16	114046 0660	31,30
6.80	120	78	34	8	0.16	114046 0680	31,30
6.90	120	78	34	8	0.16	114046 0690	31,30
7.00	120	78	34	8	0.16	114046 0700	31,30
7.34	120	78	34	8	0.20	114046 0734	53,–
7.38	120	78	34	8	0.20	114046 0738	53,–
7.40	120	78	34	8	0.20	114046 0740	33,20
7.50	120	78	34	8	0.20	114046 0750	33,20
7.80	120	81	37	8	0.20	114046 0780	34,50
7.90	120	81	37	8	0.20	114046 0790	34,50
8.00	120	81	37	8	0.20	114046 0800	34,50
8.10	120	87	37	10	0.20	114046 0810	37,90
8.20	120	87	37	10	0.20	114046 0820	37,90
8.30	120	87	37	10	0.20	114046 0830	37,90
8.40	120	87	37	10	0.20	114046 0840	37,90
8.50	120	87	37	10	0.20	114046 0850	37,90
8.60	120	90	40	10	0.20	114046 0860	39,60
8.70	120	90	40	10	0.20	114046 0870	39,60
8.80	120	90	40	10	0.20	114046 0880	39,60
9.00	120	90	40	10	0.20	114046 0900	39,60
9.18	120	90	40	10	0.24	114046 0918	68,60
9.20	120	90	40	10	0.24	114046 0920	42,80
9.24	120	90	40	10	0.24	114046 0924	68,60
9.34	120	90	40	10	0.24	114046 0934	68,60
9.36	120	90	40	10	0.24	114046 0936	68,60
9.50	120	90	40	10	0.24	114046 0950	42,80
9.80	120	93	43	10	0.24	114046 0980	49,40
10.00	120	93	43	10	0.24	114046 1000	45,10
10.20	120	100	43	12	0.24	114046 1020	56,10
10.30	120	100	43	12	0.24	114046 1030	56,10
10.40	120	100	43	12	0.24	114046 1040	56,10
10.50	120	100	43	12	0.24	114046 1050	56,10
11.00	120	104	47	12	0.24	114046 1100	61,30
11.20	120	100	43	12	0.29	114046 1120	69,80
11.50	120	104	47	12	0.29	114046 1150	66,10
12.00	120	108	51	12	0.29	114046 1200	70,70

1107

SARA® Body drill

HSS | Werks-norm | Typ N | 130° | 30°

- Especially short drill bit for sheet machining
- Dimensions **similar to DIN 1897**
- Profile-ground with point thinning, self-centring
- Without chamfer, to prevent the drill from jamming
- **Single and double-sided versions**
- For drilling thin-walled sheet metal

For sheet metal machining

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
● 20-22	○ 12-18										○ 30-50						

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

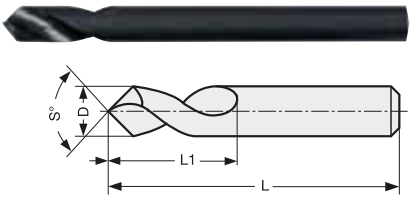
Single-sided

D h8 mm	L mm	L1 mm	art.no.	€
2.50	38	14	**102310** 0250	0,81
3.00	40	16	102310 0300	0,84
3.10	40	16	102310 0310	0,84
3.20	40	16	102310 0320	0,95
3.25	41	16	102310 0325	0,95
3.50	42	16	102310 0350	0,99
4.00	42	16	102310 0400	1,15
4.10	44	18	102310 0410	1,15

1137

D h8 mm	L mm	L1 mm	art.no.	€
4.20	44	18	102310 0420	1,15
4.80	48	20	102310 0480	1,37
4.90	50	22	102310 0490	1,37
5.00	52	24	102310 0500	1,37
5.10	52	24	102310 0510	1,59
5.20	52	24	102310 0520	1,59
6.00	55	26	102310 0600	1,85

1137



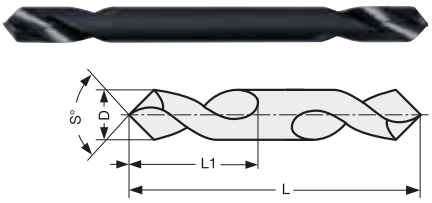
Double-sided

D h8 mm	L mm	L1 mm	art.no.	€
3.00	46	11	**102320** 0300	1,37
3.10	49	12	102320 0310	1,41
3.20	49	12	102320 0320	1,49
3.30	49	12	102320 0330	1,59
3.50	52	13	102320 0350	1,72
4.00	55	14	102320 0400	1,76

1137

D h8 mm	L mm	L1 mm	art.no.	€
4.10	55	14	102320 0410	1,76
4.20	55	14	102320 0420	1,76
4.50	58	16	102320 0450	2,18
5.00	62	17	102320 0500	2,18
6.00	66	19	102320 0600	2,64

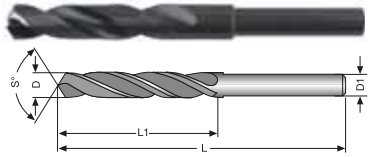
1137



ATORN® Twist drill bit

HSS | Werks-norm | Typ N | 118° | 29° | 3xD | Vap. | Vc/fz | 10-248

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



With offset shank

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
● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				

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

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13.5	152	76	12.7	0.22	**101080** 1350	31,60
14.0	152	76	12.7	0.22	101080 1400	24,10
14.5	152	76	12.7	0.22	101080 1450	36,70
15.0	152	76	12.7	0.22	101080 1500	31,40
15.5	152	76	12.7	0.22	101080 1550	37,30
16.0	152	76	12.7	0.22	101080 1600	32,–
16.5	152	76	12.7	0.28	101080 1650	35,90
17.0	152	76	12.7	0.28	101080 1700	42,–
17.5	152	76	12.7	0.28	101080 1750	39,40
18.0	152	76	12.7	0.28	101080 1800	43,70

1104

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
18.5	152	76	12.7	0.28	101080 1850	50,50
19.0	152	76	12.7	0.28	101080 1900	52,–
19.5	152	76	12.7	0.28	101080 1950	59,–
20.0	152	76	12.7	0.28	101080 2000	51,–
21.0	152	76	12.7	0.28	101080 2100	62,–
22.0	152	76	12.7	0.28	101080 2200	65,50
23.0	152	76	12.7	0.28	101080 2300	75,50
24.0	152	76	12.7	0.28	101080 2400	75,50
25.0	152	76	12.7	0.28	101080 2500	76,50

1104

Set

Number of drills	D mm	art.no.	€
14	13.5 to 20.0 mm in 0.5 mm increments	**101080** 0001	589,–
12	14.0 to 25.0 mm in 1.0 mm increments	101080 0002	629,–

1104



101080 0002



101080 0001

ATORN® Mini twist drill bit

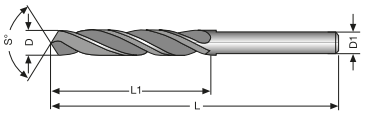
HSS-E PM | DIN 1899 | Typ N | 118° | 23° | 5xD | Vc/fz | 10-249

From Ø 0.05 mm



- **Reinforced shank**
- Profile-ground
- **High true-running accuracy and precision-ground point**
- Diameter tolerance 0/-0.004 mm
- HSS-E-PM for high cutting rates and high rigidity

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
		● 18-21	● 14-18	● 12-14	○ 6-10	○ 6-10		● 22-25	○ 18-22				○ 18-22	○ 15-18	○ 20-40				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.05	25	0.4	1.0	0.006	10	**101075** 0005	17,30
0.08	25	0.5	1.0	0.006	10	101075 0008	17,30
0.10	25	0.7	1.0	0.006	10	101075 0010	13,05
0.15	25	1.0	1.0	0.007	10	101075 0015	11,20
0.20	25	1.8	1.0	0.008	10	101075 0020	9,80
0.25	25	2.2	1.0	0.009	10	101075 0025	8,75
0.30	25	2.2	1.0	0.010	10	101075 0030	7,95
0.35	25	2.8	1.0	0.011	10	101075 0035	7,15
0.40	25	3.6	1.0	0.012	10	101075 0040	6,10
0.45	25	3.6	1.0	0.013	10	101075 0045	6,55
0.50	25	4.0	1.0	0.014	10	101075 0050	5,50
0.55	25	4.5	1.0	0.015	10	101075 0055	6,10
0.60	25	4.5	1.0	0.016	10	101075 0060	5,30
0.65	25	5.0	1.0	0.017	10	101075 0065	6,10
0.70	25	5.6	1.0	0.018	10	101075 0070	5,30
0.75	25	5.6	1.0	0.019	10	101075 0075	6,10
0.80	25	6.3	1.0	0.022	10	101075 0080	5,50
0.85	25	6.3	1.5	0.025	10	101075 0085	6,10
0.90	25	7.1	1.5	0.028	10	101075 0090	5,50
0.95	25	7.1	1.5	0.031	10	101075 0095	6,30
1.00	25	8.0	1.5	0.034	10	101075 0100	5,50
1.10	25	9.0	1.5	0.037	10	101075 0110	6,10
1.20	25	10.0	1.5	0.040	10	101075 0120	6,10
1.30	25	10.0	1.5	0.043	10	101075 0130	6,10
1.40	25	11.2	1.5	0.046	10	101075 0140	6,10
1.50	25	12.5	1.5	0.049	10	101075 0150	6,10

1104



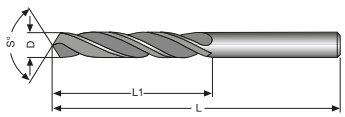
... from Ø 0.2 mm

ATORN®
High quality for great performance

SARA® Twist drill bit

HSS | DIN 338 | Typ N | 118° | 27° | 5xD | Vc/fz | 10-248

- 101001/101030.... roll-milled, cone-shaped shell
- 101002/101033.... bright surface, ground, for production



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 h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev	Roll-milled			Bright		
					art.no.	€		art.no.	€
0.4	20	5	0.03				10	**101002** 0040	1,76
0.5	22	6	0.03				10	101002 0050	1,62
0.6	24	7	0.03				10	101002 0060	1,53
0.7	28	9	0.03				10	101002 0070	1,48
0.8	30	10	0.03				10	101002 0080	1,36
0.9	32	11	0.03				10	101002 0090	1,30
1.0	34	12	0.04	10	**101001** 0100	0,34	10	101002 0100	1,15
1.1	36	14	0.04	10	101001 0110	0,36	10	101002 0110	1,12
1.2	38	16	0.04	10	101001 0120	0,36	10	101002 0120	1,12
1.3	38	16	0.04	10	101001 0130	0,36	10	101002 0130	1,12
1.4	40	18	0.04	10	101001 0140	0,36	10	101002 0140	1,12
1.5	40	18	0.04	10	101001 0150	0,34	10	101002 0150	0,94
1.6	43	20	0.04	10	101001 0160	0,37	10	101002 0160	0,92
1.7	43	20	0.04	10	101001 0170	0,37	10	101002 0170	1,12
1.8	46	22	0.04	10	101001 0180	0,37	10	101002 0180	0,83
1.9	46	22	0.04	10	101001 0190	0,37	10	101002 0190	0,84
2.0	49	24	0.04	10	101001 0200	0,37	10	101002 0200	0,70
2.1	49	24	0.04	10	101001 0210	0,38	10	101002 0210	0,83
2.2	53	27	0.04	10	101001 0220	0,38	10	101002 0220	0,84
2.3	53	27	0.04	10	101001 0230	0,38	10	101002 0230	0,84
2.4	57	30	0.04	10	101001 0240	0,38	10	101002 0240	0,88
2.5	57	30	0.09	10	101001 0250	0,37	10	101002 0250	0,88
2.6	57	30	0.09	10	101001 0260	0,43	10	101002 0260	0,92
2.7	61	33	0.09	10	101001 0270	0,43	10	101002 0270	0,92
2.8	61	33	0.09	10	101001 0280	0,43	10	101002 0280	0,92
2.9	61	33	0.09	10	101001 0290	0,43	10	101002 0290	0,92
3.0	61	33	0.09	10	101001 0300	0,32	10	101002 0300	0,75
3.1	65	36	0.09	10	101001 0310	0,35	10	101002 0310	0,95
3.2	65	36	0.09	10	101001 0320	0,35	10	101002 0320	0,95
3.3	65	36	0.09	10	101001 0330	0,35	10	101002 0330	0,96
3.4	70	39	0.09	10	101001 0340	0,35	10	101002 0340	0,95
3.5	70	39	0.09	10	101001 0350	0,35	10	101002 0350	0,88
3.6	70	39	0.09	10	101001 0360	0,36	10	101002 0360	1,03
3.7	70	39	0.09	10	101001 0370	0,36	10	101002 0370	1,12
3.8	75	43	0.09	10	101001 0380	0,39	10	101002 0380	1,16
3.9	75	43	0.09	10	101001 0390	0,39	10	101002 0390	1,21
4.0	75	43	0.09	10	101001 0400	0,39	10	101002 0400	0,92
4.1	75	43	0.09	10	101001 0410	0,46	10	101002 0410	1,26
4.2	75	43	0.09	10	101001 0420	0,46	10	101002 0420	1,10
4.3	80	47	0.09	10	101001 0430	0,50	10	101002 0430	1,28
4.4	80	47	0.09	10	101001 0440	0,50	10	101002 0440	1,28
4.5	80	47	0.09	10	101001 0450	0,43	10	101002 0450	1,16
4.6	80	47	0.09	10	101001 0460	0,47	10	101002 0460	1,28
4.7	80	47	0.09	10	101001 0470	0,47	10	101002 0470	1,29
4.8	86	52	0.09	10	101001 0480	0,54	10	101002 0480	1,28
4.9	86	52	0.09	10	101001 0490	0,54	10	101002 0490	1,35
5.0	86	52	0.09	10	101001 0500	0,49	10	101002 0500	1,15
5.1	86	52	0.13	10	101001 0510	0,53	10	101002 0510	1,42
					1137			1137	


Roll-milled


Bright surface

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Roll-milled art.no.	€		Bright art.no.	€
5.2	86	52	0.13	10	101001 0520	0,53	10	101002 0520	1,42
5.3	86	52	0.13	10	101001 0530	0,63	10	101002 0530	1,42
5.4	93	57	0.13	10	101001 0540	0,66	10	101002 0540	1,66
5.5	93	57	0.13	10	101001 0550	0,58	10	101002 0550	1,54
5.6	93	57	0.13	10	101001 0560	0,86	10	101002 0560	1,67
5.7	93	57	0.13	10	101001 0570	0,86	10	101002 0570	1,69
5.8	93	57	0.13	10	101001 0580	0,86	10	101002 0580	1,71
5.9	93	57	0.13	10	101001 0590	0,86	10	101002 0590	1,75
6.0	93	57	0.13	10	101001 0600	0,69	10	101002 0600	1,54
6.1	101	63	0.13	1	101001 0610	0,92	1	101002 0610	1,89
6.2	101	63	0.13	1	101001 0620	0,92	1	101002 0620	1,89
6.3	101	63	0.13	1	101001 0630	0,92	1	101002 0630	1,91
6.4	101	63	0.13	1	101001 0640	0,92	1	101002 0640	2,07
6.5	101	63	0.13	1	101001 0650	0,88	1	101002 0650	1,90
6.6	101	63	0.13	1	101001 0660	0,98	1	101002 0660	2,11
6.7	101	63	0.13	1	101001 0670	0,98	1	101002 0670	2,17
6.8	109	69	0.13	1	101001 0680	0,98	1	101002 0680	2,53
6.9	109	69	0.13	1	101001 0690	1,08	1	101002 0690	2,53
7.0	109	69	0.13	1	101001 0700	0,91	1	101002 0700	2,28
7.1	109	69	0.13	1	101001 0710	1,17	1	101002 0710	2,58
7.2	109	69	0.13	1	101001 0720	1,17	1	101002 0720	2,70
7.3	109	69	0.13	1	101001 0730	1,17	1	101002 0730	2,70
7.4	109	69	0.13	1	101001 0740	1,17	1	101002 0740	2,78
7.5	109	69	0.13	1	101001 0750	1,03	1	101002 0750	2,53
7.6	117	75	0.13	1	101001 0760	1,12	1	101002 0760	2,97
7.7	117	75	0.13	1	101001 0770	1,37	1	101002 0770	2,97
7.8	117	75	0.13	1	101001 0780	1,37	1	101002 0780	3,01
7.9	117	75	0.13	1	101001 0790	1,37	1	101002 0790	3,04
8.0	117	75	0.13	1	101001 0800	1,21	1	101002 0800	2,53
8.1	117	75	0.18	1	101001 0810	1,51	1	101002 0810	3,15
8.2	117	75	0.18	1	101001 0820	1,51	1	101002 0820	3,19
8.3	117	75	0.18	1	101001 0830	1,51	1	101002 0830	3,45
8.4	117	75	0.18	1	101001 0840	1,51	1	101002 0840	3,45
8.5	117	75	0.18	1	101001 0850	1,29	1	101002 0850	3,26
8.6	125	81	0.18	1	101001 0860	1,70	1	101002 0860	3,84
8.7	125	81	0.18	1	101001 0870	1,70	1	101002 0870	3,84
8.8	125	81	0.18	1	101001 0880	1,70	1	101002 0880	3,93
8.9	125	81	0.18	1	101001 0890	1,70	1	101002 0890	4,08
9.0	125	81	0.18	1	101001 0900	1,52	1	101002 0900	3,60
9.1	125	81	0.18	1	101001 0910	1,81	1	101002 0910	4,08
9.2	125	81	0.18	1	101001 0920	1,81	1	101002 0920	4,08
9.3	125	81	0.18	1	101001 0930	1,98	1	101002 0930	4,11
9.4	125	81	0.18	1	101001 0940	1,98	1	101002 0940	4,11
9.5	125	81	0.18	1	101001 0950	1,65	1	101002 0950	4,10
9.6	133	87	0.18	1	101001 0960	2,12	1	101002 0960	4,59
9.7	133	87	0.18	1	101001 0970	2,25	1	101002 0970	4,59
9.8	133	87	0.18	1	101001 0980	2,12	1	101002 0980	5,05
9.9	133	87	0.18	1	101001 0990	2,12	1	101002 0990	5,05
10.0	133	87	0.18	1	101001 1000	1,90	1	101002 1000	4,34
10.1	133	87	0.18				1	101002 1010	5,45
10.2	133	87	0.18	1	101001 1020	2,47	1	101002 1020	5,60
10.3	133	87	0.18				1	101002 1030	6,90
10.4	133	87	0.18				1	101002 1040	6,90
10.5	133	87	0.18	1	101001 1050	2,15	1	101002 1050	5,75
10.6	133	87	0.18				1	101002 1060	7,60
10.7	142	94	0.18				1	101002 1070	7,85
10.8	142	94	0.18				1	101002 1080	8,15
10.9	142	94	0.18				1	101002 1090	7,85
11.0	142	94	0.18	1	101001 1100	2,60	1	101002 1100	6,70
					1137			1137	

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Roll-milled art.no.	€		Bright art.no.	€
11.1	142	94	0.18				1	101002 1110	8,10
11.2	142	94	0.18				1	101002 1120	8,50
11.3	142	94	0.18				1	101002 1130	8,10
11.4	142	94	0.18				1	101002 1140	7,85
11.5	142	94	0.18	1	101001 1150	2,76	1	101002 1150	7,40
11.6	142	94	0.18				1	101002 1160	10,25
11.7	142	94	0.18				1	101002 1170	10,25
11.8	142	94	0.18				1	101002 1180	9,55
11.9	151	101	0.18				1	101002 1190	10,25
12.0	151	101	0.18	1	101001 1200	3,05	1	101002 1200	8,15
12.2	151	101	0.22				1	101002 1220	10,90
12.5	151	101	0.22	1	101001 1250	3,55	1	101002 1250	9,25
12.8	151	101	0.22				1	101002 1280	12,45
13.0	151	101	0.22	1	101001 1300	3,32	1	101002 1300	10,25
13.5	160	108	0.22	1	101001 1350	5,65	1	101002 1350	11,90
14.0	160	108	0.22	1	101001 1400	5,80	1	101002 1400	14,80
14.5	169	114	0.22	1	101001 1450	6,15	1	101002 1450	14,80
15.0	169	114	0.22	1	101001 1500	8,60	1	101002 1500	18,–
15.5	178	120	0.22	1	101001 1550	9,70	1	101002 1550	18,10
16.0	178	120	0.22	1	101001 1600	10,05	1	101002 1600	19,40
					1137			1137	

Sets

D mm	Number of drills	Roll-milled art.no.	€	blank art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101030** 0001	37,50	**101033** 0001	76,50
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101030 0002	96,80	101033 0002	178,–
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101030 0003	22,80	101033 0003	46,50
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101030 0004	41,90	101033 0004	96,–
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: 3.3 - 4.2 - 6.8 - 10.2 mm Ø	24			101033 0005	71,–
		1137		1137	



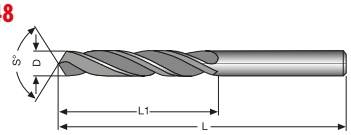


ATORN®
High quality for great performance

ATORN® SARA® Twist drill bit

HSS | DIN 338 | Typ N | 118° | 27° | 35° | 5xD | TiN | Vap. | Vc/fz

10-248



- 101005/101035.... profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101405.... profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101008/101048.... 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
101005.... 101405.... 101035....	● 20-28	● 10-15					● 25-28	○ 20-23				○ 40-55	○ 30-35	○ 25-35				
101008.... 101048....	● 25-28	● 20-22	○ 12-15	○ 10-12	○ 12-14				● 6-9	○ 6-8		○ 50-60	○ 40-50	○ 30-40				

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


HSS, vapour-treated


HSS, TiN

Single

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® Vapour-treated art.no.	€	SARA® Vapour-treated art.no.	€	ATORN® TiN art.no.	€
0.4	20	5	0.03	10 **101005** 0040	3,43				
0.5	22	6	0.03	10 101005 0050	2,73	10 **101405** 0050	1,23		
0.6	24	7	0.03	10 101005 0060	2,69	10 101405 0060	1,23		
0.7	28	9	0.03	10 101005 0070	2,52	10 101405 0070	1,23		
0.8	30	10	0.03	10 101005 0080	2,30	10 101405 0080	1,23		
0.9	32	11	0.03	10 101005 0090	2,26	10 101405 0090	1,23		
1.0	34	12	0.03	10 101005 0100	2,08	10 101405 0100	1,29	10 **101008** 0100	2,28
1.1	36	14	0.04	10 101005 0110	2,17	10 101405 0110	1,29	10 101008 0110	2,64
1.2	38	16	0.04	10 101005 0120	2,19	10 101405 0120	1,33	10 101008 0120	2,71
1.3	38	16	0.04	10 101005 0130	2,11	10 101405 0130	1,29	10 101008 0130	2,64
1.4	40	18	0.04	10 101005 0140	2,04	10 101405 0140	1,29	10 101008 0140	2,50
1.5	40	18	0.04	10 101005 0150	1,82	10 101405 0150	1,19	10 101008 0150	1,86
1.6	43	20	0.04	10 101005 0160	1,77	10 101405 0160	1,19	10 101008 0160	2,21
1.7	43	20	0.04	10 101005 0170	1,82	10 101405 0170	1,21	10 101008 0170	2,21
1.8	46	22	0.04	10 101005 0180	1,61	10 101405 0180	1,02	10 101008 0180	2,07
1.9	46	22	0.04	10 101005 0190	1,62	10 101405 0190	1,02	10 101008 0190	2,07
2.0	49	24	0.04	10 101005 0200	1,28	10 101405 0200	0,89	10 101008 0200	1,50
2.1	49	24	0.04	10 101005 0210	1,61	10 101405 0210	1,02	10 101008 0210	2,–
2.2	53	27	0.04	10 101005 0220	1,64	10 101405 0220	1,07	10 101008 0220	2,07
2.3	53	27	0.04	10 101005 0230	1,64	10 101405 0230	1,07	10 101008 0230	2,14
2.4	57	30	0.04	10 101005 0240	1,72	10 101405 0240	1,13	10 101008 0240	2,07
2.5	57	30	0.09	10 101005 0250	1,67	10 101405 0250	1,13	10 101008 0250	1,74
2.6	57	30	0.09	10 101005 0260	1,77	10 101405 0260	1,18	10 101008 0260	2,21
w2.7	61	33	0.09	10 101005 0270	1,77	10 101405 0270	1,18	10 101008 0270	2,21
2.8	61	33	0.09	10 101005 0280	1,82	10 101405 0280	1,18	10 101008 0280	2,21
2.9	61	33	0.09	10 101005 0290	1,82	10 101405 0290	1,18	10 101008 0290	2,21
3.0	61	33	0.09	10 101005 0300	1,42	10 101405 0300	0,66	10 101008 0300	1,56
3.1	65	36	0.09	10 101005 0310	1,89	10 101405 0310	1,29	10 101008 0310	2,36
3.2	65	36	0.09	10 101005 0320	1,86	10 101405 0320	1,29	10 101008 0320	1,98
3.3	65	36	0.09	10 101005 0330	1,91	10 101405 0330	1,23	10 101008 0330	1,98
3.4	70	39	0.09	10 101005 0340	1,89	10 101405 0340	1,28	10 101008 0340	2,36
3.5	70	39	0.09	10 101005 0350	1,67	10 101405 0350	1,13	10 101008 0350	1,74
3.6	70	39	0.09	10 101005 0360	2,06	10 101405 0360	1,33	10 101008 0360	2,57
3.7	70	39	0.09	10 101005 0370	2,17	10 101405 0370	1,43	10 101008 0370	2,64
3.8	75	43	0.09	10 101005 0380	2,12	10 101405 0380	1,38	10 101008 0380	2,71
3.9	75	43	0.09	10 101005 0390	2,29	10 101405 0390	1,50	10 101008 0390	2,85
4.0	75	43	0.09	10 101005 0400	1,64	10 101405 0400	1,23	10 101008 0400	1,74
4.1	75	43	0.09	10 101005 0410	2,45	10 101405 0410	1,59	10 101008 0410	3,07
4.2	75	43	0.09	10 101005 0420	2,12	10 101405 0420	1,43	10 101008 0420	2,22
4.3	80	47	0.09	10 101005 0430	2,52	10 101405 0430	1,48	10 101008 0430	3,07
4.4	80	47	0.09	10 101005 0440	2,52	10 101405 0440	1,48	10 101008 0440	3,07
4.5	80	47	0.09	10 101005 0450	2,21	10 101405 0450	1,48	10 101008 0450	2,34
				1104		1137		1104	

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		ATORN® Vapour-treated art.no.	€		SARA® Vapour-treated art.no.	€		ATORN® TiN art.no.	€
4.6	80	47	0.09	10	101005 0460	2,52	10	101405 0460	1,53	10	101008 0460	3,21
4.7	80	47	0.09	10	101005 0470	2,58	10	101405 0470	1,53	10	101008 0470	3,28
4.8	86	52	0.09	10	101005 0480	2,60	10	101405 0480	1,53	10	101008 0480	2,70
4.9	86	52	0.09	10	101005 0490	2,69	10	101405 0490	1,53	10	101008 0490	3,43
5.0	86	52	0.09	10	101005 0500	2,08	10	101405 0500	1,41	10	101008 0500	2,28
5.1	86	52	0.13	10	101005 0510	2,77	10	101405 0510	1,43	10	101008 0510	3,43
5.2	86	52	0.13	10	101005 0520	2,77	10	101405 0520	1,48	10	101008 0520	3,50
5.3	86	52	0.13	10	101005 0530	2,77	10	101405 0530	1,53	10	101008 0530	3,50
5.4	93	57	0.13	10	101005 0540	3,24	10	101405 0540	1,59	10	101008 0540	4,14
5.5	93	57	0.13	10	101005 0550	3,02	10	101405 0550	1,64	10	101008 0550	3,–
5.6	93	57	0.13	10	101005 0560	3,26	10	101405 0560	1,94	10	101008 0560	4,21
5.7	93	57	0.13	10	101005 0570	3,33	10	101405 0570	1,99	10	101008 0570	4,21
5.8	93	57	0.13	10	101005 0580	3,42	10	101405 0580	1,99	10	101008 0580	3,54
5.9	93	57	0.13	10	101005 0590	3,44	10	101405 0590	2,10	10	101008 0590	4,42
6.0	93	57	0.13	1	101005 0600	2,83	1	101405 0600	2,01	1	101008 0600	3,–
6.1	101	63	0.13	1	101005 0610	3,74	1	101405 0610	2,51	1	101008 0610	4,78
6.2	101	63	0.13	1	101005 0620	3,74	1	101405 0620	2,51	1	101008 0620	4,78
6.3	101	63	0.13	1	101005 0630	3,81	1	101405 0630	2,35	1	101008 0630	4,85
6.4	101	63	0.13	1	101005 0640	4,02	1	101405 0640	2,35	1	101008 0640	5,15
6.5	101	63	0.13	1	101005 0650	3,73	1	101405 0650	2,15	1	101008 0650	3,60
6.6	101	63	0.13	1	101005 0660	4,17	1	101405 0660	2,61	1	101008 0660	5,15
6.7	101	63	0.13	1	101005 0670	4,31	1	101405 0670	2,66	1	101008 0670	5,35
6.8	109	69	0.13	1	101005 0680	5,–	1	101405 0680	3,07	1	101008 0680	5,85
6.9	109	69	0.13	1	101005 0690	5,–	1	101405 0690	3,12	1	101008 0690	6,30
7.0	109	69	0.13	1	101005 0700	4,31	1	101405 0700	2,93	1	101008 0700	4,37
7.1	109	69	0.13	1	101005 0710	5,15	1	101405 0710	3,43	1	101008 0710	6,65
7.2	109	69	0.13	1	101005 0720	5,30	1	101405 0720	3,53	1	101008 0720	6,85
7.3	109	69	0.13	1	101005 0730	5,30	1	101405 0730	3,53	1	101008 0730	6,90
7.4	109	69	0.13	1	101005 0740	5,50	1	101405 0740	3,63	1	101008 0740	7,30
7.5	109	69	0.13	1	101005 0750	5,–	1	101405 0750	3,02	1	101008 0750	4,91
7.6	117	75	0.13	1	101005 0760	5,90	1	101405 0760	3,89	1	101008 0760	7,55
7.7	117	75	0.13	1	101005 0770	5,90	1	101405 0770	3,89	1	101008 0770	7,55
7.8	117	75	0.13	1	101005 0780	5,90	1	101405 0780	3,94	1	101008 0780	7,30
7.9	117	75	0.13	1	101005 0790	6,–	1	101405 0790	3,99	1	101008 0790	7,70
8.0	117	75	0.13	1	101005 0800	4,68	1	101405 0800	3,22	1	101008 0800	4,62
8.1	117	75	0.18	1	101005 0810	6,20	1	101405 0810	4,14	1	101008 0810	7,85
8.2	117	75	0.18	1	101005 0820	6,35	1	101405 0820	4,35	1	101008 0820	8,–
8.3	117	75	0.18	1	101005 0830	7,05	1	101405 0830	4,65	1	101008 0830	8,55
8.4	117	75	0.18	1	101005 0840	7,05	1	101405 0840	4,65	1	101008 0840	8,55
8.5	117	75	0.18	1	101005 0850	6,60	1	101405 0850	3,63	1	101008 0850	5,92
8.6	125	81	0.18	1	101005 0860	7,75	1	101405 0860	5,25	1	101008 0860	8,40
8.7	125	81	0.18	1	101005 0870	7,75	1	101405 0870	5,25	1	101008 0870	8,40
8.8	125	81	0.18	1	101005 0880	8,–	1	101405 0880	5,40	1	101008 0880	9,70
8.9	125	81	0.18	1	101005 0890	8,30	1	101405 0890	5,80	1	101008 0890	9,–
9.0	125	81	0.18	1	101005 0900	6,95	1	101405 0900	4,04	1	101008 0900	6,50
9.1	125	81	0.18	1	101005 0910	8,30	1	101405 0910	5,70	1	101008 0910	10,15
9.2	125	81	0.18	1	101005 0920	8,30	1	101405 0920	5,70	1	101008 0920	9,15
9.3	125	81	0.18	1	101005 0930	8,40	1	101405 0930	5,75	1	101008 0930	10,40
9.4	125	81	0.18	1	101005 0940	8,40	1	101405 0940	5,75	1	101008 0940	9,40
9.5	125	81	0.18	1	101005 0950	8,40	1	101405 0950	4,65	1	101008 0950	7,45
9.6	133	87	0.18	1	101005 0960	9,40	1	101405 0960	6,35	1	101008 0960	10,15
9.7	133	87	0.18	1	101005 0970	9,40	1	101405 0970	6,35	1	101008 0970	10,40
9.8	133	87	0.18	1	101005 0980	10,30	1	101405 0980	7,–	1	101008 0980	12,55
9.9	133	87	0.18	1	101005 0990	10,30	1	101405 0990	7,10	1	101008 0990	11,–
10.0	133	87	0.18	1	101005 1000	8,30	1	101405 1000	5,05	1	101008 1000	8,30
10.1	133	87	0.18	1	101005 1010	11,–	1	101405 1010	7,40	1	101008 1010	11,70
10.2	133	87	0.18	1	101005 1020	11,15	1	101405 1020	7,35	1	101008 1020	9,85
10.3	133	87	0.18	1	101005 1030	13,65	1	101405 1030	7,60	1	101008 1030	14,40
10.4	133	87	0.18	1	101005 1040	13,65	1	101405 1040	7,60	1	101008 1040	14,40
10.5	133	87	0.18	1	101005 1050	11,55	1	101405 1050	6,45	1	101008 1050	10,10
10.6	133	87	0.18	1	101005 1060	14,45	1	101405 1060	7,40	1	101008 1060	15,10
10.7	142	94	0.18	1	101005 1070	16,40	1	101405 1070	10,20	1	101008 1070	19,30
					1104			1137			1104	

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		ATORN® Vapour-treated art.no.	€		SARA® Vapour-treated art.no.	€		ATORN® TiN art.no.	€
10.8	142	94	0.18	1	101005 1080	15,90	1	101405 1080	10,15	1	101008 1080	17,30
10.9	142	94	0.18	1	101005 1090	17,–	1	101405 1090	8,25	1	101008 1090	18,80
11.0	142	94	0.18	1	101005 1100	13,20	1	101405 1100	7,65	1	101008 1100	11,65
11.1	142	94	0.18	1	101005 1110	17,–	1	101405 1110	8,35	1	101008 1110	18,–
11.2	142	94	0.18	1	101005 1120	16,40	1	101405 1120	8,35	1	101008 1120	17,60
11.3	142	94	0.18	1	101005 1130	17,50	1	101405 1130	8,55	1	101008 1130	19,10
11.4	142	94	0.18	1	101005 1140	17,50	1	101405 1140	8,75	1	101008 1140	19,10
11.5	142	94	0.18	1	101005 1150	14,50	1	101405 1150	8,10	1	101008 1150	17,60
11.6	142	94	0.18	1	101005 1160	17,50	1	101405 1160	8,85	1	101008 1160	19,10
11.7	142	94	0.18	1	101005 1170	18,20	1	101405 1170	9,20	1	101008 1170	19,30
11.8	142	94	0.18	1	101005 1180	18,50	1	101405 1180	8,95	1	101008 1180	19,30
11.9	151	101	0.18	1	101005 1190	20,10	1	101405 1190	9,25	1	101008 1190	23,60
12.0	151	101	0.18	1	101005 1200	16,–	1	101405 1200	9,15	1	101008 1200	14,55
12.1	151	101	0.22	1	101005 1210	21,30	1	101405 1210	9,95	1	101008 1210	23,–
12.2	151	101	0.22	1	101005 1220	21,30	1	101405 1220	9,75	1	101008 1220	23,–
12.3	151	101	0.22	1	101005 1230	21,40	1	101405 1230	9,85	1	101008 1230	21,40
12.4	151	101	0.22	1	101005 1240	22,40	1	101405 1240	11,50	1	101008 1240	25,10
12.5	151	101	0.22	1	101005 1250	18,–	1	101405 1250	10,75	1	101008 1250	17,20
12.6	151	101	0.22	1	101005 1260	22,40	1	101405 1260	12,–	1	101008 1260	27,–
12.7	151	101	0.22	1	101005 1270	24,–	1	101405 1270	11,50	1	101008 1270	24,80
12.8	151	101	0.22	1	101005 1280	24,–	1	101405 1280	11,90	1	101008 1280	25,70
12.9	151	101	0.22	1	101005 1290	24,20	1	101405 1290	12,20	1	101008 1290	30,70
13.0	151	101	0.22	1	101005 1300	19,60	1	101405 1300	11,40	1	101008 1300	22,–
13.25	160	108	0.22	1	101005 1325	23,30				1	101008 1325	36,40
13.5	160	108	0.22	1	101005 1350	22,80	1	101405 1350	11,45	1	101008 1350	28,40
13.75	160	108	0.22	1	101005 1375	24,20				1	101008 1375	41,40
14.0	160	108	0.22	1	101005 1400	25,70	1	101405 1400	11,75	1	101008 1400	27,–
14.25	169	114	0.22	1	101005 1425	29,40				1	101008 1425	45,70
14.5	169	114	0.22	1	101005 1450	27,20	1	101405 1450	13,50	1	101008 1450	28,50
14.75	169	114	0.22	1	101005 1475	42,20				1	101008 1475	46,40
15.0	169	114	0.22	1	101005 1500	29,30	1	101405 1500	13,50	1	101008 1500	32,80
15.25	178	120	0.22	1	101005 1525	54,50				1	101008 1525	60,–
15.5	178	120	0.22	1	101005 1550	32,10	1	101405 1550	15,90	1	101008 1550	34,30
15.75	178	120	0.22	1	101005 1575	57,50				1	101008 1575	64,–
16.0	178	120	0.22	1	101005 1600	34,60	1	101405 1600	19,60	1	101008 1600	37,10
16.5	187	125	0.28	1	101005 1650	41,90						
17.0	187	125	0.28	1	101005 1700	45,40						
17.5	196	130	0.28	1	101005 1750	51,50						
18.0	196	130	0.28	1	101005 1800	47,30						
18.5	205	135	0.28	1	101005 1850	55,–						
19.0	205	135	0.28	1	101005 1900	59,–						
19.5	214	140	0.28	1	101005 1950	62,–						
20.0	214	140	0.28	1	101005 2000	57,–						
					1104			1137			1104	

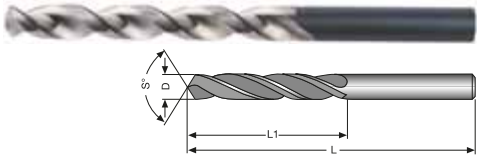


Sets

D mm	Number of drills	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101035** 0001	126,50	**101048** 0001	149,–
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101035 0002	265,–	101048 0002	315,–
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101035 0003	78,50	101048 0003	92,50
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101035 0004	165,–	101048 0004	205,–
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: 3.3 - 4.2 - 6.8 - 10.2 mm Ø	24	101035 0005	106,50	101048 0005	133,50
		1104		1104	

ATORN® Twist drill bit

HSS | DIN 338 | Typ TLP | 130° | 38° | 5xD | Nit. | Vc/fz | 10-249



- **Self-centring**
- Optimised chip flute profile for excellent chip removal
- Nitrided chamfers from ø 2.4 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
		● 25-28	● 20-22					● 22-25	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● steel < 1000 N/mm²

D h8 mm	L mm	L1 mm	Feed f mm/rev		art.no.	€
1.0	34	12	0.03	10	**101011** 0100	2,18
1.1	36	14	0.04	10	101011 0110	2,12
1.2	38	16	0.04	10	101011 0120	2,18
1.3	38	16	0.04	10	101011 0130	2,18
1.4	40	18	0.04	10	101011 0140	2,18
1.5	40	18	0.04	10	101011 0150	2,20
1.6	43	20	0.04	10	101011 0160	2,20
1.7	43	20	0.04	10	101011 0170	2,20
1.8	46	22	0.04	10	101011 0180	2,20
1.9	46	22	0.04	10	101011 0190	2,20
2.0	49	24	0.04	10	101011 0200	2,36
2.1	49	24	0.04	10	101011 0210	2,36
2.2	53	27	0.04	10	101011 0220	2,36
2.3	53	27	0.04	10	101011 0230	2,36
2.4	57	30	0.04	10	101011 0240	2,36
2.5	57	30	0.04	10	101011 0250	2,42
2.6	57	30	0.09	10	101011 0260	2,42
2.7	61	33	0.09	10	101011 0270	2,50
2.8	61	33	0.09	10	101011 0280	2,50
2.9	61	33	0.09	10	101011 0290	2,50
3.0	61	33	0.09	10	101011 0300	2,42
3.1	65	36	0.09	10	101011 0310	2,50
3.2	65	36	0.09	10	101011 0320	2,50
3.3	65	36	0.09	10	101011 0330	2,55
3.4	70	39	0.09	10	101011 0340	2,83
3.5	70	39	0.09	10	101011 0350	2,76
3.6	70	39	0.09	10	101011 0360	2,76
3.7	70	39	0.09	10	101011 0370	2,83
3.8	75	43	0.09	10	101011 0380	3,08
3.9	75	43	0.09	10	101011 0390	3,08
4.0	75	43	0.09	10	101011 0400	2,95
4.1	75	43	0.09	10	101011 0410	3,08
4.2	75	43	0.09	10	101011 0420	3,08
4.3	80	47	0.09	10	101011 0430	3,13
4.4	80	47	0.09	10	101011 0440	3,13
4.5	80	47	0.09	10	101011 0450	3,04
4.6	80	47	0.09	10	101011 0460	3,13
4.7	80	47	0.09	10	101011 0470	3,13
4.8	86	52	0.09	10	101011 0480	3,13
4.9	86	52	0.09	10	101011 0490	3,18
5.0	86	52	0.09	10	101011 0500	3,18
5.1	86	52	0.13	10	101011 0510	3,36
5.2	86	52	0.13	10	101011 0520	3,36
5.3	86	52	0.13	10	101011 0530	3,36
5.4	93	57	0.13	10	101011 0540	3,68
5.5	93	57	0.13	10	101011 0550	3,49
5.6	93	57	0.13	10	101011 0560	3,95
5.7	93	57	0.13	10	101011 0570	3,95

1104

● steel < 1000 N/mm²

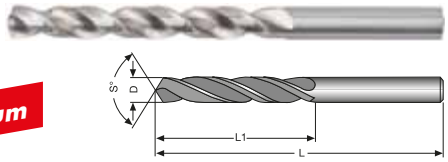
D h8 mm	L mm	L1 mm	Feed f mm/rev		art.no.	€
5.8	93	57	0.13	10	101011 0580	3,95
5.9	93	57	0.13	10	101011 0590	3,95
6.0	93	57	0.13	10	101011 0600	3,84
6.1	101	63	0.13	1	101011 0610	4,38
6.2	101	63	0.13	1	101011 0620	4,38
6.3	101	63	0.13	1	101011 0630	4,38
6.4	101	63	0.13	1	101011 0640	4,28
6.5	101	63	0.13	1	101011 0650	4,38
6.6	101	63	0.13	1	101011 0660	4,86
6.7	101	63	0.13	1	101011 0670	4,86
6.8	109	69	0.13	1	101011 0680	5,75
6.9	109	69	0.13	1	101011 0690	5,75
7.0	109	69	0.13	1	101011 0700	5,65
7.1	109	69	0.13	1	101011 0710	6,95
7.2	109	69	0.13	1	101011 0720	6,95
7.3	109	69	0.13	1	101011 0730	6,95
7.4	109	69	0.13	1	101011 0740	6,95
7.5	109	69	0.13	1	101011 0750	5,90
7.6	117	75	0.13	1	101011 0760	7,60
7.7	117	75	0.13	1	101011 0770	7,60
7.8	117	75	0.13	1	101011 0780	7,60
7.9	117	75	0.13	1	101011 0790	7,60
8.0	117	75	0.13	1	101011 0800	6,20
8.1	117	75	0.18	1	101011 0810	7,60
8.2	117	75	0.18	1	101011 0820	7,60
8.3	117	75	0.18	1	101011 0830	7,60
8.4	117	75	0.18	1	101011 0840	7,35
8.5	117	75	0.18	1	101011 0850	6,60
8.6	125	81	0.18	1	101011 0860	8,90
8.7	125	81	0.18	1	101011 0870	8,90
8.8	125	81	0.18	1	101011 0880	8,90
8.9	125	81	0.18	1	101011 0890	8,90
9.0	125	81	0.18	1	101011 0900	7,65
9.1	125	81	0.18	1	101011 0910	9,35
9.2	125	81	0.18	1	101011 0920	9,35
9.3	125	81	0.18	1	101011 0930	9,75
9.4	125	81	0.18	1	101011 0940	9,75
9.5	125	81	0.18	1	101011 0950	8,50
9.6	133	87	0.18	1	101011 0960	10,70
9.7	133	87	0.18	1	101011 0970	10,70
9.8	133	87	0.18	1	101011 0980	10,70
9.9	133	87	0.18	1	101011 0990	10,70
10.0	133	87	0.18	1	101011 1000	9,65
10.2	133	87	0.18	1	101011 1020	12,50
10.5	133	87	0.18	1	101011 1050	12,50
11.0	142	94	0.18	1	101011 1100	14,40
11.5	142	94	0.18	1	101011 1150	16,40
12.0	151	101	0.18	1	101011 1200	17,–

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ATORN® Twist drill bit

HSS | DIN 338 | Typ W | 130° | 27° | 5xD | Vc/fz | 10-250

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



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
													● 70-80	● 60-70	● 30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	L mm	L1 mm	● Feed f aluminium < 8 % Si mm/rev		art.no.	€
1.0	34	12	0.05	10	**101017** 0100	2,62
1.2	38	16	0.05	10	101017 0120	2,60
1.5	40	18	0.05	10	101017 0150	2,60
1.6	43	20	0.05	10	101017 0160	2,36
1.7	43	20	0.05	10	101017 0170	2,45
1.8	46	22	0.05	10	101017 0180	2,43
1.9	46	22	0.05	10	101017 0190	2,43
2.0	49	24	0.05	10	101017 0200	1,82
2.1	49	24	0.05	10	101017 0210	2,23
2.2	53	27	0.05	10	101017 0220	2,23
2.3	53	27	0.05	10	101017 0230	2,23
2.4	57	30	0.05	10	101017 0240	2,35
2.5	57	30	0.05	10	101017 0250	1,98
2.6	57	30	0.05	10	101017 0260	2,42
2.7	61	33	0.05	10	101017 0270	2,48
2.8	61	33	0.05	10	101017 0280	2,71
3.0	61	33	0.09	10	101017 0300	2,07
3.1	65	36	0.09	10	101017 0310	2,71
3.2	65	36	0.09	10	101017 0320	2,44
3.3	65	36	0.09	10	101017 0330	2,48
3.4	70	39	0.09	10	101017 0340	2,73
3.5	70	39	0.09	10	101017 0350	2,52
3.6	70	39	0.09	10	101017 0360	2,73
3.7	70	39	0.09	10	101017 0370	2,78
3.8	75	43	0.09	10	101017 0380	3,–
3.9	75	43	0.09	10	101017 0390	3,–
4.0	75	43	0.09	10	101017 0400	2,49
4.1	75	43	0.09	10	101017 0410	3,–
4.2	75	43	0.09	10	101017 0420	2,71
4.3	80	47	0.09	10	101017 0430	3,67
4.5	80	47	0.09	10	101017 0450	3,28
4.8	86	52	0.09	10	101017 0480	3,67
4.9	86	52	0.09	10	101017 0490	3,67

1104

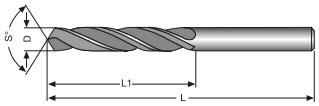
D h8 mm	L mm	L1 mm	● Feed f aluminium < 8 % Si mm/rev		art.no.	€
5.0	86	52	0.09	10	101017 0500	3,37
5.2	86	52	0.13	10	101017 0520	4,04
5.3	86	52	0.13	10	101017 0530	4,04
5.5	93	57	0.13	10	101017 0550	4,–
5.6	93	57	0.13	10	101017 0560	4,74
5.7	93	57	0.13	10	101017 0570	4,74
5.8	93	57	0.13	10	101017 0580	4,74
5.9	93	57	0.13	10	101017 0590	4,74
6.0	93	57	0.13	1	101017 0600	4,43
6.1	101	63	0.13	1	101017 0610	4,74
6.2	101	63	0.13	1	101017 0620	4,74
6.3	101	63	0.13	1	101017 0630	4,83
6.5	101	63	0.13	1	101017 0650	4,83
6.6	101	63	0.13	1	101017 0660	5,90
6.8	109	69	0.13	1	101017 0680	6,30
7.0	109	69	0.13	1	101017 0700	6,05
7.5	109	69	0.13	1	101017 0750	6,65
8.0	117	75	0.13	1	101017 0800	9,80
8.1	117	75	0.13	1	101017 0810	10,40
8.2	117	75	0.18	1	101017 0820	10,75
8.4	117	75	0.18	1	101017 0840	11,50
8.5	117	75	0.18	1	101017 0850	8,45
9.0	125	81	0.18	1	101017 0900	8,65
9.5	125	81	0.18	1	101017 0950	10,75
10.0	133	87	0.18	1	101017 1000	10,75
10.5	133	87	0.18	1	101017 1050	13,90
11.0	142	94	0.18	1	101017 1100	16,50
12.0	151	101	0.18	1	101017 1200	20,–
12.5	151	101	0.22	1	101017 1250	20,–
13.0	151	101	0.22	1	101017 1300	23,50
13.5	160	108	0.22	1	101017 1350	29,20
14.0	160	108	0.22	1	101017 1400	27,–

1104

ATORN® SARA® Twist drill bit

HSS-E | DIN 338 | Typ N | Typ NV | 118° | 130° | 27° | 35° | 5xD | Vap. | Vc/fz | 10-248

- 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
- 101410.... 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....	● 25-38	● 20-22		○ 12-14	○ 10-12		● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
101010....	● 30-35	● 20-22	○ 12-15	● 10-14	○ 10-12				● 6-9	○ 6-8								
101410....	● 30-35	● 20-22	○ 12-15	○ 10-14	○ 10-12				● 6-9	○ 6-8								

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

D h8 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev		ATORN® Type N, 118°, vap. art.no.	€		ATORN® Type NV, 130°, blank art.no.	€		SARA® Type N, 130°, blank art.no.	€
1.0	34	12	0.03	10	**101006** 0100	2,08	10	**101010** 0100	2,19	10	**101410** 0100	1,65
1.1	36	14	0.04	10	101006 0110	2,08	10	101010 0110	2,19	10	101410 0110	1,69
1.2	38	16	0.04	10	101006 0120	2,08	10	101010 0120	2,19	10	101410 0120	1,64
1.3	38	16	0.04	10	101006 0130	2,08	10	101010 0130	2,19	10	101410 0130	1,69
1.4	40	18	0.04	10	101006 0140	2,08	10	101010 0140	2,19	10	101410 0140	1,68
1.5	40	18	0.04	10	101006 0150	2,10	10	101010 0150	2,21	10	101410 0150	1,69
1.6	43	20	0.04	10	101006 0160	2,10	10	101010 0160	2,21	10	101410 0160	1,71
1.7	43	20	0.04	10	101006 0170	2,03	10	101010 0170	2,14	10	101410 0170	1,69
1.8	46	22	0.04	10	101006 0180	2,09	10	101010 0180	2,20	10	101410 0180	1,69
1.9	46	22	0.04	10	101006 0190	2,09	10	101010 0190	2,20	10	101410 0190	1,55
2.0	49	24	0.04	10	101006 0200	2,22	10	101010 0200	2,33	10	101410 0200	1,68
2.1	49	24	0.04	10	101006 0210	2,22	10	101010 0210	2,33	10	101410 0210	1,78
2.2	53	27	0.04	10	101006 0220	2,22	10	101010 0220	2,33	10	101410 0220	1,81
2.3	53	27	0.04	10	101006 0230	2,22	10	101010 0230	2,33	10	101410 0230	1,81
2.4	57	30	0.04	10	101006 0240	2,22	10	101010 0240	2,33	10	101410 0240	1,81
2.5	57	30	0.09	10	101006 0250	2,29	10	101010 0250	2,42	10	101410 0250	1,86
2.6	57	30	0.09	10	101006 0260	2,29	10	101010 0260	2,42	10	101410 0260	1,87
2.7	61	33	0.09	10	101006 0270	2,38	10	101010 0270	2,50	10	101410 0270	1,87
2.8	61	33	0.09	10	101006 0280	2,38	10	101010 0280	2,50	10	101410 0280	1,91
2.9	61	33	0.09	10	101006 0290	2,38	10	101010 0290	2,50	10	101410 0290	1,91
3.0	61	33	0.09	10	101006 0300	2,29	10	101010 0300	2,42	10	101410 0300	1,81
3.1	65	36	0.09	10	101006 0310	2,38	10	101010 0310	2,50	10	101410 0310	1,93
3.2	65	36	0.09	10	101006 0320	2,38	10	101010 0320	2,50	10	101410 0320	1,87
3.3	65	36	0.09	10	101006 0330	2,42	10	101010 0330	2,54	10	101410 0330	1,90
3.4	70	39	0.09	10	101006 0340	2,66	10	101010 0340	2,80	10	101410 0340	1,99
3.5	70	39	0.09	10	101006 0350	2,61	10	101010 0350	2,75	10	101410 0350	1,87
3.6	70	39	0.09	10	101006 0360	2,66	10	101010 0360	2,80	10	101410 0360	2,19
3.7	70	39	0.09	10	101006 0370	2,66	10	101010 0370	2,80	10	101410 0370	1,99
3.8	75	43	0.09	10	101006 0380	2,92	10	101010 0380	3,08	10	101410 0380	2,38
3.9	75	43	0.09	10	101006 0390	2,92	10	101010 0390	3,08	10	101410 0390	2,25
4.0	75	43	0.09	10	101006 0400	2,75	10	101010 0400	2,89	10	101410 0400	2,24
4.1	75	43	0.09	10	101006 0410	2,93	10	101010 0410	3,09	10	101410 0410	2,35
4.2	75	43	0.09	10	101006 0420	2,93	10	101010 0420	3,09	10	101410 0420	2,19
4.3	80	47	0.09	10	101006 0430	2,98	10	101010 0430	3,14	10	101410 0430	2,46
4.4	80	47	0.09	10	101006 0440	2,98	10	101010 0440	3,14	10	101410 0440	2,46
4.5	80	47	0.09	10	101006 0450	2,97	10	101010 0450	3,13	10	101410 0450	2,19
4.6	80	47	0.09	10	101006 0460	2,98	10	101010 0460	3,14	10	101410 0460	2,46
4.7	80	47	0.09	10	101006 0470	2,98	10	101010 0470	3,14	10	101410 0470	2,40
4.8	86	52	0.09	10	101006 0480	2,98	10	101010 0480	3,14	10	101410 0480	2,46
4.9	86	52	0.09	10	101006 0490	3,01	10	101010 0490	3,18	10	101410 0490	2,46
5.0	86	52	0.09	10	101006 0500	3,01	10	101010 0500	3,19	10	101410 0500	2,28
5.1	86	52	0.13	10	101006 0510	3,16	10	101010 0510	3,32			
5.2	86	52	0.13	10	101006 0520	3,16	10	101010 0520	3,32			
5.3	86	52	0.13	10	101006 0530	3,16	10	101010 0530	3,32			
5.4	93	57	0.13	10	101006 0540	3,46	10	101010 0540	3,64			
5.5	93	57	0.13	10	101006 0550	3,33	10	101010 0550	3,50	10	101410 0550	2,51
5.6	93	57	0.13	10	101006 0560	3,74	10	101010 0560	3,93			
					1104			1104			1137	


HSS-E, vapour-treated


HSS-E, bare surface

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® Type N, 118°, vap.			ATORN® Type NV, 130°, blank			SARA® Type N, 130°, blank		
					art.no.	€		art.no.	€		art.no.	€
5.7	93	57	0.13	10	101006 0570	3,74	10	101010 0570	3,93			
5.8	93	57	0.13	10	101006 0580	3,74	10	101010 0580	3,93			
5.9	93	57	0.13	10	101006 0590	3,74	10	101010 0590	3,93			
6.0	93	57	0.13	1	101006 0600	3,64	10	101010 0600	3,84	1	101410 0600	2,71
6.1	101	63	0.13	1	101006 0610	4,15	1	101010 0610	4,38			
6.2	101	63	0.13	1	101006 0620	4,15	1	101010 0620	4,37			
6.3	101	63	0.13	1	101006 0630	4,15	1	101010 0630	4,37			
6.4	101	63	0.13	1	101006 0640	4,15	1	101010 0640	4,37			
6.5	101	63	0.13	1	101006 0650	4,11	1	101010 0650	4,32	1	101410 0650	3,32
6.6	101	63	0.13	1	101006 0660	4,47	1	101010 0660	4,70			
6.7	101	63	0.13	1	101006 0670	4,47	1	101010 0670	4,70			
6.8	109	69	0.13	1	101006 0680	5,25	1	101010 0680	5,60	1	101410 0680	4,29
6.9	109	69	0.13	1	101006 0690	5,25	1	101010 0690	5,55			
7.0	109	69	0.13	1	101006 0700	5,25	1	101010 0700	5,55	1	101410 0700	4,25
7.1	109	69	0.13	1	101006 0710	6,50	1	101010 0710	6,85			
7.2	109	69	0.13	1	101006 0720	6,50	1	101010 0720	6,85			
7.3	109	69	0.13	1	101006 0730	6,50	1	101010 0730	6,85			
7.4	109	69	0.13	1	101006 0740	6,50	1	101010 0740	6,85			
7.5	109	69	0.13	1	101006 0750	5,50	1	101010 0750	5,80	1	101410 0750	4,38
7.6	117	75	0.13	1	101006 0760	7,20	1	101010 0760	7,55			
7.7	117	75	0.13	1	101006 0770	7,20	1	101010 0770	7,55			
7.8	117	75	0.13	1	101006 0780	7,20	1	101010 0780	7,55			
7.9	117	75	0.13	1	101006 0790	7,20	1	101010 0790	7,55			
8.0	117	75	0.13	1	101006 0800	5,90	1	101010 0800	6,20	1	101410 0800	4,86
8.1	117	75	0.18	1	101006 0810	7,20	1	101010 0810	7,55			
8.2	117	75	0.18	1	101006 0820	7,20	1	101010 0820	7,55			
8.3	117	75	0.18	1	101006 0830	7,20	1	101010 0830	7,55			
8.4	117	75	0.18	1	101006 0840	7,20	1	101010 0840	7,55			
8.5	117	75	0.18	1	101006 0850	6,30	1	101010 0850	6,65	1	101410 0850	5,10
8.6	125	81	0.18	1	101006 0860	8,35	1	101010 0860	8,80			
8.7	125	81	0.18	1	101006 0870	8,35	1	101010 0870	8,80			
8.8	125	81	0.18	1	101006 0880	8,35	1	101010 0880	8,80			
8.9	125	81	0.18	1	101006 0890	8,35	1	101010 0890	8,80			
9.0	125	81	0.18	1	101006 0900	7,25	1	101010 0900	7,65	1	101410 0900	6,–
9.1	125	81	0.18	1	101006 0910	8,95	1	101010 0910	9,40			
9.2	125	81	0.18	1	101006 0920	8,95	1	101010 0920	9,40			
9.3	125	81	0.18	1	101006 0930	9,20	1	101010 0930	9,65			
9.4	125	81	0.18	1	101006 0940	9,20	1	101010 0940	9,65			
9.5	125	81	0.18	1	101006 0950	7,95	1	101010 0950	8,35	1	101410 0950	6,45
9.6	133	87	0.18	1	101006 0960	10,10	1	101010 0960	10,60			
9.7	133	87	0.18	1	101006 0970	10,10	1	101010 0970	10,60			
9.8	133	87	0.18	1	101006 0980	10,10	1	101010 0980	10,60			
9.9	133	87	0.18	1	101006 0990	10,10	1	101010 0990	10,60			
10.0	133	87	0.18	1	101006 1000	9,10	1	101010 1000	9,60	1	101410 1000	7,35
10.1	133	87	0.18	1	101006 1010	12,35						
10.2	133	87	0.18	1	101006 1020	11,70	1	101010 1020	12,35	1	101410 1020	8,75
10.3	133	87	0.18	1	101006 1030	19,–						
10.4	133	87	0.18	1	101006 1040	19,40						
10.5	133	87	0.18	1	101006 1050	11,70	1	101010 1050	12,35	1	101410 1050	8,50
10.6	133	87	0.18	1	101006 1060	24,70						
10.7	142	94	0.18	1	101006 1070	25,–						
10.8	142	94	0.18	1	101006 1080	23,30						
10.9	142	94	0.18	1	101006 1090	26,10						
11.0	142	94	0.18	1	101006 1100	13,80	1	101010 1100	14,55	1	101410 1100	11,30
11.1	142	94	0.18	1	101006 1110	27,40						
11.2	142	94	0.18	1	101006 1120	27,–						
11.3	142	94	0.18	1	101006 1130	29,90						
11.4	142	94	0.18	1	101006 1140	26,20						
11.5	142	94	0.18	1	101006 1150	15,40	1	101010 1150	16,20	1	101410 1150	12,70
11.6	142	94	0.18	1	101006 1160	31,–						
11.7	142	94	0.18	1	101006 1170	31,–						
11.8	142	94	0.18	1	101006 1180	22,40	1	101010 1180	23,50			
11.9	151	101	0.18	1	101006 1190	31,–						
					1104			1104			1137	

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® Type N, 118°, vap.			ATORN® Type NV, 130°, blank			SARA® Type N, 130°, blank		
					art.no.	€		art.no.	€		art.no.	€
12.0	151	101	0.18	1	101006 1200	16,20	1	101010 1200	17,10	1	101410 1200	13,40
12.1	151	101	0.22	1	101006 1210	31,–						
12.2	151	101	0.22	1	101006 1220	31,–	1	101010 1220	13,30			
12.3	151	101	0.22	1	101006 1230	23,10						
12.4	151	101	0.22	1	101006 1240	32,50						
12.5	151	101	0.22	1	101006 1250	19,50	1	101010 1250	20,50			
12.6	151	101	0.22	1	101006 1260	37,30						
12.7	151	101	0.22	1	101006 1270	23,10						
12.8	151	101	0.22	1	101006 1280	42,60						
12.9	151	101	0.22	1	101006 1290	37,30						
13.0	151	101	0.22	1	101006 1300	23,30	1	101010 1300	24,60	1	101410 1300	17,90
13.5	160	108	0.22	1	101006 1350	28,90	1	101010 1350	30,50			
13.75	160	108	0.22	1	101006 1375	58,50						
14.0	160	108	0.22	1	101006 1400	29,60	1	101010 1400	31,20			
14.5	169	114	0.22	1	101006 1450	36,30	1	101010 1450	38,30			
15.0	169	114	0.22	1	101006 1500	45,30	1	101010 1500	47,70			
15.25	178	120	0.22	1	101006 1525	71,–						
15.5	178	120	0.22	1	101006 1550	47,–	1	101010 1550	36,70			
15.75	178	120	0.22	1	101006 1575	74,–						
16.0	178	120	0.22	1	101006 1600	41,60	1	101010 1600	43,80			
16.5	187	125	0.28	1	101006 1650	79,–						
17.0	187	125	0.28	1	101006 1700	74,50						
17.5	196	130	0.28	1	101006 1750	109,–						
18.0	196	130	0.28	1	101006 1800	83,–						
18.5	205	135	0.28	1	101006 1850	76,–						
19.0	205	135	0.28	1	101006 1900	80,50						
19.5	214	140	0.28	1	101006 1950	81,–						
20.0	214	140	0.28	1	101006 2000	86,–						
					1104			1104			1137	

ATORN® Twist drill bit sets

HSS-E | DIN 338 | Typ N | Typ NV | 118° | 130° | 27° | 35° | 5xD | Vc/fz 10-248

- 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....	● 25-28	● 20-22		○ 12-14	○ 10-12		● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	101038....	● 30-35	● 20-22	○ 12-15	● 10-14	○ 10-12				● 6-9	○ 6-8								
	Cutting speed Vc m/min.																		

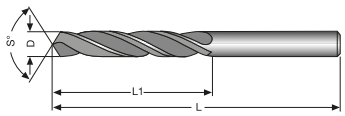
Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Number of drills	Type N, 118°, vap. art.no.	€	Type NV, 130°, blank art.no.	€	Empty case art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101036** 0001	158,–	**101038** 0001	166,50	**101039** 0001	25,10
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101036 0002	325,–	101038 0002	342,–	101039 0002	33,20
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101036 0003	91,50	101038 0003	96,–	101039 0003	10,40
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101036 0004	193,–	101038 0004	202,50	101039 0004	21,70
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: 3.3 - 4.2 - 6.8 - 10.2 mm Ø	24	101036 0005	134,–	101038 0005	140,50	101039 0005	33,70
		1104		1104		1104	

ATORN® Twist drill bit

HSS-E | DIN 338 | Typ TLP | 130° | 38° | 5xD | TiN | TiAlN | Nit. | Vc/fz | 10-248

- **Self-centring**
- 101013.... profile-ground, nitrided from Ø 2.4 mm
- 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
	101013....	● 30-35	● 22-28	○ 12-18	○ 12-16			● 28-35	○ 22-26				○ 60-70	○ 50-60	○ 30-60				
	101014....	● 35-40	● 30-35	○ 12-20	○ 14-18	○ 10-14		○ 28-35	○ 22-26										
	101012....	● 35-40	● 30-35	● 12-20	● 14-18	○ 10-14		● 30-40	○ 25-30				○ 75-90	○ 60-70	○ 30-60				
	Cutting speed Vc m/min.																		

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


HSS-E, bare surface


HSS-E, TiN


HSS-E, TiAlN

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Nitrided chamfers art.no.	€		TiN art.no.	€		TiAlN art.no.	€
1,0	34	12	0,04	10	**101013** 0100	2,57	10	**101014** 0100	4,99	10	**101012** 0100	6,65
1,1	36	14	0,04	10	101013 0110	2,51	10	101014 0110	5,10	10	101012 0110	6,80
1,2	38	16	0,04	10	101013 0120	2,57	10	101014 0120	5,10	10	101012 0120	6,80
1,3	38	16	0,04	10	101013 0130	2,57	10	101014 0130	5,10	10	101012 0130	6,80
1,4	40	18	0,04	10	101013 0140	2,57	10	101014 0140	5,10	10	101012 0140	6,80
1,5	40	18	0,04	10	101013 0150	2,60	10	101014 0150	4,69	10	101012 0150	6,25
1,6	43	20	0,04	10	101013 0160	2,60	10	101014 0160	5,10	10	101012 0160	6,80
1,7	43	20	0,04	10	101013 0170	2,60	10	101014 0170	5,10	10	101012 0170	6,80
1,8	46	22	0,04	10	101013 0180	2,60	10	101014 0180	5,10	10	101012 0180	6,80
1,9	46	22	0,04	10	101013 0190	2,60	10	101014 0190	5,10	10	101012 0190	6,80
2,0	49	24	0,04	10	101013 0200	2,78	10	101014 0200	4,87	10	101012 0200	6,50
2,1	49	24	0,04	10	101013 0210	2,78	10	101014 0210	4,99	10	101012 0210	6,65
2,2	53	27	0,04	10	101013 0220	2,78	10	101014 0220	4,99	10	101012 0220	6,65
2,3	53	27	0,04	10	101013 0230	2,78	10	101014 0230	4,99	10	101012 0230	6,65
2,4	57	30	0,04	10	101013 0240	2,78	10	101014 0240	4,99	10	101012 0240	6,65
2,5	57	30	0,09	10	101013 0250	2,85	10	101014 0250	4,99	10	101012 0250	6,65
2,6	57	30	0,09	10	101013 0260	2,85	10	101014 0260	4,99	10	101012 0260	6,65
2,7	61	33	0,09	10	101013 0270	2,95	10	101014 0270	5,10	10	101012 0270	6,80
2,8	61	33	0,09	10	101013 0280	2,95	10	101014 0280	5,10	10	101012 0280	6,80
2,9	61	33	0,09	10	101013 0290	2,95	10	101014 0290	5,10	10	101012 0290	6,80
3,0	61	33	0,09	10	101013 0300	2,85	10	101014 0300	4,99	10	101012 0300	6,65
3,1	65	36	0,09	10	101013 0310	2,95	10	101014 0310	5,10	10	101012 0310	6,80
3,2	65	36	0,09	10	101013 0320	2,95	10	101014 0320	5,10	10	101012 0320	6,80
3,3	65	36	0,09	10	101013 0330	3,01	10	101014 0330	5,20	10	101012 0330	6,95
3,4	70	39	0,09	10	101013 0340	3,33	10	101014 0340	5,65	10	101012 0340	7,50
3,5	70	39	0,09	10	101013 0350	3,25	10	101014 0350	5,65	10	101012 0350	7,45
3,6	70	39	0,09	10	101013 0360	3,25	10	101014 0360	5,65	10	101012 0360	7,50
3,7	70	39	0,09	10	101013 0370	3,33	10	101014 0370	5,65	10	101012 0370	7,50
3,8	75	43	0,09	10	101013 0380	3,63	10	101014 0380	6,10	10	101012 0380	8,10
3,9	75	43	0,09	10	101013 0390	3,63	10	101014 0390	6,10	10	101012 0390	8,10
4,0	75	43	0,09	10	101013 0400	3,48	10	101014 0400	5,80	10	101012 0400	7,70
4,1	75	43	0,09	10	101013 0410	3,63	10	101014 0410	6,10	10	101012 0410	8,10
4,2	75	43	0,09	10	101013 0420	3,63	10	101014 0420	6,10	10	101012 0420	8,10
4,3	80	47	0,09	10	101013 0430	3,69	10	101014 0430	6,15	10	101012 0430	8,20
4,4	80	47	0,09	10	101013 0440	3,69	10	101014 0440	6,15	10	101012 0440	8,20
4,5	80	47	0,09	10	101013 0450	3,59	10	101014 0450	6,–	10	101012 0450	8,–
4,6	80	47	0,09	10	101013 0460	3,69	10	101014 0460	6,15	10	101012 0460	8,20
4,7	80	47	0,09	10	101013 0470	3,69	10	101014 0470	6,15	10	101012 0470	8,20
4,8	86	52	0,09	10	101013 0480	3,69	10	101014 0480	6,70	10	101012 0480	8,95
4,9	86	52	0,09	10	101013 0490	3,75	10	101014 0490	6,70	10	101012 0490	8,95
5,0	86	52	0,09	10	101013 0500	3,75	10	101014 0500	6,70	10	101012 0500	8,95
					1104			1104			1104	

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Nitrided chamfers art.no.	€		TiN art.no.	€		TiAlN art.no.	€
5,1	86	52	0,13	10	101013 0510	3,96	10	101014 0510	7,–	10	101012 0510	9,35
5,2	86	52	0,13	10	101013 0520	3,96	10	101014 0520	7,–	10	101012 0520	9,35
5,3	86	52	0,13	10	101013 0530	3,96	10	101014 0530	7,–	10	101012 0530	9,35
5,4	93	57	0,13	10	101013 0540	4,35	10	101014 0540	7,50	10	101012 0540	10,05
5,5	93	57	0,13	10	101013 0550	4,12	10	101014 0550	7,30	10	101012 0550	9,75
5,6	93	57	0,13	10	101013 0560	4,66	10	101014 0560	7,85	10	101012 0560	10,45
5,7	93	57	0,13	10	101013 0570	4,66	10	101014 0570	7,85	10	101012 0570	10,45
5,8	93	57	0,13	10	101013 0580	4,66	10	101014 0580	7,85	10	101012 0580	10,45
5,9	93	57	0,13	10	101013 0590	4,66	10	101014 0590	7,55	10	101012 0590	10,10
6,0	93	57	0,13	10	101013 0600	4,53	10	101014 0600	7,75	10	101012 0600	10,35
6,1	101	63	0,13	1	101013 0610	5,20	1	101014 0610	9,40	1	101012 0610	12,55
6,2	101	63	0,13	1	101013 0620	5,20	1	101014 0620	8,70	1	101012 0620	11,60
6,3	101	63	0,13	1	101013 0630	5,20	1	101014 0630	8,05	1	101012 0630	10,70
6,4	101	63	0,13	1	101013 0640	5,05	1	101014 0640	7,40	1	101012 0640	9,85
6,5	101	63	0,13	1	101013 0650	5,20	1	101014 0650	10,05	1	101012 0650	13,35
6,6	101	63	0,13	1	101013 0660	5,75	1	101014 0660	10,40	1	101012 0660	13,85
6,7	101	63	0,13	1	101013 0670	5,75	1	101014 0670	10,40	1	101012 0670	13,85
6,8	109	69	0,13	1	101013 0680	6,75	1	101014 0680	11,50	1	101012 0680	15,30
6,9	109	69	0,13	1	101013 0690	6,75	1	101014 0690	11,50	1	101012 0690	15,30
7,0	109	69	0,13	1	101013 0700	6,65	1	101014 0700	11,50	1	101012 0700	15,30
7,1	109	69	0,13	1	101013 0710	8,25	1	101014 0710	13,30	1	101012 0710	17,70
7,2	109	69	0,13	1	101013 0720	8,25	1	101014 0720	13,30	1	101012 0720	17,70
7,3	109	69	0,13	1	101013 0730	8,25	1	101014 0730	13,30	1	101012 0730	17,70
7,4	109	69	0,13	1	101013 0740	8,25	1	101014 0740	13,30	1	101012 0740	17,70
7,5	109	69	0,13	1	101013 0750	6,95	1	101014 0750	12,40	1	101012 0750	16,50
7,6	117	75	0,13	1	101013 0760	8,95	1	101014 0760	14,25	1	101012 0760	19,–
7,7	117	75	0,13	1	101013 0770	8,95	1	101014 0770	14,25	1	101012 0770	19,–
7,8	117	75	0,13	1	101013 0780	8,95	1	101014 0780	14,25	1	101012 0780	19,–
7,9	117	75	0,13	1	101013 0790	8,95	1	101014 0790	14,25	1	101012 0790	19,–
8,0	117	75	0,13	1	101013 0800	7,30	1	101014 0800	13,20	1	101012 0800	17,60
8,1	117	75	0,18	1	101013 0810	8,95	1	101014 0810	14,25	1	101012 0810	19,–
8,2	117	75	0,18	1	101013 0820	8,95	1	101014 0820	14,25	1	101012 0820	19,–
8,3	117	75	0,18	1	101013 0830	8,95	1	101014 0830	14,25	1	101012 0830	19,–
8,4	117	75	0,18	1	101013 0840	8,70	1	101014 0840	14,25	1	101012 0840	19,–
8,5	117	75	0,18	1	101013 0850	7,80	1	101014 0850	13,–	1	101012 0850	17,30
8,6	125	81	0,18	1	101013 0860	10,50	1	101014 0860	16,30	1	101012 0860	21,70
8,7	125	81	0,18	1	101013 0870	10,50	1	101014 0870	16,30	1	101012 0870	21,70
8,8	125	81	0,18	1	101013 0880	10,50	1	101014 0880	16,30	1	101012 0880	21,70
8,9	125	81	0,18	1	101013 0890	10,50	1	101014 0890	16,30	1	101012 0890	21,70
9,0	125	81	0,18	1	101013 0900	9,–	1	101014 0900	15,–	1	101012 0900	20,10
9,1	125	81	0,18	1	101013 0910	11,05	1	101014 0910	16,70	1	101012 0910	22,30
9,2	125	81	0,18	1	101013 0920	11,05	1	101014 0920	16,70	1	101012 0920	22,30
9,3	125	81	0,18	1	101013 0930	11,50	1	101014 0930	16,70	1	101012 0930	22,30
9,4	125	81	0,18	1	101013 0940	11,50	1	101014 0940	16,70	1	101012 0940	22,30
9,5	125	81	0,18	1	101013 0950	10,05	1	101014 0950	16,10	1	101012 0950	21,40
9,6	133	87	0,18	1	101013 0960	12,65	1	101014 0960	19,–	1	101012 0960	25,30
9,7	133	87	0,18	1	101013 0970	12,65	1	101014 0970	19,–	1	101012 0970	25,30
9,8	133	87	0,18	1	101013 0980	12,65	1	101014 0980	19,–	1	101012 0980	25,30
9,9	133	87	0,18	1	101013 0990	12,65	1	101014 0990	19,–	1	101012 0990	25,30
10,0	133	87	0,18	1	101013 1000	11,40	1	101014 1000	17,10	1	101012 1000	22,80
10,2	133	87	0,18	1	101013 1020	14,75	1	101014 1020	19,60	1	101012 1020	26,20
10,5	133	87	0,18	1	101013 1050	14,75	1	101014 1050	19,60	1	101012 1050	26,20
11,0	142	94	0,18	1	101013 1100	17,–	1	101014 1100	21,50	1	101012 1100	28,60
11,5	142	94	0,18	1	101013 1150	19,30	1	101014 1150	22,–	1	101012 1150	29,40
11,8	142	94	0,18	1	101013 1180	27,80	1	101014 1180	23,30	1	101012 1180	31,10
12,0	151	101	0,18	1	101013 1200	20,10	1	101014 1200	23,30	1	101012 1200	31,10
12,5	151	101	0,22				1	101014 1250	25,30	1	101012 1250	33,70
13,0	151	101	0,22				1	101014 1300	25,70	1	101012 1300	34,30
13,5	160	108	0,22				1	101014 1350	35,90	1	101012 1350	47,80
14,0	160	108	0,22				1	101014 1400	32,70	1	101012 1400	43,60
14,5	169	114	0,22				1	101014 1450	56,–			
15,0	169	114	0,22				1	101014 1500	39,50	1	101012 1500	52,50
15,5	178	120	0,22				1	101014 1550	76,–			
16,0	178	120	0,22				1	101014 1600	47,10	1	101012 1600	63,–
					1104			1104			1104	

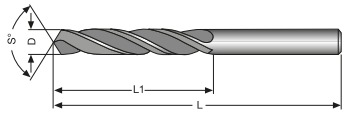
ATORN® Twist drill UNI

HSS-E | DIN 338 | Typ U | 130° | 38° | 5xD | Vc/fz | 10-248

- Special point thinning
- Self-centring
- 4-facet grinding
- **For universal applications**
- Smooth operation
- **Low torque**
- Optimum chip removal with round groove profile



Universal multi-purpose drill bit



10

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
		● 20-32	● 13-16	○ 10-15	● 12-14	● 10-12		● 28-35	○ 30-36				● 40-55	○ 30-35	○ 25-35				
	Cutting speed Vc m/min.																		

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

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	34	12	0.02	10	**101040** 0100	2,94
1.1	36	14	0.04	10	101040 0110	3,05
1.2	38	16	0.04	10	101040 0120	3,05
1.3	38	16	0.04	10	101040 0130	3,05
1.4	40	18	0.04	10	101040 0140	3,05
1.5	40	18	0.04	10	101040 0150	2,94
1.6	43	20	0.04	10	101040 0160	3,05
1.7	43	20	0.04	10	101040 0170	3,05
1.8	46	22	0.04	10	101040 0180	3,05
1.9	46	22	0.04	10	101040 0190	3,05
2.0	49	24	0.05	10	101040 0200	2,94
2.1	49	24	0.05	10	101040 0210	3,05
2.2	53	27	0.05	10	101040 0220	3,05
2.3	53	27	0.05	10	101040 0230	3,05
2.4	57	30	0.05	10	101040 0240	3,05
2.5	57	30	0.06	10	101040 0250	3,05
2.6	57	30	0.06	10	101040 0260	3,15
2.7	61	33	0.06	10	101040 0270	3,47
2.8	61	33	0.06	10	101040 0280	3,47
2.9	61	33	0.06	10	101040 0290	3,47
3.0	61	33	0.06	10	101040 0300	3,05
3.1	65	36	0.08	10	101040 0310	3,47
3.2	65	36	0.08	10	101040 0320	3,47
3.3	65	36	0.08	10	101040 0330	3,36
3.4	70	39	0.08	10	101040 0340	3,78
3.5	70	39	0.08	10	101040 0350	3,78
3.6	70	39	0.08	10	101040 0360	3,78
3.7	70	39	0.08	10	101040 0370	3,78
3.8	75	43	0.08	10	101040 0380	4,10
3.9	75	43	0.08	10	101040 0390	4,10
4.0	75	43	0.10	10	101040 0400	3,83
4.1	75	43	0.10	10	101040 0410	4,10
4.2	75	43	0.10	10	101040 0420	3,99
4.3	80	47	0.10	10	101040 0430	4,10
4.4	80	47	0.10	10	101040 0440	4,20
4.5	80	47	0.10	10	101040 0450	4,10
4.6	80	47	0.10	10	101040 0460	4,20
4.7	80	47	0.10	10	101040 0470	4,20
4.8	86	52	0.10	10	101040 0480	4,20
4.9	86	52	0.10	10	101040 0490	4,31
5.0	86	52	0.10	10	101040 0500	4,20
5.1	86	52	0.10	10	101040 0510	4,31
5.2	86	52	0.10	10	101040 0520	4,31
5.3	86	52	0.10	10	101040 0530	4,31
5.4	93	57	0.10	10	101040 0540	4,94
5.5	93	57	0.10	10	101040 0550	4,88
5.6	93	57	0.10	10	101040 0560	5,45
5.7	93	57	0.10	10	101040 0570	5,45
5.8	93	57	0.10	10	101040 0580	5,45
5.9	93	57	0.10	10	101040 0590	5,45
6.0	93	57	0.10	1	101040 0600	5,25
6.1	101	63	0.12	1	101040 0610	6,10
6.2	101	63	0.12	1	101040 0620	6,10

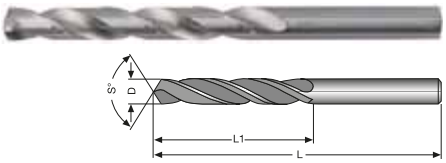
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
6.3	101	63	0.12	1	101040 0630	6,10
6.4	101	63	0.12	1	101040 0640	6,10
6.5	101	63	0.12	1	101040 0650	5,90
6.6	101	63	0.12	1	101040 0660	6,50
6.7	101	63	0.12	1	101040 0670	6,50
6.8	109	69	0.12	1	101040 0680	7,35
6.9	109	69	0.12	1	101040 0690	7,55
7.0	109	69	0.13	1	101040 0700	7,35
7.1	109	69	0.13	1	101040 0710	9,05
7.2	109	69	0.13	1	101040 0720	9,05
7.3	109	69	0.13	1	101040 0730	9,05
7.4	109	69	0.13	1	101040 0740	9,05
7.5	109	69	0.13	1	101040 0750	7,55
7.6	117	75	0.13	1	101040 0760	9,65
7.7	117	75	0.13	1	101040 0770	9,65
7.8	117	75	0.13	1	101040 0780	9,65
7.9	117	75	0.13	1	101040 0790	9,65
8.0	117	75	0.16	1	101040 0800	8,–
8.1	117	75	0.16	1	101040 0810	9,65
8.2	117	75	0.16	1	101040 0820	9,65
8.3	117	75	0.16	1	101040 0830	9,65
8.4	117	75	0.16	1	101040 0840	9,65
8.5	117	75	0.16	1	101040 0850	8,40
8.6	125	81	0.16	1	101040 0860	12,80
8.7	125	81	0.16	1	101040 0870	13,25
8.8	125	81	0.16	1	101040 0880	11,55
8.9	125	81	0.16	1	101040 0890	13,85
9.0	125	81	0.18	1	101040 0900	9,65
9.1	125	81	0.18	1	101040 0910	14,70
9.2	125	81	0.18	1	101040 0920	14,70
9.3	125	81	0.18	1	101040 0930	12,60
9.4	125	81	0.18	1	101040 0940	14,90
9.5	125	81	0.18	1	101040 0950	10,90
9.6	133	87	0.18	1	101040 0960	16,–
9.7	133	87	0.18	1	101040 0970	16,–
9.8	133	87	0.18	1	101040 0980	14,05
9.9	133	87	0.18	1	101040 0990	16,60
10.0	133	87	0.20	1	101040 1000	12,20
10.2	133	87	0.20	1	101040 1020	16,20
10.5	133	87	0.20	1	101040 1050	16,60
11.0	142	94	0.20	1	101040 1100	18,70
11.5	142	94	0.20	1	101040 1150	21,40
12.0	151	101	0.20	1	101040 1200	21,80
12.5	151	101	0.20	1	101040 1250	27,10
13.0	151	101	0.20	1	101040 1300	30,90

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ATORN® Twist drill bit

HSS-E | DIN 338 | Typ NV | 135° | 30° | 5xD | Vc/fz | 10-250



- Self-centring
- **With reinforced core**
- HSS cutting material with increased heat 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
		● 30-35	● 22-28	○ 12-18	● 12-16	○ 10-14		○ 28-35	○ 22-26	○ 6-9	○ 6-8		○ 70-80	○ 60-70	○ 30-60		○ 3-4		
	Cutting speed Vc m/min.																		

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

D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
1.0	34	12	0.04	10	**101016** 0100	1,82
1.1	36	14	0.04	10	101016 0110	1,93
1.2	38	16	0.04	10	101016 0120	1,83
1.3	38	16	0.04	10	101016 0130	2,18
1.4	40	18	0.04	10	101016 0140	1,93
1.5	40	18	0.04	10	101016 0150	1,88
1.6	43	20	0.04	10	101016 0160	1,88
1.7	43	20	0.04	10	101016 0170	1,93
1.8	46	22	0.04	10	101016 0180	2,18
1.9	46	22	0.04	10	101016 0190	2,29
2.0	49	24	0.04	10	101016 0200	1,93
2.1	49	24	0.04	10	101016 0210	2,29
2.2	53	27	0.04	10	101016 0220	2,29
2.3	53	27	0.04	10	101016 0230	2,49
2.4	57	30	0.04	10	101016 0240	2,13
2.5	57	30	0.04	10	101016 0250	1,88
2.6	57	30	0.04	10	101016 0260	2,29
2.7	61	33	0.04	10	101016 0270	2,64
2.8	61	33	0.04	10	101016 0280	2,38
2.9	61	33	0.04	10	101016 0290	2,54
3.0	61	33	0.05	10	101016 0300	2,13
3.1	65	36	0.05	10	101016 0310	2,29
3.2	65	36	0.05	10	101016 0320	1,88
3.3	65	36	0.05	10	101016 0330	1,88
3.4	70	39	0.05	10	101016 0340	2,38
3.5	70	39	0.05	10	101016 0350	2,03
3.6	70	39	0.05	10	101016 0360	2,79
3.7	70	39	0.05	10	101016 0370	3,30
3.8	75	43	0.05	10	101016 0380	2,74
3.9	75	43	0.05	10	101016 0390	3,15
4.0	75	43	0.05	10	101016 0400	2,43
4.1	75	43	0.05	10	101016 0410	2,64
4.2	75	43	0.05	10	101016 0420	2,79
4.3	80	47	0.05	10	101016 0430	3,15
4.4	80	47	0.05	10	101016 0440	3,35
4.5	80	47	0.05	10	101016 0450	2,69
4.6	80	47	0.05	10	101016 0460	3,30
4.7	80	47	0.05	10	101016 0470	3,66
4.8	86	52	0.05	10	101016 0480	3,35
4.9	86	52	0.05	10	101016 0490	4,16
5.0	86	52	0.05	10	101016 0500	3,04
5.1	86	52	0.08	10	101016 0510	3,40
5.2	86	52	0.08	10	101016 0520	3,96
5.3	86	52	0.08	10	101016 0530	4,16
5.4	93	57	0.08	10	101016 0540	4,62
5.5	93	57	0.08	10	101016 0550	4,26
5.6	93	57	0.08	10	101016 0560	5,05
5.7	93	57	0.08	10	101016 0570	4,97
5.8	93	57	0.08	10	101016 0580	4,92
5.9	93	57	0.08	10	101016 0590	4,87

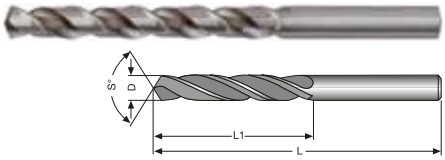
1104

D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
6.0	93	57	0.08	10	101016 0600	3,96
6.1	101	63	0.08	1	101016 0610	5,40
6.2	101	63	0.08	1	101016 0620	5,75
6.3	101	63	0.08	1	101016 0630	5,85
6.4	101	63	0.08	1	101016 0640	5,85
6.5	101	63	0.08	1	101016 0650	5,05
6.6	101	63	0.08	1	101016 0660	5,45
6.7	101	63	0.08	1	101016 0670	5,85
6.8	109	69	0.08	1	101016 0680	5,20
6.9	109	69	0.08	1	101016 0690	6,70
7.0	109	69	0.08	1	101016 0700	5,30
7.1	109	69	0.08	1	101016 0710	7,45
7.2	109	69	0.08	1	101016 0720	7,95
7.3	109	69	0.08	1	101016 0730	7,70
7.4	109	69	0.08	1	101016 0740	9,45
7.5	109	69	0.08	1	101016 0750	6,50
7.6	117	75	0.08	1	101016 0760	10,–
7.7	117	75	0.08	1	101016 0770	10,25
7.8	117	75	0.08	1	101016 0780	9,40
7.9	117	75	0.08	1	101016 0790	9,40
8.0	117	75	0.08	1	101016 0800	9,95
8.1	117	75	0.11	1	101016 0810	9,65
8.2	117	75	0.11	1	101016 0820	11,45
8.3	117	75	0.11	1	101016 0830	10,75
8.4	117	75	0.11	1	101016 0840	10,60
8.5	117	75	0.11	1	101016 0850	7,90
8.6	125	81	0.11	1	101016 0860	10,05
8.7	125	81	0.11	1	101016 0870	11,–
8.8	125	81	0.11	1	101016 0880	9,75
8.9	125	81	0.11	1	101016 0890	12,75
9.0	125	81	0.11	1	101016 0900	10,60
9.1	125	81	0.11	1	101016 0910	13,05
9.2	125	81	0.11	1	101016 0920	13,30
9.3	125	81	0.11	1	101016 0930	12,80
9.4	125	81	0.11	1	101016 0940	14,35
9.5	125	81	0.11	1	101016 0950	12,45
9.6	133	87	0.11	1	101016 0960	13,05
9.7	133	87	0.11	1	101016 0970	12,40
9.8	133	87	0.11	1	101016 0980	15,10
9.9	133	87	0.11	1	101016 0990	15,30
10.0	133	87	0.11	1	101016 1000	11,80
10.1	133	87	0.11	1	101016 1010	13,40
10.2	133	87	0.11	1	101016 1020	14,55
10.5	133	87	0.11	1	101016 1050	14,25
11.0	142	94	0.11	1	101016 1100	15,60
11.5	142	94	0.11	1	101016 1150	20,50
11.8	142	94	0.11	1	101016 1180	20,50
12.0	151	101	0.11	1	101016 1200	17,10
12.5	151	101	0.14	1	101016 1250	23,40
13.0	151	101	0.14	1	101016 1300	19,90

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ATORN® Stainless steel twist drill

HSS-E | DIN 338 | Typ VA | 130° | 40° | 5xD | Vc/fz | 10-250



- Self-centring
- **Specially designed 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
		○ 30-35	○ 22-28		● 14-18	● 10-14													

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

D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
1.0	34	12	0.04	10	**101018** 0100	2,69
1.1	36	14	0.04	10	101018 0110	3,20
1.2	38	16	0.04	10	101018 0120	3,20
1.3	38	16	0.04	10	101018 0130	3,35
1.4	40	18	0.04	10	101018 0140	3,09
1.5	40	18	0.04	10	101018 0150	2,84
1.6	43	20	0.04	10	101018 0160	3,09
1.7	43	20	0.04	10	101018 0170	3,09
1.8	46	22	0.04	10	101018 0180	3,30
1.9	46	22	0.04	10	101018 0190	3,66
2.0	49	24	0.04	10	101018 0200	2,69
2.1	49	24	0.04	10	101018 0210	3,20
2.2	53	27	0.04	10	101018 0220	3,35
2.3	53	27	0.04	10	101018 0230	4,52
2.4	57	30	0.04	10	101018 0240	4,37
2.5	57	30	0.04	10	101018 0250	3,20
2.6	57	30	0.04	10	101018 0260	3,75
2.7	61	33	0.04	10	101018 0270	4,62
2.8	61	33	0.04	10	101018 0280	4,52
2.9	61	33	0.04	10	101018 0290	4,87
3.0	61	33	0.05	10	101018 0300	3,35
3.1	65	36	0.05	10	101018 0310	4,06
3.2	65	36	0.05	10	101018 0320	3,75
3.3	65	36	0.05	10	101018 0330	3,60
3.4	70	39	0.05	10	101018 0340	4,16
3.5	70	39	0.05	10	101018 0350	3,60
3.6	70	39	0.05	10	101018 0360	4,97
3.7	70	39	0.05	10	101018 0370	4,52
3.8	75	43	0.05	10	101018 0380	5,65
3.9	75	43	0.05	10	101018 0390	5,90
4.0	75	43	0.05	10	101018 0400	4,06
4.1	75	43	0.05	10	101018 0410	5,70
4.2	75	43	0.05	10	101018 0420	4,32
4.3	80	47	0.05	10	101018 0430	4,97
4.4	80	47	0.05	10	101018 0440	5,70
4.5	80	47	0.05	10	101018 0450	4,82
4.6	80	47	0.05	10	101018 0460	6,40
4.7	80	47	0.05	10	101018 0470	6,70
4.8	86	52	0.05	10	101018 0480	5,45
4.9	86	52	0.05	10	101018 0490	6,80
5.0	86	52	0.05	10	101018 0500	4,62
5.1	86	52	0.08	10	101018 0510	5,45
5.2	86	52	0.08	10	101018 0520	5,20
5.3	86	52	0.08	10	101018 0530	6,10
5.4	93	57	0.08	10	101018 0540	8,20
5.5	93	57	0.08	10	101018 0550	5,55
5.6	93	57	0.08	10	101018 0560	8,30
5.7	93	57	0.08	10	101018 0570	13,95
5.8	93	57	0.08	10	101018 0580	5,90

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
5.9	93	57	0.08	10	101018 0590	8,30
6.0	93	57	0.08	10	101018 0600	5,95
6.1	101	63	0.08	1	101018 0610	8,05
6.2	101	63	0.08	1	101018 0620	7,65
6.3	101	63	0.08	1	101018 0630	7,05
6.4	101	63	0.08	1	101018 0640	8,30
6.5	101	63	0.08	1	101018 0650	7,05
6.6	101	63	0.08	1	101018 0660	8,75
6.7	101	63	0.08	1	101018 0670	9,05
6.8	109	69	0.08	1	101018 0680	7,90
6.9	109	69	0.08	1	101018 0690	9,85
7.0	109	69	0.08	1	101018 0700	8,05
7.1	109	69	0.08	1	101018 0710	11,45
7.2	109	69	0.08	1	101018 0720	11,95
7.3	109	69	0.08	1	101018 0730	12,25
7.4	109	69	0.08	1	101018 0740	11,65
7.5	109	69	0.08	1	101018 0750	8,85
7.6	117	75	0.08	1	101018 0760	16,10
7.7	117	75	0.08	1	101018 0770	13,65
7.8	117	75	0.08	1	101018 0780	12,70
7.9	117	75	0.08	1	101018 0790	16,10
8.0	117	75	0.08	1	101018 0800	9,85
8.1	117	75	0.11	1	101018 0810	11,95
8.2	117	75	0.11	1	101018 0820	12,20
8.3	117	75	0.11	1	101018 0830	12,90
8.4	117	75	0.11	1	101018 0840	14,25
8.5	117	75	0.11	1	101018 0850	10,60
8.6	125	81	0.11	1	101018 0860	13,95
8.7	125	81	0.11	1	101018 0870	15,–
8.8	125	81	0.11	1	101018 0880	15,70
8.9	125	81	0.11	1	101018 0890	20,20
9.0	125	81	0.11	1	101018 0900	12,75
9.1	125	81	0.11	1	101018 0910	15,10
9.2	125	81	0.11	1	101018 0920	16,70
9.3	125	81	0.11	1	101018 0930	16,50
9.4	125	81	0.11	1	101018 0940	18,40
9.5	125	81	0.11	1	101018 0950	13,35
9.6	133	87	0.11	1	101018 0960	16,90
9.7	133	87	0.11	1	101018 0970	19,–
9.8	133	87	0.11	1	101018 0980	17,40
9.9	133	87	0.11	1	101018 0990	19,60
10.0	133	87	0.11	1	101018 1000	15,80
10.2	133	87	0.11	1	101018 1020	19,70
10.5	133	87	0.11	1	101018 1050	16,60
11.0	142	94	0.11	1	101018 1100	20,90
11.5	142	94	0.11	1	101018 1150	22,70
11.8	142	94	0.11	1	101018 1180	26,70
12.0	151	101	0.11	1	101018 1200	25,10
13.0	151	101	0.14	1	101018 1300	49,80

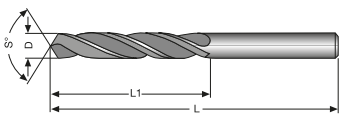
1104

ATORN® Twist drill, with 3 surface shank

HSS-E | DIN 338 | Typ VA | 135° | 40° | 5xD

- **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
		● 30-35			● 8-12	● 6-10							● 60-80	● 40-60	● 30-40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
2.0	49	24	0.04	10	**101076** 0020	2,60
2.5	57	30	0.04	10	101076 0025	2,70
3.0	61	33	0.05	10	101076 0030	2,70
3.2	65	36	0.05	10	101076 0032	3,20
3.3	65	36	0.05	10	101076 0033	3,20
3.5	70	39	0.05	10	101076 0035	3,20
4.0	75	43	0.07	10	101076 0040	3,70
4.2	75	43	0.07	10	101076 0042	3,70
4.5	80	47	0.07	10	101076 0045	3,90
5.0	86	52	0.08	10	101076 0050	4,–
5.2	86	52	0.08	5	101076 0052	4,20
5.5	93	57	0.08	5	101076 0055	4,40
6.0	93	57	0.10	1	101076 0060	4,70
6.5	101	63	0.10	1	101076 0065	4,95
6.8	109	69	0.10	1	101076 0068	5,40
7.0	109	69	0.11	1	101076 0070	5,45
7.5	109	69	0.11	1	101076 0075	5,65
8.0	117	75	0.12	1	101076 0080	6,40
8.5	117	75	0.12	1	101076 0085	6,95
9.0	125	81	0.13	1	101076 0090	8,85
9.5	125	81	0.13	1	101076 0095	9,15
10.0	133	87	0.15	1	101076 0100	10,10
10.2	133	87	0.15	1	101076 0102	13,30
10.5	133	87	0.15	1	101076 0105	13,30
11.0	142	94	0.15	1	101076 0110	15,–
11.5	142	94	0.15	1	101076 0115	17,10
12.0	151	101	0.16	1	101076 0120	18,60
12.5	151	101	0.16	1	101076 0125	20,60
13.0	151	101	0.16	1	101076 0130	21,–

1104





Straight shank with 3-facet grinding

Sets with plastic box

Number of drills	D mm	Contents	art.no.	€
6	2.0 - 8.0	6-pcs.: Ø 2 3 4 5 6 8 mm	**101076** 0001	29,90
19	1.0 - 10.0	19-pcs.: Ø 1 1.5 2 2.5 3 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 mm	101076 0002	99,–
25	1.0 - 13.0	25-pcs.: Ø 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 11.5 12 12.5 13 mm	101076 0003	199,–

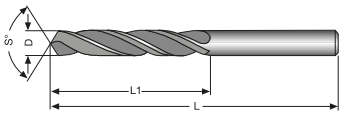
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ATORN® KSB-5D twist drill



10-251





- 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
		● 40-45	● 32-40	● 18-25	● 12-18	● 10-12		● 40-50	● 32-45				○ 60-70	○ 50-60	○ 30-60		○ 4-5		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.0	34	12	0.07	**101095** 0100	13,05
1.1	36	14	0.07	101095 0110	13,25
1.2	38	16	0.07	101095 0120	13,45
1.3	38	16	0.07	101095 0130	14,30
1.4	40	18	0.07	101095 0140	13,25
1.5	40	18	0.07	101095 0150	12,45
1.6	43	20	0.07	101095 0160	12,85
1.7	43	20	0.07	101095 0170	13,05
1.8	46	22	0.07	101095 0180	12,85
1.9	46	22	0.07	101095 0190	13,05
2.0	49	24	0.07	101095 0200	10,40
2.1	49	24	0.07	101095 0210	12,05
2.2	53	27	0.07	101095 0220	13,25
2.3	53	27	0.07	101095 0230	13,25
2.4	57	30	0.07	101095 0240	13,65
2.5	57	30	0.07	101095 0250	11,40
2.6	57	30	0.07	101095 0260	14,50
2.7	61	33	0.07	101095 0270	13,45
2.8	61	33	0.07	101095 0280	14,90
2.9	61	33	0.07	101095 0290	13,05
3.0	61	33	0.07	101095 0300	9,80
3.1	65	36	0.07	101095 0310	10,20
3.2	65	36	0.07	101095 0320	10,20
3.3	65	36	0.07	101095 0330	10,–
3.4	70	39	0.07	101095 0340	10,–
3.5	70	39	0.07	101095 0350	10,20
3.6	70	39	0.07	101095 0360	10,60
3.7	70	39	0.07	101095 0370	11,–
3.8	75	43	0.07	101095 0380	11,40
3.9	75	43	0.07	101095 0390	11,65
4.0	75	43	0.07	101095 0400	11,20
4.1	75	43	0.07	101095 0410	12,25
4.2	75	43	0.07	101095 0420	12,25
4.3	80	47	0.07	101095 0430	12,85
4.4	80	47	0.07	101095 0440	13,05
4.5	80	47	0.07	101095 0450	13,05
4.6	80	47	0.07	101095 0460	13,65
4.7	80	47	0.07	101095 0470	14,10
4.8	86	52	0.07	101095 0480	14,50
4.9	86	52	0.07	101095 0490	14,50
5.0	86	52	0.07	101095 0500	14,90
5.1	86	52	0.15	101095 0510	15,70
5.2	86	52	0.15	101095 0520	15,90
5.3	86	52	0.15	101095 0530	16,30
5.4	93	57	0.15	101095 0540	16,70
5.5	93	57	0.15	101095 0550	16,70
5.6	93	57	0.15	101095 0560	26,30

1106

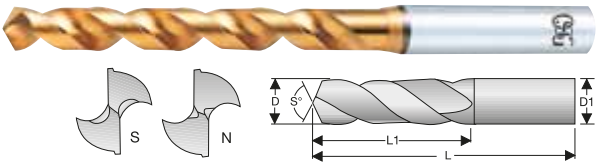
D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.7	93	57	0.15	101095 0570	26,70
5.8	93	57	0.15	101095 0580	27,70
5.9	93	57	0.15	101095 0590	27,70
6.0	93	57	0.15	101095 0600	19,–
6.1	101	63	0.15	101095 0610	29,20
6.2	101	63	0.15	101095 0620	29,60
6.3	101	63	0.15	101095 0630	30,20
6.4	101	63	0.15	101095 0640	30,80
6.5	101	63	0.15	101095 0650	20,60
6.6	101	63	0.15	101095 0660	32,–
6.7	101	63	0.15	101095 0670	32,80
6.8	109	69	0.15	101095 0680	32,20
6.9	109	69	0.15	101095 0690	34,30
7.0	109	69	0.15	101095 0700	22,40
7.1	109	69	0.15	101095 0710	35,30
7.2	109	69	0.15	101095 0720	35,50
7.3	109	69	0.15	101095 0730	35,50
7.4	109	69	0.15	101095 0740	37,10
7.5	109	69	0.15	101095 0750	24,90
7.6	117	75	0.15	101095 0760	38,10
7.7	117	75	0.15	101095 0770	38,80
7.8	117	75	0.15	101095 0780	39,40
7.9	117	75	0.15	101095 0790	39,80
8.0	117	75	0.15	101095 0800	27,10
8.1	117	75	0.18	101095 0810	41,60
8.2	117	75	0.18	101095 0820	42,20
8.3	117	75	0.18	101095 0830	43,–
8.4	117	75	0.18	101095 0840	43,50
8.5	117	75	0.18	101095 0850	28,80
8.8	125	81	0.18	101095 0880	46,30
9.0	125	81	0.18	101095 0900	31,60
9.3	125	81	0.18	101095 0930	50,–
9.5	125	81	0.18	101095 0950	34,50
9.8	133	87	0.18	101095 0980	38,10
10.0	133	87	0.18	101095 1000	36,50
10.2	133	87	0.22	101095 1020	56,–
10.3	133	87	0.22	101095 1030	59,–
10.5	142	94	0.22	101095 1050	40,60
11.0	142	94	0.22	101095 1100	43,90
11.5	151	101	0.22	101095 1150	47,90
12.0	151	101	0.22	101095 1200	51,–
12.3	151	101	0.25	101095 1230	83,50
12.5	151	101	0.25	101095 1250	59,–
12.7	160	108	0.25	101095 1270	61,–
13.0	160	108	0.25	101095 1300	64,50
13.5	160	108	0.25	101095 1350	71,50
14.0	160	108	0.25	101095 1400	75,50

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EX-SUS-GDR twist drill bit

HSS-E V3 | Typ VA | 120° | 130° | 35° -40° | 5xD | TiN | Vc/fz | 10-247

- 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
	● 32-40	● 30-35		● 15-20	● 13-18	○ 8-12			● 6-8			● 63-100	● 32-63	● 25-50				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 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	11,60
2.1	56	24	3	0.07	114050 0210	13,60
2.2	59	27	3	0.07	114050 0220	13,60
2.3	59	27	3	0.07	114050 0230	13,60
2.4	62	30	3	0.07	114050 0240	13,60
2.5	62	30	3	0.11	114050 0250	12,80
2.6	62	30	3	0.11	114050 0260	13,60
2.7	65	33	3	0.11	114050 0270	13,60
2.8	65	33	3	0.11	114050 0280	13,60
2.9	65	33	3	0.11	114050 0290	13,60
3.0	65	33	3	0.11	114050 0300	13,60
3.1	68	36	4	0.11	114050 0310	15,20
3.2	68	36	4	0.11	114050 0320	15,20
3.3	68	36	4	0.11	114050 0330	15,20
3.4	71	39	4	0.11	114050 0340	15,20
3.5	71	39	4	0.13	114050 0350	15,20
3.6	71	39	4	0.13	114050 0360	16,70
3.7	71	39	4	0.13	114050 0370	16,70
3.8	75	43	4	0.13	114050 0380	16,70
3.9	75	43	4	0.13	114050 0390	16,70
4.0	75	43	4	0.13	114050 0400	16,70
4.1	87	43	6	0.13	114050 0410	19,80
4.2	87	43	6	0.13	114050 0420	18,70
4.3	91	47	6	0.13	114050 0430	19,80
4.4	91	47	6	0.13	114050 0440	19,80
4.5	91	47	6	0.15	114050 0450	19,80
4.6	91	47	6	0.15	114050 0460	22,40
4.7	91	47	6	0.15	114050 0470	22,40
4.8	96	52	6	0.15	114050 0480	22,40
4.9	96	52	6	0.15	114050 0490	22,40
5.0	96	52	6	0.15	114050 0500	25,–
5.1	96	52	6	0.15	114050 0510	25,–
5.2	96	52	6	0.15	114050 0520	25,–
5.3	96	52	6	0.15	114050 0530	26,40
5.4	101	57	6	0.15	114050 0540	26,40
5.5	101	57	6	0.16	114050 0550	25,–
5.6	101	57	6	0.16	114050 0560	28,40
5.7	101	57	6	0.16	114050 0570	28,40
5.8	101	57	6	0.16	114050 0580	28,40
5.9	101	57	6	0.16	114050 0590	28,40
6.0	101	57	6	0.16	114050 0600	27,10
6.1	107	63	8	0.16	114050 0610	33,–
6.2	107	63	8	0.16	114050 0620	33,–
6.3	107	63	8	0.16	114050 0630	33,–

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D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
6.4	107	63	8	0.16	114050 0640	33,–
6.5	107	63	8	0.16	114050 0650	33,–
6.6	107	63	8	0.16	114050 0660	33,90
6.7	107	63	8	0.16	114050 0670	33,90
6.8	113	69	8	0.16	114050 0680	33,90
6.9	113	69	8	0.16	114050 0690	33,90
7.0	113	69	8	0.16	114050 0700	33,90
7.1	113	69	8	0.20	114050 0710	35,60
7.2	113	69	8	0.20	114050 0720	35,60
7.3	113	69	8	0.20	114050 0730	35,60
7.4	113	69	8	0.20	114050 0740	35,60
7.5	113	69	8	0.20	114050 0750	35,60
7.6	119	75	8	0.20	114050 0760	37,30
7.7	119	75	8	0.20	114050 0770	37,30
7.8	119	75	8	0.20	114050 0780	37,30
7.9	119	75	8	0.20	114050 0790	37,30
8.0	119	75	8	0.20	114050 0800	37,30
8.1	125	75	10	0.20	114050 0810	40,50
8.2	125	75	10	0.20	114050 0820	40,50
8.3	125	75	10	0.20	114050 0830	40,50
8.4	125	75	10	0.20	114050 0840	40,50
8.5	125	75	10	0.20	114050 0850	40,50
8.6	131	81	10	0.20	114050 0860	42,90
8.7	131	81	10	0.20	114050 0870	42,90
8.8	131	81	10	0.20	114050 0880	42,90
8.9	131	81	10	0.20	114050 0890	42,90
9.0	131	81	10	0.20	114050 0900	42,90
9.1	131	81	10	0.24	114050 0910	46,70
9.2	131	81	10	0.24	114050 0920	46,70
9.3	131	81	10	0.24	114050 0930	46,70
9.4	131	81	10	0.24	114050 0940	46,70
9.5	131	81	10	0.24	114050 0950	46,70
9.6	137	87	10	0.24	114050 0960	51,20
9.7	137	87	10	0.24	114050 0970	51,20
9.8	137	87	10	0.24	114050 0980	51,20
9.9	137	87	10	0.24	114050 0990	51,20
10.0	137	87	10	0.24	114050 1000	51,20
10.1	144	87	12	0.24	114050 1010	63,20
10.2	144	87	12	0.24	114050 1020	63,20
10.3	144	87	12	0.24	114050 1030	63,20
10.4	144	87	12	0.24	114050 1040	63,20
10.5	144	87	12	0.24	114050 1050	63,20
10.6	144	87	12	0.24	114050 1060	69,–
10.7	151	94	12	0.24	114050 1070	69,–

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Continued on next page >>>

D h8 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	69,–
10.9	151	94	12	0.24	114050 1090	69,–
11.0	151	94	12	0.24	114050 1100	69,–
11.1	151	94	12	0.29	114050 1110	74,50
11.2	151	94	12	0.29	114050 1120	74,50
11.3	151	94	12	0.29	114050 1130	74,50
11.4	151	94	12	0.29	114050 1140	74,50
11.5	151	94	12	0.29	114050 1150	74,50
11.6	151	94	12	0.29	114050 1160	80,50
11.7	151	94	12	0.29	114050 1170	80,50
11.8	151	94	12	0.29	114050 1180	80,50
11.9	158	101	12	0.29	114050 1190	80,50
12.0	158	101	12	0.29	114050 1200	80,50
12.1	158	101	16	0.29	114050 1210	91,80
12.2	158	101	16	0.29	114050 1220	91,80
12.3	158	101	16	0.29	114050 1230	91,80
12.4	158	101	16	0.29	114050 1240	91,80
12.5	158	101	16	0.29	114050 1250	91,80
12.6	158	101	16	0.29	114050 1260	97,–

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D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
12.7	158	101	16	0.29	114050 1270	97,–
12.8	158	101	16	0.29	114050 1280	97,–
12.9	158	101	16	0.29	114050 1290	97,–
13.0	158	101	16	0.29	114050 1300	97,–
13.5	166	106	16	0.33	114050 1350	125,80
14.0	166	106	16	0.33	114050 1400	125,80
14.5	169	109	16	0.33	114050 1450	138,60
15.0	169	109	16	0.33	114050 1500	144,90
15.5	172	112	16	0.36	114050 1550	155,70
16.0	172	112	16	0.36	114050 1600	155,70
16.5	181	115	20	0.36	114050 1650	162,80
17.0	181	115	20	0.36	114050 1700	162,80
17.5	184	118	20	0.40	114050 1750	178,50
18.0	184	118	20	0.40	114050 1800	178,50
18.5	188	122	20	0.40	114050 1850	196,20
19.0	188	122	20	0.40	114050 1900	203,60
19.5	191	125	20	0.43	114050 1950	210,20
20.0	191	125	20	0.43	114050 2000	210,20

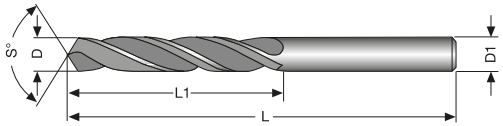
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NEXUS-GDR twist drill

HSS-E | Werks-norm | Typ VA | 120° | 130° | 35° -40° | 5xD | Vc/fz 10-247

- High spiral angle (35 - 40°) and unique flute shape reduce the cutting forces and the heat generated during machining
- **Short breakage chips even with tough materials such as stainless steel or copper**
- Shank design: straight
- S°= point angle: < Ø 4 mm = 130°, > Ø 4 mm = 120°
- **Cutting material: high-quality vanadium alloy HSS, WDI™-coated**
- Wear-resistant, suitable for a broad range of materials thanks to multi-layer 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
		● 40-60	○ 40-60		● 15-25	● 15-25	● 10-20						● 63-100	● 32-63	● 40-60				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.00	130	56	24	3	0.07	**114051** 0200	13,20
2.30	130	59	27	3	0.07	114051 0230	15,60
2.50	130	62	30	3	0.11	114051 0250	14,80
2.60	130	62	30	3	0.11	114051 0260	15,60
2.80	130	65	33	3	0.11	114051 0280	15,60
3.00	130	65	33	3	0.11	114051 0300	15,60
3.30	130	68	36	4	0.11	114051 0330	17,80
3.40	130	71	39	4	0.11	114051 0340	17,80
3.50	130	71	39	4	0.13	114051 0350	17,80
4.00	130	75	43	4	0.13	114051 0400	19,40
4.20	120	87	43	6	0.13	114051 0420	21,50
4.30	120	91	47	6	0.13	114051 0430	22,70
4.50	120	91	47	6	0.15	114051 0450	22,70
5.00	120	96	52	6	0.15	114051 0500	28,60
5.10	120	96	52	6	0.15	114051 0510	28,60
5.20	120	96	52	6	0.15	114051 0520	28,60

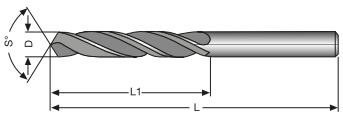
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D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.50	120	101	57	6	0.16	114051 0550	28,60
6.00	120	101	57	6	0.16	114051 0600	31,10
6.80	120	113	69	8	0.16	114051 0680	39,30
6.90	120	113	69	8	0.16	114051 0690	39,30
7.00	120	113	69	8	0.16	114051 0700	39,30
8.00	120	119	75	8	0.20	114051 0800	42,80
8.50	120	125	75	10	0.20	114051 0850	46,60
8.60	120	131	81	10	0.20	114051 0860	49,40
8.80	120	131	81	10	0.20	114051 0880	49,40
9.00	120	131	81	10	0.20	114051 0900	49,40
10.00	120	137	87	10	0.24	114051 1000	58,90
10.30	120	144	87	12	0.24	114051 1030	72,80
10.40	120	144	87	12	0.24	114051 1040	72,80
10.50	120	144	87	12	0.24	114051 1050	72,80
11.00	120	151	94	12	0.24	114051 1100	79,40
12.00	120	158	101	12	0.29	114051 1200	92,20

1107

ATORN® Twist drill bit

HSS | DIN 340 | Typ N | 118° | 30° | 10xD | Vap. | Vc/fz | 10-248



- **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
		● 25-28	● 20-22					● 25-28	○ 18-22				○ 45-55	○ 35-45	○ 30-60				
	Cutting speed Vc m/min.																		

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

● steel < 1000 N/mm²

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.60	35	15	0.01	10	**101060** 0060	5,80
0.80	46	29	0.01	10	101060 0080	4,50
1.00	56	33	0.02	10	101060 0100	3,66
1.10	60	37	0.02	10	101060 0110	3,81
1.20	65	41	0.02	10	101060 0120	3,64
1.25	65	41	0.02	10	101060 0125	5,60
1.30	65	41	0.02	10	101060 0130	3,31
1.40	70	45	0.02	10	101060 0140	3,08
1.50	70	45	0.02	10	101060 0150	2,65
1.60	76	50	0.02	10	101060 0160	2,75
1.70	76	50	0.02	10	101060 0170	2,75
1.80	80	53	0.02	10	101060 0180	2,75
1.90	80	53	0.02	10	101060 0190	2,75
2.00	85	56	0.05	10	101060 0200	1,85
2.10	85	56	0.05	10	101060 0210	2,18
2.20	90	59	0.05	10	101060 0220	2,18
2.30	90	59	0.05	10	101060 0230	2,18
2.40	95	62	0.05	10	101060 0240	2,18
2.50	95	62	0.06	10	101060 0250	1,94
2.60	95	62	0.06	10	101060 0260	2,34
2.70	100	66	0.06	10	101060 0270	2,41
2.80	100	66	0.06	10	101060 0280	2,41
2.90	100	66	0.06	10	101060 0290	2,42
3.00	100	66	0.06	10	101060 0300	1,99
3.10	106	69	0.08	10	101060 0310	2,42
3.20	106	69	0.08	10	101060 0320	2,10
3.30	106	69	0.08	10	101060 0330	2,34
3.40	112	73	0.08	10	101060 0340	2,59
3.50	112	73	0.08	10	101060 0350	2,28
3.60	112	73	0.08	10	101060 0360	2,51
3.70	112	73	0.08	10	101060 0370	2,67
3.80	119	78	0.08	10	101060 0380	2,67
3.90	119	78	0.08	10	101060 0390	2,89
4.00	119	78	0.10	10	101060 0400	2,52
4.10	119	78	0.10	10	101060 0410	2,57
4.20	119	78	0.10	10	101060 0420	2,57
4.30	126	82	0.10	10	101060 0430	3,25
4.40	126	82	0.10	10	101060 0440	3,36
4.50	126	82	0.10	10	101060 0450	2,87
4.60	126	82	0.10	10	101060 0460	3,53
4.70	126	82	0.10	10	101060 0470	3,58
4.80	132	87	0.10	10	101060 0480	3,39
4.90	132	87	0.10	10	101060 0490	3,36
5.00	132	87	0.10	10	101060 0500	3,19
5.10	132	87	0.10	10	101060 0510	3,36
5.20	132	87	0.10	10	101060 0520	3,50
5.30	132	87	0.10	10	101060 0530	3,68
5.40	139	91	0.10	10	101060 0540	4,62
5.50	139	91	0.10	10	101060 0550	3,69
5.60	139	91	0.10	10	101060 0560	4,73
5.70	139	91	0.10	10	101060 0570	4,58
5.80	139	91	0.10	10	101060 0580	3,70
5.90	139	91	0.10	10	101060 0590	4,76
6.00	139	91	0.10	10	101060 0600	4,–

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● steel < 1000 N/mm²

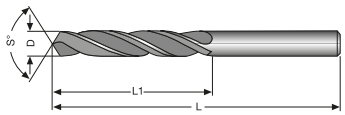
D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
6.10	148	97	0.10	1	101060 0610	4,94
6.20	148	97	0.10	1	101060 0620	4,18
6.30	148	97	0.13	1	101060 0630	5,10
6.40	148	97	0.13	1	101060 0640	5,25
6.50	148	97	0.13	1	101060 0650	4,28
6.60	148	97	0.13	1	101060 0660	5,35
6.70	156	102	0.13	1	101060 0670	5,20
6.80	156	102	0.13	1	101060 0680	6,15
6.90	156	102	0.13	1	101060 0690	7,10
7.00	156	102	0.13	1	101060 0700	5,–
7.10	156	102	0.13	1	101060 0710	9,70
7.20	156	102	0.13	1	101060 0720	6,75
7.30	156	102	0.13	1	101060 0730	8,45
7.40	156	102	0.13	1	101060 0740	11,15
7.50	156	102	0.13	1	101060 0750	5,95
7.60	156	102	0.13	1	101060 0760	7,35
7.70	165	109	0.13	1	101060 0770	7,75
7.80	165	109	0.13	1	101060 0780	7,20
7.90	165	109	0.13	1	101060 0790	7,75
8.00	165	109	0.16	1	101060 0800	6,–
8.10	165	109	0.16	1	101060 0810	8,10
8.20	165	109	0.16	1	101060 0820	7,20
8.30	165	109	0.16	1	101060 0830	8,85
8.40	165	109	0.16	1	101060 0840	8,10
8.50	165	109	0.16	1	101060 0850	7,10
8.60	175	115	0.16	1	101060 0860	9,60
8.70	175	115	0.16	1	101060 0870	9,55
8.80	175	115	0.16	1	101060 0880	9,60
8.90	175	115	0.16	1	101060 0890	17,80
9.00	175	115	0.18	1	101060 0900	7,45
9.10	175	115	0.18	1	101060 0910	11,90
9.20	175	115	0.18	1	101060 0920	16,40
9.30	175	115	0.18	1	101060 0930	16,50
9.40	175	115	0.18	1	101060 0940	13,30
9.50	175	115	0.18	1	101060 0950	9,10
9.60	184	121	0.18	1	101060 0960	9,90
9.70	184	121	0.18	1	101060 0970	11,30
9.80	184	121	0.18	1	101060 0980	11,95
9.90	184	121	0.18	1	101060 0990	15,40
10.00	184	121	0.20	1	101060 1000	8,80
10.20	184	121	0.20	1	101060 1020	11,30
10.25	184	121	0.20	1	101060 1025	13,60
10.50	184	121	0.20	1	101060 1050	12,85
11.00	195	128	0.20	1	101060 1100	13,30
11.50	195	128	0.20	1	101060 1150	14,70
12.00	205	134	0.20	1	101060 1200	16,70
12.50	205	134	0.20	1	101060 1250	16,70
13.00	205	134	0.20	1	101060 1300	17,50
13.50	214	140	0.20	1	101060 1350	22,10
14.00	214	140	0.20	1	101060 1400	21,80
14.50	220	144	0.20	1	101060 1450	31,–
15.00	220	144	0.20	1	101060 1500	27,–
15.50	227	149	0.20	1	101060 1550	32,40
16.00	227	149	0.25	1	101060 1600	32,30

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ATORN® Twist drill bit

HSS | DIN 340 | Typ TLP | 130° | 38° | 10xD | TiN | Vc/fz | 10-251

Deep bore profile





- 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**

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
		● 28-32	● 22-28	○ 12-18				● 28-33	○ 22-26				○ 45-55	○ 35-45	○ 30-60				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● steel < 1000 N/mm²

D h8 mm	L mm	L1 mm	Feed f mm/rev		art.no.	€
1.0	56.0	33.0	0.05	10	**101061** 0100	11,35
1.1	60.0	37.0	0.05	10	101061 0110	12,40
1.2	65.0	41.0	0.05	10	101061 0120	11,35
1.3	65.0	41.0	0.05	10	101061 0130	11,90
1.4	70.0	45.0	0.05	10	101061 0140	10,95
1.5	70.0	45.0	0.05	10	101061 0150	9,75
1.6	76.0	50.0	0.05	10	101061 0160	9,15
1.7	76.0	50.0	0.05	10	101061 0170	8,95
1.8	80.0	53.0	0.05	10	101061 0180	8,95
1.9	80.0	53.0	0.05	10	101061 0190	8,75
2.0	85.0	56.0	0.05	10	101061 0200	8,30
2.1	85.0	56.0	0.05	10	101061 0210	9,75
2.2	90.0	59.0	0.05	10	101061 0220	9,75
2.3	90.0	59.0	0.05	10	101061 0230	9,95
2.4	95.0	62.0	0.05	10	101061 0240	10,35
2.5	95.0	62.0	0.05	10	101061 0250	8,55
2.6	95.0	62.0	0.05	10	101061 0260	10,35
2.7	100.0	66.0	0.05	10	101061 0270	10,35
2.8	100.0	66.0	0.05	10	101061 0280	10,35
2.9	100.0	66.0	0.05	10	101061 0290	10,55
3.0	100.0	66.0	0.09	10	101061 0300	8,75
3.1	106.0	69.0	0.09	10	101061 0310	11,75
3.2	106.0	69.0	0.09	10	101061 0320	9,95
3.3	106.0	69.0	0.09	10	101061 0330	11,15
3.4	112.0	73.0	0.09	10	101061 0340	12,20
3.5	112.0	73.0	0.09	10	101061 0350	10,35
3.6	112.0	73.0	0.09	10	101061 0360	12,80
3.7	112.0	73.0	0.09	10	101061 0370	12,40
3.8	119.0	78.0	0.09	10	101061 0380	12,40
3.9	119.0	78.0	0.09	10	101061 0390	12,60
4.0	119.0	78.0	0.09	10	101061 0400	11,15
4.1	119.0	78.0	0.09	10	101061 0410	16,40
4.2	119.0	78.0	0.09	10	101061 0420	12,20
4.3	126.0	82.0	0.09	10	101061 0430	12,–
4.4	126.0	82.0	0.09	10	101061 0440	18,10

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● steel < 1000 N/mm²

D h8 mm	L mm	L1 mm	Feed f mm/rev		art.no.	€
4.5	126.0	82.0	0.09	10	101061 0450	12,80
4.7	126.0	82.0	0.09	10	101061 0470	12,80
4.8	132.0	87.0	0.09	10	101061 0480	14,20
4.9	132.0	87.0	0.09	10	101061 0490	14,20
5.0	132.0	87.0	0.13	10	101061 0500	13,20
5.1	132.0	87.0	0.13	10	101061 0510	12,80
5.2	132.0	87.0	0.13	10	101061 0520	15,80
5.3	132.0	87.0	0.13	10	101061 0530	16,40
5.4	139.0	91.0	0.13	10	101061 0540	16,60
5.5	139.0	91.0	0.13	10	101061 0550	15,60
5.6	139.0	91.0	0.13	10	101061 0560	16,70
5.7	139.0	91.0	0.13	10	101061 0570	18,50
5.8	139.0	91.0	0.13	10	101061 0580	19,50
5.9	139.0	91.0	0.13	10	101061 0590	19,10
6.0	139.0	91.0	0.13	1	101061 0600	16,20
6.1	148.0	97.0	0.13	1	101061 0610	15,60
6.2	148.0	97.0	0.13	1	101061 0620	17,80
6.3	148.0	97.0	0.13	1	101061 0630	21,10
6.4	148.0	97.0	0.13	1	101061 0640	24,90
6.5	148.0	97.0	0.13	1	101061 0650	17,90
6.6	148.0	97.0	0.13	1	101061 0660	17,70
6.7	156.0	102.0	0.13	1	101061 0670	19,80
6.8	156.0	102.0	0.13	1	101061 0680	26,80
7.0	156.0	102.0	0.13	1	101061 0700	20,90
7.5	156.0	102.0	0.13	1	101061 0750	25,60
8.0	165.0	109.0	0.13	1	101061 0800	24,–
8.5	165.0	109.0	0.18	1	101061 0850	31,30
9.0	175.0	115.0	0.18	1	101061 0900	29,–
9.5	175.0	115.0	0.18	1	101061 0950	43,80
10.0	184.0	121.0	0.18	1	101061 1000	35,50
10.2	184.0	121.0	0.18	1	101061 1020	31,10
10.5	184.0	121.0	0.18	1	101061 1050	67,–
11.0	195.0	128.0	0.18	1	101061 1100	56,–
11.5	195.0	128.0	0.18	1	101061 1150	41,20
12.0	205.0	134.0	0.18	1	101061 1200	69,–

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Safety in the workplace

Please protect your eyes, ears and respiratory system!

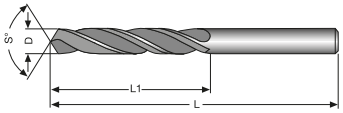


ATORN® Twist drill bit

HSS-E | DIN 340 | Typ TLP | 130° | 40° | 10xD | Nit. | Vc/fz | 10-248

- 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
		● 28-32	● 22-28	○ 12-18	● 10-12	○ 6-8		● 28-33	○ 22-26				○ 45-55	○ 35-45	○ 30-60				
	Cutting speed Vc m/min.																		

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

●

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	56	33	0.05	10	**101063** 0100	5,60
1.1	60	37	0.05	10	101063 0110	6,40
1.2	65	41	0.05	10	101063 0120	5,85
1.3	65	41	0.05	10	101063 0130	6,–
1.4	70	45	0.05	10	101063 0140	5,40
1.5	70	45	0.05	10	101063 0150	4,66
1.6	76	50	0.05	10	101063 0160	4,48
1.7	76	50	0.05	10	101063 0170	4,44
1.8	80	53	0.05	10	101063 0180	4,38
1.9	80	53	0.05	10	101063 0190	4,35
2.0	85	56	0.05	10	101063 0200	4,10
2.1	85	56	0.05	10	101063 0210	4,67
2.2	90	59	0.05	10	101063 0220	4,75
2.3	90	59	0.05	10	101063 0230	4,85
2.4	95	62	0.05	10	101063 0240	4,96
2.5	95	62	0.05	10	101063 0250	4,24
2.6	95	62	0.05	10	101063 0260	4,98
2.7	100	66	0.05	10	101063 0270	5,–
2.8	100	66	0.05	10	101063 0280	5,–
2.9	100	66	0.05	10	101063 0290	5,05
3.0	100	66	0.09	10	101063 0300	4,23
3.1	106	69	0.09	10	101063 0310	5,95
3.2	106	69	0.09	10	101063 0320	4,92
3.3	106	69	0.09	10	101063 0330	5,60
3.4	112	73	0.09	10	101063 0340	6,05
3.5	112	73	0.09	10	101063 0350	5,–
3.6	112	73	0.09	10	101063 0360	6,65
3.7	112	73	0.09	10	101063 0370	6,25
3.8	119	78	0.09	10	101063 0380	6,40
3.9	119	78	0.09	10	101063 0390	6,50
4.0	119	78	0.09	10	101063 0400	5,50
4.1	119	78	0.09	10	101063 0410	6,75
4.2	119	78	0.09	10	101063 0420	6,40
4.3	126	82	0.09	10	101063 0430	7,15
4.4	126	82	0.09	10	101063 0440	10,80
4.5	126	82	0.09	10	101063 0450	6,50
4.6	126	82	0.09	10	101063 0460	8,80
4.7	126	82	0.09	10	101063 0470	7,40
4.8	132	87	0.09	10	101063 0480	7,30
4.9	132	87	0.09	10	101063 0490	7,–
5.0	132	87	0.13	10	101063 0500	6,80
5.1	132	87	0.13	10	101063 0510	7,–
5.2	132	87	0.13	10	101063 0520	8,40
5.3	132	87	0.13	10	101063 0530	8,80
5.4	139	91	0.13	10	101063 0540	11,20
5.5	139	91	0.13	10	101063 0550	8,10
5.6	139	91	0.13	10	101063 0560	9,–

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●

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
5.7	139	91	0.13	10	101063 0570	9,–
5.8	139	91	0.13	10	101063 0580	10,35
5.9	139	91	0.13	10	101063 0590	9,20
6.0	139	91	0.13	10	101063 0600	8,40
6.1	148	97	0.13	1	101063 0610	11,–
6.2	148	97	0.13	1	101063 0620	11,65
6.3	148	97	0.13	1	101063 0630	14,10
6.4	148	97	0.13	1	101063 0640	12,65
6.5	148	97	0.13	1	101063 0650	9,30
6.6	148	97	0.13	1	101063 0660	12,25
6.7	156	102	0.13	1	101063 0670	14,30
6.8	156	102	0.13	1	101063 0680	14,15
6.9	156	102	0.13	1	101063 0690	14,50
7.0	156	102	0.13	1	101063 0700	10,90
7.1	156	102	0.13	1	101063 0710	15,10
7.2	156	102	0.13	1	101063 0720	14,85
7.3	156	102	0.13	1	101063 0730	13,90
7.4	156	102	0.13	1	101063 0740	18,60
7.5	156	102	0.13	1	101063 0750	13,35
7.6	165	109	0.13	1	101063 0760	19,60
7.7	165	109	0.13	1	101063 0770	18,60
7.8	165	109	0.13	1	101063 0780	16,40
7.9	165	109	0.13	1	101063 0790	20,60
8.0	165	109	0.13	1	101063 0800	12,50
8.1	165	109	0.13	1	101063 0810	18,80
8.2	165	109	0.13	1	101063 0820	17,–
8.3	165	109	0.13	1	101063 0830	21,–
8.4	165	109	0.13	1	101063 0840	19,60
8.5	165	109	0.18	1	101063 0850	16,40
9.0	175	115	0.18	1	101063 0900	14,85
9.5	175	115	0.18	1	101063 0950	23,10
9.8	184	121	0.18	1	101063 0980	31,10
10.0	184	121	0.18	1	101063 1000	18,40
10.2	184	121	0.18	1	101063 1020	26,10
10.5	184	121	0.18	1	101063 1050	35,50
11.0	195	128	0.18	1	101063 1100	29,60
11.5	195	128	0.18	1	101063 1150	49,30
12.0	205	134	0.18	1	101063 1200	36,30
12.5	205	134	0.22	1	101063 1250	37,50
13.0	205	134	0.22	1	101063 1300	39,–
13.5	214	140	0.22	1	101063 1350	39,50
14.0	214	140	0.22	1	101063 1400	40,90
14.5	220	144	0.22	1	101063 1450	52,–
15.0	220	144	0.22	1	101063 1500	53,–
15.5	227	149	0.22	1	101063 1550	70,–
16.0	227	149	0.22	1	101063 1600	74,–

1104

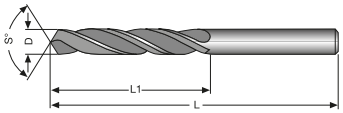
ATORN® Twist drill bit

HSS-E | DIN 340 | Typ VA | 130° | 35° | 10xD | Vc/fz | 10-251

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
○	○		●	●				●	○				●				
25-28	20-22		10-14	8-10				5-8	4-6				30-60				

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

D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
1.0	56.0	33.0	0.03	10	**101062** 0100	7,60
1.1	60.0	37.0	0.03	10	101062 0110	8,30
1.2	65.0	41.0	0.03	10	101062 0120	8,30
1.3	65.0	41.0	0.03	10	101062 0130	8,30
1.4	70.0	45.0	0.03	10	101062 0140	8,30
1.5	70.0	45.0	0.03	10	101062 0150	7,60
1.6	76.0	50.0	0.03	10	101062 0160	8,40
1.7	76.0	50.0	0.03	10	101062 0170	8,40
1.8	80.0	53.0	0.03	10	101062 0180	8,40
1.9	80.0	53.0	0.03	10	101062 0190	8,40
2.0	85.0	56.0	0.03	10	101062 0200	6,95
2.1	85.0	56.0	0.03	10	101062 0210	7,75
2.2	90.0	59.0	0.03	10	101062 0220	7,75
2.3	90.0	59.0	0.03	10	101062 0230	7,75
2.4	95.0	62.0	0.03	10	101062 0240	7,75
2.5	95.0	62.0	0.03	10	101062 0250	7,10
2.6	95.0	62.0	0.03	10	101062 0260	7,75
2.7	100.0	66.0	0.03	10	101062 0270	7,75
2.8	100.0	66.0	0.03	10	101062 0280	8,15
2.9	100.0	66.0	0.03	10	101062 0290	8,15
3.0	100.0	66.0	0.05	10	101062 0300	7,10
3.1	106.0	69.0	0.05	10	101062 0310	8,15
3.2	106.0	69.0	0.05	10	101062 0320	8,15
3.3	106.0	69.0	0.05	10	101062 0330	8,15
3.4	112.0	73.0	0.05	10	101062 0340	8,15
3.5	112.0	73.0	0.05	10	101062 0350	8,–
3.6	112.0	73.0	0.05	10	101062 0360	8,35
3.7	112.0	73.0	0.05	10	101062 0370	8,35
3.8	119.0	78.0	0.05	10	101062 0380	8,35
3.9	119.0	78.0	0.05	10	101062 0390	8,35
4.0	119.0	78.0	0.05	10	101062 0400	8,30
4.1	119.0	78.0	0.05	10	101062 0410	9,05
4.2	119.0	78.0	0.05	10	101062 0420	9,05
4.3	126.0	82.0	0.05	10	101062 0430	10,05
4.4	126.0	82.0	0.05	10	101062 0440	10,05
4.5	126.0	82.0	0.05	10	101062 0450	9,70
4.7	126.0	82.0	0.05	10	101062 0470	10,55
4.8	132.0	87.0	0.05	10	101062 0480	10,55

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
4.9	132.0	87.0	0.05	10	101062 0490	10,55
5.0	132.0	87.0	0.05	10	101062 0500	9,75
5.1	132.0	87.0	0.08	10	101062 0510	10,85
5.2	132.0	87.0	0.08	10	101062 0520	10,85
5.3	132.0	87.0	0.08	10	101062 0530	10,85
5.4	139.0	91.0	0.08	10	101062 0540	10,85
5.5	139.0	91.0	0.08	10	101062 0550	10,80
5.6	139.0	91.0	0.08	10	101062 0560	12,10
5.7	139.0	91.0	0.08	10	101062 0570	12,10
5.8	139.0	91.0	0.08	10	101062 0580	12,10
5.9	139.0	91.0	0.08	10	101062 0590	11,90
6.0	139.0	91.0	0.08	10	101062 0600	11,35
6.1	148.0	97.0	0.08	1	101062 0610	13,–
6.2	148.0	97.0	0.08	1	101062 0620	13,–
6.3	148.0	97.0	0.08	1	101062 0630	13,–
6.4	148.0	97.0	0.08	1	101062 0640	13,–
6.5	148.0	97.0	0.08	1	101062 0650	11,80
6.6	148.0	97.0	0.08	1	101062 0660	13,55
6.7	156.0	102.0	0.08	1	101062 0670	13,55
6.8	156.0	102.0	0.08	1	101062 0680	15,50
7.0	156.0	102.0	0.08	1	101062 0700	14,05
7.5	156.0	102.0	0.08	1	101062 0750	11,75
7.7	165.0	109.0	0.08	1	101062 0770	13,85
7.8	165.0	109.0	0.08	1	101062 0780	13,85
8.0	165.0	109.0	0.08	1	101062 0800	13,40
8.1	165.0	109.0	0.11	1	101062 0810	15,50
8.2	165.0	109.0	0.11	1	101062 0820	15,50
8.4	165.0	109.0	0.11	1	101062 0840	15,50
8.5	165.0	109.0	0.11	1	101062 0850	12,50
9.0	175.0	115.0	0.11	1	101062 0900	13,95
9.5	175.0	115.0	0.11	1	101062 0950	16,–
9.8	184.0	121.0	0.11	1	101062 0980	21,–
10.0	184.0	121.0	0.11	1	101062 1000	20,90
10.2	184.0	121.0	0.11	1	101062 1020	22,30
10.5	184.0	121.0	0.11	1	101062 1050	24,60
11.0	195.0	128.0	0.11	1	101062 1100	30,70
11.5	195.0	128.0	0.11	1	101062 1150	30,80
12.0	205.0	134.0	0.11	1	101062 1200	32,–

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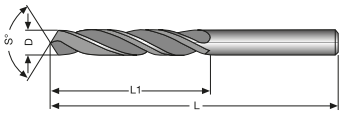
ATORN® Deep twist drill bit

HSS | DIN 1869 | Typ TLP | 130° | 38° | >10xD | Nit. | Vc/fz | 10-252

Deep bore profile

- **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 ∅ ≥ 2 mm
- Slots bare
- **Nitrided chamfers from Ø 2.5 mm**
- **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
		● 18-22	● 12-18	○ 6-12				● 18-22	○ 14-20				○ 40-45	○ 35-40	○ 20-40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

●

D h8 mm	L mm	L1 mm	Series	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.0	125	85	1	0.05	**101070** 0036	12,30
2.5	140	95	1	0.05	101070 0037	12,30
3.0	150	100	1	0.06	101070 0001	13,40
3.0	190	130	2	0.06	101070 0002	17,90
3.5	165	115	1	0.07	101070 0003	13,40
3.5	210	145	2	0.07	101070 0004	18,10
4.0	175	120	1	0.09	101070 0005	13,80
4.0	220	150	2	0.09	101070 0006	19,30
4.0	280	190	3	0.09	101070 0007	24,50
4.5	185	125	1	0.10	101070 0008	14,80
4.5	235	160	2	0.10	101070 0009	20,40
5.0	195	135	1	0.12	101070 0010	15,70
5.0	245	170	2	0.12	101070 0011	20,40
5.0	315	210	3	0.12	101070 0012	29,50
5.5	205	140	1	0.13	101070 0013	17,10
5.5	260	180	2	0.13	101070 0014	25,50
6.0	205	140	1	0.14	101070 0015	17,10
6.0	260	180	2	0.14	101070 0016	24,80

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●

D h8 mm	L mm	L1 mm	Series	Feed f steel < 700 N/mm² mm/rev	art.no.	€
6.0	330	225	3	0.14	101070 0017	33,90
6.5	215	150	1	0.16	101070 0039	23,30
6.5	275	190	2	0.16	101070 0018	28,70
6.8	225	155	1	0.16	101070 0019	30,20
7.0	225	155	1	0.17	101070 0020	24,50
7.0	290	200	2	0.17	101070 0021	31,30
7.5	225	155	1	0.17	101070 0022	27,70
7.5	290	200	2	0.17	101070 0023	36,70
8.0	240	165	1	0.20	101070 0024	30,20
8.0	305	210	2	0.20	101070 0025	36,50
8.0	390	265	3	0.20	101070 0026	54,50
8.5	240	165	1	0.21	101070 0027	39,20
8.5	305	210	2	0.21	101070 0028	56,50
9.0	250	175	1	0.21	101070 0029	41,80
9.0	320	220	2	0.21	101070 0030	55,50
10.0	265	185	1	0.22	101070 0032	43,20
10.0	340	235	2	0.22	101070 0033	59,–
10.0	430	295	3	0.22	101070 0034	86,–

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Safety in the workplace

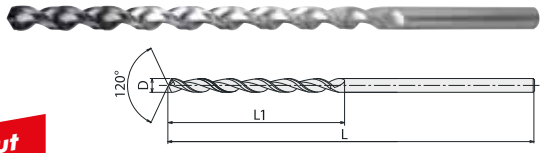
Please protect your eyes, ears and respiratory system!



TDXL high-performance deep hole drill

HSS-E | Werks-norm | Typ TLP | 120° | 40° | 10xD | 15xD | 20xD | TiAlN | Vc/fz | 10-252

- **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

Chip flute shape



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
		● 20-24	● 18-22	● 12-16				● 18-24	● 16-20										
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

10xD

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	75	26	0.02	**101099** 0016	22,–
1.8	75	26	0.03	101099 0018	22,–
2.0	75	26	0.03	101099 0020	20,50
2.1	75	33	0.03	101099 0021	24,20
2.2	75	33	0.03	101099 0022	24,20
2.3	75	33	0.03	101099 0023	24,20
2.4	75	33	0.04	101099 0024	24,20
2.5	75	33	0.04	101099 0025	23,–
2.6	90	40	0.04	101099 0026	24,20
2.7	90	40	0.04	101099 0027	27,60
2.8	90	40	0.04	101099 0028	27,60
2.9	90	40	0.04	101099 0029	27,60
3.0	90	40	0.05	101099 0030	26,60
3.1	100	45	0.05	101099 0031	31,30
3.2	100	45	0.05	101099 0032	31,30
3.3	100	45	0.05	101099 0033	31,30
3.4	100	50	0.05	101099 0034	36,–
3.5	100	50	0.05	101099 0035	29,80
3.6	100	50	0.05	101099 0036	31,30
3.7	100	50	0.06	101099 0037	31,30
3.8	100	50	0.06	101099 0038	35,10
3.9	100	50	0.06	101099 0039	35,10
4.0	100	50	0.06	101099 0040	33,50
4.1	115	55	0.06	101099 0041	35,10
4.2	115	55	0.06	101099 0042	35,10
4.3	115	60	0.06	101099 0043	39,80
4.4	115	60	0.07	101099 0044	39,80
4.5	115	60	0.07	101099 0045	37,90
4.6	115	60	0.07	101099 0046	39,80
4.7	115	60	0.07	101099 0047	45,30
4.8	115	65	0.07	101099 0048	45,30
4.9	115	65	0.07	101099 0049	46,50
5.0	115	65	0.08	101099 0050	42,40
5.1	128	70	0.08	101099 0051	45,30
5.2	128	70	0.08	101099 0052	45,30
5.3	128	70	0.08	101099 0053	45,30
5.4	128	78	0.08	101099 0054	60,60
5.5	128	78	0.08	101099 0055	48,40
5.6	128	78	0.08	101099 0056	64,50
5.7	128	78	0.09	101099 0057	64,50
5.8	128	78	0.09	101099 0058	64,50
5.9	128	78	0.09	101099 0059	64,50
6.0	128	78	0.09	101099 0060	54,60
6.1	140	78	0.09	101099 0061	88,80
6.2	140	87	0.09	101099 0062	73,40
6.3	140	87	0.09	101099 0063	88,80
6.4	140	87	0.10	101099 0064	88,80
6.5	140	87	0.10	101099 0065	61,50
6.6	140	87	0.10	101099 0066	73,40
6.7	140	87	0.10	101099 0067	73,40
6.8	140	90	0.10	101099 0068	73,40
6.9	140	90	0.10	101099 0069	73,40
7.0	140	90	0.11	101099 0070	69,60
7.1	155	100	0.11	101099 0071	94,60
7.2	155	100	0.11	101099 0072	94,60
7.3	155	100	0.11	101099 0073	94,60
7.4	155	100	0.11	101099 0074	94,60
7.5	155	100	0.11	101099 0075	78,60
7.6	155	105	0.11	101099 0076	107,30
7.7	155	105	0.12	101099 0077	107,30
7.8	155	105	0.12	101099 0078	107,30
7.9	155	105	0.12	101099 0079	107,30
8.0	155	105	0.12	101099 0080	89,50
8.1	165	110	0.12	101099 0081	116,–
8.2	165	110	0.12	101099 0082	116,–
8.3	165	110	0.12	101099 0083	116,–
8.4	165	110	0.13	101099 0084	116,–
8.5	165	110	0.13	101099 0085	100,80
8.6	165	115	0.13	101099 0086	137,30
8.7	165	115	0.13	101099 0087	137,30
8.8	165	115	0.13	101099 0088	137,30
8.9	165	115	0.13	101099 0089	137,30
9.0	165	115	0.14	101099 0090	114,50
9.1	190	125	0.14	101099 0091	148,80
9.2	190	125	0.14	101099 0092	148,80
9.3	190	125	0.14	101099 0093	148,80
9.4	190	125	0.14	101099 0094	148,80
9.5	190	125	0.14	101099 0095	129,50
9.6	190	130	0.14	101099 0096	163,20
9.7	190	130	0.15	101099 0097	163,20
9.8	190	130	0.15	101099 0098	163,20
9.9	190	130	0.15	101099 0099	163,20
10.0	190	130	0.15	101099 0100	145,70
10.1	205	140	0.15	101099 0101	182,40
10.2	205	140	0.15	101099 0102	182,40
10.3	205	140	0.15	101099 0103	182,40
10.4	205	140	0.16	101099 0104	182,40
10.5	205	140	0.16	101099 0105	165,60
10.6	205	145	0.16	101099 0106	203,30
10.7	205	145	0.16	101099 0107	203,30
10.8	205	145	0.16	101099 0108	203,30
10.9	205	145	0.16	101099 0109	203,30
11.0	205	145	0.17	101099 0110	188,10
11.1	215	155	0.17	101099 0111	208,30
11.2	215	155	0.17	101099 0112	208,30
11.3	215	155	0.17	101099 0113	208,30
11.4	215	155	0.17	101099 0114	208,30
11.5	215	155	0.17	101099 0115	198,40
11.6	215	155	0.17	101099 0116	211,50
11.7	215	155	0.18	101099 0117	211,50
11.8	215	155	0.18	101099 0118	211,50
11.9	215	155	0.18	101099 0119	211,50
12.0	215	155	0.18	101099 0120	208,40

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Continued on next page >>>

15xD

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	70	30	0.02	**101100** 0016	25,90
1.8	75	34	0.03	101100 0018	25,90
2	80	36	0.03	101100 0020	24,20
2.1	80	38	0.03	101100 0021	28,40
2.2	80	40	0.03	101100 0022	28,40
2.3	85	42	0.03	101100 0023	28,40
2.4	85	44	0.04	101100 0024	28,40
2.5	85	46	0.04	101100 0025	27,30
2.6	100	48	0.04	101100 0026	28,40
2.7	100	50	0.04	101100 0027	32,70
2.8	100	50	0.04	101100 0028	32,70
2.9	105	54	0.04	101100 0029	32,70
3	105	54	0.05	101100 0030	31,20
3.1	110	56	0.05	101100 0031	36,60
3.2	110	58	0.05	101100 0032	36,60
3.3	110	60	0.05	101100 0033	36,60
3.4	115	62	0.05	101100 0034	42,50
3.5	115	64	0.05	101100 0035	35,–
3.6	115	66	0.05	101100 0036	36,60
3.7	120	68	0.06	101100 0037	36,60
3.8	120	70	0.06	101100 0038	41,40
3.9	120	70	0.06	101100 0039	41,40
4	120	72	0.06	101100 0040	39,50
4.1	135	74	0.06	101100 0041	41,40
4.2	135	76	0.06	101100 0042	41,40
4.3	140	78	0.06	101100 0043	46,80
4.4	140	80	0.07	101100 0044	46,80
4.5	140	82	0.07	101100 0045	44,50
4.6	145	84	0.07	101100 0046	46,80
4.7	145	86	0.07	101100 0047	53,30
4.8	145	86	0.07	101100 0048	53,30
4.9	150	88	0.07	101100 0049	54,50
5	150	90	0.08	101100 0050	49,80
5.1	150	92	0.08	101100 0051	53,30
5.2	155	94	0.08	101100 0052	53,30
5.3	155	96	0.08	101100 0053	53,30
5.4	155	98	0.08	101100 0054	71,20
5.5	155	100	0.08	101100 0055	56,70
5.6	160	102	0.08	101100 0056	76,–
5.7	165	104	0.09	101100 0057	76,–
5.8	165	106	0.09	101100 0058	76,–
6	170	108	0.09	101100 0060	64,20
6.2	170	112	0.09	101100 0062	86,10
6.3	175	114	0.09	101100 0063	104,30
6.5	200	118	0.10	101100 0065	72,70
6.6	200	120	0.10	101100 0066	86,10
6.8	200	124	0.10	101100 0068	86,10
6.9	200	126	0.10	101100 0069	86,10
7	200	126	0.11	101100 0070	81,90
7.1	200	128	0.11	101100 0071	132,40
7.5	205	136	0.11	101100 0075	92,60
8	215	144	0.12	101100 0080	105,10
8.1	215	146	0.12	101100 0081	133,10
8.2	220	148	0.12	101100 0082	133,10
8.5	225	154	0.13	101100 0085	118,70
8.6	225	156	0.13	101100 0086	209,60
8.8	230	160	0.13	101100 0088	209,60
9	230	162	0.14	101100 0090	134,70
9.3	240	168	0.14	101100 0093	192,90
9.5	240	172	0.14	101100 0095	152,50
9.7	245	176	0.15	101100 0097	240,40
9.8	245	178	0.15	101100 0098	211,70
10	250	180	0.15	101100 0100	171,50
10.5	270	190	0.16	101100 0105	194,80
11	280	200	0.17	101100 0110	221,20
11.5	290	208	0.17	101100 0115	247,40
11.8	295	214	0.18	101100 0118	342,60
12	300	216	0.18	101100 0120	264,10

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20XD

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	85	38	0.02	**101101** 0016	30,70
1.8	85	42	0.03	101101 0018	30,70
2	85	46	0.03	101101 0020	29,–
2.1	90	50	0.03	101101 0021	35,50
2.2	90	52	0.03	101101 0022	35,50
2.3	95	54	0.03	101101 0023	35,50
2.4	95	56	0.04	101101 0024	35,50
2.5	100	58	0.04	101101 0025	33,40
2.6	110	60	0.04	101101 0026	35,50
2.7	115	64	0.04	101101 0027	40,40
2.8	115	66	0.04	101101 0028	40,40
2.9	120	68	0.04	101101 0029	40,40
3	120	70	0.05	101101 0030	38,10
3.1	125	72	0.05	101101 0031	45,10
3.2	125	74	0.05	101101 0032	45,10
3.3	125	76	0.05	101101 0033	45,10
3.4	130	80	0.05	101101 0034	51,90
3.5	130	82	0.05	101101 0035	42,50
3.7	135	86	0.06	101101 0037	45,50
3.8	140	88	0.06	101101 0038	51,30
4	140	92	0.06	101101 0040	48,80
4.1	155	96	0.06	101101 0041	61,80
4.2	155	98	0.06	101101 0042	51,30
4.3	160	100	0.06	101101 0043	58,–
4.5	165	104	0.07	101101 0045	55,20
4.6	165	106	0.07	101101 0046	66,70
4.8	170	112	0.07	101101 0048	66,70
5	175	116	0.08	101101 0050	63,10
5.1	180	118	0.08	101101 0051	67,20
5.2	180	120	0.08	101101 0052	67,20
5.5	185	128	0.08	101101 0055	71,20
5.7	190	132	0.09	101101 0057	94,30
5.8	200	134	0.09	101101 0058	94,30
6	200	138	0.09	101101 0060	81,30
6.3	200	146	0.09	101101 0063	132,–
6.5	225	150	0.10	101101 0065	92,–
6.8	225	158	0.10	101101 0068	109,90
6.9	230	160	0.10	101101 0069	109,90
7	230	162	0.11	101101 0070	104,60
7.5	245	174	0.11	101101 0075	118,70
8	255	184	0.12	101101 0080	135,10
8.1	255	188	0.12	101101 0081	168,–
8.2	260	190	0.12	101101 0082	168,–
8.5	265	196	0.13	101101 0085	154,40
9	275	208	0.14	101101 0090	174,50
10	300	230	0.15	101101 0100	226,10
11	350	254	0.17	101101 0110	292,50
12	350	276	0.18	101101 0120	368,40

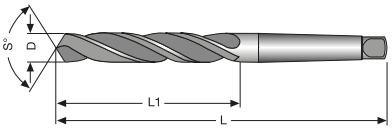
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SARA® Twist drill with MT shank

HSS | DIN 345 | Typ N | 118° | 27° | 5xD | Vc/fz | 10-248

- Standard drill bit
- Roll-milled
- Morse taper shank





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		○ 30				
	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 h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.00	182	101	MT 1	0.18	**101501** 0120	12,65
12.50	182	101	MT 1	0.22	101501 0125	12,65
13.00	182	101	MT 1	0.22	101501 0130	13,45
13.50	189	108	MT 1	0.22	101501 0135	13,95
14.00	189	108	MT 1	0.22	101501 0140	14,70
14.50	212	114	MT 2	0.22	101501 0145	17,–
15.00	212	114	MT 2	0.22	101501 0150	17,40
15.50	218	120	MT 2	0.22	101501 0155	18,30
16.00	218	120	MT 2	0.22	101501 0160	19,–
16.50	223	125	MT 2	0.28	101501 0165	20,40
17.00	223	125	MT 2	0.28	101501 0170	21,50
17.50	228	130	MT 2	0.28	101501 0175	22,40
18.00	228	130	MT 2	0.28	101501 0180	23,70
18.50	233	135	MT 2	0.28	101501 0185	24,30
19.00	233	135	MT 2	0.28	101501 0190	25,90
19.50	238	140	MT 2	0.28	101501 0195	27,20
20.00	238	140	MT 2	0.28	101501 0200	26,50
20.50	243	145	MT 2	0.28	101501 0205	29,–
21.00	243	145	MT 2	0.28	101501 0210	29,50
21.50	248	150	MT 2	0.28	101501 0215	29,80
22.00	248	150	MT 2	0.28	101501 0220	31,10
22.50	253	155	MT 2	0.28	101501 0225	32,70
23.00	253	155	MT 2	0.28	101501 0230	33,80
23.50	276	155	MT 3	0.28	101501 0235	36,30
24.00	281	160	MT 3	0.28	101501 0240	37,30
24.50	281	160	MT 3	0.28	101501 0245	38,70
25.00	281	160	MT 3	0.28	101501 0250	40,50
25.50	286	165	MT 3	0.28	101501 0255	40,90
26.00	286	165	MT 3	0.28	101501 0260	41,30
26.50	286	165	MT 3	0.28	101501 0265	46,40
27.00	291	170	MT 3	0.28	101501 0270	48,40
27.50	291	170	MT 3	0.28	101501 0275	49,80
28.00	291	170	MT 3	0.28	101501 0280	48,40

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● Feed f steel < 1000 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
28.50	296	175	MT 3	0.28	101501 0285	54,–
29.00	296	175	MT 3	0.28	101501 0290	56,50
29.50	296	175	MT 3	0.28	101501 0295	59,–
30.00	296	175	MT 3	0.28	101501 0300	61,–
30.50	301	180	MT 3	0.28	101501 0305	63,50
31.00	301	180	MT 3	0.28	101501 0310	66,50
31.50	301	180	MT 3	0.28	101501 0315	70,50
32.00	334	185	MT 4	0.28	101501 0320	73,–
33.00	334	185	MT 4	0.28	101501 0330	83,50
33.50	334	185	MT 4	0.28	101501 0335	89,–
34.00	339	190	MT 4	0.28	101501 0340	88,50
34.50	339	190	MT 4	0.28	101501 0345	91,50
35.00	339	190	MT 4	0.28	101501 0350	89,–
35.50	339	190	MT 4	0.28	101501 0355	98,–
36.00	344	195	MT 4	0.28	101501 0360	93,50
36.50	344	195	MT 4	0.28	101501 0365	112,–
37.00	344	195	MT 4	0.28	101501 0370	124,–
37.50	344	195	MT 4	0.28	101501 0375	125,–
38.00	349	200	MT 4	0.28	101501 0380	104,–
38.50	349	200	MT 4	0.28	101501 0385	130,–
39.00	349	200	MT 4	0.28	101501 0390	113,–
39.50	349	200	MT 4	0.28	101501 0395	130,–
40.00	349	200	MT 4	0.28	101501 0400	122,–
41.00	354	205	MT 4	0.28	101501 0410	148,–
42.00	354	205	MT 4	0.28	101501 0420	153,–
43.00	359	210	MT 4	0.28	101501 0430	161,–
44.00	359	210	MT 4	0.28	101501 0440	168,–
45.00	359	210	MT 4	0.28	101501 0450	176,–
46.00	364	215	MT 4	0.28	101501 0460	185,–
47.00	364	215	MT 4	0.28	101501 0470	191,–
48.00	369	220	MT 4	0.28	101501 0480	193,–
50.00	369	220	MT 4	0.28	101501 0500	194,–

1137

Safety in the workplace

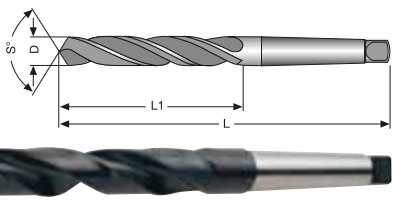
Please protect your eyes, ears and respiratory system!



ATORN® Twist drill with MT shank

HSS | DIN 345 | Typ N | 118° | 30° | 5xD | Vap. | Vc/fz | 10-248

- **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
		● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	Cutting speed Vc m/min.																		

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

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.00	133	52	MT 1	0.09	**101505** 0050	18,30
6.00	138	57	MT 1	0.13	101505 0060	18,70
6.80	150	69	MT 1	0.13	101505 0068	29,60
7.00	150	69	MT 1	0.13	101505 0070	18,30
8.00	156	75	MT 1	0.13	101505 0080	17,50
8.50	156	75	MT 1	0.18	101505 0085	19,70
9.00	162	81	MT 1	0.18	101505 0090	19,40
9.50	162	81	MT 1	0.18	101505 0095	21,40
10.00	168	87	MT 1	0.18	101505 0100	19,70
10.20	168	87	MT 1	0.18	101505 0102	29,–
10.50	168	87	MT 1	0.18	101505 0105	20,30
11.00	175	94	MT 1	0.18	101505 0110	21,–
11.50	175	94	MT 1	0.18	101505 0115	24,50
11.75	175	94	MT 1	0.18	101505 0117	28,30
11.80	175	94	MT 1	0.18	101505 0118	29,–
12.00	182	101	MT 1	0.18	101505 0120	21,70
12.10	182	101	MT 1	0.22	101505 0121	28,20
12.20	182	101	MT 1	0.22	101505 0122	28,70
12.50	182	101	MT 1	0.22	101505 0125	23,–
12.75	182	101	MT 1	0.22	101505 0127	28,70
13.00	182	101	MT 1	0.22	101505 0130	23,80
13.50	189	108	MT 1	0.22	101505 0135	27,–
13.75	189	108	MT 1	0.22	101505 0137	30,90
14.00	189	108	MT 1	0.22	101505 0140	25,10
14.25	212	114	MT 2	0.22	101505 0142	38,30
14.50	212	114	MT 2	0.22	101505 0145	26,20
14.75	212	114	MT 2	0.22	101505 0147	40,30
15.00	212	114	MT 2	0.22	101505 0150	28,20
15.25	218	120	MT 2	0.22	101505 0152	37,30
15.50	218	120	MT 2	0.22	101505 0155	30,10
15.75	218	120	MT 2	0.22	101505 0157	34,–
16.00	218	120	MT 2	0.22	101505 0160	30,10
16.25	223	125	MT 2	0.28	101505 0163	45,90
16.50	223	125	MT 2	0.28	101505 0165	32,50
16.75	223	125	MT 2	0.28	101505 0167	37,40
17.00	223	125	MT 2	0.28	101505 0170	33,80
17.25	228	130	MT 2	0.28	101505 0172	42,50
17.50	228	130	MT 2	0.28	101505 0175	34,60
17.75	228	130	MT 2	0.28	101505 0177	42,70
18.00	228	130	MT 2	0.28	101505 0180	36,20
18.50	233	135	MT 2	0.28	101505 0185	39,20
18.75	233	135	MT 2	0.28	101505 0187	45,90
19.00	233	135	MT 2	0.28	101505 0190	39,–
19.50	238	140	MT 2	0.28	101505 0195	45,20
19.75	238	140	MT 2	0.28	101505 0197	51,–
20.00	238	140	MT 2	0.28	101505 0200	41,50
20.50	243	145	MT 2	0.28	101505 0205	43,90
21.00	243	145	MT 2	0.28	101505 0210	46,50
21.50	248	150	MT 2	0.28	101505 0215	54,–
21.75	248	150	MT 2	0.28	101505 0217	60,50

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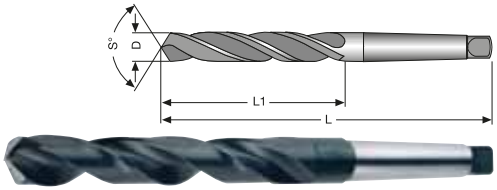
D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.00	248	150	MT 2	0.28	101505 0220	51,60
22.50	253	155	MT 2	0.28	101505 0225	56,50
23.00	253	155	MT 2	0.28	101505 0230	60,80
23.50	276	155	MT 3	0.28	101505 0235	60,50
24.00	281	160	MT 3	0.28	101505 0240	64,–
24.50	281	160	MT 3	0.28	101505 0245	66,50
24.75	281	160	MT 3	0.28	101505 0247	92,50
25.00	281	160	MT 3	0.28	101505 0250	71,–
25.50	286	165	MT 3	0.28	101505 0255	73,50
26.00	286	165	MT 3	0.28	101505 0260	80,40
26.50	286	165	MT 3	0.28	101505 0265	77,70
27.00	291	170	MT 3	0.28	101505 0270	80,–
27.50	291	170	MT 3	0.28	101505 0275	83,50
28.00	291	170	MT 3	0.28	101505 0280	88,80
28.50	296	175	MT 3	0.28	101505 0285	109,–
29.00	296	175	MT 3	0.28	101505 0290	97,–
29.50	296	175	MT 3	0.28	101505 0295	99,50
30.00	296	175	MT 3	0.28	101505 0300	96,50
30.50	301	180	MT 3	0.28	101505 0305	117,–
30.75	301	180	MT 3	0.28	101505 0307	131,–
31.00	301	180	MT 3	0.28	101505 0310	114,–
31.50	301	180	MT 3	0.28	101505 0315	131,–
32.00	334	185	MT 4	0.28	101505 0320	120,–
32.50	334	185	MT 4	0.28	101505 0325	140,–
33.00	334	185	MT 4	0.28	101505 0330	131,–
33.50	334	185	MT 4	0.28	101505 0335	144,–
34.00	339	190	MT 4	0.28	101505 0340	152,–
34.50	339	190	MT 4	0.28	101505 0345	168,–
35.00	339	190	MT 4	0.28	101505 0350	154,–
35.50	339	190	MT 4	0.28	101505 0355	186,–
36.00	344	195	MT 4	0.28	101505 0360	167,–
36.50	344	195	MT 4	0.28	101505 0365	187,–
37.00	344	195	MT 4	0.28	101505 0370	183,–
38.00	349	200	MT 4	0.28	101505 0380	194,–
38.50	349	200	MT 4	0.28	101505 0385	235,–
39.00	349	200	MT 4	0.28	101505 0390	215,–
39.50	349	200	MT 4	0.28	101505 0395	265,–
40.00	349	200	MT 4	0.28	101505 0400	220,–
40.50	354	205	MT 4	0.28	101505 0405	345,–
41.00	354	205	MT 4	0.28	101505 0410	235,–
41.50	354	205	MT 4	0.28	101505 0415	400,–
42.00	354	205	MT 4	0.28	101505 0420	255,–
42.50	354	205	MT 4	0.28	101505 0425	220,–
43.00	359	210	MT 4	0.28	101505 0430	270,–
44.00	359	210	MT 4	0.28	101505 0440	285,–
45.00	359	210	MT 4	0.28	101505 0450	300,–
46.00	364	215	MT 4	0.28	101505 0460	310,–
48.00	369	220	MT 4	0.28	101505 0480	335,–
50.00	369	220	MT 4	0.28	101505 0500	360,–

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ATORN® Twist drill with MT shank

HSS-E | DIN 345 | Typ N | 118° | 30° | 5xD | Vap. | Vc/fz | 10-252

- 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	25-30	12-16	14-18	12-14		30-35	28-30				50-70	40-55	30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.00	182	101	MT 1	0.28	**101507** 0120	41,30
12.50	182	101	MT 1	0.31	101507 0125	42,90
13.00	182	101	MT 1	0.31	101507 0130	45,–
13.50	189	108	MT 1	0.31	101507 0135	55,50
14.00	189	108	MT 1	0.31	101507 0140	48,90
14.50	212	114	MT 2	0.31	101507 0145	55,–
15.00	212	114	MT 2	0.31	101507 0150	57,–
15.50	218	120	MT 2	0.31	101507 0155	57,50
15.75	218	120	MT 2	0.31	101507 0157	65,50
16.00	218	120	MT 2	0.31	101507 0160	59,50
16.50	223	125	MT 2	0.35	101507 0165	62,–
17.00	223	125	MT 2	0.35	101507 0170	62,–
17.50	228	130	MT 2	0.35	101507 0175	60,–
18.00	228	130	MT 2	0.35	101507 0180	65,–
18.50	233	135	MT 2	0.35	101507 0185	69,50
19.00	233	135	MT 2	0.35	101507 0190	69,–
19.50	238	140	MT 2	0.35	101507 0195	83,–
20.00	238	140	MT 2	0.35	101507 0200	74,–
20.50	243	145	MT 2	0.35	101507 0205	80,50
21.00	243	145	MT 2	0.35	101507 0210	87,50
21.50	248	150	MT 2	0.35	101507 0215	115,–
22.00	248	150	MT 2	0.35	101507 0220	101,–
22.50	253	155	MT 2	0.35	101507 0225	158,–
23.00	253	155	MT 2	0.35	101507 0230	114,–

1104

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
23.50	276	155	MT 3	0.35	101507 0235	123,–
24.00	281	160	MT 3	0.35	101507 0240	132,–
24.50	281	160	MT 3	0.35	101507 0245	140,–
25.00	281	160	MT 3	0.35	101507 0250	132,–
25.50	286	165	MT 3	0.35	101507 0255	170,–
26.00	286	165	MT 3	0.35	101507 0260	156,–
26.50	286	165	MT 3	0.35	101507 0265	182,–
27.00	291	170	MT 3	0.35	101507 0270	171,–
27.50	291	170	MT 3	0.35	101507 0275	191,–
28.00	291	170	MT 3	0.35	101507 0280	196,–
28.50	296	175	MT 3	0.35	101507 0285	220,–
29.00	296	175	MT 3	0.35	101507 0290	200,–
29.50	296	175	MT 3	0.35	101507 0295	200,–
30.00	296	175	MT 3	0.35	101507 0300	187,–
30.50	301	180	MT 3	0.35	101507 0305	315,–
31.00	301	180	MT 3	0.35	101507 0310	260,–
31.50	301	180	MT 3	0.35	101507 0315	305,–
32.00	334	185	MT 4	0.35	101507 0320	270,–
32.50	334	185	MT 4	0.35	101507 0325	450,–
33.00	334	185	MT 4	0.35	101507 0330	275,–
33.50	334	185	MT 4	0.35	101507 0335	455,–
34.00	339	190	MT 4	0.35	101507 0340	290,–
35.00	339	190	MT 4	0.35	101507 0350	305,–

1104

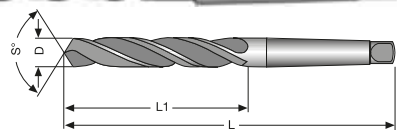
ATORN® Twist drill with MT shank

HSS-E | DIN 345 | Typ VA | 130° | 40° | 5xD | Vc/fz | 10-248

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



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	12	10	6			7	6		70	50	40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
12.5	182	101	MT 1	0.18	**101605** 0125	42,70
13.0	182	101	MT 1	0.18	101605 0130	45,10
13.5	189	108	MT 1	0.19	101605 0135	55,–
14.0	189	108	MT 1	0.19	101605 0140	48,80
14.5	212	114	MT 2	0.20	101605 0145	55,–
15.0	212	114	MT 2	0.20	101605 0150	57,50
15.5	218	120	MT 2	0.21	101605 0155	58,–
16.0	218	120	MT 2	0.21	101605 0160	60,–
16.5	223	125	MT 2	0.21	101605 0165	62,–
17.0	223	125	MT 2	0.22	101605 0170	62,–
17.5	228	130	MT 2	0.22	101605 0175	60,–

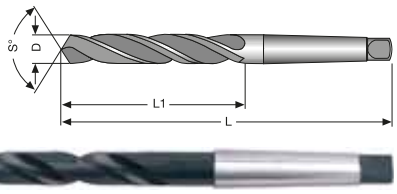
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D h8 mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
18.0	228	130	MT 2	0.23	101605 0180	64,50
18.5	233	135	MT 2	0.23	101605 0185	69,50
19.0	233	135	MT 2	0.23	101605 0190	68,50
19.5	238	140	MT 2	0.24	101605 0195	83,–
20.0	238	140	MT 2	0.24	101605 0200	73,50
20.5	243	145	MT 2	0.25	101605 0205	81,–
21.0	243	145	MT 2	0.25	101605 0210	88,–
21.5	248	150	MT 2	0.25	101605 0215	115,–
22.0	248	150	MT 2	0.26	101605 0220	101,–
22.5	253	155	MT 2	0.26	101605 0225	127,–
23.0	253	155	MT 2	0.26	101605 0230	115,–

1104

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

HSS | DIN 341 | Typ N | 118° | 30° | 10xD | Vap. | Vc/fz | 10-252



- 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
		● 25-28	● 20-22					○ 25-28	○ 18-22				○ 45-55	○ 35-45	○ 30-60				
	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 h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.0	197	116	MT 1	0.23	**101601** 0100	27,50
10.2	197	116	MT 1	0.23	101601 0102	32,90
10.5	197	116	MT 1	0.23	101601 0105	28,–
11.0	206	125	MT 1	0.23	101601 0110	28,90
11.5	206	125	MT 1	0.23	101601 0115	28,90
12.0	215	134	MT 1	0.23	101601 0120	28,90
12.5	215	134	MT 1	0.23	101601 0125	29,30
13.0	215	134	MT 1	0.23	101601 0130	29,30
13.5	223	142	MT 1	0.23	101601 0135	32,60
14.0	223	142	MT 1	0.23	101601 0140	32,90
14.5	245	147	MT 2	0.23	101601 0145	41,70
15.0	245	147	MT 2	0.23	101601 0150	41,60
15.5	251	153	MT 2	0.23	101601 0155	41,60
16.0	251	153	MT 2	0.23	101601 0160	42,90
16.5	257	159	MT 2	0.35	101601 0165	45,20
17.0	257	159	MT 2	0.35	101601 0170	44,70
17.5	263	165	MT 2	0.35	101601 0175	51,50
18.0	263	165	MT 2	0.35	101601 0180	51,–
18.5	269	171	MT 2	0.35	101601 0185	57,–
19.0	269	171	MT 2	0.35	101601 0190	56,50
20.0	275	177	MT 2	0.35	101601 0200	61,50
20.5	282	184	MT 2	0.35	101601 0205	77,–
21.0	282	184	MT 2	0.35	101601 0210	71,–
21.5	282	184	MT 2	0.35	101601 0215	83,50
22.0	289	191	MT 2	0.35	101601 0220	77,–
22.5	296	198	MT 2	0.35	101601 0225	91,50
23.0	296	198	MT 2	0.35	101601 0230	79,50

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● Feed f steel < 1000 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
24.0	327	206	MT 3	0.35	101601 0240	98,–
25.0	327	206	MT 3	0.35	101601 0250	99,–
26.0	335	214	MT 3	0.45	101601 0260	113,–
27.0	343	222	MT 3	0.45	101601 0270	128,–
28.0	343	222	MT 3	0.45	101601 0280	136,–
29.0	351	230	MT 3	0.45	101601 0290	157,–
30.0	351	230	MT 3	0.45	101601 0300	156,–
31.0	360	239	MT 3	0.45	101601 0310	198,–
32.0	397	248	MT 4	0.45	101601 0320	205,–
33.0	397	248	MT 4	0.45	101601 0330	210,–
34.0	406	257	MT 4	0.45	101601 0340	260,–
35.0	406	257	MT 4	0.45	101601 0350	255,–
36.0	416	267	MT 4	0.45	101601 0360	225,–
37.0	416	267	MT 4	0.45	101601 0370	330,–
38.0	426	277	MT 4	0.45	101601 0380	315,–
39.0	426	277	MT 4	0.45	101601 0390	340,–
40.0	426	277	MT 4	0.45	101601 0400	340,–
41.0	436	287	MT 4	0.56	101601 0410	410,–
42.0	436	287	MT 4	0.56	101601 0420	410,–
43.0	447	298	MT 4	0.56	101601 0430	435,–
44.0	447	298	MT 4	0.56	101601 0440	435,–
45.0	447	298	MT 4	0.56	101601 0450	440,–
47.0	459	310	MT 4	0.56	101601 0470	539,–
48.0	470	321	MT 4	0.56	101601 0480	559,–
49.0	470	321	MT 4	0.56	101601 0490	569,–
50.0	470	321	MT 4	0.56	101601 0500	569,–

1104



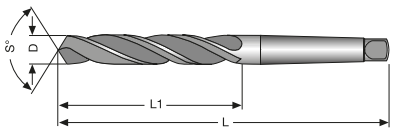
… for special measurement tasks

ATORN®
High quality for great performance

ATORN® Deep twist drill with MT shank

HSS | Werks-norm | Typ TLP | 130° | 38° | >10xD | Vc/fz | 10-248

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
		● 22	● 14	○ 6	○ 7	○ 6		● 20	○ 20	○ 5			○ 50	○ 40	○ 30				
	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

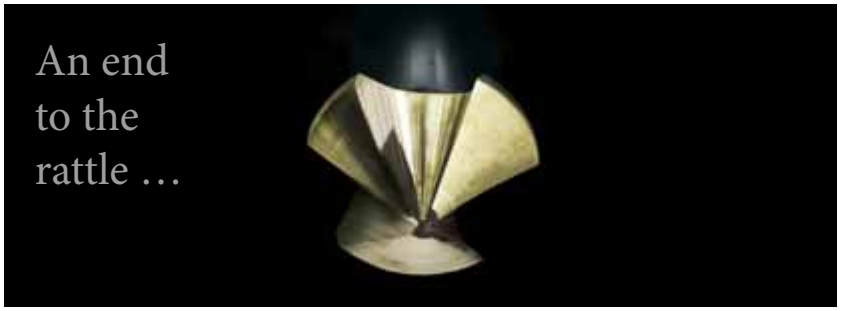
D h8 mm	L mm	L1 mm	Series	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	181	100	0	MT 1	0.15	**101700** 0800	43,–
8.0	265	165	1	MT 1	0.15	101700 0801	57,–
8.0	330	210	2	MT 1	0.15	101700 0802	88,–
8.0	500	420	3	MT 1	0.15	101700 0803	92,–
9.0	188	107	0	MT 1	0.16	101700 0900	48,–
9.0	275	175	1	MT 1	0.16	101700 0901	66,–
9.0	345	220	2	MT 1	0.16	101700 0902	95,–
9.0	500	420	3	MT 1	0.16	101700 0903	100,–
10.0	197	116	0	MT 1	0.16	101700 1000	49,–
10.0	285	185	1	MT 1	0.16	101700 1001	68,–
10.0	360	235	2	MT 1	0.16	101700 1002	95,–
10.0	500	420	3	MT 1	0.16	101700 1003	116,–
11.0	206	125	0	MT 1	0.17	101700 1100	62,–
11.0	300	195	1	MT 1	0.17	101700 1101	81,–
11.0	500	420	3	MT 1	0.17	101700 1103	126,–
12.0	215	134	0	MT 1	0.18	101700 1200	65,–
12.0	310	205	1	MT 1	0.18	101700 1201	90,–
12.0	395	260	2	MT 1	0.18	101700 1202	136,–
12.0	500	420	3	MT 1	0.18	101700 1203	134,–
13.0	215	134	0	MT 1	0.18	101700 1300	68,–
13.0	310	205	1	MT 1	0.18	101700 1301	91,–
13.0	395	260	2	MT 1	0.18	101700 1302	140,–
14.0	223	142	0	MT 1	0.19	101700 1400	68,–
14.0	325	220	1	MT 1	0.19	101700 1401	100,–
14.0	410	275	2	MT 1	0.19	101700 1402	149,–
14.0	500	420	3	MT 1	0.19	101700 1403	164,–
14.0	600	500	4	MT 1	0.19	101700 1404	225,–
15.0	245	147	0	MT 2	0.19	101700 1500	76,–
15.0	340	220	1	MT 2	0.19	101700 1501	112,–

1104

● Feed f steel < 1000 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Series	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.0	425	275	2	MT 2	0.19	101700 1502	152,–
15.0	600	500	4	MT 2	0.19	101700 1504	265,–
16.0	251	153	0	MT 2	0.20	101700 1600	85,–
16.0	355	230	1	MT 2	0.20	101700 1601	116,–
16.0	445	295	2	MT 2	0.20	101700 1602	156,–
16.0	500	400	3	MT 2	0.20	101700 1603	192,–
16.0	600	500	4	MT 2	0.20	101700 1604	285,–
17.0	257	159	0	MT 2	0.21	101700 1700	95,–
17.0	355	230	1	MT 2	0.21	101700 1701	120,–
18.0	263	165	0	MT 2	0.21	101700 1800	99,–
18.0	370	245	1	MT 2	0.21	101700 1801	132,–
18.0	465	310	2	MT 2	0.21	101700 1802	184,–
18.0	500	400	3	MT 2	0.21	101700 1803	210,–
18.0	600	500	4	MT 2	0.21	101700 1804	330,–
20.0	275	177	0	MT 2	0.22	101700 2000	120,–
20.0	385	260	1	MT 2	0.22	101700 2001	168,–
20.0	490	325	2	MT 2	0.22	101700 2002	225,–
20.0	500	400	3	MT 2	0.22	101700 2003	230,–
20.0	600	500	4	MT 2	0.22	101700 2004	330,–
21.0	282	184	0	MT 2	0.23	101700 2100	146,–
21.0	385	260	1	MT 2	0.23	101700 2101	190,–
21.0	600	500	4	MT 2	0.23	101700 2104	335,–
22.0	405	270	1	MT 2	0.23	101700 2201	199,–
22.0	600	500	4	MT 2	0.23	101700 2204	335,–
24.0	440	290	1	MT 3	0.24	101700 2401	260,–
24.0	600	475	4	MT 3	0.24	101700 2404	345,–
25.0	327	206	0	MT 3	0.25	101700 2500	199,–
25.0	600	475	4	MT 3	0.25	101700 2504	360,–

1104



… caused by uneven divisions

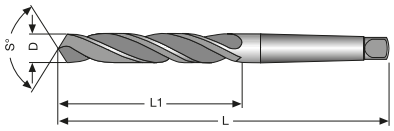
ATORN®
High quality for great performance

ATORN® Core drill with MT shank

HSS | DIN 343 | Typ N | 23° | Z 3 | Vc/fz | 10-253

3 cutting edges





- **MT shank with driving pin lugs in accordance with DIN228**
- 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
● 26-30	● 25-28					○ 10-18					○ 25-40		○ 10-30				

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

D h8 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	71,–
8.00	156	75	5.6	MT 1	0.10	101515 0800	106,–
8.80	162	81	6.3	MT 1	0.12	101515 0880	94,50
9.80	168	87	7.0	MT 1	0.12	101515 0980	69,50
10.00	168	87	7.0	MT 1	0.12	101515 1000	81,–
10.75	175	94	7.7	MT 1	0.12	101515 1075	71,50
11.00	175	94	7.7	MT 1	0.12	101515 1100	60,–
11.75	182	101	8.4	MT 1	0.12	101515 1175	62,–
12.00	182	101	8.4	MT 1	0.12	101515 1200	71,50
12.75	182	101	9.1	MT 1	0.12	101515 1275	74,–
13.00	182	101	9.1	MT 1	0.12	101515 1300	71,50
13.75	189	108	9.8	MT 1	0.12	101515 1375	76,–
14.00	189	108	9.8	MT 1	0.12	101515 1400	71,50
14.75	212	114	10.5	MT 2	0.18	101515 1475	84,–
15.00	212	114	10.5	MT 2	0.18	101515 1500	86,50
15.75	218	120	11.2	MT 2	0.18	101515 1575	78,50
16.00	218	120	11.2	MT 2	0.18	101515 1600	79,–
16.75	223	125	11.9	MT 2	0.18	101515 1675	85,–
17.00	223	125	11.9	MT 2	0.18	101515 1700	85,–
17.75	228	130	12.6	MT 2	0.18	101515 1775	92,–
18.00	228	130	12.6	MT 2	0.18	101515 1800	92,–
18.70	233	135	13.3	MT 2	0.18	101515 1870	99,50
19.00	233	135	13.3	MT 2	0.18	101515 1900	93,50
19.70	238	140	14.0	MT 2	0.18	101515 1970	88,–
20.00	238	140	14.0	MT 2	0.18	101515 2000	93,50
20.70	243	145	14.6	MT 2	0.22	101515 2070	103,–
21.00	243	145	14.6	MT 2	0.22	101515 2100	103,–

1134

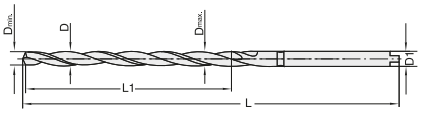
D h8 mm	L mm	L1 mm	Pre-drill min. Ø mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.70	248	150	15.3	MT 2	0.22	101515 2170	126,–
22.00	248	150	15.3	MT 2	0.22	101515 2200	131,–
22.70	253	155	16.0	MT 2	0.22	101515 2270	116,–
23.00	253	155	16.0	MT 2	0.22	101515 2300	134,–
23.70	281	160	16.6	MT 3	0.22	101515 2370	156,–
24.00	281	160	16.6	MT 3	0.22	101515 2400	137,–
24.70	281	160	17.3	MT 3	0.22	101515 2470	126,–
25.00	281	160	17.3	MT 3	0.22	101515 2500	122,–
25.70	286	165	18.0	MT 3	0.22	101515 2570	158,–
26.00	286	165	18.0	MT 3	0.22	101515 2600	139,–
26.70	291	170	18.6	MT 3	0.22	101515 2670	193,–
27.70	291	170	19.3	MT 3	0.22	101515 2770	183,–
28.00	291	170	19.3	MT 3	0.22	101515 2800	139,–
28.70	296	175	20.0	MT 3	0.22	101515 2870	161,–
29.70	296	175	20.5	MT 3	0.22	101515 2970	161,–
30.00	296	175	20.5	MT 3	0.22	101515 3000	158,–
30.60	301	180	21.0	MT 3	0.22	101515 3060	285,–
31.60	334	185	22.0	MT 4	0.22	101515 3160	285,–
32.00	334	185	22.0	MT 4	0.22	101515 3200	290,–
33.00	334	185	23.0	MT 4	0.22	101515 3300	345,–
33.60	339	190	24.0	MT 4	0.22	101515 3360	355,–
34.60	339	190	25.0	MT 4	0.22	101515 3460	255,–
37.60	349	200	26.5	MT 4	0.22	101515 3760	425,–
38.00	349	200	26.5	MT 4	0.22	101515 3800	425,–
39.60	349	200	28.0	MT 4	0.22	101515 3960	509,–
40.00	349	200	28.0	MT 4	0.22	101515 4000	450,–

1134

ATORN® Pin hole drills

HSS | DIN 1898A | 118° | 25° | Vc/fz | 10-253





- **Cutting edges with conical gradient and chip-breaking flutes**
- Used to drill conical drill holes 1:50 for taper pins in compliance with ISO 2339 (DIN 1) and ISO 8736 (DIN 7978) in one operation.
- Further sizes available on request
- Driving plane in accordance with DIN 1809
- **Note:** drill using a low 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
● 20-28	○ 18-25		○ 5-12			○ 14-25					○ 40-80		○ 50-60				

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

D mm	D min. mm	D max. mm	L mm	L1 mm	D1 e9 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.5	1.4	2.08	64	34	2.00	0.02	**101025** 0150	61,–
2.0	1.9	2.86	86	48	3.15	0.02	101025 0200	53,–
2.5	2.4	3.36	86	48	3.15	0.02	101025 0250	58,50
3.0	2.9	4.06	100	58	4.00	0.03	101025 0300	58,50
4.0	3.9	5.26	112	68	5.00	0.03	101025 0400	64,50

1104

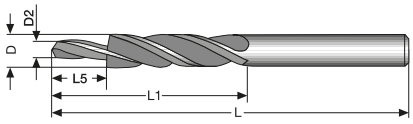
D mm	D min. mm	D max. mm	L mm	L1 mm	D1 e9 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.0	4.9	6.36	122	73	6.30	0.04	101025 0500	74,50
6.0	5.9	8.00	160	105	8.00	0.05	101025 0600	86,50
8.0	7.9	10.80	207	145	10.00	0.06	101025 0800	114,–
10.0	9.9	13.40	245	175	12.50	0.07	101025 1000	163,–
12.0	11.8	16.00	290	210	16.00	0.08	101025 1200	230,–

1104

ATORN® Step drills

HSS | DIN 8378 | DIN 8374 | DIN 8376 | 118° | 29° | Vap. | Vc/fz | 10-248

- 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

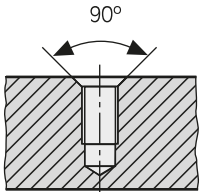


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					● 25-28	○ 20-23										
	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





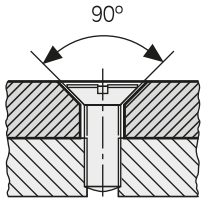
DIN 8378

for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M3	3.4	2.5	8.8	39	70	0.03	**102101** 0030	21,–
M4	4.5	3.3	11.4	47	80	0.04	102101 0040	22,90
M5	5.5	4.2	13.6	57	93	0.05	102101 0050	23,50
M6	6.6	5	16.5	63	101	0.07	102101 0060	26,60
M8	9.0	6.8	21	81	125	0.08	102101 0080	30,40
M10	11.0	8.5	25.5	94	142	0.10	102101 0100	39,–
							1105	

90° fine countersink

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





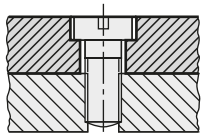
DIN 8374

for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M3	6.0	3.2	9	63	101	0.03	**102102** 0030	25,–
M4	8.0	4.3	11	75	117	0.04	102102 0040	28,90
M5	10.0	5.3	13	87	133	0.05	102102 0050	36,50
M6	11.5	6.4	15	94	142	0.07	102102 0060	40,70
M8	15.0	8.4	19	114	169	0.08	102102 0080	68,–
M10	19.0	10.5	23	135	198	0.10	102102 0100	104,–
							1105	

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





DIN 8376

for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M3	6.0	3.4	9	57	93	0.03	**102103** 0030	27,–
M4	8.0	4.5	11	75	117	0.04	102103 0040	28,70
M5	10.0	5.5	13	87	133	0.05	102103 0050	34,50
M6	11.0	6.6	15	94	142	0.07	102103 0060	39,80
M8	15.0	9	19	114	169	0.08	102103 0080	50,50
M10	18.0	11	23	130	191	0.10	102103 0100	104,–
							1105	

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



102650 0003



102652 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
		●	●	○	○			●	○				○	○	○				

Single

No.	D mm	L mm	Number of steps	D1 mm	blank art.no.	blank €	TiN art.no.	TiN €
1	4.0 - 12.0	79	9	6	**102650** 0001	21,20	**102652** 0001	26,30
2	6.0 - 20.0	71	8	9	102650 0002	28,40	102652 0002	45,90
3	6.0 - 30.0	100	13	10	102650 0003	51,–	102652 0003	57,50
					1137		1137	

Sets

Contents	blank art.no.	blank €	TiN art.no.	TiN €
1 step drill each no. 1 - 3	**102651** 0001	119,–	**102653** 0001	140,–
	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



102660 1630



102665 1630

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

No.	D mm	L mm	D1 mm	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
0	3.0 - 14.0	58	6	**102660** 0314	12,90	**102665** 0314	23,20
1	8.0 - 20.0	66	8	102660 0820	20,10	102665 0820	30,40
2	16.0 - 30.5	77	9	102660 1630	41,80	102665 1630	52,–
3	26.0 - 40.0	90	9	102660 2640	66,–	102665 2640	98,50
4	36.0 - 50.0	87	9	102660 3650	87,50	102665 3650	160,–
6	4.0 - 30.5	90	10	102660 0430	29,40	102665 0430	57,–
				1137		1137	

Sets

Contents	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
Cone drill bit no. 0, 1 and 2 including cutting paste	**102661** 0001	79,–	**102666** 0001	119,–
	1137		1137	



102661 0001



102666 0001

EUROBOOR Core drills
FOR PROFESSIONALS BY PROFESSIONALS

HSS | Vc/fz | 10-264

- **Strong HSS core drill**
- Super-fast drilling times and longer service life
- Guaranteed core removal
- **5 to 10 times longer service life than with a traditional twist drill bit**
- **No pre-drilling required**
- Surface is smooth and burr-free
- **Precise centring by means of guide pin**
- Other versions up to Ø 130 mm and various cutting material qualities (e.g. HSS-Co8) available on request

Ideal for machines with low drive power

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
		●	○		○	○		○	○				●	○					

Core drills
- Weldon shank 19.05 mm

D mm	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
12.0	**100601** 0120	20,90	**100602** 0120	31,30
13.0	100601 0130	20,90	100602 0130	31,30
14.0	100601 0140	20,90	100602 0140	29,30
15.0	100601 0150	20,90	100602 0150	29,30
16.0	100601 0160	22,30	100602 0160	30,60
17.0	100601 0170	23,70	100602 0170	31,30
18.0	100601 0180	23,70	100602 0180	34,10
19.0	100601 0190	24,40	100602 0190	34,80
20.0	100601 0200	25,10	100602 0200	36,20
21.0	100601 0210	26,50	100602 0210	39,–
22.0	100601 0220	27,20	100602 0220	40,40
23.0	100601 0230	28,50	100602 0230	41,10
24.0	100601 0240	30,60	100602 0240	43,20
25.0	100601 0250	31,30	100602 0250	45,30
26.0	100601 0260	32,70	100602 0260	46,70
	1150		1150	

D mm	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
27.0	100601 0270	33,40	100602 0270	49,40
28.0	100601 0280	34,80	100602 0280	51,50
29.0	100601 0290	35,50	100602 0290	53,50
30.0	100601 0300	39,–	100602 0300	57,–
31.0	100601 0310	43,90	100602 0310	59,–
32.0	100601 0320	46,70	100602 0320	61,50
33.0	100601 0330	49,40	100602 0330	64,–
34.0	100601 0340	53,50	100602 0340	68,50
35.0	100601 0350	59,–	100602 0350	71,–
40.0	100601 0400	69,50	100602 0400	88,50
45.0	100601 0450	85,50	100602 0450	117,–
50.0	100601 0500	102,–	100602 0500	147,–
55.0	100601 0550	121,–	100602 0550	169,–
60.0	100601 0600	135,–	100602 0600	194,–
	1150		1150	



Ejectors (centring pins)

Description	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
Ejector pin, Ø 12 - 60 mm	**100603** 0070	8,75	**100603** 0090	12,90
	1151		1151	



7-pcs. set
- For 30 mm cut depth

Contents	art.no.	€
1 ejector pin and 2 core drill bits in each size, Ø 14 / 18 / 22 mm	**100601** 1007	160,–
	1150	



Holding fixtures
- Internal coolant supply (ICS)

Description	art.no.	€
MT 2 industrial holding fixture with internal cooling, 19.05 mm Weldon	**100605** 0020	119,–
MT 3 industrial holding fixture with internal cooling, 19.05 mm Weldon	100605 0030	139,–
	1151	



Core drills



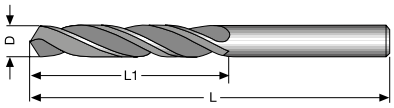
Magnetic core drill

Page 70-131

Masonry and concrete drill

HM | DIN 8039 | ISO 5468 | 5xD





- **Round shank DIN 8039**
- Very high drilling performance and service life due to rotary hammer drill head design
- **Carbide cutting insert** with 2 cutting edges
- **For drilling brick, tiles, ceramics, concrete, slate, aerated concrete blocks and masonry**
- For use primarily in hammer drills

Single

D mm	L1 mm	L mm		art.no.	€
3.0	30	60	5	**110130** 0030	2,20
4.0	50	85	5	110130 0040	1,80
4.5	50	85	5	110130 0045	2,–
5.0	50	85	5	110130 0050	1,80
6.0	60	100	5	110130 0060	1,90
6.5	60	100	5	110130 0065	2,40
7.0	60	100	5	110130 0070	2,40
8.0	80	120	5	110130 0080	2,50
9.0	80	120	5	110130 0090	3,20

1115

D mm	L1 mm	L mm		art.no.	€
10.0	80	120	1	110130 0100	3,30
11.0	85	150	1	110130 0110	4,40
12.0	85	150	1	110130 0120	4,40
13.0	90	150	1	110130 0130	7,50
14.0	90	150	1	110130 0140	7,50
15.0	100	160	1	110130 0150	9,30
16.0	100	160	1	110130 0160	10,10
18.0	100	160	1	110130 0180	13,50
20.0	100	160	1	110130 0200	17,40

1115



Set in plastic case

D mm	Contents	art.no.	€
4.0 / 5.0 / 6.0 / 8.0 / 10.0	5-pcs.	**110135** 0001	11,–

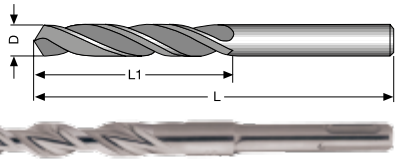
1115

Hammer drill with SDS-plus mounting shank

HM | Werks-norm | SDS Plus

MS2

Up to 25 % faster than equivalent competitor drills!



- For drill hammers with SDS-plus mounting shank and Hilti TE 10-22 dual-groove chuck
- For **drilling in concrete, masonry or natural granite**
- New, aggressive HM element with **3 power breaker** propulsion teeth for faster drilling progress
- **Centring point** allows for easy, pinpoint-accurate spot drilling without running
- **Narrow** tapered to the drill **point spiral** for reduced friction and higher
- drill speed – ideal for use in cordless rotary hammers
- **Increased reinforcement chamfering** protects the HM element in reinforcement
- Patented, **core-reinforced spirals** for fewer vibrations and increased resistance to breakage

Single

D mm	L1 mm	L mm	Shank	art.no.	€
4.0	100	160	SDS	**110140** 0040	4,60
5.0	50	110	SDS	110140 0050	3,20
5.0	100	160	SDS	110140 0051	3,70
6.0	50	110	SDS	110140 0060	3,20
6.0	100	160	SDS	110140 0061	3,40
6.0	150	210	SDS	110140 0062	5,30
6.0	200	260	SDS	110140 0063	6,30
7.0	50	110	SDS	110140 0070	4,40
8.0	50	110	SDS	110140 0080	4,–
8.0	100	160	SDS	110140 0081	4,10
8.0	150	210	SDS	110140 0082	4,90
8.0	200	260	SDS	110140 0083	6,20
10.0	50	110	SDS	110140 0100	4,85
10.0	100	160	SDS	110140 0101	4,85
10.0	150	210	SDS	110140 0102	5,80
10.0	200	260	SDS	110140 0103	7,20
10.0	400	460	SDS	110140 0104	12,70
12.0	100	160	SDS	110140 0120	5,50
12.0	150	210	SDS	110140 0121	6,50
12.0	200	260	SDS	110140 0122	8,30
12.0	400	460	SDS	110140 0123	14,50

1115

D mm	L1 mm	L mm	Shank	art.no.	€
12.0	550	610	SDS	110140 0124	23,10
12.0	950	1000	SDS	110140 0125	56,90
14.0	100	160	SDS	110140 0140	8,50
14.0	200	260	SDS	110140 0141	10,70
14.0	250	310	SDS	110140 0142	11,40
14.0	550	610	SDS	110140 0143	25,60
15.0	100	160	SDS	110140 0150	10,50
15.0	200	260	SDS	110140 0151	12,70
16.0	100	160	SDS	110140 0160	11,10
16.0	250	310	SDS	110140 0161	16,30
16.0	550	610	SDS	110140 0163	26,60
16.0	950	1000	SDS	110140 0165	65,–
18.0	150	200	SDS	110140 0180	20,90
18.0	400	450	SDS	110140 0181	26,90
20.0	400	450	SDS	110140 0201	30,90
22.0	200	250	SDS	110140 0220	36,90
22.0	400	450	SDS	110140 0221	47,70
24.0	200	250	SDS	110140 0240	39,–
25.0	200	250	SDS	110140 0250	43,90
25.0	400	450	SDS	110140 0251	56,50
26.0	400	450	SDS	110140 0260	57,50

1115





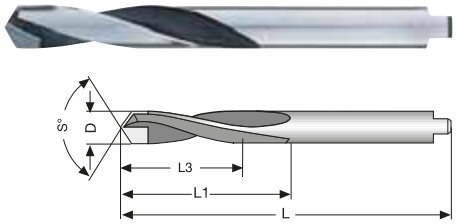
Set in metal case

Contents	art.no.	€
7-pcs. 5x50 / 6x50 / 6x100 / 8x50 / 8x100 / 10x100 / 12x100	**110145** 0001	27,90

1115

SARA® Carbide-tipped twist drill bit

HM | DIN 8037 | 118° | 15° | 3xD



- 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
● 30-60	● 25-50	● 15-30				● 50-70	● 30-50	○ 25-35			● 40-150	● 40-150	● 40-100	○ 20-100	● 6-10		

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

D h8 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	13,30
3.0	50	20	16	0.02	5	110501 0030	11,70
3.2	56	25	21	0.02	5	110501 0032	12,10
3.5	56	25	20	0.02	5	110501 0035	12,10
4.0	56	25	20	0.02	5	110501 0040	12,10
4.2	63	28	23	0.02	5	110501 0042	14,25
4.5	63	28	22	0.02	5	110501 0045	12,25
5.0	63	28	22	0.03	5	110501 0050	12,45
5.5	71	32	25	0.03	5	110501 0055	13,35
6.0	71	32	25	0.03	5	110501 0060	13,75
6.5	71	32	24	0.03	1	110501 0065	15,40
7.0	80	40	31	0.04	1	110501 0070	15,40
7.5	80	40	31	0.04	1	110501 0075	17,80
8.0	80	40	30	0.04	1	110501 0080	17,80
8.5	90	50	40	0.04	1	110501 0085	19,30
9.0	90	50	39	0.04	1	110501 0090	19,30
9.5	90	50	39	0.04	1	110501 0095	21,20
10.0	100	56	44	0.04	1	110501 0100	21,20
10.5	100	56	44	0.05	1	110501 0105	25,50
11.0	100	56	42	0.05	1	110501 0110	25,50
12.0	112	63	47	0.05	1	110501 0120	30,90
13.0	112	63	47	0.05	1	110501 0130	35,40
14.0	125	71	54	0.05	1	110501 0140	48,40
15.0	125	71	53	0.06	1	110501 0150	56,50
16.0	140	80	60	0.06	1	110501 0160	68,–

1108

Safety in the workplace

Please protect your eyes, ears and respiratory system!



Overview of solid carbide twist drills

	Factory standard	DIN 6539			DIN 6537								
Sorting by drilling depth and shank design													
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®
Drilling depth	3 x D	3 x D	3 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, IC	3 x D, IC
Diameter range [mm]	0.1 - 3.0	0.5 - 16.0	0.5 - 16	0.5 - 16	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20
Type		N	N	N	N	N	N	N	N	N	N	N	Ultra-M
Point angle	118°, 130°	118°	118°	118°	140°	140°	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	TiAlN		TiN	TiAlN	TiAlN	TiAlN	TiAlN	TiN	TiAlN	TiAlN	TiAlN	TiN	TiAlN
Item number	111550....	111005....	111008....	111009....	111501....	111502....	111504....	111503....	111505....	111506....	111508....	111507....	111545....
Catalogue page	10-60	10-61	10-61	10-61	10-63	10-63	10-63	10-63	10-66	10-66	10-66	10-66	10-68
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	
Stainless steel ferritic/martensitic	○	○	●	●	●	●	●	●	●	●	●	●	●
Stainless steel austenitic	●	○	○	●	●	●	●	○	●	●	●	●	●
Stainless steel duplex	○				○	○	○	○	○	○	○		●
Cast iron GG/GTS	●	●	●	●	●	●	●	●	●	●	●	●	
Cast iron GGG	●	●	●	●	●	●	●	○	●	●	●	●	
Titanium alloys	○	○	○	●	●	●	●	○	●	●	●	●	●
Superalloys Fe/NiCo base < 30 HRc	○			○	●	●	●	○	●	●	●		●
Superalloys Fe/NiCo base ≥ 30 HRc	○				○	○	○	○	○	○	○		●
Aluminium < 8 % Si	●	●	●	●	○	○	○	○	○	○	○	●	
Aluminium ≥ 8 % Si	●	●	●	●	●	●	●	○	●	●	●	●	
Copper Cu-alloy	●	●	●	●	○	○	○	○	○	○	○	●	
Graphite GRP/CFP/thermoset	○												
Hardened steel < 55 HRc		○	○	○	●	●	●	○	●	●	●	○	
Hardened steel < 60 HRc					○	○	○	○	○	○	○	○	
Hardened steel ≥ 60 HRc					○	○	○		○	○	○		

	DIN 6537	Factory standard	DIN 338			DIN 6537						Factory standard	DIN 6537	Factory standard
Sorting by drilling depth and shank design														
Brand	ATORN®		ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®	ATORN®		SARA®	
Drilling depth	3 x D, IC	3 x D, IC	5 x D	5 x D	5 x D	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D
Diameter range [mm]	3 - 20	2.8 - 20	1 - 13	1 - 13	1 - 13	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	3 - 20	2.78 - 20	3 - 20	2 - 12
Type	Ultra-M	VA	N	N	N	N	N	N	N	Ultra-M	Ultra-M	VA	ALU	H
Point angle	140°	140°	118°	118°	118°	140°	140°	140°	140°	140°	140°	140°	140°	120°
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	Solid carbide
Coating	TiAlN	TiAlN		TiN	TiAlN	TiAlN	TiAlN	TiAlN	TiN	TiAlN	TiAlN	TiAlN	ZrN	TiAlN
Item number	111549....	111613....	111010....	111011....	111012....	111510....	111511....	111522....	111512....	111547....	111551....	111615....	111410....	111530
Catalogue page	10-69	10-69	10-71	10-71	10-71	10-73	10-73	10-73	10-73	10-75	10-75	10-77	10-79	10-80
Material groups														
Steel < 700 N/mm²		●	●	●	●	●	●	●	●			●		
Steel < 1000 N/mm²		●	●	●	●	●	●	●	●			●		
Steel < 1400 N/mm²			●	●	●	●	●	●	●			○		
Stainless steel ferritic/martensitic	●	●	○	●	●	●	●	●	●	●	●	●		
Stainless steel austenitic	●	●			○	●	●	●	●	●	●	●	○	
Stainless steel duplex	●	●				○	○	○	○	●	●	●		
Cast iron GG/GTS		●	●	●	●	●	●	●	●			●		
Cast iron GGG		●	●	●	●	●	●	●	●			●		
Titanium alloys	●	●	○	○	●	●	●	●	●	●	●	●	○	
Superalloys Fe/NiCo base < 30 HRc	●				○	●	●	●	●	●	●		○	
Superalloys Fe/NiCo base ≥ 30 HRc	●					○	○	○	○	●	●		○	
Aluminium < 8 % Si		●	●	●	●	○	○	○	●			●	●	
Aluminium ≥ 8 % Si		○	●	●	●	●	●	●	●			○	●	
Copper Cu-alloy		○	●	●	●	○	○	○	●			○	●	
Graphite GRP/CFP/thermoset														
Hardened steel < 55 HRc			○	○	○	●	●	●	●					●
Hardened steel < 60 HRc						○	○	○	○					●
Hardened steel ≥ 60 HRc						○	○	○						●

	DIN 6537		Factory standard								
Sorting by drilling depth and shank design											
Brand	ATORN®	ATORN®	ATORN®	GG	GG	GG	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Drilling depth	7 x D, IC	7 x D, IC	12 x D, IC	Pilot drill	Deep-hole drill bit, IC	Flat drill	Flat drill, IC	Drill reamer, IC	Countersink	Countersink	Step drills
Diameter range [mm]	3 - 20	3 - 20	3 - 20	3 - 12	2 - 7	2 - 20	8 - 20	5.98 - 20.00	3 - 16	3 - 16	for M3 - M12
Type	N	N	TLP	PLT	TLP	N	N	N	N	N	
Point angle	140°	140°	135°	140°	160°	180°	180°	140°	150°	150°	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	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN		TiN	TiAlN
Item number	111513....	111519....	111514....	111726....	111715....	111711....	111710....	111701....	111013....	111014....	102202....
Catalogue page	10-81	10-81	10-83	10-84	10-84	10-88	10-89	10-90	10-90	10-90	10-91
Material groups	Usage recommendations										
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	○	○	○		●	●
Stainless steel ferritic/martensitic	○	○	○	○	○		●			○	●
Stainless steel austenitic	○	○	○	○	○		○				●
Stainless steel duplex											○
Cast iron GG/GTS	●	●	●	●	●	●	●	●	●	●	●
Cast iron GGG	○	○	○	●	●	●	●	●	●	●	●
Titanium alloys	●	●	●							○	○
Superalloys Fe/NiCo base < 30 HRc	●	●	●								○
Superalloys Fe/NiCo base ≥ 30 HRc	○	○	○								
Aluminium < 8 % Si	○	○	○			●	○		●	●	○
Aluminium ≥ 8 % Si	●	●	●			○	○		●	●	○
Copper Cu-alloy	○	○	○				○				○
Graphite GRP/CFP/thermoset											
Hardened steel < 55 HRc	○	○	○			○	○				●
Hardened steel < 60 HRc											
Hardened steel ≥ 60 HRc											

Hydraulic expansion chucks

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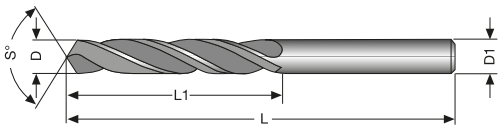
- Reduced-vibration tool clamping
- Increased tool endurance
- Reduced micro-nicks on the tool cutting edge
- High torque transfer
- High level of positioning accuracy and precision

ATORN® Solid carbide micro drill bit

VHM | Werks-norm | 118° | 130° | 30° | 3xD | DIN 6535 HA | TiAlN | Vc/fz | 10-253

- 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
		● 50-75	● 50-70	● 20-25	○ 20-35	● 20-35	○ 20-35	● 60-100	● 60-80	○ 10-30	○ 10-30	○ 10-20	● 150-220	● 100-160	● 80-130	○ 60-95			
	Cutting speed Vc m/min.																		

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

D mm	D1 h6 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.10	3.0	38	1.0	0.01	**111550** 0010	26,90
0.15	3.0	38	2.0	0.01	111550 0015	26,90
0.20	3.0	38	2.5	0.01	111550 0020	24,40
0.25	3.0	38	4.0	0.01	111550 0025	14,10
0.30	3.0	38	5.5	0.01	111550 0030	14,10
0.35	3.0	38	5.5	0.01	111550 0035	14,10
0.40	3.0	38	6.0	0.01	111550 0040	14,10
0.45	3.0	38	6.0	0.01	111550 0045	14,10
0.50	3.0	38	6.0	0.01	111550 0050	14,10
0.55	3.0	38	8.0	0.01	111550 0055	14,10
0.60	3.0	38	8.0	0.01	111550 0060	14,10
0.65	3.0	38	8.0	0.01	111550 0065	14,10
0.70	3.0	38	8.0	0.01	111550 0070	14,10
0.75	3.0	38	8.0	0.01	111550 0075	14,10
0.80	3.0	38	8.0	0.01	111550 0080	14,10
0.85	3.0	38	8.0	0.01	111550 0085	14,10
0.90	3.0	38	8.0	0.01	111550 0090	14,10
0.95	3.0	38	8.0	0.01	111550 0095	14,10
0.97	3.0	38	8.0	0.02	111550 0097	14,10
0.98	3.0	38	8.0	0.02	111550 0098	14,10
0.99	3.0	38	8.0	0.02	111550 0099	14,10
1.00	3.0	38	10.0	0.02	111550 0100	14,10
1.01	3.0	38	10.0	0.02	111550 0101	14,10
1.02	3.0	38	10.0	0.03	111550 0102	14,10
1.03	3.0	38	10.0	0.03	111550 0103	14,10
1.05	3.0	38	10.0	0.03	111550 0105	14,10
1.10	3.0	38	10.0	0.03	111550 0110	14,10
1.15	3.0	38	10.0	0.03	111550 0115	14,10
1.20	3.0	38	10.0	0.03	111550 0120	14,10
1.25	3.0	38	10.0	0.03	111550 0125	14,10
1.30	3.0	38	10.0	0.03	111550 0130	14,10
1.35	3.0	38	10.0	0.03	111550 0135	14,10
1.40	3.0	38	10.0	0.03	111550 0140	14,10
1.45	3.0	38	10.0	0.03	111550 0145	14,10
1.47	3.0	38	10.0	0.03	111550 0147	14,10
1.48	3.0	38	10.0	0.03	111550 0148	14,10
1.49	3.0	38	10.0	0.03	111550 0149	14,10
1.50	3.0	38	12.0	0.03	111550 0150	14,10
1.51	3.0	38	12.0	0.03	111550 0151	14,10
1.52	3.0	38	12.0	0.03	111550 0152	14,10
1.53	3.0	38	12.0	0.03	111550 0153	14,10
1.55	3.0	38	12.0	0.03	111550 0155	14,10

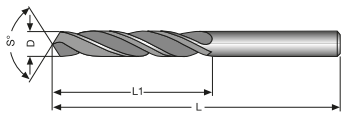
1154

D mm	D1 h6 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.60	3.0	38	12.0	0.03	111550 0160	14,10
1.65	3.0	38	12.0	0.03	111550 0165	14,10
1.70	3.0	38	12.0	0.03	111550 0170	14,10
1.75	3.0	38	12.0	0.03	111550 0175	14,10
1.80	3.0	38	12.0	0.03	111550 0180	14,10
1.85	3.0	38	12.0	0.03	111550 0185	14,10
1.90	3.0	38	12.0	0.03	111550 0190	14,10
1.95	3.0	38	12.0	0.03	111550 0195	14,10
1.97	3.0	38	12.0	0.03	111550 0197	14,10
1.98	3.0	38	12.0	0.03	111550 0198	14,10
1.99	3.0	38	12.0	0.03	111550 0199	14,10
2.00	3.0	38	12.0	0.05	111550 0200	14,10
2.01	3.0	38	12.0	0.05	111550 0201	14,10
2.02	3.0	38	12.0	0.05	111550 0202	14,10
2.03	3.0	38	12.0	0.05	111550 0203	14,10
2.05	3.0	38	12.0	0.05	111550 0205	14,10
2.10	3.0	38	12.0	0.05	111550 0210	14,10
2.15	3.0	38	12.0	0.05	111550 0215	14,10
2.20	3.0	38	12.0	0.05	111550 0220	14,10
2.25	3.0	38	12.0	0.05	111550 0225	14,10
2.30	3.0	38	12.0	0.05	111550 0230	14,10
2.35	3.0	38	12.0	0.05	111550 0235	14,10
2.40	3.0	38	12.0	0.05	111550 0240	14,10
2.45	3.0	38	12.0	0.05	111550 0245	14,10
2.50	3.0	38	12.0	0.05	111550 0250	14,10
2.51	3.0	38	12.0	0.06	111550 0251	14,10
2.52	3.0	38	12.0	0.06	111550 0252	14,10
2.53	3.0	38	12.0	0.06	111550 0253	14,10
2.55	3.0	38	12.0	0.06	111550 0255	18,30
2.60	3.0	38	12.0	0.06	111550 0260	18,30
2.65	3.0	38	12.0	0.06	111550 0265	18,30
2.70	3.0	38	12.0	0.06	111550 0270	18,30
2.75	3.0	38	12.0	0.06	111550 0275	18,30
2.80	3.0	38	12.0	0.06	111550 0280	18,30
2.85	3.0	38	12.0	0.06	111550 0285	18,30
2.90	3.0	38	12.0	0.06	111550 0290	18,30
2.95	3.0	38	12.0	0.06	111550 0295	18,30
2.96	3.0	38	12.0	0.06	111550 0296	18,30
2.97	3.0	38	12.0	0.06	111550 0297	18,30
2.98	3.0	38	12.0	0.06	111550 0298	18,30
2.99	3.0	38	12.0	0.06	111550 0299	18,30
3.00	3.0	38	12.0	0.06	111550 0300	18,30

1154

ATORN® Solid carbide twist drill bit

VHM | DIN 6539 | Typ N | 118° | 32° | 3xD | TiN | TiAlN | Vc/fz | 10-254



- Robust twist drill bit for automated units/revolving lathes
- Facet-ground

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
	111005....	● 80	● 50-70	● 50	○ 25	○ 25		● 80-90	● 70-80	○ 15-20			● 150-200	● 120-150	● 70-120		○ 20		
	111008....	● 79-92	● 58-79	● 58	● 27	○ 27		● 83-98	● 92	○ 17-23			● 240	● 150	● 136-205		○ 23		
	111009....	● 91-104	● 78-91	● 78	● 32	● 32		● 104-117	● 91-104	● 20-26	○ 20		● 260	● 156	● 140-210		○ 26		
	Cutting speed Vc m/min.																		

D h8 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
0.50	20	3	0.02	**111005** 0005	4,69	**111008** 0005	6,95	**111009** 0005	7,50
0.60	21	3.5	0.02	111005 0006	4,69	111008 0006	6,95	111009 0006	7,50
0.70	23	4.5	0.02	111005 0007	4,69	111008 0007	6,95	111009 0007	7,50
0.80	24	5	0.02	111005 0008	4,69	111008 0008	6,95	111009 0008	7,50
0.90	25	5.5	0.02	111005 0009	4,69	111008 0009	6,95	111009 0009	7,50
1.00	26	6	0.03	111005 0010	4,69	111008 0010	6,95	111009 0010	7,50
1.10	28	7	0.03	111005 0011	4,69	111008 0011	6,95	111009 0011	7,50
1.20	30	8	0.03	111005 0012	4,69	111008 0012	6,95	111009 0012	7,50
1.30	30	8	0.03	111005 0013	4,69	111008 0013	6,95	111009 0013	7,50
1.40	32	9	0.05	111005 0014	4,69	111008 0014	6,95	111009 0014	7,50
1.50	32	9	0.05	111005 0015	4,69	111008 0015	6,95	111009 0015	7,50
1.60	34	10	0.06	111005 0016	4,69	111008 0016	6,95	111009 0016	7,50
1.70	34	10	0.06	111005 0017	4,69	111008 0017	6,95	111009 0017	7,50
1.80	36	11	0.06	111005 0018	4,69	111008 0018	6,95	111009 0018	7,50
1.90	36	11	0.06	111005 0019	4,69	111008 0019	6,95	111009 0019	7,50
2.00	38	12	0.06	111005 0020	5,30	111008 0020	7,75	111009 0020	9,05
2.10	38	12	0.07	111005 0021	5,30	111008 0021	7,75	111009 0021	9,05
2.20	40	13	0.07	111005 0022	5,30	111008 0022	7,75	111009 0022	9,05
2.30	40	13	0.07	111005 0023	5,30	111008 0023	7,75	111009 0023	9,05
2.40	43	14	0.07	111005 0024	5,30	111008 0024	7,75	111009 0024	9,05
2.50	43	14	0.07	111005 0025	5,30	111008 0025	7,75	111009 0025	9,05
2.60	43	14	0.08	111005 0026	5,30	111008 0026	7,75	111009 0026	9,05
2.70	46	16	0.08	111005 0027	7,20	111008 0027	9,55	111009 0027	10,25
2.80	46	16	0.08	111005 0028	7,20	111008 0028	9,55	111009 0028	10,25
2.90	46	16	0.08	111005 0029	7,20	111008 0029	9,55	111009 0029	10,25
3.00	46	16	0.09	111005 0030	7,20	111008 0030	9,55	111009 0030	10,25
3.10	49	18	0.09	111005 0031	7,55	111008 0031	10,65	111009 0031	12,65
3.20	49	18	0.09	111005 0032	7,55	111008 0032	10,65	111009 0032	12,65
3.30	49	18	0.09	111005 0033	7,55	111008 0033	10,65	111009 0033	12,65
3.40	52	20	0.09	111005 0034	8,05	111008 0034	11,35	111009 0034	13,85
3.50	52	20	0.09	111005 0035	8,05	111008 0035	11,35	111009 0035	13,85
3.60	52	20	0.09	111005 0036	8,70	111008 0036	12,40	111009 0036	14,60
3.70	52	20	0.09	111005 0037	8,70	111008 0037	12,40	111009 0037	14,60
3.80	55	22	0.09	111005 0038	9,30	111008 0038	13,40	111009 0038	15,80
3.90	55	22	0.09	111005 0039	9,30	111008 0039	13,40	111009 0039	15,80
4.00	55	22	0.09	111005 0040	9,30	111008 0040	13,40	111009 0040	15,80
4.10	55	22	0.09	111005 0041	9,85	111008 0041	14,05	111009 0041	16,20
4.20	55	22	0.09	111005 0042	9,85	111008 0042	14,05	111009 0042	16,20
4.30	58	24	0.09	111005 0043	10,40	111008 0043	14,85	111009 0043	16,60
4.40	58	24	0.09	111005 0044	10,40	111008 0044	14,85	111009 0044	16,60
4.50	58	24	0.09	111005 0045	10,40	111008 0045	14,85	111009 0045	16,60
4.60	58	24	0.09	111005 0046	10,40	111008 0046	14,85	111009 0046	16,60
4.70	58	24	0.09	111005 0047	11,15	111008 0047	16,20	111009 0047	18,10
4.80	62	26	0.09	111005 0048	11,15	111008 0048	16,20	111009 0048	18,10
4.90	62	26	0.09	111005 0049	11,15	111008 0049	16,20	111009 0049	18,10
				1154		1154		1154	


Solid carbide, uncoated


Solid carbide TiN


Solid carbide TiAlN

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
5.00	62	26	0.09	111005 0050	11,15	111008 0050	16,20	111009 0050	18,10
5.10	62	26	0.09	111005 0051	11,15	111008 0051	16,20	111009 0051	18,10
5.20	62	26	0.09	111005 0052	14,60	111008 0052	20,70	111009 0052	22,40
5.30	62	26	0.09	111005 0053	14,60	111008 0053	20,70	111009 0053	22,40
5.40	66	28	0.09	111005 0054	14,60	111008 0054	20,70	111009 0054	22,40
5.50	66	28	0.10	111005 0055	14,60	111008 0055	20,70	111009 0055	22,40
5.60	66	28	0.10	111005 0056	15,40	111008 0056	22,10	111009 0056	24,40
5.70	66	28	0.10	111005 0057	15,40	111008 0057	22,10	111009 0057	24,40
5.80	66	28	0.10	111005 0058	15,40	111008 0058	22,10	111009 0058	24,40
5.90	66	28	0.10	111005 0059	15,40	111008 0059	22,10	111009 0059	24,40
6.00	66	28	0.10	111005 0060	15,40	111008 0060	22,10	111009 0060	24,40
6.10	70	31	0.10	111005 0061	19,30	111008 0061	27,60	111009 0061	30,90
6.20	70	31	0.10	111005 0062	19,30	111008 0062	27,60	111009 0062	30,90
6.30	70	31	0.10	111005 0063	19,30	111008 0063	27,60	111009 0063	30,90
6.40	70	31	0.10	111005 0064	19,30	111008 0064	27,60	111009 0064	30,90
6.50	70	31	0.11	111005 0065	19,30	111008 0065	27,60	111009 0065	30,90
6.60	70	31	0.11	111005 0066	22,50	111008 0066	32,70	111009 0066	35,40
6.70	70	31	0.11	111005 0067	22,50	111008 0067	32,70	111009 0067	35,40
6.80	74	34	0.11	111005 0068	22,50	111008 0068	32,70	111009 0068	35,40
6.90	74	34	0.11	111005 0069	22,50	111008 0069	32,70	111009 0069	35,40
7.00	74	34	0.11	111005 0070	22,50	111008 0070	32,70	111009 0070	35,40
7.10	74	34	0.11	111005 0071	27,30	111008 0071	39,–	111009 0071	40,40
7.20	74	34	0.11	111005 0072	27,30	111008 0072	39,–	111009 0072	40,40
7.30	74	34	0.11	111005 0073	27,30	111008 0073	39,–	111009 0073	40,40
7.40	74	34	0.11	111005 0074	27,30	111008 0074	39,–	111009 0074	40,40
7.50	74	34	0.12	111005 0075	27,30	111008 0075	39,–	111009 0075	40,40
7.60	79	37	0.12	111005 0076	30,90	111008 0076	44,20	111009 0076	44,40
7.70	79	37	0.12	111005 0077	30,90	111008 0077	44,20	111009 0077	44,40
7.80	79	37	0.12	111005 0078	30,90	111008 0078	44,20	111009 0078	44,40
7.90	79	37	0.12	111005 0079	30,90	111008 0079	44,20	111009 0079	44,40
8.00	79	37	0.12	111005 0080	30,90	111008 0080	44,20	111009 0080	44,40
8.10	79	37	0.12	111005 0081	38,30	111008 0081	50,–	111009 0081	52,–
8.20	79	37	0.12	111005 0082	38,30	111008 0082	50,–	111009 0082	52,–
8.30	79	37	0.12	111005 0083	38,30	111008 0083	50,–	111009 0083	52,–
8.40	79	37	0.13	111005 0084	38,30	111008 0084	50,–	111009 0084	52,–
8.50	79	37	0.13	111005 0085	38,30	111008 0085	50,–	111009 0085	52,–
8.60	84	40	0.13	111005 0086	40,40	111008 0086	53,50	111009 0086	55,50
8.70	84	40	0.13	111005 0087	40,40	111008 0087	53,50	111009 0087	55,50
8.80	84	40	0.13	111005 0088	40,40	111008 0088	53,50	111009 0088	55,50
8.90	84	40	0.13	111005 0089	40,40	111008 0089	53,50	111009 0089	55,50
9.00	84	40	0.13	111005 0090	40,40	111008 0090	53,50	111009 0090	55,50
9.10	84	40	0.13	111005 0091	44,30	111008 0091	58,50	111009 0091	59,–
9.20	84	40	0.14	111005 0092	44,30	111008 0092	58,50	111009 0092	59,–
9.30	84	40	0.14	111005 0093	44,30	111008 0093	58,50	111009 0093	59,–
9.40	84	40	0.14	111005 0094	44,30	111008 0094	58,50	111009 0094	59,–
9.50	84	40	0.14	111005 0095	44,30	111008 0095	58,50	111009 0095	59,–
9.60	89	43	0.14	111005 0096	45,90	111008 0096	66,–	111009 0096	69,50
9.70	89	43	0.14	111005 0097	45,90	111008 0097	66,–	111009 0097	69,50
9.80	89	43	0.14	111005 0098	45,90	111008 0098	66,–	111009 0098	69,50
9.90	89	43	0.14	111005 0099	45,90	111008 0099	66,–	111009 0099	69,50
10.00	89	43	0.15	111005 0100	45,90	111008 0100	66,–	111009 0100	69,50
10.20	89	43	0.15	111005 0102	57,70	111008 0102	76,50	111009 0102	79,–
10.50	89	43	0.15	111005 0105	57,70	111008 0105	76,50	111009 0105	79,–
11.00	95	47	0.16	111005 0110	57,70	111008 0110	76,50	111009 0110	79,–
11.20	95	47	0.16	111005 0112	67,30	111008 0112	97,50	111009 0112	97,50
11.50	95	47	0.16	111005 0115	67,30	111008 0115	97,50	111009 0115	97,50
12.00	102	51	0.17	111005 0120	67,30	111008 0120	97,50	111009 0120	97,50
12.50	102	51	0.17	111005 0125	87,–	111008 0125	108,–	111009 0125	113,–
13.00	102	51	0.18	111005 0130	81,50	111008 0130	108,–	111009 0130	113,–
14.00	107	54	0.19	111005 0140	121,–	111008 0140	154,–	111009 0140	173,–
15.00	111	56	0.19	111005 0150	137,–	111008 0150	169,–	111009 0150	190,–
16.00	115	58	0.20	111005 0160	150,–	111008 0160	193,–	111009 0160	230,–
				1154		1154		1154	

ATORN® Solid carbide twist drill bit set

VHM | DIN 6539 | Typ N | 118° | 32° | 3xD | TiN | Vc/fz | 10-254

- Set supplied in a case
- Diameter 1.0 to 10.0 mm in 1.0 mm increments
- Sturdy twist drill bits for automated units / capstan lathes



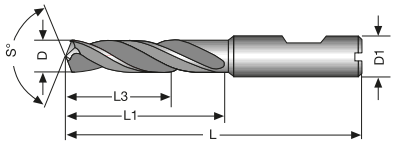
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	○		●	●	○			●	●	●		○		
		79-92	58-79	58	27	27		83-98	92	17-23			240	150	136-205		23		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Number of drills	art.no.	€
1.0 to 10.0 mm in 1.0 mm increments	10	**111008** 1001	275,–
		1154	

ATORN® SARA® Solid carbide high-performance drill bit

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HE | DIN 6535 HB | TiAlN | TiN | Vc/fz | 10-255 10-256

- With optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- Without coolant bore
- **Solid carbide cutting material: ultra-fine grain TiAlNplus and TiN**
- 2-facet grinding
- True-running accuracy of the tool when clamped max. 0.02 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
	111501....	●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
		110-145	85-110	55-85	40	45	30	125-155	120	35-40	30	25	260	180	125		40-55	25-35	25
	111502....	●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
		110-145	85-110	55-85	40	45	30	125-155	120	35-40	30	25	260	180	125		40-55	25-35	25
	111504....	●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
		110-145	85-110	55-85	40	45	30	125-155	120	35-40	30	25	260	180	125		40-55	25-35	25
	111503....	●	●	●	●	○	○	●	○	○	○	○	○	○	○		○	○	
		110-130	95-100	50-75	40-50	40	27	110-140	110	32-36	27	22	230	160	110		35-50	22-32	
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		


HA


HE


HB


HB

D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
3.00	6	62	20	14	0.06	**111501** 0030	34,80	**111502** 0030	34,80	**111504** 0030	34,80	**111503** 0030	23,80
3.10	6	62	20	14	0.06	111501 0031	34,80	111502 0031	34,80	111504 0031	34,80	111503 0031	23,80
3.20	6	62	20	14	0.06	111501 0032	34,80	111502 0032	34,80	111504 0032	34,80	111503 0032	23,80
3.25	6	62	20	14	0.07	111501 0325	34,80	111502 0325	34,80	111504 0325	34,80	111503 0325	23,80
3.30	6	62	20	14	0.07	111501 0033	34,80	111502 0033	34,80	111504 0033	34,80	111503 0033	23,80
3.40	6	62	20	14	0.07	111501 0034	34,80	111502 0034	34,80	111504 0034	34,80	111503 0034	23,80
3.50	6	62	20	14	0.07	111501 0035	34,80	111502 0035	34,80	111504 0035	34,80	111503 0035	23,80
3.60	6	62	20	14	0.07	111501 0036	34,80	111502 0036	34,80	111504 0036	34,80	111503 0036	23,80
3.70	6	62	20	14	0.07	111501 0037	34,80	111502 0037	34,80	111504 0037	34,80	111503 0037	23,80
3.80	6	66	24	17	0.08	111501 0038	34,80	111502 0038	34,80	111504 0038	34,80	111503 0038	23,80
3.90	6	66	24	17	0.08	111501 0039	34,80	111502 0039	34,80	111504 0039	34,80	111503 0039	23,80
4.00	6	66	24	17	0.08	111501 0040	34,80	111502 0040	34,80	111504 0040	34,80	111503 0040	23,80
4.10	6	66	24	17	0.08	111501 0041	34,80	111502 0041	34,80	111504 0041	34,80	111503 0041	23,80
						1111		1111		1111		1156	

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D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
4.20	6	66	24	17	0.08	111501 0042	34,80	111502 0042	34,80	111504 0042	34,80	111503 0042	23,80
4.30	6	66	24	17	0.09	111501 0043	34,80	111502 0043	34,80	111504 0043	34,80	111503 0043	23,80
4.40	6	66	24	17	0.09	111501 0044	34,80	111502 0044	34,80	111504 0044	34,80	111503 0044	23,80
4.50	6	66	24	17	0.09	111501 0045	34,80	111502 0045	34,80	111504 0045	34,80	111503 0045	23,80
4.60	6	66	24	17	0.09	111501 0046	34,80	111502 0046	34,80	111504 0046	34,80	111503 0046	23,80
4.65	6	66	24	17	0.09	111501 0465	34,80	111502 0465	34,80	111504 0465	34,80	111503 0465	23,80
4.70	6	66	24	17	0.09	111501 0047	34,80	111502 0047	34,80	111504 0047	34,80	111503 0047	23,80
4.80	6	66	28	20	0.10	111501 0048	34,80	111502 0048	34,80	111504 0048	34,80	111503 0048	23,80
4.90	6	66	28	20	0.10	111501 0049	34,80	111502 0049	34,80	111504 0049	34,80	111503 0049	23,80
5.00	6	66	28	20	0.10	111501 0050	34,80	111502 0050	34,80	111504 0050	34,80	111503 0050	23,80
5.10	6	66	28	20	0.10	111501 0051	34,80	111502 0051	34,80	111504 0051	34,80	111503 0051	23,80
5.20	6	66	28	20	0.10	111501 0052	34,80	111502 0052	34,80	111504 0052	34,80	111503 0052	23,80
5.30	6	66	28	20	0.11	111501 0053	34,80	111502 0053	34,80	111504 0053	34,80	111503 0053	23,80
5.40	6	66	28	20	0.11	111501 0054	34,80	111502 0054	34,80	111504 0054	34,80	111503 0054	23,80
5.50	6	66	28	20	0.11	111501 0055	34,80	111502 0055	34,80	111504 0055	34,80	111503 0055	23,80
5.55	6	66	28	20	0.11	111501 0555	34,80	111502 0555	34,80	111504 0555	34,80	111503 0555	23,80
5.60	6	66	28	20	0.11	111501 0056	34,80	111502 0056	34,80	111504 0056	34,80	111503 0056	23,80
5.70	6	66	28	20	0.11	111501 0057	34,80	111502 0057	34,80	111504 0057	34,80	111503 0057	23,80
5.80	6	66	28	20	0.12	111501 0058	34,80	111502 0058	34,80	111504 0058	34,80	111503 0058	23,80
5.90	6	66	28	20	0.12	111501 0059	34,80	111502 0059	34,80	111504 0059	34,80	111503 0059	23,80
6.00	6	66	28	20	0.12	111501 0060	34,80	111502 0060	34,80	111504 0060	34,80	111503 0060	23,80
6.10	8	79	34	24	0.12	111501 0061	34,80	111502 0061	34,80	111504 0061	34,80	111503 0061	24,40
6.20	8	79	34	24	0.12	111501 0062	34,80	111502 0062	34,80	111504 0062	34,80	111503 0062	24,40
6.30	8	79	34	24	0.13	111501 0063	34,80	111502 0063	34,80	111504 0063	34,80	111503 0063	24,40
6.40	8	79	34	24	0.13	111501 0064	34,80	111502 0064	34,80	111504 0064	34,80	111503 0064	24,40
6.50	8	79	34	24	0.13	111501 0065	34,80	111502 0065	34,80	111504 0065	34,80	111503 0065	24,40
6.60	8	79	34	24	0.13	111501 0066	34,80	111502 0066	34,80	111504 0066	34,80	111503 0066	24,40
6.70	8	79	34	24	0.13	111501 0067	34,80	111502 0067	34,80	111504 0067	34,80	111503 0067	24,40
6.80	8	79	34	24	0.14	111501 0068	34,80	111502 0068	34,80	111504 0068	34,80	111503 0068	24,40
6.90	8	79	34	24	0.14	111501 0069	34,80	111502 0069	34,80	111504 0069	34,80	111503 0069	24,40
7.00	8	79	34	24	0.14	111501 0070	34,80	111502 0070	34,80	111504 0070	34,80	111503 0070	24,40
7.10	8	79	41	29	0.14	111501 0071	34,80	111502 0071	34,80	111504 0071	34,80	111503 0071	24,40
7.20	8	79	41	29	0.14	111501 0072	34,80	111502 0072	34,80	111504 0072	34,80	111503 0072	24,40
7.30	8	79	41	29	0.15	111501 0073	34,80	111502 0073	34,80	111504 0073	34,80	111503 0073	24,40
7.40	8	79	41	29	0.15	111501 0074	34,80	111502 0074	34,80	111504 0074	34,80	111503 0074	24,40
7.50	8	79	41	29	0.15	111501 0075	34,80	111502 0075	34,80	111504 0075	34,80	111503 0075	24,40
7.60	8	79	41	29	0.15	111501 0076	34,80	111502 0076	34,80	111504 0076	34,80	111503 0076	24,40
7.70	8	79	41	29	0.15	111501 0077	34,80	111502 0077	34,80	111504 0077	34,80	111503 0077	24,40
7.80	8	79	41	29	0.16	111501 0078	34,80	111502 0078	34,80	111504 0078	34,80	111503 0078	24,40
7.90	8	79	41	29	0.16	111501 0079	34,80	111502 0079	34,80	111504 0079	34,80	111503 0079	24,40
8.00	8	79	41	29	0.16	111501 0080	34,80	111502 0080	34,80	111504 0080	34,80	111503 0080	24,40
8.10	10	89	47	35	0.16	111501 0081	39,–	111502 0081	39,–	111504 0081	39,–	111503 0081	28,80
8.20	10	89	47	35	0.16	111501 0082	39,–	111502 0082	39,–	111504 0082	39,–	111503 0082	28,80
8.30	10	89	47	35	0.17	111501 0083	39,–	111502 0083	39,–	111504 0083	39,–	111503 0083	28,80
8.40	10	89	47	35	0.17	111501 0084	39,–	111502 0084	39,–	111504 0084	39,–	111503 0084	28,80
8.50	10	89	47	35	0.17	111501 0085	39,–	111502 0085	39,–	111504 0085	39,–	111503 0085	28,80
8.60	10	89	47	35	0.17	111501 0086	39,–	111502 0086	39,–	111504 0086	39,–	111503 0086	28,80
8.70	10	89	47	35	0.17	111501 0087	39,–	111502 0087	39,–	111504 0087	39,–	111503 0087	28,80
8.80	10	89	47	35	0.18	111501 0088	39,–	111502 0088	39,–	111504 0088	39,–	111503 0088	28,80
8.90	10	89	47	35	0.18	111501 0089	39,–	111502 0089	39,–	111504 0089	39,–	111503 0089	28,80
9.00	10	89	47	35	0.18	111501 0090	39,–	111502 0090	39,–	111504 0090	39,–	111503 0090	28,80
9.10	10	89	47	35	0.18	111501 0091	39,–	111502 0091	39,–	111504 0091	39,–	111503 0091	28,80
9.20	10	89	47	35	0.18	111501 0092	39,–	111502 0092	39,–	111504 0092	39,–	111503 0092	28,80
9.30	10	89	47	35	0.19	111501 0093	39,–	111502 0093	39,–	111504 0093	39,–	111503 0093	28,80
9.40	10	89	47	35	0.19	111501 0094	39,–	111502 0094	39,–	111504 0094	39,–	111503 0094	28,80
9.50	10	89	47	35	0.19	111501 0095	39,–	111502 0095	39,–	111504 0095	39,–	111503 0095	28,80
9.60	10	89	47	35	0.19	111501 0096	39,–	111502 0096	39,–	111504 0096	39,–	111503 0096	28,80
9.70	10	89	47	35	0.19	111501 0097	39,–	111502 0097	39,–	111504 0097	39,–	111503 0097	28,80
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D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
9.80	10	89	47	35	0.20	111501 0098	39,–	111502 0098	39,–	111504 0098	39,–	111503 0098	28,80
9.90	10	89	47	35	0.20	111501 0099	39,–	111502 0099	39,–	111504 0099	39,–	111503 0099	28,80
10.00	10	89	47	35	0.20	111501 0100	39,–	111502 0100	39,–	111504 0100	39,–	111503 0100	28,80
10.10	12	102	55	40	0.20	111501 0101	59,–	111502 0101	59,–	111504 0101	59,–	111503 0101	40,20
10.20	12	102	55	40	0.20	111501 0102	59,–	111502 0102	59,–	111504 0102	59,–	111503 0102	40,20
10.30	12	102	55	40	0.21	111501 0103	59,–	111502 0103	59,–	111504 0103	59,–	111503 0103	40,20
10.40	12	102	55	40	0.21	111501 0104	59,–	111502 0104	59,–	111504 0104	59,–	111503 0104	40,20
10.50	12	102	55	40	0.21	111501 0105	59,–	111502 0105	59,–	111504 0105	59,–	111503 0105	40,20
10.60	12	102	55	40	0.21	111501 0106	59,–	111502 0106	59,–	111504 0106	59,–	111503 0106	40,20
10.70	12	102	55	40	0.21	111501 0107	59,–	111502 0107	59,–	111504 0107	59,–	111503 0107	40,20
10.80	12	102	55	40	0.22	111501 0108	59,–	111502 0108	59,–	111504 0108	59,–	111503 0108	40,20
10.90	12	102	55	40	0.22	111501 0109	59,–	111502 0109	59,–	111504 0109	59,–	111503 0109	40,20
11.00	12	102	55	40	0.22	111501 0110	59,–	111502 0110	59,–	111504 0110	59,–	111503 0110	40,20
11.10	12	102	55	40	0.22	111501 0111	59,–	111502 0111	59,–	111504 0111	59,–	111503 0111	40,20
11.20	12	102	55	40	0.22	111501 0112	59,–	111502 0112	59,–	111504 0112	59,–	111503 0112	40,20
11.30	12	102	55	40	0.23	111501 0113	59,–	111502 0113	59,–	111504 0113	59,–	111503 0113	40,20
11.40	12	102	55	40	0.23	111501 0114	59,–	111502 0114	59,–	111504 0114	59,–	111503 0114	40,20
11.50	12	102	55	40	0.23	111501 0115	59,–	111502 0115	59,–	111504 0115	59,–	111503 0115	40,20
11.60	12	102	55	40	0.23	111501 0116	59,–	111502 0116	59,–	111504 0116	59,–	111503 0116	40,20
11.70	12	102	55	40	0.23	111501 0117	59,–	111502 0117	59,–	111504 0117	59,–	111503 0117	40,20
11.80	12	102	55	40	0.24	111501 0118	59,–	111502 0118	59,–	111504 0118	59,–	111503 0118	40,20
11.90	12	102	55	40	0.24	111501 0119	59,–	111502 0119	59,–	111504 0119	59,–	111503 0119	40,20
12.00	12	102	55	40	0.24	111501 0120	59,–	111502 0120	59,–	111504 0120	59,–	111503 0120	40,20
12.10	14	107	60	43	0.24			111502 0121	71,–				
12.50	14	107	60	43	0.25	111501 0125	79,–	111502 0125	79,–	111504 0125	79,–	111503 0125	56,50
12.80	14	107	60	43	0.26	111501 0128	79,–	111502 0128	79,–	111504 0128	79,–	111503 0128	56,50
13.00	14	107	60	43	0.26	111501 0130	79,–	111502 0130	79,–	111504 0130	79,–	111503 0130	56,50
13.50	14	107	60	43	0.27	111501 0135	79,–	111502 0135	79,–	111504 0135	79,–	111503 0135	56,50
13.80	14	107	60	43	0.28	111501 0138	79,–	111502 0138	79,–	111504 0138	79,–	111503 0138	56,50
14.00	14	107	60	43	0.28	111501 0140	79,–	111502 0140	79,–	111504 0140	79,–	111503 0140	56,50
14.20	16	115	65	45	0.28	111501 0142	157,–	111502 0142	157,–	111504 0142	157,–	111503 0142	73,–
14.50	16	115	65	45	0.29	111501 0145	102,–	111502 0145	102,–	111504 0145	102,–	111503 0145	73,–
14.80	16	115	65	45	0.30	111501 0148	102,–	111502 0148	102,–	111504 0148	102,–	111503 0148	73,–
15.00	16	115	65	45	0.30	111501 0150	102,–	111502 0150	102,–	111504 0150	102,–	111503 0150	73,–
15.10	16	115	65	45	0.30	111501 0151	187,–	111502 0151	187,–				
15.50	16	115	65	45	0.31	111501 0155	102,–	111502 0155	102,–	111504 0155	102,–	111503 0155	73,–
15.80	16	115	65	45	0.32	111501 0158	102,–	111502 0158	102,–	111504 0158	102,–	111503 0158	73,–
16.00	16	115	65	45	0.32	111501 0160	102,–	111502 0160	102,–	111504 0160	102,–	111503 0160	73,–
16.50	18	123	73	51	0.33	111501 0165	225,–	111502 0165	225,–	111504 0165	225,–	111503 0165	116,50
17.00	18	123	73	51	0.34	111501 0170	225,–	111502 0170	225,–	111504 0170	225,–	111503 0170	116,50
17.50	18	123	73	51	0.35	111501 0175	225,–	111502 0175	225,–	111504 0175	225,–	111503 0175	116,50
18.00	18	123	73	51	0.36	111501 0180	225,–	111502 0180	225,–	111504 0180	225,–	111503 0180	116,50
18.50	20	131	79	55	0.37	111501 0185	225,–	111502 0185	225,–	111504 0185	225,–	111503 0185	140,–
19.00	20	131	79	55	0.38	111501 0190	225,–	111502 0190	225,–	111504 0190	225,–	111503 0190	140,–
19.50	20	131	79	55	0.39	111501 0195	225,–	111502 0195	225,–	111504 0195	225,–	111503 0195	140,–
20.00	20	131	79	55	0.40	111501 0200	225,–	111502 0200	225,–	111504 0200	225,–	111503 0200	140,–
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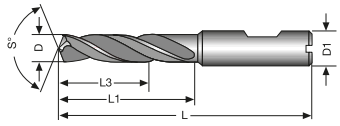
... without shrinkage

ATORN®
High quality for great performance

ATORN® SARA® Solid carbide high-performance drill bit

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HE | DIN 6535 HB | TiAlN | TiN | Vc/fz | 10-255 10-256

- With optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- With coolant bore
- **Solid carbide cutting material: ultra-fine grain TiAlNplus and TiN**
- 2-facet grinding
- True-running accuracy of the tool when clamped max. 0.02 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
111505....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111506....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111508....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111507....	● 110-150	● 75-110	● 60-95	● 40	● 50	○ 40	● 145	● 110	● 36-40	○ 36	○ 32	● 230-280	● 200	● 110		○ 50	○ 32	
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.								


HA with coolant bore


HE with coolant bore


HB with coolant bore


HB with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
3.00	6	62	20	14	0.11	**111505** 0030	47,10	**111506** 0030	47,10	**111508** 0030	47,10	**111507** 0030	32,20
3.10	6	62	20	14	0.11	111505 0031	47,10	111506 0031	47,10	111508 0031	47,10	111507 0031	32,20
3.20	6	62	20	14	0.11	111505 0032	47,10	111506 0032	47,10	111508 0032	47,10	111507 0032	32,20
3.25	6	62	20	14	0.11	111505 0325	47,10	111506 0325	47,10	111508 0325	47,10	111507 0325	32,20
3.30	6	62	20	14	0.11	111505 0033	47,10	111506 0033	47,10	111508 0033	47,10	111507 0033	32,20
3.40	6	62	20	14	0.11	111505 0034	47,10	111506 0034	47,10	111508 0034	47,10	111507 0034	32,20
3.50	6	62	20	14	0.16	111505 0035	47,10	111506 0035	47,10	111508 0035	47,10	111507 0035	32,20
3.60	6	62	20	14	0.16	111505 0036	47,10	111506 0036	47,10	111508 0036	47,10	111507 0036	32,20
3.70	6	62	20	14	0.16	111505 0037	47,10	111506 0037	47,10	111508 0037	47,10	111507 0037	32,20
3.80	6	66	24	17	0.16	111505 0038	47,10	111506 0038	47,10	111508 0038	47,10	111507 0038	32,20
3.90	6	66	24	17	0.16	111505 0039	47,10	111506 0039	47,10	111508 0039	47,10	111507 0039	32,20
4.00	6	66	24	17	0.16	111505 0040	47,10	111506 0040	47,10	111508 0040	47,10	111507 0040	32,20
4.10	6	66	24	17	0.16	111505 0041	50,–	111506 0041	50,–	111508 0041	50,–	111507 0041	32,20
4.20	6	66	24	17	0.16	111505 0042	50,–	111506 0042	50,–	111508 0042	50,–	111507 0042	32,20
4.30	6	66	24	17	0.16	111505 0043	50,–	111506 0043	50,–	111508 0043	50,–	111507 0043	32,20
4.40	6	66	24	17	0.16	111505 0044	50,–	111506 0044	50,–	111508 0044	50,–	111507 0044	32,20
4.50	6	66	24	17	0.16	111505 0045	50,–	111506 0045	50,–	111508 0045	50,–	111507 0045	32,20
4.60	6	66	24	17	0.16	111505 0046	50,–	111506 0046	50,–	111508 0046	50,–	111507 0046	32,20
4.65	6	66	24	17	0.16	111505 0465	50,–	111506 0465	50,–	111508 0465	50,–	111507 0465	32,20
4.70	6	66	24	17	0.16	111505 0047	50,–	111506 0047	50,–	111508 0047	50,–	111507 0047	32,20
4.80	6	66	28	20	0.16	111505 0048	50,–	111506 0048	50,–	111508 0048	50,–	111507 0048	32,20
4.90	6	66	28	20	0.16	111505 0049	50,–	111506 0049	50,–	111508 0049	50,–	111507 0049	32,20
5.00	6	66	28	20	0.16	111505 0050	50,–	111506 0050	50,–	111508 0050	50,–	111507 0050	32,20
5.10	6	66	28	20	0.16	111505 0051	50,–	111506 0051	50,–	111508 0051	50,–	111507 0051	32,20
5.20	6	66	28	20	0.16	111505 0052	50,–	111506 0052	50,–	111508 0052	50,–	111507 0052	32,20
5.30	6	66	28	20	0.16	111505 0053	50,–	111506 0053	50,–	111508 0053	50,–	111507 0053	32,20
5.40	6	66	28	20	0.16	111505 0054	50,–	111506 0054	50,–	111508 0054	50,–	111507 0054	32,20
5.50	6	66	28	20	0.20	111505 0055	50,–	111506 0055	50,–	111508 0055	50,–	111507 0055	32,20
5.55	6	66	28	20	0.20	111505 0555	50,–	111506 0555	50,–	111508 0555	50,–	111507 0555	32,20
5.60	6	66	28	20	0.20	111505 0056	50,–	111506 0056	50,–	111508 0056	50,–	111507 0056	32,20
5.70	6	66	28	20	0.20	111505 0057	50,–	111506 0057	50,–	111508 0057	50,–	111507 0057	32,20
5.80	6	66	28	20	0.20	111505 0058	50,–	111506 0058	50,–	111508 0058	50,–	111507 0058	32,20
5.90	6	66	28	20	0.20	111505 0059	50,–	111506 0059	50,–	111508 0059	50,–	111507 0059	32,20
6.00	6	66	28	20	0.20	111505 0060	50,–	111506 0060	50,–	111508 0060	50,–	111507 0060	32,20
6.10	8	79	34	24	0.20	111505 0061	69,50	111506 0061	69,50	111508 0061	69,50	111507 0061	41,60
6.20	8	79	34	24	0.20	111505 0062	69,50	111506 0062	69,50	111508 0062	69,50	111507 0062	41,60
6.30	8	79	34	24	0.20	111505 0063	69,50	111506 0063	69,50	111508 0063	69,50	111507 0063	41,60
6.40	8	79	34	24	0.20	111505 0064	69,50	111506 0064	69,50	111508 0064	69,50	111507 0064	41,60
6.50	8	79	34	24	0.20	111505 0065	69,50	111506 0065	69,50	111508 0065	69,50	111507 0065	41,60
6.60	8	79	34	24	0.20	111505 0066	69,50	111506 0066	69,50	111508 0066	69,50	111507 0066	41,60
6.70	8	79	34	24	0.20	111505 0067	69,50	111506 0067	69,50	111508 0067	69,50	111507 0067	41,60
6.80	8	79	34	24	0.20	111505 0068	69,50	111506 0068	69,50	111508 0068	69,50	111507 0068	41,60
6.90	8	79	34	24	0.20	111505 0069	69,50	111506 0069	69,50	111508 0069	69,50	111507 0069	41,60
7.00	8	79	34	24	0.20	111505 0070	69,50	111506 0070	69,50	111508 0070	69,50	111507 0070	41,60
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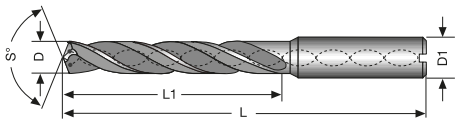
D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
7.10	8	79	41	29	0.25	111505 0071	69,50	111506 0071	69,50	111508 0071	69,50	111507 0071	41,60
7.20	8	79	41	29	0.25	111505 0072	69,50	111506 0072	69,50	111508 0072	69,50	111507 0072	41,60
7.30	8	79	41	29	0.25	111505 0073	69,50	111506 0073	69,50	111508 0073	69,50	111507 0073	41,60
7.40	8	79	41	29	0.25	111505 0074	69,50	111506 0074	69,50	111508 0074	69,50	111507 0074	41,60
7.50	8	79	41	29	0.25	111505 0075	69,50	111506 0075	69,50	111508 0075	69,50	111507 0075	41,60
7.60	8	79	41	29	0.25	111505 0076	69,50	111506 0076	69,50	111508 0076	69,50	111507 0076	41,60
7.70	8	79	41	29	0.25	111505 0077	69,50	111506 0077	69,50	111508 0077	69,50	111507 0077	41,60
7.80	8	79	41	29	0.25	111505 0078	69,50	111506 0078	69,50	111508 0078	69,50	111507 0078	41,60
7.90	8	79	41	29	0.25	111505 0079	69,50	111506 0079	69,50	111508 0079	69,50	111507 0079	41,60
8.00	8	79	41	29	0.25	111505 0080	69,50	111506 0080	69,50	111508 0080	69,50	111507 0080	41,60
8.10	10	89	47	35	0.25	111505 0081	78,50	111506 0081	78,50	111508 0081	78,50	111507 0081	49,20
8.20	10	89	47	35	0.25	111505 0082	78,50	111506 0082	78,50	111508 0082	78,50	111507 0082	49,20
8.30	10	89	47	35	0.25	111505 0083	78,50	111506 0083	78,50	111508 0083	78,50	111507 0083	49,20
8.40	10	89	47	35	0.25	111505 0084	78,50	111506 0084	78,50	111508 0084	78,50	111507 0084	49,20
8.50	10	89	47	35	0.25	111505 0085	78,50	111506 0085	78,50	111508 0085	78,50	111507 0085	49,20
8.60	10	89	47	35	0.25	111505 0086	78,50	111506 0086	78,50	111508 0086	78,50	111507 0086	49,20
8.70	10	89	47	35	0.25	111505 0087	78,50	111506 0087	78,50	111508 0087	78,50	111507 0087	49,20
8.80	10	89	47	35	0.25	111505 0088	78,50	111506 0088	78,50	111508 0088	78,50	111507 0088	49,20
8.90	10	89	47	35	0.25	111505 0089	78,50	111506 0089	78,50	111508 0089	78,50	111507 0089	49,20
9.00	10	89	47	35	0.25	111505 0090	78,50	111506 0090	78,50	111508 0090	78,50	111507 0090	49,20
9.10	10	89	47	35	0.32	111505 0091	78,50	111506 0091	78,50	111508 0091	78,50	111507 0091	49,20
9.20	10	89	47	35	0.32	111505 0092	78,50	111506 0092	78,50	111508 0092	78,50	111507 0092	49,20
9.30	10	89	47	35	0.32	111505 0093	78,50	111506 0093	78,50	111508 0093	78,50	111507 0093	49,20
9.40	10	89	47	35	0.32	111505 0094	78,50	111506 0094	78,50	111508 0094	78,50	111507 0094	49,20
9.50	10	89	47	35	0.32	111505 0095	78,50	111506 0095	78,50	111508 0095	78,50	111507 0095	49,20
9.60	10	89	47	35	0.32	111505 0096	78,50	111506 0096	78,50	111508 0096	78,50	111507 0096	49,20
9.70	10	89	47	35	0.32	111505 0097	78,50	111506 0097	78,50	111508 0097	78,50	111507 0097	49,20
9.80	10	89	47	35	0.32	111505 0098	78,50	111506 0098	78,50	111508 0098	78,50	111507 0098	49,20
9.90	10	89	47	35	0.32	111505 0099	78,50	111506 0099	78,50	111508 0099	78,50	111507 0099	49,20
10.00	10	89	47	35	0.32	111505 0100	78,50	111506 0100	78,50	111508 0100	78,50	111507 0100	49,20
10.10	12	102	55	40	0.32	111505 0101	113,–	111506 0101	113,–	111508 0101	113,–	111507 0101	72,20
10.20	12	102	55	40	0.32	111505 0102	113,–	111506 0102	113,–	111508 0102	113,–	111507 0102	72,20
10.30	12	102	55	40	0.32	111505 0103	113,–	111506 0103	113,–	111508 0103	113,–	111507 0103	72,20
10.40	12	102	55	40	0.32	111505 0104	113,–	111506 0104	113,–	111508 0104	113,–	111507 0104	72,20
10.50	12	102	55	40	0.32	111505 0105	113,–	111506 0105	113,–	111508 0105	113,–	111507 0105	72,20
10.60	12	102	55	40	0.32	111505 0106	113,–	111506 0106	113,–	111508 0106	113,–	111507 0106	72,20
10.70	12	102	55	40	0.32	111505 0107	113,–	111506 0107	113,–	111508 0107	113,–	111507 0107	72,20
10.80	12	102	55	40	0.32	111505 0108	113,–	111506 0108	113,–	111508 0108	113,–	111507 0108	72,20
10.90	12	102	55	40	0.32	111505 0109	113,–	111506 0109	113,–	111508 0109	113,–	111507 0109	72,20
11.00	12	102	55	40	0.32	111505 0110	113,–	111506 0110	113,–	111508 0110	113,–	111507 0110	72,20
11.10	12	102	55	40	0.32	111505 0111	113,–	111506 0111	113,–	111508 0111	113,–	111507 0111	72,20
11.20	12	102	55	40	0.32	111505 0112	113,–	111506 0112	113,–	111508 0112	113,–	111507 0112	72,20
11.30	12	102	55	40	0.32	111505 0113	113,–	111506 0113	113,–	111508 0113	113,–	111507 0113	72,20
11.40	12	102	55	40	0.32	111505 0114	113,–	111506 0114	113,–	111508 0114	113,–	111507 0114	72,20
11.50	12	102	55	40	0.32	111505 0115	113,–	111506 0115	113,–	111508 0115	113,–	111507 0115	72,20
11.60	12	102	55	40	0.32	111505 0116	113,–	111506 0116	113,–	111508 0116	113,–	111507 0116	72,20
11.70	12	102	55	40	0.32	111505 0117	113,–	111506 0117	113,–	111508 0117	113,–	111507 0117	72,20
11.80	12	102	55	40	0.32	111505 0118	113,–	111506 0118	113,–	111508 0118	113,–	111507 0118	72,20
11.90	12	102	55	40	0.32	111505 0119	113,–	111506 0119	113,–	111508 0119	113,–	111507 0119	72,20
12.00	12	102	55	40	0.32	111505 0120	113,–	111506 0120	113,–	111508 0120	113,–	111507 0120	72,20
12.50	14	107	60	43	0.32	111505 0125	142,–	111506 0125	142,–	111508 0125	142,–	111507 0125	95,10
12.80	14	107	60	43	0.32	111505 0128	142,–	111506 0128	142,–	111508 0128	142,–	111507 0128	95,10
13.00	14	107	60	43	0.32	111505 0130	142,–	111506 0130	142,–	111508 0130	142,–	111507 0130	95,10
13.50	14	107	60	43	0.32	111505 0135	142,–	111506 0135	142,–	111508 0135	142,–	111507 0135	95,10
13.80	14	107	60	43	0.32	111505 0138	142,–	111506 0138	142,–	111508 0138	142,–	111507 0138	95,10
14.00	14	107	60	43	0.32	111505 0140	142,–	111506 0140	142,–	111508 0140	142,–	111507 0140	95,10
14.20	16	115	65	45	0.32	111505 0142	142,–	111506 0142	142,–	111508 0142	142,–	111507 0142	95,10
14.50	16	115	65	45	0.32	111505 0145	142,–	111506 0145	142,–	111508 0145	142,–	111507 0145	118,–
14.80	16	115	65	45	0.32	111505 0148	182,–	111506 0148	182,–	111508 0148	182,–	111507 0148	118,–
15.00	16	115	65	45	0.32	111505 0150	142,–	111506 0150	142,–	111508 0150	142,–	111507 0150	118,–
15.10	16	115	65	45	0.40	111505 0151	182,–	111506 0151	182,–	111508 0151	182,–	111507 0151	118,–
15.50	16	115	65	45	0.40	111505 0155	142,–	111506 0155	142,–	111508 0155	142,–	111507 0155	118,–
15.80	16	115	65	45	0.40	111505 0158	142,–	111506 0158	142,–	111508 0158	142,–	111507 0158	118,–
16.00	16	115	65	45	0.40	111505 0160	142,–	111506 0160	142,–	111508 0160	142,–	111507 0160	118,–
16.50	18	123	73	51	0.40	111505 0165	225,–	111506 0165	225,–	111508 0165	225,–	111507 0165	162,–
17.00	18	123	73	51	0.40	111505 0170	225,–	111506 0170	225,–	111508 0170	225,–	111507 0170	162,–
17.50	18	123	73	51	0.40	111505 0175	225,–	111506 0175	225,–	111508 0175	225,–	111507 0175	162,–
18.00	18	123	73	51	0.40	111505 0180	225,–	111506 0180	225,–	111508 0180	225,–	111507 0180	162,–
18.50	20	131	79	55	0.50	111505 0185	245,–	111506 0185	245,–	111508 0185	245,–	111507 0185	201,–
19.00	20	131	79	55	0.50	111505 0190	245,–	111506 0190	245,–	111508 0190	245,–	111507 0190	201,–
19.50	20	131	79	55	0.50	111505 0195	245,–	111506 0195	245,–	111508 0195	245,–	111507 0195	201,–
20.00	20	131	79	55	0.50	111505 0200	245,–	111506 0200	245,–	111508 0200	245,–	111507 0200	201,–
						1111		1111		1111		1156	

ATORN® Ultra-M solid carbide high-performance drill bit

VHM | DIN 6537 | Typ VA | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HB | TiAlN | Vc/fz | 10-257

- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HE with coolant bore, straight shank, DIN 6535 HE
  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
			80	60	48			35	30	30							

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



HA with coolant bore



HB with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
3.00	6	62	20	0.05	**111545** 0030	55,–	**111549** 0030	55,–
3.10	6	62	20	0.05	111545 0031	55,–	111549 0031	55,–
3.20	6	62	20	0.05	111545 0032	55,–	111549 0032	55,–
3.25	6	62	20	0.05	111545 1325	55,–	111549 0325	55,–
3.30	6	62	20	0.05	111545 0033	55,–	111549 0033	55,–
3.40	6	62	20	0.05	111545 0034	55,–	111549 0034	55,–
3.50	6	62	20	0.06	111545 0035	55,–	111549 0035	55,–
3.60	6	62	20	0.06	111545 0036	55,–	111549 0036	55,–
3.70	6	62	20	0.06	111545 0037	55,–	111549 0037	55,–
3.80	6	66	24	0.06	111545 0038	55,–	111549 0038	55,–
3.90	6	66	24	0.06	111545 0039	55,–	111549 0039	55,–
4.00	6	66	24	0.06	111545 0040	55,–	111549 0040	55,–
4.10	6	66	24	0.06	111545 0041	55,–	111549 0041	55,–
4.20	6	66	24	0.06	111545 0042	55,–	111549 0042	55,–
4.30	6	66	24	0.06	111545 0043	55,–	111549 0043	55,–
4.40	6	66	24	0.06	111545 0044	55,–	111549 0044	55,–
4.50	6	66	24	0.06	111545 0045	55,–	111549 0045	55,–
4.60	6	66	24	0.06	111545 0046	55,–	111549 0046	55,–
4.65	6	66	24	0.06	111545 1465	55,–	111549 0465	55,–
4.70	6	66	24	0.06	111545 0047	55,–	111549 0047	55,–
4.80	6	66	28	0.06	111545 0048	55,–	111549 0048	55,–
4.90	6	66	28	0.06	111545 0049	55,–	111549 0049	55,–
5.00	6	66	28	0.06	111545 0050	55,–	111549 0050	55,–
5.10	6	66	28	0.06	111545 0051	55,–	111549 0051	55,–
5.20	6	66	28	0.06	111545 0052	55,–	111549 0052	55,–
5.30	6	66	28	0.06	111545 0053	55,–	111549 0053	55,–
5.40	6	66	28	0.06	111545 0054	55,–	111549 0054	55,–
5.50	6	66	28	0.08	111545 0055	55,–	111549 0055	55,–
5.55	6	66	28	0.08	111545 1555	55,–	111549 0555	55,–
5.60	6	66	28	0.08	111545 0056	55,–	111549 0056	55,–
5.70	6	66	28	0.08	111545 0057	55,–	111549 0057	55,–
5.80	6	66	28	0.08	111545 0058	55,–	111549 0058	55,–
5.90	6	66	28	0.08	111545 0059	55,–	111549 0059	55,–
6.00	6	66	28	0.08	111545 0060	55,–	111549 0060	55,–
6.10	8	79	34	0.08	111545 0061	74,–	111549 0061	74,–
6.20	8	79	34	0.08	111545 0062	74,–	111549 0062	74,–
6.30	8	79	34	0.08	111545 0063	74,–	111549 0063	74,–
6.40	8	79	34	0.08	111545 0064	74,–	111549 0064	74,–
6.50	8	79	34	0.08	111545 0065	74,–	111549 0065	74,–
6.60	8	79	34	0.08	111545 0066	74,–	111549 0066	74,–
6.70	8	79	34	0.08	111545 0067	74,–	111549 0067	74,–
6.80	8	79	34	0.08	111545 0068	74,–	111549 0068	74,–
6.90	8	79	34	0.08	111545 0069	74,–	111549 0069	74,–
7.00	8	79	34	0.08	111545 0070	74,–	111549 0070	74,–
7.10	8	79	41	0.10	111545 0071	74,–	111549 0071	74,–
					1110		1110	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
7.20	8	79	41	0.10	111545 0072	74,–	111549 0072	74,–
7.30	8	79	41	0.10	111545 0073	74,–	111549 0073	74,–
7.40	8	79	41	0.10	111545 0074	74,–	111549 0074	74,–
7.50	8	79	41	0.10	111545 0075	74,–	111549 0075	74,–
7.60	8	79	41	0.10	111545 0076	74,–	111549 0076	74,–
7.70	8	79	41	0.10	111545 0077	74,–	111549 0077	74,–
7.80	8	79	41	0.10	111545 0078	74,–	111549 0078	74,–
7.90	8	79	41	0.10	111545 0079	74,–	111549 0079	74,–
8.00	8	79	41	0.10	111545 0080	74,–	111549 0080	74,–
8.10	10	89	47	0.10	111545 0081	89,50	111549 0081	89,50
8.20	10	89	47	0.10	111545 0082	89,50	111549 0082	89,50
8.30	10	89	47	0.10	111545 0083	89,50	111549 0083	89,50
8.40	10	89	47	0.10	111545 0084	89,50	111549 0084	89,50
8.50	10	89	47	0.10	111545 0085	89,50	111549 0085	89,50
8.60	10	89	47	0.10	111545 0086	89,50	111549 0086	89,50
8.70	10	89	47	0.10	111545 0087	89,50	111549 0087	89,50
8.80	10	89	47	0.10	111545 0088	89,50	111549 0088	89,50
8.90	10	89	47	0.10	111545 0089	89,50	111549 0089	89,50
9.00	10	89	47	0.10	111545 0090	89,50	111549 0090	89,50
9.10	10	89	47	0.12	111545 0091	89,50	111549 0091	89,50
9.20	10	89	47	0.12	111545 0092	89,50	111549 0092	89,50
9.25	10	89	47	0.12	111545 1925	89,50	111549 0925	89,50
9.30	10	89	47	0.12	111545 0093	89,50	111549 0093	89,50
9.40	10	89	47	0.12	111545 0094	89,50	111549 0094	89,50
9.50	10	89	47	0.12	111545 0095	89,50	111549 0095	89,50
9.60	10	89	47	0.12	111545 0096	89,50	111549 0096	89,50
9.70	10	89	47	0.12	111545 0097	89,50	111549 0097	89,50
9.80	10	89	47	0.12	111545 0098	89,50	111549 0098	89,50
9.90	10	89	47	0.12	111545 0099	89,50	111549 0099	89,50
10.00	10	89	47	0.12	111545 0100	89,50	111549 0100	89,50
10.10	12	102	55	0.12	111545 0101	129,–	111549 0101	129,–
10.20	12	102	55	0.12	111545 0102	129,–	111549 0102	129,–
10.30	12	102	55	0.12	111545 0103	129,–	111549 0103	129,–
10.40	12	102	55	0.12	111545 0104	129,–	111549 0104	129,–
10.50	12	102	55	0.12	111545 0105	129,–	111549 0105	129,–
10.60	12	102	55	0.12	111545 0106	129,–	111549 0106	129,–
10.70	12	102	55	0.12	111545 0107	129,–	111549 0107	129,–
10.80	12	102	55	0.12	111545 0108	129,–	111549 0108	129,–
10.90	12	102	55	0.12	111545 0109	129,–	111549 0109	129,–
11.00	12	102	55	0.12	111545 0110	129,–	111549 0110	129,–
11.10	12	102	55	0.12	111545 0111	129,–	111549 0111	129,–
11.20	12	102	55	0.12	111545 0112	129,–	111549 0112	129,–
11.30	12	102	55	0.12	111545 0113	129,–	111549 0113	129,–
11.40	12	102	55	0.12	111545 0114	129,–	111549 0114	129,–
11.50	12	102	55	0.12	111545 0115	129,–	111549 0115	129,–
					1110		1110	

Continued on next page >>>

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	HA €	HB art.no.	HB €
11.60	12	102	55	0.12	111545 0116	129,–	111549 0116	129,–
11.70	12	102	55	0.12	111545 0117	129,–	111549 0117	129,–
11.80	12	102	55	0.12	111545 0118	129,–	111549 0118	129,–
11.90	12	102	55	0.12	111545 0119	129,–	111549 0119	129,–
12.00	12	102	55	0.12	111545 0120	129,–	111549 0120	129,–
12.50	14	107	60	0.12	111545 0125	168,–	111549 0125	168,–
12.70	14	107	60	0.12	111545 0127	168,–	111549 0127	168,–
13.00	14	107	60	0.12	111545 0130	168,–	111549 0130	168,–
13.50	14	107	60	0.12	111545 0135	168,–	111549 0135	168,–
14.00	14	107	60	0.12	111545 0140	168,–	111549 0140	168,–
14.50	16	115	65	0.12	111545 0145	198,–	111549 0145	198,–
15.00	16	115	65	0.12	111545 0150	198,–	111549 0150	198,–
					1110		1110	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	HA €	HB art.no.	HB €
15.50	16	115	65	0.12	111545 0155	198,–	111549 0155	198,–
16.00	16	115	65	0.12	111545 0160	198,–	111549 0160	198,–
16.50	18	123	73	0.12	111545 0165	325,–	111549 0165	325,–
16.90	18	123	73	0.12	111545 0169	325,–	111549 0169	325,–
17.00	18	123	73	0.12	111545 0170	325,–	111549 0170	325,–
17.50	18	123	73	0.14	111545 0175	325,–	111549 0175	325,–
18.00	18	123	73	0.14	111545 0180	325,–	111549 0180	325,–
18.50	20	131	79	0.14	111545 0185	355,–	111549 0185	355,–
18.90	20	131	79	0.14	111545 0189	355,–	111549 0189	355,–
19.00	20	131	79	0.14	111545 0190	355,–	111549 0190	355,–
19.50	20	131	79	0.16	111545 0195	355,–	111549 0195	355,–
20.00	20	131	79	0.16	111545 0200	355,–	111549 0200	355,–
					1110		1110	

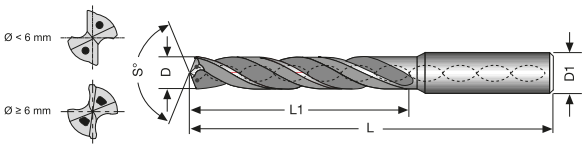
ADO-SUS-3D solid carbide high-performance drill

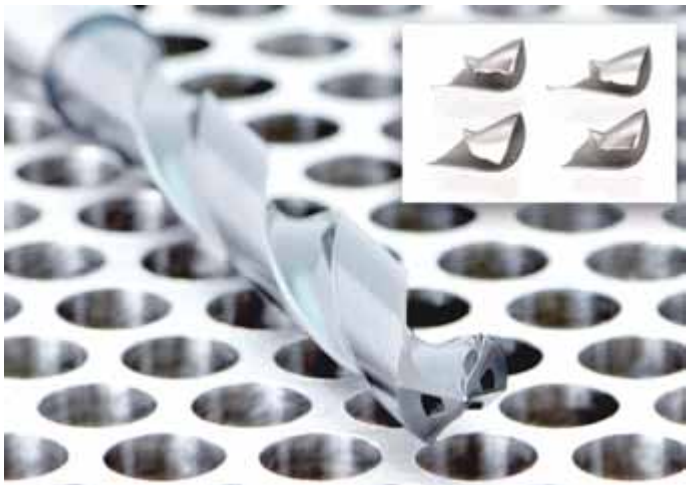
VHM | Werks-norm | Typ VA | 140° | 30° | 3xD | DIN 6535 HA | TiAlN | Vc/fz 10-262

NEW · NUOVO · NIEU · NOUVEAU · NUEVO

- **Cutting material: solid carbide, WXL-coated**
- 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 WXL coating reduces premature wear and coating spalling







material	● very well suited ○ well suited	steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
		●	●	○	●	●	●	●	●	●			●	○	○				
	Cutting speed Vc m/min.	80-120	80-120	60-90	60-100	60-100	30-60	60-100	80-120	20-50			140	120	70				

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

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.8	3	66	17	0.06	**111613** 0280	45,20
2.83	3	66	17	0.06	111613 0283	45,20
2.87	3	66	18	0.06	111613 0287	45,20
2.9	3	66	18	0.06	111613 0290	45,20
3	3	66	18	0.06	111613 0300	45,20
3.1	4	74	19	0.08	111613 0310	48,48
3.2	4	74	20	0.08	111613 0320	48,48
3.3	4	74	20	0.08	111613 0330	48,48
3.4	4	74	21	0.08	111613 0340	48,48
3.5	4	74	21	0.08	111613 0350	48,48
3.6	4	74	22	0.08	111613 0360	51,20
3.7	4	74	23	0.08	111613 0370	51,20
3.73	4	74	23	0.08	111613 0373	51,20
3.8	4	74	23	0.08	111613 0380	51,20
3.9	4	74	24	0.08	111613 0390	51,20
					1107	

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4	4	74	24	0.08	111613 0400	51,20
4.1	6	80	25	0.10	111613 0410	55,20
4.2	6	80	26	0.10	111613 0420	55,20
4.3	6	80	26	0.10	111613 0430	55,20
4.4	6	80	27	0.10	111613 0440	55,20
4.45	6	80	27	0.10	111613 0445	55,20
4.5	6	80	27	0.10	111613 0450	55,20
4.6	6	80	28	0.10	111613 0460	59,36
4.65	6	80	28	0.10	111613 0465	59,36
4.7	6	80	29	0.10	111613 0470	59,36
4.8	6	80	29	0.10	111613 0480	59,36
4.9	6	80	30	0.10	111613 0490	59,36
5	6	80	25	0.10	111613 0500	59,36
5.1	6	82	26	0.12	111613 0510	62,56
5.2	6	82	26	0.12	111613 0520	62,56
					1107	

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.3	6	82	27	0.12	111613 0530	62,56
5.4	6	82	27	0.12	111613 0540	62,56
5.5	6	82	28	0.12	111613 0550	62,56
5.55	6	82	28	0.12	111613 0555	65,52
5.6	6	82	28	0.12	111613 0560	65,52
5.7	6	82	29	0.12	111613 0570	65,52
5.8	6	82	29	0.12	111613 0580	65,52
5.9	6	82	30	0.12	111613 0590	65,52
6	6	82	30	0.12	111613 0600	65,52
6.1	8	88	31	0.14	111613 0610	73,52
6.2	8	88	31	0.14	111613 0620	73,52
6.3	8	88	32	0.14	111613 0630	73,52
6.4	8	88	32	0.14	111613 0640	73,52
6.5	8	88	33	0.14	111613 0650	73,52
6.6	8	88	33	0.14	111613 0660	73,52
6.7	8	88	34	0.14	111613 0670	73,52
6.9	8	88	35	0.14	111613 0690	73,52
7	8	88	35	0.14	111613 0700	73,52
7.1	8	94	36	0.16	111613 0710	73,52
7.2	8	94	36	0.16	111613 0720	73,52
7.3	8	94	37	0.16	111613 0730	73,52
7.4	8	94	37	0.16	111613 0740	73,52
7.45	8	94	38	0.16	111613 0745	73,52
7.5	8	94	38	0.16	111613 0750	73,52
7.55	8	94	38	0.16	111613 0755	77,44
7.6	8	94	38	0.16	111613 0760	77,44
7.7	8	94	39	0.16	111613 0770	77,44
7.8	8	94	39	0.16	111613 0780	77,44
7.9	8	94	40	0.16	111613 0790	77,44
8	8	94	40	0.16	111613 0800	77,44
8.1	10	101	41	0.18	111613 0810	92,40
8.2	10	101	41	0.18	111613 0820	92,40
8.3	10	101	42	0.18	111613 0830	92,40
8.4	10	101	42	0.18	111613 0840	92,40
8.5	10	101	43	0.18	111613 0850	92,40
8.6	10	101	43	0.18	111613 0860	92,40
8.7	10	101	44	0.18	111613 0870	92,40
8.8	10	101	44	0.18	111613 0880	92,40
8.9	10	101	45	0.18	111613 0890	92,40
9	10	101	45	0.18	111613 0900	92,40
9.1	10	106	46	0.20	111613 0910	92,40
9.2	10	106	46	0.20	111613 0920	92,40
9.3	10	106	47	0.20	111613 0930	92,40
9.4	10	106	47	0.20	111613 0940	92,40
9.5	10	106	48	0.20	111613 0950	92,40
9.55	10	106	48	0.20	111613 0955	94,80
9.6	10	106	48	0.20	111613 0960	94,80
9.7	10	106	49	0.20	111613 0970	94,80
9.8	10	106	49	0.20	111613 0980	94,80
9.9	10	106	50	0.20	111613 0990	94,80
10	10	106	50	0.20	111613 1000	94,80
10.1	12	113	51	0.22	111613 1010	107,28
10.2	12	113	51	0.22	111613 1020	107,28
10.3	12	113	52	0.22	111613 1030	107,28
10.4	12	113	52	0.22	111613 1040	107,28
10.5	12	113	53	0.22	111613 1050	107,28
10.6	12	113	53	0.22	111613 1060	107,28
10.7	12	113	54	0.22	111613 1070	107,28
10.8	12	113	54	0.22	111613 1080	107,28

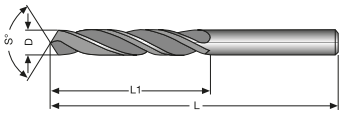
1107

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.9	12	113	55	0.22	111613 1090	107,28
11	12	113	55	0.22	111613 1100	107,28
11.1	12	120	56	0.24	111613 1110	107,28
11.2	12	120	56	0.24	111613 1120	107,28
11.3	12	120	57	0.24	111613 1130	107,28
11.4	12	120	57	0.24	111613 1140	107,28
11.5	12	120	58	0.24	111613 1150	107,28
11.6	12	120	58	0.24	111613 1160	109,20
11.7	12	120	59	0.24	111613 1170	109,20
11.8	12	120	59	0.24	111613 1180	109,20
11.9	12	120	60	0.24	111613 1190	109,20
12	12	120	60	0.24	111613 1200	109,20
12.1	14	128	61	0.26	111613 1210	119,36
12.5	14	128	63	0.26	111613 1250	119,36
12.8	14	128	64	0.26	111613 1280	119,36
13	14	128	65	0.26	111613 1300	119,36
13.1	14	134	66	0.28	111613 1310	119,36
13.2	14	134	67	0.28	111613 1320	119,36
13.3	14	134	68	0.28	111613 1330	119,36
13.43	14	134	68	0.28	111613 1343	119,36
13.5	14	134	68	0.28	111613 1350	119,36
13.55	14	134	68	0.28	111613 1355	122,48
13.6	14	134	68	0.28	111613 1360	122,48
14	14	134	70	0.28	111613 1400	122,48
14.5	16	140	73	0.28	111613 1450	135,52
15	16	140	75	0.28	111613 1500	135,52
15.1	16	145	76	0.28	111613 1510	135,52
15.3	16	145	77	0.28	111613 1530	135,52
15.5	16	145	78	0.28	111613 1550	135,52
15.55	16	145	78	0.28	111613 1555	138,64
16	16	145	80	0.30	111613 1600	138,64
16.5	18	150	83	0.30	111613 1650	200,16
16.7	18	150	84	0.30	111613 1670	200,16
17	18	150	85	0.30	111613 1700	200,16
17.3	18	155	87	0.30	111613 1730	200,16
17.5	18	155	88	0.30	111613 1750	200,16
17.55	18	155	88	0.30	111613 1755	203,44
18	18	155	90	0.32	111613 1800	203,44
18.5	20	160	93	0.32	111613 1850	261,84
18.7	20	160	94	0.32	111613 1870	261,84
19	20	160	95	0.34	111613 1900	261,84
19.3	20	165	97	0.34	111613 1930	261,84
19.5	20	165	98	0.34	111613 1950	261,84
19.55	20	165	98	0.34	111613 1955	263,84
20	20	165	100	0.36	111613 2000	263,84

1107

ATORN® Solid carbide twist drill bit

VHM | Werks-norm | Typ N | 118° | 32° | 5xD | TiN | TiAlN | Vc/fz | 10-254



- **sim. to DIN 338**
- 111010.... Facet-ground, point thinning from ⌀ 2.0 mm
- 111011.... Facet-ground, point thinning from ⌀ 2.0 mm, TiN-coated
- 111012.... Facet-ground, point thinning from ⌀ 2.0 mm, TiAlN-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
111010....	● 80	● 50-70	● 50	○ 25			● 70-90	● 80	○ 15-20			● 200	● 150	● 70-120		○ 20		
111011....	● 80-90	● 70-80	● 55	● 27			● 70-102	● 80	○ 17-22			● 230	● 135	● 135-205		○ 22		
111012....	● 90-100	● 80-90	● 65	● 30	○ 30		● 80-115	● 90	● 20-25	○ 20		● 260	● 155	● 100		○ 25		

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 h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
1.0	34	12	0.02	**111010** 0100	5,25	**111011** 0100	8,25	**111012** 0100	8,65
1.1	36	14	0.02	111010 0110	5,25	111011 0110	8,25	111012 0110	8,65
1.2	38	16	0.02	111010 0120	5,25	111011 0120	8,25	111012 0120	8,65
1.3	38	16	0.02	111010 0130	5,25	111011 0130	8,25	111012 0130	8,65
1.4	40	18	0.02	111010 0140	5,25	111011 0140	8,25	111012 0140	8,65
1.5	40	18	0.02	111010 0150	5,25	111011 0150	8,25	111012 0150	8,65
1.6	43	20	0.02	111010 0160	6,05	111011 0160	9,25	111012 0160	10,25
1.7	43	20	0.02	111010 0170	6,05	111011 0170	9,25	111012 0170	10,25
1.8	46	22	0.02	111010 0180	6,50	111011 0180	9,90	111012 0180	11,60
1.9	46	22	0.02	111010 0190	6,50	111011 0190	9,90	111012 0190	11,60
2.0	49	24	0.02	111010 0200	6,50	111011 0200	9,90	111012 0200	11,60
2.1	49	24	0.03	111010 0210	8,40	111011 0210	12,65	111012 0210	12,75
2.2	53	27	0.03	111010 0220	8,40	111011 0220	12,65	111012 0220	12,75
2.3	53	27	0.03	111010 0230	8,40	111011 0230	12,65	111012 0230	12,75
2.4	57	30	0.03	111010 0240	8,40	111011 0240	12,65	111012 0240	12,75
2.5	57	30	0.07	111010 0250	8,40	111011 0250	12,65	111012 0250	12,75
2.6	57	30	0.07	111010 0260	11,40	111011 0260	16,50	111012 0260	14,60
2.7	61	33	0.07	111010 0270	11,40	111011 0270	16,50	111012 0270	14,60
2.8	61	33	0.07	111010 0280	11,40	111011 0280	16,50	111012 0280	14,60
2.9	61	33	0.07	111010 0290	11,40	111011 0290	16,50	111012 0290	14,60
3.0	61	33	0.07	111010 0300	12,10	111011 0300	18,20	111012 0300	18,10
3.1	65	36	0.07	111010 0310	12,10	111011 0310	18,20	111012 0310	18,10
3.2	65	36	0.07	111010 0320	12,10	111011 0320	18,20	111012 0320	18,10
3.3	65	36	0.07	111010 0330	12,10	111011 0330	18,20	111012 0330	18,10
3.4	70	39	0.07	111010 0340	12,10	111011 0340	18,20	111012 0340	18,10
3.5	70	39	0.07	111010 0350	12,70	111011 0350	19,–	111012 0350	19,80
3.6	70	39	0.07	111010 0360	12,70	111011 0360	19,–	111012 0360	19,80
3.7	70	39	0.07	111010 0370	12,70	111011 0370	19,–	111012 0370	19,80
3.8	75	43	0.07	111010 0380	13,70	111011 0380	20,80	111012 0380	21,90
3.9	75	43	0.07	111010 0390	13,70	111011 0390	20,80	111012 0390	21,90
4.0	75	43	0.07	111010 0400	13,70	111011 0400	20,80	111012 0400	21,90
4.1	75	43	0.07	111010 0410	13,70	111011 0410	20,80	111012 0410	21,90
4.2	75	43	0.07	111010 0420	13,70	111011 0420	20,80	111012 0420	21,90
4.3	80	47	0.07	111010 0430	17,90	111011 0430	27,30	111012 0430	24,50
4.4	80	47	0.07	111010 0440	17,90	111011 0440	27,30	111012 0440	24,50
4.5	80	47	0.07	111010 0450	17,90	111011 0450	27,30	111012 0450	24,50
4.6	80	47	0.07	111010 0460	19,50	111011 0460	29,40	111012 0460	25,80
4.7	80	47	0.07	111010 0470	19,50	111011 0470	29,40	111012 0470	25,80
4.8	86	52	0.07	111010 0480	19,50	111011 0480	29,40	111012 0480	25,80
4.9	86	52	0.07	111010 0490	19,50	111011 0490	29,40	111012 0490	25,80
5.0	86	52	0.07	111010 0500	19,50	111011 0500	29,40	111012 0500	25,80
5.1	86	52	0.10	111010 0510	21,80	111011 0510	39,10	111012 0510	32,80
5.2	86	52	0.10	111010 0520	21,80	111011 0520	39,10	111012 0520	32,80
				1154		1154		1154	



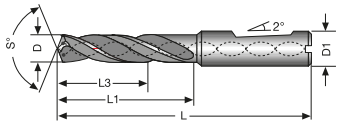
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
5.3	86	52	0.10	111010 0530	21,80	111011 0530	39,10	111012 0530	32,80
5.4	93	57	0.10	111010 0540	26,–	111011 0540	39,10	111012 0540	35,90
5.5	93	57	0.10	111010 0550	26,–	111011 0550	39,10	111012 0550	35,90
5.6	93	57	0.10	111010 0560	26,–	111011 0560	39,10	111012 0560	35,90
5.7	93	57	0.10	111010 0570	26,–	111011 0570	39,10	111012 0570	35,90
5.8	93	57	0.10	111010 0580	26,–	111011 0580	39,10	111012 0580	35,90
5.9	93	57	0.10	111010 0590	26,–	111011 0590	39,10	111012 0590	35,90
6.0	93	57	0.10	111010 0600	26,–	111011 0600	39,10	111012 0600	35,90
6.1	101	63	0.10	111010 0610	32,20	111011 0610	48,60	111012 0610	44,40
6.2	101	63	0.10	111010 0620	32,20	111011 0620	48,60	111012 0620	44,40
6.3	101	63	0.10	111010 0630	32,20	111011 0630	48,60	111012 0630	44,40
6.4	101	63	0.10	111010 0640	32,20	111011 0640	48,60	111012 0640	44,40
6.5	101	63	0.10	111010 0650	32,20	111011 0650	48,60	111012 0650	44,40
6.6	101	63	0.10	111010 0660	37,80	111011 0660	57,50	111012 0660	52,–
6.7	101	63	0.10	111010 0670	37,80	111011 0670	57,50	111012 0670	52,–
6.8	109	69	0.10	111010 0680	37,80	111011 0680	57,50	111012 0680	52,–
6.9	109	69	0.10	111010 0690	37,80	111011 0690	57,50	111012 0690	52,–
7.0	109	69	0.10	111010 0700	37,80	111011 0700	57,50	111012 0700	52,–
7.1	109	69	0.10	111010 0710	39,60	111011 0710	60,–	111012 0710	56,–
7.2	109	69	0.10	111010 0720	39,60	111011 0720	60,–	111012 0720	56,–
7.3	109	69	0.10	111010 0730	39,60	111011 0730	60,–	111012 0730	56,–
7.4	109	69	0.10	111010 0740	39,60	111011 0740	60,–	111012 0740	56,–
7.5	109	69	0.10	111010 0750	39,60	111011 0750	60,–	111012 0750	56,–
7.6	117	75	0.10	111010 0760	44,20	111011 0760	67,50	111012 0760	59,50
7.7	117	75	0.10	111010 0770	44,20	111011 0770	67,50	111012 0770	59,50
7.8	117	75	0.10	111010 0780	44,20	111011 0780	67,50	111012 0780	59,50
7.9	117	75	0.10	111010 0790	44,20	111011 0790	67,50	111012 0790	59,50
8.0	117	75	0.10	111010 0800	44,20	111011 0800	67,50	111012 0800	59,50
8.1	117	75	0.14	111010 0810	51,60	111011 0810	78,50	111012 0810	72,–
8.2	117	75	0.14	111010 0820	51,60	111011 0820	78,50	111012 0820	72,–
8.3	117	75	0.14	111010 0830	51,60	111011 0830	78,50	111012 0830	72,–
8.4	117	75	0.14	111010 0840	51,60	111011 0840	78,50	111012 0840	72,–
8.5	117	75	0.14	111010 0850	51,60	111011 0850	78,50	111012 0850	72,–
8.6	125	81	0.14	111010 0860	55,50	111011 0860	85,50	111012 0860	83,50
8.7	125	81	0.14	111010 0870	55,50	111011 0870	85,50	111012 0870	83,50
8.8	125	81	0.14	111010 0880	55,50	111011 0880	85,50	111012 0880	83,50
8.9	125	81	0.14	111010 0890	55,50	111011 0890	85,50	111012 0890	83,50
9.0	125	81	0.14	111010 0900	55,50	111011 0900	85,50	111012 0900	83,50
9.1	125	81	0.14	111010 0910	65,50	111011 0910	99,50	111012 0910	93,–
9.2	125	81	0.14	111010 0920	65,50	111011 0920	99,50	111012 0920	93,–
9.3	125	81	0.14	111010 0930	65,50	111011 0930	99,50	111012 0930	93,–
9.4	125	81	0.14	111010 0940	65,50	111011 0940	99,50	111012 0940	93,–
9.5	125	81	0.14	111010 0950	65,50	111011 0950	99,50	111012 0950	93,–
9.6	133	87	0.14	111010 0960	65,50	111011 0960	99,50	111012 0960	93,–
9.7	133	87	0.14	111010 0970	65,50	111011 0970	99,50	111012 0970	93,–
9.8	133	87	0.14	111010 0980	65,50	111011 0980	99,50	111012 0980	93,–
9.9	133	87	0.14	111010 0990	65,50	111011 0990	99,50	111012 0990	93,–
10.0	133	87	0.14	111010 1000	65,50	111011 1000	99,50	111012 1000	93,–
10.2	133	87	0.14	111010 1020	79,50	111011 1020	120,–	111012 1020	104,–
10.5	133	87	0.14	111010 1050	79,50	111011 1050	120,–	111012 1050	104,–
11.0	142	94	0.14	111010 1100	98,–	111011 1100	149,–	111012 1100	139,–
11.5	142	94	0.14	111010 1150	114,50	111011 1150	164,–	111012 1150	148,–
12.0	151	101	0.14	111010 1200	114,50	111011 1200	167,–	111012 1200	163,–
13.0	151	101	0.18	111010 1300	137,50	111011 1300	191,–	111012 1300	189,–
				1154		1154		1154	

ATORN® SARA® Solid carbide high-performance drill bit

VHM | DIN 6537 | Typ U | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HE | DIN 6535 HB | TiAlN | TiN | Vc/fz | 10-255 | 10-257

- With optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- With coolant bore
- **Solid carbide cutting material: ultra-fine grain TiAlNplus and TiN**
- 2-facet grinding
- **True-running accuracy of the tool when clamped: max. 0.02 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
111510....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111511....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111522....	● 120-170	● 85-120	● 65-105	● 45	● 55	○ 44	● 160	● 120	● 40-45	● 40	○ 35	○ 260-310	● 220	○ 125		● 55	○ 35	○ 30
111512....	● 110-150	● 75-110	● 60-95	● 40	● 50	○ 40	● 145	● 110	● 36-40	○ 36	○ 32	● 230-280	● 200	● 110		○ 50	○ 32	

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


HA with coolant bore


HE with coolant bore


HB with coolant bore


HB with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
3.00	6	66	28	23	0.11	**111510** 0030	61,50	**111511** 0030	61,50	**111522** 0030	61,50	**111512** 0030	41,–
3.10	6	66	28	23	0.11	111510 0031	61,50	111511 0031	61,50	111522 0031	61,50	111512 0031	41,–
3.20	6	66	28	23	0.11	111510 0032	61,50	111511 0032	61,50	111522 0032	61,50	111512 0032	41,–
3.25	6	66	28	23	0.11	111510 0325	61,50	111511 0325	61,50	111522 0325	61,50	111512 0325	41,–
3.30	6	66	28	23	0.11	111510 0033	61,50	111511 0033	61,50	111522 0033	61,50	111512 0033	41,–
3.40	6	66	28	23	0.11	111510 0034	61,50	111511 0034	61,50	111522 0034	61,50	111512 0034	41,–
3.50	6	66	28	23	0.16	111510 0035	61,50	111511 0035	61,50	111522 0035	61,50	111512 0035	41,–
3.60	6	66	28	23	0.16	111510 0036	61,50	111511 0036	61,50	111522 0036	61,50	111512 0036	41,–
3.70	6	66	28	23	0.16	111510 0037	61,50	111511 0037	61,50	111522 0037	61,50	111512 0037	41,–
3.80	6	74	36	29	0.16	111510 0038	61,50	111511 0038	61,50	111522 0038	61,50	111512 0038	41,–
3.90	6	74	36	29	0.16	111510 0039	61,50	111511 0039	61,50	111522 0039	61,50	111512 0039	41,–
4.00	6	74	36	29	0.16	111510 0040	61,50	111511 0040	61,50	111522 0040	61,50	111512 0040	41,–
4.10	6	74	36	29	0.16	111510 0041	66,–	111511 0041	66,–	111522 0041	66,–	111512 0041	41,–
4.20	6	74	36	29	0.16	111510 0042	66,–	111511 0042	66,–	111522 0042	66,–	111512 0042	41,–
4.30	6	74	36	29	0.16	111510 0043	66,–	111511 0043	66,–	111522 0043	66,–	111512 0043	41,–
4.40	6	74	36	29	0.16	111510 0044	66,–	111511 0044	66,–	111522 0044	66,–	111512 0044	41,–
4.50	6	74	36	29	0.16	111510 0045	66,–	111511 0045	66,–	111522 0045	66,–	111512 0045	41,–
4.60	6	74	36	29	0.16	111510 0046	66,–	111511 0046	66,–	111522 0046	66,–	111512 0046	41,–
4.65	6	74	36	29	0.16	111510 0465	66,–	111511 0465	66,–	111522 0465	66,–	111512 0465	41,–
4.70	6	74	36	29	0.16	111510 0047	66,–	111511 0047	66,–	111522 0047	66,–	111512 0047	41,–
4.80	6	82	44	35	0.16	111510 0048	66,–	111511 0048	66,–	111522 0048	66,–	111512 0048	41,–
4.90	6	82	44	35	0.16	111510 0049	66,–	111511 0049	66,–	111522 0049	66,–	111512 0049	41,–
5.00	6	82	44	35	0.16	111510 0050	66,–	111511 0050	66,–	111522 0050	66,–	111512 0050	41,–
5.10	6	82	44	35	0.16	111510 0051	66,–	111511 0051	66,–	111522 0051	66,–	111512 0051	41,–
5.20	6	82	44	35	0.16	111510 0052	66,–	111511 0052	66,–	111522 0052	66,–	111512 0052	41,–
5.30	6	82	44	35	0.16	111510 0053	66,–	111511 0053	66,–	111522 0053	66,–	111512 0053	41,–
5.40	6	82	44	35	0.16	111510 0054	66,–	111511 0054	66,–	111522 0054	66,–	111512 0054	41,–
5.50	6	82	44	35	0.20	111510 0055	66,–	111511 0055	66,–	111522 0055	66,–	111512 0055	41,–
5.55	6	82	44	35	0.20	111510 0555	66,–	111511 0555	66,–	111522 0555	66,–	111512 0555	41,–
5.60	6	82	44	35	0.20	111510 0056	66,–	111511 0056	66,–	111522 0056	66,–	111512 0056	41,–
5.70	6	82	44	35	0.20	111510 0057	66,–	111511 0057	66,–	111522 0057	66,–	111512 0057	41,–
5.80	6	82	44	35	0.20	111510 0058	66,–	111511 0058	66,–	111522 0058	66,–	111512 0058	41,–
5.90	6	82	44	35	0.20	111510 0059	66,–	111511 0059	66,–	111522 0059	66,–	111512 0059	41,–
6.00	6	82	44	35	0.20	111510 0060	66,–	111511 0060	66,–	111522 0060	66,–	111512 0060	41,–
6.10	8	91	53	43	0.20	111510 0061	73,–	111511 0061	73,–	111522 0061	73,–	111512 0061	47,10
6.20	8	91	53	43	0.20	111510 0062	73,–	111511 0062	73,–	111522 0062	73,–	111512 0062	47,10
6.30	8	91	53	43	0.20	111510 0063	73,–	111511 0063	73,–	111522 0063	73,–	111512 0063	47,10
6.40	8	91	53	43	0.20	111510 0064	73,–	111511 0064	73,–	111522 0064	73,–	111512 0064	47,10
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D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
6.50	8	91	53	43	0.20	111510 0065	73,–	111511 0065	73,–	111522 0065	73,–	111512 0065	47,10
6.60	8	91	53	43	0.20	111510 0066	73,–	111511 0066	73,–	111522 0066	73,–	111512 0066	47,10
6.70	8	91	53	43	0.20	111510 0067	73,–	111511 0067	73,–	111522 0067	73,–	111512 0067	47,10
6.80	8	91	53	43	0.20	111510 0068	73,–	111511 0068	73,–	111522 0068	73,–	111512 0068	47,10
6.90	8	91	53	43	0.20	111510 0069	73,–	111511 0069	73,–	111522 0069	73,–	111512 0069	47,10
7.00	8	91	53	43	0.20	111510 0070	73,–	111511 0070	73,–	111522 0070	73,–	111512 0070	47,10
7.10	8	91	53	43	0.25	111510 0071	73,–	111511 0071	73,–	111522 0071	73,–	111512 0071	47,10
7.20	8	91	53	43	0.25	111510 0072	73,–	111511 0072	73,–	111522 0072	73,–	111512 0072	47,10
7.30	8	91	53	43	0.25	111510 0073	73,–	111511 0073	73,–	111522 0073	73,–	111512 0073	47,10
7.40	8	91	53	43	0.25	111510 0074	73,–	111511 0074	73,–	111522 0074	73,–	111512 0074	47,10
7.50	8	91	53	43	0.25	111510 0075	73,–	111511 0075	73,–	111522 0075	73,–	111512 0075	47,10
7.60	8	91	53	43	0.25	111510 0076	73,–	111511 0076	73,–	111522 0076	73,–	111512 0076	47,10
7.70	8	91	53	43	0.25	111510 0077	73,–	111511 0077	73,–	111522 0077	73,–	111512 0077	47,10
7.80	8	91	53	43	0.25	111510 0078	73,–	111511 0078	73,–	111522 0078	73,–	111512 0078	47,10
7.90	8	91	53	43	0.25	111510 0079	73,–	111511 0079	73,–	111522 0079	73,–	111512 0079	47,10
8.00	8	91	53	43	0.25	111510 0080	73,–	111511 0080	73,–	111522 0080	73,–	111512 0080	47,10
8.10	10	103	61	49	0.25	111510 0081	84,–	111511 0081	84,–	111522 0081	84,–	111512 0081	53,20
8.20	10	103	61	49	0.25	111510 0082	84,–	111511 0082	84,–	111522 0082	84,–	111512 0082	53,20
8.30	10	103	61	49	0.25	111510 0083	84,–	111511 0083	84,–	111522 0083	84,–	111512 0083	53,20
8.40	10	103	61	49	0.25	111510 0084	84,–	111511 0084	84,–	111522 0084	84,–	111512 0084	53,20
8.50	10	103	61	49	0.25	111510 0085	84,–	111511 0085	84,–	111522 0085	84,–	111512 0085	53,20
8.60	10	103	61	49	0.25	111510 0086	84,–	111511 0086	84,–	111522 0086	84,–	111512 0086	53,20
8.70	10	103	61	49	0.25	111510 0087	84,–	111511 0087	84,–	111522 0087	84,–	111512 0087	53,20
8.80	10	103	61	49	0.25	111510 0088	84,–	111511 0088	84,–	111522 0088	84,–	111512 0088	53,20
8.90	10	103	61	49	0.25	111510 0089	84,–	111511 0089	84,–	111522 0089	84,–	111512 0089	53,20
9.00	10	103	61	49	0.25	111510 0090	84,–	111511 0090	84,–	111522 0090	84,–	111512 0090	53,20
9.10	10	103	61	49	0.32	111510 0091	84,–	111511 0091	84,–	111522 0091	84,–	111512 0091	53,20
9.20	10	103	61	49	0.32	111510 0092	84,–	111511 0092	84,–	111522 0092	84,–	111512 0092	53,20
9.30	10	103	61	49	0.32	111510 0093	84,–	111511 0093	84,–	111522 0093	84,–	111512 0093	53,20
9.40	10	103	61	49	0.32	111510 0094	84,–	111511 0094	84,–	111522 0094	84,–	111512 0094	53,20
9.50	10	103	61	49	0.32	111510 0095	84,–	111511 0095	84,–	111522 0095	84,–	111512 0095	53,20
9.60	10	103	61	49	0.32	111510 0096	84,–	111511 0096	84,–	111522 0096	84,–	111512 0096	53,20
9.70	10	103	61	49	0.32	111510 0097	84,–	111511 0097	84,–	111522 0097	84,–	111512 0097	53,20
9.80	10	103	61	49	0.32	111510 0098	84,–	111511 0098	84,–	111522 0098	84,–	111512 0098	53,20
9.90	10	103	61	49	0.32	111510 0099	84,–	111511 0099	84,–	111522 0099	84,–	111512 0099	53,20
10.00	10	103	61	49	0.32	111510 0100	84,–	111511 0100	84,–	111522 0100	84,–	111512 0100	53,20
10.10	12	118	71	56	0.32	111510 0101	122,–	111511 0101	122,–	111522 0101	122,–	111512 0101	74,70
10.20	12	118	71	56	0.32	111510 0102	122,–	111511 0102	122,–	111522 0102	122,–	111512 0102	74,70
10.30	12	118	71	56	0.32	111510 0103	122,–	111511 0103	122,–	111522 0103	122,–	111512 0103	74,70
10.40	12	118	71	56	0.32	111510 0104	122,–	111511 0104	122,–	111522 0104	122,–	111512 0104	74,70
10.50	12	118	71	56	0.32	111510 0105	122,–	111511 0105	122,–	111522 0105	122,–	111512 0105	74,70
10.60	12	118	71	56	0.32	111510 0106	122,–	111511 0106	122,–	111522 0106	122,–	111512 0106	74,70
10.70	12	118	71	56	0.32	111510 0107	122,–	111511 0107	122,–	111522 0107	122,–	111512 0107	74,70
10.80	12	118	71	56	0.32	111510 0108	122,–	111511 0108	122,–	111522 0108	122,–	111512 0108	74,70
10.90	12	118	71	56	0.32	111510 0109	122,–	111511 0109	122,–	111522 0109	122,–	111512 0109	74,70
11.00	12	118	71	56	0.32	111510 0110	122,–	111511 0110	122,–	111522 0110	122,–	111512 0110	74,70
11.10	12	118	71	56	0.32	111510 0111	122,–	111511 0111	122,–	111522 0111	122,–	111512 0111	74,70
11.20	12	118	71	56	0.32	111510 0112	122,–	111511 0112	122,–	111522 0112	122,–	111512 0112	74,70
11.30	12	118	71	56	0.32	111510 0113	122,–	111511 0113	122,–	111522 0113	122,–	111512 0113	74,70
11.40	12	118	71	56	0.32	111510 0114	122,–	111511 0114	122,–	111522 0114	122,–	111512 0114	74,70
11.50	12	118	71	56	0.32	111510 0115	122,–	111511 0115	122,–	111522 0115	122,–	111512 0115	74,70
11.60	12	118	71	56	0.32	111510 0116	122,–	111511 0116	122,–	111522 0116	122,–	111512 0116	74,70
11.70	12	118	71	56	0.32	111510 0117	122,–	111511 0117	122,–	111522 0117	122,–	111512 0117	74,70
11.80	12	118	71	56	0.32	111510 0118	122,–	111511 0118	122,–	111522 0118	122,–	111512 0118	74,70
11.90	12	118	71	56	0.32	111510 0119	122,–	111511 0119	122,–	111522 0119	122,–	111512 0119	74,70
12.00	12	118	71	56	0.32	111510 0120	122,–	111511 0120	122,–	111522 0120	122,–	111512 0120	74,70
12.10	14	124	77	58	0.32	111510 0121	169,–	111511 0121	169,–				
12.20	14	124	77	58	0.32	111510 0122	169,–	111511 0122	169,–				
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D m7 mm	D1 h6 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN, HA art.no.	€	ATORN® TiAlN, HE art.no.	€	ATORN® TiAlN, HB art.no.	€	SARA® TiN, HB art.no.	€
12.50	14	124	77	60	0.32	111510 0125	169,–	111511 0125	169,–	111522 0125	169,–	111512 0125	101,50
12.80	14	124	77	60	0.32	111510 0128	169,–	111511 0128	169,–	111522 0128	169,–	111512 0128	101,50
13.00	14	124	77	60	0.32	111510 0130	169,–	111511 0130	169,–	111522 0130	169,–	111512 0130	101,50
13.50	14	124	77	60	0.32	111510 0135	169,–	111511 0135	169,–	111522 0135	169,–	111512 0135	101,50
13.80	14	124	77	60	0.32	111510 0138	169,–	111511 0138	169,–	111522 0138	169,–	111512 0138	101,50
14.00	14	124	77	60	0.32	111510 0140	169,–	111511 0140	169,–	111522 0140	169,–	111512 0140	101,50
14.10	16	133	83	63	0.32	111510 0141	200,–	111511 0141	200,–				
14.20	16	133	83	63	0.32	111510 0142	220,–	111511 0142	220,–	111522 0142	220,–	111512 0142	131,50
14.50	16	133	83	63	0.32	111510 0145	200,–	111511 0145	200,–	111522 0145	200,–	111512 0145	131,50
14.80	16	133	83	63	0.32	111510 0148	200,–	111511 0148	200,–	111522 0148	200,–	111512 0148	131,50
15.00	16	133	83	63	0.32	111510 0150	200,–	111511 0150	200,–	111522 0150	200,–	111512 0150	131,50
15.10	16	133	83	63	0.40	111510 0151	200,–	111511 0151	200,–	111522 0151	200,–	111512 0151	131,50
15.50	16	133	83	63	0.40	111510 0155	200,–	111511 0155	200,–	111522 0155	200,–	111512 0155	131,50
15.80	16	133	83	63	0.40	111510 0158	200,–	111511 0158	200,–	111522 0158	200,–	111512 0158	131,50
16.00	16	133	83	63	0.40	111510 0160	200,–	111511 0160	200,–	111522 0160	200,–	111512 0160	131,50
16.50	18	143	93	71	0.40	111510 0165	325,–	111511 0165	325,–	111522 0165	325,–	111512 0165	204,–
17.00	18	143	93	71	0.40	111510 0170	325,–	111511 0170	325,–	111522 0170	325,–	111512 0170	204,–
17.50	18	143	93	71	0.40	111510 0175	325,–	111511 0175	325,–	111522 0175	325,–	111512 0175	204,–
18.00	18	143	93	71	0.40	111510 0180	325,–	111511 0180	325,–	111522 0180	325,–	111512 0180	204,–
18.50	20	153	101	77	0.50	111510 0185	355,–	111511 0185	355,–	111522 0185	355,–	111512 0185	225,–
19.00	20	153	101	77	0.50	111510 0190	355,–	111511 0190	355,–	111522 0190	355,–	111512 0190	225,–
19.50	20	153	101	77	0.50	111510 0195	355,–	111511 0195	355,–	111522 0195	355,–	111512 0195	225,–
20.00	20	153	101	77	0.50	111510 0200	355,–	111511 0200	355,–	111522 0200	355,–	111512 0200	225,–
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ATORN® Ultra-M solid carbide high-performance drill bit

VHM | DIN 6537 | Typ VA | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HB | TiAlN | Vc/fz 10-257

- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HE with coolant bore, straight shank, DIN 6535 HE
  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
					● 80	● 60	● 48			● 35	● 30	● 30							
	Cutting speed Vc m/min.																		

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

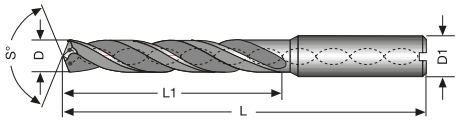
D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
3	6	66	28	0.05	**111547** 0030	66,–	**111551** 0030	66,–
3.1	6	66	28	0.05	111547 0031	66,–	111551 0031	66,–
3.2	6	66	28	0.05	111547 0032	66,–	111551 0032	66,–
3.25	6	66	28	0.05	111547 1325	66,–	111551 0325	66,–
3.3	6	66	28	0.05	111547 0033	66,–	111551 0033	66,–
3.4	6	66	28	0.05	111547 0034	66,–	111551 0034	66,–
3.5	6	66	28	0.06	111547 0035	66,–	111551 0035	66,–
3.6	6	66	28	0.06	111547 0036	66,–	111551 0036	66,–
3.7	6	66	28	0.06	111547 0037	66,–	111551 0037	66,–
3.8	6	74	36	0.06	111547 0038	66,–	111551 0038	66,–
3.9	6	74	36	0.06	111547 0039	66,–	111551 0039	66,–
4	6	74	36	0.06	111547 0040	66,–	111551 0040	66,–
4.1	6	74	36	0.06	111547 0041	66,–	111551 0041	66,–
4.2	6	74	36	0.06	111547 0042	66,–	111551 0042	66,–
4.3	6	74	36	0.06	111547 0043	66,–	111551 0043	66,–
4.4	6	74	36	0.06	111547 0044	66,–	111551 0044	66,–
4.5	6	74	36	0.06	111547 0045	66,–	111551 0045	66,–
4.6	6	74	36	0.06	111547 0046	66,–	111551 0046	66,–
4.65	6	74	36	0.06	111547 1465	66,–	111551 0465	66,–
4.7	6	74	36	0.06	111547 0047	66,–	111551 0047	66,–
					1110		1110	



HA with coolant bore



HB with coolant bore



Continued on next page >>>

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
4.8	6	82	44	0.06	111547 0048	66,–	111551 0048	66,–
4.9	6	82	44	0.06	111547 0049	66,–	111551 0049	66,–
5	6	82	44	0.06	111547 0050	66,–	111551 0050	66,–
5.1	6	82	44	0.06	111547 0051	66,–	111551 0051	66,–
5.2	6	82	44	0.06	111547 0052	66,–	111551 0052	66,–
5.3	6	82	44	0.06	111547 0053	66,–	111551 0053	66,–
5.4	6	82	44	0.06	111547 0054	66,–	111551 0054	66,–
5.5	6	82	44	0.08	111547 0055	66,–	111551 0055	66,–
5.55	6	82	44	0.08	111547 1555	66,–	111551 0555	66,–
5.6	6	82	44	0.08	111547 0056	66,–	111551 0056	66,–
5.7	6	82	44	0.08	111547 0057	66,–	111551 0057	66,–
5.8	6	82	44	0.08	111547 0058	66,–	111551 0058	66,–
5.9	6	82	44	0.08	111547 0059	66,–	111551 0059	66,–
6	6	82	44	0.08	111547 0060	66,–	111551 0060	66,–
6.1	8	91	53	0.08	111547 0061	73,–	111551 0061	73,–
6.2	8	91	53	0.08	111547 0062	73,–	111551 0062	73,–
6.3	8	91	53	0.08	111547 0063	73,–	111551 0063	73,–
6.4	8	91	53	0.08	111547 0064	73,–	111551 0064	73,–
6.5	8	91	53	0.08	111547 0065	73,–	111551 0065	73,–
6.6	8	91	53	0.08	111547 0066	73,–	111551 0066	73,–
6.7	8	91	53	0.08	111547 0067	73,–	111551 0067	73,–
6.8	8	91	53	0.08	111547 0068	73,–	111551 0068	73,–
6.9	8	91	53	0.08	111547 0069	73,–	111551 0069	73,–
7	8	91	53	0.08	111547 0070	73,–	111551 0070	73,–
7.1	8	91	53	0.10	111547 0071	73,–	111551 0071	73,–
7.2	8	91	53	0.10	111547 0072	73,–	111551 0072	73,–
7.3	8	91	53	0.10	111547 0073	73,–	111551 0073	73,–
7.4	8	91	53	0.10	111547 0074	73,–	111551 0074	73,–
7.5	8	91	53	0.10	111547 0075	73,–	111551 0075	73,–
7.6	8	91	53	0.10	111547 0076	73,–	111551 0076	73,–
7.7	8	91	53	0.10	111547 0077	73,–	111551 0077	73,–
7.8	8	91	53	0.10	111547 0078	73,–	111551 0078	73,–
7.9	8	91	53	0.10	111547 0079	73,–	111551 0079	73,–
8	8	91	53	0.10	111547 0080	73,–	111551 0080	73,–
8.1	10	103	61	0.10	111547 0081	89,–	111551 0081	89,–
8.2	10	103	61	0.10	111547 0082	89,–	111551 0082	89,–
8.3	10	103	61	0.10	111547 0083	89,–	111551 0083	89,–
8.4	10	103	61	0.10	111547 0084	89,–	111551 0084	89,–
8.5	10	103	61	0.10	111547 0085	89,–	111551 0085	89,–
8.6	10	103	61	0.10	111547 0086	89,–	111551 0086	89,–
8.7	10	103	61	0.10	111547 0087	89,–	111551 0087	89,–
8.8	10	103	61	0.10	111547 0088	89,–	111551 0088	89,–
8.9	10	103	61	0.10	111547 0089	89,–	111551 0089	89,–
9	10	103	61	0.10	111547 0090	89,–	111551 0090	89,–
9.1	10	103	61	0.12	111547 0091	89,–	111551 0091	89,–
9.2	10	103	61	0.12	111547 0092	89,–	111551 0092	89,–
9.3	10	103	61	0.12	111547 0093	89,–	111551 0093	89,–
9.4	10	103	61	0.12	111547 0094	89,–	111551 0094	89,–
9.5	10	103	61	0.12	111547 0095	89,–	111551 0095	89,–
9.6	10	103	61	0.12	111547 0096	89,–	111551 0096	89,–
9.7	10	103	61	0.12	111547 0097	89,–	111551 0097	89,–
9.8	10	103	61	0.12	111547 0098	89,–	111551 0098	89,–
9.9	10	103	61	0.12	111547 0099	89,–	111551 0099	89,–
10	10	103	61	0.12	111547 0100	89,–	111551 0100	89,–
10.1	12	118	71	0.12	111547 0101	129,–		
10.2	12	118	71	0.12	111547 0102	129,–	111551 0102	129,–
10.3	12	118	71	0.12	111547 0103	129,–		
10.4	12	118	71	0.12	111547 0104	129,–		
10.5	12	118	71	0.12	111547 0105	129,–	111551 0105	129,–
10.6	12	118	71	0.12	111547 0106	129,–		
10.7	12	118	71	0.12	111547 0107	129,–		
10.8	12	118	71	0.12	111547 0108	129,–	111551 0108	129,–
10.9	12	118	71	0.12	111547 0109	129,–		
11	12	118	71	0.12	111547 0110	129,–	111551 0110	129,–
11.1	12	118	71	0.12	111547 0111	129,–		
11.2	12	118	71	0.12	111547 0112	129,–	111551 0112	129,–
11.3	12	118	71	0.12	111547 0113	129,–		
11.4	12	118	71	0.12	111547 0114	129,–		
11.5	12	118	71	0.12	111547 0115	129,–	111551 0115	129,–
11.6	12	118	71	0.12	111547 0116	129,–		
11.7	12	118	71	0.12	111547 0117	129,–		
					1110		1110	

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
11.8	12	118	71	0.12	111547 0118	129,–	111551 0118	129,–
11.9	12	118	71	0.12	111547 0119	129,–		
12	12	118	71	0.12	111547 0120	129,–	111551 0120	129,–
12.2	14	124	77	0.12	111547 0122	170,–	111551 0122	170,–
12.5	14	124	77	0.12	111547 0125	170,–	111551 0125	170,–
12.7	14	124	77	0.12	111547 0127	170,–	111551 0127	170,–
13	14	124	77	0.12	111547 0130	170,–	111551 0130	170,–
13.5	14	124	77	0.12	111547 0135	170,–	111551 0135	170,–
14	14	124	77	0.12	111547 0140	170,–	111551 0140	170,–
14.2	16	133	83	0.12	111547 0142	210,–	111551 0142	210,–
14.5	16	133	83	0.12	111547 0145	210,–	111551 0145	210,–
15	16	133	83	0.12	111547 0150	210,–	111551 0150	210,–
15.5	16	133	83	0.12	111547 0155	210,–	111551 0155	210,–
16	16	133	83	0.12	111547 0160	210,–	111551 0160	210,–
16.5	18	143	93	0.12	111547 0165	340,–	111551 0165	340,–
16.9	18	143	93	0.12	111547 0169	340,–	111551 0169	340,–
17	18	143	93	0.12	111547 0170	340,–	111551 0170	340,–
17.5	18	143	93	0.14	111547 0175	340,–	111551 0175	340,–
18	18	143	93	0.14	111547 0180	340,–	111551 0180	340,–
18.5	20	153	101	0.14	111547 0185	385,–	111551 0185	385,–
18.9	20	153	101	0.14	111547 0189	385,–	111551 0189	385,–
19	20	153	101	0.14	111547 0190	385,–	111551 0190	385,–
19.5	20	153	101	0.16	111547 0195	385,–	111551 0195	385,–
20	20	153	101	0.16	111547 0200	385,–	111551 0200	385,–
					1110		1110	

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

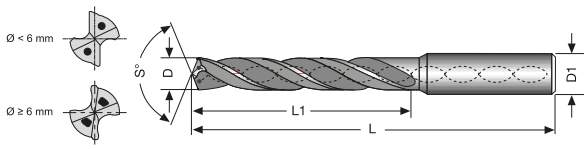
VHM | Werks-norm | Typ VA | 140° | 30° | 5xD | DIN 6535 HA | | TiAlN | Vc/fz

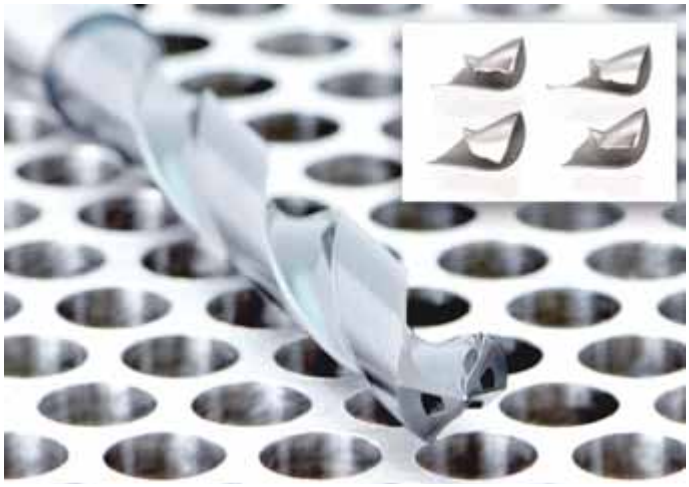
10-262

NEW · NUOVO · NY · NOUVEAU · NUEVO · NEU

- **Cutting material: solid carbide, WXL-coated**
- 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**
- Excellent coating adhesion of the new WXL 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
	● 80-120	● 80-120	○ 60-90	● 60-100	● 60-100	● 30-60	● 60-100	● 80-120	● 20-50			● 140	○ 120	○ 70				
Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.78	3	78	26	0.06	**111615** 0278	61,68
2.8	3	78	26	0.06	111615 0280	61,68
2.83	3	78	26	0.06	111615 0283	61,68
2.87	3	78	26	0.06	111615 0287	61,68
2.9	3	78	27	0.06	111615 0290	61,68
3	3	78	27	0.06	111615 0300	61,68
					1107	

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.1	4	86	28	0.08	111615 0310	64,24
3.2	4	86	29	0.08	111615 0320	64,24
3.3	4	86	30	0.08	111615 0330	64,24
3.4	4	86	31	0.08	111615 0340	64,24
3.5	4	86	32	0.08	111615 0350	64,24
3.6	4	86	33	0.08	111615 0360	64,72
					1107	

Continued on next page >>>

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.68	4	86	34	0.08	111615 0368	64,72
3.7	4	86	34	0.08	111615 0370	64,72
3.73	4	86	34	0.08	111615 0373	64,72
3.8	4	86	35	0.08	111615 0380	64,72
3.9	4	86	36	0.08	111615 0390	64,72
4	4	86	36	0.08	111615 0400	64,72
4.1	6	95	37	0.10	111615 0410	66,32
4.2	6	95	38	0.10	111615 0420	66,32
4.3	6	95	39	0.10	111615 0430	66,32
4.4	6	95	40	0.10	111615 0440	66,32
4.45	6	95	41	0.10	111615 0445	66,32
4.5	6	95	41	0.10	111615 0450	66,32
4.6	6	95	42	0.10	111615 0460	67,92
4.64	6	95	42	0.10	111615 0464	67,92
4.7	6	95	43	0.10	111615 0470	67,92
4.8	6	95	44	0.10	111615 0480	67,92
4.9	6	95	45	0.10	111615 0490	67,92
5	6	95	45	0.10	111615 0500	67,92
5.1	6	100	41	0.12	111615 0510	72,–
5.2	6	100	42	0.12	111615 0520	72,–
5.3	6	100	43	0.12	111615 0530	72,–
5.4	6	100	44	0.12	111615 0540	72,–
5.5	6	100	44	0.12	111615 0550	72,–
5.54	6	100	45	0.12	111615 0554	72,–
5.6	6	100	45	0.12	111615 0560	75,52
5.7	6	100	46	0.12	111615 0570	75,52
5.8	6	100	47	0.12	111615 0580	75,52
5.9	6	100	48	0.12	111615 0590	75,52
6	6	100	48	0.12	111615 0600	75,52
6.1	8	109	49	0.14	111615 0610	84,40
6.2	8	109	50	0.14	111615 0620	84,40
6.3	8	109	51	0.14	111615 0630	84,40
6.4	8	109	52	0.14	111615 0640	84,40
6.5	8	109	52	0.14	111615 0650	84,40
6.6	8	109	53	0.14	111615 0660	84,40
6.7	8	109	54	0.14	111615 0670	84,40
6.8	8	109	55	0.14	111615 0680	84,40
6.9	8	109	56	0.14	111615 0690	84,40
7	8	109	56	0.14	111615 0700	84,40
7.1	8	118	57	0.16	111615 0710	84,40
7.2	8	118	58	0.16	111615 0720	84,40
7.3	8	118	59	0.16	111615 0730	84,40
7.38	8	118	60	0.16	111615 0738	84,40
7.4	8	118	60	0.16	111615 0740	84,40
7.45	8	118	60	0.16	111615 0745	84,40
7.5	8	118	60	0.16	111615 0750	84,40
7.54	8	118	61	0.16	111615 0754	84,40
7.6	8	118	61	0.16	111615 0760	89,44
7.7	8	118	62	0.16	111615 0770	89,44
7.8	8	118	63	0.16	111615 0780	89,44
7.9	8	118	64	0.16	111615 0790	89,44
8	8	118	64	0.16	111615 0800	89,44
8.1	10	128	65	0.18	111615 0810	103,12
8.2	10	128	66	0.18	111615 0820	103,12
8.3	10	128	67	0.18	111615 0830	103,12
8.4	10	128	68	0.18	111615 0840	103,12
8.5	10	128	68	0.18	111615 0850	103,12
8.6	10	128	69	0.18	111615 0860	103,12
8.7	10	128	70	0.18	111615 0870	103,12
8.8	10	128	71	0.18	111615 0880	103,12
8.9	10	128	72	0.18	111615 0890	103,12
9	10	128	72	0.18	111615 0900	103,12
9.1	10	136	73	0.20	111615 0910	103,12
9.2	10	136	74	0.20	111615 0920	103,12
9.26	10	136	75	0.20	111615 0926	103,12

1107

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.3	10	136	75	0.20	111615 0930	103,12
9.38	10	136	76	0.20	111615 0938	103,12
9.4	10	136	76	0.20	111615 0940	103,12
9.5	10	136	76	0.20	111615 0950	103,12
9.54	10	136	77	0.20	111615 0954	103,12
9.6	10	136	77	0.20	111615 0960	105,12
9.7	10	136	78	0.20	111615 0970	105,12
9.8	10	136	79	0.20	111615 0980	105,12
9.9	10	136	80	0.20	111615 0990	105,12
10	10	136	80	0.20	111615 1000	105,12
10.1	12	146	81	0.22	111615 1010	120,–
10.2	12	146	82	0.22	111615 1020	120,–
10.3	12	146	83	0.22	111615 1030	120,–
10.4	12	146	84	0.22	111615 1040	120,–
10.5	12	146	84	0.22	111615 1050	120,–
10.6	12	146	85	0.22	111615 1060	120,–
10.7	12	146	86	0.22	111615 1070	120,–
10.8	12	146	87	0.22	111615 1080	120,–
10.9	12	146	88	0.22	111615 1090	120,–
11	12	146	88	0.22	111615 1100	120,–
11.1	12	156	89	0.24	111615 1110	120,–
11.2	12	156	90	0.24	111615 1120	120,–
11.24	12	156	90	0.24	111615 1124	120,–
11.3	12	156	91	0.24	111615 1130	120,–
11.38	12	156	92	0.24	111615 1138	120,–
11.4	12	156	92	0.24	111615 1140	120,–
11.5	12	156	92	0.24	111615 1150	120,–
11.6	12	156	93	0.24	111615 1160	125,84
11.7	12	156	94	0.24	111615 1170	125,84
11.8	12	156	95	0.24	111615 1180	125,84
11.9	12	156	96	0.24	111615 1190	125,84
12	12	156	96	0.24	111615 1200	125,84
12.1	14	167	97	0.26	111615 1210	137,84
12.5	14	167	100	0.26	111615 1250	137,84
12.8	14	167	103	0.26	111615 1280	137,84
13	14	167	104	0.26	111615 1300	137,84
13.1	14	176	105	0.28	111615 1310	137,84
13.2	14	176	106	0.28	111615 1320	137,84
13.25	14	176	106	0.28	111615 1325	137,84
13.43	14	176	108	0.28	111615 1343	137,84
13.5	14	176	108	0.28	111615 1350	137,84
13.55	14	176	109	0.28	111615 1355	142,64
13.6	14	176	109	0.28	111615 1360	142,64
14	14	176	112	0.28	111615 1400	142,64
14.5	16	185	116	0.28	111615 1450	155,68
15	16	185	120	0.28	111615 1500	155,68
15.1	16	193	121	0.28	111615 1510	155,68
15.25	16	193	122	0.28	111615 1525	155,68
15.5	16	193	124	0.28	111615 1550	155,68
15.55	16	193	125	0.28	111615 1555	161,60
16	16	193	128	0.30	111615 1600	161,60
16.5	18	184	113	0.30	111615 1650	213,04
16.7	18	184	117	0.30	111615 1670	213,04
17	18	184	114	0.30	111615 1700	213,04
17.3	18	191	122	0.30	111615 1730	213,04
17.5	18	191	123	0.30	111615 1750	213,04
17.55	18	191	123	0.30	111615 1755	230,96
18	18	191	126	0.32	111615 1800	230,96
18.5	20	198	130	0.32	111615 1850	267,44
18.7	20	198	131	0.32	111615 1870	267,44
19	20	198	133	0.32	111615 1900	267,44
19.3	20	205	136	0.32	111615 1930	267,44
19.5	20	205	137	0.32	111615 1950	267,44
19.55	20	205	137	0.32	111615 1955	276,40
20	20	205	140	0.34	111615 2000	276,40

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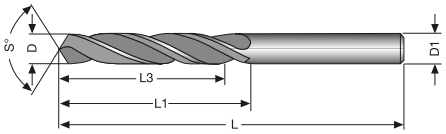
SARA® ALU solid carbide high-performance drill bit

VHM | DIN 6537 | Typ W | 140° | 30° | 5xD | DIN 6535 HA | ZrN | Vc/fz | 10-257



- Twisted coolant bore
- **Cutting material: solid carbide, ZrN-coated**
- Special rounded-off cutting edges to minimise micro-nicks

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
						○ 60				○ 35-50	○ 35	○ 35	● 260	● 240	● 150				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D m7 mm	D1 h6 mm	L1 mm	L3 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
3.0	6	28	23	66	0.14	**111410** 0030	68,50
3.1	6	28	23	66	0.14	111410 0031	68,50
3.2	6	28	23	66	0.14	111410 0032	68,50
3.3	6	28	23	66	0.14	111410 0033	68,50
3.4	6	28	23	66	0.14	111410 0034	68,50
3.5	6	28	23	66	0.14	111410 0035	68,50
3.6	6	28	23	66	0.14	111410 0036	68,50
3.7	6	28	23	66	0.14	111410 0037	68,50
3.8	6	36	29	74	0.14	111410 0038	72,50
3.9	6	36	29	74	0.14	111410 0039	72,50
4.0	6	36	29	74	0.14	111410 0040	72,50
4.1	6	36	29	74	0.14	111410 0041	72,50
4.2	6	36	29	74	0.14	111410 0042	72,50
4.3	6	36	29	74	0.14	111410 0043	72,50
4.4	6	36	29	74	0.14	111410 0044	72,50
4.5	6	36	29	74	0.14	111410 0045	72,50
4.6	6	36	29	74	0.14	111410 0046	72,50
4.7	6	36	29	74	0.14	111410 0047	72,50
4.8	6	44	35	82	0.14	111410 0048	78,–
4.9	6	44	35	82	0.14	111410 0049	78,–
5.0	6	44	35	82	0.14	111410 0050	78,–
5.1	6	44	35	82	0.18	111410 0051	78,–
5.2	6	44	35	82	0.18	111410 0052	78,–
5.3	6	44	35	82	0.18	111410 0053	78,–
5.4	6	44	35	82	0.18	111410 0054	78,–
5.5	6	44	35	82	0.18	111410 0055	78,–
5.6	6	44	35	82	0.18	111410 0056	78,–
5.7	6	44	35	82	0.18	111410 0057	78,–
5.8	6	44	35	82	0.18	111410 0058	78,–
5.9	6	44	35	82	0.18	111410 0059	78,–
6.0	6	44	35	82	0.18	111410 0060	78,–
6.1	8	53	43	91	0.18	111410 0061	102,–
6.2	8	53	43	91	0.18	111410 0062	102,–
6.3	8	53	43	91	0.18	111410 0063	102,–
6.4	8	53	43	91	0.18	111410 0064	102,–
6.5	8	53	43	91	0.18	111410 0065	102,–
6.6	8	53	43	91	0.18	111410 0066	102,–
6.7	8	53	43	91	0.18	111410 0067	102,–
6.8	8	53	43	91	0.18	111410 0068	102,–
6.9	8	53	43	91	0.18	111410 0069	102,–
7.0	8	53	43	91	0.18	111410 0070	102,–
7.1	8	53	43	91	0.18	111410 0071	102,–
7.2	8	53	43	91	0.18	111410 0072	102,–
7.3	8	53	43	91	0.18	111410 0073	102,–
7.4	8	53	43	91	0.18	111410 0074	102,–
7.5	8	53	43	91	0.18	111410 0075	102,–
7.6	8	53	43	91	0.18	111410 0076	102,–
7.7	8	53	43	91	0.18	111410 0077	102,–
7.8	8	53	43	91	0.18	111410 0078	102,–
7.9	8	53	43	91	0.18	111410 0079	102,–
8.0	8	53	43	91	0.18	111410 0080	102,–
8.1	10	61	49	103	0.26	111410 0081	130,–
8.2	10	61	49	103	0.26	111410 0082	130,–
8.3	10	61	49	103	0.26	111410 0083	130,–
8.4	10	61	49	103	0.26	111410 0084	130,–
8.5	10	61	49	103	0.26	111410 0085	130,–
8.6	10	61	49	103	0.26	111410 0086	130,–

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D m7 mm	D1 h6 mm	L1 mm	L3 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
8.7	10	61	49	103	0.26	111410 0087	130,–
8.8	10	61	49	103	0.26	111410 0088	130,–
8.9	10	61	49	103	0.26	111410 0089	130,–
9.0	10	61	49	103	0.26	111410 0090	130,–
9.1	10	61	49	103	0.26	111410 0091	130,–
9.2	10	61	49	103	0.26	111410 0092	130,–
9.3	10	61	49	103	0.26	111410 0093	130,–
9.4	10	61	49	103	0.26	111410 0094	130,–
9.5	10	61	49	103	0.26	111410 0095	130,–
9.6	10	61	49	103	0.26	111410 0096	130,–
9.7	10	61	49	103	0.26	111410 0097	130,–
9.8	10	61	49	103	0.26	111410 0098	130,–
9.9	10	61	49	103	0.26	111410 0099	130,–
10.0	10	61	49	103	0.26	111410 0100	130,–
10.1	12	71	56	118	0.26	111410 0101	161,–
10.2	12	71	56	118	0.26	111410 0102	161,–
10.3	12	71	56	118	0.26	111410 0103	161,–
10.4	12	71	56	118	0.26	111410 0104	161,–
10.5	12	71	56	118	0.26	111410 0105	161,–
10.6	12	71	56	118	0.26	111410 0106	161,–
10.7	12	71	56	118	0.26	111410 0107	161,–
10.8	12	71	56	118	0.26	111410 0108	161,–
10.9	12	71	56	118	0.26	111410 0109	161,–
11.0	12	71	56	118	0.26	111410 0110	161,–
11.1	12	71	56	118	0.26	111410 0111	161,–
11.2	12	71	56	118	0.26	111410 0112	161,–
11.3	12	71	56	118	0.26	111410 0113	161,–
11.4	12	71	56	118	0.26	111410 0114	161,–
11.5	12	71	56	118	0.26	111410 0115	161,–
11.6	12	71	56	118	0.26	111410 0116	161,–
11.7	12	71	56	118	0.26	111410 0117	161,–
11.8	12	71	56	118	0.26	111410 0118	161,–
11.9	12	71	56	118	0.26	111410 0119	161,–
12.0	12	71	56	118	0.26	111410 0120	161,–
12.3	14	77	60	124	0.36	111410 0123	205,–
12.5	14	77	60	124	0.36	111410 0125	205,–
12.8	14	77	60	124	0.36	111410 0128	205,–
13.0	14	77	60	124	0.36	111410 0130	205,–
13.5	14	77	60	124	0.36	111410 0135	205,–
13.8	14	77	60	124	0.36	111410 0138	205,–
14.0	14	77	60	124	0.36	111410 0140	205,–
14.5	16	83	63	133	0.36	111410 0145	275,–
14.8	16	83	63	133	0.36	111410 0148	275,–
15.0	16	83	63	133	0.36	111410 0150	275,–
15.5	16	83	63	133	0.36	111410 0155	275,–
15.8	16	83	63	133	0.36	111410 0158	275,–
16.0	16	83	63	133	0.36	111410 0160	275,–
16.5	18	93	71	143	0.45	111410 0165	360,–
16.8	18	93	71	143	0.45	111410 0168	360,–
17.0	18	93	71	143	0.45	111410 0170	360,–
17.5	18	93	71	143	0.45	111410 0175	360,–
17.8	18	93	71	143	0.45	111410 0178	360,–
18.0	18	93	71	143	0.45	111410 0180	360,–
18.5	20	101	77	153	0.45	111410 0185	415,–
19.0	20	101	77	153	0.45	111410 0190	415,–
19.5	20	101	77	153	0.45	111410 0195	415,–
20.0	20	101	77	153	0.45	111410 0200	415,–

1148

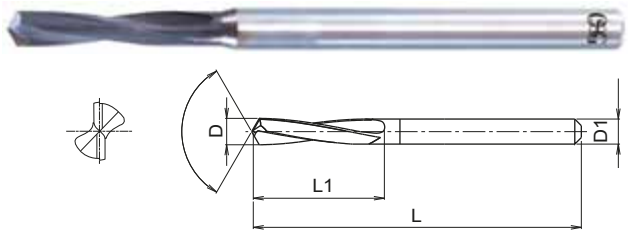
WH70-DRL solid carbide high-performance drill

VHM | Werks-norm | Typ H | 120° | 15° | 5xD | TiAlN | Vc/fz | 10-262

Up to 70 HRc

NEW · NUOVO · NY · NOUVEAU · NUEVO

- **For hardened materials up to 70 HRc**
- Excellent wear-resistance and tensile strength properties
- **Cutting material: solid carbide, WXS-coated**
- Special point thinning on the chisel edge for hardened materials, preventing nicks in the centre
- Additional corner radius, which prevents nicks on the outer 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
																	● 15-20	● 10-16	● 8-13
	Cutting speed Vc m/min.																		

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

D h8 mm	D1 h6 mm	L mm	L1 mm	● Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
2	3	42	12	0.04	**111530** 0200	88,50
2.1	3	42	12	0.04	111530 0210	96,30
2.2	3	43	13	0.04	111530 0220	96,30
2.3	3	43	13	0.04	111530 0230	96,30
2.4	3	44	14	0.04	111530 0240	96,30
2.5	3	44	14	0.04	111530 0250	96,30
2.6	3	44	14	0.04	111530 0260	96,30
2.7	3	46	16	0.04	111530 0270	96,30
2.8	3	46	16	0.04	111530 0280	96,30
2.9	3	46	16	0.04	111530 0290	96,30
3	3	46	16	0.04	111530 0300	96,30
3.1	4	48	18	0.04	111530 0310	103,20
3.2	4	48	18	0.04	111530 0320	103,20
3.3	4	48	18	0.04	111530 0330	103,20
3.4	4	50	20	0.04	111530 0340	103,20
3.5	4	50	20	0.04	111530 0350	103,20
3.6	4	50	20	0.04	111530 0360	109,–
3.7	4	50	20	0.04	111530 0370	109,–
3.8	4	52	22	0.04	111530 0380	109,–
3.9	4	52	22	0.04	111530 0390	109,–
4	4	52	22	0.04	111530 0400	109,–
4.1	5	68	25	0.04	111530 0410	123,30
4.2	5	68	25	0.04	111530 0420	123,30
4.3	5	68	28	0.04	111530 0430	123,30
4.4	5	68	28	0.04	111530 0440	123,30
4.5	5	68	28	0.04	111530 0450	123,30
4.6	5	68	28	0.04	111530 0460	139,50
4.7	5	68	28	0.04	111530 0470	139,50
4.8	5	68	32	0.04	111530 0480	139,50
4.9	5	68	32	0.04	111530 0490	139,50
5	5	68	32	0.04	111530 0500	139,50
5.1	6	74	32	0.04	111530 0510	139,50
5.2	6	74	32	0.04	111530 0520	155,40
5.3	6	74	32	0.04	111530 0530	155,40
5.4	6	74	35	0.04	111530 0540	155,40
5.5	6	74	35	0.04	111530 0550	155,40
5.6	6	74	35	0.04	111530 0560	166,40
5.7	6	74	35	0.04	111530 0570	166,40
5.8	6	74	35	0.04	111530 0580	166,40
5.9	6	74	35	0.04	111530 0590	166,40
6	6	74	35	0.04	111530 0600	166,40
6.1	7	83	40	0.04	111530 0610	187,70
6.2	7	83	40	0.04	111530 0620	187,70
6.3	7	83	40	0.04	111530 0630	187,70
6.4	7	83	40	0.04	111530 0640	187,70
6.5	7	83	40	0.04	111530 0650	166,40
6.6	7	83	40	0.04	111530 0660	197,50
6.7	7	83	40	0.04	111530 0670	197,50
6.8	7	83	45	0.04	111530 0680	174,60
6.9	7	83	45	0.04	111530 0690	197,50
7	7	83	45	0.04	111530 0700	174,60

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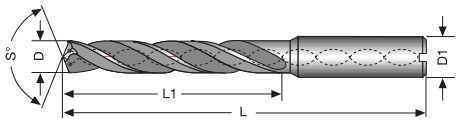
D h8 mm	D1 h6 mm	L mm	L1 mm	● Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
7.1	8	94	45	0.04	111530 0710	207,–
7.2	8	94	45	0.04	111530 0720	207,–
7.3	8	94	45	0.04	111530 0730	207,–
7.4	8	94	45	0.04	111530 0740	207,–
7.5	8	94	45	0.04	111530 0750	183,20
7.6	8	94	50	0.04	111530 0760	217,30
7.7	8	94	50	0.04	111530 0770	217,30
7.8	8	94	50	0.04	111530 0780	217,30
7.9	8	94	50	0.04	111530 0790	217,30
8	8	94	50	0.04	111530 0800	193,–
8.1	9	101	50	0.04	111530 0810	225,70
8.2	9	101	50	0.04	111530 0820	225,70
8.3	9	101	50	0.04	111530 0830	225,70
8.4	9	101	50	0.04	111530 0840	225,70
8.5	9	101	50	0.04	111530 0850	201,20
8.6	9	101	57	0.04	111530 0860	236,30
8.7	9	101	57	0.04	111530 0870	209,20
8.8	9	101	57	0.04	111530 0880	236,30
8.9	9	101	57	0.04	111530 0890	236,30
9	9	101	57	0.04	111530 0900	209,20
9.1	10	106	57	0.04	111530 0910	253,40
9.2	10	106	57	0.04	111530 0920	253,40
9.3	10	106	57	0.04	111530 0930	253,40
9.4	10	106	57	0.04	111530 0940	253,40
9.5	10	106	57	0.04	111530 0950	225,70
9.6	10	106	63	0.04	111530 0960	264,10
9.7	10	106	63	0.04	111530 0970	264,10
9.8	10	106	63	0.04	111530 0980	264,10
9.9	10	106	63	0.04	111530 0990	264,10
10	10	106	63	0.04	111530 1000	234,30
10.1	11	113	63	0.04	111530 1010	274,70
10.2	11	113	63	0.04	111530 1020	274,70
10.3	11	113	63	0.04	111530 1030	242,70
10.4	11	113	63	0.04	111530 1040	274,70
10.5	11	113	63	0.04	111530 1050	242,70
10.6	11	113	63	0.04	111530 1060	281,–
10.7	11	113	71	0.04	111530 1070	281,–
10.8	11	113	71	0.04	111530 1080	281,–
10.9	11	113	71	0.04	111530 1090	281,–
11	11	113	71	0.04	111530 1100	249,20
11.1	12	120	71	0.04	111530 1110	295,90
11.2	12	120	71	0.04	111530 1120	295,90
11.3	12	120	71	0.04	111530 1130	295,90
11.4	12	120	71	0.04	111530 1140	295,90
11.5	12	120	71	0.04	111530 1150	262,10
11.6	12	120	71	0.04	111530 1160	306,60
11.7	12	120	71	0.04	111530 1170	306,60
11.8	12	120	71	0.04	111530 1180	306,60
11.9	12	120	76	0.04	111530 1190	306,60
12	12	120	76	0.04	111530 1200	270,30

1107

ATORN® Solid carbide high-performance drill bit

VHM | Werks-norm | Typ U | 140° | 30° | 7xD | DIN 6535 HA | DIN 6535 HE | TiAlN | Vc/fz | 10-259

- With optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: ultra-fine grain K40F solid carbide, TiAlNplus-coated**
- Good self-centring properties with short chips
- For use on powerful machines with low-play spindles, precisely aligned tool holding fixtures
- **Four guide chamfers for precisely aligned bores with good quality surfaces**
- True-running accuracy of the tool when clamped max. 0.02 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
		●	●	●	○	○		●	○	●	●	○	○	●	○		○		
		120-145	65-120	65-105	45	55		160	120	40	35	35	260-310	220	125		55		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		


HA with coolant bore


HE with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HE art.no.	€
3.0	6	70	30	0.07	**111513** 0030	138,–	**111519** 0030	138,–
3.1	6	70	30	0.07	111513 0031	138,–	111519 0031	138,–
3.2	6	70	30	0.07	111513 0032	138,–	111519 0032	138,–
3.3	6	70	30	0.08	111513 0033	138,–	111519 0033	138,–
3.4	6	75	35.5	0.08	111513 0034	138,–	111519 0034	138,–
3.5	6	75	35.5	0.08	111513 0035	138,–	111519 0035	138,–
3.6	6	75	35.5	0.08	111513 0036	138,–	111519 0036	138,–
3.7	6	75	35.5	0.08	111513 0037	138,–	111519 0037	138,–
3.8	6	75	37.5	0.09	111513 0038	138,–	111519 0038	138,–
3.9	6	75	37.5	0.09	111513 0039	138,–	111519 0039	138,–
4.0	6	75	37.5	0.09	111513 0040	138,–	111519 0040	138,–
4.1	6	75	37.5	0.09	111513 0041	138,–	111519 0041	138,–
4.2	6	75	37.5	0.09	111513 0042	138,–	111519 0042	138,–
4.3	6	85	45	0.10	111513 0043	138,–	111519 0043	138,–
4.4	6	85	45	0.10	111513 0044	138,–	111519 0044	138,–
4.5	6	85	45	0.10	111513 0045	138,–	111519 0045	138,–
4.6	6	85	45	0.10	111513 0046	138,–	111519 0046	138,–
4.7	6	85	45	0.10	111513 0047	138,–	111519 0047	138,–
4.8	6	90	50	0.12	111513 0048	138,–	111519 0048	138,–
4.9	6	90	50	0.12	111513 0049	138,–	111519 0049	138,–
5.0	6	90	50	0.12	111513 0050	138,–	111519 0050	138,–
5.1	6	90	50	0.12	111513 0051	138,–	111519 0051	138,–
5.2	6	90	50	0.12	111513 0052	138,–	111519 0052	138,–
5.3	6	90	50	0.13	111513 0053	138,–	111519 0053	138,–
5.4	6	97	57	0.13	111513 0054	138,–	111519 0054	138,–
5.5	6	97	57	0.13	111513 0055	138,–	111519 0055	138,–
5.7	6	97	57	0.13	111513 0057	138,–	111519 0057	138,–
5.8	6	97	57	0.14	111513 0058	138,–	111519 0058	138,–
5.9	6	97	57	0.14	111513 0059	138,–	111519 0059	138,–
6.0	6	97	57	0.14	111513 0060	138,–	111519 0060	138,–
6.2	8	106	66	0.14	111513 0062	172,–	111519 0062	172,–
6.3	8	106	66	0.15	111513 0063	172,–	111519 0063	172,–
6.5	8	106	66	0.15	111513 0065	172,–	111519 0065	172,–
6.6	8	106	66	0.15	111513 0066	172,–	111519 0066	172,–
6.7	8	106	66	0.15	111513 0067	172,–	111519 0067	172,–
6.8	8	106	66	0.16	111513 0068	172,–	111519 0068	172,–
6.9	8	116	76	0.16	111513 0069	172,–	111519 0069	172,–
7.0	8	116	76	0.16	111513 0070	172,–	111519 0070	172,–
7.1	8	116	76	0.16	111513 0071	172,–	111519 0071	172,–
7.2	8	116	76	0.16	111513 0072	172,–	111519 0072	172,–
7.5	8	116	76	0.18	111513 0075	172,–	111519 0075	172,–
					1110		1110	


4 guide chamfers

Continued on next page >>>

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HE art.no.	€
7.6	8	116	76	0.18	111513 0076	172,–	111519 0076	172,–
7.7	8	116	76	0.18	111513 0077	172,–	111519 0077	172,–
7.8	8	116	76	0.19	111513 0078	172,–	111519 0078	172,–
8.0	8	116	76	0.19	111513 0080	172,–	111519 0080	172,–
8.1	10	131	87	0.19	111513 0081	220,–	111519 0081	220,–
8.2	10	131	87	0.19	111513 0082	220,–	111519 0082	220,–
8.4	10	131	87	0.20	111513 0084	220,–	111519 0084	220,–
8.5	10	131	87	0.20	111513 0085	220,–	111519 0085	220,–
8.6	10	131	87	0.20	111513 0086	220,–	111519 0086	220,–
8.7	10	131	87	0.20	111513 0087	220,–	111519 0087	220,–
8.8	10	131	87	0.21	111513 0088	220,–	111519 0088	220,–
9.0	10	131	87	0.21	111513 0090	220,–	111519 0090	220,–
9.1	10	139	95	0.21	111513 0091	220,–	111519 0091	220,–
9.2	10	139	95	0.21	111513 0092	220,–	111519 0092	220,–
9.3	10	139	95	0.22	111513 0093	220,–	111519 0093	220,–
9.4	10	139	95	0.22	111513 0094	220,–	111519 0094	220,–
9.5	10	139	95	0.22	111513 0095	220,–	111519 0095	220,–
9.7	10	139	95	0.22	111513 0097	220,–	111519 0097	220,–
9.8	10	139	95	0.24	111513 0098	220,–	111519 0098	220,–
9.9	10	139	95	0.24	111513 0099	220,–	111519 0099	220,–
10.0	10	139	95	0.24	111513 0100	220,–	111519 0100	220,–
10.2	12	155	106	0.24	111513 0102	280,–	111519 0102	280,–
10.5	12	155	106	0.25	111513 0105	280,–	111519 0105	280,–
10.8	12	155	106	0.26	111513 0108	280,–	111519 0108	280,–
11.0	12	155	106	0.26	111513 0110	280,–	111519 0110	280,–
11.2	12	163	114	0.26	111513 0112	280,–	111519 0112	280,–
11.5	12	163	114	0.27	111513 0115	280,–	111519 0115	280,–
11.8	12	163	114	0.28	111513 0118	280,–	111519 0118	280,–
12.0	12	163	114	0.28	111513 0120	280,–	111519 0120	280,–
12.2	14	182	133	0.28	111513 0122	360,–	111519 0122	360,–
12.5	14	182	133	0.30	111513 0125	360,–	111519 0125	360,–
12.7	14	182	133	0.30	111513 0127	360,–	111519 0127	360,–
13.0	14	182	133	0.31	111513 0130	360,–	111519 0130	360,–
13.5	14	182	133	0.32	111513 0135	360,–	111519 0135	360,–
14.0	14	182	133	0.33	111513 0140	360,–	111519 0140	360,–
14.2	16	204	152	0.33	111513 0142	465,–	111519 0142	465,–
14.5	16	204	152	0.34	111513 0145	465,–	111519 0145	465,–
15.0	16	204	152	0.36	111513 0150	465,–	111519 0150	465,–
15.5	16	204	152	0.37	111513 0155	465,–	111519 0155	465,–
16.0	16	204	152	0.38	111513 0160	465,–	111519 0160	465,–
16.5	18	223	171	0.39	111513 0165	600,–	111519 0165	600,–
17.0	18	223	171	0.40	111513 0170	600,–	111519 0170	600,–
17.5	18	223	171	0.42	111513 0175	600,–	111519 0175	600,–
18.0	18	223	171	0.43	111513 0180	600,–	111519 0180	600,–
18.5	20	244	190	0.44	111513 0185	690,–	111519 0185	690,–
19.0	20	244	190	0.45	111513 0190	690,–	111519 0190	690,–
19.5	20	244	190	0.46	111513 0195	690,–	111519 0195	690,–
20.0	20	244	190	0.48	111513 0200	690,–	111519 0200	690,–
					1110		1110	

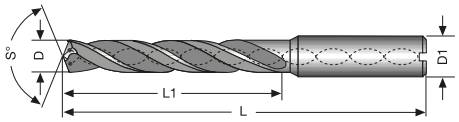
ATORN® Solid carbide high-performance deep twist drill bit

VHM | Werks-norm | Typ TLP | 135° | | 30° | 12xD | DIN 6535 HA | | TiAlN | Vc/fz | 10-260

Head coating

- With optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- 2-facet grinding
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated (head)**
- Reliable chip flow even with tough and long-chipping cutting material due to adapted drill bit profile and large chip chambers
- **Four guide chamfers for precisely aligned bores with good quality surfaces**
- True-running accuracy of the tool when clamped max. 0.02 mm
- **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
		●	●	●	○	○		●	○				○	●	○		○		
		80-90	80	40-60	40	40		120	90				120	150	120		35		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h7 mm	D1 h6 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.0	6	90	50	0.06	**111514** 0030	169,–
3.5	6	90	50	0.06	111514 0035	169,–
4.0	6	102	64	0.08	111514 0040	169,–
4.2	6	102	64	0.08	111514 0042	169,–
4.3	6	102	64	0.09	111514 0043	169,–
4.4	6	102	64	0.09	111514 0044	169,–
4.5	6	102	64	0.09	111514 0045	169,–
5.0	6	116	78	0.10	111514 0050	169,–
5.5	6	116	78	0.11	111514 0055	169,–
6.0	6	116	78	0.12	111514 0060	169,–
6.5	8	146	108	0.13	111514 0065	213,–
6.8	8	146	108	0.14	111514 0068	213,–
7.0	8	146	108	0.14	111514 0070	213,–
7.5	8	146	108	0.15	111514 0075	213,–
8.0	8	146	108	0.16	111514 0080	213,–
8.5	10	162	120	0.17	111514 0085	265,–
9.0	10	162	120	0.18	111514 0090	265,–
9.5	10	162	120	0.19	111514 0095	265,–
10.0	10	162	120	0.20	111514 0100	265,–
10.2	12	204	156	0.20	111514 0102	365,–
10.5	12	204	156	0.21	111514 0105	365,–
11.0	12	204	156	0.22	111514 0110	365,–
11.5	12	204	156	0.23	111514 0115	365,–
12.0	12	204	156	0.24	111514 0120	365,–
12.5	14	230	182	0.25	111514 0125	430,–
12.7	14	230	182	0.25	111514 0127	430,–
13.0	14	230	182	0.26	111514 0130	430,–
13.5	14	230	182	0.27	111514 0135	430,–
14.0	14	230	182	0.28	111514 0140	430,–
14.5	16	260	208	0.29	111514 0145	529,–
15.0	16	260	208	0.30	111514 0150	529,–
16.0	16	260	208	0.32	111514 0160	529,–
16.5	18	285	234	0.33	111514 0165	669,–
17.0	18	285	234	0.34	111514 0170	669,–
18.0	18	285	234	0.36	111514 0180	669,–
19.0	20	310	258	0.38	111514 0190	819,–
20.0	20	310	258	0.40	111514 0200	819,–

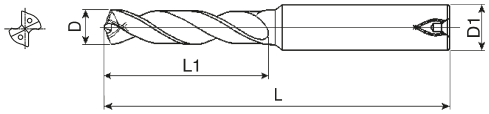
1110

ADO solid carbide deep twist drill

VHM | Werks-norm | Typ PLT | Typ TLP | 160° | 140° | 30° | 10xD | 15xD | 20xD | 30xD | DIN 6535 HA | | TiAlN | Vc/fz | 10-257

- With optimised diameter tolerance of the shank, shrink fit holder suitable as holding fixture
- **Cutting material: solid carbide, WDI™-coated**
- High-performance drill bit for cost-efficient manufacturing of deep bores up to 30xD with no step
- Optimum chip removal due to special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped max. 0.02 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
		● 60-125	● 60-125	● 60-125	○ 40-80	○ 40-80		● 60-125	● 50-80										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									





ADO-PLT - pilot drill

- Cutting edge tolerance h8

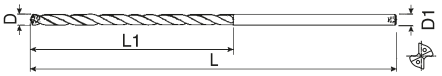
D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.03	3	65	15	0.06	**111726** 0303	85,–
3.53	4	70	18	0.07	111726 0353	96,–
4.03	4	70	20	0.08	111726 0403	108,50
4.53	5	75	23	0.09	111726 0453	114,40
5.03	5	75	25	0.1	111726 0503	128,30
5.53	6	80	28	0.11	111726 0553	142,90
6.03	6	80	30	0.12	111726 0603	156,40
6.53	7	85	33	0.13	111726 0653	168,70

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.03	7	85	35	0.14	111726 0703	181,–
8.03	8	90	40	0.16	111726 0803	197,20
8.53	9	95	43	0.17	111726 0853	89,80
9.03	9	95	45	0.18	111726 0903	102,40
10.03	10	100	50	0.2	111726 1003	114,40
11.03	11	115	55	0.22	111726 1103	121,30
12.03	12	120	60	0.24	111726 1203	148,80

1107





ADO-10D - 10xD

- Cutting edge tolerance h8

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	75	26	0.04	**111715** 0020	122,80
2.1	3	75	33	0.04	111715 0021	122,80
2.2	3	75	33	0.04	111715 0022	122,80
2.3	3	75	33	0.05	111715 0023	122,80
2.4	3	75	33	0.05	111715 0024	122,80
2.5	3	75	33	0.05	111715 0025	122,80
2.6	3	90	40	0.05	111715 0026	122,80
2.7	3	90	40	0.05	111715 0027	122,80
2.8	3	90	40	0.06	111715 0028	122,80
2.9	3	90	40	0.06	111715 0029	122,80
3	3	90	40	0.06	111715 0030	103,–
3.1	4	100	45	0.06	111715 0031	105,–
3.2	4	100	45	0.06	111715 0032	105,–
3.3	4	100	45	0.07	111715 0033	105,–
3.4	4	100	50	0.07	111715 0034	105,–
3.5	4	100	50	0.07	111715 0035	105,–
3.6	4	100	50	0.07	111715 0036	105,–
3.7	4	100	50	0.07	111715 0037	105,–
3.8	4	100	50	0.08	111715 0038	105,–
3.9	4	100	50	0.08	111715 0039	105,–
4	4	100	50	0.08	111715 0040	105,–
4.1	6	115	55	0.08	111715 0041	118,50
4.2	6	115	55	0.08	111715 0042	118,50
4.3	6	115	60	0.09	111715 0043	118,50
4.4	6	115	60	0.09	111715 0044	118,50
4.5	6	115	60	0.09	111715 0045	118,50

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.6	6	115	60	0.09	111715 0046	118,50
4.7	6	115	65	0.09	111715 0047	118,50
4.8	6	115	65	0.1	111715 0048	118,50
4.9	6	115	65	0.1	111715 0049	118,50
5	6	115	65	0.1	111715 0050	118,50
5.1	6	128	70	0.1	111715 0051	118,50
5.2	6	128	70	0.1	111715 0052	118,50
5.3	6	128	70	0.11	111715 0053	118,50
5.4	6	128	78	0.11	111715 0054	118,50
5.5	6	128	78	0.11	111715 0055	118,50
5.6	6	128	78	0.11	111715 0056	118,50
5.7	6	128	78	0.11	111715 0057	118,50
5.8	6	128	78	0.12	111715 0058	118,50
5.9	6	128	78	0.12	111715 0059	118,50
6	6	128	78	0.12	111715 0060	118,50
6.1	8	140	87	0.12	111715 0061	143,40
6.2	8	140	87	0.12	111715 0062	143,40
6.3	8	140	87	0.13	111715 0063	143,40
6.4	8	140	87	0.13	111715 0064	143,40
6.5	8	140	87	0.13	111715 0065	143,40
6.6	8	140	87	0.13	111715 0066	143,40
6.7	8	140	87	0.13	111715 0067	143,40
6.8	8	140	90	0.14	111715 0068	143,40
6.9	8	140	90	0.14	111715 0069	143,40
7	8	140	90	0.14	111715 0070	143,40
7.1	8	155	100	0.14	111715 0071	143,40

1107

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.2	8	155	100	0.14	111715 0072	143,40
7.3	8	155	100	0.15	111715 0073	143,40
7.4	8	155	100	0.15	111715 0074	143,40
7.5	8	155	100	0.15	111715 0075	143,40
7.6	8	155	105	0.15	111715 0076	143,40
7.7	8	155	105	0.15	111715 0077	143,40
7.8	8	155	105	0.16	111715 0078	143,40
7.9	8	155	105	0.16	111715 0079	143,40
8	8	155	105	0.16	111715 0080	143,40
8.1	10	165	110	0.16	111715 0081	161,20
8.2	10	165	110	0.16	111715 0082	161,20
8.3	10	165	110	0.17	111715 0083	161,20
8.4	10	165	110	0.17	111715 0084	161,20
8.5	10	165	110	0.17	111715 0085	161,20
8.6	10	165	115	0.17	111715 0086	161,20
8.7	10	165	115	0.17	111715 0087	161,20
8.8	10	165	115	0.18	111715 0088	161,20
8.9	10	165	115	0.18	111715 0089	161,20
9	10	165	115	0.18	111715 0090	161,20
9.1	10	190	125	0.18	111715 0091	161,20
9.2	10	190	125	0.18	111715 0092	161,20
9.3	10	190	125	0.19	111715 0093	161,20
9.4	10	190	125	0.19	111715 0094	161,20
9.5	10	190	125	0.19	111715 0095	161,20
9.6	10	190	130	0.19	111715 0096	161,20

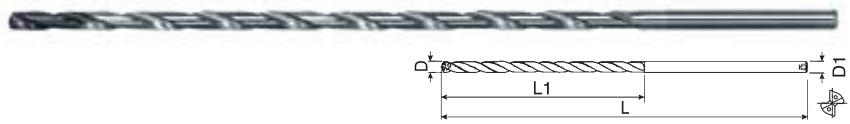
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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.7	10	190	130	0.19	111715 0097	161,20
9.8	10	190	130	0.2	111715 0098	161,20
9.9	10	190	130	0.2	111715 0099	161,20
10	10	190	130	0.2	111715 0100	161,20
10.1	12	205	140	0.2	111715 0101	206,10
10.2	12	205	140	0.2	111715 0102	206,10
10.3	12	205	140	0.21	111715 0103	206,10
10.4	12	205	140	0.21	111715 0104	206,10
10.5	12	205	140	0.21	111715 0105	206,10
10.6	12	205	140	0.21	111715 0106	206,10
10.7	12	205	140	0.21	111715 0107	206,10
10.8	12	205	145	0.22	111715 0108	206,10
10.9	12	205	145	0.22	111715 0109	206,10
11	12	205	145	0.22	111715 0110	206,10
11.1	12	215	155	0.22	111715 0111	206,10
11.2	12	215	155	0.22	111715 0112	206,10
11.3	12	215	155	0.23	111715 0113	206,10
11.4	12	215	155	0.23	111715 0114	206,10
11.5	12	215	155	0.23	111715 0115	206,10
11.6	12	215	155	0.23	111715 0116	206,10
11.7	12	215	155	0.23	111715 0117	206,10
11.8	12	215	155	0.24	111715 0118	206,10
11.9	12	215	155	0.24	111715 0119	206,10
12	12	215	155	0.24	111715 0120	206,10

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ADO-15D - 15xD

- Cutting edge tolerance:
  Ø3 mm -0.005 to -0.024
  Ø3.1-6 mm -0.01 to -0.032
  Ø6.1-10 mm -0.015 to -0.04
  Ø10.1-12 mm -0.02 to -0.05



D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	105	55	0.06	**111716** 0030	167,10
3.1	4	125	60	0.06	111716 0031	192,60
3.2	4	125	60	0.06	111716 0032	192,60
3.3	4	125	60	0.07	111716 0033	192,60
3.4	4	125	65	0.07	111716 0034	192,60
3.5	4	125	65	0.07	111716 0035	170,60
3.6	4	125	65	0.07	111716 0036	192,60
3.7	4	125	65	0.07	111716 0037	192,60
3.8	4	125	75	0.08	111716 0038	192,60
3.9	4	125	75	0.08	111716 0039	192,60
4	4	125	75	0.08	111716 0040	170,60
4.1	6	140	75	0.08	111716 0041	205,90
4.2	6	140	75	0.08	111716 0042	205,90
4.3	6	140	85	0.09	111716 0043	205,90
4.4	6	140	85	0.09	111716 0044	205,90
4.5	6	140	85	0.09	111716 0045	182,40
4.6	6	140	85	0.09	111716 0046	219,–
4.7	6	140	85	0.09	111716 0047	219,–
4.8	6	140	90	0.1	111716 0048	219,–
4.9	6	140	90	0.1	111716 0049	219,–
5	6	140	90	0.1	111716 0050	194,10
5.1	6	160	95	0.1	111716 0051	227,–
5.2	6	160	95	0.1	111716 0052	227,–
5.3	6	160	95	0.11	111716 0053	227,–
5.4	6	160	110	0.11	111716 0054	227,–
5.5	6	160	110	0.11	111716 0055	201,–

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.6	6	160	110	0.11	111716 0056	234,80
5.7	6	160	110	0.11	111716 0057	234,80
5.8	6	160	110	0.12	111716 0058	234,80
5.9	6	160	110	0.12	111716 0059	234,80
6	6	160	110	0.12	111716 0060	208,–
6.1	8	175	120	0.12	111716 0061	251,80
6.2	8	175	120	0.12	111716 0062	251,80
6.3	8	175	120	0.13	111716 0063	251,80
6.4	8	175	120	0.13	111716 0064	251,80
6.5	8	175	120	0.13	111716 0065	223,10
6.6	8	175	120	0.13	111716 0066	262,50
6.7	8	175	120	0.13	111716 0067	262,50
6.8	8	175	125	0.14	111716 0068	262,50
6.9	8	175	125	0.14	111716 0069	262,50
7	8	175	125	0.14	111716 0070	232,50
7.1	8	195	135	0.14	111716 0071	278,30
7.2	8	195	135	0.14	111716 0072	278,30
7.3	8	195	135	0.15	111716 0073	278,30
7.4	8	195	135	0.15	111716 0074	278,30
7.5	8	195	135	0.15	111716 0075	246,60
7.6	8	195	145	0.15	111716 0076	294,20
7.7	8	195	145	0.15	111716 0077	294,20
7.8	8	195	145	0.16	111716 0078	294,20
7.9	8	195	145	0.16	111716 0079	294,20
8	8	195	145	0.16	111716 0080	260,50
8.1	10	210	155	0.16	111716 0081	324,50

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.2	10	210	155	0.16	111716 0082	324,50
8.3	10	210	155	0.17	111716 0083	324,50
8.4	10	210	155	0.17	111716 0084	324,50
8.5	10	210	155	0.17	111716 0085	287,30
8.6	10	210	160	0.17	111716 0086	327,70
8.7	10	210	160	0.17	111716 0087	327,70
8.8	10	210	160	0.18	111716 0088	327,70
8.9	10	210	160	0.18	111716 0089	327,70
9	10	210	160	0.18	111716 0090	290,30
9.1	10	240	170	0.18	111716 0091	344,60
9.2	10	240	170	0.18	111716 0092	344,60
9.3	10	240	170	0.19	111716 0093	344,60
9.4	10	240	170	0.19	111716 0094	344,60
9.5	10	240	170	0.19	111716 0095	344,60
9.6	10	240	180	0.19	111716 0096	361,30
9.7	10	240	180	0.19	111716 0097	361,30
9.8	10	240	180	0.2	111716 0098	361,30
9.9	10	240	180	0.2	111716 0099	361,30
10	10	240	180	0.2	111716 0100	320,–
10.1	12	260	190	0.2	111716 0101	379,30

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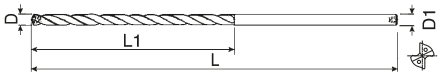
D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.2	12	260	190	0.2	111716 0102	379,30
10.3	12	260	190	0.21	111716 0103	379,30
10.4	12	260	190	0.21	111716 0104	379,30
10.5	12	260	190	0.21	111716 0105	379,30
10.6	12	260	190	0.21	111716 0106	397,50
10.7	12	260	200	0.21	111716 0107	397,50
10.8	12	260	200	0.22	111716 0108	397,50
10.9	12	260	200	0.22	111716 0109	397,50
11	12	260	200	0.22	111716 0110	352,–
11.1	12	280	210	0.22	111716 0111	417,30
11.2	12	280	210	0.22	111716 0112	417,30
11.3	12	280	210	0.23	111716 0113	417,30
11.4	12	280	210	0.23	111716 0114	417,30
11.5	12	280	210	0.23	111716 0115	417,30
11.6	12	280	210	0.23	111716 0116	437,10
11.7	12	280	210	0.23	111716 0117	437,10
11.8	12	280	210	0.24	111716 0118	437,10
11.9	12	280	215	0.24	111716 0119	437,10
12	12	280	215	0.24	111716 0120	387,20

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ADO-20D - 20xD

- Cutting edge tolerance:
  Ø3 mm -0.005 to -0.024
  Ø3.1-6 mm -0.01 to -0.032
  Ø6.1-10 mm -0.015 to -0.04
  Ø10.1-12 mm -0.02 to -0.05





D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	120	70	0.06	**111717** 0030	183,80
3.1	4	140	80	0.06	111717 0031	212,60
3.2	4	140	80	0.06	111717 0032	212,60
3.3	4	140	80	0.07	111717 0033	212,60
3.4	4	140	85	0.07	111717 0034	212,60
3.5	4	140	85	0.07	111717 0035	188,20
3.6	4	140	85	0.07	111717 0036	212,60
3.7	4	140	85	0.07	111717 0037	212,60
3.8	4	140	90	0.08	111717 0038	212,60
3.9	4	140	90	0.08	111717 0039	212,60
4	4	140	90	0.08	111717 0040	188,20
4.1	6	165	100	0.08	111717 0041	228,10
4.2	6	165	100	0.08	111717 0042	228,10
4.3	6	165	110	0.09	111717 0043	228,10
4.4	6	165	110	0.09	111717 0044	228,10
4.5	6	165	110	0.09	111717 0045	202,10
4.6	6	165	110	0.09	111717 0046	241,40
4.7	6	165	110	0.09	111717 0047	241,40
4.8	6	165	115	0.1	111717 0048	241,40
4.9	6	165	115	0.1	111717 0049	241,40
5	6	165	115	0.1	111717 0050	213,90
5.1	6	190	120	0.1	111717 0051	246,60
5.2	6	190	120	0.1	111717 0052	246,60
5.3	6	190	120	0.11	111717 0053	246,60
5.4	6	190	140	0.11	111717 0054	246,60
5.5	6	190	140	0.11	111717 0055	218,50
5.6	6	190	140	0.11	111717 0056	258,50
5.7	6	190	140	0.11	111717 0057	258,50
5.8	6	190	140	0.12	111717 0058	258,50
5.9	6	190	140	0.12	111717 0059	258,50
6	6	190	140	0.12	111717 0060	229,–

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.1	8	210	155	0.12	111717 0061	277,–
6.2	8	210	155	0.12	111717 0062	277,–
6.3	8	210	155	0.13	111717 0063	277,–
6.4	8	210	155	0.13	111717 0064	277,–
6.5	8	210	155	0.13	111717 0065	245,40
6.6	8	210	155	0.13	111717 0066	288,80
6.7	8	210	155	0.13	111717 0067	288,80
6.8	8	210	160	0.14	111717 0068	288,80
6.9	8	210	160	0.14	111717 0069	288,80
7	8	210	160	0.14	111717 0070	255,90
7.1	8	230	170	0.14	111717 0071	305,90
7.2	8	230	170	0.14	111717 0072	305,90
7.3	8	230	170	0.15	111717 0073	305,90
7.4	8	230	170	0.15	111717 0074	305,90
7.5	8	230	170	0.15	111717 0075	271,10
7.6	8	230	180	0.15	111717 0076	323,10
7.7	8	230	180	0.15	111717 0077	323,10
7.8	8	230	180	0.16	111717 0078	323,10
7.9	8	230	180	0.16	111717 0079	323,10
8	8	230	180	0.16	111717 0080	286,20
8.1	10	260	195	0.16	111717 0081	356,–
8.2	10	260	195	0.16	111717 0082	356,–
8.3	10	260	195	0.17	111717 0083	356,–
8.4	10	260	195	0.17	111717 0084	356,–
8.5	10	260	195	0.17	111717 0085	315,30
8.6	10	260	210	0.17	111717 0086	360,60
8.7	10	260	210	0.17	111717 0087	360,60
8.8	10	260	210	0.18	111717 0088	360,60
8.9	10	260	210	0.18	111717 0089	360,60
9	10	260	210	0.18	111717 0090	319,40
9.1	10	290	220	0.18	111717 0091	379,30

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.2	10	290	220	0.18	111717 0092	379,30
9.3	10	290	220	0.19	111717 0093	379,30
9.4	10	290	220	0.19	111717 0094	379,30
9.5	10	290	220	0.19	111717 0095	379,30
9.6	10	290	230	0.19	111717 0096	398,30
9.7	10	290	230	0.19	111717 0097	398,30
9.8	10	290	230	0.2	111717 0098	398,30
9.9	10	290	230	0.2	111717 0099	398,30
10	10	290	230	0.2	111717 0100	352,70
10.1	12	310	250	0.2	111717 0101	418,–
10.2	12	310	250	0.2	111717 0102	418,–
10.3	12	310	250	0.21	111717 0103	418,–
10.4	12	310	250	0.21	111717 0104	418,–
10.5	12	310	250	0.21	111717 0105	418,–
10.6	12	310	250	0.21	111717 0106	437,90

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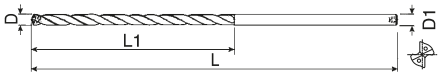
D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.7	12	310	250	0.21	111717 0107	437,90
10.8	12	310	250	0.22	111717 0108	437,90
10.9	12	310	250	0.22	111717 0109	437,90
11	12	310	250	0.22	111717 0110	387,90
11.1	12	330	270	0.22	111717 0111	458,–
11.2	12	330	270	0.22	111717 0112	458,–
11.3	12	330	270	0.23	111717 0113	458,–
11.4	12	330	270	0.23	111717 0114	458,–
11.5	12	330	270	0.23	111717 0115	458,–
11.6	12	330	270	0.23	111717 0116	481,80
11.7	12	330	270	0.23	111717 0117	481,80
11.8	12	330	270	0.24	111717 0118	481,80
11.9	12	330	270	0.24	111717 0119	481,80
12	12	330	270	0.24	111717 0120	426,70

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ADO-30D - 30xD

- Cutting edge tolerance:
  Ø3 mm -0.005 to -0.024
  Ø3.5-6 mm -0.01 to -0.032
  Ø6.1-10 mm -0.015 to -0.04



D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	150	100	0.06	**111718** 0030	230,70
3.5	4	185	116	0.07	111718 0035	259,–
3.6	4	185	116	0.07	111718 0036	292,40
3.7	4	185	116	0.07	111718 0037	292,40
3.8	4	185	132	0.08	111718 0038	292,40
3.9	4	185	132	0.08	111718 0039	292,40
4	4	185	132	0.08	111718 0040	259,–
4.1	6	215	140	0.08	111718 0041	321,70
4.2	6	215	140	0.08	111718 0042	321,70
4.3	6	215	150	0.09	111718 0043	321,70
4.4	6	215	150	0.09	111718 0044	321,70
4.5	6	215	150	0.09	111718 0045	285,–
4.6	6	215	150	0.09	111718 0046	321,70
4.7	6	215	150	0.09	111718 0047	321,70
4.8	6	215	165	0.1	111718 0048	321,70
4.9	6	215	165	0.1	111718 0049	321,70
5	6	215	165	0.1	111718 0050	285,–
5.1	6	250	180	0.1	111718 0051	328,40
5.2	6	250	180	0.1	111718 0052	328,40
5.3	6	250	180	0.11	111718 0053	328,40
5.4	6	250	200	0.11	111718 0054	328,40
5.5	6	250	200	0.11	111718 0055	290,80
5.6	6	250	200	0.11	111718 0056	345,50
5.7	6	250	200	0.11	111718 0057	345,50
5.8	6	250	200	0.12	111718 0058	345,50
5.9	6	250	200	0.12	111718 0059	345,50
6	6	250	200	0.12	111718 0060	305,90
6.1	8	280	215	0.12	111718 0061	370,60
6.2	8	280	215	0.12	111718 0062	370,60
6.3	8	280	215	0.13	111718 0063	370,60
6.4	8	280	215	0.13	111718 0064	370,60
6.5	8	280	215	0.13	111718 0065	328,30
6.6	8	280	215	0.13	111718 0066	385,10
6.7	8	280	215	0.13	111718 0067	385,10
6.8	8	280	230	0.14	111718 0068	385,10
6.9	8	280	230	0.14	111718 0069	385,10

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7	8	280	230	0.14	111718 0070	341,–
7.1	8	315	250	0.14	111718 0071	406,80
7.2	8	315	250	0.14	111718 0072	406,80
7.3	8	315	250	0.15	111718 0073	406,80
7.4	8	315	250	0.15	111718 0074	406,80
7.5	8	315	250	0.15	111718 0075	360,20
7.6	8	315	265	0.15	111718 0076	428,50
7.7	8	315	265	0.15	111718 0077	428,50
7.8	8	315	265	0.16	111718 0078	428,50
7.9	8	315	265	0.16	111718 0079	428,50
8	8	315	265	0.16	111718 0080	379,60
8.1	10	350	280	0.16	111718 0081	450,–
8.2	10	350	280	0.16	111718 0082	450,–
8.3	10	350	280	0.17	111718 0083	450,–
8.4	10	350	280	0.17	111718 0084	450,–
8.5	10	350	280	0.17	111718 0085	398,60
8.6	10	350	300	0.17	111718 0086	471,40
8.7	10	350	300	0.17	111718 0087	471,40
8.8	10	350	300	0.18	111718 0088	471,40
8.9	10	350	300	0.18	111718 0089	471,40
9	10	350	300	0.18	111718 0090	417,50
9.1	10	390	315	0.18	111718 0091	495,–
9.2	10	390	315	0.18	111718 0092	495,–
9.3	10	390	315	0.19	111718 0093	495,–
9.4	10	390	315	0.19	111718 0094	495,–
9.5	10	390	315	0.19	111718 0095	495,–
9.6	10	390	330	0.19	111718 0096	518,50
9.7	10	390	330	0.19	111718 0097	518,50
9.8	10	390	330	0.2	111718 0098	518,50
9.9	10	390	330	0.2	111718 0099	518,50
10	10	390	330	0.2	111718 0100	459,20

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ADF-2D solid carbide flat drill

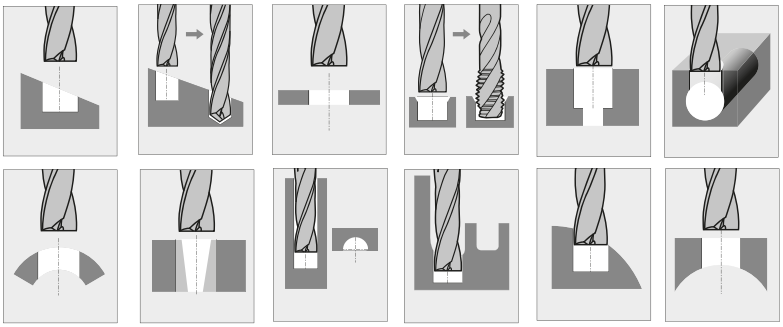
VHM | Werks-norm | Typ N | 180° | 20° | 2xD | TiAlN | Vc/fz | 10-262

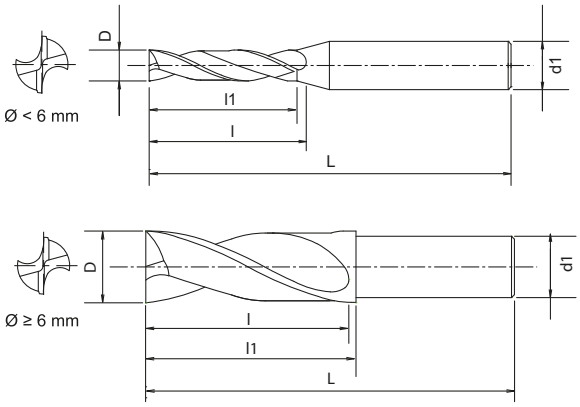
- Suitable for a variety of applications, such as inclined surfaces, round surfaces, shallow drilling and eccentric drilling etc.
- **Cutting material: solid carbide, EgiAs-coating**
- Outstanding wear resistance thanks to new EgiAs coating
- **Reduced cutting forces thanks to innovative cutting edge 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
		● 60-100	● 30-90	○ 20-40				● 60-120	● 50-80				● 80-200	○ 80-200			○ 20-30		
	Cutting speed Vc m/min.																		

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

D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
2	50	10.3	10	4	**111711** 0200	55,–
2.1	50	10.5	10	4	111711 0210	55,–
2.2	50	11	10.6	4	111711 0220	55,–
2.3	50	11	10.8	4	111711 0230	55,–
2.32	50	11	10.9	4	111711 0232	55,–
2.4	50	12	11	4	111711 0240	55,–
2.42	50	12	11.1	4	111711 0242	55,–
2.5	50	12	11.2	4	111711 0250	55,–
2.54	50	12	11.3	4	111711 0254	55,–
2.58	50	12	11.4	4	111711 0258	55,–
2.6	50	13	11.4	4	111711 0260	55,–
2.7	50	13	11.6	4	111711 0270	55,–
2.76	50	13	11.7	4	111711 0276	55,–
2.78	50	13	11.7	4	111711 0278	55,–
2.8	50	14	11.8	4	111711 0280	55,–
2.9	50	14	11.9	4	111711 0290	55,–
3	55	15	11.4	6	111711 0300	55,–
3.03	55	15	11.5	6	111711 0303	59,20
3.1	55	15	11.6	6	111711 0310	59,20
3.15	55	15	11.7	6	111711 0315	59,20
3.2	55	15	11.8	6	111711 0320	59,20
3.3	55	15	12	6	111711 0330	59,20
3.4	55	16	12.1	6	111711 0340	59,20
3.5	55	16	12.3	6	111711 0350	59,20
3.53	55	16	12.4	6	111711 0353	62,30
3.6	55	16	12.5	6	111711 0360	62,30
3.66	55	16	12.6	6	111711 0366	62,30

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
3.68	55	16	12.7	6	111711 0368	62,30
3.7	55	16	12.7	6	111711 0370	62,30
3.8	60	19	17.9	6	111711 0380	62,30
3.9	60	19	18.1	6	111711 0390	62,30
4	60	19	18.3	6	111711 0400	62,30
4.03	60	19	18.3	6	111711 0403	66,70
4.1	60	19	18.5	6	111711 0410	66,70
4.2	60	21	18.6	6	111711 0420	66,70
4.3	60	21	18.8	6	111711 0430	66,70
4.4	60	21	19	6	111711 0440	66,70
4.5	60	21	19.2	6	111711 0450	66,70
4.53	60	21	19.3	6	111711 0453	71,50
4.6	60	21	19.4	6	111711 0460	71,50
4.62	60	21	19.4	6	111711 0462	71,50
4.64	60	21	19.5	6	111711 0464	71,50
4.7	60	21	19.6	6	111711 0470	71,50
4.8	65	24.8	24	6	111711 0480	71,50
4.9	65	24.9	24	6	111711 0490	71,50
5	65	25.1	24	6	111711 0500	71,50
5.03	65	25.2	24	6	111711 0503	75,50
5.1	65	25.3	24	6	111711 0510	75,50
5.2	65	25.5	24	6	111711 0520	75,50
5.3	65	25.7	24	6	111711 0530	75,50
5.4	65	27	25.9	6	111711 0540	75,50
5.5	65	27	26.1	6	111711 0550	75,50
5.52	65	27	26.1	6	111711 0552	79,–
5.54	65	27	26.1	6	111711 0554	79,–

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
5.6	65	27	26.3	6	111711 0560	79,–
5.7	65	27	26.4	6	111711 0570	79,–
5.8	65	27	26.6	6	111711 0580	79,–
5.9	65	27	26.8	6	111711 0590	79,–
6	65	27	27	6	111711 0600	79,–
6.03	70	30	32	6	111711 0603	79,–
6.1	70	30	32	6	111711 0610	79,–
6.2	70	30	32	6	111711 0620	79,–
6.3	70	30	32	6	111711 0630	79,–
6.4	70	30	32	6	111711 0640	79,–
6.5	70	30	32	6	111711 0650	79,–
6.53	70	30	32	6	111711 0653	84,–
6.6	70	30	32	6	111711 0660	84,–
6.7	70	30	32	6	111711 0670	84,–
6.8	70	30	32	6	111711 0680	84,–
6.9	70	30	32	6	111711 0690	84,–
7	70	30	32	6	111711 0700	84,–
7.03	75	34	36	6	111711 0703	89,–
7.1	75	34	36	6	111711 0710	89,–
7.2	75	34	36	6	111711 0720	89,–
7.3	75	34	36	6	111711 0730	89,–
7.4	75	34	36	6	111711 0740	89,–
7.5	75	34	36	6	111711 0750	89,–
7.6	75	34	36	6	111711 0760	93,90
7.7	75	34	36	6	111711 0770	93,90
7.8	75	34	36	6	111711 0780	93,90
7.9	75	34	36	6	111711 0790	93,90

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Continued on next page >>>

D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
8	75	34	36	8	111711 0800	93,90
8.03	80	38	40	8	111711 0803	98,90
8.1	80	38	40	8	111711 0810	98,90
8.2	80	38	40	8	111711 0820	98,90
8.3	80	38	40	8	111711 0830	98,90
8.4	80	38	40	8	111711 0840	98,90
8.5	80	38	40	8	111711 0850	98,90
8.53	80	38	40	8	111711 0853	103,70
8.6	80	38	40	8	111711 0860	103,70
8.7	80	38	40	8	111711 0870	103,70
8.8	80	38	40	8	111711 0880	103,70
8.9	80	38	40	8	111711 0890	103,70
9	80	38	40	8	111711 0900	103,70
9.03	85	42	44	8	111711 0903	108,50
9.1	85	42	44	8	111711 0910	108,50
9.2	85	42	44	8	111711 0920	108,50
9.3	85	42	44	8	111711 0930	108,50
9.4	85	42	44	8	111711 0940	108,50
9.5	85	42	44	8	111711 0950	108,50
9.6	85	42	44	8	111711 0960	113,50
9.7	85	42	44	8	111711 0970	113,50
9.8	85	42	44	8	111711 0980	113,50
9.9	85	42	44	8	111711 0990	113,50
10	85	42	44	10	111711 1000	113,50
10.03	90	46	48	10	111711 1003	118,30
10.1	90	46	48	10	111711 1010	118,30
10.2	90	46	48	10	111711 1020	118,30
10.3	90	46	48	10	111711 1030	118,30
10.4	90	46	48	10	111711 1040	118,30
10.5	90	46	48	10	111711 1050	118,30
10.6	90	46	48	10	111711 1060	123,10
10.7	90	46	48	10	111711 1070	123,10

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
10.8	90	46	48	10	111711 1080	123,10
10.9	90	46	48	10	111711 1090	123,10
11	90	46	48	10	111711 1100	123,10
11.03	95	50	52	10	111711 1103	128,10
11.1	95	50	52	10	111711 1110	128,10
11.2	95	50	52	10	111711 1120	128,10
11.3	95	50	52	10	111711 1130	128,10
11.4	95	50	52	10	111711 1140	128,10
11.5	95	50	52	10	111711 1150	128,10
11.6	95	50	52	10	111711 1160	133,20
11.7	95	50	52	10	111711 1170	133,20
11.8	95	50	52	10	111711 1180	133,20
11.9	95	50	52	10	111711 1190	133,20
12	95	50	52	12	111711 1200	133,20
12.03	100	56	58	12	111711 1203	154,–
12.1	100	56	58	12	111711 1210	154,–
12.2	100	56	58	12	111711 1220	154,–
12.3	100	56	58	12	111711 1230	154,–
12.4	100	56	58	12	111711 1240	154,–
12.5	100	56	58	12	111711 1250	154,–
12.6	100	56	58	12	111711 1260	154,90
12.7	100	56	58	12	111711 1270	154,90
12.8	100	56	58	12	111711 1280	154,90
12.9	100	56	58	12	111711 1290	154,90
13	100	56	58	12	111711 1300	154,90
13.1	105	60	62	12	111711 1310	188,10
13.2	105	60	62	12	111711 1320	188,10
13.3	105	60	62	12	111711 1330	188,10
13.4	105	60	62	12	111711 1340	188,10
13.5	105	60	62	12	111711 1350	188,10
13.6	105	60	62	12	111711 1360	188,10
13.7	105	60	62	12	111711 1370	188,10

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
13.8	105	60	62	12	111711 1380	188,10
13.9	105	60	62	12	111711 1390	188,10
14	105	60	62	12	111711 1400	188,10
14.1	110	64	66	12	111711 1410	208,40
14.2	110	64	66	12	111711 1420	208,40
14.3	110	64	66	12	111711 1430	208,40
14.4	110	64	66	12	111711 1440	208,40
14.5	110	64	66	12	111711 1450	208,40
14.6	110	64	66	12	111711 1460	208,40
14.7	110	64	66	12	111711 1470	208,40
14.8	110	64	66	12	111711 1480	208,40
14.9	110	64	66	12	111711 1490	208,40
15	110	64	66	12	111711 1500	208,40
15.1	115	68	70	12	111711 1510	236,20
15.2	115	68	70	12	111711 1520	236,20
15.3	115	68	70	12	111711 1530	236,20
15.4	115	68	70	12	111711 1540	236,20
15.5	115	68	70	12	111711 1550	236,20
15.6	115	68	70	12	111711 1560	236,20
15.7	115	68	70	12	111711 1570	236,20
15.8	115	68	70	12	111711 1580	236,20
15.9	115	68	70	12	111711 1590	236,20
16	115	68	70	16	111711 1600	236,20
16.5	125	74	76	16	111711 1650	323,90
17	125	74	76	16	111711 1700	323,90
17.5	130	78	80	16	111711 1750	334,40
18	130	78	80	16	111711 1800	334,40
18.5	135	84	86	16	111711 1850	365,70
19	135	84	86	16	111711 1900	365,70
19.5	140	88	90	16	111711 1950	415,90
20	140	88	90	20	111711 2000	415,90

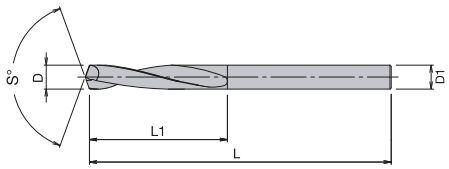
1107

ATORN® Solid carbide flat drills

VHM | Werks-norm | Typ N | 180° | 30° | 5xD | DIN 6535 HA | Z 2 | TiAlN | Vc/fz | 10-260

- **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	25		80	80				220	180	120		25		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

●

D m7 mm	D1 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	8	91	53	2	0.23	**111710** 0080	97,–
9.0	9	103	61	2	0.23	111710 0090	118,–
10.0	10	103	61	2	0.23	111710 0100	118,–
11.0	12	116	69	2	0.23	111710 0110	154,–

1154

●

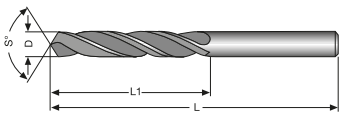
D m7 mm	D1 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.0	16	131	81	2	0.30	111710 0150	265,–
18.0	18	141	91	2	0.34	111710 0180	345,–
20.0	20	151	99	2	0.34	111710 0200	430,–

1154

ATORN® Solid carbide drill, 3-edged

VHM | DIN 6539 | Typ N | 150° | 28° | h8 | 5xD | Z 3 | TiN | Vc/fz | 10-261

3 cutting edges



- 3 cutting edges, with wider flutes
- **For precisely positioned and shaped bores in solid material**
- Very good self-centring
- Very good bore surfaces

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
111013....	● 90	● 75	● 60				● 70-85	● 80				● 160	● 120					
111014....	● 90-100	● 50-100	● 35-70	○ 40			● 100-140	● 90-100	○ 18			● 170-200	● 140					

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


Uncoated


TiN-coated

● Feed f steel < 1000 N/mm² mm/rev

D h7 mm	L mm	L1 mm	blank art.no.	€	TiN art.no.	€
3	46	22	0.08	**111013** 0030	24,70	**111014** 0030	26,10
3.2	49	24	0.08	111013 0032	32,70	111014 0032	34,50
3.3	49	24	0.08	111013 0033	33,10	111014 0033	34,50
3.5	52	27	0.08	111013 0035	29,60	111014 0035	31,40
3.8	55	30	0.08	111013 0038	34,10	111014 0038	36,30
4	55	30	0.10	111013 0040	30,–	111014 0040	31,90
4.2	55	30	0.10	111013 0042	35,30	111014 0042	37,40
4.5	58	32	0.10	111013 0045	35,10	111014 0045	37,–
4.8	62	35	0.10	111013 0048	41,70	111014 0048	43,70
5	62	35	0.10	111013 0050	37,40	111014 0050	40,20
5.5	66	39	0.10	111013 0055	48,20	111014 0055	50,50
5.8	66	39	0.10	111013 0058	49,40	111014 0058	52,–
6	66	39	0.10	111013 0060	42,70	111014 0060	45,90
6.5	70	42	0.13	111013 0065	59,–	111014 0065	63,50
6.8	74	45	0.13	111013 0068	62,50	111014 0068	65,50
7	74	45	0.13	111013 0070	58,–	111014 0070	59,–

1154 1154

● Feed f steel < 1000 N/mm² mm/rev

D h7 mm	L mm	L1 mm	blank art.no.	€	TiN art.no.	€
7.5	74	45	0.13	111013 0075	65,50	111014 0075	69,50
7.8	79	48	0.13	111013 0078	71,50	111014 0078	74,50
8	79	48	0.16	111013 0080	59,–	111014 0080	63,50
8.5	79	48	0.16	111013 0085	62,50	111014 0085	65,50
9	84	52	0.16	111013 0090	64,50	111014 0090	67,50
9.5	84	52	0.16	111013 0095	74,50	111014 0095	80,50
9.8	89	55	0.16	111013 0098	86,–	111014 0098	92,–
10	89	55	0.20	111013 0100	71,50	111014 0100	74,50
10.2	89	55	0.20	111013 0102	86,–	111014 0102	92,–
10.5	89	55	0.20	111013 0105	83,50	111014 0105	92,–
11	95	60	0.20	111013 0110	94,50	111014 0110	99,50
12	102	65	0.20	111013 0120	106,–	111014 0120	111,–
13	102	65	0.20	111013 0130	120,–	111014 0130	127,–
14	107	66	0.20	111013 0140	165,–	111014 0140	175,–
15	111	70	0.20	111013 0150	183,–	111014 0150	193,–
16	115	73	0.25	111013 0160	250,–	111014 0160	255,–

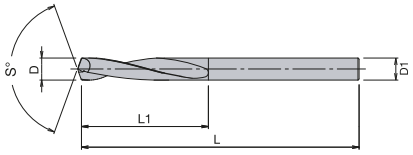
1154 1154

ATORN® Solid carbide drill reamers

VHM | Werks-norm | Typ N | 140° | 30° | 5xD | DIN 6535 HA | Z 2 | TiAlN | Vc/fz | 10-261

Drilling and reaming in one operation

- **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





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
	● 65	● 50	○ 30				● 50	● 50										

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 H7 mm	D1 mm	L mm	L1 mm	art.no.	€
5.98	6	81	44	0.19	**111701** 0598	108,–
5.99	6	81	44	0.19	111701 0599	108,–
6.00	6	81	44	0.19	111701 0600	108,–
6.01	6	81	44	0.19	111701 0601	108,–
6.02	6	91	53	0.19	111701 0602	108,–
7.98	8	91	53	0.19	111701 0798	108,–
7.99	8	91	53	0.19	111701 0799	108,–
8.00	8	91	53	0.19	111701 0800	108,–
8.01	8	91	53	0.19	111701 0801	108,–
8.02	8	91	53	0.19	111701 0802	108,–
9.98	10	103	61	0.24	111701 0998	148,–
9.99	10	103	61	0.24	111701 0999	148,–

1154

● Feed f steel < 1000 N/mm² mm/rev

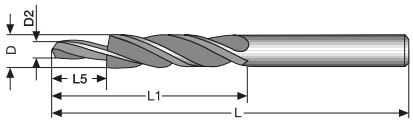
D H7 mm	D1 mm	L mm	L1 mm	art.no.	€
10.00	10	103	61	0.24	111701 1000	148,–
10.01	10	103	61	0.24	111701 1001	148,–
10.02	10	103	61	0.24	111701 1002	148,–
11.98	12	118	71	0.24	111701 1198	215,–
11.99	12	118	71	0.24	111701 1199	215,–
12.00	12	118	71	0.24	111701 1200	215,–
12.01	12	118	71	0.24	111701 1201	215,–
12.02	12	118	71	0.24	111701 1202	215,–
14.00	14	124	77	0.37	111701 1400	270,–
16.00	16	133	83	0.37	111701 1600	360,–
18.00	18	143	93	0.40	111701 1800	435,–
20.00	20	153	101	0.40	111701 2000	519,–

1154

ATORN® Solid carbide short step drill bit

VHM | Werks-norm | 140° | DIN 6535 HA | TiAlN | Vc/fz | 10-263

- ∅ 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

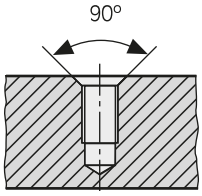


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	○	○		○	○	○		●		
		75	60	60	25	30	25	70	60	35	35		200	180	80		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**





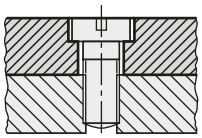
for thread	D h8 mm	D2 h8 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	90° countersink angle art.no.	€
M3	6	2.5	6	8.8	28	66	0.10	**102202** 0003	62,–
M4	6	3.3	6	11.4	28	66	0.10	102202 0004	62,–
M5	6	4.2	6	13.6	28	66	0.10	102202 0005	62,–
M6	8	5	8	16.5	41	79	0.10	102202 0006	95,–
M8	10	6.8	10	21	47	89	0.12	102202 0008	124,–
M10	12	8.5	12	25.5	55	102	0.15	102202 0010	196,–
M12	14	10.2	14	30	60	107	0.15	102202 0012	240,–

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 h8 mm	D2 h8 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	Countersink angle 180° art.no.	€
M3	6	3.4	6	9	28	64	0.10	**102211** 0003	50,–
M4	8	4.5	8	11	37	79	0.10	102211 0004	77,–
M5	10	5.5	10	13	43	89	0.11	102211 0005	106,–
M6	11	6.6	12	15	55	102	0.11	102211 0006	145,–
M8	15	9	16	19	60	115	0.14	102211 0008	245,–
M10	18	11	18	23	62	123	0.14	102211 0010	295,–

1154



... and optimum service life

ATORN®
High quality for great performance

Overview of modular drilling tools

	Factory standard								
Sorting by type and diameter									
Brand	ATORN®	GEN2 TA	GEN2 TA	GEN3SYS	GEN3SYS	GEN3SYS	GEN3SYS	SARA DRILL	
System	ETD 840	GEN2 TA	GEN2 TA	GEN3SYS	GEN3SYS	GEN3SYS	GEN3SYS	SDX	Phoenix PD
Type/info				C1	C2	CI	AS		
Drilling depth	3xD, 7xD, 10xD	up to 30xD	up to 30xD	5xD, 7xD	5xD, 7xD	5xD, 7xD	5xD, 7xD	3xD, 5xD	2, 3, 4 and 5xD
Diameter [mm]	8 - 40	9.5 - 114	9.5 - 35	12 - 31	12 - 31	12 - 31	12 - 31	14 - 55	15 - 63
Shank	Straight	Str. / MT	Str. / MT	Straight	Straight	Straight	Straight	Straight	Straight
Cutting material	HM	HSS-E	HM	HM	HM	HM	HM	HM	HM
Coating	TiAlN	AM 200™	AM 200™	AM 200™	AM 200™	AM 200™	AM 300™	SDX 300	XP9020
Page	From 10-93	From 10-97	From 10-97	From 10-104	From 10-104	From 10-104	From 10-104	From 10-107	From 10-109
Material groups	Usage recommendations								
Steel < 700 N/mm²	●	●	●	●	○			●	●
Steel < 1000 N/mm²	●	●	●	●	○			●	●
Steel < 1400 N/mm²	●	●	●	●	○			●	●
Stainless steel ferritic/martensitic	●	○	●				●	●	●
Stainless steel austenitic	●	○	●				●	●	●
Stainless steel duplex	○		●				●	○	○
Cast iron GG/GTS	●	○	●		○	●		○	○
Cast iron GGG	●	○	●		○	●		○	○
Titanium alloys	●	○	●		●			●	○
Superalloys Fe/NiCo base < 30 HRc	●	○	●		○			●	○
Superalloys Fe/NiCo base ≥ 30 HRc	○	○	○					○	○
Aluminium < 8 % Si					●				○
Aluminium ≥ 8 % Si	○	○	○		●				○
Copper Cu-alloy	●	●	●		●				
Graphite GRP/CFP/thermoset									
Hardened steel < 55 HRc	○		○	○	○				○
Hardened steel < 60 HRc				○					
Hardened steel ≥ 60 HRc				○					

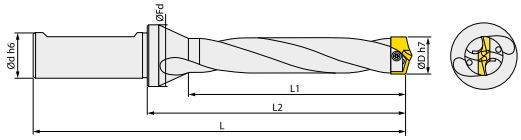
	Factory standard								
Sorting by type and diameter									
Brand			SARA®	ATORN®	ATORN®	ATORN®	ATORN®	SARA DRILL	SARA DRILL
System	Phoenix PD	Phoenix PD	SARAcut 2.0	Precision boring bar	Core and countersink drill	Core and countersink drill	Countersinks	SD1	SD1
Type/info				Adjustable, CC.T	Z1, CC.T	Z2, CC.T	CC.T		
Drilling depth	2, 3, 4 and 5xD	2, 3, 4 and 5xD	1.5 and 2.5xD	2.5xD				Up to 15xD	Up to 15xD
Diameter	15 - 63	15 - 63	8 - 32	10 - 32	10 - 33	16 - 42	15 - 76	49 - 270	49 - 270
Shank	Straight	Straight	Straight	Straight	Straight	Straight	Straight	MT	MT
Cutting material	HM	HM	HM	HM	HM	HM	HM	HSS-E-PM	HSS-E-PM
Coating	XP1010	CK110		ICI-dependent	ICI-dependent	ICI-dependent	ICI-dependent		TiN
Page	From 10-109	From 10-109	10-114	10-115	10-116	10-116	10-117	10-118	10-118
Material groups									
Steel < 700 N/mm²	○		●	●	●	●	●	●	●
Steel < 1000 N/mm²	○		●	●	●	●	●	●	●
Steel < 1400 N/mm²	○		●	●	●	●	●	●	●
Stainless steel ferritic/martensitic			●	●	●	●	●	○	○
Stainless steel austenitic			●	●	●	●	●	○	○
Stainless steel duplex			○	○	○	○	○		○
Cast iron GG/GTS	●		●	○	○	○	○	●	●
Cast iron GGG	●		●	○	○	○	○	●	●
Titanium alloys			●	○	○	○	○		
Superalloys Fe/NiCo base < 30 HRc			●	○	○	○	○		
Superalloys Fe/NiCo base ≥ 30 HRc			○	○	○	○	○		
Aluminium < 8 % Si		●	○	●	●	●	●	●	●
Aluminium ≥ 8 % Si		●	○	●	●	●	●	●	●
Copper Cu-alloy		●	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset									
Hardened steel < 55 HRc								○	○
Hardened steel < 60 HRc									
Hardened steel ≥ 60 HRc									

ATORN® ETD 840 indexable insert drill bit

3xD 5xD 7xD Vc/fz 10-268

- **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 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
8.0 - 8.4	10 (HA)	18	87	32	42	**106003** 0080	163,–
8.5 - 8.9	10 (HA)	18	89	34	44	106003 0085	163,–
9.0 - 9.4	10 (HA)	18	92	36	47	106003 0090	163,–
9.5 - 9.9	12 (HA)	18	97	38	49	106003 0095	163,–
10.0 - 10.4	12 (HA)	18	99	40	51	106003 0100	171,–
10.5 - 10.9	12 (HA)	18	102	42	54	106003 0105	171,–
11.0 - 11.4	12 (HA)	18	104	44	56	106003 0110	171,–
11.5 - 11.9	12 (HA)	18	107	46	59	106003 0115	171,–
12.0 - 12.4	16 (HB)	21	109	48	61	106003 0120	184,–
12.5 - 12.9	16 (HB)	21	111	50	63	106003 0125	184,–
13.0 - 13.4	16 (HB)	21	114	52	66	106003 0130	184,–
13.5 - 13.9	16 (HB)	21	116	54	68	106003 0135	184,–
14.0 - 14.4	16 (HB)	21	119	56	71	106003 0140	184,–
14.5 - 14.9	20 (HB)	27	123	58	73	106003 0145	184,–
15.0 - 15.4	20 (HB)	27	127	60	77	106003 0150	184,–
15.5 - 15.9	20 (HB)	27	130	62	80	106003 0155	184,–
16.0 - 16.4	20 (HB)	27	132	64	82	106003 0160	205,–
16.5 - 16.9	20 (HB)	27	135	66	85	106003 0165	205,–
17.0 - 17.4	20 (HB)	27	137	68	87	106003 0170	205,–
17.5 - 17.9	20 (HB)	27	139	70	89	106003 0175	205,–
18.0 - 18.4	20 (HB)	27	142	72	92	106003 0180	205,–
18.5 - 18.9	20 (HB)	27	144	74	94	106003 0185	205,–
19.0 - 19.4	20 (HB)	27	147	76	97	106003 0190	205,–
19.5 - 19.9	20 (HB)	27	149	78	99	106003 0195	205,–
20.0 - 20.4	25 (HB)	32	157	80	101	106003 0200	250,–
20.5 - 20.9	25 (HB)	32	160	82	104	106003 0205	250,–
21.0 - 21.4	25 (HB)	32	162	84	106	106003 0210	250,–
21.5 - 21.9	25 (HB)	32	165	86	109	106003 0215	250,–
22.0 - 22.4	25 (HB)	32	167	88	111	106003 0220	250,–
22.5 - 22.9	25 (HB)	32	169	90	113	106003 0225	250,–
23.0 - 23.4	25 (HB)	32	172	92	116	106003 0230	250,–
23.5 - 23.9	25 (HB)	32	174	94	118	106003 0235	250,–
24.0 - 24.4	32 (HB)	39	181	96	121	106003 0240	295,–
24.5 - 24.9	32 (HB)	39	183	98	123	106003 0245	295,–
25.0 - 25.4	32 (HB)	39	185	100	125	106003 0250	295,–
25.5 - 25.9	32 (HB)	39	188	102	128	106003 0255	295,–
26.0 - 26.4	32 (HB)	39	190	104	130	106003 0260	295,–
26.5 - 26.9	32 (HB)	39	193	106	133	106003 0265	295,–
27.0 - 27.4	32 (HB)	39	195	108	135	106003 0270	295,–
27.5 - 27.9	32 (HB)	39	197	110	137	106003 0275	295,–
28.0 - 28.4	32 (HB)	39	200	112	140	106003 0280	380,–
28.5 - 28.9	32 (HB)	39	202	114	142	106003 0285	380,–
29.0 - 29.4	32 (HB)	39	205	116	145	106003 0290	380,–
29.5 - 29.9	32 (HB)	39	207	118	147	106003 0295	380,–
30.0 - 30.4	32 (HB)	39	209	120	149	106003 0300	380,–
30.5 - 30.9	32 (HB)	39	212	122	152	106003 0305	380,–
31.0 - 31.4	32 (HB)	39	214	124	154	106003 0310	380,–
31.5 - 31.9	32 (HB)	39	217	126	157	106003 0315	380,–
32.0 - 32.4	32 (HB)	39	219	128	159	106003 0320	505,–
32.5 - 32.9	32 (HB)	39	221	130	161	106003 0325	505,–
33.0 - 334	32 (HB)	39	224	132	164	106003 0330	505,–
33.5 - 33.9	32 (HB)	39	226	134	166	106003 0335	505,–
34.0 - 34.4	40 (HB)	55	239	136	169	106003 0340	525,–
34.5 - 34.9	40 (HB)	55	241	138	171	106003 0345	525,–
35.0 - 35.4	40 (HB)	55	243	140	173	106003 0350	525,–
35.5 - 35.9	40 (HB)	55	246	142	176	106003 0355	525,–
36.0 - 36.4	40 (HB)	55	248	144	178	106003 0360	579,–
36.5 - 36.9	40 (HB)	55	251	146	181	106003 0365	579,–
37.0 - 37.4	40 (HB)	55	253	148	183	106003 0370	579,–
37.5 - 37.9	40 (HB)	55	255	150	185	106003 0375	579,–
38.0 - 38.4	40 (HB)	55	258	152	188	106003 0380	579,–
38.5 - 38.9	40 (HB)	55	260	154	196	106003 0385	579,–
39.0 - 39.4	40 (HB)	55	263	156	193	106003 0390	579,–
39.5 - 39.9	40 (HB)	55	265	158	195	106003 0395	579,–
40.0 - 40.4	40 (HB)	55	267	160	197	106003 0400	639,–

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5xD

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
8.0 - 8.4	10 (HA)	18	103	48	58	**106005** 0080	210,–
8.5 - 8.9	10 (HA)	18	106	51	61	106005 0085	210,–
9.0 - 9.4	10 (HA)	18	110	54	65	106005 0090	210,–
9.5 - 9.9	12 (HA)	18	116	57	68	106005 0095	210,–
10.0 - 10.4	12 (HA)	18	119	60	71	106005 0100	215,–
10.5 - 10.9	12 (HA)	18	123	63	75	106005 0105	215,–
11.0 - 11.4	12 (HA)	18	126	66	78	106005 0110	215,–
11.5 - 11.9	12 (HA)	18	130	69	82	106005 0115	215,–
12.0 - 12.4	16 (HB)	21	133	72	85	106005 0120	238,–
12.5 - 12.9	16 (HB)	21	136	75	88	106005 0125	238,–
13.0 - 13.4	16 (HB)	21	140	78	92	106005 0130	238,–
13.5 - 13.9	16 (HB)	21	143	81	95	106005 0135	238,–
14.0 - 14.4	16 (HB)	21	147	84	99	106005 0140	238,–
14.5 - 14.9	20 (HB)	27	152	87	102	106005 0145	238,–
15.0 - 15.4	20 (HB)	27	157	90	107	106005 0150	238,–
15.5 - 15.9	20 (HB)	27	161	93	111	106005 0155	238,–
16.0 - 16.4	20 (HB)	27	164	96	114	106005 0160	255,–
16.5 - 16.9	20 (HB)	27	168	99	118	106005 0165	255,–
17.0 - 17.4	20 (HB)	27	171	102	121	106005 0170	255,–
17.5 - 17.9	20 (HB)	27	174	105	124	106005 0175	255,–

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Continued on next page >>>

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
18.0 - 18.4	20 (HB)	27	178	108	128	106005 0180	255,–
18.5 - 18.9	20 (HB)	27	181	111	131	106005 0185	255,–
19.0 - 19.4	20 (HB)	27	185	114	135	106005 0190	255,–
19.5 - 19.9	20 (HB)	27	188	117	138	106005 0195	255,–
20.0 - 20.4	25 (HB)	32	197	120	141	106005 0200	299,–
20.5 - 20.9	25 (HB)	32	201	123	145	106005 0205	299,–
21.0 - 21.4	25 (HB)	32	204	126	148	106005 0210	299,–
21.5 - 21.9	25 (HB)	32	208	129	152	106005 0215	299,–
22.0 - 22.4	25 (HB)	32	211	132	155	106005 0220	299,–
22.5 - 22.9	25 (HB)	32	214	135	158	106005 0225	299,–
23.0 - 23.4	25 (HB)	32	218	138	162	106005 0230	299,–
23.5 - 23.9	25 (HB)	32	221	141	165	106005 0235	299,–
24.0 - 24.4	32 (HB)	39	229	144	169	106005 0240	370,–
24.5 - 24.9	32 (HB)	39	232	147	172	106005 0245	370,–
25.0 - 25.4	32 (HB)	39	235	150	175	106005 0250	370,–
25.5 - 25.9	32 (HB)	39	239	153	179	106005 0255	370,–
26.0 - 26.4	32 (HB)	39	242	156	182	106005 0260	370,–
26.5 - 26.9	32 (HB)	39	246	159	186	106005 0265	370,–
27.0 - 27.4	32 (HB)	39	249	162	189	106005 0270	370,–
27.5 - 27.9	32 (HB)	39	252	165	192	106005 0275	370,–
28.0 - 28.4	32 (HB)	39	256	168	196	106005 0280	385,–
28.5 - 28.9	32 (HB)	39	259	171	199	106005 0285	385,–
29.0 - 29.4	32 (HB)	39	263	174	203	106005 0290	385,–

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D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
29.5 - 29.9	32 (HB)	39	266	177	206	106005 0295	385,–
30.0 - 30.4	32 (HB)	39	269	180	209	106005 0300	385,–
30.5 - 30.9	32 (HB)	39	273	183	213	106005 0305	385,–
31.0 - 31.4	32 (HB)	39	276	186	216	106005 0310	385,–
31.5 - 31.9	32 (HB)	39	280	189	220	106005 0315	385,–
32.0 - 32.4	32 (HB)	39	283	192	223	106005 0320	579,–
32.5 - 32.9	32 (HB)	39	286	195	226	106005 0325	579,–
33.0 - 33.4	32 (HB)	39	290	198	230	106005 0330	579,–
33.5 - 33.9	32 (HB)	39	293	201	233	106005 0335	579,–
34.0 - 34.4	40 (HB)	55	307	204	237	106005 0340	599,–
34.5 - 34.9	40 (HB)	55	310	207	240	106005 0345	599,–
35.0 - 35.4	40 (HB)	55	313	210	243	106005 0350	599,–
35.5 - 35.9	40 (HB)	55	317	213	247	106005 0355	599,–
36.0 - 36.4	40 (HB)	55	320	216	250	106005 0360	649,–
36.5 - 36.9	40 (HB)	55	324	219	254	106005 0365	649,–
37.0 - 37.4	40 (HB)	55	327	222	257	106005 0370	649,–
37.5 - 37.9	40 (HB)	55	330	225	260	106005 0375	649,–
38.0 - 38.4	40 (HB)	55	334	228	264	106005 0380	649,–
38.5 - 38.9	40 (HB)	55	337	231	267	106005 0385	649,–
39.0 - 39.4	40 (HB)	55	341	234	271	106005 0390	649,–
39.5 - 39.9	40 (HB)	55	344	237	274	106005 0395	649,–
40.0 - 40.4	40 (HB)	55	347	240	277	106005 0400	699,–

1152

7xD

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
8.0 - 8.4	10 (HA)	18	119	64	74	**106007** 0080	310,–
8.5 - 8.9	10 (HA)	18	123	68	78	106007 0085	310,–
9.0 - 9.4	10 (HA)	18	128	72	83	106007 0090	310,–
9.5 - 9.9	12 (HA)	18	135	76	87	106007 0095	310,–
10.0 - 10.4	12 (HA)	18	139	80	91	106007 0100	320,–
10.5 - 10.9	12 (HA)	18	144	84	96	106007 0105	320,–
11.0 - 11.4	12 (HA)	18	148	88	100	106007 0110	320,–
11.5 - 11.9	12 (HA)	18	153	92	105	106007 0115	320,–
12.0 - 12.4	16 (HB)	21	157	96	109	106007 0120	350,–
12.5 - 12.9	16 (HB)	21	161	100	113	106007 0125	350,–
13.0 - 13.4	16 (HB)	21	166	104	118	106007 0130	350,–
13.5 - 13.9	16 (HB)	21	170	108	122	106007 0135	350,–
14.0 - 14.4	16 (HB)	21	175	112	127	106007 0140	350,–
14.5 - 14.9	20 (HB)	27	181	116	131	106007 0145	350,–
15.0 - 15.4	20 (HB)	27	187	120	137	106007 0150	350,–
15.5 - 15.9	20 (HB)	27	192	124	142	106007 0155	350,–
16.0 - 16.4	20 (HB)	27	196	128	146	106007 0160	445,–
16.5 - 16.9	20 (HB)	27	201	132	151	106007 0165	445,–
17.0 - 17.4	20 (HB)	27	205	136	155	106007 0170	445,–
17.5 - 17.9	20 (HB)	27	209	140	159	106007 0175	445,–
18.0 - 18.4	20 (HB)	27	214	144	164	106007 0180	445,–
18.5 - 18.9	20 (HB)	27	218	148	168	106007 0185	445,–
19.0 - 19.4	20 (HB)	27	223	152	173	106007 0190	445,–
19.5 - 19.9	20 (HB)	27	227	156	177	106007 0195	445,–
20.0 - 20.4	25 (HB)	32	237	160	181	106007 0200	525,–
20.5 - 20.9	25 (HB)	32	242	164	186	106007 0205	525,–
21.0 - 21.4	25 (HB)	32	246	168	190	106007 0210	525,–
21.5 - 21.9	25 (HB)	32	251	172	195	106007 0215	525,–
22.0 - 22.4	25 (HB)	32	255	176	199	106007 0220	525,–
22.5 - 22.9	25 (HB)	32	259	180	203	106007 0225	525,–
23.0 - 23.4	25 (HB)	32	264	184	208	106007 0230	525,–
23.5 - 23.9	25 (HB)	32	268	188	212	106007 0235	525,–
24.0 - 24.4	32 (HB)	39	277	192	217	106007 0240	639,–
24.5 - 24.9	32 (HB)	39	281	196	221	106007 0245	639,–

1152

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm	art.no.	€
25.0 - 25.4	32 (HB)	39	285	200	225	106007 0250	639,–
25.5 - 25.9	32 (HB)	39	290	204	230	106007 0255	639,–
26.0 - 26.4	32 (HB)	39	294	208	234	106007 0260	639,–
26.5 - 26.9	32 (HB)	39	299	212	239	106007 0265	639,–
27.0 - 27.4	32 (HB)	39	303	216	243	106007 0270	639,–
27.5 - 27.9	32 (HB)	39	307	220	247	106007 0275	639,–
28.0 - 28.4	32 (HB)	39	312	224	252	106007 0280	825,–
28.5 - 28.9	32 (HB)	39	316	228	256	106007 0285	825,–
29.0 - 29.4	32 (HB)	39	321	232	261	106007 0290	825,–
29.5 - 29.9	32 (HB)	39	325	236	265	106007 0295	825,–
30.0 - 30.4	32 (HB)	39	329	240	269	106007 0300	825,–
30.5 - 30.9	32 (HB)	39	334	244	274	106007 0305	825,–
31.0 - 31.4	32 (HB)	39	338	248	278	106007 0310	825,–
31.5 - 31.9	32 (HB)	39	343	252	283	106007 0315	825,–
32.0 - 32.4	32 (HB)	39	347	256	287	106007 0320	889,–
32.5 - 32.9	32 (HB)	39	351	260	291	106007 0325	889,–
33.0 - 33.4	32 (HB)	39	356	264	296	106007 0330	889,–
33.5 - 33.9	32 (HB)	39	360	268	300	106007 0335	889,–
34.0 - 34.4	40 (HB)	55	375	272	305	106007 0340	909,–
34.5 - 34.9	40 (HB)	55	379	276	309	106007 0345	909,–
35.0 - 35.4	40 (HB)	55	383	280	313	106007 0350	909,–
35.5 - 35.9	40 (HB)	55	388	284	318	106007 0355	909,–
36.0 - 36.4	40 (HB)	55	392	288	322	106007 0360	1.349,–
36.5 - 36.9	40 (HB)	55	397	292	327	106007 0365	1.349,–
37.0 - 37.4	40 (HB)	55	401	296	331	106007 0370	1.349,–
37.5 - 37.9	40 (HB)	55	405	300	335	106007 0375	1.349,–
38.0 - 38.4	40 (HB)	55	410	304	340	106007 0380	1.349,–
38.5 - 38.9	40 (HB)	55	414	308	344	106007 0385	1.349,–
39.0 - 39.4	40 (HB)	55	419	312	349	106007 0390	1.349,–
39.5 - 39.9	40 (HB)	55	423	316	353	106007 0395	1.349,–
40.0 - 40.4	40 (HB)	55	427	320	357	106007 0400	1.409,–

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Continued on next page >>>

Through bolt

for Ø mm	Through bolt art.no.	€
8.0 - 8.9	**106027** 0800	8,05
9.0 - 9.9	106027 0900	8,05
10.0 - 11.9	106027 1000	8,05
12.0 - 13.9	106027 1200	8,05
14.0 - 15.9	106027 1400	8,05
16.0 - 17.9	106027 1600	8,05
18.0 - 19.9	106027 1800	8,05
20.0 - 21.9	106027 2000	8,05

1152

for Ø mm	Through bolt art.no.	€
22.0 - 23.9	106027 2200	8,05
24.0 - 25.9	106027 2400	8,05
26.0 - 27.9	106027 2600	8,05
28.0 - 29.9	106027 2800	8,05
30.0 - 31.9	106027 3000	8,05
32.0 - 35.9	106027 3200	8,05
36.0 - 39.9	106027 3600	8,05
40.0 - 44.9	106027 4000	8,05

1152

Clamping screw (grub screw)

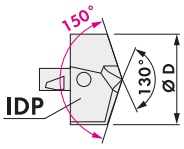
for Ø mm	Clamping screw art.no.	€
12.0 - 19.9	**106025** 0020	5,35
20.0 - 26.9	106025 0030	5,35
27.0 - 30.9	106025 0040	5,35
31.0 - 39.9	106025 0050	5,35
40.0 - 50.4	106025 0060	5,35

1152

ATORN® ETD 840 indexable inserts

VHM | 130° | TiAlN | Vc/fz 10-268

- **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
		●	●	●	●	●	○	●	●	●	●	○		○	●		○		

D h7 mm	art.no.	€
8.0	**106020** 0080	31,80
8.5	106020 0085	31,80
8.8	106020 0088	31,80
9.0	106020 0090	35,90
9.3	106020 0093	35,90
9.5	106020 0095	35,90
9.8	106020 0098	35,90
10.0	106020 0100	42,70
10.2	106020 0102	42,70
10.5	106020 0105	42,70
10.8	106020 0108	42,70
11.0	106020 0110	54,50
11.2	106020 0112	54,50
11.5	106020 0115	54,50
11.8	106020 0118	54,50
12.0	106020 0120	65,–
12.5	106020 0125	65,–
12.8	106020 0128	65,–
13.0	106020 0130	65,–
13.1	106020 0131	65,–
13.5	106020 0135	65,–
13.8	106020 0138	65,–
14.0	106020 0140	74,–
14.5	106020 0145	74,–
14.8	106020 0148	74,–
15.0	106020 0150	74,–
15.1	106020 0151	74,–
15.5	106020 0155	74,–
15.8	106020 0158	74,–
16.0	106020 0160	79,50
16.1	106020 0161	79,50
16.5	106020 0165	79,50
16.8	106020 0168	79,50
17.0	106020 0170	79,50
17.5	106020 0175	79,50

1153

D h7 mm	art.no.	€
17.8	106020 0178	79,50
18.0	106020 0180	79,50
18.5	106020 0185	79,50
18.8	106020 0188	79,50
19.0	106020 0190	79,50
19.5	106020 0195	79,50
19.8	106020 0198	79,50
20.0	106020 0200	79,50
20.5	106020 0205	79,50
20.8	106020 0208	79,50
21.0	106020 0210	79,50
21.5	106020 0215	79,50
21.8	106020 0218	79,50
22.0	106020 0220	87,50
22.5	106020 0225	87,50
22.8	106020 0228	87,50
23.0	106020 0230	87,50
23.5	106020 0235	87,50
23.8	106020 0238	87,50
24.0	106020 0240	104,–
24.5	106020 0245	104,–
24.8	106020 0248	104,–
25.0	106020 0250	104,–
25.5	106020 0255	104,–
25.7	106020 0257	104,–
26.0	106020 0260	126,–
26.5	106020 0265	126,–
26.7	106020 0267	126,–
27.0	106020 0270	126,–
27.5	106020 0275	126,–
27.7	106020 0277	126,–
28.0	106020 0280	157,–
28.5	106020 0285	157,–
28.7	106020 0287	157,–
29.0	106020 0290	157,–

1153

D h7 mm	art.no.	€
29.5	106020 0295	157,–
29.7	106020 0297	157,–
30.0	106020 0300	165,–
30.5	106020 0305	165,–
30.7	106020 0307	165,–
31.0	106020 0310	165,–
31.5	106020 0315	165,–
31.7	106020 0317	165,–
32.0	106020 0320	187,–
32.5	106020 0325	187,–
32.7	106020 0327	187,–
33.0	106020 0330	187,–
33.5	106020 0335	187,–
33.7	106020 0337	187,–
34.0	106020 0340	210,–
34.5	106020 0345	210,–
34.7	106020 0347	210,–
35.0	106020 0350	210,–
35.5	106020 0355	210,–
35.7	106020 0357	210,–
36.0	106020 0360	240,–
36.5	106020 0365	240,–
36.7	106020 0367	240,–
37.0	106020 0370	240,–
37.5	106020 0375	240,–
37.7	106020 0377	240,–
38.0	106020 0380	270,–
38.5	106020 0385	270,–
38.7	106020 0387	270,–
39.0	106020 0390	270,–
39.5	106020 0395	270,–
39.7	106020 0397	270,–
40.0	106020 0400	295,–

1153

AMEC modular drilling systems

INFO

Modular drills 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 drill 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.



You can find the entire range in the Allied Maxcut special catalogue.
Request your free copy now!



GEN2 T-A® and T-A® Original

- Diameter range 9.50 – 160.00 mm
- Various geometries, base substrates and coatings available
- Coatings
- Exchangeable cutting inserts reduce regrinding work
- 1.5 x D to 32 x D in the AMEC standard range

YouTube
Application video

GEN2 T-A
T-A® Original



APX Drill

- Diameter range 38.00 to 101.60 mm
- Drilling depth 3 x D, 5 x D, 8 x D and 10 x D
- AMEC® IC cutting inserts with AM300® coating for maximum output
- High flexibility due to a large selection of different pilot geometries in the existing T-A®, GEN2®, GEN3SYS® and GEN3SYS® XT series

APX DRILL™



GEN3SYS®X and GEN3SYS®

- Diameter range 11.00 to 35.00 mm
- Geometries and base materials for machining steel, stainless steel, cast iron and non-ferrous metals
- New AM300® coating for extended service life
- Up to 20% higher cutting speeds
- 1 x D to 7 x D in the AMEC standard range

GEN3SYS XT High Penetration Drilling System
GEN3SYS XT STRUCTURAL STEEL
GEN3SYS



Core & Revolution Drill

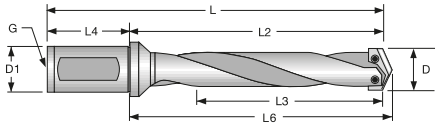
- Diameter range 47.75 to 142.75 mm
- Core Drill extends an existing hole in a single action.
- Revolution Drill drills into solid material (no pilot hole required).
- Adjustable cartridges
- AM300® and AM200® coatings for extended service life
- Drilling depths up to 4.5 x D

CoreDrill™
RevolutionDrill™

Series Y T-A drilling system®

10-264
10-265

- **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
	105140....	●	●	●	○	○		○	○	○	○	○		○	●				
	105146....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		




Series Y holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	9.50-11.00	19	47.6	50	95.6	16	48	1/16" *	A1	B1	**105001** 0010	211,–
Straight-fluted	Short	9.50-11.00	32	61.1	63.5	111.1	20	50	1/8"	A1	B1	105001 0020	195,21
Spiral-fluted	Standard	9.50-11.00	60	89.7	92.1	139.7	20	50	1/8"	A1	B1	105001 0030	218,41
Spiral-fluted	Standard plus	9.50-11.00	86	115.4	117.8	165.4	20	50	1/8"	A1	B1	105001 0035	230,70
Spiral-fluted	Extra-long	9.50-11.00	111	140.5	142.9	190.5	20	50	1/8"	A1	B1	105001 0040	245,92
Straight-fluted	XL	9.50-11.00	222	251.7	254.1	301.7	20	50	1/8"	A1	B1	105001 0050	244,33
Straight-fluted	3XL	9.50-11.00	290	319.9	322.3	369.9	20	50	1/8"	A1	B1	105001 0060	303,55

1141

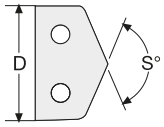
Series Y cutting inserts

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

GEN2 T-A

D mm	S °		HSS Super Cobalt AM200™ art.no.	€		HM C1 K35 AM200™ art.no.	€
9.50	132	2	**105140** 0950	41,55	2	**105146** 0950	62,28
10.00	132	2	105140 1000	41,55	2	105146 1000	62,28
10.20	132	2	105140 1020	41,55	2	105146 1020	62,28
10.50	132	2	105140 1050	41,55	2	105146 1050	62,28
10.80	132	2	105140 1080	41,55	2	105146 1080	62,28
11.00	132	2	105140 1100	41,55	2	105146 1100	62,28

1142 1143

Spare parts

	Screw art.no.	€
A1	105085 0010	2,65

1145

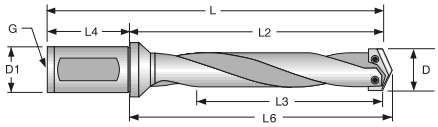
	TORX plus art.no.	€
B1	705145 0007	5,82

7113

Series Z T-A drilling system®

10-264
10-265

- **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
	105236....	●	●	●	○	○		○	○	○	○	○		○	●				
	105241....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		




Series Z holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			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	211,–
Straight-fluted	Short	11.11-12.80	32	61.1	63.5	111.1	20	50	1/8"	A1	B1	105003 0020	195,21
Spiral-fluted	Standard	11.11-12.80	60	89.7	92.1	139.7	20	50	1/8"	A1	B1	105003 0030	218,41
Spiral-fluted	Standard plus	11.11-12.80	86	115.4	117.8	165.4	20	50	1/8"	A1	B1	105003 0035	230,70
Spiral-fluted	Extra-long	11.11-12.80	111	140.5	142.9	190.5	20	50	1/8"	A1	B1	105003 0040	245,92
Spiral-fluted	Long	11.11-12.80	180	209.4	211.8	259.4	20	50	1/8"	A1	B1	105003 0045	242,55
Straight-fluted	XL	11.11-12.80	222.3	251.7	254.1	301.7	20	50	1/8"	A1	B1	105003 0050	244,33
Straight-fluted	3XL	11.11-12.80	290.5	319.9	322.3	369.9	20	50	1/8"	A1	B1	105003 0060	303,55

1141

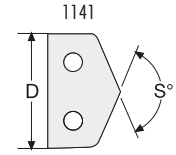
Series Z cutting inserts

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

GEN2 T-A

D mm	S °		HSS Super Cobalt AM200™ art.no.	€		HM C1 K35 AM200™ art.no.	€
11.50	132	2	**105236** 1150	41,55	2	**105241** 1150	62,28
12.00	132	2	105236 1200	41,55	2	105241 1200	62,28
12.50	132	2	105236 1250	41,55	2	105241 1250	62,28

1142 1143

Spare parts

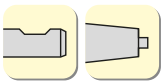
	Screw art.no.	€
A1	105085 0020	2,40

1145

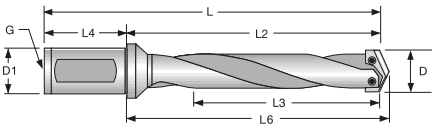
	TORX plus art.no.	€
B1	705145 0007	5,82

7113

Series 0 T-A drilling system®



10-264
10-265



- **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....	●	●	●	○	○		○	○	○	○	○		○	●				
	105341....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		





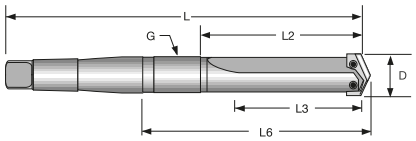
Series 0 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	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	211,–
Straight-fluted	Extra-short	15.50-17.50	22	47.6	50.4	97.6	20	50	1/8"	A2	B1	105005 0020	211,–
Straight-fluted	Short	13.00-17.50	35	63.5	66.3	113.5	20	50	1/8"	A1	B1	105005 0030	195,21
Straight-fluted	Short	15.50-17.50	35	63.5	66.3	113.5	20	50	1/8"	A2	B1	105005 0040	195,21
Spiral-fluted	Standard	13.00-17.50	64	92.1	94.9	142.1	20	50	1/8"	A1	B1	105005 0050	218,41
Spiral-fluted	Standard	15.50-17.50	64	92.1	94.9	142.1	20	50	1/8"	A2	B1	105005 0060	218,41
Spiral-fluted	Standard plus	13.00-17.50	89	117.6	120.4	167.6	20	50	1/8"	A1	B1	105005 0065	230,70
Spiral-fluted	Extra-long	13.00-17.50	114	142.9	145.7	192.9	20	50	1/8"	A1	B1	105005 0070	245,92
Spiral-fluted	Extra-long	15.50-17.50	114	142.9	145.7	192.9	20	50	1/8"	A2	B1	105005 0080	245,92
Spiral-fluted	Ultra-long	13.00-17.50	177	206.4	209.1	256.4	20	50	1/8"	A1	B1	105005 0090	290,62
Spiral-fluted	Ultra-long	15.50-17.50	177	206.4	209.1	256.4	20	50	1/8"	A2	B1	105005 0100	290,62
Spiral-fluted	Ultra-long	13.00-17.50	240	268.6	271.4	318.6	20	50	1/8"	A1	B1	105005 0105	301,70
Straight-fluted	XL	13.00-17.50	295	323.9	326.7	373.9	20	50	1/8"	A1	B1	105005 0110	273,30
Straight-fluted	3XL	13.00-17.50	387	416	418.8	466.0	20	50	1/8"	A1	B1	105005 0120	325,29

1141







Series 0 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	13.00-17.50	35	55.5	92.4	164.3	MT 2	2SRM	1/16"	A1	B1	**105006** 0010	195,21
Straight-fluted	Short	15.50-17.50	35	55.5	92.4	164.3	MT 2	2SRM	1/16"	A2	B1	105006 0020	195,21
Spiral-fluted	Standard	13.00-17.50	64	84.1	121	192.9	MT 2	2SRM	1/16"	A1	B1	105006 0030	209,72
Spiral-fluted	Standard	15.50-17.50	64	84.1	121	192.9	MT 2	2SRM	1/16"	A2	B1	105006 0040	209,72
Spiral-fluted	Extra-long	13.00-17.50	114	135	171.8	243.7	MT 2	2SRM	1/16"	A1	B1	105006 0050	238,63
Spiral-fluted	Extra-long	15.50-17.50	114	135	171.8	243.7	MT 2	2SRM	1/16"	A2	B1	105006 0060	238,63
Spiral-fluted	Ultra-long	13.00-17.50	177	198.5	235.3	307.2	MT 2	2SRM	1/16"	A1	B1	105006 0070	281,80
Spiral-fluted	Ultra-long	15.50-17.50	177	198.5	235.3	307.2	MT 2	2SRM	1/16"	A2	B1	105006 0080	281,80

1141

Series 0 cutting inserts

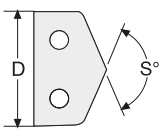
Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Cobalt AM200™ art.no.	€		HM C1 K35 AM200™ art.no.	€
13.00	132	2	**105336** 1300	44,55	2	**105341** 1300	68,22
13.50	132	2	105336 1350	44,55	2	105341 1350	68,22
14.00	132	2	105336 1400	44,55	2	105341 1400	68,22
14.50	132	2	105336 1450	44,55	2	105341 1450	68,22
15.00	132	2	105336 1500	44,55	2	105341 1500	68,22
15.50	132	2	105336 1550	44,55	2	105341 1550	68,22
16.00	132	2	105336 1600	44,55	2	105341 1600	68,22
16.50	132	2	105336 1650	44,55	2	105341 1650	68,22
17.00	132	2	105336 1700	44,55	2	105341 1700	68,22
17.50	132	2	105336 1750	44,55	2	105341 1750	68,22

1142 1143





Spare parts

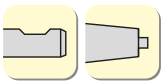
	Screw art.no.	€
A1	105085 0030	2,20
A2	105085 0040	2,20

1145

	TORX plus art.no.	€
B1	705145 0008	5,82

7113

Series 1 T-A drilling system®

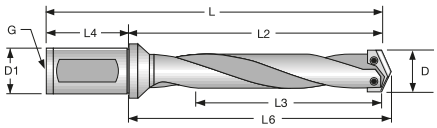






10-264
10-265

- **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....	●	●	●	○	○		○	○	○	○	○		○	●				
	105446....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		





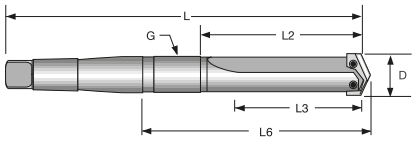
Series 1 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread	A1	B1	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	231,40
Straight-fluted	Extra-short	22.00-24.00	57	88.5	92.1	144.5	25	56	1/8" *	A2	B1	105007 0020	250,27
Straight-fluted	Short	18.00-24.00	67	107.2	110.7	163.2	25	56	1/8"	A1	B1	105007 0030	202,50
Straight-fluted	Short	22.00-24.00	67	107.2	110.7	163.2	25	56	1/8"	A2	B1	105007 0040	218,41
Spiral-fluted	Medium-length	18.00-24.00	118	154.8	158.4	210.8	25	56	1/8"	A1	B1	105007 0050	234,35
Spiral-fluted	Medium-length	22.00-24.00	118	154.8	158.4	210.8	25	56	1/8"	A2	B1	105007 0060	251,55
Spiral-fluted	Standard	18.00-24.00	168	205.6	209.2	261.6	25	56	1/8"	A1	B1	105007 0070	258,78
Spiral-fluted	Standard	22.00-24.00	168	205.6	209.2	261.6	25	56	1/8"	A2	B1	105007 0080	274,83
Spiral-fluted	Standard plus	18.00-24.00	219	256.3	259.9	312.3	25	56	1/8"	A1	B1	105007 0085	272,–
Spiral-fluted	Extra-long	18.00-24.00	270	307.2	310.8	363.2	25	56	1/8"	A1	B1	105007 0090	290,62
Spiral-fluted	Extra-long	22.00-24.00	270	307.2	310.8	363.2	25	56	1/8"	A2	B1	105007 0100	306,55
Spiral-fluted	Ultra-long	18.00-24.00	365	402.3	405.9	458.3	25	56	1/8"	A1	B1	105007 0105	313,50
Straight-fluted	XL	18.00-24.00	457	494.5	498.1	550.5	25	56	1/8"	A1	B1	105007 0110	303,55
Straight-fluted	3XL	18.00-24.00	565	602.5	606.1	658.5	25	56	1/8"	A1	B1	105007 0120	368,72

1141







Series 1 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread	A1	B1	art.no.	€
Straight-fluted	Short	18.00-24.00	70	98.4	142.5	232.5	MT 3	3SRM	1/8"	A1	B1	**105008** 0010	212,73
Straight-fluted	Short	22.00-24.00	70	98.4	142.5	232.5	MT 3	3SRM	1/8"	A2	B1	105008 0020	230,–
Spiral-fluted	Medium-length	18.00-24.00	121	149.2	193.3	283.3	MT 3	3SRM	1/8"	A1	B1	105008 0030	235,76
Spiral-fluted	Medium-length	22.00-24.00	121	149.2	193.3	283.3	MT 3	3SRM	1/8"	A2	B1	105008 0040	253,02
Spiral-fluted	Standard	18.00-24.00	172	200	244.1	334.2	MT 3	3SRM	1/8"	A1	B1	105008 0050	250,27
Spiral-fluted	Standard	22.00-24.00	172	200	244.1	334.2	MT 3	3SRM	1/8"	A2	B1	105008 0060	267,47
Spiral-fluted	Extra-long	18.00-24.00	273	301.6	345.7	435.8	MT 3	3SRM	1/8"	A1	B1	105008 0070	290,62
Spiral-fluted	Extra-long	22.00-24.00	273	301.6	345.7	435.8	MT 3	3SRM	1/8"	A2	B1	105008 0080	305,15

1141

Series 1 cutting inserts

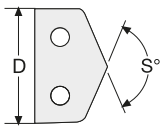
Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Cobalt AM200™	art.no.	€	HM C1 K35 AM200™	art.no.	€
18.00	132	2	**105441** 1800	50,52	2	**105446** 1800	78,60
18.50	132	2	105441 1850	50,52	2	105446 1850	78,60
19.00	132	2	105441 1900	50,52	2	105446 1900	78,60
19.50	132	2	105441 1950	50,52	2	105446 1950	78,60
20.00	132	2	105441 2000	50,52	2	105446 2000	78,60
20.50	132	2	105441 2050	50,52	2	105446 2050	78,60
21.00	132	2	105441 2100	50,52	2	105446 2100	78,60
21.50	132	2	105441 2150	50,52	2	105446 2150	78,60
22.00	132	2	105441 2200	50,52	2	105446 2200	78,60
22.50	132	2	105441 2250	50,52	2	105446 2250	78,60
23.00	132	2	105441 2300	50,52	2	105446 2300	78,60
23.50	132	2	105441 2350	50,52	2	105446 2350	78,60
24.00	132	2	105441 2400	50,52	2	105446 2400	78,60

1142 1143





Spare parts

	Screw	art.no.	€
A1		105085 0050	2,30
A2		105085 0060	2,30

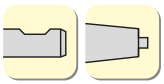
1145

	TORX plus	art.no.	€
B1		705145 0009	6,23

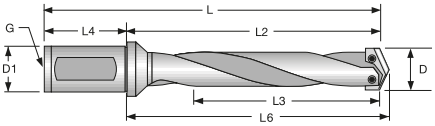
7113

Series 2 T-A drilling system®

10



10-264
10-265



- **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....	●	●	●	○	○		○	○	○	○	○		○	●				
105506....	●	●	●	○	○		○	○	○	○	○		○	●				
105546....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		





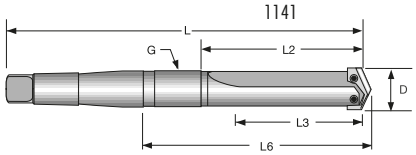
Series 2 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			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	257,38
Straight-fluted	Extra-short	30.00-35.00	92	123.4	127	183.4	32	60	1/4" *	A1	B1	105009 0020	281,98
Straight-fluted	Short	24.50-35.00	86	128.6	132.2	188.6	32	60	1/4"	A1	B1	105009 0030	218,41
Straight-fluted	Short	30.00-35.00	86	128.6	132.2	188.6	32	60	1/4"	A1	B1	105009 0040	244,33
Spiral-fluted	Medium-length	24.50-35.00	137	179.4	183	239.4	32	60	1/4"	A1	B1	105009 0050	258,78
Spiral-fluted	Medium-length	30.00-35.00	137	179.4	183	239.4	32	60	1/4"	A1	B1	105009 0060	287,75
Spiral-fluted	Standard	24.50-35.00	187	230.2	233.8	290.2	32	60	1/4"	A1	B1	105009 0070	283,40
Spiral-fluted	Standard	30.00-35.00	187	230.2	233.8	290.2	32	60	1/4"	A1	B1	105009 0080	306,55
Spiral-fluted	Standard plus	24.50-35.00	238	280.9	284.5	340.9	32	60	1/4"	A1	B1	105009 0085	307,60
Spiral-fluted	Extra-long	24.50-35.00	289	331.8	335.4	391.8	32	60	1/4"	A1	B1	105009 0090	328,18
Spiral-fluted	Extra-long	30.00-35.00	289	331.8	335.4	391.8	32	60	1/4"	A1	B1	105009 0100	342,62
Spiral-fluted	Ultra-long	24.50-35.00	410	452.9	456.5	512.9	32	60	1/4"	A1	B1	105009 0105	349,–
Straight-fluted	XL	24.50-35.00	511	554.1	557.7	614.1	32	60	1/4"	A1	B1	105009 0110	325,29
Straight-fluted	3XL	24.50-35.00	692	735.1	738.7	795.1	32	60	1/4"	A1	B1	105009 0120	397,50

1141







Series 2 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	24.50-35.00	86	114.3	160.4	273.8	MT 4	3SRM	1/8"	A1	B1	**105010** 0010	245,92
Straight-fluted	Short	30.00-35.00	86	114.3	167.6	281	MT 4	4SRM	1/4"	A1	B1	105010 0020	263,12
Spiral-fluted	Medium-length	24.50-35.00	137	165.1	211.2	324.6	MT 4	3SRM	1/8"	A1	B1	105010 0030	267,47
Spiral-fluted	Medium-length	30.00-35.00	137	165.1	218.4	331.8	MT 4	4SRM	1/4"	A1	B1	105010 0040	287,75
Spiral-fluted	Standard	24.50-35.00	188	215.9	262	375.4	MT 4	3SRM	1/8"	A1	B1	105010 0050	290,62
Spiral-fluted	Standard	30.00-35.00	188	215.9	269.2	382.6	MT 4	4SRM	1/4"	A1	B1	105010 0060	309,37
Spiral-fluted	Extra-long	24.50-35.00	289	317.5	363.6	477	MT 4	3SRM	1/8"	A1	B1	105010 0070	331,18
Spiral-fluted	Extra-long	30.00-35.00	289	317.5	370.8	484.2	MT 4	4SRM	1/4"	A1	B1	105010 0080	349,86

1141

Series 2 cutting inserts

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

GEN2 T-A

D mm	S °		HSS Super Cobalt AM200™ art.no.	€		HM C1 K35 AM200™ art.no.	€
24.50	132	2	**105541** 2450	57,86	2	**105546** 2450	93,44
25.00	132	2	105541 2500	57,86	2	105546 2500	93,44
25.50	132	2	105541 2550	57,86	2	105546 2550	93,44
26.00	132	2	105541 2600	57,86	2	105546 2600	93,44
26.50	132	2	105541 2650	57,86	2	105546 2650	93,44
27.00	132	2	105541 2700	57,86	2	105546 2700	93,44
27.50	132	2	105541 2750	57,86	2	105546 2750	93,44
28.00	132	2	105541 2800	57,86	2	105546 2800	93,44
28.50	132	2	105541 2850	57,86	2	105546 2850	93,44
29.00	132	2	105541 2900	57,86	2	105546 2900	93,44
29.50	132	2	105541 2950	57,86	2	105546 2950	93,44
30.00	132	2	105541 3000	57,86	2	105546 3000	93,44
30.50	132	2	105541 3050	57,86	2	105546 3050	93,44

1142 1143

D mm	S °		HSS Super Cobalt AM200™ art.no.	€		HM C1 K35 AM200™ art.no.	€
31.00	132	2	105541 3100	57,86	2	105546 3100	93,44
31.50	132	2	105541 3150	57,86	2	105546 3150	93,44
32.00	132	2	105541 3200	57,86	2	105546 3200	93,44
32.50	132	2	105541 3250	57,86	2	105546 3250	93,44
33.00	132	2	105541 3300	57,86	2	105546 3300	93,44
33.50	132	2	105541 3350	57,86	2	105546 3350	93,44
34.00	132	2	105541 3400	57,86	2	105546 3400	93,44
34.50	132	2	105541 3450	57,86	2	105546 3450	93,44
35.00	132	2	105541 3500	57,86	2	105546 3500	93,44

1142 1143

Spare parts

	Screw art.no.	€
A1	105085 0070	2,20

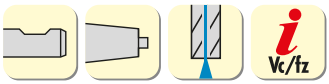
1145

	TORX plus art.no.	€
B1	705145 0015	6,65

7113

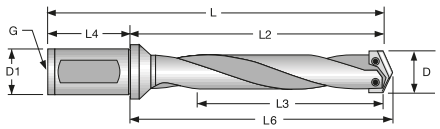


Series 3 T-A drilling system®



10-266

- **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
		●	●	●	○	○		○	○	○	○	○		○	●				





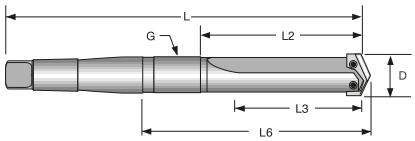
Series 3 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	36.00-47.00	76.2	125	129.8	195	40	70	1/4" *	A1	B1	**105011** 0010	305,15
Straight-fluted	Short	36.00-47.00	121	173	177.8	243	40	70	1/4"	A1	B1	105011 0020	267,47
Spiral-fluted	Medium-length	36.00-47.00	165	217.5	222.3	287.5	40	70	1/4"	A1	B1	105011 0030	360,02
Spiral-fluted	Standard	36.00-47.00	210	261.9	266.7	331.9	40	70	1/4"	A1	B1	105011 0040	373,07
Straight-fluted	Extra-long	36.00-47.00	349.3	401.6	406.4	471.6	40	70	1/4"	A1	B1	105011 0050	409,27
Straight-fluted	XL	36.00-47.00	558.8	611.1	615.9	681.1	40	70	1/4"	A1	B1	105011 0060	469,78
Straight-fluted	3XL	36.00-47.00	787.4	839.7	844.5	909.7	40	70	1/4"	A1	B1	105011 0070	571,02

1141







Series 3 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	36.00-47.00	121	152.4	206.4	319.1	MT 4	4SRM	1/4"	A1	B1	**105012** 0010	263,12
Spiral-fluted	Medium-length	36.00-47.00	165	196.9	250.9	363.6	MT 4	4SRM	1/4"	A1	B1	105012 0020	349,86
Spiral-fluted	Standard	36.00-47.00	210	241.3	295.3	408	MT 4	4SRM	1/4"	A1	B1	105012 0030	373,07
Straight-fluted	Extra-long	36.00-47.00	349	381	435	547	MT 4	4SRM	1/4"	A1	B1	105012 0040	380,–
Straight-fluted	XL	36.00-47.00	558.8	590.6	644.6	757.2	MT 4	4SRM	1/4"	A1	B1	105012 0050	469,78
Straight-fluted	3XL	36.00-47.00	787.4	819.2	873.2	985.8	MT 4	4SRM	1/4"	A1	B1	105012 0060	571,02

1141

Series 3 cutting inserts

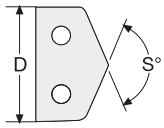
Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
36.00	132	**105641** 3600	62,76
37.00	132	105641 3700	62,76
38.00	132	105641 3800	62,76
39.00	132	105641 3900	62,76
40.00	132	105641 4000	62,76
41.00	132	105641 4100	62,76
42.00	132	105641 4200	62,76
43.00	132	105641 4300	62,76
44.00	132	105641 4400	62,76
45.00	132	105641 4500	62,76
46.00	132	105641 4600	62,76
47.00	132	105641 4700	62,76

1142





Spare parts

	Screw art.no.	€
A1	105085 0080	2,20

1145

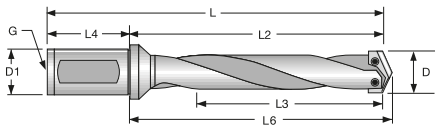
	TORX plus art.no.	€
B1	705145 0020	7,06

7113

Series 4 T-A drilling system®

10-266

- **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
		●	●	●	○	○		○	○	○	○	○		○	●				





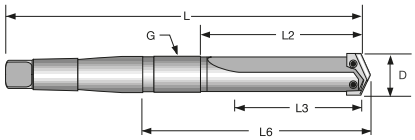
Series 4 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Short	48.00-65.00	130	179.4	184.2	249.4	40	70	1/4"	A1	B1	**105013** 0010	292,36
Spiral-fluted	Standard	48.00-65.00	232	281	285.8	351	40	70	1/4"	A1	B1	105013 0020	428,33
Straight-fluted	Extra-long	48.00-65.00	422	471.5	476.3	541.5	40	70	1/4"	A1	B1	105013 0030	454,42
Straight-fluted	XL	48.00-65.00	625	674.7	679.5	744.7	40	70	1/4"	A1	B1	105013 0040	549,98
Straight-fluted	3XL	48.00-65.00	879	928.7	933.5	998.7	40	70	1/4"	A1	B1	105013 0050	614,32

1141







Series 4 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	48.00-65.00	130	165.1	219.1	363.5	MT 5	5SRM	1/4"	A1	B1	**105014** 0010	312,63
Spiral-fluted	Standard	48.00-65.00	232	266.7	320.7	465.1	MT 5	5SRM	1/4"	A1	B1	105014 0020	432,68
Straight-fluted	Extra-long	48.00-65.00	422	457	511.2	655.6	MT 5	5SRM	1/4"	A1	B1	105014 0030	432,68
Straight-fluted	XL	48.00-65.00	625	660.4	714.4	858.8	MT 5	5SRM	1/4"	A1	B1	105014 0040	549,98
Straight-fluted	3XL	48.00-65.00	879	914.4	968.4	1112.8	MT 5	5SRM	1/4"	A1	B1	105014 0050	614,83

1141

Series 4 cutting inserts

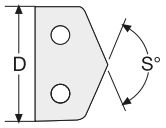
Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
48.00	132	**105716** 4800	79,02
49.00	132	105716 4900	79,02
50.00	132	105716 5000	79,02
51.00	132	105716 5100	79,02
52.00	132	105716 5200	79,02
53.00	132	105716 5300	79,02
54.00	132	105716 5400	79,02
55.00	132	105716 5500	79,02
56.00	132	105716 5600	79,02
57.00	132	105716 5700	79,02
58.00	132	105716 5800	79,02
59.00	132	105716 5900	79,02
60.00	132	105716 6000	79,02
61.00	132	105716 6100	79,02
62.00	132	105716 6200	79,02
63.00	132	105716 6300	79,02
64.00	132	105716 6400	79,02
65.00	132	105716 6500	79,02

1142





Spare parts

	Screw art.no.	€
A1	105085 0080	2,20

1145

	TORX plus art.no.	€
B1	705145 0020	7,06

7113

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

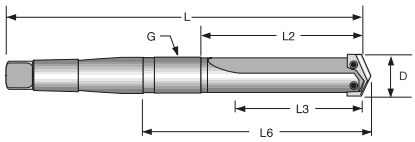
10-266

- **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

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread	A1	B1	art.no.	€
Straight-fluted	Short	64.00-88.00	172	215.9	287.3	430.2	MT 5	6SRM	1/2"	A1	B1	**105016** 0010	453,85
Spiral-fluted	Standard	64.00-88.00	273	317.5	388.9	531.8	MT 5	6SRM	1/2"	A1	B1	105016 0020	662,09
Straight-fluted	Extra-long	64.00-88.00	464	508	579.4	722.3	MT 5	6SRM	1/2"	A1	B1	105016 0030	699,77
Straight-fluted	XL	64.00-88.00	660	704.8	776.2	919.1	MT 5	6SRM	1/2"	A1	B1	105016 0040	794,93

1141

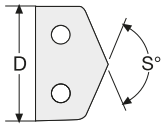
Series 7/8 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread	A1	B1	art.no.	€
Straight-fluted	Short	90.00-114.00	172	225.4	296.8	439.7	MT 5	6SRM	1/2"	A1	B1	**105017** 0010	617,20
Spiral-fluted	Standard	90.00-114.00	273	327	398.5	541.3	MT 5	6SRM	1/2"	A1	B1	105017 0020	855,69
Straight-fluted	Extra-long	90.00-114.00	556	610	681	823.9	MT 5	6SRM	1/2"	A1	B1	105017 0030	1.004,59
Straight-fluted	XL	90.00-114.00	685	739.7	811.2	954	MT 5	6SRM	1/2"	A1	B1	105017 0040	1.190,21

1141

GEN2 T-A





Series 5 cutting inserts

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

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
64.00	144	**105765** 6400	110,43
66.00	144	105765 6600	110,43
68.00	144	105765 6800	110,43
70.00	144	105765 7000	110,43
72.00	144	105765 7200	110,43
74.00	144	105765 7400	110,43
76.00	144	105765 7600	110,43

1142

Series 6 cutting inserts

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

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
78.00	144	**105810** 7800	122,34
80.00	144	105810 8000	122,34
82.00	144	105810 8200	122,34
84.00	144	105810 8400	122,34
86.00	144	105810 8600	122,34
88.00	144	105810 8800	122,34

1142

Series 7 cutting inserts

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

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
90.00	144	**105860** 9000	143,65
92.00	144	105860 9200	143,65
94.00	144	105860 9400	143,65
96.00	144	105860 9600	143,65
98.00	144	105860 9800	143,65
100.00	144	105860 0000	143,65

1142

Series 8 cutting inserts

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

D mm	S °	HSS Super Cobalt AM200™ art.no.	€
102.00	144	**105910** 0200	162,05
104.00	144	105910 0400	162,05
106.00	144	105910 0600	162,05
108.00	144	105910 0800	162,05
110.00	144	105910 1000	162,05
112.00	144	105910 1200	162,05
114.00	144	105910 1400	162,05

1142

Spare parts

	Screw art.no.	€
A1	105085 0090	2,95

1145

	TORX plus art.no.	€
B1	705145 0025	7,32

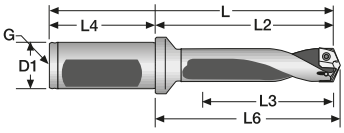
7113

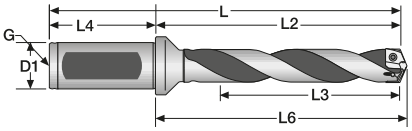
GEN3SYS high-performance drilling system®XT

VHM | 5xD | 7xD | TiAlN | Vc/fz | 10-267

- **Robust holder with internal coolant supply**
- **5xD and 7xD holders** (3xD available on request)
- Excellent chip control
- Up to 20 % higher speeds
- High-precision drill bit centring in the holder for absolute repeatability
- **newly patented TiAlN-coating AM300™ for up to 25 % longer service life**
- High drilling accuracy, surface finish quality and concentricity
- Helix-ground guide rail for maximum stability
- Universally applicable for most materials
- **Innovative "XT" cutting edge 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
	105974....	●	●	●													○	○	○
	105975....	○	○	○				○	○	●	○		●	●	●		○		
	105976....							●	●										
	105973....				●	●	●												



5xD holder with straight shank

D mm	Chip space design	D1 mm	L4 mm	L3 mm	Clamping surface	L6 mm	L mm	L2 mm	Thread			art.no.	€
12.00 - 12.99	Straight-fluted	20	41.9	64.9	Yes	94.8	134.5	92.6	1/8"	A1	B1	**105951** 0101	239,26
12.00 - 12.99	Spiral-fluted	20	41.9	64.9	Yes	94.8	134.5	92.6	1/8"	A1	B1	105951 0102	239,26
12.00 - 12.99	Spiral-fluted	20	41.9	64.9	No	94.8	134.5	92.6	1/8"	A1	B1	105951 0103	239,26
13.00 - 13.99	Straight-fluted	20	41.9	70	Yes	99.5	139.2	97.3	1/8"	A1	B1	105951 0201	239,26
13.00 - 13.99	Spiral-fluted	20	41.9	70	Yes	99.5	139.2	97.3	1/8"	A1	B1	105951 0202	239,26
13.00 - 13.99	Spiral-fluted	20	41.9	70	No	99.5	139.2	97.3	1/8"	A1	B1	105951 0203	239,26
14.00 - 14.99	Straight-fluted	20	41.9	75	Yes	104.9	144.3	102.4	1/8"	A1	B1	105951 0301	250,55
14.00 - 14.99	Spiral-fluted	20	41.9	75	Yes	104.9	144.3	102.4	1/8"	A1	B1	105951 0302	250,55
14.00 - 14.99	Spiral-fluted	20	41.9	75	No	104.9	144.3	102.4	1/8"	A1	B1	105951 0303	250,55
15.00 - 15.99	Straight-fluted	20	41.9	80	Yes	109.6	148.9	107.0	1/8"	A1	B1	105951 0401	250,55
15.00 - 15.99	Spiral-fluted	20	41.9	80	Yes	109.6	148.9	107.0	1/8"	A1	B1	105951 0402	250,55
15.00 - 15.99	Spiral-fluted	20	41.9	80	No	109.6	148.9	107	1/8"	A1	B1	105951 0403	250,55
16.00 - 16.99	Straight-fluted	20	41.9	84.9	Yes	118.2	157.2	115.3	1/8"	A2	B2	105951 0501	264,08
16.00 - 16.99	Spiral-fluted	20	41.9	84.9	Yes	118.2	157.2	115.3	1/8"	A2	B2	105951 0502	264,08
16.00 - 16.99	Spiral-fluted	20	41.9	84.9	No	118.2	157.2	115.3	1/8"	A2	B2	105951 0503	264,08
17.00 - 17.99	Straight-fluted	20	41.9	89.9	Yes	122.9	162	120	1/8"	A3	B2	105951 0601	275,37
17.00 - 17.99	Spiral-fluted	20	41.9	89.9	Yes	122.9	162	120	1/8"	A3	B2	105951 0602	275,37
17.00 - 17.99	Spiral-fluted	20	41.9	89.9	No	122.9	162	120	1/8"	A3	B2	105951 0603	275,37
18.00 - 19.99	Straight-fluted	25	53	99.9	Yes	136.8	187.1	134	1/8"	A4	B3	105951 0701	286,66
18.00 - 19.99	Spiral-fluted	25	53	99.9	Yes	136.8	187.1	134	1/8"	A4	B3	105951 0702	286,66
18.00 - 19.99	Spiral-fluted	25	53	99.9	No	136.8	187.1	134	1/8"	A4	B3	105951 0703	286,66
20.00 - 21.99	Straight-fluted	25	53	110	Yes	146.9	197.2	144.1	1/8"	A4	B3	105951 0801	299,07
20.00 - 21.99	Spiral-fluted	25	53	110	Yes	146.9	197.2	144.1	1/8"	A4	B3	105951 0802	299,07
20.00 - 21.99	Spiral-fluted	25	53	110	No	146.9	197.2	144.1	1/8"	A4	B3	105951 0803	299,07
22.00 - 23.99	Straight-fluted	25	53	120	Yes	156.2	206.4	153.3	1/8"	A4	B3	105951 0901	311,48
22.00 - 23.99	Spiral-fluted	25	53	120	Yes	156.2	206.4	153.3	1/8"	A4	B3	105951 0902	311,48
22.00 - 23.99	Spiral-fluted	25	53	120	No	156.2	206.4	153.3	1/8"	A4	B3	105951 0903	311,48
24.00 - 25.99	Straight-fluted	25	53	130	Yes	168.7	216	165.8	1/8"	A5	B3	105951 1001	322,77
24.00 - 25.99	Spiral-fluted	25	53	130	Yes	168.7	216	165.8	1/8"	A5	B3	105951 1002	322,77
24.00 - 25.99	Spiral-fluted	25	53	130	No	168.7	216	165.8	1/8"	A5	B3	105951 1003	322,77
26.00 - 28.99	Straight-fluted	32	58	145	Yes	188.8	244	186	1/8"	A6	B4	105951 1101	334,06
26.00 - 28.99	Spiral-fluted	32	58	145	Yes	188.8	244	186	1/8"	A6	B4	105951 1102	334,06
26.00 - 28.99	Spiral-fluted	32	58	145	No	188.8	244	186	1/8"	A6	B4	105951 1103	334,06
29.00 - 31.99	Straight-fluted	32	58	160	Yes	203.1	258	200.1	1/8"	A6	B4	105951 1201	346,47
29.00 - 31.99	Spiral-fluted	32	58	160	Yes	203.1	258	200.1	1/8"	A6	B4	105951 1202	346,47
29.00 - 31.99	Spiral-fluted	32	58	160	No	203.1	258	200.1	1/8"	A6	B4	105951 1203	346,47
32.00 - 35.00	Straight-fluted	40	70	175	Yes	231.3	297.7	227.7	1/4"	A6	B4	105951 1301	376,94
32.00 - 35.00	Spiral-fluted	40	70	175	Yes	231.3	297.7	227.7	1/4"	A6	B4	105951 1302	376,94
32.00 - 35.00	Spiral-fluted	40	70	175	No	231.3	297.7	227.7	1/4"	A6	B4	105951 1303	376,94

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Continued on next page >>>



7xD holder with straight shank

D mm	Chip space design	D1 mm	L4 mm	L3 mm	Clamping surface	L6 mm	L2 mm	L mm	Thread			art.no.	€
12.00 - 12.99	Straight-fluted	20	41.9	90.9	Yes	120.8	118.5	160.5	1/8"	A1	B1	**105952** 0101	264,08
15.00 - 15.99	Spiral-fluted	20	41.9	111.9	Yes	141.6	139.0	180.9	1/8"	A1	B1	105952 0402	275,37
12.00 - 12.99	Spiral-fluted	20	41.9	90.9	Yes	120.8	118.5	160.5	1/8"	A1	B1	105952 0102	264,08
12.00 - 12.99	Spiral-fluted	20	41.9	90.9	No	120.8	118.5	160.5	1/8"	A1	B1	105952 0103	264,08
13.00 - 13.99	Straight-fluted	20	41.9	97.9	Yes	127.5	125.3	167.2	1/8"	A1	B1	105952 0201	264,08
13.00 - 13.99	Spiral-fluted	20	41.9	97.9	Yes	127.5	125.3	167.2	1/8"	A1	B1	105952 0202	264,08
13.00 - 13.99	Spiral-fluted	20	41.9	97.9	No	127.5	125.3	167.2	1/8"	A1	B1	105952 0203	264,08
14.00 - 14.99	Straight-fluted	20	41.9	104.9	Yes	134.9	132.4	190.5	1/8"	A1	B1	105952 0301	275,37
14.00 - 14.99	Spiral-fluted	20	41.9	104.9	Yes	134.9	123.4	190.5	1/8"	A1	B1	105952 0302	275,37
14.00 - 14.99	Spiral-fluted	20	41.9	104.9	No	134.9	123.4	190.5	1/8"	A1	B1	105952 0303	275,37
15.00 - 15.99	Straight-fluted	20	41.9	111.9	Yes	141.6	139.0	180.9	1/8"	A1	B1	105952 0401	275,37
15.00 - 15.99	Spiral-fluted	20	41.9	111.9	No	141.6	139.0	180.9	1/8"	A1	B1	105952 0403	275,37
16.00 - 16.99	Straight-fluted	20	41.9	118.9	Yes	152.2	149.3	191.2	1/8"	A2	B2	105952 0501	286,66
16.00 - 16.99	Spiral-fluted	20	41.9	118.9	Yes	152.2	149.3	191.2	1/8"	A2	B2	105952 0502	286,66
16.00 - 16.99	Spiral-fluted	20	41.9	118.9	No	152.2	149.3	191.2	1/8"	A2	B2	105952 0503	286,66
17.00 - 17.99	Straight-fluted	20	41.9	125.9	Yes	158.9	156.0	197.9	1/8"	A3	B2	105952 0601	299,07
17.00 - 17.99	Spiral-fluted	20	41.9	125.9	Yes	158.9	156.0	197.9	1/8"	A3	B2	105952 0602	299,07
17.00 - 17.99	Spiral-fluted	20	41.9	125.9	No	158.9	156.0	197.9	1/8"	A3	B2	105952 0603	299,07
18.00 - 19.99	Straight-fluted	25	53	139.9	Yes	176.8	174.0	227.1	1/8"	A4	B3	105952 0701	311,48
18.00 - 19.99	Spiral-fluted	25	53	139.9	No	176.8	174.0	227.1	1/8"	A4	B3	105952 0702	311,48
18.00 - 19.99	Spiral-fluted	25	53	139.9	Yes	176.8	174.0	227.1	1/8"	A4	B3	105952 0703	311,48
20.00 - 21.99	Straight-fluted	25	53	153.9	Yes	190.9	188.1	241.1	1/8"	A4	B3	105952 0801	322,77
20.00 - 21.99	Spiral-fluted	25	53	153.9	Yes	190.9	188.1	241.1	1/8"	A4	B3	105952 0802	322,77
20.00 - 21.99	Spiral-fluted	25	53	153.9	No	190.9	188.1	241.1	1/8"	A4	B3	105952 0803	322,77
22.00 - 23.99	Straight-fluted	25	53	168	Yes	204.2	201.3	254.4	1/8"	A4	B3	105952 0901	334,06
22.00 - 23.99	Spiral-fluted	25	53	168	Yes	204.2	201.3	254.4	1/8"	A4	B3	105952 0902	334,06
22.00 - 23.99	Spiral-fluted	25	53	168	No	204.2	201.3	254.4	1/8"	A4	B3	105952 0903	334,06
24.00 - 25.99	Straight-fluted	25	53	182	Yes	220.7	217.8	267.9	1/8"	A5	B3	105952 1001	347,60
24.00 - 25.99	Spiral-fluted	25	53	182	Yes	220.7	217.8	267.9	1/8"	A5	B3	105952 1002	347,60
24.00 - 25.99	Spiral-fluted	25	53	182	No	220.7	217.8	267.9	1/8"	A5	B3	105952 1003	347,60
26.00 - 28.99	Straight-fluted	32	58	203	Yes	246.8	244.0	302.0	1/8"	A6	B4	105952 1101	358,88
26.00 - 28.99	Spiral-fluted	32	58	203	Yes	246.8	244.0	302.0	1/8"	A6	B4	105952 1102	358,88
26.00 - 28.99	Spiral-fluted	32	58	203	No	246.8	244.0	302.0	1/8"	A6	B4	105952 1103	358,88
29.00 - 31.99	Straight-fluted	32	58	224	Yes	267.1	264.1	322.0	1/8"	A6	B4	105952 1201	370,17
29.00 - 31.99	Spiral-fluted	32	58	224	Yes	267.1	264.1	322.0	1/8"	A6	B4	105952 1202	370,17
29.00 - 31.99	Spiral-fluted	32	58	224	No	267.1	264.1	322.0	1/8"	A6	B4	105952 1203	370,17
32.00 - 35.00	Straight-fluted	40	70	244.9	Yes	301.3	297.7	367.7	1/4"	A6	B4	105952 1301	406,28
32.00 - 35.00	Spiral-fluted	40	70	244.9	Yes	301.3	297.7	367.7	1/4"	A6	B4	105952 1302	406,28
32.00 - 35.00	Spiral-fluted	40	70	244.9	No	301.3	297.7	367.7	1/4"	A6	B4	105952 1303	406,28

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Safety in the workplace

Please protect your eyes, ears and respiratory system!



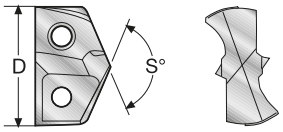
GEN3SYS XT
High Penetration Drilling System

Carbide cutting inserts

D mm	S °	K35 (C1) AM300 art.no.	€	K20 (C2) AM300 art.no.	€	K20 (CI) AM300 art.no.	€	K20 (AS) AM300 art.no.	€
12.00	140	**105974** 1200	85,68	**105975** 1200	85,68	**105976** 1200	85,68	**105973** 1200	85,68
12.50	140	105974 1250	85,68	105975 1250	85,68	105976 1250	85,68	105973 1250	85,68
13.00	140	105974 1300	85,68	105975 1300	85,68	105976 1300	85,68	105973 1300	85,68
13.50	140	105974 1350	85,68	105975 1350	85,68	105976 1350	85,68	105973 1350	85,68
14.00	140	105974 1400	87,73	105975 1400	87,73	105976 1400	87,73	105973 1400	87,73
14.50	140	105974 1450	87,73	105975 1450	87,73	105976 1450	87,73	105973 1450	87,73
15.00	140	105974 1500	87,73	105975 1500	87,73	105976 1500	87,73	105973 1500	87,73
15.50	140	105974 1550	87,73	105975 1550	87,73	105976 1550	87,73	105973 1550	87,73
16.00	140	105974 1600	92,15	105975 1600	92,15	105976 1600	92,15	105973 1600	92,15
16.50	140	105974 1650	92,15	105975 1650	92,15	105976 1650	92,15	105973 1650	92,15
17.00	140	105974 1700	92,15	105975 1700	92,15	105976 1700	92,15	105973 1700	92,15
17.50	140	105974 1750	92,15	105975 1750	92,15	105976 1750	92,15	105973 1750	92,15
18.00	140	105974 1800	97,94	105975 1800	97,94	105976 1800	97,94	105973 1800	97,94
18.50	140	105974 1850	97,94	105975 1850	97,94	105976 1850	97,94	105973 1850	97,94
19.00	140	105974 1900	97,94	105975 1900	97,94	105976 1900	97,94	105973 1900	97,94
19.50	140	105974 1950	97,94	105975 1950	97,94	105976 1950	97,94	105973 1950	97,94
20.00	140	105974 2000	103,02	105975 2000	103,02	105976 2000	103,02	105973 2000	103,02
20.50	140	105974 2050	103,02	105975 2050	103,02	105976 2050	103,02	105973 2050	103,02
21.00	140	105974 2100	103,02	105975 2100	103,02	105976 2100	103,02	105973 2100	103,02
22.00	140	105974 2200	108,15	105975 2200	108,15	105976 2200	108,15	105973 2200	108,15
23.00	140	105974 2300	108,15	105975 2300	108,15	105976 2300	108,15	105973 2300	108,15
24.00	140	105974 2400	114,28	105975 2400	114,28	105976 2400	114,28	105973 2400	114,28
25.00	140	105974 2500	114,28	105975 2500	114,28	105976 2500	114,28	105973 2500	114,28
26.00	140	105974 2600	121,75	105975 2600	121,75	105976 2600	121,75	105973 2600	121,75
27.00	140	105974 2700	121,75	105975 2700	121,75	105976 2700	121,75	105973 2700	121,75
28.00	140	105974 2800	121,75	105975 2800	121,75	105976 2800	121,75	105973 2800	121,75
29.00	140	105974 2900	129,23	105975 2900	129,23	105976 2900	129,23	105973 2900	129,23
30.00	140	105974 3000	129,23	105975 3000	129,23	105976 3000	129,23	105973 3000	129,23
30.50	140	105974 3050	129,23	105975 3050	129,23	105976 3050	129,23	105973 3050	129,23
31.00	140	105974 3100	129,23	105975 3100	129,23	105976 3100	129,23	105973 3100	129,23
32.00	140	105974 3200	138,60	105975 3200	138,60	105976 3200	138,60	105973 3200	129,23
33.00	140	105974 3300	138,60	105975 3300	138,60	105976 3300	138,60	105973 3300	138,60
34.00	140	105974 3400	138,60	105975 3400	138,60	105976 3400	138,60		
35.00	140	105974 3500	138,60	105975 3500	138,60	105976 3500	138,60		
		1147		1147		1147		1147	



AM300



Spare parts

	Screw art.no.	€
A1	105085 0020	2,40
A2	105085 0030	2,20
A3	105085 0040	2,20
A4	105085 0050	2,30
A5	105085 0060	2,30
A6	105085 0070	2,20

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	TORX plus art.no.	€
B1	705145 0007	5,82
B2	705145 0008	5,82
B3	705145 0009	6,23
B4	705145 0015	6,65

7113

APX-Drill drilling system

INFO

The APX™ drill is a modular high-performance system for large drill diameters and was developed for use at high cutting speeds and for maximum utilisation of the machine output power of modern CNC machines.

Properties and advantages

- Diameter range from 38.00 mm to 101.60 mm
- Depths of 5xD, 8xD and 10xD
- AMEC® IC cutting inserts with AM300® coating for maximum output
- High flexibility due to a large selection of different pilot geometries in the existing T-A®, GEN2®, GEN3SYS® or GEN3SYS® XT series

We will be pleased to send you more information.



YouTube user video

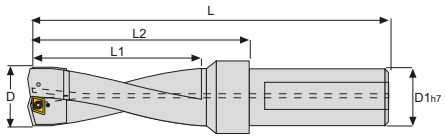
SARA® DRILL SDX solid drill

Werks-norm | 3xD | 5xD | Vc/fz | 10-270





- Surface-hardened carrier tools
- **Available tool lengths of 3xD and 5xD**
- **Diameter 14-55 mm**
- 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
- **4 effective cutting edges per indexable insert**
- **Same indexable insert can be used as centre and periphery plate**
- Good process reliability in applications such as drilling, spot facing, external turning and internal turning
- **With internal coolant supply**



SDX3 - 3xD

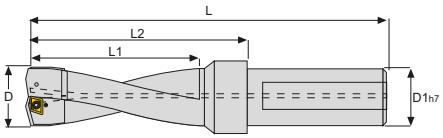
D mm	L1 mm	L2 mm	L mm	D1 mm	suitable indexable inserts	Tightening torque max. N-m				art.no.	€
14	43	60	104	20	XPMT 042004	0.5	A1	B1		**124173** 0014	289,–
15	46	63	107	20	XPMT 042004	0.5	A1	B1		124173 0015	289,–
16	49	66	110	20	XPMT 052804	0.5	A2	B1		124173 0016	289,–
17	52	69	113	20	XPMT 052804	0.5	A2	B1		124173 0017	289,–
18	55	72	116	20	XPMT 052804	0.5	A2	B1		124173 0018	289,–
19	58	78	134	25	XPMT 063306	1.0	A3	B2		124173 0019	289,–
20	61	81	137	25	XPMT 063306	1.0	A3	B2		124173 0020	289,–
21	64	84	140	25	XPMT 063306	1.0	A3	B2		124173 0021	289,–
22	67	87	143	25	XPMT 063306	1.0	A3	B2		124173 0022	289,–
23	70	90	146	25	XPMT 074006	1.5	A4	B3		124173 0023	299,–
24	73	93	149	25	XPMT 074006	1.5	A4	B3		124173 0024	310,–
25	76	96	152	25	XPMT 074006	1.5	A4	B3		124173 0025	310,–
26	79	99	155	25	XPMT 074006	1.5	A4	B3		124173 0026	310,–
27	82	102	158	25	XPMT 074006	1.5	A4	B3		124173 0027	310,–
28	85	105	161	25	XPMT 074006	1.5	A4	B3		124173 0028	310,–
29	88	110	170	32	XPMT 094508	3.5	A5	B4		124173 0029	310,–
30	91	113	173	32	XPMT 094508	3.5	A5	B4		124173 0030	340,–
31	94	116	176	32	XPMT 094508	3.5	A5	B4		124173 0031	340,–
32	97	119	179	32	XPMT 094508	3.5	A5	B4		124173 0032	340,–
33	100	122	182	32	XPMT 094508	3.5	A5	B4		124173 0033	340,–
34	103	125	185	32	XPMT 094508	3.5	A5	B4		124173 0034	340,–
35	106	128	188	32	XPMT 094508	3.5	A5	B4		124173 0035	354,–
36	109	131	191	32	XPMT 094508	3.5	A5	B4		124173 0036	395,–
37	112	134	194	32	XPMT 125812	5.0	A6	B5		124173 0037	395,–
38	115	137	197	32	XPMT 125812	5.0	A6	B5		124173 0038	395,–
39	118	140	200	32	XPMT 125812	5.0	A6	B5		124173 0039	395,–
40	121	143	203	32	XPMT 125812	5.0	A6	B5		124173 0040	395,–
41	124	146	206	32	XPMT 125812	5.0	A6	B5		124173 0041	395,–
42	127	150	220	40	XPMT 125812	5.0	A6	B5		124173 0042	395,–
43	130	153	223	40	XPMT 125812	5.0	A6	B5		124173 0043	395,–
44	133	156	226	40	XPMT 125812	5.0	A6	B5		124173 0044	425,–
45	136	159	229	40	XPMT 125812	5.0	A6	B5		124173 0045	425,–
46	139	170	240	40	XPMT 156812	5.0	A7		C1	124173 0046	425,–
47	141	173	243	40	XPMT 156812	5.0	A7		C1	124173 0047	425,–
48	144	176	246	40	XPMT 156812	5.0	A7		C1	124173 0048	445,–
49	147	179	249	40	XPMT 156812	5.0	A7		C1	124173 0049	445,–
50	150	182	252	40	XPMT 156812	5.0	A7		C1	124173 0050	445,–
51	153	185	255	40	XPMT 156812	5.0	A7		C1	124173 0051	445,–
52	156	188	258	40	XPMT 156812	5.0	A7		C1	124173 0052	445,–
53	159	191	261	40	XPMT 156812	5.0	A7		C1	124173 0053	445,–
54	162	194	264	40	XPMT 156812	5.0	A7		C1	124173 0054	445,–
55	165	197	267	40	XPMT 156812	5.0	A7		C1	124173 0055	445,–

1122

Continued on next page >>>



SDX5 - 5xD



D mm	L1 mm	L2 mm	L mm	D1 mm	suitable indexable inserts	Tightening torque max. N-m			art.no.	€
14	71	88	132	20	XPMT 042004	0.5	A1	B1	**124175** 0014	330,–
15	76	93	137	20	XPMT 042004	0.5	A1	B1	124175 0015	330,–
16	81	98	142	20	XPMT 052804	0.5	A2	B1	124175 0016	330,–
17	86	103	147	20	XPMT 052804	0.5	A2	B1	124175 0017	330,–
18	91	108	152	20	XPMT 052804	0.5	A2	B1	124175 0018	330,–
19	96	116	172	25	XPMT 063306	1.0	A3	B2	124175 0019	330,–
20	101	121	177	25	XPMT 063306	1.0	A3	B2	124175 0020	330,–
21	106	126	182	25	XPMT 063306	1.0	A3	B2	124175 0021	330,–
22	111	131	187	25	XPMT 063306	1.0	A3	B2	124175 0022	330,–
23	116	136	192	25	XPMT 074006	1.5	A4	B3	124175 0023	345,–
24	121	141	197	25	XPMT 074006	1.5	A4	B3	124175 0024	359,–
25	126	146	202	25	XPMT 074006	1.5	A4	B3	124175 0025	359,–
26	131	151	207	25	XPMT 074006	1.5	A4	B3	124175 0026	359,–
27	136	156	212	25	XPMT 074006	1.5	A4	B3	124175 0027	359,–
28	141	161	217	25	XPMT 074006	1.5	A4	B3	124175 0028	359,–
29	146	168	228	32	XPMT 094508	3.5	A5	B4	124175 0029	359,–
30	151	173	233	32	XPMT 094508	3.5	A5	B4	124175 0030	389,–
31	156	178	238	32	XPMT 094508	3.5	A5	B4	124175 0031	389,–
32	161	183	243	32	XPMT 094508	3.5	A5	B4	124175 0032	389,–
33	166	188	248	32	XPMT 094508	3.5	A5	B4	124175 0033	389,–
34	171	193	253	32	XPMT 094508	3.5	A5	B4	124175 0034	389,–
35	176	198	258	32	XPMT 094508	3.5	A5	B4	124175 0035	405,–

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Indexable cutting inserts

ISO P M K S



ISO designation		SDX300 art.no.	€
XPMT 042004-G	10	**124171** 0404	12,50
XPMT 052804-G	10	124171 0504	13,40
XPMT 063306-G	10	124171 0606	13,80
XPMT 074006-G	10	124171 0706	14,30
XPMT 094508-G	10	124171 0908	16,40
XPMT 125812-G	10	124171 1212	16,90
XPMT 156812-G	10	124171 1512	18,10

1123

Spare parts

	Screw art.no.	€
A1	124170 0404	14,40
A2	124170 0504	14,40
A3	124170 0606	14,40
A4	124170 0706	14,40
A5	124170 0908	14,40
A6	124170 1212	14,40
A7	124170 1512	14,40

3106

	TORX art.no.	€
B1	703053 0060	3,09
B2	703053 0070	3,09
B3	703053 0080	3,15
B4	703053 0150	3,35
B5	703053 0200	3,40

7114

	Wrench art.no.	€
C1	705141 0025	6,15

7114



… for special measurement tasks

ATORN®
High quality for great performance

PHOENIX PD solid drill

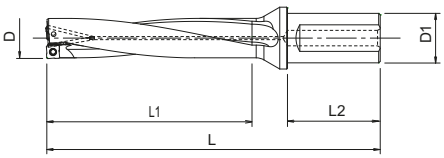
Werks-norm | 2xD | 3xD | 4xD | 5xD | Vc/fz | 10-271

- Optimised substrate geometry for increased stability, improved chip removal and reduced cutting forces
- **Available tool lengths of 2xD, 3xD, 4xD and 5xD**
- **Diameter 15-63 mm**
- **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**
- Same indexable insert can be used as centre and periphery plate
- **With internal coolant supply**

NEW · NUOVO · NEU · NOUVEAU · NUEVO

Patented chip flute geometry (PAT. in Japan)





P2D - 2xD

D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
15	95	30	50	20	0.4	15.8	XCMT 042204ER	A1	B1	**124202** 0150	264,60
15.5	96	31	50	20	0.3	16.1	XCMT 042204ER	A1	B1	124202 0155	264,60
16	97	32	50	20	0.3	16.6	XCMT 042204ER	A1	B1	124202 0160	264,60
16.5	98	33	50	20	0.3	17.1	XCMT 042204ER	A1	B1	124202 0165	264,60
17	102	34	50	20	0.6	18.2	XCMT 052404ER	A1	B1	124202 0170	264,60
17.5	109	35	56	25	0.5	18.5	XCMT 052404ER	A1	B1	124202 0175	276,80
18	110	36	56	25	0.5	19.0	XCMT 052404ER	A1	B1	124202 0180	276,80
18.5	111	37	56	25	0.4	19.3	XCMT 052404ER	A1	B1	124202 0185	276,80
19	112	38	56	25	0.6	20.2	XCMT 062706ER	A2	B2	124202 0190	276,80
19.5	113	39	56	25	0.5	20.5	XCMT 062706ER	A2	B2	124202 0195	276,80
20	114	40	56	25	0.4	20.8	XCMT 062706ER	A2	B2	124202 0200	276,80
20.5	115	41	56	25	0.4	21.3	XCMT 062706ER	A2	B2	124202 0205	276,80
21	121	42	56	25	1.0	23.0	XCMT 073106ER	A3	B3	124202 0210	274,40
21.5	122	43	56	25	0.9	23.3	XCMT 073106ER	A3	B3	124202 0215	292,30
22	123	44	56	25	0.8	23.6	XCMT 073106ER	A3	B3	124202 0220	292,30
22.5	124	45	56	25	0.7	23.9	XCMT 073106ER	A3	B3	124202 0225	292,30
23	125	46	56	25	0.5	24.0	XCMT 073106ER	A3	B3	124202 0230	292,30
23.5	130	47	60	32	0.4	24.3	XCMT 073106ER	A3	B3	124202 0235	292,30
24	131	48	60	32	0.3	24.6	XCMT 073106ER	A3	B3	124202 0240	292,30
24.5	132	49	60	32	0.2	24.9	XCMT 073106ER	A3	B3	124202 0245	292,30
25	133	50	60	32	1.1	27.2	XCMT 083508ER	A4	B4	124202 0250	292,30
25.5	134	51	60	32	0.9	27.3	XCMT 083508ER	A4	B4	124202 0255	292,30
26	135	52	60	32	0.8	27.6	XCMT 083508ER	A4	B4	124202 0260	292,30
26.5	136	53	60	32	0.7	27.9	XCMT 083508ER	A4	B4	124202 0265	292,30
27	137	54	60	32	0.6	28.2	XCMT 083508ER	A4	B4	124202 0270	347,60
28	139	56	60	32	0.3	28.6	XCMT 083508ER	A4	B4	124202 0280	347,60
28.5	140	57	60	32	0.2	28.9	XCMT 083508ER	A4	B4	124202 0285	347,60
29	141	58	60	32	1.3	31.6	XCMT 094008ER	A4	B4	124202 0290	347,60
30	143	60	60	32	1.1	32.2	XCMT 094008ER	A4	B4	124202 0300	347,60
31	155	62	70	40	0.8	32.6	XCMT 094008ER	A4	B4	124202 0310	347,60
32	157	64	70	40	0.6	33.2	XCMT 094008ER	A4	B4	124202 0320	347,60
33	159	66	70	40	0.3	33.6	XCMT 094008ER	A4	B4	124202 0330	347,60
33.5	160	67	70	40	0.2	33.9	XCMT 094008ER	A4	B4	124202 0335	385,60
34	161	68	70	40	1.1	36.2	XCMT 104608ER	A5	B5	124202 0340	392,–
35	163	70	70	40	0.8	36.6	XCMT 104608ER	A5	B5	124202 0350	392,–
36	165	72	70	40	0.8	37.6	XCMT 104608ER	A5	B5	124202 0360	392,–
37	167	74	70	40	0.6	38.2	XCMT 104608ER	A5	B5	124202 0370	405,80
38	169	76	70	40	0.3	38.6	XCMT 104608ER	A5	B5	124202 0380	405,80
39	178	78	70	40	1.0	41.0	XCMT 125010ER	A5	B5	124202 0390	438,90
40	180	80	70	40	0.9	41.8	XCMT 125010ER	A5	B5	124202 0400	438,90
41	182	82	70	40	0.8	42.6	XCMT 125010ER	A5	B5	124202 0410	438,90
42	184	84	70	40	0.6	43.2	XCMT 125010ER	A5	B5	124202 0420	438,90
43	186	86	70	40	0.5	44.0	XCMT 125010ER	A5	B5	124202 0430	438,90
44	188	88	70	40	0.3	44.6	XCMT 125010ER	A5	B5	124202 0440	438,90
45	190	90	70	40	0.9	46.8	XCMT 135212ER	A6	B6	124202 0450	471,10
46	192	92	70	40	0.8	47.6	XCMT 135212ER	A6	B6	124202 0460	471,10
47	194	94	70	40	0.7	48.4	XCMT 135212ER	A6	B6	124202 0470	471,10
48	196	96	70	40	0.5	49.0	XCMT 135212ER	A6	B6	124202 0480	471,10

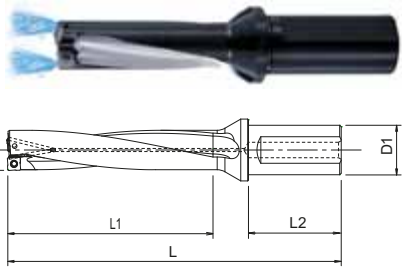
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D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
49	198	98	70	40	0.3	49.6	XCMT 135212ER	A6	B6	124202 0490	471,10
50	200	100	70	40	1.1	52.2	XCMT 145612ER	A6	B6	124202 0500	522,30
51	202	102	70	40	1.0	53.0	XCMT 145612ER	A6	B6	124202 0510	522,30
52	204	104	70	40	0.8	53.6	XCMT 145612ER	A6	B6	124202 0520	522,30
53	206	106	70	40	0.7	54.4	XCMT 145612ER	A6	B6	124202 0530	522,30
54	208	108	70	40	0.6	55.2	XCMT 145612ER	A6	B6	124202 0540	522,30
55	210	110	70	40	0.4	55.8	XCMT 145612ER	A6	B6	124202 0550	522,30
56	212	112	70	40	0.1	56.2	XCMT 145612ER	A6	B6	124202 0560	522,30
57	214	114	70	40	1.1	59.2	XCMT 165912ER	A6	B6	124202 0570	537,30
58	216	116	70	40	1.0	60.0	XCMT 165912ER	A6	B6	124202 0580	537,30
59	218	118	70	40	0.9	60.8	XCMT 165912ER	A6	B6	124202 0590	537,30
60	220	120	70	40	0.8	61.6	XCMT 165912ER	A6	B6	124202 0600	537,30
61	222	122	70	40	0.6	62.2	XCMT 165912ER	A6	B6	124202 0610	537,30
62	224	124	70	40	0.4	62.8	XCMT 165912ER	A6	B6	124202 0620	537,30
63	226	126	70	40	0.2	63.4	XCMT 165912ER	A6	B6	124202 0630	537,30

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P3D - 3xD



D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
15	110	45	50	20	0.4	15.8	XCMT 042204ER	A1	B1	**124203** 0150	294,70
15.5	112	47	50	20	0.3	16.1	XCMT 042204ER	A1	B1	124203 0155	294,70
16	113	48	50	20	0.3	16.6	XCMT 042204ER	A1	B1	124203 0160	294,70
16.5	115	50	50	20	0.3	17.1	XCMT 042204ER	A1	B1	124203 0165	294,70
17	119	51	50	20	0.6	18.2	XCMT 052404ER	A1	B1	124203 0170	294,70
17.5	121	53	50	20	0.5	18.5	XCMT 052404ER	A1	B1	124203 0175	294,70
17.5	127	53	56	25	0.5	18.5	XCMT 052404ER	A1	B1	124203 1175	296,10
18	128	54	56	25	0.5	19.0	XCMT 052404ER	A1	B1	124203 0180	294,70
18.5	130	56	56	25	0.4	19.3	XCMT 052404ER	A1	B1	124203 0185	294,70
19	131	57	56	25	0.6	20.2	XCMT 062706ER	A2	B2	124203 0190	294,70
19.5	133	59	56	25	0.5	20.5	XCMT 062706ER	A2	B2	124203 0195	294,70
20	134	60	56	25	0.4	20.8	XCMT 062706ER	A2	B2	124203 0200	294,70
20.5	136	62	56	25	0.4	21.3	XCMT 062706ER	A2	B2	124203 0205	294,70
21	142	63	56	25	1.0	23.0	XCMT 073106ER	A3	B3	124203 0210	308,40
21.5	144	65	56	25	0.9	23.3	XCMT 073106ER	A3	B3	124203 0215	308,40
22	145	66	56	25	0.8	23.6	XCMT 073106ER	A3	B3	124203 0220	308,40
22.5	147	68	56	25	0.7	23.9	XCMT 073106ER	A3	B3	124203 0225	308,40
23	148	69	56	25	0.5	24.0	XCMT 073106ER	A3	B3	124203 0230	323,50
23.5	154	71	60	32	0.4	24.3	XCMT 073106ER	A3	B3	124203 0235	323,50
24	155	72	60	32	0.3	24.6	XCMT 073106ER	A3	B3	124203 0240	323,50
24.5	157	74	60	32	0.2	24.9	XCMT 073106ER	A3	B3	124203 0245	323,50
25	158	75	60	32	1.1	27.2	XCMT 083508ER	A4	B4	124203 0250	323,50
25.5	160	77	60	32	0.9	27.3	XCMT 083508ER	A4	B4	124203 0255	323,50
26	161	78	60	32	0.8	27.6	XCMT 083508ER	A4	B4	124203 0260	366,60
26.5	163	80	60	32	0.7	27.9	XCMT 083508ER	A4	B4	124203 0265	366,60
27	164	81	60	32	0.6	28.2	XCMT 083508ER	A4	B4	124203 0270	366,60
28	167	84	60	32	0.3	28.6	XCMT 083508ER	A4	B4	124203 0280	366,60
28.5	169	86	60	32	0.2	28.9	XCMT 083508ER	A4	B4	124203 0285	366,60
29	170	87	60	32	1.3	31.6	XCMT 094008ER	A4	B4	124203 0290	366,60
30	173	90	60	32	1.1	32.2	XCMT 094008ER	A4	B4	124203 0300	366,60
31	186	93	70	40	0.8	32.6	XCMT 094008ER	A4	B4	124203 0310	406,90
32	189	96	70	40	0.6	33.2	XCMT 094008ER	A4	B4	124203 0320	406,90
33	192	99	70	40	0.3	33.6	XCMT 094008ER	A4	B4	124203 0330	406,90
33.5	194	101	70	40	0.2	33.9	XCMT 094008ER	A4	B4	124203 0335	406,90
34	195	102	70	40	1.1	36.2	XCMT 104608ER	A5	B5	124203 0340	412,70
35	198	105	70	40	0.8	36.6	XCMT 104608ER	A5	B5	124203 0350	412,70
36	201	108	70	40	0.8	37.6	XCMT 104608ER	A5	B5	124203 0360	412,70
37	204	111	70	40	0.6	38.2	XCMT 104608ER	A5	B5	124203 0370	431,–
38	207	114	70	40	0.3	38.6	XCMT 104608ER	A5	B5	124203 0380	431,–
39	217	117	70	40	1.0	41.0	XCMT 125010ER	A5	B5	124203 0390	466,80
40	220	120	70	40	0.9	41.8	XCMT 125010ER	A5	B5	124203 0400	466,80
41	223	123	70	40	0.8	42.6	XCMT 125010ER	A5	B5	124203 0410	466,80

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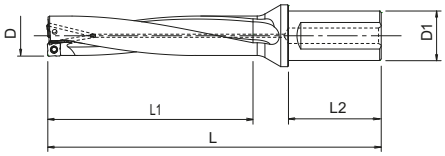
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D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
42	226	126	70	40	0.6	43.2	XCMT 125010ER	A5	B5	124203 0420	466,80
43	229	129	70	40	0.5	44.0	XCMT 125010ER	A5	B5	124203 0430	466,80
44	232	132	70	40	0.3	44.6	XCMT 125010ER	A5	B5	124203 0440	466,80
45	235	135	70	40	0.9	46.8	XCMT 135212ER	A6	B6	124203 0450	509,70
46	238	138	70	40	0.8	47.6	XCMT 135212ER	A6	B6	124203 0460	509,70
47	241	141	70	40	0.7	48.4	XCMT 135212ER	A6	B6	124203 0470	509,70
48	244	144	70	40	0.5	49.0	XCMT 135212ER	A6	B6	124203 0480	509,70
49	247	147	70	40	0.3	49.6	XCMT 135212ER	A6	B6	124203 0490	509,70
50	250	150	70	40	1.1	52.2	XCMT 145612ER	A6	B6	124203 0500	564,50
51	253	153	70	40	1.0	53.0	XCMT 145612ER	A6	B6	124203 0510	564,50
52	256	156	70	40	0.8	53.6	XCMT 145612ER	A6	B6	124203 0520	564,50
53	259	159	70	40	0.7	55.4	XCMT 145612ER	A6	B6	124203 0530	564,50
54	262	162	70	40	0.6	55.2	XCMT 145612ER	A6	B6	124203 0540	564,50
55	265	165	70	40	0.4	55.8	XCMT 145612ER	A6	B6	124203 0550	564,50
56	268	168	70	40	0.1	56.2	XCMT 145612ER	A6	B6	124203 0560	564,50
57	271	171	70	40	1.1	59.2	XCMT 165912ER	A6	B6	124203 0570	578,60
58	274	174	70	40	1.0	60.0	XCMT 165912ER	A6	B6	124203 0580	578,60
59	277	177	70	40	0.9	60.8	XCMT 165912ER	A6	B6	124203 0590	578,60
60	280	180	70	40	0.8	61.6	XCMT 165912ER	A6	B6	124203 0600	578,60
61	283	183	70	40	0.6	62.2	XCMT 165912ER	A6	B6	124203 0610	578,60
62	286	186	70	40	0.4	62.8	XCMT 165912ER	A6	B6	124203 0620	578,60
63	289	189	70	40	0.2	63.4	XCMT 165912ER	A6	B6	124203 0630	578,60

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P4D - 4xD





D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
15	125	60	50	20	0.4	15.8	XCMT 042204ER	A1	B1	**124204** 0150	444,70
15.5	127	62	50	20	0.3	16.1	XCMT 042204ER	A1	B1	124204 0155	444,70
16	129	64	50	20	0.3	16.6	XCMT 042204ER	A1	B1	124204 0160	444,70
16.5	131	66	50	20	0.3	17.1	XCMT 042204ER	A1	B1	124204 0165	444,70
17	136	68	50	20	0.6	18.2	XCMT 052404ER	A1	B1	124204 0170	467,40
17.5	138	70	50	20	0.5	18.5	XCMT 052404ER	A1	B1	124204 0175	467,40
18	146	72	56	25	0.5	19.0	XCMT 052404ER	A1	B1	124204 0180	467,40
18.5	148	74	56	25	0.4	19.3	XCMT 052404ER	A1	B1	124204 0185	467,40
19	150	76	56	25	0.6	20.2	XCMT 062706ER	A2	B2	124204 0190	484,90
19.5	152	78	56	25	0.5	20.5	XCMT 062706ER	A2	B2	124204 0195	484,90
20	154	80	56	25	0.4	20.8	XCMT 062706ER	A2	B2	124204 0200	484,90
20.5	156	82	56	25	0.4	21.3	XCMT 062706ER	A2	B2	124204 0205	484,90
21	163	84	56	25	1.0	23.0	XCMT 073106ER	A3	B3	124204 0210	438,60
21.5	165	86	56	25	0.9	23.3	XCMT 073106ER	A3	B3	124204 0215	438,60
22	167	88	56	25	0.8	23.6	XCMT 073106ER	A3	B3	124204 0220	438,60
22.5	169	90	56	25	0.7	23.9	XCMT 073106ER	A3	B3	124204 0225	438,60
23	171	92	56	25	0.5	24.0	XCMT 073106ER	A3	B3	124204 0230	438,60
23.5	177	94	60	32	0.4	24.3	XCMT 073106ER	A3	B3	124204 0235	438,60
24	179	96	60	32	0.3	24.6	XCMT 073106ER	A3	B3	124204 0240	438,60
24.5	181	98	60	32	0.2	24.9	XCMT 073106ER	A3	B3	124204 0245	438,60
25	183	100	60	32	1.1	27.2	XCMT 083508ER	A4	B4	124204 0250	468,10
25.5	185	102	60	32	0.9	27.3	XCMT 083508ER	A4	B4	124204 0255	468,10
26	187	104	60	32	0.8	27.6	XCMT 083508ER	A4	B4	124204 0260	468,10
26.5	189	106	60	32	0.7	27.9	XCMT 083508ER	A4	B4	124204 0265	468,10
27	191	108	60	32	0.6	28.2	XCMT 083508ER	A4	B4	124204 0270	468,10
28	195	112	60	32	0.3	28.6	XCMT 083508ER	A4	B4	124204 0280	468,10
28.5	197	114	60	32	0.2	28.9	XCMT 083508ER	A4	B4	124204 0285	468,10
29	199	116	60	32	1.3	31.6	XCMT 094008ER	A4	B4	124204 0290	495,50
30	203	120	60	32	1.1	32.2	XCMT 094008ER	A4	B4	124204 0300	495,50
31	207	124	60	32	0.8	32.6	XCMT 094008ER	A4	B4	124204 0310	495,50
32	211	128	60	32	0.6	33.2	XCMT 094008ER	A4	B4	124204 0320	495,50
33	225	132	70	40	0.3	33.6	XCMT 094008ER	A4	B4	124204 0330	495,50
33.5	227	134	70	40	0.2	33.9	XCMT 094008ER	A4	B4	124204 0335	495,50
34	229	136	70	40	1.1	36.2	XCMT 104608ER	A5	B5	124204 0340	502,60
35	233	140	70	40	0.8	36.6	XCMT 104608ER	A5	B5	124204 0350	502,60

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D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
36	237	144	70	40	0.8	37.6	XCMT 104608ER	A5	B5	124204 0360	502,60
37	241	148	70	40	0.6	38.2	XCMT 104608ER	A5	B5	124204 0370	522,50
38	245	152	70	40	0.3	38.6	XCMT 104608ER	A5	B5	124204 0380	522,50
39	256	156	70	40	1.0	41.0	XCMT 125010ER	A5	B5	124204 0390	532,40
40	260	160	70	40	0.9	41.8	XCMT 125010ER	A5	B5	124204 0400	589,–
41	264	164	70	40	0.8	42.6	XCMT 125010ER	A5	B5	124204 0410	589,–
42	268	168	70	40	0.6	43.2	XCMT 125010ER	A5	B5	124204 0420	589,–
43	272	172	70	40	0.5	44.0	XCMT 125010ER	A5	B5	124204 0430	589,–
44	276	176	70	40	0.3	44.6	XCMT 125010ER	A5	B5	124204 0440	589,–
45	280	180	70	40	0.9	46.8	XCMT 135212ER	A6	B6	124204 0450	620,60
46	284	184	70	40	0.8	47.6	XCMT 135212ER	A6	B6	124204 0460	620,60
47	288	188	70	40	0.7	48.4	XCMT 135212ER	A6	B6	124204 0470	620,60
48	292	192	70	40	0.5	49.0	XCMT 135212ER	A6	B6	124204 0480	620,60
49	296	196	70	40	0.3	49.6	XCMT 135212ER	A6	B6	124204 0490	620,60
50	300	200	70	40	1.1	52.2	XCMT 145612ER	A6	B6	124204 0500	690,50
51	304	204	70	40	1.0	53.0	XCMT 145612ER	A6	B6	124204 0510	690,50
52	308	208	70	40	0.8	53.6	XCMT 145612ER	A6	B6	124204 0520	690,50
53	312	212	70	40	0.7	54.4	XCMT 145612ER	A6	B6	124204 0530	690,50
54	316	216	70	40	0.6	55.2	XCMT 145612ER	A6	B6	124204 0540	690,50
55	320	220	70	40	0.4	55.8	XCMT 145612ER	A6	B6	124204 0550	690,50
56	324	224	70	40	0.1	56.2	XCMT 145612ER	A6	B6	124204 0560	690,50
57	328	228	70	40	1.1	59.2	XCMT 165912ER	A6	B6	124204 0570	707,90
58	332	232	70	40	1.0	60.0	XCMT 165912ER	A6	B6	124204 0580	707,90
59	336	236	70	40	0.9	60.8	XCMT 165912ER	A6	B6	124204 0590	707,90
60	340	240	70	40	0.8	61.6	XCMT 165912ER	A6	B6	124204 0600	707,90
61	344	244	70	40	0.6	62.2	XCMT 165912ER	A6	B6	124204 0610	707,90
62	348	248	70	40	0.4	62.8	XCMT 165912ER	A6	B6	124204 0620	707,90
63	352	252	70	40	0.2	63.4	XCMT 165912ER	A6	B6	124204 0630	707,90

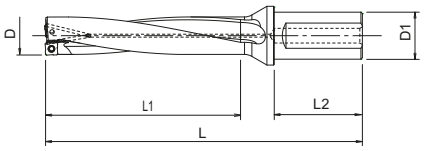
1169



P5D - 5xD

D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
15	140	75	50	20	0.4	15.8	XCMT 042204ER	A1	B1	**124205** 0150	449,80
15.5	143	78	50	20	0.3	16.1	XCMT 042204ER	A1	B1	124205 0155	449,80
16	145	80	50	20	0.3	16.6	XCMT 042204ER	A1	B1	124205 0160	449,80
16.5	148	83	50	20	0.3	17.1	XCMT 042204ER	A1	B1	124205 0165	449,80
17	153	85	50	20	0.6	18.2	XCMT 052404ER	A1	B1	124205 0170	473,90
17.5	156	88	50	20	0.5	18.5	XCMT 052404ER	A1	B1	124205 0175	473,90
18	164	90	56	25	0.5	19.0	XCMT 052404ER	A1	B1	124205 0180	473,90
18.5	167	93	56	25	0.4	19.3	XCMT 052404ER	A1	B1	124205 0185	473,90
19	169	95	56	25	0.6	20.2	XCMT 062706ER	A2	B2	124205 0190	491,40
19.5	172	98	56	25	0.5	20.5	XCMT 062706ER	A2	B2	124205 0195	491,40
20	174	100	56	25	0.4	20.8	XCMT 062706ER	A2	B2	124205 0200	491,40
20.5	177	103	56	25	0.4	21.3	XCMT 062706ER	A2	B2	124205 0205	491,40
21	184	105	56	25	1.0	23.0	XCMT 073106ER	A3	B3	124205 0210	466,10
21.5	187	108	56	25	0.9	23.3	XCMT 073106ER	A3	B3	124205 0215	466,10
22	189	110	56	25	0.8	23.6	XCMT 073106ER	A3	B3	124205 0220	466,10
22.5	192	113	56	25	0.7	23.9	XCMT 073106ER	A3	B3	124205 0225	466,10
23	194	115	56	25	0.5	24.0	XCMT 073106ER	A3	B3	124205 0230	466,10
23.5	201	118	60	32	0.4	24.3	XCMT 073106ER	A3	B3	124205 0235	466,10
24	203	120	60	32	0.3	24.6	XCMT 073106ER	A3	B3	124205 0240	466,10
24.5	206	123	60	32	0.2	24.9	XCMT 073106ER	A3	B3	124205 0245	466,10
25	208	125	60	32	1.1	27.2	XCMT 083508ER	A4	B4	124205 0250	497,40
25.5	211	128	60	32	0.9	27.3	XCMT 083508ER	A4	B4	124205 0255	497,40
26	213	130	60	32	0.8	27.6	XCMT 083508ER	A4	B4	124205 0260	497,40
26.5	216	133	60	32	0.7	27.9	XCMT 083508ER	A4	B4	124205 0265	497,40
27	218	135	60	32	0.6	28.2	XCMT 083508ER	A4	B4	124205 0270	497,40
28	223	140	60	32	0.3	28.6	XCMT 083508ER	A4	B4	124205 0280	497,40
28.5	226	143	60	32	0.2	28.9	XCMT 083508ER	A4	B4	124205 0285	497,40
29	228	145	60	32	1.3	31.6	XCMT 094008ER	A4	B4	124205 0290	528,40

1169



Continued on next page >>>

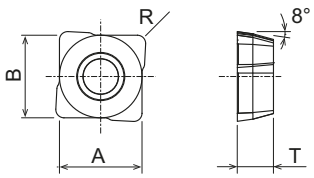
D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
30	233	150	60	32	1.1	32.2	XCMT 094008ER	A4	B4	124205 0300	528,40
31	238	155	60	32	0.8	32.6	XCMT 094008ER	A4	B4	124205 0310	528,40
32	243	160	60	32	0.6	33.2	XCMT 094008ER	A4	B4	124205 0320	528,40
33	258	165	70	40	0.3	33.6	XCMT 094008ER	A4	B4	124205 0330	528,40
33.5	261	168	70	40	0.2	33.9	XCMT 094008ER	A4	B4	124205 0335	528,40
34	263	170	70	40	1.1	36.2	XCMT 104608ER	A5	B5	124205 0340	538,40
35	268	175	70	40	0.8	36.6	XCMT 104608ER	A5	B5	124205 0350	538,40
36	273	180	70	40	0.8	37.6	XCMT 104608ER	A5	B5	124205 0360	538,40
37	278	185	70	40	0.6	38.2	XCMT 104608ER	A5	B5	124205 0370	560,70
38	283	190	70	40	0.3	38.6	XCMT 104608ER	A5	B5	124205 0380	560,70
39	295	195	70	40	1.0	41.0	XCMT 125010ER	A5	B5	124205 0390	624,80
40	300	200	70	40	0.9	41.8	XCMT 125010ER	A5	B5	124205 0400	624,80
41	305	205	70	40	0.8	42.6	XCMT 125010ER	A5	B5	124205 0410	624,80
42	310	210	70	40	0.6	43.2	XCMT 125010ER	A5	B5	124205 0420	624,80
43	315	215	70	40	0.5	44.0	XCMT 125010ER	A5	B5	124205 0430	624,80
44	320	220	70	40	0.3	44.6	XCMT 125010ER	A5	B5	124205 0440	624,80
45	325	225	70	40	0.9	46.8	XCMT 135212ER	A6	B6	124205 0450	661,–
46	330	230	70	40	0.8	47.6	XCMT 135212ER	A6	B6	124205 0460	661,–
47	335	235	70	40	0.7	48.4	XCMT 135212ER	A6	B6	124205 0470	661,–
48	340	240	70	40	0.5	49.0	XCMT 135212ER	A6	B6	124205 0480	661,–
49	345	245	70	40	0.3	49.6	XCMT 135212ER	A6	B6	124205 0490	661,–
50	350	250	70	40	1.1	52.2	XCMT 145612ER	A6	B6	124205 0500	800,70
51	355	255	70	40	1.0	53.0	XCMT 145612ER	A6	B6	124205 0510	800,70
52	360	260	70	40	0.8	53.6	XCMT 145612ER	A6	B6	124205 0520	800,70
53	365	265	70	40	0.7	54.4	XCMT 145612ER	A6	B6	124205 0530	800,70
54	370	270	70	40	0.6	55.2	XCMT 145612ER	A6	B6	124205 0540	800,70
55	375	275	70	40	0.4	55.8	XCMT 145612ER	A6	B6	124205 0550	800,70
56	380	280	70	40	0.1	56.2	XCMT 145612ER	A6	B6	124205 0560	800,70
57	385	285	70	40	1.1	59.2	XCMT 165912ER	A6	B6	124205 0570	828,90
58	390	290	70	40	1.0	60.0	XCMT 165912ER	A6	B6	124205 0580	828,90
59	395	295	70	40	0.9	60.8	XCMT 165912ER	A6	B6	124205 0590	828,90
60	400	300	70	40	0.8	61.6	XCMT 165912ER	A6	B6	124205 0600	828,90
61	405	305	70	40	0.6	62.2	XCMT 165912ER	A6	B6	124205 0610	828,90
62	410	310	70	40	0.4	62.8	XCMT 165912ER	A6	B6	124205 0620	828,90
63	415	315	70	40	0.2	63.4	XCMT 165912ER	A6	B6	124205 0630	828,90

1169

Indexable cutting inserts

ISO designation	ISO P M			ISO K			ISO N		
		-DM XP9020			-DR XP1010			-DN CK110	
		art.no.	€		art.no.	€		art.no.	€
XCMT 042204ER	10	**124210** 2204	9,70	10	**124211** 2204	9,70	10	**124212** 2204	8,40
XCMT 052404ER	10	124210 2404	10,–	10	124211 2404	10,–	10	124212 2404	9,20
XCMT 062706ER	10	124210 2706	10,50	10	124211 2604	10,50	10	124212 2604	9,20
XCMT 073106ER	10	124210 3106	12,40	10	124211 3106	12,40	10	124212 3106	12,40
XCMT 083508ER	10	124210 3508	13,10	10	124211 3508	13,20	10	124212 3508	13,20
XCMT 094008ER	10	124210 4008	14,20	10	124211 4008	14,30	10	124212 4008	14,30
XCMT 104608ER	10	124210 4608	14,90	10	124211 4608	14,90	10	124212 4608	13,30
XCMT 125010ER	10	124210 5010	16,–	10	124211 5010	16,–	10	124212 5010	14,70
XCMT 135212ER	10	124210 5212	17,20	10	124211 5212	17,20	10	124212 5212	15,80
XCMT 145612ER	10	124210 5612	19,40	10	124211 5612	19,40	10	124212 5612	18,10
XCMT 165912ER	10	124210 5912	23,10	10	124211 5912	23,10	10	124212 5912	21,80
		1170			1170			1170	





Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	124215 0004	7,60	B1	703054 0060	4,30
A2	124215 0006	7,30	B2	703054 0070	4,30
A3	124215 0007	6,20	B3	703054 0080	4,30
A4	124215 0008	4,90	B4	703054 0090	4,55
A5	124215 0010	5,80	B5	703054 0150	5,–
A6	124215 0013	5,80	B6	703054 0200	5,75
	1169			7114	

SARA SARAcut 2.0 drilling and turning tool

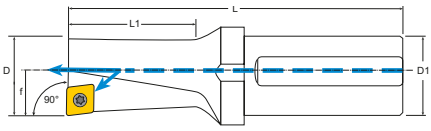
10-272

NEW · NUOVO · NY · NOUVEAU · NUEVO

1 tool for 4 applications

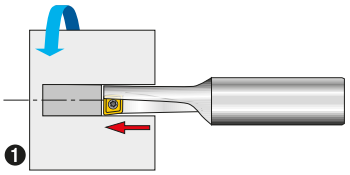


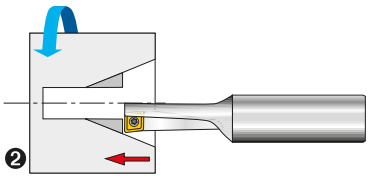
- **Drilling and turning with one tool**
- **Multifunctional:**
  Solid drilling with a level-bottomed drill hole (Drawing 1)
  Turning internal contours (Drawing 2)
  Turning of flat contours (Drawing 3)
  Turning external contours (Drawing 4)
  (Note change of rotational direction)
- Reduced storage 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**
- With internal coolant supply



1.5 x D

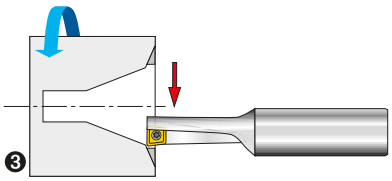
D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	7.85	8.3	80	12	4	12	XPNT 0402	A1	B1	**129101** 0080	116,–	**129102** 0080	116,–
10	9.85	10.5	90	15	5	12	XPNT 0502	A2	B1	129101 0100	118,–	129102 0100	118,–
12	11.85	12.5	100	18	6	16	XPNT 0602	A3	B2	129101 0120	122,–	129102 0120	122,–
14	13.85	14.5	110	21	7	16	XPNT 0703	A4	B3	129101 0140	122,–		
16	15.85	16.5	125	24	8	20	XPNT 0803	A5	B4	129101 0160	132,–		
18	17.85	18.5	135	27	9	25	XPNT 0904	A5	B4	129101 0180	137,–		
20	19.8	20.5	150	30	10	25	XPNT 1004	A6	B5	129101 0200	151,–		
25	24.8	25.8	180	37.5	12.5	32	XPNT 1305	A7	B6	129101 0250	162,–		
32	31.8	33	200	48	16	40	XPNT 1706	A7	B6	129101 0320	172,–		
										1122		1122	

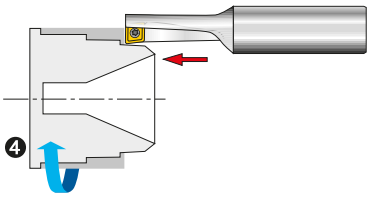




2.25 x D

D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	7.85	8.3	60	18	4	10	XPNT 0402	A1	B1	**129201** 0080	162,–	**129202** 0080	162,–
10	9.85	10.5	69.5	22.5	5	12	XPNT 0502	A2	B1	129201 0100	164,–	129202 0100	164,–
12	11.85	12.5	78	27	6	16	XPNT 0602	A3	B2	129201 0120	167,–	129202 0120	167,–
14	13.85	14.5	83.5	31.5	7	16	XPNT 0703	A4	B3	129201 0140	169,–		
16	15.85	16.5	94	36	8	20	XPNT 0803	A5	B4	129201 0160	178,–		
18	17.85	18.5	109.5	40.5	9	25	XPNT 0904	A5	B4	129201 0180	180,–		
20	19.8	20.5	111	45	10	25	XPNT 1004	A6	B5	129201 0200	182,–		
25	24.8	25.8	129	56.5	12.5	32	XPNT 1304	A7	B6	129201 0250	196,–		
32	31.8	33	158	72	16	40	XPNT 1706	A7	B6	129201 0320	225,–		
										1122		1122	





XPNT indexable inserts

ISO designation		ISO PMS SP300 art.no.	€		ISO PK SP350 art.no.	€
XPNT 040204 EL	10	**129300** 0002	8,95	10	**129350** 0002	8,95
XPNT 040204 ER	10	129300 0001	8,95	10	129350 0001	8,95
XPNT 050204 EN	10	129300 0003	8,95	10	129350 0003	8,95
XPNT 060204 EN	10	129300 0004	9,85	10	129350 0004	9,85
XPNT 070304 EN	10	129300 0005	9,85	10	129350 0005	9,85
XPNT 080304 EN	10	129300 0006	10,05	10	129350 0006	10,05
XPNT 090404 EN	10	129300 0007	10,15	10	129350 0007	10,15
XPNT 100404 EN	10	129300 0008	11,25	10	129350 0008	11,25
XPNT 100408 EN	10	129300 0009	11,25	10	129350 0009	11,25
XPNT 130504 EN	10	129300 0010	12,40	10	129350 0010	12,40
XPNT 130508 EN	10	129300 0011	12,40	10	129350 0011	12,40
XPNT 170608 EN	10	129300 0012	13,30	10	129350 0012	13,30
		1123			1123	



Spare parts

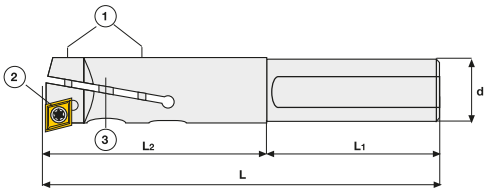
	Screw art.no.	€
A1	129380 0618	4,95
A2	129380 0620	4,95
A3	129380 0722	4,95
A4	129380 0825	4,95
A5	129380 0930	4,95
A6	129380 1535	9,95
A7	129380 2045	9,95
	1123	

	TORX plus art.no.	€
B1	705145 0006	5,82
B2	705145 0007	5,82
B3	705145 0008	5,82
B4	705145 0009	6,23
B5	705145 0015	6,65
B6	705145 0020	7,06
	7113	

ATORN® Adjustable precision boring bars

The cost-efficient alternative to spindle tools

- 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**



1 = adjusting screw, 2 = indexable insert screw, 3 = counter screw



D min. mm	D max. mm	L mm	L1 mm	L2 mm	d mm	suitable indexable inserts	suitable regulation screw	suitable lock screw	A1	B1	art.no.	€
10	12	100	70	30	10	CC..0602..	RE 1	BL 0	A1	B1	**323001** 1012	198,–
12	15	105	70	30	12	CC..0602..	RE 1	BL 1	A1	B1	323001 1215	215,–
15	20	110	60	50	16	CC..0602..	RE 2	BL 2	A1	B1	323001 1520	220,–
20	25	120	60	60	20	CC..0602..	RE 3	BL 3	A1	B1	323001 2025	235,–
25	30	140	70	70	25	CC..09T3..	RE 4	BL 4	A2	B2	323001 2530	245,–
30	35	160	70	90	25	CC..09T3..	RE 5	BL 5	A2	B2	323001 3035	260,–
35	40	170	70	100	32	CC..09T3..	RE 6	BL 6	A2	B2	323001 3540	305,–
40	45	190	70	120	32	CC..09T3..	RE 7	BL 7	A2	B2	323001 4045	330,–
45	50	220	70	150	32	CC..09T3..	RE 8	BL 10	A2	B2	323001 4550	375,–

3105

Regulation screw

Designation	for Ø mm	art.no.	€
RE 1	10-15	**323002** 0002	4,95
RE 2	15-20	323002 0003	4,95
RE 3	20-25	323002 0004	4,95
RE 4	25-30	323002 0005	4,95
RE 5	30-35	323002 0006	4,95
RE 6	35-40	323002 0007	4,95
RE 7	40-45	323002 0008	4,95
RE 8	45-50	323002 0009	4,95

3106

Counter screw

Designation	for Ø mm	art.no.	€
BL 0	10-12	**323003** 0001	5,95
BL 1	12-15	323003 0002	5,95
BL 2	15-20	323003 0003	5,95
BL 3	25-30	323003 0004	5,95
BL 4	25-30	323003 0005	5,95
BL 5	30-35	323003 0006	6,55
BL 6	35-40	323003 0007	6,55
BL 7	40-45	323003 0008	7,40
BL10	45-50	323003 0009	7,40

3106

For ISO indexable inserts, please refer to the "Turning" section

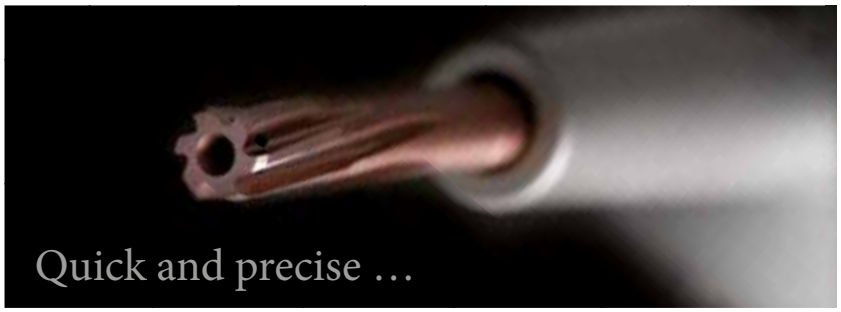
Spare parts

Screw	art.no.	€
A1	262551 0025	4,90
A2	262551 0035	7,15

3106

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

7114



… HPC with internal cooling

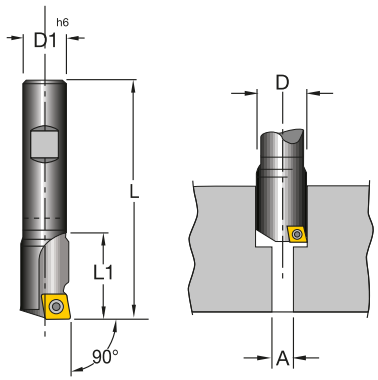
ATORN®
High quality for great performance

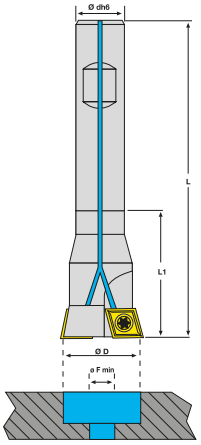
ATORN® Core and countersink drill

h6 | DIN 1835 B | Z 1 | Z 2

For ISO indexable inserts, please refer to the "Turning" section

- **With internal cooling**
- For countersinking and drilling
- **The diameter to be drilled must not be smaller than dimension A!**
- **Bore tolerances:** For countersinks in accordance with DIN 74; D = +0.1/-0.1 mm









Single-cutter boring bar with internal cooling

D mm	L mm	L1 mm	D1 h6 mm	A mm	for indexable inserts			art.no.	€
10	85	15	12	4	CCM. 0602..	A1	B1	**164003** 0100	82,50
11	85	15	12	4	CCM. 0602..	A1	B1	164003 0110	82,50
12	85	18	12	4	CCM. 0602..	A1	B1	164003 0120	82,50
13	85	23	12	5	CCM. 0602..	A1	B1	164003 0130	84,50
14	85	23	12	5	CCM. 0602..	A1	B1	164003 0140	84,50
15	85	30	12	5	CCM. 0602..	A1	B1	164003 0150	82,50
16	85	30	12	5	CCM. 0602..	A1	B1	164003 0160	85,50
17	95	30	16	6	CCM. 09T3..	A2	B2	164003 0170	109,–
18	95	40	16	6	CCM. 09T3..	A2	B2	164003 0180	107,–
19	95	40	16	6	CCM. 09T3..	A2	B2	164003 0190	111,–
20	95	40	16	5	CCM. 09T3..	A2	B2	164003 0200	130,–
21	95	42	16	5	CCM. 09T3..	A2	B2	164003 0210	132,–
22	95	42	16	6	CCM. 09T3..	A2	B2	164003 0220	132,–
23	95	42	16	6	CCM. 09T3..	A2	B2	164003 0230	132,–
24	95	42	16	6	CCM. 09T3..	A2	B2	164003 0240	134,–
25	95	42	16	8	CCM. 09T3..	A2	B2	164003 0250	132,–
26	120	56	20	8	CCM. 09T3..	A2	B2	164003 0260	142,–
27	120	56	20	8	CCM. 09T3..	A2	B2	164003 0270	144,–
28	120	56	20	10	CCM. 09T3..	A2	B2	164003 0280	144,–
29	120	56	20	10	CCM. 09T3..	A2	B2	164003 0290	144,–
30	120	56	20	10	CCM. 09T3..	A2	B2	164003 0300	144,–
31	120	56	20	12	CCM. 09T3..	A2	B2	164003 0310	144,–
32	120	56	20	12	CCM. 09T3..	A2	B2	164003 0320	144,–
33	120	56	20	12	CCM. 09T3..	A2	B2	164003 0330	144,–

1132

Twin-cutter boring bar with internal cooling

D mm	L mm	L1 mm	D1 h6 mm	A mm	for indexable inserts			art.no.	€
16	92	30	12	5	CCM. 0602..	A1	B1	**164005** 0016	153,–
17	94	32	16	6	CCM. 0602..	A1	B1	164005 0017	154,–
18	97	41	16	7	CCM. 0602..	A1	B1	164005 0018	163,–
19	100	41	16	8	CCM. 0602..	A1	B1	164005 0019	163,–
20	102	41	16	9	CCM. 0602..	A1	B1	164005 0020	175,–
21	105	41	16	10	CCM. 0602..	A1	B1	164005 0021	181,–
22	110	41	16	11	CCM. 0602..	A1	B1	164005 0022	194,–
23	112	41	16	12	CCM. 0602..	A1	B1	164005 0023	194,–
24	115	41	16	13	CCM. 0602..	A1	B1	164005 0024	215,–
25	120	40	16	8	CCM. 09T3..	A2	B2	164005 0025	210,–
26	125	55	20	9	CCM. 09T3..	A2	B2	164005 0026	210,–
27	128	55	20	10	CCM. 09T3..	A2	B2	164005 0027	215,–
28	130	55	20	11	CCM. 09T3..	A2	B2	164005 0028	215,–
29	132	55	20	12	CCM. 09T3..	A2	B2	164005 0029	230,–
30	134	55	20	13	CCM. 09T3..	A2	B2	164005 0030	225,–
31	136	55	20	14	CCM. 09T3..	A2	B2	164005 0031	230,–
32	138	55	20	15	CCM. 09T3..	A2	B2	164005 0032	225,–
33	140	55	20	16	CCM. 09T3..	A2	B2	164005 0033	225,–
34	140	60	25	16	CCM. 09T3..	A2	B2	164005 0034	235,–
35	140	60	25	17	CCM. 09T3..	A2	B2	164005 0035	235,–
36	140	60	25	18	CCM. 09T3..	A2	B2	164005 0036	235,–
37	140	60	25	19	CCM. 09T3..	A2	B2	164005 0037	235,–
38	140	60	25	20	CCM. 09T3..	A2	B2	164005 0038	235,–
39	140	60	25	21	CCM. 09T3..	A2	B2	164005 0039	260,–
40	140	60	25	22	CCM. 09T3..	A2	B2	164005 0040	260,–
41	140	60	25	23	CCM. 09T3..	A2	B2	164005 0041	260,–
42	140	60	25	24	CCM. 09T3..	A2	B2	164005 0042	260,–

1132

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	4,90
A2	320901 2502	10,50

3106

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

7114

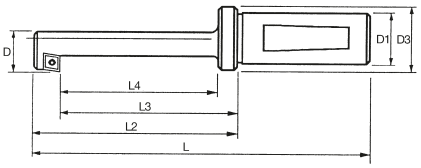
ATORN® 180° reverse countersink

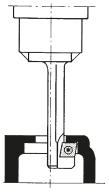
h6 | Vc/fz | 10-277



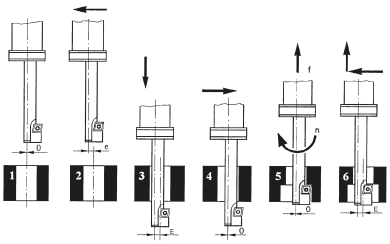
- For rotating use with stationary workpieces
- **For ISO indexable cutting inserts (CPMT or CCM and CCG)**
- With internal cooling, (Ø15 and Ø18 without internal cooling)
- Straight shank with clamping surface (Whistle notch)
- D5 = maximum countersink diameter

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.





D5 = max. achievable diameter



D mm	D min. mm	L mm	D3 mm	L2 mm	L2 mm	L3 mm	L4 mm	D1 mm	E mm	for indexable inserts	Clamping screw	Wrench dimension	art.no.	€
15	8.5	105	25	55	55	42	35	20	3.50	CPMT05T1..	M2.2 x 6	T7	**152501** 0150	182,–
18	10.5	112	25	62	62	47	40	20	4.00	CC..0602..	M2.5 x 6	T8	152501 0180	146,–
20	13.0	117	25	67	67	52	45	20	3.75	CC..0602..	M2.5 x 6	T8	152501 0200	161,–
24	15.0	122	25	72	72	57	50	20	4.75	CC..0602..	M2.5 x 6	T8	152501 0240	175,–
26	17.0	132	25	82	82	67	60	20	5.00	CC..0602..	M2.5 x 6	T8	152501 0260	188,–
30	19.0	142	25	92	92	77	65	20	6.00	CC..0602..	M2.5 x 6	T8	152501 0300	205,–
33	21.0	152	25	102	102	82	75	20	6.50	CC..09T3..	M4 x 8	T15	152501 0330	235,–
36	23.0	173	40	113	113	93	85	32	7.00	CC..09T3..	M4 x 8	T15	152501 0360	270,–
40	25.0	183	40	123	123	103	95	32	8.00	CC..09T3..	M4 x 8	T15	152501 0400	285,–
43	30.0	183	40	123	123	103	95	32	7.00	CC..09T3..	M4 x 8	T15	152501 0430	315,–
48	33.0	223	40	163	163	143	135	32	8.00	CC..09T3..	M4 x 8	T15	152501 0480	330,–
53	36.0	210	-	140	140	-	110	40	9.00	CC..1204..	M5 x 11	T20	152501 0530	365,–
57	39.0	220	-	150	150	-	120	40	9.50	CC..1204..	M5 x 11	T20	152501 0570	375,–
66	45.0	245	-	165	165	-	135	50	11.00	CC..1204..	M5 x 11	T20	152501 0660	395,–
76	52.0	265	-	185	185	-	155	50	12.50	CC..1204..	M5 x 11	T20	152501 0760	435,–

1132

Spare parts

	Screw art.no.	€
A1	152599 0001	4,95
A2	262551 0025	4,90
A3	320901 2502	10,50

3106

	TORX art.no.	€
B1	703053 0060	3,09
B2	703053 0080	3,15
B3	703053 0150	3,35

7114

ATORN® ISO indexable cutting inserts CPMT..

For further ISO indexable inserts, please refer to the "Turning" section



ISO designation		ISO P Coated HC 4635 art.no.	€
CPMT 05T104	10	**331260** 0032	13,30

1132

SARA® DRILL SD1 solid drilling tool

HSS-E PM | 15xD | TiN | Vc/fz | 10-269

- **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	Working area mm	art.no.	€
A1-55	49 - 55	**104501** 0055	619,–
A2-65	55 - 65	104501 0065	619,–
B-80	65 - 80	104501 0080	759,–
C-100	80 - 100	104501 0100	889,–
D-120	100 - 120	104501 0120	1.039,–

1118

Designation	Working area mm	art.no.	€
E-150	120 - 150	104501 0150	2.369,–
F-180	150 - 180	104501 0180	3.209,–
G-210	180 - 210	104501 0210	3.939,–
H-240	210 - 240	104501 0240	5.249,–
I-270	240 - 270	104501 0270	6.649,–

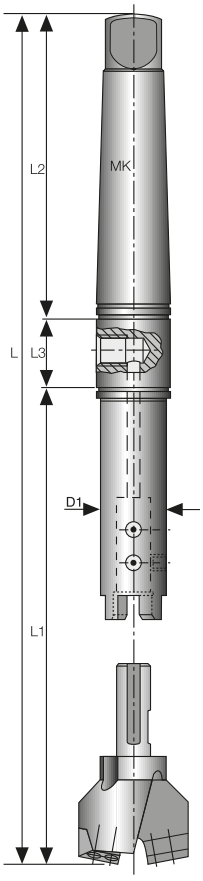
1118



Boring bar with Morse taper shank

for boring head	L1 mm	L2 mm	L3 mm	D1 mm	Shank	art.no.	€
A1/A2	200	158	30	29	MT 4	**104505** 0055	350,–
B-80	200	158	30	35	MT 4	104505 0080	370,–
C-100	200	158	30	38	MT 4	104505 0100	415,–
D-120	200	192	30	45	MT 5	104505 0120	719,–
E-150	200	192	30	55	MT 5	104505 0150	859,–
F-180	200	192	30	65	MT 5	104505 0180	999,–
G-210	200	192	30	75	MT 5	104505 0210	1.169,–
H-240	200	267	40	85	MT 6	104505 0240	1.559,–
I-270	200	267	40	95	MT 6	104505 0270	1.679,–

1118



Continued on next page >>>

Extension

150 mm and 300 mm

for boring head	D1 mm	150 mm art.no.	€	300 mm art.no.	€
A1/A2	29	**104510** 0055	290,–	**104515** 0055	335,–
B-80	35	104510 0080	315,–	104515 0080	390,–
C-100	38	104510 0100	335,–	104515 0100	410,–
D-120	45	104510 0120	385,–	104515 0120	435,–
E-150	55	104510 0150	719,–	104515 0150	799,–
F-180	65	104510 0180	829,–	104515 0180	919,–
G-210	75	104510 0210	989,–	104515 0210	1.019,–
H-240	85	104510 0240	1.099,–	104515 0240	1.199,–
I-270	95	104510 0270	1.319,–	104515 0270	1.419,–
		1118		1118	



Carbide guide

For use with extremely deep bores

for boring head	Working area mm	art.no.	€
B-80	65 - 70	**104520** 0070	151,–
B-80	70 - 80	104520 0080	151,–
C-100 / D-120	80 - 120	104520 0120	151,–
		1118	

for boring head	Working area mm	art.no.	€
E-150 / F-180	120 - 180	104520 0180	455,–
G-210 / H-240 / I-270	180 - 270	104520 0270	629,–
		1118	



Centre bit

for boring head	D mm	Working area mm	art.no.	€
A1-55 to D-120	12	49 - 120	**104530** 0012	54,90
E-150 to I-270	20	120 - 270	104530 0020	76,50
			1119	



Coolant ring

Compl. with coupling, grip bar and circlips

for boring head	Working area mm	Shank	art.no.	€
A1-55 to C-100	49 - 100	MT 4	**104540** 0001	174,–
D-120 to G-210	100 - 210	MT 5	104540 0002	275,–
H-240 to I-270	210 - 270	MT 6	104540 0003	719,–
			1118	



Replacement clamps

For boring heads (prices per set of 2 heads)

for boring head	art.no.	€
A1-55	**104570** 0001	97,–
A2-65	104570 0002	97,–
B-80	104570 0003	97,–
C-100	104570 0004	111,–
D-120	104570 0005	129,–
E-150	104570 0006	315,–
F-180	104570 0007	385,–
G-210	104570 0008	420,–
H-240	104570 0009	420,–
I-270	104570 0010	420,–
	1118	



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Drilling with 100 mm diameter into solid material with just 5 KW of drive power?

Use *SARA-DRILL* of course

Working example of a user of ***SARA-Drill***

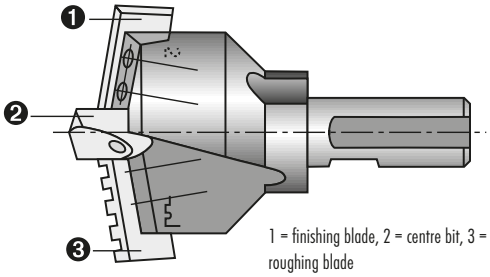
Workpiece:	Compression cylinder
Material:	1.7225, 42CrMo4V
Hole:	Diameter 100 mm, depth 200 mm
Machine:	Milling machine
Feed rate f:	0.18 mm/rev
Cutting speed Vc:	18 m/min

Drive power: approx. 4.5 KW

Result: 65% savings in working time







1 = finishing blade, 2 = centre bit, 3 = roughing blade

SARA-DRILL cutting edge

- **For SARA-DRILL** 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)

D mm	for boring head	art.no.	€	TiN art.no.	TiN €
49	A1-55	**104550** 0049	159,–	**104555** 0049	170,–
50	A1-55	104550 0050	159,–	104555 0050	170,–
51	A1-55	104550 0051	159,–	104555 0051	170,–
52	A1-55	104550 0052	159,–	104555 0052	170,–
53	A1-55	104550 0053	159,–	104555 0053	170,–
54	A1-55	104550 0054	159,–	104555 0054	170,–
55	A1-55,A2-65	104550 0055	159,–	104555 0055	170,–
56	A2-65	104550 0056	159,–	104555 0056	176,–
57	A2-65	104550 0057	159,–	104555 0057	176,–
58	A2-65	104550 0058	159,–	104555 0058	176,–
59	A2-65	104550 0059	159,–	104555 0059	176,–
60	A2-65	104550 0060	159,–	104555 0060	176,–
61	A2-65	104550 0061	163,–	104555 0061	176,–
62	A2-65	104550 0062	163,–	104555 0062	176,–
63	A2-65	104550 0063	163,–	104555 0063	176,–
64	A2-65	104550 0064	163,–	104555 0064	176,–
65	A2-65,B-080	104550 0065	163,–	104555 0065	176,–
66	B-80	104550 0066	196,–	104555 0066	210,–
67	B-80	104550 0067	196,–	104555 0067	210,–
68	B-80	104550 0068	196,–	104555 0068	210,–
69	B-80	104550 0069	196,–	104555 0069	210,–
70	B-80	104550 0070	196,–	104555 0070	210,–
71	B-80	104550 0071	196,–	104555 0071	210,–
72	B-80	104550 0072	196,–	104555 0072	210,–
73	B-80	104550 0073	196,–	104555 0073	210,–
74	B-80	104550 0074	205,–	104555 0074	235,–
75	B-80	104550 0075	205,–	104555 0075	235,–
76	B-80	104550 0076	205,–	104555 0076	235,–
77	B-80	104550 0077	205,–	104555 0077	235,–
78	B-80	104550 0078	205,–	104555 0078	235,–
79	B-80	104550 0079	205,–	104555 0079	235,–
80	B-80,C-100	104550 0080	220,–	104555 0080	255,–
81	C-100	104550 0081	220,–	104555 0081	255,–
82	C-100	104550 0082	220,–	104555 0082	255,–
83	C-100	104550 0083	220,–	104555 0083	255,–
84	C-100	104550 0084	220,–	104555 0084	255,–
85	C-100	104550 0085	220,–	104555 0085	255,–
86	C-100	104550 0086	220,–	104555 0086	255,–
87	C-100	104550 0087	220,–	104555 0087	255,–
88	C-100	104550 0088	220,–	104555 0088	255,–
89	C-100	104550 0089	220,–	104555 0089	255,–
90	C-100	104550 0090	220,–	104555 0090	255,–
91	C-100	104550 0091	235,–	104555 0091	275,–
92	C-100	104550 0092	235,–	104555 0092	275,–
93	C-100	104550 0093	235,–	104555 0093	275,–
94	C-100	104550 0094	235,–	104555 0094	275,–
95	C-100	104550 0095	235,–	104555 0095	275,–
		1119		1119	

D mm	for boring head	art.no.	€	TiN art.no.	TiN €
96	C-100	104550 0096	235,–	104555 0096	275,–
97	C-100	104550 0097	235,–	104555 0097	275,–
98	C-100	104550 0098	235,–	104555 0098	275,–
99	C-100	104550 0099	235,–	104555 0099	275,–
100	C-100,D- 120	104550 0100	235,–	104555 0100	275,–
101	D-120	104550 0101	250,–	104555 0101	290,–
102	D-120	104550 0102	250,–	104555 0102	290,–
103	D-120	104550 0103	250,–	104555 0103	290,–
104	D-120	104550 0104	250,–	104555 0104	290,–
105	D-120	104550 0105	250,–	104555 0105	290,–
106	D-120	104550 0106	250,–	104555 0106	290,–
107	D-120	104550 0107	250,–	104555 0107	290,–
108	D-120	104550 0108	250,–	104555 0108	290,–
109	D-120	104550 0109	250,–	104555 0109	290,–
110	D-120	104550 0110	250,–	104555 0110	290,–
111	D-120	104550 0111	295,–	104555 0111	335,–
112	D-120	104550 0112	295,–	104555 0112	335,–
113	D-120	104550 0113	295,–	104555 0113	335,–
114	D-120	104550 0114	295,–	104555 0114	335,–
115	D-120	104550 0115	295,–	104555 0115	335,–
116	D-120	104550 0116	295,–	104555 0116	335,–
117	D-120	104550 0117	295,–	104555 0117	335,–
118	D-120	104550 0118	295,–	104555 0118	335,–
119	D-120	104550 0119	295,–	104555 0119	335,–
120	D-120	104550 0120	295,–	104555 0120	335,–
120	E-150	104550 1120	405,–	104555 1120	485,–
125	E-150	104550 0125	415,–	104555 0125	509,–
130	E-150	104550 0130	425,–	104555 0130	519,–
135	E-150	104550 0135	435,–	104555 0135	539,–
140	E-150	104550 0140	445,–	104555 0140	539,–
145	E-150	104550 0145	460,–	104555 0145	559,–
150	E-150	104550 0150	475,–	104555 0150	579,–
150	F-180	104550 1150	589,–	104555 1150	719,–
155	F-180	104550 0155	609,–	104555 0155	729,–
160	F-180	104550 0160	629,–	104555 0160	769,–
165	F-180	104550 0165	649,–	104555 0165	789,–
170	F-180	104550 0170	679,–	104555 0170	809,–
180	F-180,G-210	104550 0180	719,–	104555 0180	859,–
190	G-210	104550 0190	749,–	104555 0190	899,–
200	G-210	104550 0200	769,–	104555 0200	919,–
210	G-210,H-240	104550 0210	799,–	104555 0210	939,–
220	H-240	104550 0220	829,–	104555 0220	969,–
230	H-240	104550 0230	849,–	104555 0230	1.009,–
240	H-240,I-270	104550 0240	919,–	104555 0240	1.069,–
250	I-270	104550 0250	979,–	104555 0250	1.159,–
260	I-270	104550 0260	1.039,–	104555 0260	1.219,–
270	I-270	104550 0270	1.119,–	104555 0270	1.299,–
		1119		1119	

Overview of hand taps

	Sets											
Sorting by thread												
Brand	ATORN	ATORN	SARA	ATORN	ATORN	SARA	ATORN	SARA	ATORN	ATORN	ATORN	ATORN
Thread	M	M	M	M-LH	M	M	MF	MF	UNC	UNF	BSW	G
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	3-48-7/8"-9	4-48 5/8"-18	W1/8"-W3/4"	G1/8"-G3/4"
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	2181	351	5157
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....	130140....	130141....	130142....	130143....
Page	10-122	10-122	10-122	10-123	10-123	10-123	10-124	10-124	10-125	10-125	10-126	10-126
Material groups	Usage recommendations											
Steel < 700 N/mm²	●	○	●	●	○	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	○	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²					●	○						
Stainless steel ferritic/martensitic		●				○						
Stainless steel austenitic		●										
Stainless steel duplex		○										
Cast iron GG/GTS	○	○		○	○	●	○		○	○	○	○
Cast iron GGG	○	○		○	○	○	○		○	○	○	○
Titanium alloys												
Superalloys Fe/NiCo base < 30 HRc												
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8 % Si	○	○			○		○		○	○	○	○
Aluminium ≥ 8 % Si	○	○			○		○		○	○	○	○
Copper Cu-alloy	○	○			○		○		○	○	○	○
Graphite GRP/CFP/thermoset												
Hardened steel < 55 HRc												
Hardened steel < 60 HRc												
Hardened steel ≥ 60 HRc												

ATORN® The ISO colour ring system for threading taps and forming taps

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**

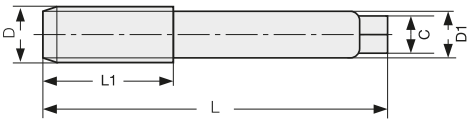
Steel | **Stainless steel**



ATORN® 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 (VS, MS and FS)





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
		●	●					○	○				○	○	○				

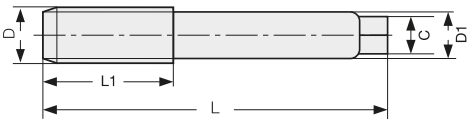
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® 3-pcs. set art.no.	€	SARA® 3-piece set art.no.	€
M1	0.25	32	5.5	2.5	2.1	**130130** 0010	68,50		
M1.2	0.25	32	5.5	2.5	2.1	130130 0012	60,–		
M1.4	0.3	32	7	2.5	2.1	130130 0014	62,–		
M1.6	0.35	32	8	2.5	2.1	130130 0016	56,50		
M1.7	0.35	32	8	2.5	2.1	130130 0017	53,50		
M1.8	0.35	32	8	2.5	2.1	130130 0018	56,50		
M2.2	0.45	36	11	2.8	2.1			**130101** 0022	24,50
M2	0.4	36	10	2.8	2.1	130130 0020	32,30	130101 0020	22,10
M2.3	0.4	36	11	2.8	2.1	130130 0023	39,30	130101 0023	23,90
M2.5	0.45	40	12	2.8	2.1	130130 0025	30,90	130101 0025	22,10
M2.6	0.45	40	12	2.8	2.1	130130 0026	34,90	130101 0026	21,10
M3	0.5	40	12	3.5	2.7	130130 0030	23,10	130101 0030	12,75
M3.5	0.6	45	14	4	3	130130 0035	30,70	130101 0035	18,70
M4	0.7	45	14	4.5	3.4	130130 0040	21,60	130101 0040	12,75
M4.5	0.75	45	14	4.5	3.4	130130 0045	34,–	130101 0045	18,70
M5	0.8	48	16	6	4.9	130130 0050	22,30	130101 0050	13,–
M6	1	50	18	6	4.9	130130 0060	23,50	130101 0060	13,40
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® 3-pcs. set art.no.	€	SARA® 3-piece set art.no.	€
M7	1	50	18	6	4.9	130130 0070	30,–	130101 0070	21,10
M8	1.25	56	22	6	4.9	130130 0080	26,90	130101 0080	17,60
M9	1.25	63	22	7	5.5	130130 0090	47,30	130101 0090	22,10
M10	1.5	70	25	7	5.5	130130 0100	33,40	130101 0100	22,30
M11	1.5	70	25	8	6.2	130130 0110	58,–	130101 0110	42,80
M12	1.75	75	30	9	7	130130 0120	44,10	130101 0120	28,50
M14	2	80	32	11	9	130130 0140	52,–	130101 0140	30,40
M16	2	80	32	12	9	130130 0160	74,50	130101 0160	47,60
M18	2.5	95	40	14	11	130130 0180	102,–	130101 0180	51,–
M20	2.5	95	40	16	12	130130 0200	103,–	130101 0200	69,–
M22	2.5	100	40	18	14.5			130101 0220	84,–
M24	3	110	50	18	14.5	130130 0240	143,–	130101 0240	96,–
M27	3	110	50	20	16			130101 0270	125,–
M30	3.5	132	56	22	18			130101 0300	150,–
M33	3.5	132	56	25	20			130101 0330	200,–
M36	4	150	63	28	22	130130 0360	375,–	130101 0360	245,–
M42	4.5	150	63	32	24	130130 0420	539,–		
						1125		1133	

ATORN® Hand taps

M | 60° | HSS-E | 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 (VS, MS and FS)




Taper tap type A


Second tap type D


Bottom tap type C

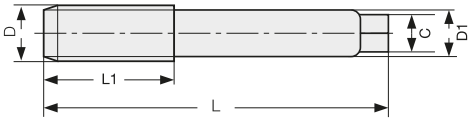
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.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

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	3-pcs. set art.no.	€	Taper tap art.no.	€	Second tap art.no.	€	Bottom tap art.no.	€
M2	0.4	36	10	2.8	2.1	**130126** 0020	81,50	**130127** 0020	27,70	**130128** 0020	27,70	**130129** 0020	27,70
M2.5	0.45	40	12	2.8	2.1	130126 0025	71,50	130127 0025	24,60	130128 0025	24,60	130129 0025	24,60
M3	0.5	40	12	3.5	2.7	130126 0030	53,50	130127 0030	19,30	130128 0030	19,30	130129 0030	19,30
M3.5	0.6	45	14	4	3	130126 0035	66,–	130127 0035	22,90	130128 0035	22,90	130129 0035	22,90
M4	0.7	45	14	4.5	3.4	130126 0040	53,50	130127 0040	19,30	130128 0040	19,30	130129 0040	19,30
M5	0.8	48	16	6	4.9	130126 0050	60,–	130127 0050	21,60	130128 0050	21,60	130129 0050	21,60
M6	1	50	18	6	4.9	130126 0060	61,–	130127 0060	21,60	130128 0060	21,60	130129 0060	21,60
M8	1.25	56	22	6	4.9	130126 0080	66,–	130127 0080	23,50	130128 0080	23,50	130129 0080	23,50
M10	1.5	70	25	7	5.5	130126 0100	88,–	130127 0100	30,50	130128 0100	30,50	130129 0100	30,50
M12	1.75	75	30	9	7	130126 0120	113,–	130127 0120	38,90	130128 0120	38,90	130129 0120	38,90
M16	2	80	32	12	9	130126 0160	179,–	130127 0160	63,–	130128 0160	63,–	130129 0160	63,–
M20	2.5	95	40	16	12	130126 0200	270,–	130127 0200	94,50	130128 0200	94,50	130129 0200	94,50
						1125		1125		1125		1125	

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





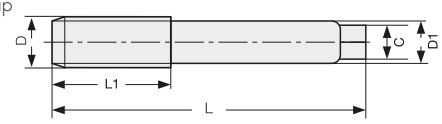
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.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

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	art.no.	€
M4 - LH	0.7	45	14	4.5	3.4	**130134** 0040	95,50
M5 - LH	0.8	48	16	6	4.9	130134 0050	101,–
M6 - LH	1	50	18	6	4.9	130134 0060	107,–
M8 - LH	1.25	56	22	6	4.9	130134 0080	122,–
M10 - LH	1.5	70	25	7	5.5	130134 0100	145,–
M12 - LH	1.75	75	30	9	7	130134 0120	189,–
M14 - LH	2	80	32	11	9	130134 0140	230,–
M16 - LH	2	80	32	12	9	130134 0160	275,–
M20 - LH	2.5	95	40	16	12	130134 0200	325,–
						1125	

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® Vapour-treated art.no.	€
M2	0.4	36	12	2.8	2.1	**130135** 0020	85,–		
M3	0.5	40	12	3.5	2.7	130135 0030	56,50	**130110** 0030	39,50
M4	0.7	45	14	4.5	3.4	130135 0040	55,50	130110 0040	39,50
M5	0.8	48	16	6	4.9	130135 0050	64,–	130110 0050	41,80
M6	1	50	18	6	4.9	130135 0060	64,–	130110 0060	41,80
M8	1.25	56	22	6	4.9	130135 0080	67,–	130110 0080	48,–
M10	1.5	70	25	7	5.5	130135 0100	90,50	130110 0100	59,50
M12	1.75	75	30	9	7	130135 0120	122,–	130110 0120	88,–
M14	2	80	32	11	9	130135 0140	133,–	130110 0140	88,–
M16	2	80	32	12	9	130135 0160	181,–	130110 0160	121,–
						1125		1133	

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



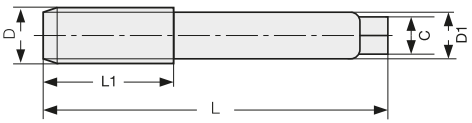
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130130....	●	●					○	○				○	○	○				
	130126....	●	●		●	●	○	○	○				○	○	○				

Contents	HSS art.no.	€	HSS-E art.no.	€
1 set of hand taps each, DIN 352, M3-4-5-6-8-10-12	**130130** 1001	229,–	**130126** 1001	439,–
	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
		●	●					○	○				○	○	○				

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® art.no.	€	SARA® art.no.	€
M3	0.35	40	9	3.5	2.7			**130105** 0005	17,40
M3.5	0.35	45	10	4	3			130105 0006	28,–
M4	0.5	45	10	4.5	3.4	**130139** 0007	25,20	130105 0007	18,60
M5	0.5	50	12	6	4.9	130139 0009	26,–	130105 0009	13,45
M6	0.5	50	12	6	4.9	130139 0054	29,60		
M6	0.75	50	12	6	4.9	130139 0010	26,30	130105 0010	13,–
M7	0.75	50	14	6	4.9	130139 0011	32,10	130105 0011	25,30
M8	0.5	50	16	6	4.9	130139 0055	34,20		
M8	0.75	50	16	6	4.9	130139 0013	31,10	130105 0013	17,40
M8	1	56	16	6	4.9	130139 0012	26,–	130105 0012	16,10
M9	1	63	16	7	5.5			130105 0014	30,80
M10	0.75	63	16	7	5.5	130139 0017	40,70	130105 0017	31,90
M10	1	63	16	7	5.5	130139 0016	28,10	130105 0016	18,60
M10	1.25	70	20	7	5.5	130139 0015	33,20	130105 0015	19,–
M11	1	63	16	8	6.2			130105 0018	38,50
M12	0.75	63	20	9	7			130105 0022	38,50
M12	1	63	20	9	7	130139 0021	33,–	130105 0021	22,80
M12	1.25	63	20	9	7	130139 0020	42,20	130105 0020	23,50
M12	1.5	75	20	9	7	130139 0019	32,60	130105 0019	22,10
M14	1	70	20	11	9	130139 0025	48,10	130105 0025	36,20
M14	1.25	70	20	11	9	130139 0024	51,–	130105 0024	28,50
M14	1.5	70	20	11	9	130139 0023	40,30	130105 0023	27,70
M15	1	70	20	12	9	130139 0027	58,–	130105 0027	44,90
M15	1.5	70	20	12	9			130105 0026	44,90
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® art.no.	€	SARA® art.no.	€
M16	1	70	20	12	9	130139 0030	55,50	130105 0030	36,20
M16	1.25	70	20	12	9			130105 0029	49,70
M16	1.5	70	20	12	9	130139 0028	47,30	130105 0028	37,90
M18	1	80	20	14	11	130139 0032	74,50	130105 0032	53,50
M18	1.5	80	20	14	11	130139 0031	66,–	130105 0031	48,–
M20	1	80	22	16	12	130139 0034	82,–	130105 0034	60,50
M20	1.5	80	22	16	12	130139 0033	64,–	130105 0033	52,60
M22	1	80	22	18	14.5			130105 0036	70,–
M22	1.5	80	22	18	14.5	130139 0035	86,–	130105 0035	62,50
M24	1	80	22	18	14.5	130139 0039	116,–	130105 0039	77,–
M24	1.5	80	22	18	14.5	130139 0038	94,50	130105 0038	74,50
M24	2	80	22	18	14.5	130139 0037	98,50	130105 0037	77,–
M25	1.5	80	22	18	14.5			130105 0041	126,–
M26	1.5	80	22	18	14.5			130105 0042	83,–
M27	1.5	90	22	20	16			130105 0044	144,–
M27	2	90	22	20	16	130139 0043	141,–	130105 0043	105,–
M28	1.5	90	22	20	16			130105 0046	95,–
M28	2	90	22	20	16			130105 0045	153,–
M30	1.5	90	22	22	18	130139 0048	155,–	130105 0048	124,–
M30	2	90	22	22	18	130139 0047	170,–	130105 0047	135,–
M32	1.5	90	22	22	18			130105 0050	167,–
M36	1.5	100	25	28	22	130139 0056	230,–		
M36	2	100	25	28	22			130105 0052	235,–
M36	3	150	63	28	22			130105 0051	235,–
						1125		1133	

ATORN® Hand taps

UNC | 60° | HSS | DIN 351 | 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
		●	●					○	○				○	○	○				

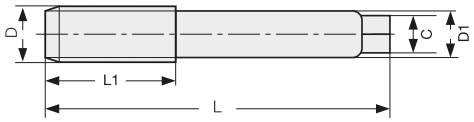
Size UNC	Pitch TPI	D mm	L mm	L1 mm	D1 mm	C mm	3-pcs. set art.no.	€
3-48	48	2.52	40	9	2.8	2.1	**130140** 0001	43,80
4-40	40	2.85	40	11	3.5	2.7	130140 0002	24,30
5-40	40	3.18	40	11	3.5	2.7	130140 0003	33,30
6-32	32	3.51	45	12	4.0	3.0	130140 0004	24,30
8-32	32	4.17	45	13	4.5	3.4	130140 0005	24,30
10-24	24	4.83	50	14	6.0	4.9	130140 0006	24,30
1/4"-20	20	6.35	50	16	6.0	4.9	130140 0007	24,30
5/16"-18	18	7.94	56	18	6.0	4.9	130140 0008	25,40
3/8"-16	16	9.53	70	20	7.0	5.5	130140 0009	29,90
7/16"-14	14	11.11	75	22	8.0	6.2	130140 0010	38,80
1/2"-13	13	12.70	75	25	9.0	7.0	130140 0011	45,70
5/8"-11	11	15.88	80	30	12.0	9.0	130140 0012	64,90
3/4"-10	10	19.05	95	33	14.0	11.0	130140 0013	91,50
7/8"-9	9	22.23	100	35	18.0	14.5	130140 0014	133,50

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
		●	●					○	○				○	○	○				

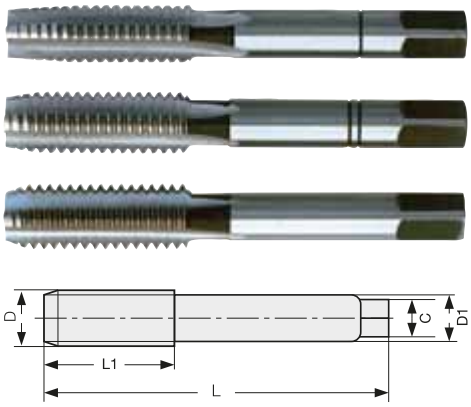
Size UNF	Pitch TPI	D mm	L mm	L1 mm	D1 mm	C mm	2-pcs. set art.no.	€
4-48	48	2.85	40	10	3.5	2.7	**130141** 0001	39,80
6-40	40	3.51	45	11	4.0	3.0	130141 0002	33,30
8-36	36	4.17	45	12	4.5	3.4	130141 0003	40,80
10-32	32	4.83	50	14	6.0	4.9	130141 0004	20,20
12-28	28	5.49	50	16	6.0	4.9	130141 0005	35,50
1/4"-28	28	6.35	50	17	6.0	4.9	130141 0006	25,80
5/16"-24	24	7.94	56	17	6.0	4.9	130141 0007	27,20
3/8"-24	24	9.53	63	18	7.0	5.5	130141 0008	32,70
7/16"-20	20	11.11	63	20	8.0	6.2	130141 0009	42,80
1/2"-20	20	12.70	63	20	9.0	7.0	130141 0010	48,50
9/16"-18	18	14.29	70	20	11.0	9.0	130141 0011	104,–
5/8"-18	18	15.88	70	20	12.0	9.0	130141 0012	65,–

1125

ATORN® Hand taps

BSW | 55° | HSS | DIN 351

- **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
		●	●					○	○				○	○	○				

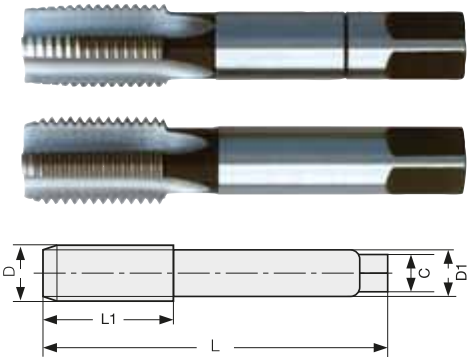
D mm	Pitch TPI	L mm	L1 mm	D1 mm	C mm	art.no.	€
W 1/8"	40	40	12	3.5	2.7	**130142** 0002	27,70
W 5/32"	32	45	14	4.5	3.4	130142 0003	56,–
W 3/16"	24	45	14	5.5	4.3	130142 0004	52,–
W 7/32"	24	48	16	6	4.9	130142 0005	62,–
W 1/4"	20	50	18	6	4.9	130142 0006	25,90
W 5/16"	18	56	22	6	4.9	130142 0007	65,–
W 3/8"	16	63	22	7	5.5	130142 0008	44,20
W 1/2"	12	80	30	8	7	130142 0010	67,50
W 5/8"	11	80	32	12	9	130142 0012	95,50
W 3/4"	10	95	40	14	11	130142 0013	135,–

1125

ATORN® Hand taps

G | 55° | HSS | DIN 5157

- **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 mm	Pitch TPI	L mm	L1 mm	D1 mm	C mm	art.no.	€
G 1/8"	28	63	20	7	5.5	**130143** 0001	29,–
G 1/4"	19	70	22	11	9	130143 0002	36,50
G 3/8"	19	70	22	12	9	130143 0003	52,50
G 1/2"	14	80	22	16	12	130143 0004	87,50
G 3/4"	14	90	22	20	16	130143 0006	134,–

1125

Overview of machine taps

Sorting by thread and bore type															
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	GG	GG	GG	GG	ATORN	ATORN	ATORN	SARA	ATORN	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M-LH	M
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	Through-hole	Through-hole	Through-hole
Range	M2 - M16	M1 - M30	M3 - M20	M3 - M20	M3 - M16	M3 - M24	M2 - M16	M3 - M16	M3 - M16	M2 - M30	M3 - M24	M3 - M24	M3 - M12	M4 - M20 (LH)	M3 - M20
Tolerance	6H	6H	6H	6H	6HX	6H	6HX	6HX	6HX	6H	6H	6H	6H	6H	6H
DIN	352	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	WN
Chamfer (form)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Possible thread depth	3xD	3xD	3xD	3xD	2xD	2.5xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	blank	Vapour-treated	TiN	TiAlN	TiCN	Vapour-treated	TiCN	TiCN	TiCN	blank	TiN	TiCN	blank	blank	blank
Type		UNI	UNI	Hardlube	UNI	S-POT	A-POT	A-POT	A-OIL-POT						
Info					Synchro			Weldon	IC					Left-hand thread	Extra-long
Item number	135360....	134700....	134705....	134745....	134720....	133875....	133450....	133495....	133456....	134105....	134110....	134115....	134106....	134120....	134125....
Page	10-131	10-133	10-133	10-147	10-148	10-154	10-155	10-156	10-157	10-135	10-135	10-135	10-135	10-137	10-136
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²						○	○	○	○						
Stainless steel ferritic/martensitic		○	●	●	●	●	●	●	●	○	○	○	○	○	○
Stainless steel austenitic		○	●	●	●	●	●	●	●	○	○	○	○	○	○
Stainless steel duplex						○									
Cast iron GG/GTS											○	○	○	○	○
Cast iron GGG										○					
Titanium alloys							○	○	○						
Superalloys Fe/NiCo base < 30 HRc															
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8 % Si		○	○	●	●		○	○	○						
Aluminium ≥ 8 % Si							○	○	○						
Copper Cu-alloy		○	○	○	○	○	○	○	○						
Graphite GRP/CFP/thermoset															

Sorting by thread and bore type															
Brand	GG	ATORN	ATORN	GG	ATORN	ATORN	SARA	ATORN	GG	GG	GG	ATORN	ATORN	SARA	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
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	Through-hole	Through-hole	Through-hole
Range	M2 - M30	M3 - M20	M3 - M12	M2 - M10	M2 - M20	M3 - M16	M3 - M12	M3 - M16	M2 - M20	M2 - M36	M2 - M16	M3 - M20	M3 - M20	M3 - M12	M3 - M24
Tolerance	6H	6H	6H	6H	6H	6H	6H	6H	6HX	6H	6G	6H	6H	6H	6H
DIN	371/376	357	371/376	371	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	20-thread	B	B	B	B	B	B	B	B	B	B	B	B	B
Possible thread depth	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	2.5xD	2.5xD	3xD	3xD	3xD	3xD
Cutting material	HSS-E-V3	HSS-E	HSS-E	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	blank	blank	blank	blank	Vapour-treated	TiN	Vapour-treated	blank	CrN	Vapour-treated	Vapour-treated	blank	TiCN	blank	TiN
Type	POT		ALU	AL-POT	VA	VA	VA	VA	CC-POT	VA-POT	VA-POT				
Info		Long chamfer						Exp. thread ridges							Synchro
Item number	133001....	135100....	134127....	133035....	134130....	134131....	134132....	135140....	133040....	133015....	133020....	134135....	134137....	134136....	135385....
Page	10-159	10-152	10-146	10-165	10-143	10-143	10-143	10-144	10-161	10-163	10-164	10-141	10-141	10-141	10-140
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●							●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	●							○	●	●	●	●	●	●
Steel < 1400 N/mm²	○											●	●	○	○
Stainless steel ferritic/martensitic		○			●	●	●	●	●	●	●	○	○	○	●
Stainless steel austenitic		○			●	●	●	●	●	●	●				●
Stainless steel duplex					●	●	○	●	●	○	○				○
Cast iron GG/GTS		○							○			●	●	●	●
Cast iron GGG									○			●	●	●	●
Titanium alloys									○	○	○	○	○	○	
Superalloys Fe/NiCo base < 30 HRc									○			○	○	○	
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8 % Si	○		●	●					●	○	○				○
Aluminium ≥ 8 % Si	●		●	●					○	●	●	○	○	○	○
Copper Cu-alloy	○		●	●					○	○	○				○
Graphite GRP/CFP/thermoset															

Sorting by thread and bore type														
Brand	ATORN	ATORN	GG	ATORN	ATORN	ATORN	ATORN	GG	ATORN	GG	ATORN	ATORN	ATORN	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Type	Through-hole	Through-hole	Through-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	Through-hole	Blind-hole	Blind-hole	Blind-hole
Range	M2 - M20	M3 - M16	M2 - M20	M3 - M16	M2 - M20	M3 - M24	M3 - M16	M3 - M12	M3 - M16	M3 - M12	M3 - M20	M3 - M20	M1 - M30	M3 - M20
Tolerance	6H	6H	6HX	6H	6H	6HX	6HX	6HX	6H	6HX	6H	6H	6H	6H
DIN	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	WN	WN	371/376	352	371/376	371/376
Chamfer (form)	B	B	B	C	C	C	D	C	D	C	D	C	C	C
Possible thread depth	3xD	3xD	2.5xD	3xD	1.5xD	3xD	1.5xD	1.5xD	1.5xD	1.5xD	3xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	Solid carbide	Solid carbide	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	TiN	TiCN	TiCN	blank	blank	Nitrided	TiCN	TiCN	TiCN	TiCN	blank	blank	Vapour-treated	TiN
Type			Z-POT					V-XPM-HAT		VX-OT			UNI	UNI
Info	Synchro		Synchro								Left-hand twist			
Item number	134570....	134196....	133045....	134142....	135150....	135155....	135165....	133255....	135170....	133250....	135365....	135395....	134710....	134715....
Page	10-149	10-142	10-166	10-145	10-151	10-152	10-153	10-167	10-153	10-167	10-151	10-131	10-132	10-132
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●		●			●			●	●	●	●
Steel < 1000 N/mm²	●	●	●		●			●			○	○	●	●
Steel < 1400 N/mm²	○	●	○					●						
Stainless steel ferritic/martensitic	●	●	●		○								○	●
Stainless steel austenitic	●	●	●		○								○	●
Stainless steel duplex	○	○	●											
Cast iron GG/GTS	●		○			●								
Cast iron GGG	●		○		○	●								
Titanium alloys			○	●										
Superalloys Fe/NiCo base < 30 HRc			○	●										
Superalloys Fe/NiCo base ≥ 30 HRc				○										
Aluminium < 8 % Si	○		○										○	○
Aluminium ≥ 8 % Si	○		○			○								
Copper Cu-alloy	○		○			○							○	○
Hardened steel < 55 HRc							●	●	●					
Hardened steel < 60 HRc									●	●				
Hardened steel ≥ 60 HRc									●	●				

Sorting by thread and bore type														
Brand	ATORN	ATORN	GG	GG	GG	GG	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M-LH
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	Blind-hole	Blind-hole
Range	M3 - M20	M3 - M20	M3 - M24	M2 - M24	M3 - M16	M6 - M56	M2 - M30	M3 - M20	M3 - M16	M2 - M30	M2 - M30	M2 - M20	M3 - M12	M3 - M20
Tolerance	6H	6HX	6H	6HX	6HX	6HX	6	6H	6H	6H	6H	6H	6H	6H
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	371/376	371/376
Chamfer (form)	C	C	C	C	C	C	C	C	B	C	C	C	C	C
Possible thread depth	2xD	2.5xD	2.5xD	2xD	2xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	TiAlN	TiN	Vapour-treated	TiCN	TiCN	TiCN	blank	TiN	blank	blank	TiN	TiCN	blank	blank
Type	Hardlube	UNI	S-SFT	A-SFT	A-SFT	A-OIL-SFT			TI					
Info		Synchro		Synchro	Weldon	IC								Left-hand thread
Item number	134740....	134725....	133865...	133400....	133490....	133410/15....	134175....	134180....	134192....	134200....	134205....	134210....	134201....	134215....
Page	10-147	10-148	10-154	10-155	10-156	10-157	10-138	10-138	10-145	10-134	10-134	10-134	10-134	10-137
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●		●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●		●	●	●	●	●
Steel < 1400 N/mm²			○	○	○	○								
Stainless steel ferritic/martensitic	●	●	●	●	●	●	○	○		○	○	○	○	○
Stainless steel austenitic	●	●	●	●	●	●	○	○		○	○	○	○	○
Stainless steel duplex			○											
Cast iron GG/GTS														
Cast iron GGG							○	○		○	○	○	○	○
Titanium alloys				○					●					
Superalloys Fe/NiCo base < 30 HRc									●					
Superalloys Fe/NiCo base ≥ 30 HRc					○	○			○					
Aluminium < 8 % Si	●	●		○	○	○								
Aluminium ≥ 8 % Si				○	○	○								
Copper Cu-alloy	○	○	○	○	○	○								
Graphite GRP/CFP/thermoset														

Sorting by thread and bore type															
Brand	ATORN®	GG	ATORN®	GG	GG	ATORN®	ATORN®	SARA®	ATORN®	GG	GG	ATORN®	ATORN®	ATORN®	SARA®
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
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	Blind-hole	Blind-hole	Blind-hole
Range	M3 - M20	M2 - M30	M2 - M12	M1.6 - M10	M2 - M36	M2 - M20	M3 - M16	M3 - M12	M3 - M20	M2 - M36	M2 - M16	M3 - M16	M3 - M20	M3 - M16	M3 - M12
Tolerance	6H	6H	6H	6H	6HX	6H	6H	6H	6H	6H	6G	6H	6H	6H	6H
DIN	WN	371/376	371/376	371	371/376	371/376	371/376	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	C	C	C
Possible thread depth	2.5xD	2.5xD	2.5xD	2.5xD	3xD	2.5xD	2.5xD	2.5xD	2xD	2.5xD	2.5xD	3xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E-V3	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E	HSS-E
Coating / surface treatment	blank	blank	blank	blank	CrN	Vapour-treated	TiN	Vapour-treated	blank	Vapour-treated	Vapour-treated	TiCN	blank	TiCN	blank
Type		SFT	ALU	AL-SFT	CC-SFT	VA	VA	VA	VA	VA-SFT	VA-SFT				
Info	Extra-long								Exp. thread ridges						
Item number	134220....	133101....	134195....	133145....	133106....	134225....	134226....	134227....	135390....	133125....	133130....	134193....	134230....	134233....	134231....
Page	10-136	10-158	10-146	10-165	10-160	10-143	10-143	10-143	10-144	10-162	10-164	10-142	10-141	10-141	10-141
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●			●					●	●	●	●	●	●
Steel < 1000 N/mm²	●	○			○					●	●	●	●	●	●
Steel < 1400 N/mm²		○										●	●	●	○
Stainless steel ferritic/martensitic	○				●	●	●	●	●	●	●	●	○	○	○
Stainless steel austenitic	○				●	●	●	●	●	●	●	●			
Stainless steel duplex					●	●	●	○	●	○	○	○			
Cast iron GG/GTS					○								●	●	●
Cast iron GGG	○				○								●	●	●
Titanium alloys					○					○	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc					○								○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8 % Si		○	●	●	●					○	○				
Aluminium ≥ 8 % Si		●	●	●	○								○	○	○
Copper Cu-alloy		○	●	●	○					○	○				
Graphite GRP/CFP/thermoset															

Sorting by thread and bore type															
Brand	ATORN®	ATORN®	GG	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	GG	GG	GG	ATORN®	ATORN®	ATORN®	ATORN®
Thread	M	M	M	M	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole	Through-hole	Blind-hole/through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole
Range	M3 - M20	M3 - M24	M3 - M20	M4 - M20	M3 - M40	M3 - M40	M3 - M36	M4 - M42	M3 - M24	M3 - M24	M6 - M24	M5 - M30	M6 - M20	M6 - M20	M8 - M24
Tolerance	6H	6H	6H	6HX	6H	6H	6H	6H	6H	6H	6HX	6H	6H	6H	6H
DIN	371/376	371/376	371/376	371/376	374	374	374	374	374	374	374	374	374	374	374
Chamfer (form)	C	C	C	C	B	B	C	B	B	B	B	C	C	C	C
Possible thread depth	2.5xD	2.5xD	2.5xD	2.5xD	3xD	3xD	1.5xD	3xD	2.5xD	2.5xD	2.5xD	1.5xD	3xD	3xD	2.5xD
Cutting material	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	blank	TiN	TiCN	TiN	blank	TiN	blank	Vapour-treated	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	Vapour-treated	TiN	TiAlN
Type			Z-SFT					VA	S-POT	VA-POT	A-POT				VA
Info		Synchro	Synchro	Synchro											
Item number	134235....	135350....	133155....	134575....	135255....	135260....	135265....	135370....	133975....	133505....	133460....	135280....	135285....	135290....	135375....
Page	10-138	10-140	10-166	10-149	10-169	10-169	10-170	10-171	10-173	10-174	10-175	10-168	10-168	10-168	10-170
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●	●	●	●	●	○	●	●	●	●	●	●	○
Steel < 1000 N/mm²	●	●	●	●	●	●	●	○	●	●	●	●	●	●	○
Steel < 1400 N/mm²	●		○	○					○		○				
Stainless steel ferritic/martensitic	○		●	●	○	○	○	●	●	●	●	○	○	○	●
Stainless steel austenitic	○		●	●	○	○	○	●	●	●	●	○	○	○	●
Stainless steel duplex	○		●	○				○	○	●					○
Cast iron GG/GTS	●		○	●											
Cast iron GGG	●		○	●	○	○	○		○			○	○	○	
Titanium alloys	○		○								○				
Superalloys Fe/NiCo base < 30 HRc	○		○							○					
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8 % Si	●		○	●						○	○				
Aluminium ≥ 8 % Si	○		○	○							○				
Copper Cu-alloy	●		○	○					○	○	○				
Graphite GRP/CFP/thermoset															

Sorting by thread and bore type														
Brand	GG	GG	GG	ATORN	GG	ATORN	ATORN	ATORN	GG	GG	ATORN	ATORN	ATORN	ATORN
Thread	MF	MF	MF	G	G	G	G	G	G	G	UNC	UNC	UNF	UNF
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole/through-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole	Blind-hole	Through-hole	Blind-hole
Range	M3 - M24	M3 - M24	M6 - M24	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/4" - 3/4"	1/4" - 3/4"	1/4" - 3/4"	1/4" - 5/8"
Tolerance	6H	6H	6HX	ISO 228		ISO 228	ISO 228	ISO 228			2B	2B	2B	2B
DIN	374	374	374	5156	5156	5156	5156	5156	5156	5156	371/376	371/376	374	374
Chamfer (form)	C	C	C	C	B	C	C	C	C	C	B	C	B	C
Possible thread depth	2.5xD	2.5xD	2xD	3xD	2.5xD	1.5xD	3xD	3xD	2.5xD	2xD	3xD	3xD	3xD	2.5xD
Cutting material	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E
Coating / surface treatment	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	TiCN	blank	blank	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated
Type	S-SFT	VA-SFT	A-SFT		A-POT				VA-SFT	A-SFT				
Info														
Item number	133965....	133515....	133420....	135295....	133900....	135300....	135315....	135320....	133910....	133860....	135325....	135330....	135335....	135340....
Page	10-172	10-174	10-175	10-177	10-178	10-176	10-176	10-177	10-179	10-178	10-180	10-180	10-181	10-181
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	○		○		○					○				
Stainless steel ferritic/martensitic	●	●	●	○	●	○	○	○	●	●	○	○	○	○
Stainless steel austenitic	●	●	●	○	●	○	○	○	●	●	○	○	○	○
Stainless steel duplex	○	●												
Cast iron GG/GTS														
Cast iron GGG	○			○		○	○	○			○	○	○	○
Titanium alloys			○		○					○				
Superalloys Fe/NiCo base < 30 HRc		○							○					
Superalloys Fe/NiCo base ≥ 30 HRc														
Aluminium < 8 % Si		○	○		○				○	○				
Aluminium ≥ 8 % Si			○		○					○				
Copper Cu-alloy	○	○	○		○				○	○				
Graphite GRP/CFP/thermoset														

Sorting by thread and bore type		
Brand	ATORN	ATORN
Thread	NPT	PG
Type	Blind-hole/through-hole	Through-hole
Range	1/16" - 1"	7 - 29
Tolerance	-	-
DIN	WN	40430
Chamfer (form)	C	B
Possible thread depth	1.5xD	3xD
Cutting material	HSS-E	HSS-E
Coating / surface treatment	blank	blank
Type		
Info		
Item number	135345....	135380....
Page	10-182	10-182
Material groups	Usage recommendations	
Steel < 700 N/mm²	●	●
Steel < 1000 N/mm²	●	○
Steel < 1400 N/mm²		
Stainless steel ferritic/martensitic	○	
Stainless steel austenitic	○	
Stainless steel duplex		
Cast iron GG/GTS		
Cast iron GGG	○	
Titanium alloys		
Superalloys Fe/NiCo base < 30 HRc		
Superalloys Fe/NiCo base ≥ 30 HRc		
Aluminium < 8 % Si		
Aluminium ≥ 8 % Si		
Copper Cu-alloy		
Graphite GRP/CFP/thermoset		

ATORN® ISO coloured ring system

INFO

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 1000 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 1400 N/mm²

Steel **Stainless steel**

ATORN® Machine tap

M | 60° | HSS-E | DIN 352 | ISO 2 6H | C 2-3 | 15° | 1,5xD | Vc/fz | 10-272

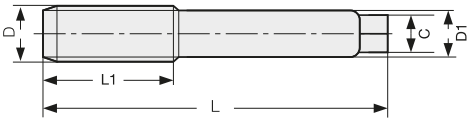
- **Metric ISO 6H thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- DIN 352
- **Cutting material: HSS-E**
- Possible thread depth 1.5 x D



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
		● 5-20	○ 5-15																
		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.	€
M3	0.5	40	6	3.5	2.7	2.50	**135395** 0030	11,60
M4	0.7	45	7.5	3.4	3.4	3.30	135395 0040	11,80
M5	0.8	50	8.5	4.9	4.9	4.20	135395 0050	12,25
M6	1.0	56	11	4.9	4.9	5.00	135395 0060	12,45
M8	1.25	63	14	4.9	4.9	6.80	135395 0080	14,25
M10	1.5	70	16	5.5	5.5	8.50	135395 0100	18,50
M12	1.75	75	18.5	7.0	7.0	10.25	135395 0120	24,50
M16	2.0	80	20	9.0	9.0	14.00	135395 0160	41,40
M20	2.5	95	25	16.0	12.0	17.50	135395 0200	68,50

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 352 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 10-272

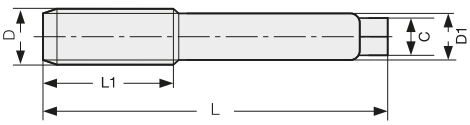
- **ISO 6H metric thread**
- **Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer**
- DIN 352
- **Cutting material: HSS-E**
- For through-hole threads
- The spiral point ensures chip removal to the front
- Possible thread depth 3 x D



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
		● 5-20	○ 5-15																
		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.	€
M2	0.4	36	8	2.8	2.1	1.60	**135360** 0020	16,30
M2.5	0.45	40	9	2.8	2.1	2.05	135360 0025	16,30
M3	0.5	40	10	3.5	2.7	2.50	135360 0030	10,40
M4	0.7	45	12	4.5	3.4	3.30	135360 0040	10,20
M5	0.8	50	14	6.0	4.9	4.20	135360 0050	10,20
M6	1.0	56	14	6.0	4.9	5.00	135360 0060	10,20
M8	1.25	63	18	6.0	4.9	6.80	135360 0080	12,65
M10	1.5	70	20	7.0	5.5	8.50	135360 0100	16,70
M12	1.75	75	24	9.0	7.0	10.25	135360 0120	21,80
M16	2.0	80	26	12.0	9.0	14.00	135360 0160	36,50

1127

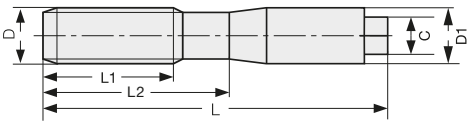


ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 10-272

- **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**

Program expanded!



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
134710....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
134715....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				○ 10-20		○ 10-20				

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	Vapour-treated art.no.	€	TiN art.no.	€
M1	0.25	40	5	-	2.5	2.1	0.75	**134710** 0010	30,20		
M1.2	0.25	40	5	-	2.5	2.1	0.95	134710 0012	30,20		
M1.4	0.3	40	7	-	2.5	2.1	1.10	134710 0014	27,–		
M1.6	0.35	40	8	-	2.5	2.1	1.25	134710 0016	25,50		
M1.7	0.35	40	8	-	2.5	2.1	1.35	134710 0017	26,60		
M1.8	0.35	40	8	-	2.5	2.1	1.45	134710 0018	25,50		
M2	0.4	45	8	-	2.8	2.1	1.60	134710 0020	21,90		
M2.2	0.45	45	9	-	2.8	2.1	1.75	134710 0022	22,30		
M2.3	0.4	45	9	-	2.8	2.1	1.90	134710 0023	25,–		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134710 0025	21,90		
M2.6	0.45	50	9	-	2.8	2.1	2.15	134710 0026	22,80		
M3	0.5	56	10	18	3.5	2.7	2.50	134710 0030	10,20	**134715** 0030	16,20
M4	0.7	63	12	21	4.5	3.4	3.30	134710 0040	10,20	134715 0040	16,20
M5	0.8	70	14	25	6	4.9	4.20	134710 0050	10,50	134715 0050	16,60
M6	1.0	80	16	30	6	4.9	5.00	134710 0060	10,50	134715 0060	16,90
M8	1.25	90	18	35	8	6.2	6.80	134710 0080	13,35	134715 0080	20,30
M10	1.5	100	20	39	10	8	8.50	134710 0100	15,80	134715 0100	23,70
M12	1.75	110	22	-	9	7	10.25	134710 0120	22,80	134715 0120	32,70
M16	2.0	110	28	-	12	9	14.00	134710 0160	34,30	134715 0160	48,60
M20	2.5	140	32	-	16	12	17.50	134710 0200	56,–	134715 0200	79,–
M24	3.0	160	30	-	18	14.5	21.00	134710 0240	92,50		
M27	3.0	160	30	-	20	16	24.00	134710 0270	151,–		
M30	3.5	180	35	-	22	18	26.60	134710 0300	179,–		
								1127		1127	

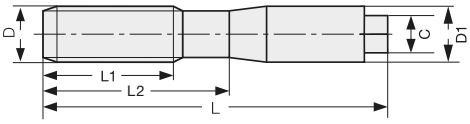


ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | | 3xD | | TiN | Vap. | i Vc/fz | 10-272

- 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**

Program expanded!



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....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	134705....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				○ 10-20		○ 10-20				
	Cutting speed Vc m/min.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
M1	0.25	40	5	-	2.5	2.1	0.75	**134700** 0010	30,20		
M1.2	0.25	40	5	-	2.5	2.1	0.95	134700 0012	30,20		
M1.4	0.30	40	7	-	2.5	2.1	1.10	134700 0014	27,–		
M1.6	0.35	40	8	-	2.5	2.1	1.25	134700 0016	25,60		
M1.7	0.35	40	8	-	2.5	2.1	1.35	134700 0017	26,60		
M1.8	0.35	40	8	-	2.5	2.1	1.45	134700 0018	25,60		
M2	0.40	45	8	-	2.8	2.1	1.60	134700 0020	21,90		
M2.2	0.45	45	9	-	2.8	2.1	1.75	134700 0022	22,30		
M2.3	0.40	45	9	-	2.8	2.1	1.90	134700 0023	25,–		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134700 0025	21,90		
M2.6	0.45	50	9	-	2.8	2.1	2.15	134700 0026	23,–		
M3	0.5	56	10	18	3.5	2.7	2.50	134700 0030	10,20	**134705** 0030	16,20
M4	0.7	63	12	21	4.5	3.4	3.30	134700 0040	10,20	134705 0040	16,20
M5	0.8	70	14	25	6	4.9	4.20	134700 0050	10,50	134705 0050	16,60
M6	1.0	80	16	30	6	4.9	5.00	134700 0060	10,50	134705 0060	16,90
M8	1.25	90	18	35	8	6.2	6.80	134700 0080	13,35	134705 0080	20,30
M10	1.5	100	20	39	10	8	8.50	134700 0100	15,80	134705 0100	23,70
M12	1.75	110	22	-	9	7	10.25	134700 0120	22,80	134705 0120	32,70
M16	2.0	110	28	-	12	9	14.00	134700 0160	34,30	134705 0160	48,60
M20	2.5	140	32	-	16	12	17.50	134700 0200	56,–	134705 0200	79,–
M24	3.0	160	36	-	18	14.5	21.00	134700 0240	92,50		
M27	3.0	160	36	-	20	16	24.00	134700 0270	152,–		
M30	3.5	180	40	-	22	18	26.50	134700 0300	179,–		
								1127		1127	



Safety in the workplace

Please protect your eyes, ears and respiratory system!

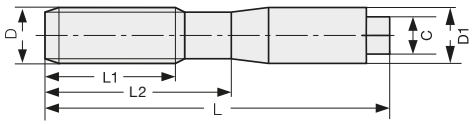


ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | TiCN | Vc/fz | 10-272

- **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 TiN**; **HSS-E TiCN**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 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
134200....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
134205....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134210....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134201....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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



Right-hand thread

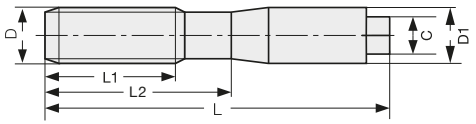
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiN art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134200** 0020	16,–	**134205** 0020	22,80	**134210** 0020	22,80		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134200 0025	16,–	134205 0025	22,80	134210 0025	22,80		
M3	0.5	56	6	18	3.5	2.7	2.50	134200 0030	12,75	134205 0030	20,20	134210 0030	20,20	**134201** 0030	8,95
M4	0.7	63	7	21	4.5	3.4	3.30	134200 0040	12,75	134205 0040	20,20	134210 0040	20,20	134201 0040	8,95
M5	0.8	70	8	25	6	4.9	4.20	134200 0050	12,85	134205 0050	20,30	134210 0050	20,30	134201 0050	9,05
M6	1	80	10	30	6	4.9	5.00	134200 0060	13,05	134205 0060	21,10	134210 0060	21,10	134201 0060	9,15
M8	1.25	90	13	35	8	6.2	6.80	134200 0080	16,30	134205 0080	24,80	134210 0080	24,80	134201 0080	11,45
M10	1.5	100	15	39	10	8	8.50	134200 0100	19,30	134205 0100	28,80	134210 0100	28,80	134201 0100	13,50
M12	1.75	110	18	-	9	7	10.25	134200 0120	27,70	134205 0120	39,80	134210 0120	39,80	134201 0120	19,50
M14	2	110	20	-	11	9	12.00	134200 0140	39,40			134210 0140	55,50		
M16	2	110	20	-	12	9	14.00	134200 0160	41,50	134205 0160	59,–	134210 0160	59,–		
M20	2.5	140	25	-	16	12	17.50	134200 0200	68,–	134205 0200	96,–	134210 0200	96,–		
M24	3	160	30	-	18	14.5	21.00	134200 0240	98,50	134205 0240	132,–				
M30	3.5	180	35	-	22	18	26.50	134200 0300	187,–	134205 0300	235,–				
								1127		1127		1127		1156	

ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | TiCN | Vc/fz | 10-272

- **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**; **HSS-E TiN**; **HSS-E TiCN**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- 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
	134105....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	134110....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
	134115....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
	134106....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



Right-hand thread

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiN-coated art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134105** 0020	15,70						
M2.5	0.45	50	9	-	2.8	2.1	2.05	134105 0025	12,95						
M3	0.5	56	10	18	3.5	2.7	2.50	134105 0030	10,45	**134110** 0030	18,40	**134115** 0030	18,40	**134106** 0030	8,40
M3.5	0.6	56	11	20	4	3	2.90	134105 0035	12,15	134110 0035	20,40	134115 0035	20,40		
M4	0.7	63	12	21	4.5	3.4	3.30	134105 0040	10,45	134110 0040	18,40	134115 0040	18,40	134106 0040	8,40
M5	0.8	70	14	25	6	4.9	4.20	134105 0050	10,55	134110 0050	18,50	134115 0050	18,50	134106 0050	8,50
M6	1.0	80	16	30	6	4.9	5.00	134105 0060	10,90	134110 0060	19,70	134115 0060	19,70	134106 0060	8,75
M7	1.0	80	16	30	7	5.5	6.00	134105 0070	16,20						
M8	1.25	90	18	35	8	6.2	6.80	134105 0080	12,35	134110 0080	22,10	134115 0080	22,10	134106 0080	9,90
M10	1.5	100	20	39	10	8	8.50	134105 0100	15,20	134110 0100	26,90	134115 0100	26,90	134106 0100	12,25
M12	1.75	110	22	-	9	7	10.25	134105 0120	21,40	134110 0120	36,40	134115 0120	36,40	134106 0120	17,20
M14	2.0	110	25	-	11	9	12.00	134105 0140	29,10	134110 0140	51,–	134115 0140	51,–		
M16	2.0	110	28	-	12	9	14.00	134105 0160	32,90	134110 0160	54,50	134115 0160	54,50		
M18	2.5	125	32	-	14	11	15.50	134105 0180	46,10	134110 0180	80,50	134115 0180	80,50		
M20	2.5	140	32	-	16	12	17.50	134105 0200	51,–	134110 0200	88,–	134115 0200	88,–		
M22	2.5	140	32	-	18	14.5	19.50	134105 0220	75,50						
M24	3.0	160	36	-	18	14.5	21.00	134105 0240	75,50	134110 0240	120,–	134115 0240	120,–		
M27	3.0	160	36	-	20	16	24.00	134105 0270	140,–						
M30	3.5	180	40	-	22	18	26.50	134105 0300	148,–						
								1127		1127		1127		1156	

ATORN® Machine tap, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions similar to DIN 371 = up to M10, similar to DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D



material: ● very well suited ○ well suited

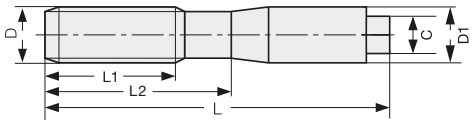
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Right-hand thread, long version (company standard)

D mm	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	2.50	**134220** 0030	38,40
M4	0.7	126	7	21	4.5	3.4	3.30	134220 0040	38,40
M5	0.8	140	8	25	6	4.9	4.20	134220 0050	37,–
M6	1	160	10	30	6	4.9	5.00	134220 0060	37,–
M8	1.25	180	13	35	8	6.2	6.80	134220 0080	45,80
M10	1.5	200	15	39	10	8	8.50	134220 0100	51,50
M12	1.75	220	18	-	9	7	10.25	134220 0120	63,–
M14	2	220	20	-	9	7	12.00	134220 0140	98,50
M16	2	220	20	-	12	9	14.00	134220 0160	109,–
M20	2.5	280	25	-	16	12	17.50	134220 0200	148,–

1127



ATORN® Machine tap, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- Constructional dimensions similar to DIN 371 = up to M 10, similar to DIN 376 = from M12
- **Cutting material: HSS-E**
- 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

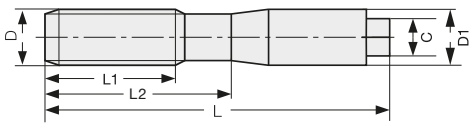
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Right-hand thread, long version (company standard)

D mm	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	2.50	**134125** 0030	37,80
M4	0.7	126	12	21	4.5	3.4	3.30	134125 0040	37,80
M5	0.8	140	14	25	6	4.9	4.20	134125 0050	36,50
M6	1.0	160	16	30	6	4.9	5.00	134125 0060	36,50
M8	1.25	180	18	35	8	6.2	6.80	134125 0080	45,10
M10	1.5	200	20	39	10	8	8.50	134125 0100	50,50
M12	1.75	220	22	-	9	7	10.25	134125 0120	62,–
M14	2.0	220	25	-	11	9.0	12.00	134125 0140	75,–
M16	2.0	220	28	-	12	9.0	14.00	134125 0160	85,–
M20	2.5	280	32	-	16	12.0	17.50	134125 0200	124,–

1127



ATORN® Left-hand thread machine tap

M-LH | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 10-272

- **ISO 6H metric left-hand 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**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D



material: ● very well suited ○ well suited

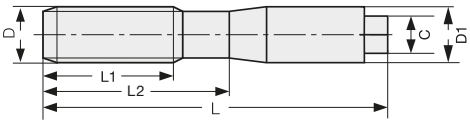
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Left-hand thread

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3-LH	0.5	56	6	18	3.5	2.7	2.50	**134215** 0030	36,90
M4-LH	0.7	63	7	21	4.5	3.4	3.30	134215 0040	36,90
M5-LH	0.8	70	8	25	6	4.9	4.20	134215 0050	36,40
M6-LH	1	80	10	30	6	4.9	5.00	134215 0060	35,40
M8-LH	1.25	90	13	35	8	6.2	6.80	134215 0080	43,60
M10-LH	1.5	100	15	39	10	8	8.50	134215 0100	49,30
M12-LH	1.75	110	18	-	9	7	10.25	134215 0120	60,50
M16-LH	2	110	20	-	12	9	14.00	134215 0160	104,–
M20-LH	2.5	140	25	-	16	12	17.50	134215 0200	141,–

1127



ATORN® Left-hand thread machine tap

M-LH | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 10-272

- **ISO 6H metric left-hand thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- Constructional dimensions DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E**
- 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

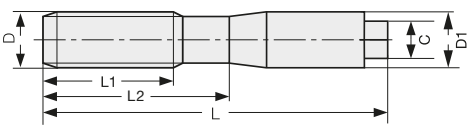
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Left-hand thread

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M4-LH	0.7	63	12	21	4.5	3.4	3.30	**134120** 0040	36,40
M5-LH	0.8	70	14	25	6	4.9	4.20	134120 0050	34,80
M6-LH	1.0	80	16	30	6	4.9	5.00	134120 0060	34,80
M8-LH	1.25	90	18	35	8	6.2	6.80	134120 0080	43,10
M10-LH	1.5	100	20	39	10	8	8.50	134120 0100	48,40
M12-LH	1.75	110	22	-	9	7	10.25	134120 0120	59,50
M14-LH	2.0	110	25	-	11	9	12.00	134120 0140	84,50
M16-LH	2.0	110	28	-	12	9	14.00	134120 0160	94,–
M20-LH	2.5	140	32	-	16	12	17.50	134120 0200	139,–

1127

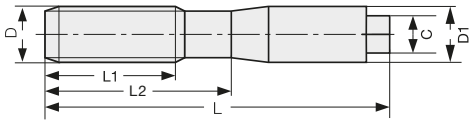


ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 15° | 2,5xD | TiN | Vc/fz | 10-272

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, for blind-hole threads
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E; HSS-E TiN**
- Possible thread depth 2.5 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
134175....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
134180....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
Cutting speed Vc m/min.																		

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





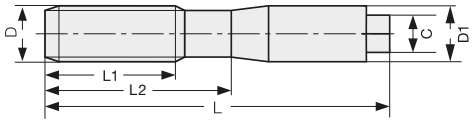
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiN art.no.	TiN €
M2	0.4	45	8	-	2.8	2.1	1.60	**134175** 0020	21,70		
M2.3	0.4	45	9	-	2.8	2.1	1.90	134175 0023	21,70		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134175 0025	20,80		
M2.6	0.45	50	9	-	2.8	2.1	2.10	134175 0026	21,70		
M3	0.5	56	10	18	3.5	2.7	2.50	134175 0030	15,20	**134180** 0030	21,–
M3.5	0.6	56	11	20	4	3	2.90	134175 0035	20,80		
M4	0.7	63	12	21	4.5	3.4	3.30	134175 0040	15,20	134180 0040	21,–
M5	0.8	70	14	25	6	4.9	4.20	134175 0050	15,90	134180 0050	21,80
M6	1.0	80	16	30	6	4.9	5.00	134175 0060	15,90	134180 0060	22,30
M7	1.0	80	16	30	7	5.5	6.00	134175 0070	21,30		
M8	1.25	90	18	35	8	6.2	6.80	134175 0080	20,60	134180 0080	27,60
M10	1.5	100	20	39	10	8	8.50	134175 0100	23,60	134180 0100	31,60
M12	1.75	110	22	-	9	7	10.25	134175 0120	30,20	134180 0120	43,40
M14	2.0	110	25	-	11	9	12.00	134175 0140	35,90		
M16	2.0	110	28	-	12	9	14.00	134175 0160	43,30	134180 0160	62,–
M18	2.5	125	32	-	14	11	15.50	134175 0180	54,50		
M20	2.5	140	32	-	16	12	17.50	134175 0200	54,50	134180 0200	84,–
M24	3.0	160	36	-	18	14.5	21.00	134175 0240	97,50		
M30	3.5	180	40	-	22	18	26.50	134175 0300	215,–		
								1127		1127	

ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 10-272

- **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-PM**
- For blind-hole threads
- Shortened threaded part, larger relief grinding, narrow cutting inserts
- 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
	● 5-20	● 5-15	● 5-10	○ 5-10	○ 5-12	○ 5-8	● 8-20	● 8-20	○ 2-6	○ 2-6		● 20-40	○ 10-25	● 10-12				
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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**134235** 0030	29,70
M4	0.7	63	12	21	4.5	3.4	3.30	134235 0040	29,70
M5	0.8	70	14	25	6	4.9	4.20	134235 0050	28,40
M6	1.0	80	16	30	6	4.9	5.00	134235 0060	28,40
M8	1.25	90	18	35	8	6.2	6.80	134235 0080	35,–
								1127	

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M10	1.5	100	20	39	10	8	8.50	134235 0100	39,60
M12	1.75	110	22	-	9	7	10.25	134235 0120	48,50
M14	2.0	110	25	-	11	9	12.00	134235 0140	68,–
M16	2.0	110	28	-	12	9	14.00	134235 0160	75,50
M20	2.5	140	32	-	16	12	17.50	134235 0200	108,–
								1127	

ATORN® Machine tap set

M | 60° | HSS-E | DIN 371/376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 10-272

- In a plastic case
- **HSS-E tap for ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D
- **HSS-E twist drill bit, type TLP**
- 130° point angle



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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Contents	art.no.	€
Tap no. 134200.... M3, M4, M5, M6, M8, M10, M12 Twist drill no. 101013.... Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm	**139001** 0001	169,–
	1127	

SARA® Machine tap set

M | 60° | HSS-E | DIN 371/376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 10-272

- In plastic box

HSS-E tap for metric ISO 6H thread, right-hand

- 40°, spiral-fluted
- Form C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- For blind-hole threads
- Possible thread depth 2.5 x D
- M3 / M4 / M5 /M6 / M8 / M10 / M12

HSS-E twist drill bitHSS-E

- 130° point angle
- Ø 2.5 / 3.3 / 4.2 / 5.0 / 6.8 / 8.5 / 10.2 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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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

Contents	art.no.	€
Tap no. M3, M4, M5, M6, M8, M10, M12 Twist drill Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm	**139005** 0001	159,–
	1156	

ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vc/fz | 10-272

- **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

Synchro

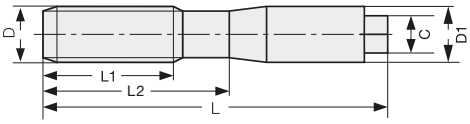


material

● 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
	● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				○ 30-60	○ 10-30	○ 10-20				
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.	€
M3	0.5	56	6	18	3.5	2.7	2.50	**135350** 0030	24,70
M4	0.7	63	7.5	21	4.5	3.4	3.30	135350 0040	26,10
M5	0.8	70	8.5	25	6	4.9	4.20	135350 0050	26,50
M6	1.0	80	11	30	6	4.9	5.00	135350 0060	31,80
M8	1.25	90	14	35	8	6.2	6.80	135350 0080	36,90
M10	1.5	100	16	39	10	8	8.50	135350 0100	43,80
M12	1.75	110	18.5	-	9	7	10.25	135350 0120	57,–
M14	2.0	110	20	-	11	9	12.00	135350 0140	76,50
M16	2.0	110	20	-	12	9	14.00	135350 0160	76,50
M18	2.5	125	25	-	14	11	15.50	135350 0180	104,–
M20	2.5	140	25	-	16	12	17.50	135350 0200	128,–
M24	3.0	160	30	-	18	14.5	21.00	135350 0240	155,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 10-272

- **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

Synchro

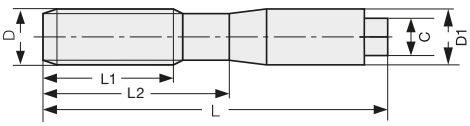


material

● 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
	● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				○ 30-60	○ 10-30	○ 10-20				
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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**135385** 0030	23,20
M4	0.7	63	12	21	4.5	3.4	3.30	135385 0040	24,–
M5	0.8	70	14	25	6	4.9	4.20	135385 0050	24,70
M6	1.0	80	16	30	6	4.9	5.00	135385 0060	29,10
M8	1.25	90	17	35	8	6.2	6.80	135385 0080	32,60
M10	1.5	100	20	39	10	8.0	8.50	135385 0100	46,10
M12	1.75	110	24	-	9	7.0	10.25	135385 0120	54,–
M14	2.0	110	26	-	11	9.0	12.00	135385 0140	71,50
M16	2.0	110	26	-	12	9.0	14.00	135385 0160	74,50
M18	2.5	125	30	-	14	11.0	15.50	135385 0180	91,50
M20	2.5	140	32	-	16	12.0	17.50	135385 0200	99,–
M24	3.0	160	36	-	18	14.5	21.00	135385 0240	128,–

1127



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiCN | Vc/fz | 10-272

- **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

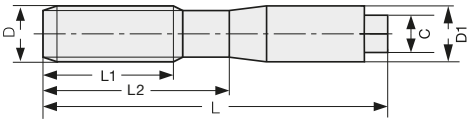


material

● 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....	● 5-20	● 5-15	● 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					
134233....	● 5-40	● 5-30	● 5-20	○ 5-20			● 8-30	● 8-30	○ 2-6	○ 2-6			○ 10-30					
134231....	● 5-20	● 5-15	○ 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					

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	ATORN® art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M3	0.5	56	6	18	3.5	2.7	2.50	**134230** 0030	13,80	**134233** 0030	18,10	**134231** 0030	9,70
M4	0.7	63	7	21	4.5	3.4	3.30	134230 0040	13,80	134233 0040	18,10	134231 0040	9,70
M5	0.8	70	8	25	6	4.9	4.20	134230 0050	14,–	134233 0050	18,20	134231 0050	9,85
M6	1.0	80	10	30	6	4.9	5.00	134230 0060	14,30	134233 0060	19,–	134231 0060	10,10
M8	1.25	90	13	35	8	6.2	6.80	134230 0080	17,60	134233 0080	22,40	134231 0080	12,40
M10	1.5	100	15	39	10	8	8.50	134230 0100	21,–	134233 0100	26,10	134231 0100	14,80
M12	1.75	110	18	-	9	7	10.25	134230 0120	30,30	134233 0120	36,50	134231 0120	21,30
M16	2.0	110	20	-	12	9	14.00	134230 0160	46,30	134233 0160	55,–		
M20	2.5	140	25	-	16	12	17.50	134230 0200	79,–	134233 0200	102,–		
								1127		1127		1156	



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 10-272

- **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

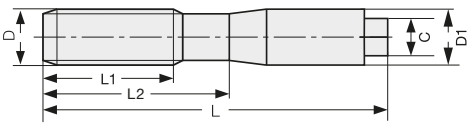


material

● 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....	● 5-20	● 5-15	● 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					
134137....	● 5-40	● 5-30	● 5-20	○ 5-20			● 8-30	● 8-30	○ 2-6	○ 2-6			○ 10-30					
134136....	● 5-20	● 5-15	○ 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					

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	ATORN® art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**134135** 0030	14,60	**134137** 0030	21,10	**134136** 0030	10,25
M4	0.7	63	12	21	4.5	3.4	3.30	134135 0040	14,60	134137 0040	21,10	134136 0040	10,25
M5	0.8	70	14	25	6	4.9	4.20	134135 0050	14,70	134137 0050	21,30	134136 0050	10,30
M6	1.0	80	16	30	6	4.9	5.00	134135 0060	15,10	134137 0060	22,10	134136 0060	10,60
M8	1.25	90	18	35	8	6.2	6.80	134135 0080	18,70	134137 0080	26,–	134136 0080	13,10
M10	1.5	100	20	39	10	8	8.50	134135 0100	22,10	134137 0100	30,50	134136 0100	15,50
M12	1.75	110	22	-	9	7	10.25	134135 0120	31,90	134137 0120	42,50	134136 0120	22,30
M16	2.0	110	28	-	12	9	14.00	134135 0160	48,90	134137 0160	64,–		
M20	2.5	140	32	-	16	12	17.50	134135 0200	83,–	134137 0200	105,–		
								1127		1127		1156	



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 3xD | TiCN | Vc/fz | 10-272

- **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



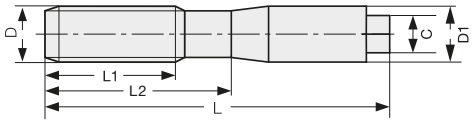
material: ● very well suited ○ well suited

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
● 5-40	● 5-30	● 5-20	● 5-20	● 5-24	○ 5-15			○ 2-6									

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.	€
M3	0.5	56	6	18	3.5	2.7	2.50	**134193** 0305	24,20
M4	0.7	63	7	21	4.5	3.4	3.30	134193 0407	24,20
M5	0.8	70	8	25	6	4.9	4.20	134193 0508	24,30
M6	1.0	80	10	30	6	4.9	5.00	134193 0610	25,40
M8	1.25	90	13	35	8	6.2	6.80	134193 0812	30,60
M10	1.5	100	15	39	10	8	8.50	134193 1015	35,70
M12	1.75	110	18	-	9	7	10.25	134193 1217	49,20
M16	2.0	110	20	-	12	9	14.00	134193 1620	74,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 10-272

- **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



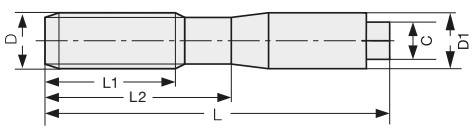
material: ● very well suited ○ well suited

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
● 5-40	● 5-30	● 5-20	● 5-20	● 5-24	○ 5-15			○ 2-6									

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.	€
M3	0.5	56	6	18	3.5	2.7	2.50	**134196** 0305	26,50
M4	0.7	63	7	21	4.5	3.4	3.30	134196 0407	26,50
M5	0.8	70	8	25	6	4.9	4.20	134196 0508	26,60
M6	1.0	80	10	30	6	4.9	5.00	134196 0610	28,–
M8	1.25	90	13	35	8	6.2	6.80	134196 0812	33,70
M10	1.5	100	15	39	10	8	8.50	134196 1015	40,20
M12	1.75	110	18	-	9	7	10.25	134196 1217	54,–
M16	2.0	110	20	-	12	9	14.00	134196 1620	81,–

1127



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 10-272

- **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, vapour-treated**; **HSS-E, TiN-coated**
- For blind bore threads, minimal thread relief grinding
- Possible thread depth 2.5 x D

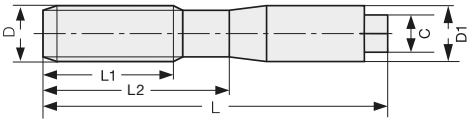
For stainless steel



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....				● 5-10	● 5-12	● 5-8												
	134226....				● 5-20	● 5-24	● 5-15												
	134227....				● 5-8	● 5-8	○ 5-8												
	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	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€	SARA® art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134225** 0020	22,90				
M2.5	0.45	50	9	-	2.8	2.1	2.05	134225 0025	19,–				
M3	0.5	56	6	18	3.5	2.7	2.50	134225 0030	15,20	**134226** 0030	23,60	**134227** 0030	10,70
M4	0.7	63	7	21	4.5	3.4	3.30	134225 0040	15,20	134226 0040	23,60	134227 0040	10,70
M5	0.8	70	8	25	6	4.9	4.20	134225 0050	15,40	134226 0050	23,70	134227 0050	10,80
M6	1.0	80	10	30	6	4.9	5.00	134225 0060	15,80	134226 0060	24,90	134227 0060	11,10
M8	1.25	90	13	35	8	6.2	6.80	134225 0080	19,60	134226 0080	30,–	134227 0080	13,75
M10	1.5	100	15	39	10	8	8.50	134225 0100	23,30	134226 0100	34,70	134227 0100	16,40
M12	1.75	110	18	-	9	7	10.25	134225 0120	33,60	134226 0120	48,20	134227 0120	23,60
M16	2.0	110	20	-	11	9	14.00	134225 0160	51,50	134226 0160	72,50		
M20	2.5	140	25	-	16	12	17.50	134225 0200	87,–				
								1127		1127		1156	



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vap. | Vc/fz | 10-272

- **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 vapour-treated**; **HSS-E, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D

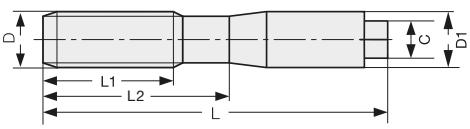
For stainless steel



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....				● 5-10	● 5-12	● 5-8												
	134131....				● 5-20	● 5-24	● 5-15												
	134132....				● 5-8	● 5-8	○ 5-8												
	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	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€	SARA® Vapour-treated art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134130** 0020	21,60				
M2.5	0.45	50	9	-	2.8	2.1	2.05	134130 0025	17,80				
M3	0.5	56	10	18	3.5	2.7	2.50	134130 0030	14,40	**134131** 0030	22,20	**134132** 0030	10,10
M4	0.7	63	12	21	4.5	3.4	3.30	134130 0040	14,40	134131 0040	22,20	134132 0040	10,10
M5	0.8	70	14	25	6	4.9	4.20	134130 0050	14,50	134131 0050	22,30	134132 0050	10,20
M6	1.0	80	16	30	6	4.9	5.00	134130 0060	14,85	134131 0060	23,40	134132 0060	10,40
M8	1.25	90	18	35	8	6.2	6.80	134130 0080	18,40	134131 0080	28,10	134132 0080	12,90
M10	1.5	100	20	39	10	8	8.50	134130 0100	21,80	134131 0100	32,80	134132 0100	15,30
M12	1.75	110	22	-	9	7	10.25	134130 0120	31,40	134131 0120	45,30	134132 0120	22,–
M16	2.0	110	28	-	12	9	14.00	134130 0160	48,20	134131 0160	68,–		
M20	2.5	140	32	-	16	12	17.50	134130 0200	82,–				
								1127		1127		1156	



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 15° | 2xD | Vap. | Vc/fz | 10-272

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, 15°, spiral-fluted with exposed ridges
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind bore threads, easy chip removal to the rear
- Possible thread depth 2xD

Exposed thread ridges

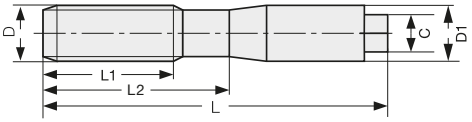


material

● 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
				● 5-10	● 5-12	● 5-8												
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.	€
M3	0.5	56	6.0	18	3.5	2.7	2.50	**135390** 0030	27,10
M4	0.7	63	7.5	21	4.5	3.4	3.30	135390 0040	27,10
M5	0.8	70	8.5	25	6	4.9	4.20	135390 0050	27,90
M6	1.0	80	11.0	30	6	4.9	5.00	135390 0060	27,50
M8	1.25	90	14.0	35	8	6.2	6.80	135390 0080	32,20
M10	1.5	100	16.0	39	10	8.0	8.50	135390 0100	40,80
M12	1.75	110	18.5	-	9	7.0	10.25	135390 0120	49,30
M16	2.0	110	20.0	-	12	9.0	14.00	135390 0160	69,50
M20	2.5	140	25.0	-	16	12.0	17.50	135390 0200	110,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- Straight-fluted, with exposed thread ridges
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads in materials that tend to jam, thin-walled parts and pipes
- Possible thread depth 3 x D

Exposed thread ridges

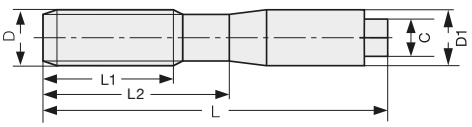


material

● 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
				● 5-10	● 5-12	● 5-8												
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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**135140** 0030	36,90
M4	0.7	63	12	21	4.5	3.4	3.30	135140 0040	32,–
M5	0.8	70	14	25	6	4.9	4.20	135140 0050	28,70
M6	1.0	80	16	30	6	4.9	5.00	135140 0060	32,60
M8	1.25	90	17	35	8	6.2	6.80	135140 0080	37,50
M10	1.5	100	20	39	10	8	8.50	135140 0100	45,70
M12	1.75	110	24	-	9	7	10.25	135140 0120	64,–
M16	2.0	110	26	-	12	9	14.00	135140 0160	99,50

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | D 3,5-5 | 20° | 2,5xD | Vc/fz | 10-272

- **Metric ISO 6H thread**
- Form D, 3.5-5 thread chamfer, 20°, spiral-fluted
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- For blind-hole threads, easy chip removal to the rear
- Possible thread depth 2.5 x D

For titanium and superalloys



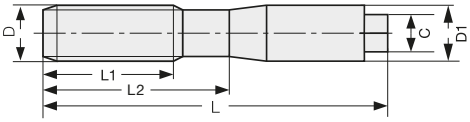
material

● 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
									● 2-6	● 2-6	○ 2-6							

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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**134192** 0030	30,90
M4	0.7	63	12	21	4.5	3.4	3.30	134192 0040	30,90
M5	0.8	70	14	25	6	4.9	4.20	134192 0050	29,80
M6	1.0	80	16	30	6	4.9	5.00	134192 0060	29,80
M8	1.25	90	18	35	8	6.2	6.80	134192 0080	36,70
M10	1.5	100	20	39	10	8.0	8.50	134192 0100	41,30
M12	1.75	110	22	-	9	7.0	10.25	134192 0120	50,50
M16	2.0	110	28	-	12	9.0	14.00	134192 0160	76,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 10-272

NEW · NUOVO · NEU · NOUVEAU · NUEVO

- **Metric ISO 6HX thread**
- Straight-fluted with spiral point, Form B, 3.5 to 5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depths 3 x D

For titanium and superalloys



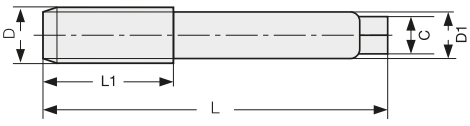
material

● 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
									● 2-6	● 2-6	○ 2-6							

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.	€
M3	0.5	56	10	3.5	2.7	2.50	**134142** 0030	33,40
M4	0.7	63	12	4.5	3.4	3.30	134142 0040	33,40
M5	0.8	70	14	6.0	4.9	4.20	134142 0050	32,–
M6	1.0	80	16	6.0	4.9	5.00	134142 0060	32,–
M8	1.25	90	18	8.0	6.2	6.80	134142 0080	39,60
M10	1.5	100	20	10.0	8.0	8.50	134142 0100	44,60
M12	1.75	110	22	9.0	7.0	10.25	134142 0120	54,50
M16	2.0	110	28	12.0	9.0	14.00	134142 0160	82,–

1127





… 3 µm

ATORN®
High quality for great performance

ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 2,5xD | Vc/fz

10-272

- **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



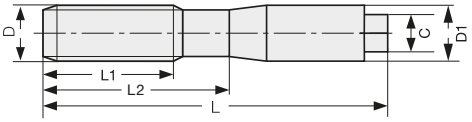
material — ● very well suited ○ well suited

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
											● 20-40	● 10-25	● 10-12				

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.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134195** 0020	18,80
M3	0.5	56	6	18	3.5	2.7	2.50	134195 0030	13,80
M4	0.7	63	7	21	4.5	3.4	3.30	134195 0040	14,–
M5	0.8	70	8	25	6	4.9	4.20	134195 0050	14,60
M6	1.0	80	10	30	6	4.9	5.00	134195 0060	14,70
M8	1.25	90	13	35	8	6.2	6.80	134195 0080	19,40
M10	1.5	100	15	39	10	8	8.50	134195 0100	23,80
M12	1.75	110	18	-	9	7	10.25	134195 0120	36,30

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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

10-272

- **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



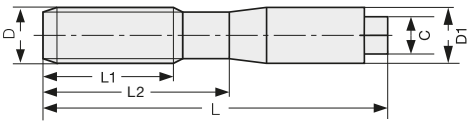
material — ● very well suited ○ well suited

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
											● 20-40	● 10-25	● 10-12				

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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**134127** 0030	12,75
M4	0.7	63	12	21	4.5	3.4	3.30	134127 0040	12,85
M5	0.8	70	14	25	6.0	4.9	4.20	134127 0050	13,50
M6	1.0	80	16	30	6.0	4.9	5.00	134127 0060	13,60
M8	1.25	90	18	35	8.0	6.2	6.80	134127 0080	17,90
M10	1.5	100	20	39	10.0	8.0	8.50	134127 0100	22,–
M12	1.75	110	22	-	9.0	7.0	10.25	134127 0120	33,70

1127



ATORN® Machine threading taps HARDLUBE

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2xD | TiAlN | Vc/fz | 10-272

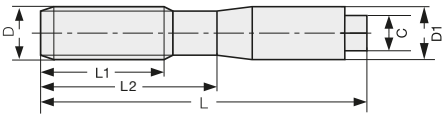
- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, Hardlube coating**
- Easy chip removal to the rear
- Possible thread depth 2xD
- **BALINIT® HARDLUBE**: The high level of hardness 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.



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
● 15-35	● 10-25		● 5-15	● 5-15							● 10-30		○ 10-25				

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	C mm	D1 mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	10	18	2.7	3.5	2.50	**134740** 0030	23,80
M4	0.7	63	12	21	3.4	4.5	3.30	134740 0040	23,80
M5	0.8	70	14	25	4.9	6	4.20	134740 0050	24,60
M6	1.0	80	16	30	4.9	6	5.00	134740 0060	25,10
M8	1.25	90	18	35	6.2	8	6.80	134740 0080	29,70
M10	1.5	100	20	39	8	10	8.50	134740 0100	33,10
M12	1.75	110	22	-	7	9	10.25	134740 0120	42,80
M16	2.0	110	28	-	9	12	14.00	134740 0160	61,–
M20	2.5	140	32	-	12	16	17.50	134740 0200	93,–

1127

ATORN® Machine threading taps HARDLUBE

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiAlN | Vc/fz | 10-272

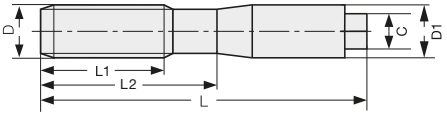
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E-PM, Hardlube coating**
- For through-hole threads
- Possible thread depth 3 x D
- **BALINIT® HARDLUBE**: The high 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.



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
● 15-35	● 10-25		● 5-15	● 5-15							● 10-30		○ 10-25				

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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**134745** 0030	23,80
M4	0.7	63	12	21	4.5	3.4	3.30	134745 0040	23,80
M5	0.8	70	14	25	6	4.9	4.20	134745 0050	24,60
M6	1.0	80	16	30	6	4.9	5.00	134745 0060	25,10
M8	1.25	90	18	35	8	6.2	6.80	134745 0080	29,70
M10	1.5	100	20	39	10	8	8.50	134745 0100	33,10
M12	1.75	110	22	-	9	7	10.25	134745 0120	42,80
M16	2.0	110	28	-	12	9	14.00	134745 0160	61,–
M20	2.5	140	32	-	16	12	17.50	134745 0200	93,–

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ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 45° | 2xD | TiCN | Vc/fz | 10-272

- **ISO 6HX metric thread**
- Type C, 2 to 3-thread chamfer, for blind-hole threads
- 45°, spiral-fluted
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- Shank tolerance h6
- Possible thread depth 2xD
- Synchro tool for CNC machines (rigid clamping or minimal length compensation)

Synchro



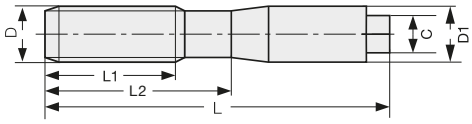
material: ● very well suited ○ well suited

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
● 15-35	● 10-25		● 5-15	● 5-15							● 10-30		○ 10-25				

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.	€
M3	0.5	56	5	18	3.5	2.7	2.50	**134725** 0030	34,80
M4	0.7	63	6	21	4.5	3.4	3.30	134725 0040	34,80
M5	0.8	70	7	25	6	4.9	4.20	134725 0050	35,–
M6	1.0	80	8	30	6	4.9	5.00	134725 0060	36,80
M8	1.25	90	10	35	8	6.2	6.80	134725 0080	44,20
M10	1.5	100	12	39	10	8	8.50	134725 0100	51,–
M12	1.75	110	18	-	9	7	10.20	134725 0120	71,–
M16	2.0	110	20	-	12	9	14.00	134725 0160	106,–

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ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | B 3,5-5 | 2xD | TiCN | Vc/fz | 10-272

- Straight-fluted with spiral point
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- Shank tolerance h6
- The spiral point ensures strong chip removal to the front
- Possible thread depth 2xD
- Synchro tool for CNC machines (rigid clamping or minimal length compensation)

Synchro



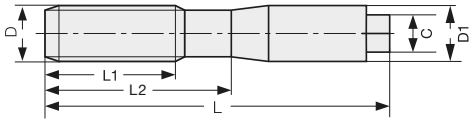
material: ● very well suited ○ well suited

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
● 15-35	● 10-25		● 5-15	● 5-15							● 10-30		○ 10-25				

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.	€
M3	0.5	56	5	18	3.5	2.7	2.50	**134720** 0030	34,80
M4	0.7	63	6	21	4.5	3.4	3.30	134720 0040	34,80
M5	0.8	70	7	25	6	4.9	4.20	134720 0050	35,–
M6	1.0	80	8	30	6	4.9	5.00	134720 0060	36,80
M8	1.25	90	10	35	8	6.2	6.80	134720 0080	44,20
M10	1.5	100	12	39	10	8	8.50	134720 0100	51,–
M12	1.75	110	18	-	9	7	10.20	134720 0120	71,–
M16	2.0	110	20	-	12	9	14.00	134720 0160	106,–

1127





... without shrinkage

ATORN®
High quality for great performance

ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 50° | 2,5xD | TiN | Vc/fz | 10-272

- **ISO 6HX metric thread**
- 50°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D
- **Minimum-sized guide piece and extremely large clearance angle**
- Shank tolerance = h6
- For synchronous tap chucks

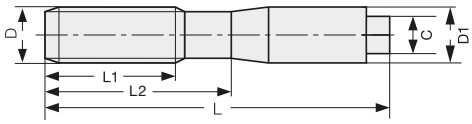
Synchro



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
		● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				● 30-60	○ 10-30	○ 10-20				
	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.	€
M4	0.7	63	3.5	21	4.5	3.4	3.30	**134575** 0040	39,30
M5	0.8	70	4.0	25	6	4.9	4.20	134575 0050	38,50
M6	1.0	80	5.0	30	6	4.9	5.00	134575 0060	42,20
M8	1.25	90	6.3	35	8	6.2	6.80	134575 0080	49,70
M10	1.5	100	7.5	39	10	8	8.50	134575 0100	67,50
M12	1.75	110	8.8	-	9	7	10.25	134575 0120	84,50
M14	2.0	110	10.0	-	11	9	12.00	134575 0140	93,50
M16	2.0	110	10.0	-	12	9	14.00	134575 0160	120,–
M20	2.5	140	12.5	-	16	12	17.50	134575 0200	167,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 10-272

- **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-PM, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks

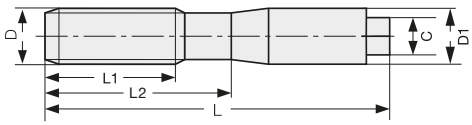
Synchro



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
		● 20-25	● 15-20	○ 10-15	● 10-18	● 10-18	○ 10-15	● 8-30	● 8-30				○ 25-30	○ 25-30	○ 25-30				
	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.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**134570** 0020	25,50
M3	0.5	56	10	18	3.5	2.7	2.50	134570 0030	26,50
M4	0.7	63	12	21	4.5	3.4	3.30	134570 0040	27,30
M5	0.8	70	14	25	6	4.9	4.20	134570 0050	27,90
M6	1.0	80	16	30	6	4.9	5.00	134570 0060	32,60
M8	1.25	90	17	35	8	6.2	6.80	134570 0080	36,90
M10	1.5	100	20	39	10	8.0	8.50	134570 0100	52,–
M12	1.75	110	24	-	9	7.0	10.25	134570 0120	61,–
M14	2.0	110	26	-	11	9.0	12.00	134570 0140	81,50
M16	2.0	110	26	-	12	9.0	14.00	134570 0160	82,50
M18	2.5	125	30	-	14	11.0	15.50	134570 0180	104,–
M20	2.5	140	32	-	16	12.0	17.50	134570 0200	114,–

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ATORN® Machine tap set

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6HX | C 2-3 | 50° | 2,5xD | TiN | Vc/fz | 10-272

- **ISO 6HX metric thread**
- 50°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D
- **Minimum-sized guide piece and extremely large clearance angle**
- Shank tolerance = h6
- For synchronous tap chucks

Synchro



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
● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				● 30-60	○ 10-30	○ 10-20				

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

Contents	art.no.	€
5-pcs. set: M5, M6, M8, M10, M12	**134575** 1005 1127	210,–

ATORN® Machine tap set

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 10-272

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks
- M5, M6, M8, M10, M12

Synchro



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
● 20-25	● 15-20	○ 10-15	● 10-18	● 10-18	○ 10-15	● 8-30	● 8-30				○ 25-30	○ 25-30	○ 25-30				

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

Contents	art.no.	€
5-pcs. set: M5, M6, M8, M10, M12	**134570** 1005 1127	189,–

ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | D 3,5-5 | 15° | 3xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- Type D, 3.5 to 5-thread chamfer,
- 15° left-hand twist
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 3 x D

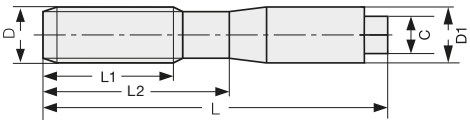
15° left-hand twist for right-hand through-hole thread



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
		● 5-20	○ 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**135365** 0030	18,10
M4	0.7	63	12	21	4.5	3.4	3.30	135365 0040	18,10
M5	0.8	70	14	25	6	4.9	4.20	135365 0050	18,50
M6	1.0	80	16	30	6	4.9	5.00	135365 0060	18,50
M8	1.25	90	18	35	8	6.2	6.80	135365 0080	22,20
M10	1.5	100	20	39	10	8.0	8.50	135365 0100	26,30
M12	1.75	110	24	-	9	7.0	10.25	135365 0120	32,60
M14	2.0	110	26	-	11	9.0	12.00	135365 0140	45,40
M16	2.0	110	26	-	12	9.0	14.00	135365 0160	50,50
M20	2.5	140	32	-	16	12.0	17.50	135365 0200	84,50

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 1,5xD | Vc/fz | 10-272

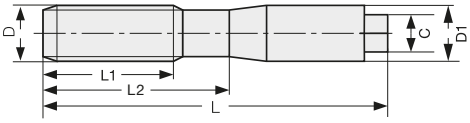
- **ISO 6H metric thread**
- Straight-fluted
- Type C, 2-3 thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads
- Possible thread depth 1.5xD



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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
M2	0.4	45	4.5	-	2.8	2.1	1.60	**135150** 0020	20,–
M2.5	0.45	50	5.0	-	2.8	2.1	2.05	135150 0025	19,40
M3	0.5	56	6.0	18	3.5	2.7	2.50	135150 0030	16,10
M4	0.7	63	7.5	21	4.5	3.4	3.30	135150 0040	15,30
M5	0.8	70	8.5	25	6	4.9	4.20	135150 0050	16,50
M6	1.0	80	11	30	6	4.9	5.00	135150 0060	16,70
M8	1.25	90	14	35	8	6.2	6.80	135150 0080	18,50
M10	1.5	100	16	39	10	8	8.50	135150 0100	22,60
M12	1.75	110	18.5	-	9	7	10.25	135150 0120	26,90
M14	2.0	110	20	-	11	9	12.00	135150 0140	36,30
M16	2.0	110	20	-	12	9	14.00	135150 0160	33,60
M20	2.5	140	25	-	16	12	17.50	135150 0200	61,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 357 | ISO 2 6H | 3xD | Vc/fz | 10-272

- **Extra-long, ISO 6H metric thread**
- Straight-fluted with extra-long shank
- Approx. 20-thread chamfer
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 3 x D

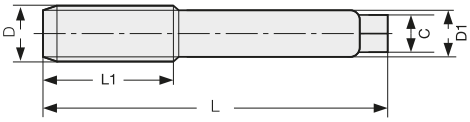
Extra-long



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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
M3	0.5	70	22	2.2	-	2.50	**135100** 0030	36,90
M4	0.7	90	25	2.8	2.1	3.30	135100 0040	32,60
M5	0.8	100	28	3.5	2.7	4.20	135100 0050	35,30
M6	1.0	110	32	4.5	3.4	5.00	135100 0060	40,40
M8	1.25	125	40	6	4.9	6.80	135100 0080	50,50
M10	1.5	140	45	7	5.5	8.50	135100 0100	60,–
M12	1.75	180	50	9	7	10.25	135100 0120	81,50
M16	2	200	63	12	9	14.00	135100 0160	112,–
M20	2.5	250	70	16	12	17.50	135100 0200	220,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 3xD | Vc/fz | 10-272

- **ISO 6HX metric thread**
- Straight-fluted
- Type C, 2-3 thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, nitrided**
- For blind bore and through-hole threads
- Possible thread depth 3 x D

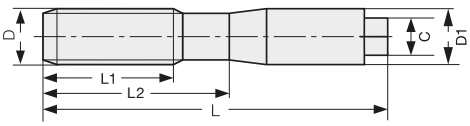
For cast iron



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
								● 8-20	● 8-20					○ 10-25	○ 10-12				
	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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**135155** 0030	13,85
M4	0.7	63	12	21	4.5	3.4	3.30	135155 0040	13,65
M5	0.8	70	14	25	6	4.9	4.20	135155 0050	14,90
M6	1.0	80	17	30	6	4.9	5.00	135155 0060	14,90
M8	1.25	90	18	35	8	6.2	6.80	135155 0080	18,10
M10	1.5	100	20	39	10	8	8.50	135155 0100	21,40
M12	1.75	110	24	-	9	7	10.25	135155 0120	28,10
M16	2.0	110	26	-	12	9	14.00	135155 0160	40,10
M18	2.5	125	30	-	14	11	15.50	135155 0180	50,50
M20	2.5	140	32	-	16	12	17.50	135155 0200	63,–
M24	3.0	160	36	-	18	14.5	21.00	135155 0240	85,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | D 3,5-5 | 1,5xD | TiCN | Vc/fz | 10-272

- **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

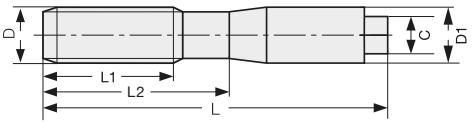
Hard machining < 55 HRc



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
																	● 2-12		
	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.	€
M3	0.5	56	10	18	3.5	2.7	2.50	**135165** 0030	55,–
M4	0.7	63	12	21	4.5	3.4	3.30	135165 0040	58,–
M5	0.8	70	14	25	6	4.9	4.20	135165 0050	62,50
M6	1.0	80	16	30	6	4.9	5.00	135165 0060	58,50
M8	1.25	90	18	35	8	6.2	6.80	135165 0080	64,–
M10	1.5	100	20	39	10	8	8.50	135165 0100	83,50
M12	1.75	110	22	-	9	7	10.25	135165 0120	103,–
M16	2.0	110	28	-	12	9	14.00	135165 0160	133,–

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ATORN® Machine tap

M | 60° | VHM | DIN 371 | ISO 2 6H | D 3,5-5 | 1,5xD | TiCN | Vc/fz | 10-272

- **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

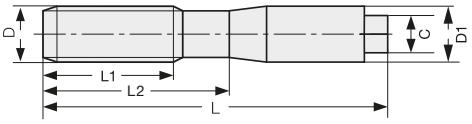
Hard machining ≥ 60 HRc



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
																	● 2-12	● 2-6	● 1-3
	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.	€
M3	0.5	56	12	18	3.5	2.7	2.50	**135170** 0030	130,–
M4	0.7	63	14	21	4.5	3.4	3.30	135170 0040	112,–
M5	0.8	70	17	25	6	4.9	4.20	135170 0050	144,–
M6	1.0	80	20	30	6	4.9	5.00	135170 0060	141,–
M8	1.25	90	20	35	8	6.2	6.80	135170 0080	169,–
M10	1.5	100	24	39	10	8	8.50	135170 0100	198,–
M12	1.75	110	28	-	12	9	10.25	135170 0120	275,–
M16	2.0	110	40	-	16	12	14.00	135170 0160	460,–

1127





... maximum material removal rate

ATORN®
High quality for great performance

S-SFT machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

- **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

Accelerated chip removal due to unequally twisted flute

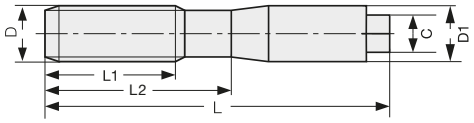


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				
	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.	€
M3	0,5	56	11	18	3.5	2.7	2.5	**133865** 0030	14,60
M4	0,7	63	13	21	4.5	3.4	3.3	133865 0040	14,80
M5	0,8	70	16	25	6	4.9	4.2	133865 0050	15,40
M6	1	80	19	30	6	4.9	5	133865 0060	15,50
M8	1,25	90	22	35	8	6.2	6.8	133865 0080	17,80
M10	1,5	100	24	39	10	8	8.5	133865 0100	22,50
M12	1,75	110	18	-	9	7	10.2	133865 0120	27,60
M14	2	110	20	-	11	9	12	133865 0140	34,20
M16	2	110	20	-	12	9	14	133865 0160	40,10
M18	2,5	125	25	-	14	11	15.5	133865 0180	54,20
M20	2,5	140	25	-	16	12	17.5	133865 0200	63,90
M22	2,5	140	25	-	18	14.5	19.5	133865 0220	69,70
M24	3	160	30	-	18	14.5	21	133865 0240	85,80

1128



S-POT machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 10-272

- **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

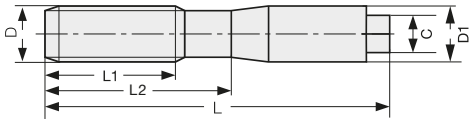


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				
	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.	€
M3	0,5	56	11	18	3.5	2.7	2.5	**133875** 0030	13,70
M4	0,7	63	13	21	4.5	3.4	3.3	133875 0040	13,90
M5	0,8	70	16	25	6	4.9	4.2	133875 0050	14,50
M6	1	80	19	30	6	4.9	5	133875 0060	14,60
M8	1,25	90	22	35	8	6.2	6.8	133875 0080	16,70
M10	1,5	100	24	39	10	8	8.5	133875 0100	20,90
M12	1,75	110	28	-	9	7	10.2	133875 0120	25,70
M14	2	110	30	-	11	9	12	133875 0140	32,–
M16	2	110	32	-	12	9	14	133875 0160	37,40
M18	2,5	125	34	-	14	11	15.5	133875 0180	50,30
M20	2,5	140	34	-	16	12	17.5	133875 0200	59,50
M22	2,5	140	34	-	18	14.5	19.5	133875 0220	65,20
M24	3	160	38	-	18	14.5	21	133875 0240	80,–

1128



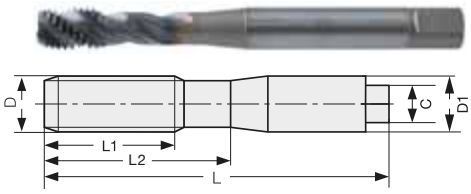
A-SFT machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 10-272

- **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**

Synchro

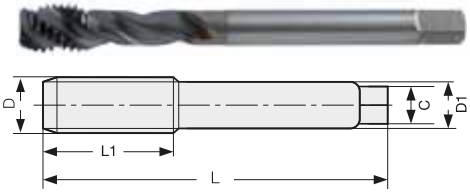
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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.	€
M2	0.4	45	3.2	-	2.8	2.1	1.60	**133400** 0020	26,80
M2.5	0.45	50	3.6	-	2.8	2.1	2.10	133400 0025	26,60
M3	0.5	56	4	18	3.5	2.7	2.50	133400 0030	23,30
M4	0.7	63	5.6	21	4.5	3.4	3.30	133400 0040	24,10
M5	0.8	70	6.4	25	6	4.9	4.20	133400 0050	24,60
M6	1.0	80	8	30	6	4.9	5.00	133400 0060	24,80
M8	1.25	90	10	35	8	6.2	6.80	133400 0080	29,70
M10	1.5	100	12	39	10	8	8.50	133400 0100	36,20

1128



DIN 376

D mm	Pitch mm	L mm	L mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	14	9	7	10.30	**133405** 0120	45,50
M14	2.0	110	16	11	9	12.00	133405 0140	53,90
M16	2.0	110	16	12	9	14.00	133405 0160	63,30
M18	2.5	125	25	14	11	15.50	133405 0180	85,90
M20	2.5	140	25	16	12	17.50	133405 0200	101,50
M22	2.5	140	25	18	14.5	19.50	133405 0220	111,–
M24	3.0	160	30	18	14.5	21.00	133405 0240	136,30

1128

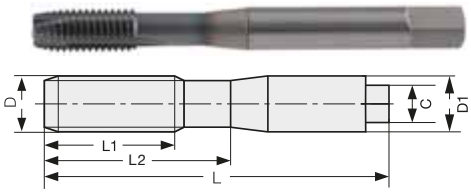
A-POT machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 10-272

- **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**

Universal

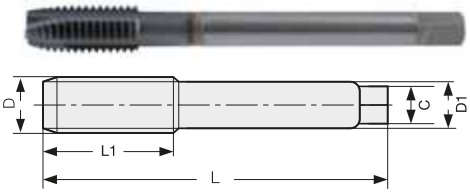
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**133450** 0020	26,20
M2.5	0.45	50	9	-	2.8	2.1	2.10	133450 0025	25,90
M3	0.5	56	11	18	3.5	2.7	2.50	133450 0030	22,60
M4	0.7	63	13	21	4.5	3.4	3.30	133450 0040	23,20
M5	0.8	70	16	25	6	4.9	4.20	133450 0050	23,90
M6	1.0	80	19	30	6	4.9	5.00	133450 0060	24,20
M8	1.25	90	22	35	8	6.2	6.80	133450 0080	28,90
M10	1.5	100	24	39	10	8	8.50	133450 0100	35,30

1128



DIN 376

D mm	Pitch mm	L mm	L mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	28	9	7	10.25	**133455** 0120	44,50
M14	2.0	110	30	11	9	12.00	133455 0140	53,–
M16	2.0	110	32	12	9	14.00	133455 0160	62,30
M18	2.5	125	34	14	11	15.50	133455 0180	84,20
M20	2.5	140	34	16	12	17.50	133455 0200	99,80
M22	2.5	140	34	18	14.5	19.50	133455 0220	108,80
M24	3.0	160	38	18	14.5	21.00	133455 0240	133,70

1128

A-SFT machine tap, with Weldon clamping surface

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2,5 | 45° | TiCN | Vc/fz | 10-272

- **Metric ISO 6HX thread**
- 45°, spiral-fluted
- Form 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**



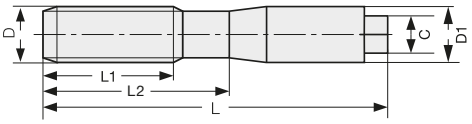
material — ● very well suited ○ well suited

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
● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				

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.	€
M3	0.5	56	4	18	3.5	2.7	2.5	**133490** 0030	25,20
M4	0.7	63	5.6	21	4.5	3.4	3.3	133490 0040	25,90
M5	0.8	70	6.4	25	6	4.9	4.2	133490 0050	26,70
M6	1.0	80	8	30	6	4.9	5	133490 0060	27,–
M8	1.25	90	10	35	8	6.2	6.8	133490 0080	32,30
M10	1.5	100	12	39	10	8	8.5	133490 0100	39,40
M12	1.75	110	14	-	9	7	10.3	133490 0120	49,70
M14	2.0	110	16	-	11	9	12	133490 0140	59,20
M16	2.0	110	16	-	12	9	14	133490 0160	69,60

1128



A-POT machine tap, with Weldon clamping surface

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | TiCN | Vc/fz | 10-272

- **Metric ISO 6HX thread**
- Straight-fluted with spiral point
- Form 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**



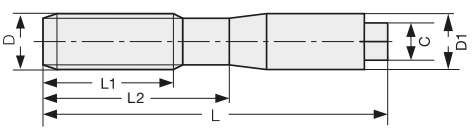
material — ● very well suited ○ well suited

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
● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				

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.	€
M3	0.5	56	11	18	3.5	2.7	2.5	**133495** 0030	24,50
M4	0.7	63	13	21	4.5	3.4	3.3	133495 0040	25,10
M5	0.8	70	16	25	6	4.9	4.2	133495 0050	25,80
M6	1	80	19	30	6	4.9	5	133495 0060	26,10
M8	1.25	90	22	35	8	6.2	6.8	133495 0080	31,30
M10	1.5	100	24	39	10	8	8.5	133495 0100	38,30
M12	1.75	110	28	-	9	7	10.25	133495 0120	48,20
M14	2	110	30	-	11	9	12	133495 0140	57,40
M16	2	110	32	-	12	9	14	133495 0160	67,50

1128



A-OIL-SFT machine tap, with internal cooling

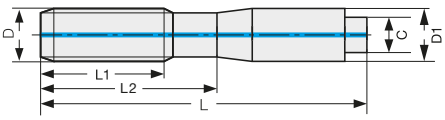
M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6H | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 10-272

- **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**

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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
M6	1.0	80	8	30	6	4.9	**133410** 0060	40,60
M8	1.25	90	10	35	8	6.2	133410 0080	45,90
M10	1.5	100	12	39	10	8	133410 0100	51,10
M12	1.75	110	14	-	9	7	133415 0120	65,10
M14	2.0	110	16	-	11	9	133415 0140	72,80
M16	2.0	110	16	-	12	9	133415 0160	82,70
M18	2.5	125	25	-	14	11	133415 0180	119,30
M20	2.5	140	25	-	16	12	133415 0200	141,30
M22	2.5	140	25	-	18	14.5	133415 0220	154,30
M24	3.0	160	30	-	18	14.5	133415 0240	189,40

1128

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	art.no.	€
M27	3.0	160	36	-	20	16	133415 0270	244,50
M30	3.5	180	42	-	22	18	133415 0300	303,–
M33	3.5	180	42	-	25	20	133415 0330	340,80
M36	4.0	200	48	-	28	22	133415 0360	375,50
M39	4.0	200	48	-	32	24	133415 0390	450,–
M42	4.5	200	54	-	32	24	133415 0420	554,20
M45	4.5	220	54	-	36	29	133415 0450	656,30
M48	5.0	250	60	-	36	29	133415 0480	762,90
M52	5.0	250	60	-	40	32	133415 0520	1.007,20
M56	5.5	250	66	-	40	32	133415 0560	1.112,90

1128

A-OIL-POT machine tap, with internal cooling

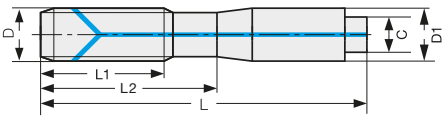
M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 10-272

- **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**

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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
M6	1.0	80	19	30	6	4.9	**133456** 0060	41,80
M8	1.25	90	22	35	8	6.2	133456 0080	47,10
M10	1.5	100	24	39	10	8	133456 0100	52,30
M12	1.75	110	29	-	9	7	133456 0120	65,80
M14	2.0	110	30	-	11	9	133456 0140	77,10
M16	2.0	110	32	-	12	9	133456 0160	88,20
M18	2.5	125	34	-	14	11	133456 0180	119,10
M20	2.5	140	34	-	16	12	133456 0200	141,10
M22	2.5	140	34	-	18	14.5	133456 0220	154,–
M24	3.0	160	38	-	18	14.5	133456 0240	189,10

1128

SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3**
- Also available with TIN coating on request

material — ● very well suited ○ well suited

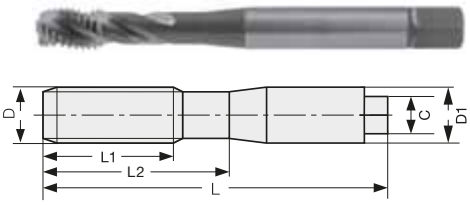
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	○	○									○	●	○				
5-20	5-15	5-10									20-40	10-25	10-12				

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.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**133101** 0020	15,60
M2.5	0.45	50	9	-	2.8	2.1	2.10	133101 0025	14,70
M3	0.5	56	5	18	3.5	2.7	2.50	133101 0030	12,40
M3.5	0.6	56	6	20	4.0	3.0	2.90	133101 0035	13,40
M4	0.7	63	7	21	4.5	3.4	3.30	133101 0040	12,70
M5	0.8	70	8	25	6.0	4.9	4.20	133101 0050	12,70
M6	1.0	80	10	30	6.0	4.9	5.00	133101 0060	12,70
M8	1.25	90	13	35	8.0	6.2	6.80	133101 0080	13,40
M10	1.5	100	15	39	10.0	8.0	8.50	133101 0100	15,80

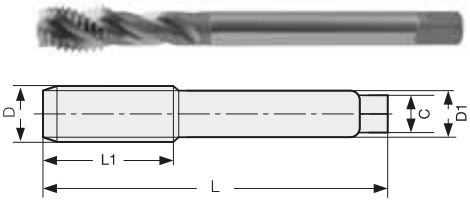
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DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	5	2.2	-	2.50	**133105** 0030	12,40
M4	0.7	63	7	2.8	2.1	3.30	133105 0040	12,70
M5	0.8	70	8	3.5	2.7	4.20	133105 0050	12,70
M6	1.0	80	10	4.5	3.4	5.00	133105 0060	12,70
M8	1.25	90	13	6.0	4.9	6.80	133105 0080	13,40
M10	1.5	100	15	7.0	5.5	8.50	133105 0100	15,80
M12	1.75	110	18	9.0	7.0	10.25	133105 0120	18,70
M14	2.0	110	20	11.0	9.0	12.00	133105 0140	24,80
M16	2.0	110	20	12.0	9.0	14.00	133105 0160	29,90
M18	2.5	125	25	14.0	11.0	15.50	133105 0180	36,–
M20	2.5	140	25	16.0	12.0	17.50	133105 0200	42,10
M22	2.5	140	25	18.0	14.5	21.00	133105 0220	67,30
M24	3.0	160	30	18.0	14.5	21.00	133105 0240	75,20
M27	3.0	160	30	20.0	16.0	24.00	133105 0270	90,80
M30	3.5	180	35	22.0	18.0	26.50	133105 0300	114,80

1128





... from Ø 0.2 mm

ATORN®
High quality for great performance

POT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 2,5xD | Vc/fz | 10-272

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5 to 5-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3**
- Also available with TiN coating on request

material — ● very well suited ○ well suited

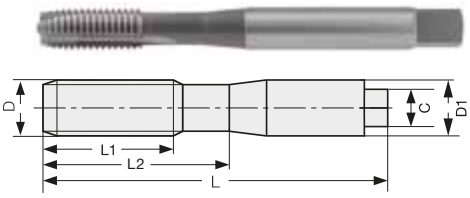
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	○	○									○	●	○				
5-20	5-15	5-10									20-40	10-25	10-12				

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.	€
M2	0.4	45	8	-	2.8	2.1	1.60	**133001** 0020	13,60
M2.5	0.45	50	9	-	2.8	2.1	2.10	133001 0025	12,40
M3	0.5	56	11	18	3.5	2.7	2.50	133001 0030	11,60
M3.5	0.6	56	13	20	4.0	3.0	2.90	133001 0035	12,40
M4	0.7	63	13	21	4.5	3.4	3.30	133001 0040	11,60
M5	0.8	70	16	25	6.0	4.9	4.20	133001 0050	11,80
M6	1.0	80	19	30	6.0	4.9	5.00	133001 0060	11,80
M8	1.25	90	22	35	8.0	6.2	6.80	133001 0080	13,10
M10	1.5	100	24	39	10.0	8.0	8.50	133001 0100	15,30

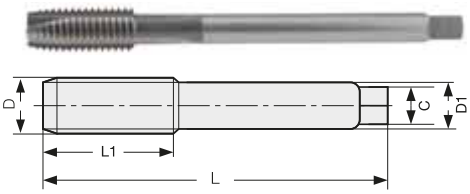
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	11	2.2	-	2.50	**133005** 0030	11,60
M4	0.7	63	13	2.8	2.1	3.30	133005 0040	11,60
M5	0.8	70	16	3.5	2.7	4.20	133005 0050	11,80
M6	1.0	80	19	4.5	3.4	5.00	133005 0060	11,80
M8	1.25	90	22	6.0	4.9	6.80	133005 0080	13,10
M10	1.5	100	24	7.0	5.5	8.50	133005 0100	15,30
M12	1.75	110	29	9.0	7.0	10.25	133005 0120	17,90
M14	2.0	110	30	11.0	9.0	12.00	133005 0140	23,–
M16	2.0	110	32	12.0	9.0	14.00	133005 0160	28,50
M18	2.5	125	34	14.0	11.0	15.50	133005 0180	33,70
M20	2.5	140	34	16.0	12.0	17.50	133005 0200	40,40
M22	2.5	140	34	18.0	14.5	19.50	133005 0220	64,50
M24	3.0	160	38	18.0	14.5	21.00	133005 0240	71,70
M27	3.0	160	38	20.0	16.0	24.00	133005 0270	86,50
M30	3.5	180	45	22.0	18.0	26.50	133005 0300	109,90

1128



Safety in the workplace

Please protect your eyes, ears and respiratory system!



CC-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6HX | C 2,5 | 45° | 3xD | CrN | Vc/fz | 10-272

- **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



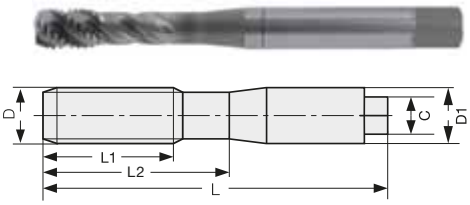
Chips from the CC-SFT



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
		●	○		●	●	●	○	○				●	○	○				
		5-40	5-30		5-20	5-24	5-15	8-30	8-30				30-60	10-30	10-20				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

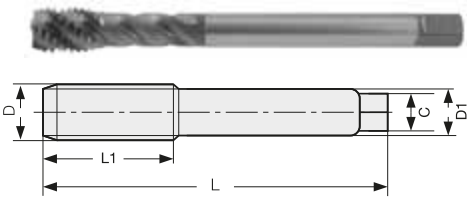
DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133106** 0020	24,40
M2.5	0.45	50	10	-	2.8	2.1	2.1	133106 0025	24,20
M3	0.5	56	12	-	3.5	2.7	2.5	133106 0030	21,10
M4	0.7	63	16	-	4.5	3.4	3.3	133106 0040	21,90
M5	0.8	70	20	-	6.0	4.9	4.2	133106 0050	22,30
M6	1.0	80	24	-	6.0	4.9	5.0	133106 0060	22,50
M8	1.25	90	11	35	8.0	6.2	6.8	133106 0080	27,10
M10	1.5	100	14	39	10.0	8.0	8.5	133106 0100	33,10
								1128	



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	16	9	7	10.3	**133107** 0120	41,30
M14	2.0	110	18	11	9	12	133107 0140	49,–
M16	2.0	110	18	12	9	14	133107 0160	57,60
M18	2.5	125	23	14	11	15.5	133107 0180	77,70
M20	2.5	140	23	16	12	17.5	133107 0200	92,–
M24	3.0	160	27	18	14.5	21	133107 0240	123,50
M30	3.5	180	32	22	18	26.5	133107 0300	237,50
M36	4.0	200	36	28	22	32	133107 0360	341,50
							1128	





… with safety

ATORN®
High quality for great performance

CC-POT machine tap

M | 60° | HSS-E V3 | HSS-E | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | 2,5xD | CrN | Vc/fz | 10-272

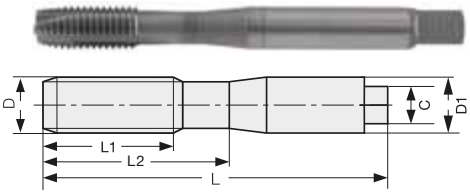
- **Metric ISO 6HX thread**
- **For stainless steel, aluminium and steel**
- Controllable chips
- For better thread surfaces
- Low machining temperature
- Improved service life
- **For through-hole threads**
- Straight-fluted
- 4-thread chamfer
- **Material: HSS-E V3, CrN-coated**
- UNC, UNF and Whitworth 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
		●	○		●	●	●	○	○				●	○	○				
		5-40	5-30		5-20	5-24	5-15	8-30	8-30				30-60	10-30	10-20				
	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.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133040** 0020	23,80
M2.5	0.45	50	9	-	2.8	2.1	2.1	133040 0025	23,50
M3	0.5	56	12	18	3.5	2.7	2.5	133040 0030	20,50
M4	0.7	63	16	21	4.5	3.4	3.3	133040 0040	21,10
M5	0.8	70	20	25	6.0	4.9	4.2	133040 0050	21,60
M6	1.0	80	24	30	6.0	4.9	5.0	133040 0060	22,–
M8	1.25	90	35	35	8.0	6.2	6.8	133040 0080	26,40
M10	1.5	100	39	39	10.0	8.0	8.5	133040 0100	32,30

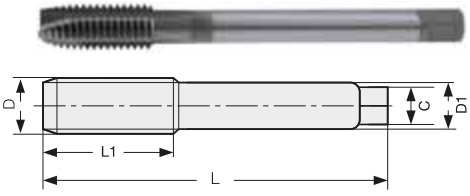
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	28	9	7	10.3	**133041** 0120	40,30
M14	2.0	110	30	11	9	12	133041 0140	47,60
M16	2.0	110	32	12	9	14	133041 0160	55,90
M18	2.5	125	34	14	11	15.5	133041 0180	75,70
M20	2.5	140	34	16	12	17.5	133041 0200	89,50
M24	3.0	160	38	18	14.5	21	133041 0240	119,70
M30	3.5	180	45	22	18	26.5	133041 0300	230,60

1128





... from Ø 0.2 mm

ATORN®
High quality for great performance

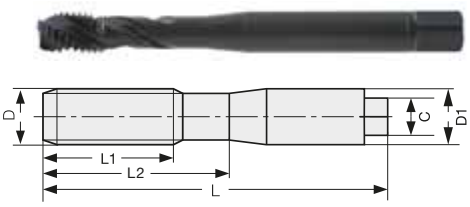
VA-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

- **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	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
	● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

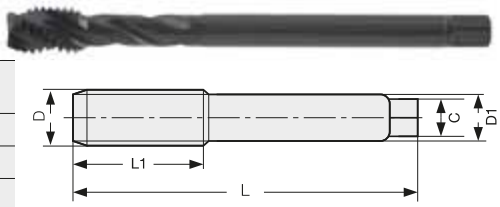
DIN 371



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133125** 0020	15,90
M2.2	0.45	45	9	-	2.8	2.1	1.7	133125 0022	17,60
M2.5	0.45	50	9	-	2.8	2.1	2.1	133125 0025	17,40
M3	0.5	56	5	18	3.5	2.7	2.5	133125 0030	15,–
M3.5	0.6	56	6	20	4.0	3.0	2.9	133125 0035	15,70
M4	0.7	63	7	21	4.5	3.4	3.3	133125 0040	15,20
M5	0.8	70	8	25	6.0	4.9	4.2	133125 0050	15,80
M6	1.0	80	10	30	6.0	4.9	5.0	133125 0060	15,90
M8	1.25	90	13	35	8.0	6.2	6.8	133125 0080	18,40
M10	1.5	100	15	39	10.0	8.0	8.5	133125 0100	23,10

1128

DIN 376



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	5	2.2	-	2.5	**133135** 0030	16,30
M4	0.7	63	7	2.8	2.1	3.3	133135 0040	16,60
M5	0.8	70	8	3.5	2.7	4.2	133135 0050	17,40
M6	1.0	80	10	4.5	3.4	5.0	133135 0060	17,60
M8	1.25	90	13	6.0	4.9	6.8	133135 0080	19,–
M10	1.5	100	15	7.0	5.5	8.5	133135 0100	22,70
M12	1.75	110	18	9.0	7	10.25	133135 0120	28,40
M14	2.0	110	20	11.0	9	12.0	133135 0140	35,20
M16	2.0	110	20	12.0	9	14.0	133135 0160	41,30
M18	2.5	125	25	14.0	11	15.5	133135 0180	55,80
M20	2.5	140	25	16.0	12.0	17.5	133135 0200	65,90
M22	2.5	140	25	18.0	14.5	19.5	133135 0220	71,80
M24	3.0	160	30	18.0	14.5	21.0	133135 0240	88,40
M27	3.0	160	30	20.0	16.0	24.0	133135 0270	114,70
M30	3.5	180	35	22.0	18.0	26.5	133135 0300	137,80
M33	3.5	180	35	25.0	20	29.5	133135 0330	157,60
M36	4.0	200	40	28.0	22	32.0	133135 0360	184,–

1128



... and optimum service life

ATORN®
High quality for great performance

VA-POT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 10-272

- **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**

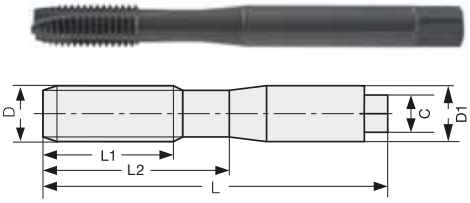
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
	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.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133015** 0020	15,90
M2.2	0.45	45	9	-	2.8	2.1	1.7	133015 0022	15,80
M2.5	0.45	50	9	-	2.8	2.1	2.1	133015 0025	15,70
M3	0.5	56	11	18	3.5	2.7	2.5	133015 0030	14,10
M3.5	0.6	56	11	20	4.0	3	2.9	133015 0035	14,80
M4	0.7	63	13	21	4.5	3.4	3.3	133015 0040	14,30
M5	0.8	70	16	25	6.0	4.9	4.2	133015 0050	14,90
M6	1.0	80	19	30	6.0	4.9	5.0	133015 0060	15,–
M8	1.25	90	22	35	8.0	6.2	6.8	133015 0080	17,30
M10	1.5	100	24	39	10.0	8.0	8.5	133015 0100	21,50

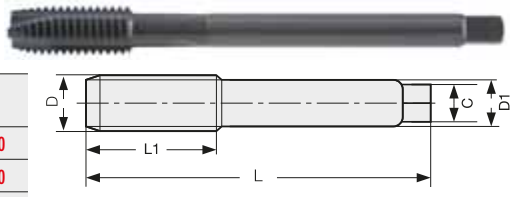
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	11	2.2	-	2.5	**133025** 0030	15,10
M4	0.7	63	13	2.8	2.1	3.3	133025 0040	15,40
M5	0.8	70	16	3.5	2.7	4.2	133025 0050	15,90
M6	1.0	80	19	4.5	3.4	5.0	133025 0060	16,30
M8	1.25	90	22	6.0	4.9	6.8	133025 0080	17,70
M10	1.5	100	24	7.0	5.5	8.5	133025 0100	21,10
M12	1.75	110	29	9.0	7.0	10.25	133025 0120	26,50
M14	2.0	110	30	11.0	9.0	12.0	133025 0140	33,–
M16	2.0	110	32	12.0	9.0	14.0	133025 0160	38,60
M18	2.5	125	34	14.0	11.0	15.5	133025 0180	51,90
M20	2.5	140	34	16.0	12.0	17.5	133025 0200	61,30
M22	2.5	140	34	18.0	14.5	19.5	133025 0220	67,20
M24	3.0	160	38	18.0	14.5	21.0	133025 0240	82,40
M27	3.0	160	38	20.0	16.0	24.0	133025 0270	106,60
M30	3.5	180	45	22.0	18.0	26.5	133025 0300	127,40
M36	4.0	200	56	28.0	22.0	32.0	133025 0360	171,–

1128



Safety in the workplace

Please protect your eyes, ears and respiratory system!



VA-SFT machine tap, tolerance 6G

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 3 6G | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

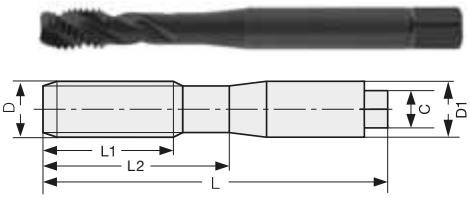
- **ISO 6G metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	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
	● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.																		

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

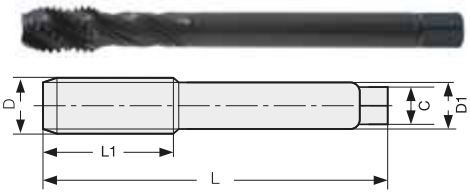
DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133130** 0020	19,50
M2.5	0.45	50	9	-	2.8	2.1	2.1	133130 0025	20,70
M3	0.5	56	5	18	3.5	2.7	2.5	133130 0030	18,10
M4	0.7	63	7	21	4.5	3.4	3.3	133130 0040	18,40
M5	0.8	70	8	25	6.0	4.9	4.2	133130 0050	19,30
M6	1.0	80	10	30	6.0	4.9	5.0	133130 0060	19,40
M8	1.25	90	13	35	8.0	6.2	6.8	133130 0080	22,20
M10	1.5	100	15	39	10.0	8	8.5	133130 0100	27,80
								1128	



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	18	9	7	10.25	**133140** 0120	34,20
M14	2.0	110	20	11	9	12.0	133140 0140	42,20
M16	2.0	110	20	12	9	14.0	133140 0160	49,60
							1128	



VA-POT machine tap, tolerance 6G

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 3 6G | B 4 | 2,5xD | Vap. | Vc/fz | 10-272

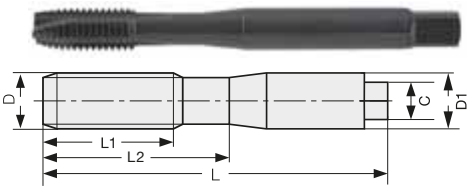
- **ISO 6G metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	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
	● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.																		

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

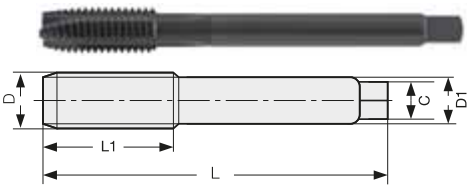
DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133020** 0020	19,50
M2.5	0.45	50	9	-	2.8	2.1	2.1	133020 0025	19,30
M3	0.5	56	11	18	3.5	2.7	2.5	133020 0030	16,80
M4	0.7	63	13	21	4.5	3.4	3.3	133020 0040	17,30
M5	0.8	70	16	25	6.0	4.9	4.2	133020 0050	17,90
M6	1.0	80	19	30	6.0	4.9	5.0	133020 0060	18,–
M8	1.25	90	22	35	8.0	6.2	6.8	133020 0080	20,50
M10	1.5	100	24	39	10.0	8.0	8.5	133020 0100	25,90
								1128	



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	29	9.0	7.0	10.25	**133030** 0120	31,90
M14	2.0	110	30	11.0	9.0	12.0	133030 0140	39,60
M16	2.0	110	32	12.0	9.0	14.0	133030 0160	46,30
							1128	



AL-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | ISO 2 6H | C 2,5 | 50° | 2,5xD | Vc/fz | 10-272

- **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**

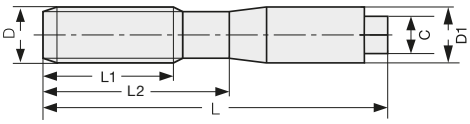
For aluminium



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
													● 20-40	● 10-25	● 10-12				
	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.	€
M1.6	0.35	40	8	-	2.5	2.1	1.25	**133145** 0016	18,70
M2	0.4	45	8	-	2.8	2.1	1.6	133145 0020	15,90
M2.2	0.45	45	9	-	2.8	2.1	1.7	133145 0022	15,90
M2.5	0.45	50	9	-	2.8	2.1	2.1	133145 0025	15,80
M3	0.5	56	5	18	3.5	2.7	2.5	133145 0030	13,70
M3.5	0.6	56	6	20	4.0	3.0	2.9	133145 0035	14,80
M4	0.7	63	7	21	4.5	3.4	3.3	133145 0040	14,20
M5	0.8	70	8	25	6.0	4.9	4.2	133145 0050	14,70
M6	1.0	80	10	30	6.0	4.9	5.0	133145 0060	14,80
M8	1.25	90	13	35	8.0	6.2	6.8	133145 0080	16,80
M10	1.5	100	15	39	10.0	8.0	8.5	133145 0100	20,40

1128



AL-POT machine tap

M | 60° | HSS-E V3 | DIN 371 | ISO 2 6H | B 4 | 3xD | Vc/fz | 10-272

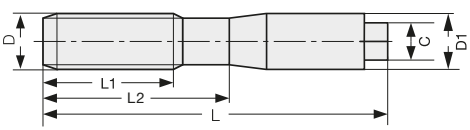
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3**



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
													● 20-40	● 10-25	● 10-12				
	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	C mm	D1 mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.1	2.8	1.6	**133035** 0020	15,20
M2.5	0.45	50	9	-	2.1	2.8	2.1	133035 0025	15,10
M3	0.5	56	11	18	2.7	3.5	2.5	133035 0030	13,20
M4	0.7	63	13	21	3.4	4.5	3.3	133035 0040	13,60
M5	0.8	70	16	25	4.9	6	4.2	133035 0050	14,10
M6	1.0	80	19	30	4.9	6	5.0	133035 0060	14,20
M8	1.25	90	22	35	6.2	8	6.8	133035 0080	16,30
M10	1.5	100	24	39	8	10	8.5	133035 0100	19,60

1128



Z-SFT machine tap

M | 60° | PM | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 50° | 2,5xD | | TiCN | Vc/fz | 10-272

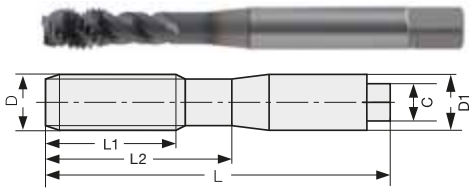
- **ISO 6H metric thread**
- 50°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

Synchro

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
	●	●	○	●	●	●			○			○	○	○				
	5-40	5-30	5-20	5-20	5-24	5-15			5-10			30-60	10-30	10-20				
Cutting speed Vc m/min.																		

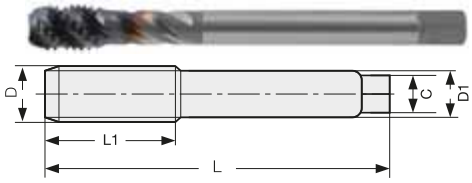
Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M3	0.5	56	5	18	3.5	2.7	2.5	**133155** 0030	27,20
M4	0.7	63	7	21	4.5	3.4	3.3	133155 0040	28,60
M5	0.8	70	8	25	6.0	4.9	4.2	133155 0050	29,30
M6	1.0	80	10	30	6.0	4.9	5.0	133155 0060	29,50
M8	1.25	90	13	35	8.0	6.2	6.75	133155 0080	35,–
M10	1.5	100	15	39	10.0	8.0	8.5	133155 0100	41,10

1128



DIN 376

D mm	Pitch mm	L mm	L mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	18	9	7	10.25	**133160** 0120	51,80
M14	2.0	110	20	11	9	12.0	133160 0140	65,–
M16	2.0	110	20	12	9	14.0	133160 0160	74,90
M18	2.5	125	25	14	11	15.5	133160 0180	96,30
M20	2.5	140	25	16	12	17.5	133160 0200	108,40
M24	3.0	160	30	18	14.5	21	133160 0240	181,70
M30	3.5	180	35	22	18	26.5	133160 0300	277,–

1128

Z-POT machine tap

M | 60° | PM | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | | 2,5xD | | TiCN | Vc/fz | 10-272

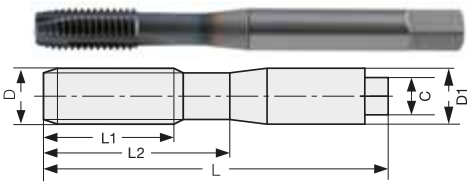
- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

Synchro

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
	●	●	○	●	●	●			○			○	○	○				
	5-40	5-30	5-20	5-20	5-24	5-15			5-15			30-60	10-30	10-20				
Cutting speed Vc m/min.																		

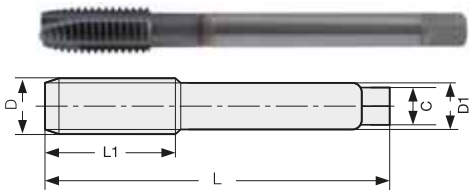
Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M2	0.4	45	8	-	2.8	2.1	1.6	**133045** 0020	33,50
M2.5	0.45	50	9	-	2.8	2.1	2.1	133045 0025	33,40
M3	0.5	56	11	18	3.5	2.7	2.5	133045 0030	26,60
M4	0.7	63	13	21	4.5	3.4	3.3	133045 0040	28,20
M5	0.8	70	16	25	6.0	4.9	4.2	133045 0050	28,60
M6	1.0	80	19	30	6.0	4.9	5.0	133045 0060	29,10
M8	1.25	90	22	35	8.0	6.2	6.75	133045 0080	34,20
M10	1.5	100	24	39	10.0	8.0	8.5	133045 0100	40,20

1128



DIN 376

D mm	Pitch mm	L mm	L mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.75	110	29	9	7	10.25	**133050** 0120	51,–
M14	2.0	110	30	11	9	12.0	133050 0140	64,20
M16	2.0	110	32	12	9	14.0	133050 0160	73,50
M18	2.5	125	34	14	11	15.5	133050 0180	94,50
M20	2.5	140	34	16	12	17.5	133050 0200	106,10

1128

V-XPM-HT machine tap

M | 60° | XPM | Werks-norm | ISO 2 6HX | C 2,5 | 1,5xD | TiCN | Vc/fz | 10-272

- **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)**

Hard machining < 55 HRc



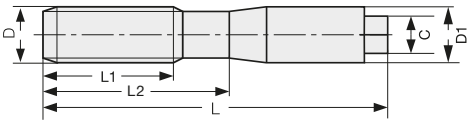
material — ● very well suited ○ well suited

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
● 5-40	● 5-30	● 5-20													● 2-12		

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.	€
M3	0.5	46	11	19	3.5	2.7	2.5	**133255** 0030	26,20
M4	0.7	52	13	21	4.5	3.4	3.3	133255 0040	26,30
M5	0.8	60	16	24	6.0	4.9	4.2	133255 0050	26,90
M6	1.0	62	19	29	6.0	4.9	5.0	133255 0060	27,30
M8	1.25	70	22	-	6.0	4.9	6.8	133255 0080	30,60
M10	1.5	75	24	-	7.0	5.5	8.5	133255 0100	35,80
M12	1.75	82	29	-	9.0	7.0	10.25	133255 0120	47,–

1128



Machine tap VX-OT

M | 60° | VHM | Werks-norm | ISO 2 6HX | C 2,5 | 1,5xD | TiCN | Vc/fz | 10-272

- **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)**

Hard machining ≥ 60 HRc



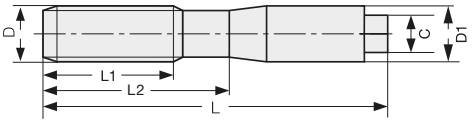
material — ● very well suited ○ well suited

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
																● 2-6	● 1-3

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.	€
M3	0.5	46	11	19	3.5	2.7	2.5	**133250** 0030	98,–
M4	0.7	52	13	21	4.5	3.4	3.3	133250 0040	102,30
M5	0.8	60	16	24	6.0	4.9	4.2	133250 0050	106,30
M6	1.0	62	19	29	6.0	4.9	5.0	133250 0060	116,–
M8	1.25	70	22	-	6.0	4.9	6.8	133250 0080	142,70
M10	1.5	75	24	-	7.0	5.5	8.5	133250 0100	191,80
M12	1.75	82	29	-	9.0	7.0	10.25	133250 0120	249,30

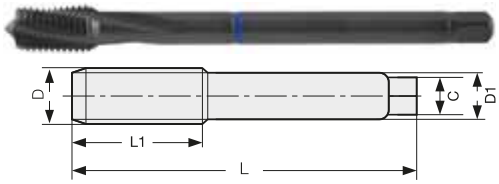
1128



ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 15° | 1,5xD | Vap. | Vc/fz | 10-272

- **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
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
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.	€
M5	0.5	70	5	3.5	2.7	4.50	**135280** 0505	28,40
M6	0.75	80	8	4.5	3.4	5.20	135280 0607	21,70
M8	0.75	80	8	6.0	4.9	7.20	135280 0807	25,30
M8	1	90	11	6.0	4.9	7.00	135280 0810	20,20
M10	1	90	11	7.0	5.5	9.00	135280 1010	23,20
M10	1.25	100	14	7.0	5.5	8.80	135280 1012	24,60
M12	1	100	11	9.0	7.0	11.00	135280 1210	40,80
M12	1.25	100	16	9.0	7.0	10.80	135280 1212	35,90
M12	1.5	100	16	9.0	7.0	10.50	135280 1215	40,–
M14	1	100	11	11.0	9.0	13.00	135280 1410	53,–
M14	1.5	100	15	11.0	9.0	12.50	135280 1415	52,–
M16	1	100	11	12.0	9.0	15.00	135280 1610	51,–

1127

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M16	1.5	100	15	12.0	9.0	14.50	135280 1615	51,–
M18	1.5	110	16	14.0	11.0	16.50	135280 1815	63,50
M20	1.5	125	16	16.0	12.0	18.50	135280 2015	72,50
M22	1.5	125	16	18.0	14.5	20.50	135280 2215	75,50
M24	1.5	140	16	18.0	14.5	22.50	135280 2415	82,50
M24	2	140	22	18.0	14.5	22.00	135280 2420	93,50
M26	1.5	140	20	18.0	14.5	24.50	135280 2615	105,–
M27	1.5	140	20	20.0	16.0	25.50	135280 2715	116,–
M27	2	140	28	20.0	16.0	25.00	135280 2720	127,–
M28	1.5	140	20	20.0	16.0	26.50	135280 2815	150,–
M30	1.5	150	20	22.0	18.0	28.50	135280 3015	151,–
M30	2	150	20	22.0	18.0	28.00	135280 3020	167,–

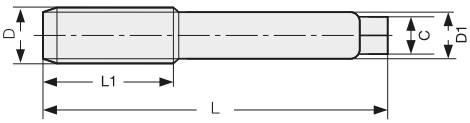
1127

ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 3xD | TiN | Vap. | Vc/fz | 10-272

- **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....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
135290....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
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	**Vapour-treated** art.no.	€	**TiN** art.no.	€
M6	0.75	80	8	4.5	3.4	5.20	**135285** 0607	33,80	**135290** 0607	22,80
M8	1	90	11	6	4.9	7.00	135285 0810	25,10	135290 0810	30,50
M10	1	90	11	7	5.5	9.00	135285 1010	28,20	135290 1010	33,60
M10	1.25	100	14	7	5.5	8.80	135285 1012	31,10	135290 1012	36,50
M12	1.25	100	16	9	7	10.80	135285 1212	49,80	135290 1212	58,50
M12	1.5	100	16	9	7	10.50	135285 1215	43,10	135290 1215	52,–
M14	1.5	100	15	11	9	12.50	135285 1415	55,–	135290 1415	63,50
M16	1.5	100	15	12	9	14.50	135285 1615	56,50	135290 1615	65,–
M18	1.5	110	16	14	11	16.50	135285 1815	72,–	135290 1815	82,50
M20	1.5	125	16	16	12	18.50	135285 2015	88,–	135290 2015	99,–

1127 1127

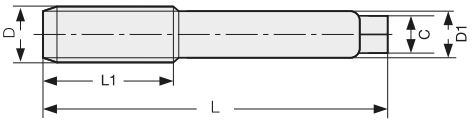


ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 10-272

- **ISO 6H fine-pitch metric thread**
- Straight-fluted with spiral point, type 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
- 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
135255....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
135260....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

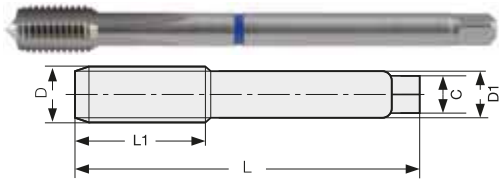
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiN art.no.	€
M3	0.35	56	7	2.2	-	2.65	**135255** 0335	28,70	**135260** 0305	34,10
M4	0.5	63	8	2.8	2.1	3.50	135255 0405	19,40	135260 0405	25,30
M5	0.5	70	10	3.5	2.7	4.50	135255 0505	19,60	135260 0505	25,50
M6	0.5	80	13	4.5	3.4	5.50	135255 0605	19,60	135260 0605	25,50
M6	0.75	80	13	4.5	3.4	5.20	135255 0607	19,60	135260 0607	25,50
M7	0.75	80	13	5.5	4.3	6.20	135255 0675	28,90	135260 0675	34,50
M8	0.5	80	14	6	4.9	7.50	135255 0805	26,50	135260 0805	32,20
M8	0.75	80	14	6	4.9	7.20	135255 0807	23,–	135260 0807	28,70
M8	1	90	17	6	4.9	7.00	135255 0810	21,20	135260 0810	27,20
M9	1	90	17	7	5.5	8.00	135255 0910	36,10	135260 0910	41,50
M10	0.75	90	17	7	5.5	9.20	135255 1007	32,–	135260 1007	37,40
M10	1	90	17	7	5.5	9.00	135255 1010	24,30	135260 1010	30,50
M10	1.25	100	20	7	5.5	8.80	135255 1012	25,90	135260 1012	35,30
M11	1	90	20	8	6.2	10.00	135255 1110	43,20	135260 1110	52,–
M12	1	100	20	9	7	11.00	135255 1210	28,70	135260 1210	38,20
M12	1.25	100	20	9	7	10.80	135255 1212	30,20	135260 1212	39,70
M12	1.5	100	20	9	7	10.50	135255 1215	27,50	135260 1215	37,–
M14	1	100	20	11	9	13.00	135255 1410	35,50	135260 1410	45,10
M14	1.25	100	20	11	9	12.80	135255 1412	36,90	135260 1412	46,10
M14	1.5	100	20	11	9	12.50	135255 1415	33,20	135260 1415	43,–
M15	1	100	20	12	9	14.00	135255 1510	53,–	135260 1510	61,–
M15	1.5	100	20	12	9	13.50	135255 1515	54,–	135260 1515	62,50
M16	1	100	22	12	9	15.00	135255 1610	46,10	135260 1610	56,–
M16	1.5	100	22	12	9	14.50	135255 1615	42,80	135260 1615	52,50
M18	1	110	25	14	11	17.00	135255 1810	62,–	135260 1810	74,50
M18	1.5	110	25	14	11	16.50	135255 1815	57,–	135260 1815	68,50
M18	2	125	30	14	11	16.00	135255 1820	71,50	135260 1820	82,–
M20	1	125	25	16	12	19.00	135255 2010	76,50	135260 2010	87,50
M20	1.5	125	25	16	12	18.50	135255 2015	63,–	135260 2015	75,50
M20	2	140	32	16	12	18.00	135255 2020	82,50	135260 2020	92,50
M22	1	125	25	18	14.5	21.00	135255 2210	89,50	135260 2210	100,–
M22	1.5	125	25	18	14.5	20.50	135255 2215	74,50	135260 2215	85,–
M22	2	140	32	18	14.5	20.00	135255 2220	89,50	135260 2220	100,–
M24	1	140	28	18	14.5	23.00	135255 2410	104,–	135260 2410	113,–
M24	1.5	140	28	18	14.5	22.50	135255 2415	83,50	135260 2415	93,50
M24	2	140	28	18	14.5	22.00	135255 2420	86,50	135260 2420	98,50
M26	1.5	140	28	18	14.5	24.50	135255 2615	104,–	135260 2615	113,–
M27	1.5	140	28	20	16	25.50	135255 2715	118,–	135260 2715	139,–
M27	2	140	28	20	16	25.00	135255 2720	122,–	135260 2720	143,–
M30	1.5	150	28	22	18	28.50	135255 3015	128,–	135260 3015	151,–
M30	2	150	28	22	18	28.00	135255 3020	135,–	135260 3020	158,–
M32	1.5	150	28	22	18	30.50	135255 3215	155,–	135260 3215	177,–
M33	1.5	160	28	25	20	31.50	135255 3315	169,–	135260 3315	191,–
M35	1.5	170	30	28	22	33.50	135255 3515	205,–	135260 3515	225,–
M36	1.5	170	30	28	22	34.50	135255 3615	185,–	135260 3615	220,–
M38	1.5	170	30	28	22	36.50	135255 3815	205,–	135260 3815	235,–
M40	1.5	170	30	32	24	38.50	135255 4015	245,–	135260 4015	275,–
							1127		1127	



ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 1,5xD | Vc/fz | 10-272

- **ISO 6H fine-pitch metric thread**
- Straight-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads
- 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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
M3	0.35	56	4	2.2	2.1	2.65	**135265** 0303	38,30
M4	0.5	63	5	2.8	2.1	3.50	135265 0405	27,20
M5	0.5	70	5	3.5	2.7	4.50	135265 0505	22,30
M6	0.5	80	5	4.5	3.4	5.50	135265 0605	22,70
M6	0.75	80	8	4.5	3.4	5.20	135265 0607	20,30
M8	0.5	80	8	6	4.9	7.50	135265 0805	28,80
M8	0.75	80	8	6	4.9	7.20	135265 0807	22,40
M8	1	90	11	6	4.9	7.00	135265 0810	22,40
M9	1	90	11	7	5.5	8.00	135265 0910	25,60
M10	0.75	90	11	7	5.5	9.20	135265 1075	23,40
M10	1	90	11	7	5.5	9.00	135265 1010	23,60
M10	1.25	100	14	7	5.5	8.80	135265 1012	22,60
M12	1	100	11	9	7	11.00	135265 1210	31,40
M12	1.25	100	16	9	7	10.80	135265 1212	30,–
M12	1.5	100	16	9	7	10.50	135265 1215	29,30
M14	1	100	11	11	9	13.00	135265 1410	38,40
M14	1.25	100	15	11	9	12.80	135265 1412	44,40
M14	1.5	100	15	11	9	12.50	135265 1415	35,30

1127

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M15	1	100	11	12	9	14.00	135265 1510	52,50
M16	1	100	11	12	9	15.00	135265 1610	46,30
M16	1.5	100	15	12	9	14.50	135265 1615	42,40
M18	1	110	12	14	11	17.00	135265 1810	54,–
M18	1.5	110	16	14	11	16.50	135265 1815	51,50
M20	1	125	12	16	12	19.00	135265 2010	77,–
M20	2	140	20	16	12	18.00	135265 2020	93,–
M22	1.5	125	16	18	14.5	20.50	135265 2215	73,50
M24	1	140	15	18	14.5	23.00	135265 2410	121,–
M24	1.5	140	16	18	14.5	22.50	135265 2415	89,–
M24	2	140	22	18	14.5	22.00	135265 2420	99,–
M26	1.5	140	20	18	14.5	24.50	135265 2615	112,–
M27	1.5	140	20	20	16	25.50	135265 2715	124,–
M27	2	140	28	20	16	25.00	135265 2720	124,–
M30	1.5	150	20	22	18	28.50	135265 3015	127,–
M30	2	150	20	22	18	28.00	135265 3020	127,–
M36	1.5	170	25	28	22	34.50	135265 3615	193,–

1127

ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6HX | C 2-3 | 45° | 2,5xD | TiAlN | 10-272

- **ISO 6H fine-pitch metric thread**
- Spiral-fluted, type C
- For blind-hole threads
- **Cutting material: HSS-E, TiAlN-coated**

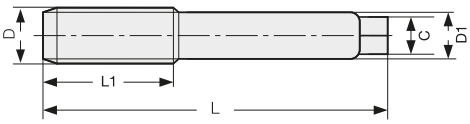
For stainless steel



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
		○ 5-40	○ 5-30		● 5-20	● 5-24	○ 5-15												
	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.	€
M8	0.75	80	8	6	4.9	7.2	**135375** 0875	53,50
M10	1.0	90	11	7	5.5	9	135375 1010	62,–
M10	1.25	100	14	7	5.5	8.8	135375 1012	64,–
M12	1.0	100	11	9	7	11	135375 1210	68,50
M12	1.25	100	16	9	7	10.8	135375 1212	66,–
M12	1.5	100	16	9	7	10.5	135375 1215	67,50
M14	1.5	100	15	11	9	12.5	135375 1415	78,50
M16	1.5	100	15	12	9	14.5	135375 1615	118,–
M18	1.5	110	16	14	11	16.5	135375 1815	124,–
M20	1.5	125	16	16	12	18.5	135375 2015	141,–
M24	1.5	140	16	18	14.5	22.5	135375 2415	196,–

1127



ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | Vap. | Vc/fz | 10-272

- **ISO 6H fine-pitch metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E, vapour-treated**

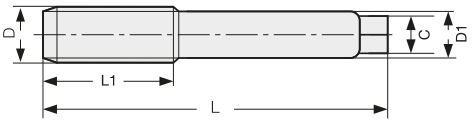
For stainless steel



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
○ 5-20	○ 5-15		● 5-10	● 5-12	○ 5-8												

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.	€
M4	0.5	63	8	2.8	2.1	3.50	**135370** 0450	28,10
M5	0.5	70	10	3.5	2.7	4.50	135370 0550	28,10
M6	0.5	80	13	4.5	3.4	5.50	135370 0650	29,60
M6	0.75	80	13	4.5	3.4	5.20	135370 0675	27,90
M7	0.75	80	13	5.5	4.3	6.20	135370 0775	37,70
M8	0.5	80	14	6	4.9	7.50	135370 0850	33,80
M8	0.75	80	18	6	4.9	7.20	135370 0875	32,80
M8	1.0	90	18	6	4.9	7.00	135370 0810	29,80
M9	1.0	90	18	7	5.5	8.00	135370 0910	47,90
M10	0.75	90	20	7	5.5	9.20	135370 1075	41,20
M10	1.0	90	20	7	5.5	9.00	135370 1010	35,50
M10	1.25	100	20	7	5.5	8.80	135370 1012	31,40
M11	1.0	90	20	8	6.2	10.00	135370 1110	46,70
M12	1.0	100	20	9	7	11.00	135370 1210	40,40
M12	1.25	100	20	9	7	10.80	135370 1212	43,–
M12	1.5	100	20	9	7	10.50	135370 1215	36,70
M14	1.0	100	20	11	9	13.00	135370 1410	53,–
M14	1.25	100	20	11	9	12.80	135370 1412	55,–
M14	1.5	100	20	11	9	12.50	135370 1415	46,90
M15	1.0	100	20	12	9	14.00	135370 1510	74,50
M16	1.0	100	22	12	9	15.00	135370 1610	59,–
M16	1.5	100	22	12	9	14.50	135370 1615	55,–
M18	1.0	110	25	14	11	17.00	135370 1810	86,50
M18	1.5	110	25	14	11	16.50	135370 1815	80,50
M20	1.0	125	25	16	11	19.00	135370 2010	95,–
M20	1.5	125	25	16	12	18.50	135370 2015	89,50
M20	2.0	125	25	16	12	18.00	135370 2020	122,–
M22	1.0	140	25	18	14.5	21.00	135370 2210	128,–
M22	1.5	125	25	18	14.5	20.50	135370 2215	100,–
M24	1.0	125	25	18	14.5	23.00	135370 2410	128,–
M24	1.5	140	25	18	14.5	22.50	135370 2415	112,–
M24	2.0	140	25	18	14.5	22.00	135370 2420	120,–
M26	1.5	140	28	18	14.5	24.50	135370 2615	118,–
M30	1.5	150	28	22	18	28.50	135370 3015	173,–
M30	2.0	150	28	22	18	28.00	135370 3020	179,–
M33	1.5	160	28	25	20	31.50	135370 3315	225,–
M33	2.0	160	28	25	20	31.00	135370 3320	225,–
M35	1.5	170	28	28	22	33.50	135370 3515	270,–
M36	1.5	170	30	28	22	34.50	135370 3615	245,–
M36	2.0	170	30	28	22	34.00	135370 3620	265,–
M38	1.5	170	30	28	22	36.50	135370 3815	260,–
M42	1.5	170	30	32	24	40.50	135370 4215	315,–

1127

S-SFT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

- **Metric ISO 6H fine thread**
- 40°, spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

Accelerated chip removal due to unequally twisted flute

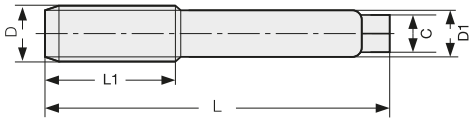
NEW · NUOVO · NEU · NOUVEAU · NUEVO

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
● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

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.	€
M3	0.35	56	4	2.2	-	2.65	**133965** 0303	22,10
M4	0.5	63	5.6	2.8	2.1	3.5	133965 0405	22,10
M5	0.5	70	6.4	3.5	2.7	4.5	133965 0505	22,80
M6	0.5	80	8	4.5	3.4	5.5	133965 0605	22,80
M6	0.75	80	8	4.5	3.4	5.2	133965 0607	22,20
M8	0.75	80	10	6	4.9	7.2	133965 0807	23,40
M8	1	90	10	6	4.9	7	133965 0810	23,50
M9	1	90	10	7	5.5	8	133965 0910	29,–
M10	0.75	90	12	7	5.5	9.2	133965 1007	26,70
M10	1	90	12	7	5.5	9	133965 1010	25,50
M10	1.25	100	12	7	5.5	8.8	133965 1012	25,50
M11	1	90	12	8	6.2	10	133965 1110	51,10
M12	1	100	14	9	7	11	133965 1210	29,80
M12	1.25	100	14	9	7	10.8	133965 1212	29,80
M12	1.5	100	14	9	7	10.5	133965 1215	29,80
M14	1	100	16	11	9	13	133965 1410	45,60
M14	1.25	100	16	11	9	12.8	133965 1412	45,60
M14	1.5	100	16	11	9	12.5	133965 1415	38,60
M16	1	100	16	12	9	15	133965 1610	47,40
M16	1.5	100	16	12	9	14.5	133965 1615	44,40
M18	1	110	20	14	11	17	133965 1810	60,40
M18	1.5	110	20	14	11	16.5	133965 1815	51,10
M20	1	125	20	16	12	19	133965 2010	75,60
M20	1.5	125	20	16	12	18.5	133965 2015	63,90
M20	2	140	20	16	12	18	133965 2020	60,40
M22	1	125	20	18	14.5	21	133965 2210	86,30
M22	1.5	125	20	18	14.5	20.5	133965 2215	69,10
M22	2	140	20	18	14.5	20	133965 2220	75,60
M24	1	140	20	18	14.5	23	133965 2410	101,20
M24	1.5	140	24	18	14.5	22.5	133965 2415	86,60
M24	2	140	24	18	14.5	22	133965 2420	86,30

1128



… 3 µm

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High quality for great performance

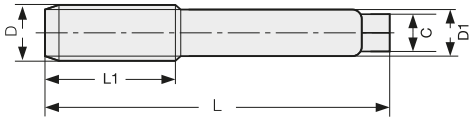
S-POT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 10-272

- **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
		● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				
	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.	€
M3	0.35	56	9	2.2	-	2.65	**133975** 0303	20,50
M4	0.5	63	10	2.8	2.1	3.5	133975 0405	20,50
M5	0.5	70	12	3.5	2.7	4.5	133975 0505	21,20
M6	0.5	80	14	4.5	3.4	5.5	133975 0605	20,70
M6	0.75	80	14	4.5	3.4	5.2	133975 0607	22,–
M8	0.75	80	18	6	4.9	7.2	133975 0807	21,90
M8	1	90	22	6	4.9	7	133975 0810	23,50
M9	1	90	22	7	5.5	8	133975 0910	27,60
M10	0.75	90	20	7	5.5	9.2	133975 1007	35,–
M10	1	90	20	7	5.5	9	133975 1010	33,–
M10	1.25	100	24	7	5.5	8.8	133975 1012	29,–
M11	1	90	20	8	6.2	10	133975 1110	48,60
M12	1	100	22	9	7	11	133975 1210	27,80
M12	1.25	100	22	9	7	10.8	133975 1212	27,80
M12	1.5	100	22	9	7	10.5	133975 1215	27,80
M14	1	100	22	11	9	13	133975 1410	49,10
M14	1.25	100	22	11	9	12.8	133975 1412	49,10
M14	1.5	100	22	11	9	12.5	133975 1415	41,20
M16	1	100	22	12	9	15	133975 1610	51,40
M16	1.5	100	22	12	9	14.5	133975 1615	47,60
M18	1	110	25	14	11	17	133975 1810	71,–
M18	1.5	110	25	14	11	16.5	133975 1815	59,50
M20	1	125	25	16	12	19	133975 2010	72,40
M20	1.5	125	25	16	12	18.5	133975 2015	60,60
M20	2	140	34	16	12	18	133975 2020	71,–
M22	1	125	25	18	14.5	21	133975 2210	96,10
M22	1.5	125	25	18	14.5	20.5	133975 2215	76,–
M22	2	140	34	18	14.5	20	133975 2220	72,40
M24	1	140	28	18	14.5	23	133975 2410	95,90
M24	1.5	140	28	18	14.5	22.5	133975 2415	81,20
M24	2	140	28	18	14.5	22	133975 2420	96,10

1128



... without shrinkage

ATORN®
High quality for great performance

VA-SFT machine tap

MF | 60° | HSS-E V3 | DIN 374 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

- **ISO 6H fine-pitch metric thread**
- 40° spiral-fluted with spiral point, type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

For stainless steel



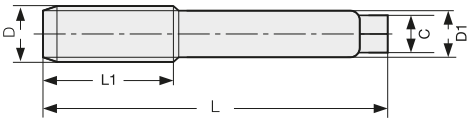
material — ● very well suited ○ well suited

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
● 5-10	● 5-15		● 5-10	● 5-12	● 5-8				○ 2-6		○ 20-40		○ 10-12				

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.	€
M3	0.35	56	4	2.2	-	2.7	**133515** 0303	22,40
M4	0.5	63	6	2.8	2.1	3.5	133515 0405	22,40
M5	0.5	70	7	3.5	2.7	4.5	133515 0505	23,10
M6	0.5	80	8	4.5	3.4	5.5	133515 0605	23,10
M6	0.75	80	8	4.5	3.4	5.3	133515 0607	22,50
M8	0.75	80	10	6.0	4.9	7.3	133515 0807	23,80
M8	1.0	90	10	6.0	4.9	7.0	133515 0810	23,90
M10	1.0	90	12	7.0	5.5	9.0	133515 1010	25,90
M10	1.25	100	20	7.0	5.5	8.8	133515 1012	25,90
M12	1.0	100	16	9.0	7.0	11.0	133515 1210	30,20
M12	1.5	100	14	9.0	7.0	10.5	133515 1215	30,20
M14	1.5	100	16	11.0	9.0	12.5	133515 1415	39,20
M16	1.5	100	16	12.0	9.0	14.5	133515 1615	45,10
M18	1.5	110	12	14.0	11.0	16.5	133515 1815	51,90
M20	1.5	125	9	16.0	12.0	18.5	133515 2015	64,90
M22	1.5	125	20	18.0	14.5	20.5	133515 2215	70,10
M24	1.5	140	24	18.0	14.5	22.5	133515 2415	87,90

1128

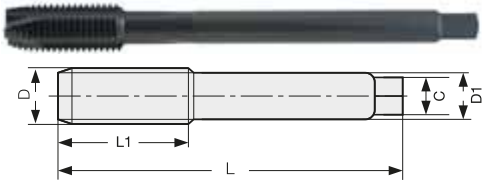


VA-POT machine tap

MF | 60° | HSS-E V3 | DIN 374 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 10-272

- **ISO 6H fine-pitch metric thread**
- Straight-fluted with spiral point, type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

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
● 5-20	● 5-15		● 5-10	● 5-12	● 5-8				○ 2-6		○ 20-40		○ 10-12				

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.	€
M3	0.35	56	9	2.2	-	2.7	**133505** 0303	20,80
M4	0.5	63	10	2.8	2.1	3.5	133505 0405	20,80
M5	0.5	70	12	3.5	2.7	4.5	133505 0505	21,50
M6	0.5	80	14	4.5	3.4	5.5	133505 0605	21,–
M6	0.75	80	14	4.5	3.4	5.3	133505 0607	22,30
M8	0.75	80	19	6.0	4.9	7.3	133505 0807	22,20
M8	1.0	90	22	6.0	4.9	7.0	133505 0810	23,90
M10	1.0	90	20	7.0	5.5	9.0	133505 1010	33,50
M10	1.25	100	24	7.0	5.5	8.8	133505 1012	29,40

1128

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M12	1.0	100	22	9.0	7.0	11.0	133505 1210	28,20
M12	1.5	100	22	9.0	7.0	10.5	133505 1215	28,20
M14	1.5	100	22	11.0	9.0	12.5	133505 1415	41,80
M16	1.5	100	22	12.0	9.0	14.5	133505 1615	48,30
M18	1.5	110	25	14.0	11.0	16.5	133505 1815	60,40
M20	1.5	125	25	16.0	12.0	18.5	133505 2015	61,50
M22	1.5	125	25	18.0	14.5	20.5	133505 2215	77,10
M24	1.5	140	28	18.0	14.5	22.5	133505 2415	82,40

1128

A-SFT machine tap

MF | 60° | HSS-E PM | DIN 374 | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 10-272

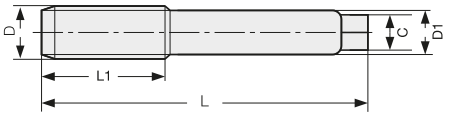
- **ISO2 6HX fine-pitch metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads



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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
M6	0.75	80	8	4.5	3.4	**133420** 0675	34,80
M8	0.75	80	8	6	4.9	133420 0875	36,80
M8	1.0	90	10	6	4.9	133420 0810	38,80
M10	1.0	90	10	7	5.5	133420 1010	40,90
M10	1.25	100	12	7	5.5	133420 1012	40,10
M12	1.0	100	12	9	7	133420 1210	47,–
M12	1.25	100	12	9	7	133420 1212	47,–
M12	1.5	100	14	9	7	133420 1215	48,90
M14	1.5	100	16	11	9	133420 1415	60,50
M16	1.5	100	16	12	9	133420 1615	70,10
M18	1.5	110	16	14	11	133420 1815	80,80
M20	1.5	125	16	16	12	133420 2015	101,30
M22	1.5	125	16	18	14.5	133420 2215	105,–
M24	1.5	140	16	18	14.5	133420 2415	137,80

1128



A-POT machine tap

MF | 60° | HSS-E PM | DIN 374 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 10-272

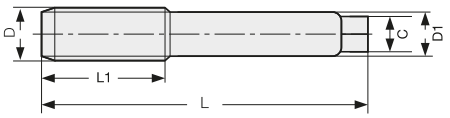
- **Metric ISO2 6HX fine thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads



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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
M6	0.75	80	14	4.5	3.4	**133460** 0675	33,80
M8	0.75	80	18	6	4.9	133460 0875	35,70
M8	1.0	90	22	6	4.9	133460 0810	37,70
M10	1.0	90	20	7	5.5	133460 1010	39,60
M10	1.25	100	24	7	5.5	133460 1012	38,90
M12	1.0	100	22	9	7	133460 1210	45,60
M12	1.25	100	22	9	7	133460 1212	45,60
M12	1.5	100	22	9	7	133460 1215	47,50
M14	1.5	100	22	11	9	133460 1415	58,80
M16	1.5	100	22	12	9	133460 1615	68,–
M18	1.5	110	25	14	11	133460 1815	78,50
M20	1.5	125	25	16	12	133460 2015	98,40
M22	1.5	125	25	18	14.5	133460 2215	101,70
M24	1.5	140	28	18	14.5	133460 2415	133,70

1128



ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | C 2-3 | 15° | 3xD | Vc/fz | 10-272

- **Whitworth pipe thread, 55°**
- 15°, right-hand, spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E**
- For blind-hole threads
- Easy chip removal to the rear
- Possible thread depth 1.5 x D
- Suitable for conventional machining with quick-action chuck
- Note: For DIN-ISO 228/1 straight pipe threads

Up to 1000 N/mm²



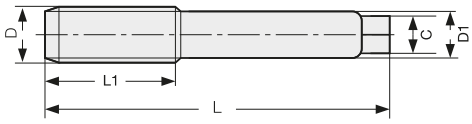
material — ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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 1/8"	28	90	11	7	5.5	8.80	**135315** 0018	33,40
G 1/4"	19	100	14	11	9	11.80	135315 0014	43,80
G 3/8"	19	100	14	12	9	15.25	135315 0038	57,–
G 1/2"	14	125	18	16	12	19.00	135315 0012	69,–
G 3/4"	14	140	20	20	16	24.50	135315 0034	104,–
G 1"	11	160	24	25	20	30.75	135315 0100	210,–

1127



ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | C 2-3 | 1,5xD | Vc/fz | 10-272

- **Whitworth pipe thread, 55°**
- Straight-fluted, without spiral point
- Through shank, type C, 2 to 3-thread chamfer
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 1.5xD
- Suitable for conventional machining with quick-action chuck
- **Note:** For DIN-ISO 228/1 straight pipe threads

Up to 1000 N/mm²



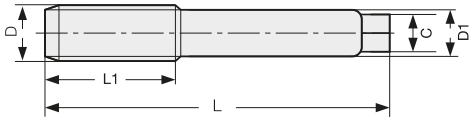
material — ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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 1/8"	28	90	11	7	5.5	8.80	**135300** 0018	32,50
G 1/4"	19	100	14	11	9	11.80	135300 0014	44,80
G 3/8"	19	100	14	12	9	15.25	135300 0038	51,–
G 1/2"	14	125	18	16	12	19.00	135300 0012	81,50
G 3/4"	14	140	20	20	16	24.50	135300 0034	106,–
G 1"	11	160	24	25	20	30.75	135300 0100	158,–

1127





... from Ø 0.2 mm

ATORN®
High quality for great performance

ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | C 2-3 | 40° | 3xD | Vap. | Vc/fz | 10-272

- **Whitworth pipe thread, 55°**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 3 x D
- Suitable for conventional machining with quick-action chuck
- **Note:** For DIN-ISO 228/1 straight pipe threads

For long-chipping materials



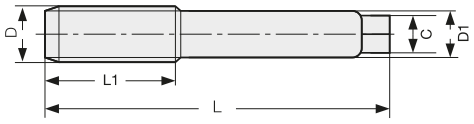
material: ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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 1/8"	28	90	18	7	5.5	8.80	**135320** 0018	31,90
G 1/4"	19	100	20	11	9	11.80	135320 0014	44,–
G 3/8"	19	100	22	12	9	15.25	135320 0038	49,90
G 1/2"	14	125	25	16	12	19.00	135320 0012	80,–
G 3/4"	14	140	28	20	16	24.50	135320 0034	104,–
G 1"	11	160	30	25	20	30.75	135320 0100	155,–

1127



ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | B 3,5-5 | 3xD | Vap. | Vc/fz | 10-272

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Possible thread depth 3 x D
- **Note:** For DIN-ISO 228/1 straight pipe threads



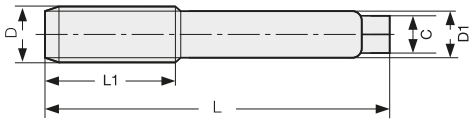
material: ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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 1/8"	28	90	11	7	5.5	8.80	**135295** 0018	26,70
G 1/4"	19	100	14	11	9	11.80	135295 0014	35,50
G 3/8"	19	100	14	12	9	15.25	135295 0038	40,60
G 1/2"	14	125	18	16	12	19.00	135295 0012	61,–
G 3/4"	14	140	20	20	16	24.50	135295 0034	108,–
G 1"	11	160	24	25	20	30.75	135295 0100	152,–

1127



Safety in the workplace

Please protect your eyes, ears and respiratory system!



A-SFT machine tap

G | 55° | HSS-E PM | DIN 5156 | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 10-272

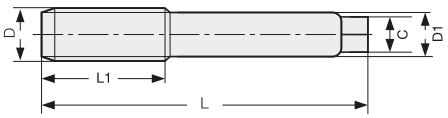
- **Whitworth pipe thread, 55°**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads



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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
G 1/8"	28	90	20	7	5.5	**133860** 0018	56,60
G 1/4"	19	100	22	11	9	133860 0014	76,–
G 3/8"	19	100	22	12	9	133860 0038	95,60
G 1/2"	14	125	25	16	12	133860 0012	133,–
G 5/8"	14	125	25	18	14.5	133860 0058	163,40
G 3/4"	14	140	28	20	16	133860 0034	216,50
G 7/8"	14	150	28	22	18	133860 0078	283,20
G 1"	11	160	30	25	20	133860 0111	307,10

1128



A-POT machine tap

G | 55° | HSS-E PM | DIN 5156 | B 4 | 2,5xD | TiCN | Vc/fz | 10-272

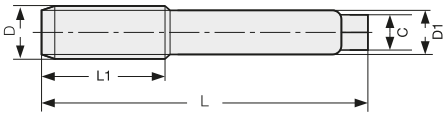
- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads



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
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	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	art.no.	€
G 1/8"	28	90	20	7	5.5	**133900** 0018	51,10
G 1/4"	19	100	22	11	9	133900 0014	68,50
G 3/8"	19	100	22	12	9	133900 0038	86,10
G 1/2"	14	125	25	16	12	133900 0012	119,70
G 5/8"	14	125	25	18	14.5	133900 0058	147,10
G 3/4"	14	140	28	20	16	133900 0034	194,90
G 7/8"	14	150	28	22	18	133900 0078	254,90
G 1"	11	160	30	25	20	133900 0111	276,50

1128

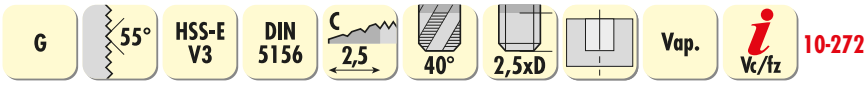


Safety in the workplace

Please protect your eyes, ears and respiratory system!



VA-SFT machine tap



- **Whitworth pipe thread, 55 °, ISO 228**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

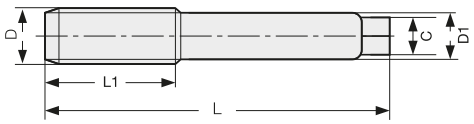
For stainless steel



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
		● 5-20	● 5-15		● 5-10	● 5-12					○ 2-6		○ 20-40		○ 10-12				
	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	11	7	5.5	8.8	**133910** 0001	35,30
G 1/4"	19	100	16	11	9.0	11.8	133910 0002	47,50
G 3/8"	19	100	16	12	9.0	15.0	133910 0003	59,80
G 1/2"	14	125	22	16	12.0	19.0	133910 0004	83,–
G 5/8"	14	125	22	18	14.5	21.0	133910 0005	102,10
G 3/4"	14	140	22	20	16.0	24.5	133910 0006	135,20
G 7/8"	14	150	22	22	18.0	28.0	133910 0007	176,80
G 1"	11	160	28	25	20.0	31.0	133910 0008	191,80

1128



ATORN® The ISO colour ring system for threading taps and forming taps

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® Machine tap

UNC | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 3xD | Vap. | Vc/fz | 10-272

- **UNC, unified national standard coarse-pitch thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions similar to DIN 371 = up to 3/8 inch, DIN 376 = from 7/16 inch
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Suitable for conventional machining with quick-action chuck
- Possible thread depth 3 x D



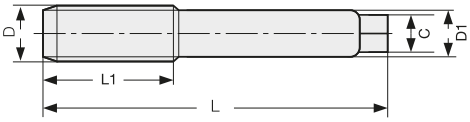
material — ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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.	€
1/4"	20	80	13	7	5.5	5.2	**135330** 0001	31,70
5/16"	18	90	14	8	6.2	6.6	135330 0002	31,40
3/8"	16	100	16	10	8	8.0	135330 0003	42,10
7/16"	14	100	18	8	6.2	9.4	135330 0004	61,–
1/2"	13	110	20	9	7	10.75	135330 0005	61,–
9/16"	12	110	21	11	9	12.25	135330 0006	96,–
5/8"	11	110	24	12	9	13.50	135330 0007	87,50
3/4"	10	125	25	14	11	16.50	135330 0008	115,–

1127



ATORN® Machine tap

UNC | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | | 3xD | Vap. | Vc/fz | 10-272

- **UNC, unified national standard coarse-pitch thread**
- Type B, 3.5-5 thread chamfer
- Constructional dimensions similar to DIN 371 = up to 3/8 inch, DIN 376 = from 7/16 inch
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Suitable for conventional machining with quick-action chuck
- Possible thread depth 3 x D



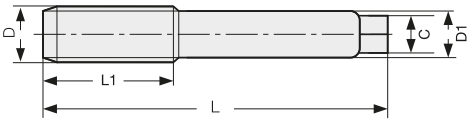
material — ● very well suited ○ well suited

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
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

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.	€
1/4"	20	80	16	7	5.5	5.20	**135325** 0001	20,90
5/16"	18	90	18	8	6.2	6.60	135325 0002	25,20
3/8"	16	100	20	10	8	8.00	135325 0003	30,30
7/16"	14	100	22	8	6.2	9.40	135325 0004	49,30
1/2"	13	110	25	9	7	10.75	135325 0005	53,50
9/16"	12	110	30	11	9	12.25	135325 0006	72,50
5/8"	11	110	30	12	9	13.50	135325 0007	73,–
3/4"	10	125	33	14	11	16.50	135325 0008	104,–

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… for special measurement tasks

ATORN®
High quality for great performance

ATORN® Machine tap

UNF | 60° | HSS-E | DIN 374 | 2 B | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 10-272

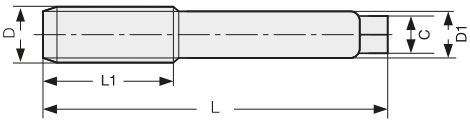
- **UNF, unified national standard fine-pitch thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Possible thread depth 2.5 x D



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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
1/4"	28	80	16	4.5	3.4	5.50	**135340** 0001	32,50
5/16"	24	90	18	6	4.9	6.90	135340 0002	23,60
3/8"	24	90	18	7	5.5	8.50	135340 0003	42,80
7/16"	20	100	22	8	6.2	9.90	135340 0004	62,–
1/2"	20	100	20	9	7	11.50	135340 0005	79,–
5/8"	18	100	22	12	9	14.50	135340 0007	95,50

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ATORN® Machine tap

UNF | 60° | HSS-E | DIN 374 | 2 B | B 3,5-5 | 3xD | Vap. | Vc/fz | 10-272

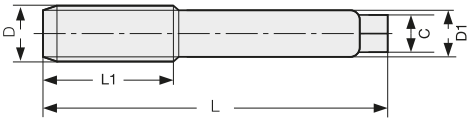
- **UNF, unified national standard fine-pitch thread**
- Straight-fluted with spiral point
- Tolerance: 2B
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Suitable for conventional machining with quick-action chuck
- 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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
1/4"	28	80	16	4.5	3.4	5.50	**135335** 0001	23,90
5/16"	24	90	18	6	4.9	6.90	135335 0002	28,70
3/8"	24	90	18	7	5.5	8.50	135335 0003	30,30
7/16"	20	100	22	8	6.2	9.90	135335 0004	47,40
1/2"	20	100	20	9	7	11.50	135335 0005	53,50
9/16"	18	100	22	11	9	12.90	135335 0006	72,–
5/8"	18	100	22	12	9	14.50	135335 0007	68,–
3/4"	16	110	25	14	11	17.50	135335 0008	90,–

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... from Ø 0.2 mm

ATORN®
High quality for great performance

ATORN® Machine tap

NPT | 60° | HSS-E | C 2-3 | 1,5xD | Vc/fz | 10-272

- **American national standard tapered pipe thread, NPT 60°**
- Straight-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads
- Tapered, sealing pitch 1:16
- Possible thread depth 1.5xD
- Taper reamer suitable for conical tapping holes (taper 1:16) available on request

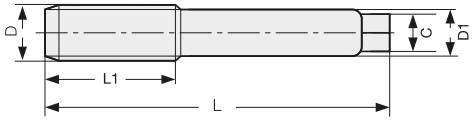
Pitch 1:16



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
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	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.	€
NPT 1/16"	27	56	14	6	4.9	6.10	**135345** 0001	41,10
NPT 1/8"	27	63	15	7	5.5	8.50	135345 0002	52,–
NPT 1/4"	18	63	21	11	9	11.00	135345 0003	63,–
NPT 3/8"	18	70	21	12	9	14.50	135345 0004	83,50
NPT 1/2"	14	80	27	16	12	18.00	135345 0005	110,–
NPT 3/4"	14	100	27	20	16	23.00	135345 0006	137,–
NPT 1"	11.5	110	32	25	20	29.00	135345 0007	198,–

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ATORN® Machine tap

Pg | 80° | HSS-E | DIN 40430 | C 2-3 | 3xD | Vc/fz | 10-272

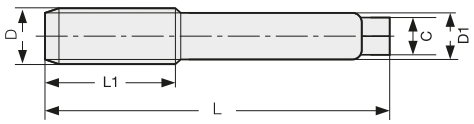
- **80° reinforced conduit thread**
- Straight-fluted
- **Without spiral point**
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 3 x D



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
		● 5-20	○ 5-15																
	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.	€
PG 7	20	70	22	9	7	11.40	**135380** 0070	32,40
PG 9	18	70	22	12	9	14.00	135380 0090	42,60
PG 11	18	80	22	14	11	17.30	135380 0110	59,–
PG 13.5	18	80	22	16	12	19.00	135380 0135	61,–
PG 16	18	80	22	18	14.5	21.30	135380 0160	67,50
PG 21	16	90	22	22	18	26.90	135380 0210	116,–
PG 29	16	100	25	28	22	35.50	135380 0290	181,–

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Overview of forming taps

Sorting by thread and cutting material	Forming taps											
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	OSG	OSG	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	MF
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 - M20	M2 - M12	M3 - M12	M3 - M12	M3 - M16	M3 - M20	M3 - M20	M3 - M12	M5 - M20	M1 - M30	M2 - M10	M6 - M24
Tolerance	6HX	6GX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX
DIN	2174	2174	2174	2174	371/376	2174	WN	371/376	371	2174	371	2174
Chamfer (form)	C	C	C	C	C	C	C	C	C	C	C	C
Possible thread depth	1xD	1xD	3xD	3xD	2xD	2xD	2xD	2xD	2xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E
Coating / surface treatment	TiN	TiN	TiN	TiAlN	TiCN	TiCN	TiN	TiCN	TiAlN	TiCN	TiCN	TiN
Type					UNI		Extra-long			S-XPF	V-NRT-B	
Info			with oil grooves	with oil grooves	Synchro	with oil grooves	Coolant bore	with oil grooves	Coolant bore	with oil grooves		with oil grooves
Item number	135405....	135450....	135240....	135245....	134730....	135460....	135410....	134194....	135430....	133920....	133320....	135480....
Page	10-185	10-185	10-186	10-186	10-186	10-187	10-187	10-188	10-188	10-189	10-189	10-190
Material groups	Usage recommendations											
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²							○		○			
Stainless steel ferritic/martensitic	●	●	●	●	●	●	○	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●	●	○	●	●	●	●	●
Stainless steel duplex	●	●	●	●		●	○	●	●	●	●	●
Cast iron GG/GTS	●	●				●						
Cast iron GGG	●	●	○	○		●		○			○	○
Titanium alloys	○	○				○						
Superalloys Fe/NiCo base < 30 HRc	●	●	○	○		●	○	○	○		○	○
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8 % Si	●	●	●	●	○	●	○	●	○	●	●	●
Aluminium ≥ 8 % Si							●		○		○	
Copper Cu-alloy			○	○	○		○	○	○	●	○	○
Graphite GRP/CFP/thermoset												

Sorting by thread and cutting material		
Brand	OSG	ATORN
Thread	MF	G
Type	Blind-hole/through-hole	Blind-hole/through-hole
Range	M4 - M22	1/16" - 3/4"
Tolerance	6HX	
DIN	2174	2189
Chamfer (form)	C	C
Possible thread depth	2.5xD	2xD
Cutting material	HSS-E	HSS-E
Coating / surface treatment	TiCN	TiN
Type	S-XPF	
Info	with oil grooves	with oil grooves
Item number	133930....	135495....
Page	10-190	10-191
Material groups	Usage recommendations	
Steel < 700 N/mm²	●	●
Steel < 1000 N/mm²	●	●
Steel < 1400 N/mm²		
Stainless steel ferritic/martensitic	●	●
Stainless steel austenitic	●	●
Stainless steel duplex	●	●
Cast iron GG/GTS		
Cast iron GGG		
Titanium alloys		
Superalloys Fe/NiCo base < 30 HRc		○
Superalloys Fe/NiCo base ≥ 30 HRc		
Aluminium < 8 % Si	●	○
Aluminium ≥ 8 % Si		
Copper Cu-alloy	●	○
Graphite GRP/CFP/thermoset		

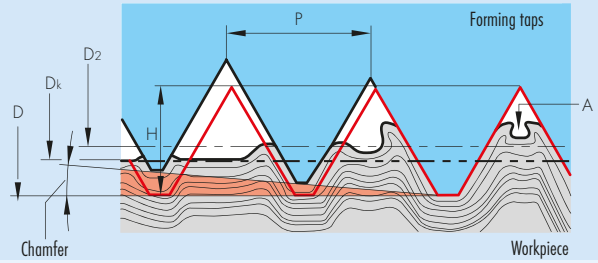


Thread forming

In contrast to thread cutting, in which material is cut out, thread forming is a chipless, pressure forming process for creating female threads in which the material is cold formed, without disrupting the fibre orientation. The screw-shaped threaded section of the former, which is fitted with a polygon, is "screwed into" the pre-drilled workpiece with an even feed that corresponds to the pitch of the thread. The thread profile is gradually pushed into the material by the start of the threaded section. In the process, the tension in the compression zone exceeds the compression limit and the material undergoes plastic forming. The material escapes radially and flows along the thread profile into the free tooth root and thus forms the core diameter of the nut thread. As a result of the flow process, the process-specific forming pockets are created at the tips of the thread. The pre-drilling diameter depends heavily on the formability of the material, the workpiece geometry and the load-bearing depth required. A larger core hole diameter should be chosen than for thread production by cutting. With a larger pre-drilling diameter, the load on the tool is reduced resulting in a simultaneous increase in service life. The load-bearing capacity of the thread is sufficient for steel materials even at around 50% of the load-bearing depth thanks to the uninterrupted fibre orientation and the cold work hardening.

The flow properties of the workpiece material during pressure forming by thread forming

D	Nominal Ø
D_2	Flank Ø
D_k	Hole Ø
H	Profile height
P	Pitch
A	Forming pocket (claw)
—	Finished nut thread



The incompletely formed crests of the thread with decreasing contact area ratio are a typical characteristic of formed threads. With a fully formed flank, this has no impact on the strength of the thread. The desired degree of forming of the thread may have to be determined by a trial run.

Lubrication is crucial for thread forming. It prevents the material from gathering in the thread flanks and ensures that the torque required is not too high. Lubrication must therefore always be carried out. Lubricating, graphite-based cooling lubricants or oils, as used in rolling, are most suitable for thread forming lubrication.



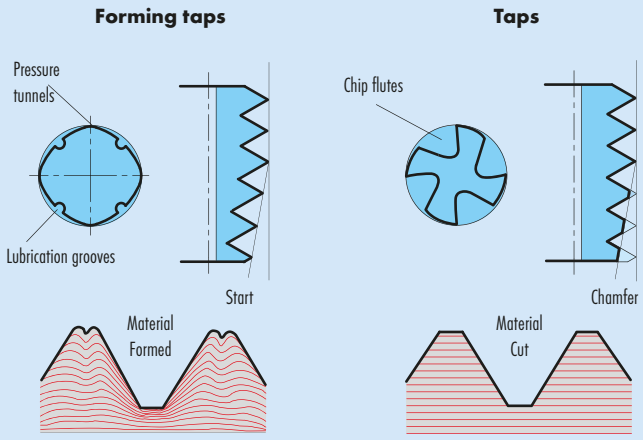


Advantages

- Generates no chips
- Threads in through-holes and blind bores can be made using the same tool.
- A wide range of materials can be machined.
- Miscutting of the thread is ruled out.
- Thread pitch and angle faults of the sort that can occur when cutting threads are ruled out. Formed female threads have greater strength because of their "uninterrupted fibre orientation" and the cold work hardening process, especially in the load-bearing thread flanks.
- Improved surface
- Higher cutting speeds possible with no change in service life, as the formability of many materials increases with the forming speed.
- Low risk of breakage thanks to strong tool design

Operating method

Chipless female thread production (thread forming) compared to thread cutting



ATORN® Machine forming taps

M | 60° | HSS-E | DIN 2174 | ISO 6HX | C 2-3 | 1xD | TiN | Vc/fz | 10-272

- **ISO 6HX metric thread**
- Type 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 %
- Possible thread depth 1xD

Program expanded!



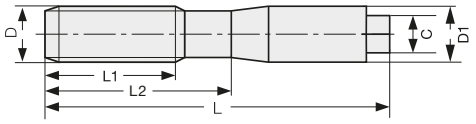
material: ● very well suited ○ well suited

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
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						

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.	€
M1	0.25	40	4	-	2.5	2.1	0.90	**135405** 0010	38,70
M1.2	0.25	40	4.8	-	2.5	2.1	1.10	135405 0012	38,20
M1.4	0.3	40	5.6	-	2.5	2.1	1.26	135405 0014	36,90
M1.6	0.35	40	6.4	-	2.5	2.1	1.45	135405 0016	36,10
M1.8	0.35	40	7.2	-	2.5	2.1	1.65	135405 0018	33,80
M2	0.4	45	8	-	2.8	2.1	1.85	135405 0020	29,60
M2.5	0.45	50	9	-	2.8	2.1	2.30	135405 0025	30,60
M3	0.5	56	11	18	3.5	2.7	2.75	135405 0030	23,50
M3.5	0.6	56	12	20	4	3	3.25	135405 0035	26,50
M4	0.7	63	13	21	4.5	3.4	3.65	135405 0040	19,40
M5	0.8	70	16	25	6	4.9	4.60	135405 0050	19,90
M6	1.0	80	19	30	6	4.9	5.55	135405 0060	20,50
M8	1.25	90	22	35	8	6.2	7.40	135405 0080	25,20
M10	1.5	100	24	39	10	8	9.30	135405 0100	35,40
M12	1.75	110	24	-	9	7	11.20	135405 0120	61,50
M14	2.0	110	26	-	11	9	13.10	135405 0140	111,–
M16	2.0	110	26	-	12	9	15.10	135405 0160	99,–
M20	2.5	140	32	-	16	12	18.90	135405 0200	185,–

1127



ATORN® Machine forming taps tolerance 6GX

M | 60° | HSS-E | DIN 2174 | ISO 3 6G | C 2-3 | 1xD | TiN | Vc/fz | 10-272

- **ISO 6GX metric thread**
- Type 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 %
- Possible thread depth 1xD



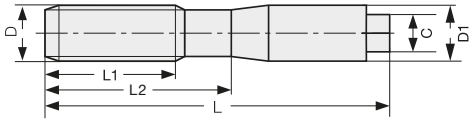
material: ● very well suited ○ well suited

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
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						

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.	€
M2	0.4	45	8	-	2.8	2.1	1.85	**135450** 0020	32,–
M2.5	0.45	50	9	-	2.8	2.1	2.30	135450 0025	28,80
M3	0.5	56	11	18	3.5	2.7	2.75	135450 0030	27,20
M3.5	0.6	56	12	20	4	3	3.25	135450 0035	29,90
M4	0.7	63	13	21	4.5	3.4	3.65	135450 0040	27,20
M5	0.8	70	16	25	6	4.9	4.60	135450 0050	28,30
M6	1.0	80	19	30	6	4.9	5.55	135450 0060	28,30
M8	1.25	90	22	35	8	6.2	7.40	135450 0080	33,60
M10	1.5	100	24	39	10	8	9.30	135450 0100	46,–
M12	1.75	110	24	-	9	7	11.20	135450 0120	65,50

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ATORN® Machine forming taps

M | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2-3 | 3xD | TiN | TiAlN | Vc/fz | 10-272

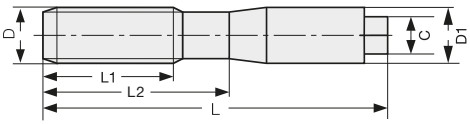
- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN; HSS-E TiAlN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %
- Possible thread depth 3 x D

With oil grooves



material	● very well suited ○ well suited	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
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90		○ 15-30				
	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-coated art.no.	€	TiAlN art.no.	€
M3	0.5	56	10	18	3.5	2.7	2.75	**135240** 0030	23,20	**135245** 0030	29,20
M4	0.7	63	12	21	4.5	3.4	3.65	135240 0040	19,30	135245 0040	23,30
M5	0.8	70	14	25	6	4.9	4.60	135240 0050	20,30	135245 0050	19,20
M6	1.0	80	16	30	6	4.9	5.55	135240 0060	21,–	135245 0060	19,70
M8	1.25	90	18	35	8	6.2	7.40	135240 0080	24,80	135245 0080	20,30
M10	1.5	100	20	39	10	8	9.30	135240 0100	35,20	135245 0100	25,–
M12	1.75	110	24	-	9	7	11.10	135240 0120	56,50	135245 0120	40,40
								1127		1127	



ATORN® Machine forming taps

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 2xD | TiCN | Vc/fz | 10-272

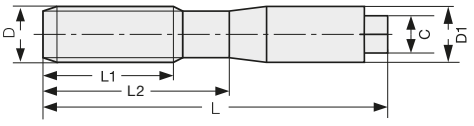
- **ISO 6HX metric thread**
- With oil grooves
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- **Shank tolerance h6**
- Possible thread depth 2xD
- Synchro tool for CNC machines (rigid clamping or minimal length compensation)

Synchro



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
		● 15-40	● 10-30		● 5-18	● 5-18							○ 10-40		○ 10-30				
	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.	€
M3	0.5	56	5	18	3.5	2.7	2.75	**134730** 0030	44,70
M4	0.7	63	6	21	4.5	3.4	3.65	134730 0040	44,70
M5	0.8	70	7	25	6	4.9	4.60	134730 0050	45,–
M6	1.0	80	8	30	6	4.9	5.55	134730 0060	47,20
M8	1.25	90	10	35	8	6.2	7.40	134730 0080	57,50
M10	1.5	100	12	39	10	8	9.30	134730 0100	70,50
M12	1.75	110	18	-	9	7	11.10	134730 0120	91,50
M16	2.0	110	20	-	12	9	15.10	134730 0160	103,–
								1127	





... and optimum service life

ATORN®
High quality for great performance

ATORN® Machine forming taps

M | 60° | HSS-E PM | DIN 2174 | ISO 6HX | C 2-3 | 2xD | TiCN | Vc/fz | 10-272

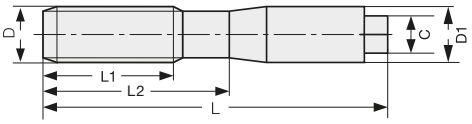
- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E-PM TiCN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %



material	● very well suited ○ well suited	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
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						
	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.	€
M3	0.5	56	11	18	3.5	2.7	2.75	**135460** 0030	46,80
M4	0.7	63	13	21	4.5	3.4	3.65	135460 0040	48,70
M5	0.8	70	16	25	6	4.9	4.60	135460 0050	55,–
M6	1.0	80	19	30	6	4.9	5.55	135460 0060	63,50
M8	1.25	90	22	35	8	6.2	7.40	135460 0080	72,50
M10	1.5	100	24	39	10	8	9.30	135460 0100	94,50
M12	1.75	110	24	-	9	7	11.20	135460 0120	108,–
M16	2.0	110	26	-	12	9	15.10	135460 0160	200,–
M20	2.5	140	32	-	16	12	18.90	135460 0200	250,–

1127



ATORN® Machine forming taps, long

M | 60° | HSS-E PM | Werks-norm | ISO 2 6HX | C 2-3 | 2xD | TiN | Vc/fz | 10-272

- **Metric ISO 6HX thread**
- Form C, 2-3 thread chamfer
- With oil grooves
- **Cutting material: HSS-E-PM, TiN**
- For blind-hole and through-hole threads
- **Extra-long range to bridge protruding contours**
- With axial coolant bore outlet
- Possible thread depth 2 x D
- **With internal coolant supply from M5**
- **Also available in metric fine (MF) version**

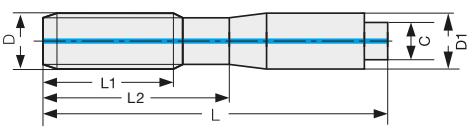
Long version



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
		● 8-60	● 8-45	○ 8-30	○ 8-30	○ 8-36	○ 8-22				○ 3-9		○ 45-90	○ 20-45	○ 15-30				
	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.	€
M3	0.5	112	6	18	3.5	2.7	2.80	**135410** 0030	169,–
M4	0.7	112	7.5	21	2.8	2.1	3.70	135410 0040	190,–
M5	0.8	125	8.5	25	3.5	2.7	4.65	135410 0050	196,–
M6	1.0	125	11	30	4.5	3.4	5.55	135410 0060	210,–
M8	1.25	140	14	35	6	4.9	7.40	135410 0080	230,–
M10	1.5	160	16	39	7	5.5	9.30	135410 0100	295,–
M12	1.75	180	18.5	49	9	7	11.20	135410 0120	335,–
M16	2.0	220	20	54	12	9	15.10	135410 0160	395,–
M20	2.5	280	25	62	16	12	18.90	135410 0200	480,–

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ATORN® Machine forming taps

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 2xD | TiCN | Vc/fz | 10-272

- **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

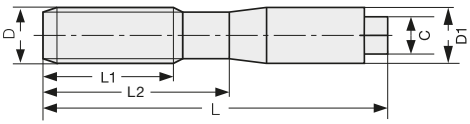
Ideal for steel and stainless steel



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
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 6-9		● 45-90		○ 15-30				
	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.	€
M3	0.5	56	10	18	3.5	2.7	2.75	**134194** 0305	30,40
M4	0.7	63	12	21	4.5	3.4	3.65	134194 0407	30,50
M5	0.8	70	14	25	6	4.9	4.60	134194 0508	31,60
M6	1.0	80	16	30	6	4.9	5.55	134194 0610	32,70
M8	1.25	90	18	35	8	6.2	7.40	134194 0812	41,10
M10	1.5	100	20	39	10	8	9.30	134194 1015	49,60
M12	1.75	110	22	-	9	7	11.10	134194 1217	67,–

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ATORN® Machine forming taps, with coolant bore

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 2xD | TiAlN | Vc/fz | 10-272

- **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 TiAlN**
- For blind-hole and through-hole threads
- For materials up to max. 1200 N/mm²
- With radial coolant bore outlet
- Possible thread depth 2xD

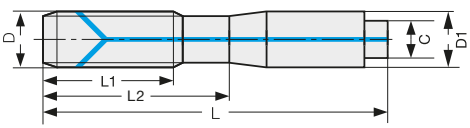
Radial coolant bore outlet



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
		● 8-60	● 8-45	○ 8-30	● 8-30	● 8-36	● 8-22				○ 3-9		○ 45-90	○ 15-45	○ 15-30				
	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.	€
M5	0.8	70	14	25	6	4.9	4.65	**135430** 0050	74,50
M6	1.0	80	16	30	6	4.9	5.55	135430 0060	86,50
M8	1.25	90	17	35	8	6.2	7.40	135430 0080	89,50
M10	1.5	100	20	39	10	8	9.30	135430 0100	112,–
M12	1.75	110	24	-	9	7	11.20	135430 0120	132,–
M14	2.0	110	26	-	11	9	13.10	135430 0140	198,–
M16	2.0	110	26	-	12	9	15.10	135430 0160	205,–
M20	2.5	140	32	-	16	12	18.90	135430 0200	260,–

1127



S-XPF machine forming taps

M | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2,5 | 2,5xD | TiCN | Vc/fz | 10-272

- **ISO 6HX metric thread**
- ISO 2/4HX where ≤ M1.4
- Type C, 2.5-thread chamfer
- With oil grooves ≥ M3
- **additional versions available**

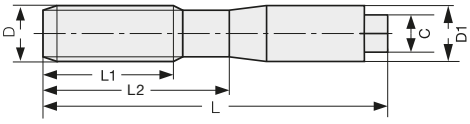


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-40	● 15-40		● 8-20	● 8-20	● 8-20						● 20-50		● 10-30				
	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.	€
M1	0.25	40	4	-	2.5	2.1	0.90	**133920** 0010	56,80
M1.2	0.25	40	4.8	-	2.5	2.1	1.10	133920 0012	54,60
M1.4	0.3	40	5.6	-	2.5	2.1	1.26	133920 0014	53,90
M1.6	0.35	40	6.4	-	2.5	2.1	1.45	133920 0016	52,90
M2	0.4	45	8	-	2.8	2.1	1.85	133920 0020	42,10
M2.5	0.45	50	9	-	2.8	2.1	2.30	133920 0025	41,20
M3	0.5	56	11	18	3.5	2.7	2.75	133920 0030	39,50
M4	0.7	63	13	21	4.5	3.4	3.65	133920 0040	40,–
M5	0.8	70	16	25	6	4.9	4.60	133920 0050	40,50
M6	1.0	80	19	30	6	4.9	5.55	133920 0060	41,20
M8	1.25	90	22	35	8	6.2	7.40	133920 0080	45,70
M10	1.5	100	24	39	10	8	9.30	133920 0100	54,60
M12	1.75	110	24	-	9	7	11.20	133920 0120	64,60
M14	2.0	110	26	-	11	9	13.10	133920 0140	80,40
M16	2.0	110	26	-	12	9	15.10	133920 0160	110,60
M18	2.5	125	30	-	14	11	16.90	133920 0180	126,90
M20	2.5	140	32	-	16	12	18.90	133920 0200	145,10
M22	2.5	140		-	18	14.5	20.80	133920 0220	194,70
M24	3.0	160		-	18	14.5	22.50	133920 0240	205,–
M27	3.0	160		-	20	16	25.50	133920 0270	237,10
M30	3.5	180		-	22	18	28.20	133920 0300	254,50

1128



V-NRT-B machine forming tap

M | 60° | HSS-E | DIN 371 | ISO 2 6HX | C 2 | 2,5xD | TiCN | Vc/fz | 10-272

- **Metric ISO 6HX thread**
- Type C, 2-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E TiCN**
- **Also available in Tolerance 6GX version**

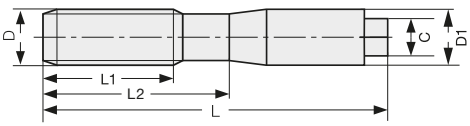


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90	○ 15-45	○ 15-30				
	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.	€
M2	0.4	45	8	8	2.8	2.1	1.85	**133320** 0020	33,40
M2.2	0.45	45	9	8	2.8	2.1	2.00	133320 0022	35,50
M2.5	0.45	50	9	9	2.8	2.1	2.30	133320 0025	32,80
M3	0.5	56	11	18	3.5	2.7	2.75	133320 0030	31,30
M3.5	0.6	56	13	20	4.0	3.0	3.25	133320 0035	32,50
M4	0.7	63	13	21	4.5	3.4	3.65	133320 0040	31,80
M5	0.8	70	16	25	6.0	4.9	4.60	133320 0050	32,30
M6	1.0	80	19	30	6.0	4.9	5.55	133320 0060	32,80
M8	1.25	90	22	35	8.0	6.2	7.40	133320 0080	35,90
M10	1.5	100	24	39	10.0	8.0	9.30	133320 0100	43,–

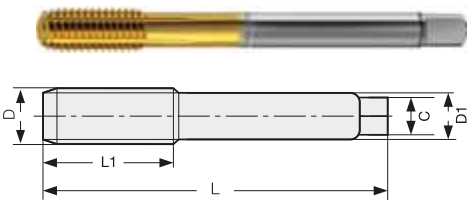
1128



ATORN® Machine forming taps

MF | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2-3 | | 2,5xD | | TiN | Vc/fz | 10-272

- **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
- **Also available in HSS-E-PM 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
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90		○ 15-30				
	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.	€
M6	0.75	80	30	4.5	3.4	5.65	**135480** 0675	64,–
M8	0.75	80	30	6	4.9	7.65	135480 0875	70,–
M8	1.0	90	35	6	4.9	7.55	135480 0810	55,50
M10	1.0	90	35	7	5.5	7.55	135480 1010	57,–
M10	1.25	100	39	7	5.5	9.40	135480 1012	74,50
M12	1.0	100	40	9	7	11.55	135480 1210	72,–
M12	1.25	100	40	9	7	11.40	135480 1212	76,50
M12	1.5	100	40	9	7	11.30	135480 1215	74,–
M14	1.0	100	40	11	9	13.55	135480 1410	96,–

1127

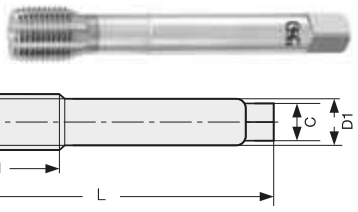
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M14	1.5	100	40	11	9	13.30	135480 1415	91,–
M16	1.0	100	44	12	9	15.55	135480 1610	123,–
M16	1.5	100	44	12	9	15.30	135480 1615	104,–
M18	1.0	110	44	14	11	17.55	135480 1810	143,–
M18	1.5	110	44	14	11	17.30	135480 1815	127,–
M20	1.0	125	44	16	12	19.55	135480 2010	167,–
M20	1.5	125	44	16	12	19.30	135480 2015	144,–
M22	1.5	125	44	18	14.5	21.30	135480 2215	184,–
M24	1.5	140	48	18	14.5	23.30	135480 2415	195,–

1127

S-XPF machine forming taps

MF | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2,5 | | 2,5xD | | TiCN | Vc/fz | 10-272

- **ISO 6HX fine-pitch metric thread**
- Type C, 2.5-thread chamfer
- With oil grooves
- **Cutting material: HSS-E TiCN**
- For blind-hole and 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
		● 15-40	● 15-40		● 8-20	● 8-20	● 8-20						● 20-50		● 10-30				
	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.	€
M4	0.5	63	8	4.5	3.4	3.80	**133930** 0405	47,20
M5	0.5	70	8	6	4.9	4.80	133930 0505	47,80
M6	0.5	80	8	6	4.9	5.80	133930 0605	48,70
M6	0.75	80	8	6	4.9	5.70	133930 0607	48,70
M8	0.5	80	10	6	4.9	7.80	133930 0805	54,–
M8	0.75	80	10	6	4.9	7.70	133930 0807	54,–
M8	1.0	90	10	6	4.9	7.55	133930 0810	45,90
M10	1.0	90	12	7	5.5	9.55	133930 1010	64,70
M10	1.25	100	12	7	5.5	9.40	133930 1012	60,20
M12	1.0	100	15	9	7	11.60	133930 1210	75,90
M12	1.25	100	15	9	7	11.40	133930 1212	66,10
M12	1.5	100	15	9	7	11.30	133930 1215	66,10

1128

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M14	1.0	100	15	11	9	13.60	133930 1410	94,90
M14	1.25	100	15	11	9	13.40	133930 1412	80,40
M14	1.5	100	15	11	9	13.30	133930 1415	80,40
M16	1.0	100	15	12	9	15.60	133930 1610	130,60
M16	1.5	100	15	12	9	15.30	133930 1615	110,60
M18	1.0	110	15	14	11	17.60	133930 1810	149,80
M18	1.5	110	15	14	11	17.30	133930 1815	124,20
M20	1.0	125	15	16	12	19.60	133930 2010	171,30
M20	1.5	125	15	16	12	19.30	133930 2015	142,30
M22	1.5	125	15	18	14.5	21.30	133930 2215	190,70
M24	1.5	140	15	18	14.5	23.30	133930 2415	201,–

1128

ATORN® Machine forming taps

G | 55° | HSS-E | C 2-3 | 2xD | TiN | Vc/fz | 10-272

- **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



10

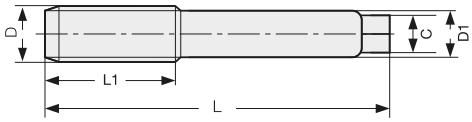
material — ● very well suited ○ well suited

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
● 8-50	● 8-45		● 8-30	● 8-36	● 8-22				○ 3-9		○ 45-90		○ 15-30				

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

D mm	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	7.30	**135495** 0116	42,40
G 1/8"	28	90	18	7	5.5	9.30	135495 0018	48,90
G 1/4"	19	100	20	11	9	12.50	135495 0014	60,–
G 3/8"	19	100	22	12	9	16.00	135495 0038	84,50
G 1/2"	14	125	25	16	12	20.00	135495 0012	110,–
G 3/4"	14	140	28	20	16	25.50	135495 0034	116,–

1127



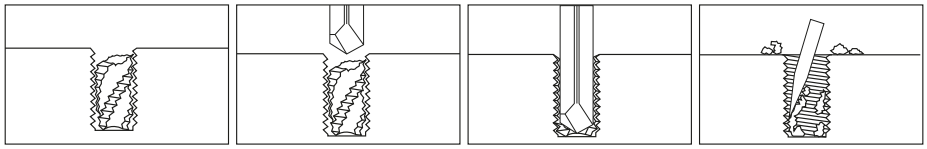
ATORN® Solid carbide tap drill-out tool

VHM | Werks-norm | Typ H | TiN | Vc/fz | 10-273

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**





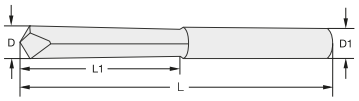
material — ● very well suited ○ well suited

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
114075....																● 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	3.0	**114075** 2025	31,40
M4	3.3	14	50	4.0	114075 2033	36,60
M5	4.2	19	50	5.0	114075 2042	42,30
M6	5.0	23	50	6.0	114075 2050	47,60
M8	6.8	23	80	8.0	114075 2068	51,–
M10	8.5	25	80	10.0	114075 2085	68,–
M12	10.2	35	80	12.0	114075 2102	99,–

1132





7 pcs. set

Contents	art.no.	€
1 solid carbide tap extractor in each size, Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2	**114075** 2120	365,–

1132

THERMDRILL® Thermal drill bits (flow drill)

i Vc/fz 10-275

For a lower wall thickness, often only 1-2 threads can be inserted. These are generally not sufficient for a load-bearing thread. With the THERMDRILL process, you can create extremely stable thread bushes in seconds in only two steps. Protected against rotation and resistant to vibrations. Ideal for thin-walled sheet steel, pipes and profiles as the thread bushes are produced as if from one cast.

- **Wobbling, loosening or rotating (as with rivet nuts) no longer possible**
- Additional inserts no longer required
- **Especially suitable for round tubes**
- **Secure hold even in sheet metal and hollow profiles**
- No waste, chip-free process by using friction heat
- Better quality thread due to shaped instead of cut thread (material reinforcement)
- **Long service life of tools thanks to polygon-ground solid carbide**









Basic equipment

- Incl. ER32 - Ø 6, 8 and 10 mm collets

Holding fixtures	Contents	art.no.	€
MT 2	1 each of paste 100 g, thread form oil 100 ml, brass brush, bristle brush, spanner, hook wrench, tool holder with cooling ring, system case	**102900** 1000	339,–
MT 3	1 each of paste 100 g, thread form oil 100 ml, brass brush, bristle brush, spanner, hook wrench, tool holder with cooling ring, system case	102900 1001	369,–

1159

FORM type tool sets

- including forming taps
- **for bushes with collar**
- Type FORM forms a bulge from material flowing upwards





Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M4	6	Short	1.5	**102910** 0040	92,50
M4	6	Long	2.5	102920 0040	92,50
M5	6	Short	2.0	102910 0050	96,–
M5	6	Long	3.0	102920 0050	96,–
M6	8	Short	2.0	102910 0060	105,–
M6	8	Long	3.5	102920 0060	105,–
M8	8	Short	2.5	102910 0080	123,–
M8	8	Long	4.0	102920 0080	123,–
M10	10	Short	2.5	102910 0100	148,–
M10	10	Long	4.5	102920 0100	148,–

1159

CUT type tool sets

- including forming taps
- **for bushes without collar**
- Type CUT cuts the material protruding upwards flat



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M4	6	Short	2.0	**102930** 0040	120,–
M4	6	Long	4.0	102940 0040	120,–
M5	6	Short	3.0	102930 0050	145,–
M5	6	Long	4.5	102940 0050	145,–
M6	8	Short	3.0	102930 0060	162,–
M6	8	Long	5.0	102940 0060	162,–
M8	8	Short	4.0	102930 0080	184,–
M8	8	Long	6.0	102940 0080	177,–
M10	10	Short	4.0	102930 0100	210,–
M10	10	Long	6.5	102940 0100	210,–

1159

Continued on next page >>>

FORM type thermal drill bits

- **for bushes with collar**
- Type FORM forms a bulge from material flowing upwards



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M4	6	Short	1.5	**102901** 0040	59,50
M4	6	Long	2.5	102902 0040	59,50
M5	6	Short	2.0	102901 0050	63,50
M5	6	Long	3.0	102902 0050	63,50
M6	8	Short	2.0	102901 0060	70,50
M6	8	Long	3.5	102902 0060	70,50
M8	8	Short	2.5	102901 0080	85,50
M8	8	Long	4.0	102902 0080	85,50
M10	10	Short	2.5	102901 0100	105,–
M10	10	Long	4.5	102902 0100	105,–

1159

CUT type thermal drill bits

- **for bushes without collar**
- Type CUT cuts the material protruding upwards flat



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M4	6	Short	2.0	**102903** 0040	84,–
M4	6	Long	4.0	102904 0040	84,–
M5	6	Short	3.0	102903 0050	110,–
M5	6	Long	4.5	102904 0050	110,–
M6	8	Short	3.0	102903 0060	124,–
M6	8	Long	5.0	102904 0060	124,–
M8	8	Short	4.0	102903 0080	137,–
M8	8	Long	6.0	102904 0080	143,–
M10	10	Short	4.0	102903 0100	162,–
M10	10	Long	6.5	102904 0100	162,–

1159

Paste and thread forming oil

- Paste to protect the thermal drill from excessive wear
- High-performance oil especially suitable for thread forming in aluminium, copper, brass, steel and stainless steel



Description	art.no.	€
Flow drill paste 100 g including brush	**102980** 0100	24,50
Flow drill paste 1 kg including brush	102980 1000	59,50
Thread forming oil 100 ml including brush	102981 0100	23,40
Thread forming oil 1 l including brush	102981 1000	45,70

1159

Safety in the workplace

Please protect your eyes, ears and respiratory system!



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 10-273

- 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

HELICOIL plus repair kits with metric thread inserts

for coil thread	Twist drill Ø mm	Number inserts	art.no.	€
M3 x 0.5	3.2	60	**137060** 0003	46,10
M4 x 0.7	4.2	60	137060 0004	49,30
M5 x 0.8	5.2	60	137060 0005	47,40
M6 x 1.0	6.3	60	137060 0006	42,10
M8 x 1.25	8.4	30	137060 0008	41,80
M10 x 1.5	10.5	30	137060 0010	51,–
M12 x 1.75	12.5	30	137060 0012	52,70
M14 x 2.0	14.5	30	137060 0014	64,70
M16 x 2.0	16.5	30	137060 0016	74,30
			1149	

HELICOIL plus 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

for coil thread	Number inserts	art.no.	€
M5 - M12	230	**137065** 0001	206,–
M6/M8/M10	132	137065 0002	155,–
		1149	

HELICOIL plus small refill packs



for coil thread	Contents	1 x D art.no.	€	1.5 x D art.no.	€	2 x D art.no.	€
M3	20	**137061** 0003	11,60	**137062** 0003	13,30	**137063** 0003	15,30
M4	20	137061 0004	10,–	137062 0004	11,40	137063 0004	12,90
M5	20	137061 0005	12,30	137062 0005	14,–	137063 0005	15,60
M6	20	137061 0006	13,30	137062 0006	15,50	137063 0006	17,50
M8	10	137061 0008	7,30	137062 0008	8,50	137063 0008	9,50
M10	10	137061 0010	10,–	137062 0010	11,40	137063 0010	12,90
M12	10	137061 0012	23,10	137062 0012	26,60	137063 0012	30,–
M14	10	137061 0014	23,25	137062 0014	26,70	137063 0014	30,20
M16	10	137061 0016	32,–	137062 0016	36,80	137063 0016	41,70
		1149		1149		1149	

HELICOIL plus large refill packs



for coil thread	Contents	1 x D art.no.	€	1.5 x D art.no.	€	2 x D art.no.	€
M3	100			**137062** 0103	27,20		
M4	100	**137061** 0104	31,60	137062 0104	33,80	**137063** 0104	40,10
M5	100	137061 0105	34,90	137062 0105	37,50	137063 0105	45,60
M6	100	137061 0106	32,60	137062 0106	39,–	137063 0106	41,80
M8	100	137061 0108	37,80	137062 0108	47,30	137063 0108	53,50
M10	100	137061 0110	43,80	137062 0110	55,50	137063 0110	71,–
M12	100	137061 0112	59,–	137062 0112	82,–	137063 0112	110,–
M16	100	137061 0116	91,50	137062 0116	174,–	137063 0116	172,–
M20	100	137061 0120	280,–	137062 0120	330,–		
		1149		1149		1149	

Accessories

for coil thread	Hand taps art.no.	€	Installation mandrel art.no.	€	Tang break-off tool art.no.	€
M3	**137066** 0003	6,80	**137067** 0003	8,40	**137068** 0003	4,25
M4	137066 0004	6,25	137067 0004	8,40	137068 0004	3,50
M5	137066 0005	6,70	137067 0005	8,40	137068 0005	3,70
M6	137066 0006	5,55	137067 0006	8,40	137068 0006	3,70
M8	137066 0008	7,65	137067 0008	8,40	137068 0008	1,70
M10	137066 0010	10,–	137067 0010	8,40	137068 0010	1,90
M12	137066 0012	12,50	137067 0012	8,40	137068 0012	2,10
M16	137066 0016	22,40	137067 0016	13,60		
	1149		1149		1149	



Hand taps



Installation mandrel



Tang break-off tool

Overview of threading dies

	Threading dies									
Sorting by thread										
Brand	ATORN	SARA	ATORN	SARA	ATORN	SARA	SARA	ATORN	SARA	ATORN
Thread	M	M	M-LH	M-LH	M	M	M	MF	MF	MF-LH
Range	M2.5 - M36	M2.5 - M36	M3 - M20	M3 - M20	M2 - M24	M2 - M24	M3 - M30	M2 - M50	M2 - M36	M8 - M20
Tolerance	6g	6g	6g	6g	6g	6g	6g	6g	6g	6g
DIN	22568	22568	22568	22568	22568	22568	382	22568	22568	22568
Cutting material	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS
Type/info			Left-hand thread	Left-hand thread			Hexagonal			Left-hand thread
Item number	136001....	136004....	136010....	136014....	136005....	136045....	136002....	136015....	136016....	136025....
Page	10-197	10-197	10-198	10-198	10-198	10-198	10-199	10-200	10-200	10-201
Material groups	Usage recommendations									
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	○	○	●	●	○	○	○	○
Steel < 1400 N/mm²					○	○				
Stainless steel ferritic/martensitic	○	○	○	○	●	●	○	○	○	○
Stainless steel austenitic	○	○	○	○	○	○	○	○	○	○
Stainless steel duplex										
Cast iron GG/GTS										
Cast iron GGG										
Titanium alloys										
Superalloys Fe/NiCo base < 30 HRc										
Superalloys Fe/NiCo base ≥ 30 HRc										
Aluminium < 8 % Si	○	○	○	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si										
Copper Cu-alloy	○	○	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset										
Hardened steel < 55 HRc										
Hardened steel < 60 HRc										
Hardened steel ≥ 60 HRc										

	Threading dies			
Sorting by thread				
Brand	ATORN	ATORN	ATORN	ATORN
Thread	MF	BSW	G	UNF
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....
Page	10-201	10-202	10-202	10-202
Material groups				
Steel < 700 N/mm²	●	●	●	●
Steel < 1000 N/mm²	●	○	○	○
Steel < 1400 N/mm²	○			
Stainless steel ferritic/martensitic	●	○	○	○
Stainless steel austenitic	○	○	○	○
Stainless steel duplex				
Cast iron GG/GTS				
Cast iron GGG				
Titanium alloys				
Superalloys Fe/NiCo base < 30 HRc				
Superalloys Fe/NiCo base ≥ 30 HRc				
Aluminium < 8 % Si	○	○	○	○
Aluminium ≥ 8 % Si				
Copper Cu-alloy	○	○	○	○
Graphite GRP/CFP/thermoset				
Hardened steel < 55 HRc				
Hardened steel < 60 HRc				
Hardened steel ≥ 60 HRc				

Thread cutting sets from page 10-203



ATORN® SARA® Threading dies

M | 60° | HSS | DIN EN 22568 | DIN 13 6g | Vc/fz | 10-273

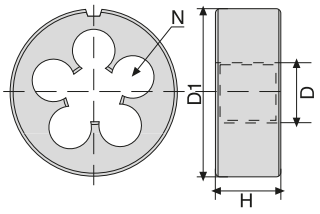
- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**



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
		●	○		○	○							○		○				

Right-hand thread

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M2.5	0.45	16	5	3	**136001** 0025	26,–	**136004** 0025	19,10
M2.6	0.45	16	5	3	136001 0026	28,–	136004 0026	21,30
M3	0.5	20	5	3	136001 0030	16,90	136004 0030	10,25
M3.5	0.6	20	5	3	136001 0035	26,50	136004 0035	20,90
M4	0.7	20	5	3	136001 0040	16,90	136004 0040	10,25
M4.5	0.75	20	7	4	136001 0045	39,60	136004 0045	30,10
M5	0.8	20	7	4	136001 0050	16,90	136004 0050	10,25
M6	1.0	20	7	4	136001 0060	16,90	136004 0060	10,25
M7	1.0	25	9	4	136001 0070	23,10	136004 0070	18,30
M8	1.25	25	9	4	136001 0080	18,70	136004 0080	11,30
M9	1.25	25	9	4	136001 0090	37,40	136004 0090	29,30
M10	1.5	30	11	4	136001 0100	24,20	136004 0100	14,40
M11	1.5	30	11	4	136001 0110	47,–	136004 0110	36,–
M12	1.75	38	14	4	136001 0120	29,90	136004 0120	17,90
M14	2.0	38	14	4	136001 0140	29,90	136004 0140	17,90
M16	2.0	45	18	4	136001 0160	40,80	136004 0160	24,50
M18	2.5	45	18	5	136001 0180	40,80	136004 0180	26,10
M20	2.5	45	18	5	136001 0200	40,80	136004 0200	30,–
M22	2.5	55	22	5	136001 0220	56,50	136004 0220	39,–
M24	3.0	55	22	5	136001 0240	56,50	136004 0240	41,20
M27	3.0	65	25	5	136001 0270	139,–	136004 0270	84,–
M30	3.5	65	25	6	136001 0300	139,–	136004 0300	88,50
M33	3.5	65	25	6	136001 0330	160,–	136004 0330	109,–
M36	4.0	65	25	7	136001 0360	158,–	136004 0360	116,–
					1126		1158	



Tap accessories

from page 10-204



ATORN® SARA® Left-hand threading die

M-LH | 60° | HSS | DIN EN 22568 | DIN 13 6g | Vc/fz | 10-273

- **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**

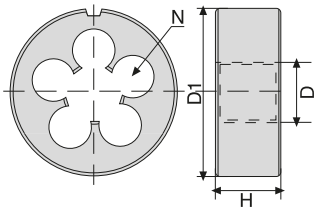


material — ● very well suited ○ well suited

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
●	○		○	○							○		○				

Left-hand thread

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M3-LH	0.5	20	5	4	**136010** 0030	47,60	**136014** 0030	38,10
M4-LH	0.7	20	5	4	136010 0040	44,80	136014 0040	35,80
M5-LH	0.8	20	7	4	136010 0050	42,20	136014 0050	33,80
M6-LH	1.0	20	7	4	136010 0060	42,20	136014 0060	33,80
M8-LH	1.25	25	9	4	136010 0080	45,80	136014 0080	36,60
M10-LH	1.5	30	11	4	136010 0100	56,–	136014 0100	44,70
M12-LH	1.75	38	14	4	136010 0120	73,80	136014 0120	59,–
M14-LH	2.0	38	14	4	136010 0140	73,80	136014 0140	59,–
M16-LH	2.0	45	18	4	136010 0160	96,50	136014 0160	77,20
M20-LH	2.5	45	18	5	136010 0200	98,50	136014 0200	79,–
					1126		1158	



ATORN® SARA® Threading dies

M | 60° | HSS-E | DIN EN 22568 | DIN 13 6g | Vc/fz | 10-273

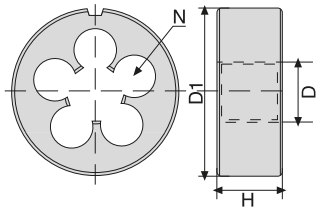
- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS-E**



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
●	●	○	●	○							○		○				

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M2	0.4	16	5	4	**136005** 0020	54,60	**136045** 0020	43,90
M3	0.5	20	5	4	136005 0030	34,30	136045 0030	23,80
M4	0.7	20	5	4	136005 0040	33,20	136045 0040	23,10
M5	0.8	20	7	4	136005 0050	30,90	136045 0050	21,50
M6	1.0	20	7	4	136005 0060	30,90	136045 0060	21,50
M8	1.25	25	9	5	136005 0080	36,90	136045 0080	25,50
M10	1.5	30	11	5	136005 0100	44,–	136045 0100	30,30
M12	1.75	38	14	5	136005 0120	58,50	136045 0120	40,40
M14	2.0	38	14	5	136005 0140	63,60	136045 0140	44,–
M16	2.0	45	18	5	136005 0160	75,90	136045 0160	52,70
M18	2.5	45	18	5	136005 0180	92,–	136045 0180	62,–
M20	2.5	45	18	5	136005 0200	85,–	136045 0200	58,90
M24	3.0	55	22	6	136005 0240	128,50	136045 0240	88,80
					1126		1158	



SARA® Threading die set

M | 60° | HSS | HSS-E | DIN 22568 | DIN 13 6g | Vc/fz | 10-273

- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- Tolerance zone 6g
- **Cutting material: HSS and HSS-E**
- In a steel case



139120 0001



139120 0002

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-E - 1 threading die in each size, M3-4-5-6-8-10-12	**139120** 0001	145,–
HSS - 1 threading die in each size, M3-4-5-6-8-10-12 including threading die holders	139120 0002	59,95

1158

SARA® Hexagonal threading dies

M | 60° | HSS | DIN 382 | DIN 13 6g | Vc/fz | 10-273

- **For ISO metric thread, DIN 13**
- Tolerance zone 6g
- **Cutting material: HSS**
- For re-cutting and repairing damaged 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	H mm	Wr. width mm	art.no.	€
M3	0.5	5	19	**136002** 0030	23,–
M4	0.7	5	19	136002 0040	22,60
M5	0.8	7	19	136002 0050	22,20
M6	1.0	7	19	136002 0060	22,20
M8	1.25	9	22	136002 0080	23,80
M10	1.5	11	27	136002 0100	29,60
M12	1.75	14	36	136002 0120	39,20
M14	2.0	14	36	136002 0140	44,–
M16	2.0	18	41	136002 0160	51,20
M20	2.5	18	41	136002 0200	52,–
M24	3.0	22	50	136002 0240	83,50
M30	3.5	25	60	136002 0300	135,–

1158



7 pcs. set

- In a steel case

Contents	art.no.	€
1 threading die of each size, M3-4-5-6-8-10-12	**136002** 0312	129,90

1158

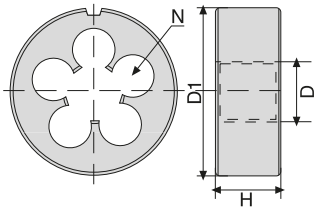
ATORN® SARA® Threading dies

MF | 60° | HSS | DIN EN 22568 | DIN 13 6g | i Vc/fz | 10-273

- **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
		●	○		○	○							○		○				



Right-hand thread

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	€	SARA® art.no.	€
M2*	0.25	16	5	4	**136015** 0001	65,–		
M3	0.35	20	5	4	136015 0006	45,50	**136016** 0006	30,10
M4	0.35	20	5	4	136015 0008	45,–	136016 0008	33,50
M5	0.5	20	5	4	136015 0010	33,30	136016 0010	23,20
M6	0.5	20	5	4	136015 0011	33,30	136016 0011	23,20
M6	0.75	20	7	4	136015 0012	25,70	136016 0012	20,10
M7	0.75	25	9	4	136015 0013	37,50	136016 0013	26,30
M8	0.5	25	9	5	136015 0014	45,–	136016 0014	31,50
M8	0.75	25	9	4	136015 0015	28,60	136016 0015	21,20
M8	1.0	25	9	4	136015 0016	28,60	136016 0016	21,–
M9	1.0	25	9	5	136015 0018	39,80	136016 0018	29,40
M10	0.75	30	11	5	136015 0020	48,–	136016 0020	36,60
M10	1.0	30	11	4	136015 0021	34,20	136016 0021	25,10
M10	1.25	30	11	4	136015 0022	36,80	136016 0022	28,90
M11	1.0	30	11	5	136015 0023	46,10	136016 0023	32,50
M12	1.0	38	10	5	136015 0025	45,–	136016 0025	33,20
M12	1.25	38	10	4	136015 0026	47,60	136016 0026	36,60
M12	1.5	38	10	4	136015 0027	41,60	136016 0027	30,30
M14	1.0	38	10	5	136015 0031	45,–	136016 0031	34,60
M14	1.25	38	10	5	136015 0032	47,10	136016 0032	37,20
M14	1.5	38	10	5	136015 0033	41,60	136016 0033	30,30
M15	1.0	38	10	5	136015 0034	60,50	136016 0034	37,70
M16	1.0	45	14	5	136015 0036	62,50	136016 0036	49,50
M16	1.5	45	14	5	136015 0037	56,50	136016 0037	41,20
M18	1.0	45	14	5	136015 0038	79,50	136016 0038	61,50
M18	1.5	45	14	5	136015 0039	56,–	136016 0039	41,20
					1126		1158	

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	€	SARA® art.no.	€
M20	1.0	45	14	6	136015 0041	79,50	136016 0041	61,50
M20	1.5	45	14	6	136015 0042	56,–	136016 0042	41,20
M20	2.0	45	14	6	136015 0043	83,50	136016 0043	63,50
M22	1.0	55	16	6	136015 0044	106,–	136016 0044	84,–
M22	1.5	55	16	5	136015 0045	76,50	136016 0045	56,40
M22	2.0	55	16	5	136015 0046	112,–	136016 0046	77,–
M24	1.0	55	16	6	136015 0047	106,–	136016 0047	79,–
M24	1.5	55	16	6	136015 0048	77,–	136016 0048	56,40
M24	2.0	55	16	6	136015 0049	104,–	136016 0049	77,50
M25	1.5	55	16	6	136015 0051	112,–	136016 0051	88,–
M26	1.5	55	16	6	136015 0052	90,50	136016 0052	71,50
M27	2.0	65	18	6	136015 0055	154,–	136016 0055	112,–
M28	1.5	65	18	6	136015 0057	113,–	136016 0057	88,–
M30	1.5	65	18	6	136015 0060	113,–	136016 0060	90,–
M30	2.0	65	18	6	136015 0061	154,–	136016 0061	97,50
M32	1.5	65	18	7	136015 0062	141,–	136016 0062	98,50
M33	2.0	65	18	7	136015 0065	158,–	136016 0065	119,–
M34	1.5	65	18	7	136015 0066	159,–	136016 0066	119,–
M35	1.5	65	18	8	136015 0067	152,–	136016 0067	115,–
M36	1.5	65	18	8	136015 0068	146,–	136016 0068	109,–
M36	2.0	65	18	8	136015 0069	158,–	136016 0069	122,–
M36	3.0	65	25	7	136015 0070	185,–	136016 0070	122,–
M40	1.5	75	20	8	136015 0075	225,–		
M42	1.5	75	20	8	136015 0078	225,–		
M45	1.5	90	22	7	136015 0082	300,–		
M50	1.5	90	22	8	136015 0088	300,–		
					1126		1158	



... without shrinkage

ATORN®
High quality for great performance

ATORN® Left-hand threading die

MF-LH | 60° | HSS | DIN EN 22568 | DIN 13 6g | Vc/fz | 10-273



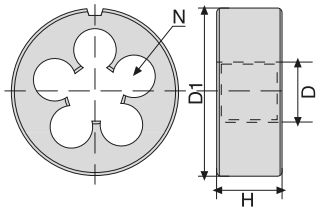
- **For left-hand ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

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
		●	○		○	○							○		○				

Left-hand thread

D mm	Pitch mm	D1 mm	H mm	N	art.no.	€
M8-LH	0.75	25	9	4	**136025** 0009	58,50
M8-LH	1.0	25	9	4	136025 0010	45,90
M10-LH	1.0	30	11	5	136025 0015	55,–
M12-LH	1.5	38	10	4	136025 0019	66,50
M14-LH	1.5	38	10	4	136025 0020	66,50
M16-LH	1.5	45	14	4	136025 0022	90,50
M20-LH	1.5	45	14	5	136025 0025	90,50

1126



ATORN® Threading dies

MF | 60° | HSS-E | DIN EN 22568 | DIN 13 6g | Vc/fz | 10-273

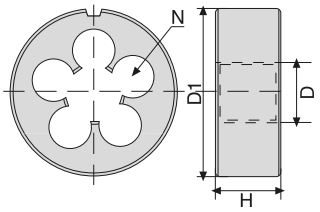


- **For ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS-E (lapped)**

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	H mm	N	art.no.	€
M5	0.5	20	5	4	**136020** 0010	48,80
M6	0.75	20	7	4	136020 0012	44,–
M8	0.75	25	9	4	136020 0015	49,–
M10	1.0	30	11	5	136020 0021	53,50
M12	1.0	38	10	5	136020 0025	70,–
M12	1.5	38	10	5	136020 0027	67,–
M14	1.5	38	10	5	136020 0033	67,–
M16	1.5	45	14	5	136020 0037	91,–
M18	1.5	45	14	5	136020 0039	91,–
M20	1.5	45	14	6	136020 0042	91,–
M22	1.5	55	16	6	136020 0045	130,–
M24	1.5	55	16	6	136020 0048	130,–
M30	1.5	65	18	6	136020 0060	185,–

1126



ATORN® Threading dies

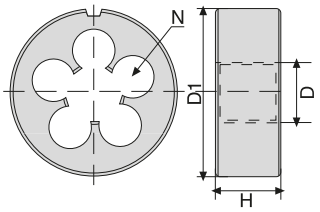
BSW | G | 55° | HSS | DIN EN 22568 | Vc/fz | 10-273



- **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
		●	○		○	○							○		○				

BS 84 Whitworth thread, medium tolerance zone



D	Pitch TPI	D1 mm	H mm	N	art.no.	€
BSW 1/8''	40	20	5	3	**136035** 0003	44,90
BSW 5/32''	32	20	7	4	136035 0004	51,60
BSW 7/32''	24	20	7	4	136035 0006	52,70
BSW 1/4''	20	20	7	4	136035 0007	39,80
BSW 5/16''	18	25	9	4	136035 0008	44,20
BSW 3/8''	16	30	11	4	136035 0009	53,50
BSW 1/2''	12	38	14	4	136035 0011	70,–
BSW 5/8''	11	45	18	4	136035 0013	90,–

1126

Whitworth pipe thread, DIN/EN/ISO 228 part 1 in tolerance zone A

D	Pitch TPI	D1 mm	H mm	N	art.no.	€
G 1/8"	28	30	11	4	**136040** 0001	39,90
G 1/4"	19	38	10	5	136040 0002	39,90
G 3/8"	19	45	14	5	136040 0003	53,10
G 1/2"	14	45	14	6	136040 0004	53,10
G 3/4"	14	55	16	6	136040 0006	82,70
G 1"	11	65	18	7	136040 0008	115,50
G 1 1/2"	11	90	22	8	136040 0012	265,–
G 2"	11	105	22	9	136040 0014	330,–

1126

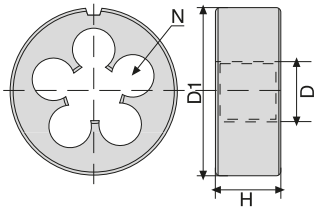
ATORN® Threading dies

UNF | 60° | HSS | DIN EN 22568 | Vc/fz | 10-273



- **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	D1 mm	H mm	Pitch TPI	N	art.no.	€
UNF no. 4*	16	5	48	4	**136050** 0005	46,–
UNF no. 6	20	7	40	4	136050 0007	45,–
UNF no. 8	20	7	36	4	136050 0008	43,90
UNF no. 10	20	7	32	4	136050 0009	43,90
UNF no. 12	20	7	28	4	136050 0010	47,–
UNF 1/4"	20	7	28	4	136050 0011	43,10
UNF 5/16"	25	9	24	4	136050 0012	48,40
UNF 3/8"	30	11	24	4	136050 0013	58,50
UNF 7/16"	30	11	20	5	136050 0014	58,50
UNF 1/2"	38	10	20	5	136050 0015	73,20
UNF 9/16"	38	10	18	5	136050 0016	79,50
UNF 5/8"	45	14	18	5	136050 0017	96,50

1126

SARA® Thread cutting tool set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H DIN 13 6g



- **In a steel case**
- 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.	€
M3 - M12 thread cutting tool	**137120** 0012	310,–
	1158	

SARA® Thread cutting tool set, M3 - M20

M | 60° | HSS | DIN 352 | ISO 2 6H DIN 13 6g



- **In a steel case**
- 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.	€
M3 - M20 thread cutting tool	**137130** 0020	589,–
	1158	

SARA® Hand tap set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H



- **For metric threads, M3-M12**
- With adjustable tap wrench and tool holder with ratchet
- 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.	€
1 set of DIN 352 hand taps in each size, M3-4-5-6-8-10-12; 1 tap wrench, size 1 ½; 1 tool holder	**139110** 0001	125,–
	1158	

SARA® Single operation tap set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H | B 3-4



- **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 taps DIN 352, 1 each of: M3-4-5-6-8-10-12, 1 tap wrench DIN 1814 size 1 1/2 adjustable, twist drills DIN 338 roll-milled: 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm	**150140** 0063	89,–
	1133	

SARA® Single operation tapping bits

M | 60° | HSS | Werks-norm | Bit C 6,3

- Tool for cutting threads with bit shank
- **Form C 6.3** hexagonal connector, 6.35 mm (1/4")

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
		●	●										●	○	○				



7-pcs.

Contents	art.no.	€
In plastic box: M3 - M4 - M5 - M6 - M8 - M10 including bit holder	**150127** 0001	36,50
	1133	



12-pcs.

Contents	art.no.	€
In plastic box: M3 - M4 - M5 - M6 - M8 - M10; twist drill bits: 2.5 - 3.3 - 4.2 - 5.0 - 6.8 - 8.5 mm	**150128** 0001	54,–
	1133	



... from Ø 0.2 mm

ATORN®
High quality for great performance

SARA® Combination tap bits

M | 60° | HSS | Werks-norm | Bit C 6,3

3-in-1 tool

- **For tapping hole creation, threading and deburring in one operation**
- **Form C 6.3** hexagonal connector, 6.35 mm (1/4")
- For material thickness max. 5-6 mm
- **Increased bending elasticity thanks to heat-treated induction zone**
- Up to 50 % longer service lives
- Reduced risk of breaking



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	Pitch mm	Tapping hole Ø mm	Total length mm	Spiral length mm	art.no.	€
M3	0.5	2.5	36	6.5	**150129** 0030	10,80
M4	0.7	3.3	39	9	150129 0040	11,30
M5	0.8	4.2	41	10	150129 0050	11,–
M6	1.0	5.0	44	12	150129 0060	11,30
M8	1.25	6.8	50	15	150129 0080	14,70
M10	1.5	8.5	59	18	150129 0100	18,10

1133

7-pcs. set

Contents	art.no.	€
In plastic box: M3 - M4 - M5 - M6 - M8 - M10 including bit holder	**150129** 0001	105,50

1133



SARA® Hand tap extension

- For extending taps and other tools with square end in accordance with DIN 10
- DIN 377
- Hardened and ground





for quadratic mm	for tap M	L mm	D3 mm	art.no.	€
2.1	1 - 2.6	60	6	**138015** 0021	4,15
2.4		70	6	138015 0024	4,15
2.7	3	80	7	138015 0027	4,15
3.0	3.5	90	7	138015 0030	4,15
3.4	4	95	8	138015 0034	4,25
3.8		100	9	138015 0038	4,45
4.3		105	10	138015 0043	4,80
4.9	4.5 - 8	110	11	138015 0049	5,05
5.5	9 - 10	115	12	138015 0055	5,25
6.2	11	120	14	138015 0062	6,75

1158

for quadratic mm	for tap M	L mm	D3 mm	art.no.	€
7.0	12	125	15	138015 0070	7,–
8.0		125	17	138015 0080	7,90
9.0	13 - 16	130	19	138015 0090	8,85
10.0		140	21	138015 0100	9,95
11.0	18	150	23	138015 0110	11,55
12.0	20	155	25	138015 0120	12,65
14.5	22 - 24	175	29	138015 0145	19,70
16.0	27	180	30	138015 0160	23,80
18.0	30	200	33	138015 0180	26,80
20.0	33	220	33	138015 0200	35,10

1158

SARA® 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)



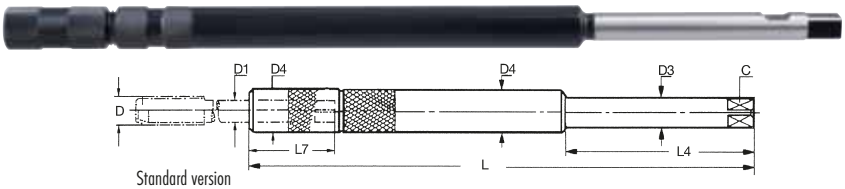
L mm	for quadratic mm	for tap M	art.no.	€
85	2.0 - 5.0	M3 - M10	**138010** 0085	9,40
250	2.0 - 5.0	M3 - M10	138010 0250	16,40
100	4.5 - 8.0	M5 - M12	138010 0100	12,85
300	4.5 - 8.0	M5 - M12	138010 0300	22,50
117	9.0 - 12.5	M13 - M20	138010 0117	79,20

1158

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.**
- **Versions:**
  138002.... Straight shank
  138003.... Straight shank with internal cooling (IC)
  138005.... Straight shank with Weldon clamping surface, shank tolerance h6
- 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

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€	IC art.no.	IC €	Weldon art.no.	Weldon €
TE1 / TE1IK	2.8	2.1	22	6	4.9	6.1	60	130	**138002** 0001	120,–			**138005** 0001	163,–
TE1L	2.8	2.1	22	6	4.9	6.1	70	230	138002 0002	134,–				
TE2 / TE2IK	3.5	2.7	23	6	4.9	7.5	60	130	138002 0003	120,–	**138003** 0003	166,–	138005 0003	163,–
TE2L	3.5	2.7	23	6	4.9	7.5	70	230	138002 0004	134,–				
TE3 / TE3IK	4.5	3.4	23	6	4.9	8.4	60	130	138002 0005	138,–	138003 0005	166,–	138005 0005	163,–
TE3L	4.5	3.4	23	6	4.9	8.4	70	230	138002 0006	152,–				
TE4 / TE4IK	6	4.9	26	7	5.5	12.1	60	130	138002 0007	138,–	138003 0007	166,–	138005 0007	169,–
TE4L / TE4LIK	6	4.9	26	8	6.2	12.1	70	230	138002 0008	152,–			138005 0008	193,–
TE5 / TE5IK	7	5.5	26	8	6.2	12.1	60	130	138002 0009	144,–	138003 0009	172,–	138005 0009	169,–
TE5L / TE5LIK	7	5.5	26	8	6.2	12.1	70	230	138002 0010	157,–			138005 0010	193,–
TE6 / TE6IK	8	6.2	30	8	6.2	13	60	130	138002 0011	144,–	138003 0011	172,–	138005 0011	169,–
TE6L / TE6LIK	8	6.2	30	8	6.2	13	80	230	138002 0012	157,–	138003 0012	197,–	138005 0012	193,–
TE7 / TE7IK	9	7	31	10	8	15	60	130	138002 0013	144,–			138005 0013	169,–
TE7L / TE7LIK	9	7	31	10	8	15	80	230	138002 0014	157,–	138003 0014	172,–	138005 0014	193,–
TE8 / TE8IK	10	8	33	10	8	15	60	130	138002 0015	144,–	138003 0015	172,–	138005 0015	169,–
TE8L / TE8LIK	10	8	33	10	8	15	80	230	138002 0016	157,–	138003 0016	197,–	138005 0016	193,–
TE9 / TE9IK	11	9	36	12	9	18	90	130	138002 0017	152,–	138003 0017	183,–	138005 0017	179,–
TE9L / TE9LIK	11	9	36	12	9	18	90	230	138002 0018	167,–	138003 0018	210,–	138005 0018	205,–
TE10 / TE10IK	12	9	36	12	9	18	90	130	138002 0019	152,–	138003 0019	183,–	138005 0019	179,–
TE10L / TE10LIK	12	9	36	12	9	18	90	230	138002 0020	167,–	138003 0020	210,–	138005 0020	205,–
TE11 / TE11IK	14	11	40	14	11	22	90	200	138002 0021	250,–	138003 0021	300,–	138005 0021	295,–
TE11L / TE11LIK	14	11	40	14	11	22	90	330	138002 0022	280,–	138003 0022	335,–	138005 0022	330,–
TE12 / TE12IK	16	12	41	16	12	22	90	200	138002 0023	250,–	138003 0023	300,–	138005 0023	295,–
TE12L / TE12LIK	16	12	41	16	12	22	90	330	138002 0024	280,–	138003 0024	335,–	138005 0024	330,–
TE13 / TE13IK	18	14.5	43	18	14.5	26	100	200	138002 0025	275,–	138003 0025	330,–	138005 0025	325,–
TE13L / TE13LIK	18	14.5	43	18	14.5	26	100	330	138002 0026	300,–	138003 0026	360,–	138005 0026	355,–
TE14 / TE14IK	20	16	52	20	16	28	100	200	138002 0027	305,–	138003 0027	345,–	138005 0027	340,–
TE14L / TE14LIK	20	16	52	20	16	28	100	330	138002 0028	330,–	138003 0028	375,–	138005 0028	370,–
TE15 / TE15IK	22	18.5	55	22	18.5	30	100	200	138002 0029	310,–	138003 0029	355,–	138005 0029	350,–
TE15L / TE15LIK	22	18.5	55	22	18.5	30	100	330	138002 0030	350,–	138003 0030	400,–	138005 0030	390,–
TE16 / TE16IK	25	20	56	25	20	35	100	200	138002 0031	325,–	138003 0031	365,–	138005 0031	355,–
TE16L / TE16LIK	25	20	56	25	20	35	100	330	138002 0032	355,–	138003 0032	435,–	138005 0032	420,–
TE17 / TE17IK	28	22	58	28	22	40	100	200	138002 0033	345,–	138003 0033	385,–	138005 0033	375,–
TE17L / TE17LIK	28	22	58	28	22	40	100	330	138002 0034	370,–	138003 0034	445,–	138005 0034	435,–
TE18 / TE18IK	32	24	60	32	24	44	100	200	138002 0035	355,–	138003 0035	395,–	138005 0035	385,–
TE18L / TE18LIK	32	24	60	32	24	44	100	330	138002 0036	385,–	138003 0036	455,–	138005 0036	440,–
									1166		1166		1166	

SARA® Tap wrench, adjustable

DIN 352



- DIN 1814
- Housing no. 0 - 5: high-purity die-cast zinc
- Housing no. 6: steel
- Jaws case-hardened
- Galvanised steel handles, one can be unscrewed
- For holding DIN 352 hand taps and DIN 206 hand reamers via square end

No.	for quadratic mm	L mm	art.no.	€
0	2.0 - 5.0	125	**138020** 0001	4,75
1	2.0 - 6.0	180	138020 0002	5,40
1 1/2	2.0 - 8.0	200	138020 0003	5,40
2	4.0 - 9.0	280	138020 0004	8,35
			1158	

No.	for quadratic mm	L mm	art.no.	€
3	4.9 - 12.0	375	138020 0005	14,80
4	5.5 - 16.0	480	138020 0006	24,50
5	7.0 - 20.0	700	138020 0007	41,20
6	9.0 - 25.0	960	138020 0008	76,50
			1158	

SARA® Mini tap wrench, adjustable

- Hardened steel jaws
- For small threads
- Light and handy
- For delicate and precise work



D mm	for quadratic mm	for tap M	for tap Ww	art.no.	€
40	max. 2.4	M1 - M2.6	1/16" - 3/32"	**138025** 0001	23,95
				1158	

SARA® Threading die holder

DIN 22568



- Housing Ø 16 - 65 mm high-purity die-cast zinc
- Housing from Ø 75 mm: steel
- Handles can be unscrewed
- For holding DIN 223/EN 22568 threading dies

D mm	H mm	suitable for threading die	L mm	art.no.	€
16	5	M1 - 2.6	160	**138030** 0001	2,96
20	5	M3; 4	180	138030 0002	2,96
20	7	M4.5 - 6	180	138030 0003	2,96
25	9	M7 - 9	210	138030 0004	3,36
30	11	M10 - 11	270	138030 0005	5,–
38	14	M12 - 14	310	138030 0006	6,85
45	18	M16 - 20	440	138030 0007	10,50
				1158	

D mm	H mm	suitable for threading die	L mm	art.no.	€
45	14	MF 16 - 20	440	138030 0014	10,50
55	22	M22; 24	490	138030 0008	14,50
55	16	MF 22; 25	490	138030 0012	14,50
65	25	M27; 30; 33; 36	630	138030 0009	18,20
75	30	M39; 42	900	138030 0010	60,50
90	36	M45; 48; 52	920	138030 0011	74,50
				1158	

SARA® Ball-type tap wrench

Werks-norm



- Die-cast zinc casing
- Galvanised steel handles, one can be unscrewed
- With 4 square holes in accordance with DIN 10
- For holding DIN 352 hand taps and DIN 206 hand reamers via square end

No.	for quadratic mm	L mm	art.no.	€
0	2.1 / 2.7 / 3.0 / 3.4	200	**138022** 0000	11,–
1	3.0 / 3.4 / 4.3 / 4.9	200	138022 0001	11,80
2	3.4 / 4.3 / 4.9 / 5.5	240	138022 0002	12,70
3	4.9 / 5.5 / 6.2 / 7.0	300	138022 0003	15,30
			1158	

No.	for quadratic mm	L mm	art.no.	€
4	5.5 / 6.2 / 7.0 / 9.0	340	138022 0004	30,60
5	7.0 / 9.0 / 11.0 / 12.0	450	138022 0005	38,50
6	11.0 / 12.0 / 14.5 / 16.0	645	138022 0006	65,–
			1158	

Overview of countersink and deburring tools

	Taper and deburring countersinks													
Sorting by countersink angle and number of cutting edges														
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	SARA	BECK	BECK	ATORN	ATORN	SARA	ATORN	SARA
Countersink angle	60°	60°	60°	60°	75°	90°	90°	90°	90°	90°	90°	90°	90°	90°
Diameter	6.3 - 25	6.3 - 25	25 - 63	8 - 25	8 - 25	6.3 - 31	6.3 - 31	4.3 - 31	6.3 - 31	10.4 - 31	4.3 - 40	4.3 - 40	4.3 - 31	4.3 - 31
Shank	Straight	Straight	MT	Straight	Straight	3F-shank	3F-shank	Straight	Straight	Straight	Straight	Straight	Straight	Straight
DIN	334C	334C	334D	WN	WN	335C	335C	335C	335C	WN	335C	335C	335C	335C
Number of cutting edges	3	3	3	3	3	3	3	3	3	4/5	3	3	3	3
Cutting material	HSS	HSS	HSS	Solid carbide	HSS	HSS	HSS	HSS	Solid carbide	HSS-E	HSS	HSS	HSS	HSS
Coating		TiN					TiN	ZrN	ZrN				TiN	TiN
Type/info						ADVANCED	ADVANCED	EUC-Speed	EUC-Speed	ENORMplus				
Item number	150130....	150131....	150135....	150133....	150140....	150270....	150271....	150170....	150171....	150163....	150101....	150201....	150105....	150205....
Page	10-209	10-209	10-209	10-209	10-210	10-210	10-210	10-214	10-214	10-212	10-211	10-211	10-211	10-211
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	●	●	○	●	●	●	●	●	○	○	○	○
Steel < 1400 N/mm²				●		○	○	○	●	●	○	○	○	○
Stainless steel ferritic/martensitic	○	○		●	○	○	○	○	●	●	○	○	○	○
Stainless steel austenitic	○	○		●	○	○	○	○	●	●	○	○	○	○
Stainless steel duplex						○	○		○		○	○	○	○
Cast iron GG/GTS	○	○		●	○	○	○	●	●		○	○	○	○
Cast iron GGG	○	○		●	○	○	○	●	●		○	○	○	○
Titanium alloys								○	●	●				
Superalloys Fe/NiCo base < 30 HRc									●	●				
Superalloys Fe/NiCo base ≥ 30 HRc									○	●				
Aluminium < 8 % Si	○	○		●	○	○	○	○	●		○	○	○	○
Aluminium ≥ 8 % Si	○	○		●	○	○	○		●		○	○	○	○
Copper Cu-alloy	○	○		●	○	○	○	○	●		○	○	○	○
Graphite GRP/CFP/thermoset														
Hardened steel < 55 HRc				○					○					
Hardened steel < 60 HRc														
Hardened steel ≥ 60 HRc														

	Taper and deburring countersinks											Flat countersinks	Combi countersinks	Deburring fork
Sorting by countersink angle and number of cutting edges														
Brand	ATORN	ATORN	SARA	ATORN	ATORN	SARA	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	GRAINLINE Tools	SARA
Countersink angle	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	180°	180°	
Diameter	4.3 - 31	5.3 - 31	5.3 - 31	6.3 - 31	6.3 - 25	4.3 - 25	20.5 - 80	5 - 50	10 - 35	10 - 35	10 - 21	6 - 20	7 - 66	1 - 16.28
Shank	Straight	Straight	Straight	Straight	Straight	Straight	MT	Straight	Straight	Straight	Straight	Straight	Str. / MT	Straight
DIN	335C	335C	335C	WN	335C	WN	335D	WN	WN	WN	WN	373	WN	WN
Number of cutting edges	3	3	3	3	3	3	3	1	1	1	1	3	4	2
Cutting material	HSS	HSS-E	HSS-E	HSS	HSS-E-PM	Solid carbide	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS/HSS-E	HSS	HSS
Coating	TiAlN					TiAlN				TiN				
Type/info				(Extra-)long							(Extra-)long	Fine/medium	Model 0, 1, 2	S-Grat
Item number	150107....	150111....	150211....	150104....	150108....	150166....	150115....	150155....	150145....	150146....	150147....	150501....	151010....	155001....
Page	10-211	10-213	10-213	10-212	10-213	10-214	10-215	10-216	10-215	10-215	10-215	10-217	From 10-218	10-221
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	○	○	●	●	○	○	○	○	○	○	●	○
Steel < 1400 N/mm²	○	○	○	○	○	●		○	○	○	○	○	○	
Stainless steel ferritic/martensitic	○	○	○	○	●	●	○	○	○	○	○		○	○
Stainless steel austenitic	○	○	○	○	●	●	○	○	○	○	○		○	○
Stainless steel duplex	○	○	○	○	○		○	○	○	○	○			
Cast iron GG/GTS	○	○	○	○		●	○	○	○	○	○	○	○	○
Cast iron GGG	○	○	○	○		●	○	○	○	○	○	○	○	○
Titanium alloys					○									
Superalloys Fe/NiCo base < 30 HRc					○									
Superalloys Fe/NiCo base ≥ 30 HRc					○									
Aluminium < 8 % Si	○	○	○	○		●	○	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○		●	○	○	○	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	●	●	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset						○								
Hardened steel < 55 HRc					○	○								
Hardened steel < 60 HRc														
Hardened steel ≥ 60 HRc														

ATORN® Taper and deburring countersinks

HSS | 60° | Z 3 | TiN | Vc/fz | 10-276

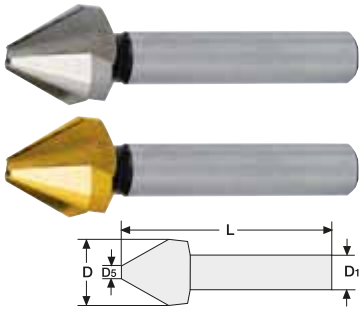
- 3 cutting edges
- **Cutting material: HSS; HSS, TiN-coated**

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
		●	○		○	○		○	○				○	○	○				
		20-28	10-15		5-8	5-10		8-14	8-12				40-80	20-50	25-40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Straight shank

- DIN 334C

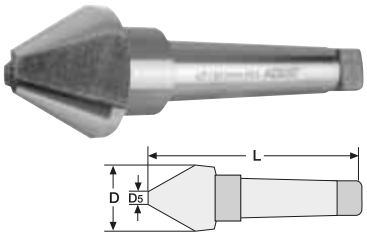
D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€
6.3	1.6	5	45	0.06	**150130** 0063	7,85	**150131** 0063	13,–
8.0	2	6	50	0.06	150130 0080	8,30	150131 0080	13,50
10.0	2.5	6	50	0.09	150130 0100	10,–	150131 0100	16,70
12.5	3.2	8	56	0.12	150130 0125	10,65	150131 0125	18,30
16.0	4	10	63	0.12	150130 0160	13,05	150131 0160	22,50
20.0	5	10	67	0.16	150130 0200	17,70	150131 0200	31,60
25.0	6.3	10	71	0.16	150130 0250	24,60	150131 0250	42,90
					1129		1129	



Morse taper shank

- DIN 334D

D mm	D5 mm	Shank	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
25.0	6.3	MT 2	112	0.16	**150135** 0250	33,80
31.5	10.0	MT 2	118	0.16	150135 0315	41,80
40.0	12.5	MT 3	150	0.16	150135 0400	66,50
50.0	16.0	MT 3	160	0.20	150135 0500	86,50
63.0	20.0	MT 4	190	0.20	150135 0630	168,–
					1129	



ATORN® Taper and deburring countersinks

VHM | Werks-norm | 60° | Z 3 | Vc/fz | 10-276

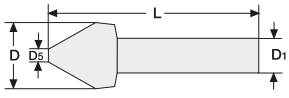
- 3 cutting edges, radially relief-ground
- Shank tolerance h9
- Straight shank
- **Cutting material: solid carbide**
- Design: Ø 8 in solid carbide, Ø10 - Ø25 solid carbide head and soldered shank
- We recommend the carbide version for machining solid steels.

Smooth countersinks, high endurance



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
		●	●	●	●	●		●	●				●	●	●	●	○		
		30-50	25-40	8-20	15-25	15-30		15-25	12-22				60-100	40-65	40-80	5-10	4-12		
	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.	€
8.0	2.0	6.0	50	0.07	**150133** 0080	118,–
10.0	2.5	8.0	50	0.08	150133 0100	120,–
12.5	3.2	8.0	56	0.10	150133 0125	120,–
16.0	4.0	10.0	63	0.14	150133 0160	173,–
20.0	5.0	10.0	67	0.16	150133 0200	198,–
25.0	6.3	10.0	71	0.18	150133 0250	225,–
					1129	



ATORN® Taper and deburring countersinks

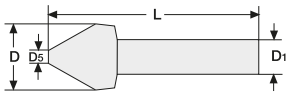
HSS | Werks-norm | 75° | Z 3 | Vc/fz | 10-276



- 3 cutting edges, straight shank
- Type C
- **Cutting material: HSS**
- Deburring countersinks also available with Morse taper shank and other countersink angles on request!

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
	● 20-28	○ 10-15		○ 5-8	○ 5-10		○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
Cutting speed Vc m/min.																		

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



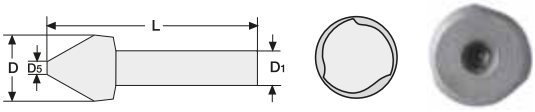
D mm	D5 mm	D1 mm	L mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	2.0	6	50	0.06	**150140** 0080	16,50
10.0	2.5	6	54	0.09	150140 0100	17,70
12.5	2.8	8	54	0.12	150140 0125	19,90
15.0	3.2	8	56	0.12	150140 0150	26,60
20.0	3.5	10	63	0.16	150140 0200	40,70
25.0	3.8	10	71	0.16	150140 0250	45,10
					1129	

SARA® ADVANCED taper and deburring countersinks

HSS | DIN 335C | 90° | Z 3 | TiN | Vc/fz | 10-276



- 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**



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
	● 20-28	● 10-15	○ 5-8	○ 5-8	○ 5-10	○ 5-10	○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
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	15,30	**150271** 0063	17,90
8.3	2	6	50	0.10	150270 0083	16,90	150271 0083	19,80
10.4	2.5	6	50	0.10	150270 0104	17,20	150271 0104	20,20
12.4	2.8	8	56	0.12	150270 0124	20,60	150271 0124	24,20
16.5	3.2	10	60	0.14	150270 0165	23,80	150271 0165	28,–
20.5	3.5	10	63	0.18	150270 0205	29,60	150271 0205	34,80
25	3.8	10	67	0.22	150270 0250	35,70	150271 0250	42,–
31	4.2	12	71	0.22	150270 0310	43,70	150271 0310	51,50
					1165		1165	







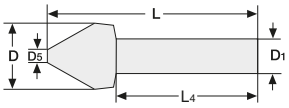
Sets

Contents	art.no.	€	**TiN** art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150270** 1000	121,–	**150271** 1000	139,–
6.3 / 10.4 / 16.5 / 20.5 / 25 mm (1 of each)	150270 2000	120,–	150271 2000	141,–
	1165		1165	

ATORN® SARA® Taper and deburring countersinks

HSS | DIN 335C | Werks-norm | 90° | Z 3 | TiN | TiAlN | Vc/fz | 10-276

- 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

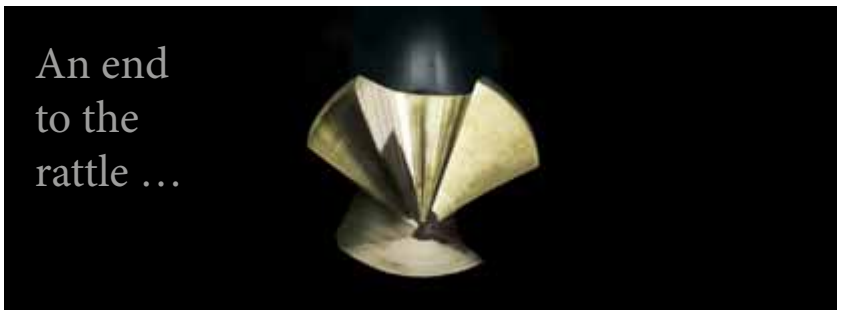
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 20-28	● 10-15	○ 5-8	○ 5-8	○ 5-10	○ 5-10	○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
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 min. mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® HSS art.no.	€	SARA® HB art.no.	€	ATORN® TiN art.no.	€	SARA® HB TiN art.no.	€	ATORN® TiAlN art.no.	€
4.3	1.3	4	40	28	0.04	**150101** 0043	7,40	**150201** 0043	5,45	**150105** 0043	13,90	**150205** 0043	10,10	**150107** 0043	15,70
5.0	1.5	4	40	28	0.04	150101 0050	7,65	150201 0050	5,65	150105 0050	13,90	150205 0050	10,10	150107 0050	15,70
5.3	1.5	4	40	28	0.06	150101 0053	7,65	150201 0053	5,65	150105 0053	13,90	150205 0053	10,10	150107 0053	16,90
5.8	1.5	5	45	28	0.06	150101 0058	7,65	150201 0058	5,65	150105 0058	14,30	150205 0058	10,40	150107 0058	16,90
6.0	1.5	5	45	28	0.06	150101 0060	7,65	150201 0060	5,65	150105 0060	13,90	150205 0060	10,10	150107 0060	16,90
6.3	1.5	5	45	28	0.06	150101 0063	7,65	150201 0063	5,65	150105 0063	13,90	150205 0063	10,10	150107 0063	16,90
7.0	1.8	6	50	36	0.06	150101 0070	7,80	150201 0070	5,75	150105 0070	14,30	150205 0070	10,40	150107 0070	20,30
7.3	1.8	6	50	36	0.06	150101 0073	7,80	150201 0073	5,75	150105 0073	14,30	150205 0073	10,40	150107 0073	20,80
8.0	2.0	6	50	36	0.06	150101 0080	8,50	150201 0080	6,30	150105 0080	15,50	150205 0080	11,20	150107 0080	20,80
8.3	2.0	6	50	36	0.09	150101 0083	8,50	150201 0083	6,30	150105 0083	15,50	150205 0083	11,20	150107 0083	20,80
9.4	2.2	6	50	36	0.09	150101 0094	9,70	150201 0094	7,20	150105 0094	18,10	150205 0094	13,05	150107 0094	23,–
10.0	2.5	6	50	36	0.09	150101 0100	9,35	150201 0100	6,90	150105 0100	17,30	150205 0100	12,45	150107 0100	23,–
10.4	2.5	6	50	36	0.09	150101 0104	9,85	150201 0104	7,30	150105 0104	18,60	150205 0104	13,45	150107 0104	22,90
11.5	2.8	8	56	36	0.09	150101 0115	10,30	150201 0115	7,60	150105 0115	18,80	150205 0115	13,60	150107 0115	23,60
12.4	2.8	8	56	36	0.12	150101 0124	10,85	150201 0124	8,–	150105 0124	20,20	150205 0124	14,55	150107 0124	25,10
13.4	2.9	8	56	36	0.12	150101 0134	12,20	150201 0134	9,–	150105 0134	22,20	150205 0134	16,–	150107 0134	27,–
15.0	3.2	10	60	40	0.12	150101 0150	12,25	150201 0150	9,–	150105 0150	22,20	150205 0150	16,–	150107 0150	30,–
16.5	3.2	10	60	40	0.16	150101 0165	13,05	150201 0165	9,60	150105 0165	23,90	150205 0165	17,30	150107 0165	30,70
19.0	3.5	10	63	40	0.16	150101 0190	17,30	150201 0190	12,75	150105 0190	31,30	150205 0190	22,60	150107 0190	39,50
20.5	3.5	10	63	40	0.16	150101 0205	17,60	150201 0205	13,–	150105 0205	36,30	150205 0205	26,20	150107 0205	40,10
23.0	3.8	10	67	40	0.16	150101 0230	23,70	150201 0230	17,40	150105 0230	45,–	150205 0230	32,50	150107 0230	52,–
25.0	3.8	10	67	40	0.16	150101 0250	25,–	150201 0250	18,40	150105 0250	46,70	150205 0250	33,70	150107 0250	60,–
28.0	4.0	12	71	40	0.16	150101 0280	35,10	150201 0280	25,80					150107 0280	81,–
30.0	4.2	12	71	40	0.16	150101 0300	35,50							150107 0300	83,50
31.0	4.2	12	71	45	0.16	150101 0310	37,50	150201 0310	27,60	150105 0310	68,–	150205 0310	49,20	150107 0310	85,–
40.0	10.0	12	75	40	0.16	150101 0400	68,50	150201 0400	50,50						
						1129		1168		1129		1168		1129	

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ATORN®
High quality for great performance


150110 0001


150112 0001


150112 0002


150114 0001

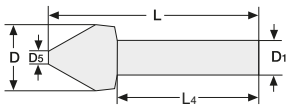
Sets

Contents	ATORN HSS art.no.	€	SARA art.no.	€	ATORN TiN art.no.	€	SARA TiN art.no.	€	ATORN TiAlN art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150110** 0001	70,–	**150201** 0001	52,–	**150112** 0001	126,50	**150205** 0001	92,–	**150114** 0001	149,–
10.4 / 16.5 / 20.5 / 25.0 mm (1 of each)	150110 0002	78,–			150112 0002	124,–				
8.0 / 10.0 / 11.5 / 15.0 mm (1 of each)	150110 0003	45,50			150112 0003	73,–				
	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	Feed f steel < 1000 N/mm² mm/rev	L4 = 100 mm art.no.	€	L4 = 150 mm art.no.	€
6.3	1.5	5	0.06	**150104** 0063	25,10	**150102** 0063	31,20
8.3	2.0	6	0.09	150104 0083	26,–	150102 0083	32,50
10.4	2.5	6	0.09	150104 0104	28,60	150102 0104	35,90
12.4	2.8	8	0.12	150104 0124	29,50	150102 0124	39,10
15.0	3.2	10	0.12	150104 0150	36,90	150102 0150	47,10
16.5	3.2	10	0.16	150104 0165	36,90	150102 0165	47,70
20.5	3.5	10	0.16	150104 0205	51,50	150102 0205	66,50
25.0	3.8	10	0.16	150104 0250	78,–	150102 0250	91,–
31.0	4.2	12	0.16	150104 0310	133,–	150102 0310	154,–
				1129		1129	

Sets, extra-long shank, similar to DIN 335C

Contents	L4 = 100 mm art.no.	€	L4 = 150 mm art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150116** 0001	199,–	**150113** 0001	255,–
	1129		1129	


150116 0001

ATORN® ENORMplus deburring countersink

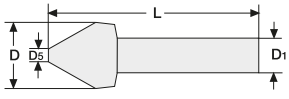
HSS-E | Werks-norm | 90° | Z 4 | Z 5 | Vc/fz | 10-276



- **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 < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
		8-14	8-14	6-12	10-15	10-17				7-12	8-15	5-12							
	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	Z	Feed f steel < 1400 N/mm² mm/rev	art.no.	€
10.4	4.0	6.0	50	4	0.03	**150163** 1040	47,–
12.4	4.0	8.0	56	5	0.03	150163 1240	52,–
16.5	4.5	10.0	60	5	0.04	150163 1650	65,–
20.5	5.0	10.0	63	5	0.05	150163 2050	90,50
25.0	5.5	10.0	67	5	0.06	150163 2500	128,–
31.0	6.0	12.0	71	5	0.06	150163 3100	163,–
						1129	



ATORN® SARA® Taper and deburring countersinks

HSS-E | DIN 335C | Werks-norm | 90° | Z 3 | Vc/fz | 10-276

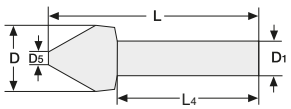


- 3 cutting edges
- Radially relief-ground
- **HSS-E cutting material**
- For countersinking and deburring
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

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
		● 20-28	● 10-15	○ 5-8	○ 5-8	○ 5-10	○ 5-10	○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
	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	L4 min. mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® HSS-E art.no.	€	SARA® art.no.	€
5.3	1.5	4	40	28	0.06	**150111** 0053	9,65	**150211** 0053	8,10
6.3	1.5	5	45	28	0.06	150111 0063	9,75	150211 0063	8,20
8.0	2.0	6	50	36	0.06	150111 0080	10,50	150211 0080	8,80
8.3	2.0	6	50	36	0.09	150111 0083	10,50	150211 0083	8,80
9.4	2.2	6	50	36	0.09	150111 0094	11,65	150211 0094	9,70
10.0	2.5	6	50	36	0.09	150111 0100	11,65	150211 0100	9,70
10.4	2.5	6	50	36	0.09	150111 0104	11,65	150211 0104	9,70
12.4	2.8	8	56	36	0.12	150111 0124	13,75	150211 0124	11,50
15.0	3.2	10	60	40	0.12	150111 0150	15,90	150211 0150	13,30
16.5	3.2	10	60	40	0.16	150111 0165	16,50	150211 0165	13,80
20.5	3.5	10	63	40	0.16	150111 0205	21,10	150211 0205	17,60
25.0	3.8	10	67	40	0.16	150111 0250	27,90	150211 0250	23,30
31.0	4.2	12	71	45	0.16	150111 0310	37,40	150211 0310	31,20
						1129		1168	



Sets

Contents	ATORN® HSS-E art.no.	€	SARA® art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150117** 0001	85,–	**150211** 0001	71,–
	1129		1168	



SARA® Taper and deburring countersinks

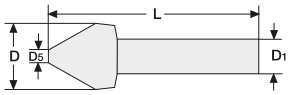
HSS-E PM | DIN 335C | 90° | Z 3 | Vc/fz | 10-276



- **Cutting material: HSS-E-PM**
- Radially relief-ground
- Diameter tolerance ±0.05 mm
- Shank tolerance h9

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
		● 6-10	● 6-10	● 6-10	● 4-8	● 4-8	● 4-8										● 5-12		
	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.	€
6.3	1.5	5	45	0.03	**150108** 0063	29,50
8.3	2	6	50	0.04	150108 0083	37,40
10.4	2.5	6	50	0.05	150108 0104	47,30
12.4	2.8	8	56	0.08	150108 0124	51,–
16.5	3.2	10	60	0.09	150108 0165	57,–
20.5	3.5	10	63	0.09	150108 0205	78,50
25	3.8	10	67	0.10	150108 0250	108,–
					1165	



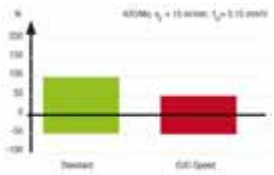
BECK MAPAL GROUP | EUC-Speed taper and deburring countersink

HSS | VHM | DIN 335C | 90° | Z 3 | ZrN | Vc/fz

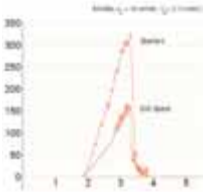
10-276
10-277

Very unequal pitch – patent pending. Range extended with solid carbide design

- Geometry with very unequal pitch (EU pitch)
- **High degree of smoothness**
- Precision design
- Prepared cutting edge
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- Special coating
- **Shaft tolerances:**



Reduces radial force by 25%



Reduces axial force by 50%



Very unequal pitch

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....	● 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 art.no.	€	Solid carbide art.no.	€
4.3	1.3	4	40	0.06	**150170** 0043	20,70		
6.3	1.5	5	45	0.08	150170 0063	22,40	**150171** 0063	109,–
8.3	2	6	50	0.10	150170 0083	24,80	150171 0083	118,–
10.4	2.5	6	50	0.10	150170 0104	25,30	150171 0104	123,–
12.4	2.8	8	56	0.12	150170 0124	30,20	150171 0124	129,–
16.5	3.2	10	60	0.14	150170 0165	35,–	150171 0165	158,–
20.5	3.5	10	63	0.18	150170 0205	43,50	150171 0205	181,–
25.0	3.8	10	67	0.22	150170 0250	52,50	150171 0250	209,–
31.0	4.2	12	71	0.22	150170 0310	64,20	150171 0310	248,–
					1165		1165	



Optimised countersink



5 pcs set

Contents	art.no.	€
6.3 / 10.4 / 16.5 / 20.5 / 25 mm (1 of each)	**150170** 1000	171,50
	1165	

SARA® Solid carbide deburring countersink

VHM | Werks-norm | 90° | Z 3 | TiAlN | Vc/fz

10-276



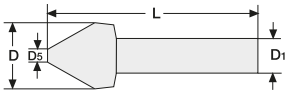
- 3 cutting edges, radially relief-ground
- **Cutting material: solid carbide TiAlN**
- Made entirely of solid carbide
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

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
		● 30-50	● 25-40	● 8-20	● 15-28	● 15-30		● 12-25	● 12-22				● 60-100	● 40-65	● 40-80	○ 5-10	○ 4-12		
	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	86,50
6.3	2.0	5	45	0.06	150166 0630	90,50
8.3	2.0	6	50	0.07	150166 0830	90,50
10.4	2.5	6	50	0.08	150166 1040	90,50
12.4	2.8	8	56	0.08	150166 1240	90,50
16.5	3.2	10	60	0.14	150166 1650	90,50
20.5	3.5	10	63	0.16	150166 2050	109,–
25.0	3.8	10	67	0.18	150166 2500	143,–
					1165	



ATORN® Taper and deburring countersinks

HSS | DIN 335D | 90° | Z 3 | Vc/fz | 10-276

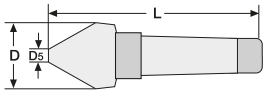


- 3 cutting edges
- Morse taper shank
- **Cutting material: HSS**
- Chatter-free countersinking and deburring

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
		●	○		○	○	○	○	○				○	○	○				
		20-28	10-15		5-8	5-10	5-10	8-14	8-12				40-80	20-50	25-40				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

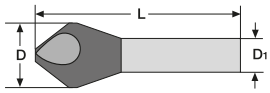
D mm	D5 mm	Shank	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
20.5	3.5	MT 2	100	0.16	**150115** 0205	43,–
25.0	3.8	MT 2	106	0.16	150115 0250	44,10
28.0	4.0	MT 2	112	0.16	150115 0280	44,10
30.0	4.2	MT 2	112	0.16	150115 0300	46,10
31.0	4.2	MT 2	112	0.18	150115 0310	48,10
34.0	4.5	MT 2	118	0.18	150115 0340	52,–
37.0	4.8	MT 2	118	0.18	150115 0370	56,50
40.0	10.0	MT 3	140	0.18	150115 0400	70,50
50.0	14.0	MT 3	150	0.2	150115 0500	87,50
63.0	16.0	MT 4	180	0.2	150115 1630	144,–
80.0	22.0	MT 4	190	0.2	150115 1800	250,–

1129



ATORN® Taper and deburring countersinks

HSS-E | Werks-norm | 90° | Z 1 | TiN | Vc/fz | 10-276

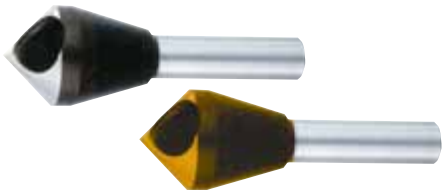


- With cross-hole and straight shank
- Chip removal due to slanted bore in the shank direction, light spiral point
- **Cutting material: HSS-E; HSS-E, TiN-coated**

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
		●	○	○	○	○	○	○	○				○	○	○				
		22-30	11-16	5-9	5-9	5-11	5-11	9-15	9-13				44-88	22-55	27-44				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Individual

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	7,95	**150146** 0025	13,85
14	5 - 10	56	6	0.08	150145 0510	10,60	150146 0510	17,70
21	10 - 15	67	10	0.11	150145 1015	19,60	150146 1015	27,90
28	15 - 20	90	12	0.15	150145 1520	39,90	150146 1520	59,50
35	20 - 25	106	15	0.16	150145 2025	57,–	150146 2025	86,50
					1129		1129	



5 pcs set

Contents	art.no.	€	**TiN** art.no.	€
D: 10 / 14 / 21 / 28 mm	**150150** 0001	79,50	**150151** 0001	119,–
	1129		1129	



150151 0001

Extra-long

D mm	for Ø mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10	2 - 5	136	6	0.04	**150148** 0001	34,50
14	5 - 10	146	6	0.08	150148 0002	42,80
21	10 - 15	156	10	0.11	150148 0003	82,–
					1129	



SARA® Taper and deburring countersinks

HSS-E | Werks-norm | 90° | Z 1 | Vc/fz | 10-276

- 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



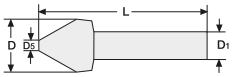
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○	○	○	○				○	○	○				
		22-30	11-16	5-9	5-9	5-11	5-11	9-15	9-13				44-88	22-55	27-44				
	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	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5	1	5	50	0.04	**150155** 0050	11,75
10	1	10	60	0.09	150155 0100	12,80
15	2	10	65	0.12	150155 0150	17,60
20	2	10	73	0.16	150155 0200	25,–
25	2	10	80	0.16	150155 0250	37,90
30	3	12	82	0.16	150155 0300	50,–
40	3	12	92	0.16	150155 0400	75,–
50	3	12	100	0.16	150155 0500	121,–

1133



SARA® 90° countersink bits

HSS | DIN 335C | 90° | Bit C 6,3 | 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	Total length mm	art.no.	€
6.3	M3	31	**150140** 0083	8,55
8.3	M4	31	150140 0104	8,65
10.4	M5	34	150140 0124	9,90
12.4	M6	35	150140 0165	11,15
16.5	M8	40	150140 0205	12,30
20.5	M10	41	150141 0001	14,05

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	72,50

1133



SARA® 90° hand-held deburring tool

HSS | 90° | Z 3

- Right-hand cutting



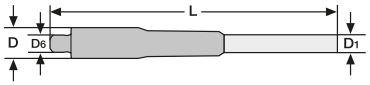
D mm	art.no.	€
12.4	**150103** 0124	15,50
16.5	150103 0165	18,10
20.5	150103 0205	23,10
25.0	150103 0250	28,95

1133

ATORN® 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
	●	○	○	○	○		○	○				○	○	○				
Cutting speed Vc m/min.	30	20	10	10	10		15	15				80	70	40				

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



With through-hole pin, fine-grade

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6.5	3.2	M3	5.0	71	**150501** 0001	13,15	**150506** 0001	19,20
8.0	4.3	M4	5.0	71	150501 0003	10,50	150506 0003	18,40
10.0	5.3	M5	8.0	80	150501 0005	11,50	150506 0005	20,80
11.0	6.4	M6	8.0	80	150501 0007	12,45	150506 0007	23,40
15.0	8.4	M8	12.5	100	150501 0009	19,70	150506 0009	30,–
18.0	10.5	M10	12.5	100	150501 0011	23,70	150506 0011	35,60
20.0	13.0	M12	12.5	100	150501 0013	25,30	150506 0013	38,90
					1129		1129	



With through-hole pin, medium-grade

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6.5	3.4	M3	5.0	71	**150501** 0002	13,15	**150506** 0002	19,20
8.0	4.5	M4	5.0	71	150501 0004	10,50	150506 0004	18,40
10.0	5.5	M5	8.0	80	150501 0006	11,50	150506 0006	20,80
11.0	6.6	M6	8.0	80	150501 0008	12,45	150506 0008	23,40
15.0	9.0	M8	12.5	100	150501 0010	19,70	150506 0010	30,–
18.0	11.0	M10	12.5	100	150501 0012	23,70	150506 0012	35,60
20.0	13.5	M12	12.5	100	150501 0014	25,30	150506 0014	38,90
					1129		1129	



With tapping hole pin

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6.5	2.5	M3	5.0	71	**150505** 0006	13,95	**150507** 0006	21,60
8.0	3.3	M4	5.0	71	150505 0008	13,95	150507 0008	20,20
10.0	4.2	M5	8.0	80	150505 0010	12,25	150507 0010	23,30
11.0	5.0	M6	8.0	80	150505 0011	13,–	150507 0011	24,90
15.0	6.8	M8	12.5	100	150505 0015	20,30	150507 0015	32,20
18.0	8.5	M10	12.5	100	150505 0018	24,–	150507 0018	39,20
20.0	10.2	M12	12.5	100	150505 0020	27,20	150507 0020	40,80
					1129		1129	

Sets

- Contents: 1 unit each Counterbore for screws M3-M10 = 6-part

Description	HSS art.no.	€	HSS-E art.no.	€
Through-hole, fine-grade	**150511** 0002	105,–	**150512** 0002	149,–
Through-hole, medium-grade	150511 0003	106,–	150512 0003	149,–
Tapping hole	150511 0001	110,–	150512 0001	160,–
	1129		1129	



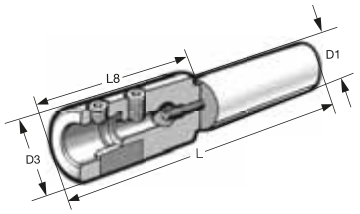
150511 0002

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
		● 15-30	● 10-25	○ 5-20	○ 10-20	○ 10-20		○ 20-40	○ 20-40				○ 70-150	○ 70-120	○ 30-60				
	Cutting speed Vc m/min.																		

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

Combination counterbore holder

model	D1 mm	Shank	Countersink area mm	L mm	D3 mm	L8 mm	Hole H7 mm	art.no.	€
0	10x50		7-16.5	92	18	42	10	**150005** 0001	117,–
0		MT 1	7-16.5	111	18	42	10	150005 0002	125,–
0		MT 2	7-16.5	132	18	57	10	150005 0008	123,–
1	12x65		14-27.5	120	24	55	14	150005 0003	125,–
1		MT 1	14-27.5	123	24	55	14	150005 0004	134,–
1		MT 2	14-27.5	137	24	55	14	150005 0009	127,–
2		MT 2	24-66	155	34.5	75	22	150005 0005	183,–
2		MT 3	24-66	174	34.5	75	22	150005 0006	173,–

1130



150005 0008 150005 0003



151001 0003



151001 0002



151001 0001

Combination counterbore sets

model	Contents, piloted counterbore	Contents, pilot pin	Holder	art.no.	€
0P M4-M8	8.0 / 9.0 / 10.0 / 11.0 / 12.0 / 13.0 / 14.0 / 15.0	4.5 / 5.0 / 5.5 / 6.0 / 6.5 / 6.6 / 7.0 / 7.5 / 8.0 / 8.5 / 9.0 / 10.0	Model 0, MT 2	**151001** 0001	749,–
1P M8-M14	14.0 / 15.0 / 16.0 / 18.0 / 20.0 / 22.0 / 24.0	8.0 / 8.5 / 9.5 / 10.0 / 10.5 / 11.0 / 11.5 / 12.0 / 12.5 / 13.0 / 13.5 / 14.0 / 14.5 / 15.0 / 15.5 / 16.0	Model 1, MT 2	151001 0002	909,–
2P M14-M24	24.0 / 26.0 / 28.0 / 30.0 / 32.0 / 33.0 / 34.0 / 36.0 / 40.0	13.0 / 14.0 / 15.0 / 16.0 / 17.0 / 18.0 / 19.0 / 20.0 / 23.0 / 24.0 / 25.0 / 26.0	Model 2, MT 3	151001 0003	1.679,–

1130

Continued on next page >>>

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	art.no.	€
7.0	0.1	**151010** 0070	53,–
7.5	0.1	151010 0075	58,50
8.0	0.1	151010 0080	52,50
8.5	0.1	151010 0085	57,50
9.0	0.1	151010 0090	52,50
9.5	0.1	151010 0095	57,50
10.0	0.1	151010 0100	50,50
10.5	0.1	151010 0105	56,50
11.0	0.1	151010 0110	52,50
11.5	0.1	151010 0115	58,–

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.0	0.1	151010 0120	53,–
12.5	0.1	151010 0125	59,–
13.0	0.1	151010 0130	57,50
13.5	0.1	151010 0135	66,50
14.0	0.2	151010 0140	57,50
14.5	0.2	151010 0145	66,50
15.0	0.2	151010 0150	58,50
15.5	0.2	151010 0155	67,–
16.0	0.2	151010 0160	61,50
16.5	0.2	151010 0165	71,50

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	17,40
4.5	151025 0045	20,70
5.0	151025 0050	20,70
5.5	151025 0055	20,70
6.0	151025 0060	20,70
6.5	151025 0065	20,70
7.0	151025 0070	20,70
7.5	151025 0075	20,70
8.0	151025 0080	20,90
8.5	151025 0085	20,90
9.0	151025 0090	20,90
9.5	151025 0095	20,90
10.0	151025 0100	20,90
10.5	151025 0105	20,90
11.0	151025 0110	20,90
11.5	151025 0115	20,90

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	art.no.	€
14.0	0.2	**151015** 0140	58,–
14.5	0.2	151015 0145	65,50
15.0	0.2	151015 0150	58,–
15.5	0.2	151015 0155	66,50
16.0	0.2	151015 0160	61,–
16.5	0.2	151015 0165	71,–
17.0	0.2	151015 0170	64,–
17.5	0.2	151015 0175	71,50
18.0	0.2	151015 0180	66,–
18.5	0.2	151015 0185	77,50
19.0	0.2	151015 0190	73,50
19.5	0.2	151015 0195	82,–
20.0	0.2	151015 0200	73,50
20.5	0.2	151015 0205	84,50

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.0	0.2	151015 0210	75,–
21.5	0.2	151015 0215	88,–
22.0	0.2	151015 0220	77,50
22.5	0.2	151015 0225	88,–
23.0	0.2	151015 0230	87,–
23.5	0.2	151015 0235	92,50
24.0	0.3	151015 0240	87,–
24.5	0.3	151015 0245	96,–
25.0	0.3	151015 0250	87,–
25.5	0.3	151015 0255	97,–
26.0	0.3	151015 0260	93,–
26.5	0.3	151015 0265	99,–
27.0	0.3	151015 0270	94,50
27.5	0.3	151015 0275	101,–

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	19,50
7.5	151030 0075	19,50
8.0	151030 0080	19,50
8.5	151030 0085	19,50
9.0	151030 0090	19,50
9.5	151030 0095	19,50
10.0	151030 0100	19,50
10.5	151030 0105	20,70
11.0	151030 0110	20,70
11.5	151030 0115	20,70
12.0	151030 0120	20,70
12.5	151030 0125	21,50
13.0	151030 0130	23,70
13.5	151030 0135	23,70
14.0	151030 0140	23,90
14.5	151030 0145	23,90
15.0	151030 0150	23,90
15.5	151030 0155	23,90
16.0	151030 0160	23,90
16.5	151030 0165	23,90
17.0	151030 0170	23,90
17.5	151030 0175	23,90
18.0	151030 0180	24,50

1130

Continued on next page >>>

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	art.no.	€
24.0	0.3	**151020** 0240	107,–
24.5	0.3	151020 0245	114,–
25.0	0.3	151020 0250	115,–
25.5	0.3	151020 0255	124,–
26.0	0.3	151020 0260	118,–
26.5	0.3	151020 0265	126,–
27.0	0.3	151020 0270	119,–
27.5	0.3	151020 0275	128,–
28.0	0.3	151020 0280	122,–
28.5	0.3	151020 0285	130,–
29.0	0.3	151020 0290	125,–
30.0	0.3	151020 0300	126,–
30.5	0.3	151020 0305	136,–
31.0	0.3	151020 0310	135,–
32.0	0.3	151020 0320	140,–
33.0	0.3	151020 0330	141,–
34.0	0.3	151020 0340	142,–
35.0	0.3	151020 0350	149,–
36.0	0.3	151020 0360	151,–
37.0	0.3	151020 0370	157,–
38.0	0.3	151020 0380	167,–
39.0	0.3	151020 0390	171,–
40.0	0.3	151020 0400	175,–

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
41.0	0.3	151020 0410	185,–
42.0	0.3	151020 0420	188,–
43.0	0.3	151020 0430	210,–
44.0	0.3	151020 0440	215,–
45.0	0.3	151020 0450	215,–
46.0	0.3	151020 0460	220,–
47.0	0.3	151020 0470	225,–
48.0	0.3	151020 0480	225,–
49.0	0.3	151020 0490	240,–
50.0	0.3	151020 0500	315,–
51.0	0.3	151020 0510	315,–
52.0	0.3	151020 0520	320,–
53.0	0.3	151020 0530	320,–
54.0	0.3	151020 0540	325,–
55.0	0.3	151020 0550	330,–
56.0	0.3	151020 0560	335,–
58.0	0.3	151020 0580	340,–
60.0	0.3	151020 0600	350,–
62.0	0.3	151020 0620	355,–
64.0	0.3	151020 0640	410,–
65.0	0.3	151020 0650	390,–
66.0	0.3	151020 0660	410,–

1130

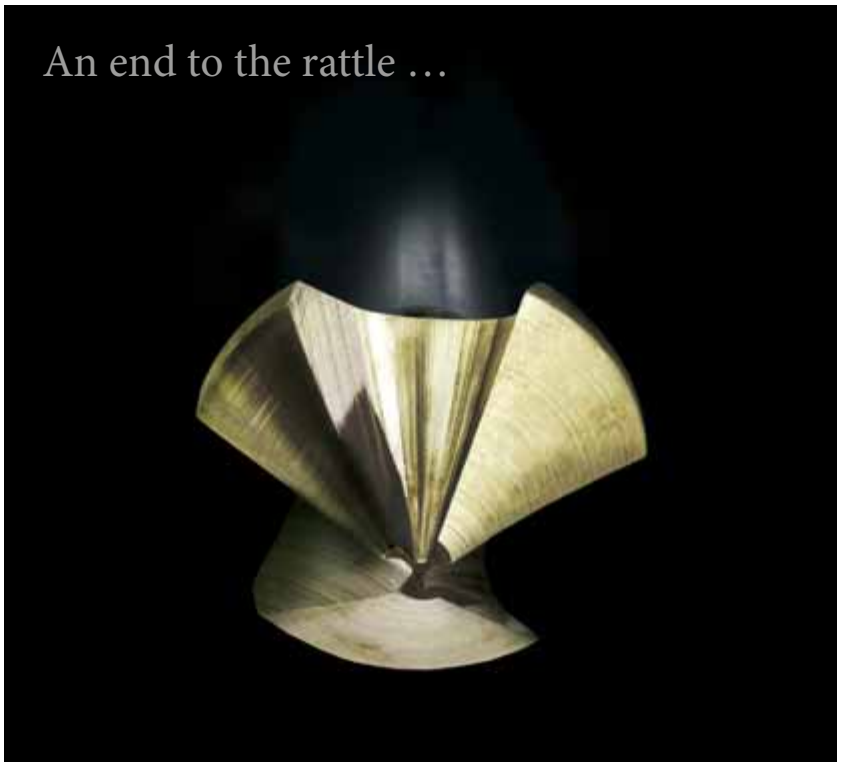
Pilot pin, hardened and ground, model 2



- Fixed pilot pin (*= rotating pilot pin)
- Total length 105 mm
- Shank Ø 10 mm

D mm	art.no.	€
11.5	**151035** 0115	22,30
12.0	151035 0120	22,30
12.5	151035 0125	22,30
13.0	151035 0130	22,30
13.5	151035 0135	22,30
14.0	151035 0140	26,–
14.5	151035 0145	26,–
15.0	151035 0150	26,–
16.0	151035 0160	26,–
17.0	151035 0170	26,–
18.0	151035 0180	26,–
19.0	151035 0190	26,–
20.0	151035 0200	26,–
21.0	151035 0210	29,–
22.0	151035 0220	29,–
23.0	151035 0230	29,–
24.0	151035 0240	29,–
25.0	151035 0250	29,–
26.0	151035 0260	35,60
27.0	151035 0270	44,–
28.0	151035 0280	44,50
29.0	151035 0290	44,50
30.0	151035 0300	44,50
33.0*	151035 0330	51,–
35.0*	151035 0350	55,–
38.0*	151035 0380	63,50
40.0*	151035 0400	74,50

1130



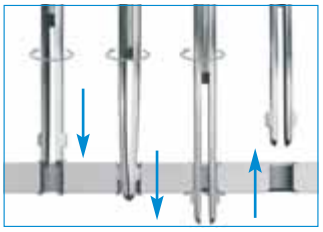
… caused by uneven divisions

ATORN®
High quality for great performance

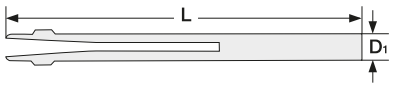
SARA® S-Grat drill hole deburring tool

HSS | Werks-norm | Z 2 | Vc/fz | 10-277

- **Bore deburring on both sides in one operation**
- Spindle stop not required
- Deburring in inaccessible places, e.g. hollow parts
- No need for a second clamp
- Simple and robust construction
- Especially suitable for mass production
- Suitable for any machine and almost any workpiece
- Very short machining times
- Other dimensions and TiN-coated versions available on request
- **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	D1 mm	L mm	art.no.	€
1.0 - 1.1	0.9	45	**155001** 0100	255,–
1.1 - 1.2	1.0	45	155001 0110	255,–
1.2 - 1.3	1.1	45	155001 0120	159,–
1.3 - 1.4	1.2	45	155001 0130	159,–
1.4 - 1.5	1.3	45	155001 0140	159,–
1.5 - 1.6	1.4	50	155001 0150	159,–
1.6 - 1.7	1.5	50	155001 0160	159,–
1.7 - 1.8	1.6	50	155001 0170	159,–
1.8 - 1.9	1.7	60	155001 0180	144,–
1.9 - 2.0	1.8	60	155001 0190	144,–
2.0 - 2.2	1.9	60	155001 0200	144,–
2.2 - 2.4	2.1	80	155001 0220	95,50
2.4 - 2.6	2.3	80	155001 0240	95,50
2.6 - 2.8	2.5	80	155001 0260	95,50
2.8 - 3.18	2.75	101.6	155001 0280	56,–
3.17 - 3.55	3.15	101.6	155001 0317	56,–
3.55 - 3.96	3.58	101.6	155001 0355	56,–
3.96 - 4.36	3.94	101.6	155001 0396	56,–
4.36 - 4.74	4.34	101.6	155001 0436	56,–
4.74 - 5.15	4.72	101.6	155001 0474	58,–
5.15 - 5.56	5.13	101.6	155001 0515	58,–
5.56 - 5.94	5.54	101.6	155001 0556	58,–
5.94 - 6.35	5.92	101.6	155001 0594	58,–
6.35 - 6.75	6.32	101.6	155001 0635	62,50

1131

D mm	D1 mm	L mm	art.no.	€
6.75 - 7.13	6.73	101.6	155001 0675	62,50
7.13 - 7.54	7.11	101.6	155001 0713	62,50
7.54 - 7.95	7.52	101.6	155001 0754	62,50
7.95 - 8.33	7.92	101.6	155001 0795	67,50
8.33 - 8.71	8.31	101.6	155001 0833	67,50
8.71 - 9.11	8.69	101.6	155001 0871	67,50
9.11 - 9.52	9.09	101.6	155001 0911	67,50
9.52 - 9.90	9.50	112.7	155001 0952	75,50
9.90 - 10.31	9.88	112.7	155001 0990	75,50
10.31 - 10.72	10.29	112.7	155001 1031	78,–
10.71 - 11.13	10.67	112.7	155001 1071	78,–
11.10 - 11.51	11.07	139.7	155001 1110	97,–
11.51 - 11.91	11.48	139.7	155001 1151	97,–
11.89 - 12.29	11.86	139.7	155001 1189	97,–
12.29 - 12.70	12.27	139.7	155001 1229	97,–
12.70 - 13.11	12.67	177.8	155001 1270	129,–
13.08 - 13.49	13.05	177.8	155001 1308	194,–
13.49 - 13.89	13.46	177.8	155001 1349	194,–
13.89 - 14.30	13.84	177.8	155001 1389	194,–
14.30 - 14.68	14.27	190.5	155001 1430	215,–
14.68 - 15.09	14.65	190.5	155001 1468	215,–
15.09 - 15.47	15.06	190.5	155001 1509	215,–
15.47 - 15.88	15.44	190.5	155001 1547	255,–
15.88 - 16.28	15.84	212.6	155001 1588	255,–

1131

Overview of reamers

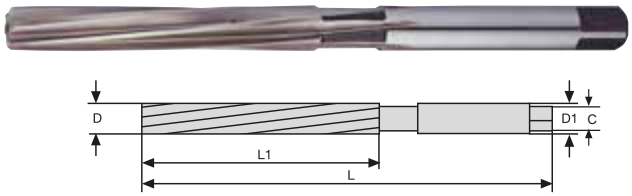
	Hand reamers				Machine reamers						
Sorting by cutting material and shank											
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Diameter	1.5 - 40	8 - 37	1.5 - 50	1.5 - 50	2 - 20	6.4 - 40	1.5 - 20	2 - 12	2 - 10	3 - 12	3 - 20
Tolerance	H7						H7	H7	H7	H7	H7
DIN	206	WN	9	9	2179	311	212	WN	WN	212	212
Shank	Straight	Straight	Straight	Straight	Straight	MT	Straight	Straight	Straight	Straight	Straight
Cutting material	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating										TiN	
Helix angle	6°			6°	45°	25°	10°	10°	10°	9°	9°
Type/info		adjustable	1:50	1:50	1:50	Taper bridge		Long	Extra-long	NC	NC
Item number	160101....	160110....	160140....	160145....	160150....	160130....	161001....	161002....	161003....	161020....	161010....
Page	10-223	10-223	10-224	10-224	10-224	10-225	10-226	10-227	10-227	10-227	10-227
Material groups	Usage recommendations										
Steel < 700 N/mm²	○	○	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	●	●	●	○	●	●	●	●	●
Steel < 1400 N/mm²							○	○	○	○	
Stainless steel ferritic/martensitic											
Stainless steel austenitic											
Stainless steel duplex											
Cast iron GG/GTS	●	○			●	●	●	●	●	●	●
Cast iron GGG	●	○			●	●	●	●	●	●	●
Titanium alloys											
Superalloys Fe/NiCo base < 30 HRc											
Superalloys Fe/NiCo base ≥ 30 HRc											
Aluminium < 8 % Si	○	○	●	●	●	●	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	●	○	○	○	○	○	○
Copper Cu-alloy					○	●	○	○	○	○	○
Graphite GRP/CFP/thermoset											○
Hardened steel < 55 HRc											
Hardened steel < 60 HRc											
Hardened steel ≥ 60 HRc											

	Machine reamers									
Sorting by cutting material and shank											
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	SARA®	SARA®
Diameter	1 - 12.03	2 - 20	3 - 50	14 - 30	12 - 30	1.5 - 12	1 - 20	0.6 - 13.05	4 - 20	4 - 20
Tolerance	0/+0.003	H7	H7	H7	H7	H7	H7	0/+0.003/+0.004/+0.005	H7	H7
DIN	212	212	208	WN	WN	WN	WN	WN	WN	WN
Shank	Straight	Straight	MT	MT	MT	Straight	Straight	Straight	Straight	Straight
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating									TiAlN	TiAlN
Helix angle	7 - 8°	45°	9°	10°	10°	9°	9°	10°	7°	
Type/info	1/100	Spiral geometry		Long	Extra-long		NC	1/100	Coolant bore	Coolant bore
Item number	161030....	161015....	161005....	161006....	161007....	163001....	163005....	163002....	163510....	163512....
Page	10-228	10-228	10-229	10-229	10-229	10-230	10-230	10-231	10-232	10-232
Material groups	Usage recommendations									
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²			○	○	○	●	●	●	●	●
Stainless steel ferritic/martensitic		○				○	○			
Stainless steel austenitic						○	○			
Stainless steel duplex										
Cast iron GG/GTS	●		●	●	●	●	●	●	●	●
Cast iron GGG	●		●	●	●	●	●	●	●	●
Titanium alloys										
Superalloys Fe/NiCo base < 30 HRc										
Superalloys Fe/NiCo base ≥ 30 HRc										
Aluminium < 8 % Si	○	○	○	○	○	○	●	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○	●	●	●	○	○
Copper Cu-alloy	○	○	○	○	○	○		○	○	○
Graphite GRP/CFP/thermoset	○									
Hardened steel < 55 HRc										
Hardened steel < 60 HRc										
Hardened steel ≥ 60 HRc										

ATORN® Hand reamers

HSS | DIN 206 | 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 H7 mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
1.5	1.5	20	41	1.12	4	**160101** 0015	23,90
2.0	2.0	25	50	1.60	4	160101 0020	22,20
2.5	2.5	29	58	2.00	4	160101 0025	22,20
3.0	3.0	31	62	2.24	6	160101 0030	22,20
3.5	3.5	35	71	2.80	6	160101 0035	25,50
4.0	4.0	38	76	3.15	6	160101 0040	21,40
4.5	4.5	41	81	3.55	6	160101 0045	22,70
5.0	5.0	44	87	4.00	6	160101 0050	23,30
5.5	5.5	47	93	4.50	6	160101 0055	25,50
6.0	6.0	47	93	4.50	6	160101 0060	23,20
7.0	7.0	54	107	5.60	6	160101 0070	24,70
8.0	8.0	58	115	6.30	6	160101 0080	25,50
9.0	9.0	62	124	7.10	6	160101 0090	30,10
10.0	10.0	66	133	8.00	6	160101 0100	30,10
11.0	11.0	71	142	9.00	8	160101 0110	35,20
12.0	12.0	76	152	10.00	8	160101 0120	35,20
13.0	13.0	76	152	10.00	8	160101 0130	56,–
14.0	14.0	81	163	11.20	8	160101 0140	62,50

1134

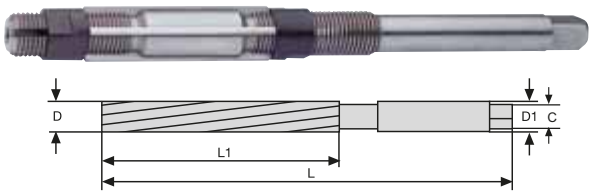
D H7 mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
15.0	15.0	81	163	11.20	8	160101 0150	65,50
16.0	16.0	87	175	12.50	8	160101 0160	67,50
17.0	17.0	87	175	12.50	8	160101 0170	74,50
18.0	18.0	93	188	14.00	8	160101 0180	77,–
19.0	19.0	93	188	14.00	8	160101 0190	84,–
20.0	20.0	100	201	16.00	10	160101 0200	84,–
22.0	22.0	107	215	18.00	10	160101 0220	102,–
24.0	24.0	115	231	20.00	10	160101 0240	116,–
25.0	25.0	115	231	20.00	10	160101 0250	119,–
26.0	26.0	115	231	20.00	10	160101 0260	123,–
28.0	28.0	124	247	22.40	10	160101 0280	157,–
30.0	30.0	124	247	22.40	10	160101 0300	157,–
32.0	32.0	133	265	25.00	12	160101 0320	184,–
34.0	34.0	142	284	28.00	12	160101 0340	225,–
35.0	35.0	142	284	28.00	12	160101 0350	191,–
36.0	36.0	142	284	28.00	12	160101 0360	200,–
38.0	38.0	152	305	31.50	12	160101 0380	250,–
40.0	40.0	152	305	31.50	12	160101 0400	255,–

1134

ATORN® Quick-adjustment hand reamers

HSS | Werks-norm | Z 5 | Z 6 | Z 8+

- Right-hand cutting, 4 cutting edges
- Straight shank and square end
- Large adjusting range, fine adjustment with ring gauges or micrometre
- **Cutting material: HSS**
- For repair work that does not require narrow fit tolerances, and for intermediate dimensions



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
○	○					○	○				○	○					

model	D mm	L1 mm	L mm	C mm	Z	art.no.	€
0	8.0 - 9.0	32	111	4.3	5	**160110** 0090	86,–
1	9.0 - 10.0	32	115	4.3	5	160110 0100	90,–
2	10.0 - 11.0	35	120	4.9	5	160110 0110	90,–
3	11.0 - 12.0	35	125	6.2	5	160110 0120	90,–
4	12.0 - 13.5	42	130	6.2	5	160110 0135	100,50
5	13.5 - 15.5	50	145	7	5	160110 0155	112,–
6	15.5 - 18.0	60	165	8	5	160110 0180	115,–
7	18.0 - 21.0	65	180	9	5	160110 0210	125,–
8	21.0 - 24.0	70	190	10	5	160110 0240	151,50
9	24.0 - 27.5	75	205	11	5	160110 0275	161,–
10	27.5 - 31.5	80	225	12	6	160110 0315	195,–
11	31.5 - 37.0	90	240	14.5	6	160110 0370	275,–
12	37.0 - 45.0	100	285	16	6	160110 0450	355,–
13	45.0 - 55.0	109	320	20	6	160110 0550	480,–
14	55.0 - 65.0	120	350	24	8	160110 0670	609,–

1134



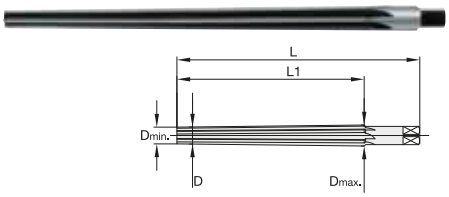
ATORN® Hand taper reamers

HSS | DIN 9 | 1:50 | 6° | Z 3 | Z 4 | Z 5 | Z 6 | Z 8+

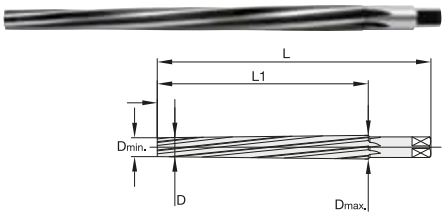
- 1:50 taper for taper pins
- **Type A**, straight-fluted
- **Type B**, spiral-fluted, 6° left-hand twist
- Shank design: straight with square end
- For taper pins in accordance with DIN EN 22339, DIN 258, DIN EN 28737 and DIN EN 28736
- For output bores, we recommend conical pin-hole drill bit no. 101025....
- Ø 13 mm and Ø 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	Form A art.no.	Form A €	Form B art.no.	Form B €
1.50	1.40	2.14	57	37	3	**160140** 0015	32,30	**160145** 0015	33,70
1.60*	1.50	2.24	57	37	4	160140 0016	33,70	160145 0016	33,70
2.00	1.90	2.86	68	48	4	160140 0020	30,80	160145 0020	31,90
2.50	2.40	3.36	68	48	4	160140 0025	30,80	160145 0025	31,90
3.00	2.90	4.06	80	58	5	160140 0030	27,90	160145 0030	27,90
3.50*	3.40	4.90	100	75	5	160140 0035	34,10	160145 0035	34,10
4.00	3.90	5.26	93	68	5	160140 0040	30,80	160145 0040	30,80
4.50*	4.40	6.14	115	87	5	160140 0045	38,40	160145 0045	38,40
5.00	4.90	6.36	100	73	5	160140 0050	33,70	160145 0050	33,70
5.50*	5.40	7.78	150	119	6	160140 0055	50,50	160145 0055	50,50
6.00	5.90	8.00	135	105	6	160140 0060	42,10	160145 0060	42,10
6.50*	6.40	8.78	150	119	6	160140 0065	52,–	160145 0065	52,–
7.00*	6.90	9.72	177	141	6	160140 0070	61,–	160145 0070	61,–
8.00	7.90	10.80	180	145	6	160140 0080	61,50	160145 0080	61,50
9.00*	8.90	12.16	205	163	6	160140 0090	91,50	160145 0090	91,50
10.00	9.90	13.40	215	175	6	160140 0100	79,50	160145 0100	79,50
12.00	11.80	16.00	255	210	8	160140 0120	102,–	160145 0120	102,–
13.00*	12.86	16.74	240	194	8	160140 0130	117,–	160145 0130	111,–
14.00*	13.86	17.74	240	194	8	160140 0140	123,–	160145 0140	117,–
16.00	15.80	20.40	280	230	8	160140 0160	147,–	160145 0160	139,–
20.00	19.80	24.80	310	250	10	160140 0200	200,–	160145 0200	191,–
25.00	24.70	30.70	370	300	10	160140 0250	350,–	160145 0250	350,–
30.00	29.70	36.10	400	320	12	160140 0300	430,–	160145 0300	430,–
40.00	39.70	46.50	430	340	12	160140 0400	689,–	160145 0400	689,–
50.00	49.70	56.90	460	360	14	160140 0500	1.109,–	160145 0500	1.109,–
						1134		1134	



Type A



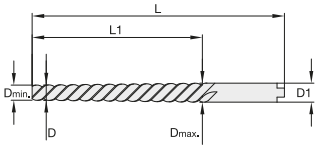
Type B

ATORN® High helix taper reamers

HSS-E | DIN 2179 | 1:50 | 45° | Z 2 | Z 3 | Vc/fz | 10-277

- Taper 1:50 for taper pins
- Shank design: straight with driving pin lugs in accordance with DIN 1809
- For taper pins in accordance with DIN EN 22339, DIN 258, DIN EN 28737 and DIN EN 28736
- Spiral-fluted, 45° left-hand twist
- For through-holes
- For output bores, we recommend the conical drill bit for pin holes No. 101025....
- Requires extensive chip removal (do not pre-drill too deep)
- **Cutting material: HSS-E**
- Ø 6.5, 13, 14, 16 and Ø 20 mm, non-DIN





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
		● 6-8	● 6-8					● 6-8	● 4-6				● 6-8	● 6-8	○ 6-8				
	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	D min. mm	D max. mm	L mm	L1 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.0	1.90	2.86	86	48	3.15	2	0.25	**160150** 0020	34,–
2.5	2.40	3.36	86	48	3.15	3	0.25	160150 0025	39,90
3.0	2.90	4.06	100	58	4.00	3	0.25	160150 0030	36,20
4.0	3.90	5.26	112	68	5.00	3	0.45	160150 0040	35,40
5.0	4.90	6.36	122	73	6.30	3	0.45	160150 0050	39,10
6.0	5.90	8.00	160	105	8.00	3	0.45	160150 0060	43,40
6.5	6.40	8.78	187	119	8.50	3	0.45	160150 0065	57,50
								1134	

● Feed f steel < 1000 N/mm² mm/rev

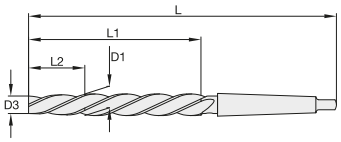
D mm	D min. mm	D max. mm	L mm	L1 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	7.90	10.80	207	145	10.0	3	0.45	160150 0080	67,–
10.0	9.90	13.40	245	175	12.5	3	0.45	160150 0100	87,50
12.0	11.80	16.00	290	210	16.0	3	0.50	160150 0120	113,–
13.0	12.86	16.74	275	194	16.0	3	0.50	160150 0130	178,–
14.0	13.86	17.74	275	194	17.0	3	0.50	160150 0140	215,–
16.0	15.84	21.12	355	264	20.0	3	0.55	160150 0160	335,–
20.0	19.80	25.20	370	270	24.0	3	0.55	160150 0200	450,–
								1134	

SARA® Taper bridge reamers

HSS | DIN 311 | 25° | Z 3 | Z 4 | Z 5 | Vc/fz | 10-276

- Right-hand cutting
- Cutting edge lengths 1/3 tapered, 2/3 straight
- Shank design: MT
- Spiral-fluted, 25° left-hand twist
- **Cutting material: HSS**
- Used for reaming bores that are too small or offset

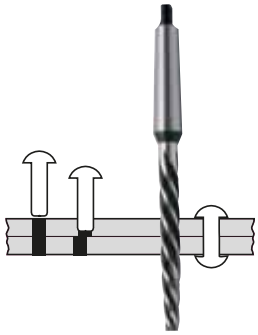




material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.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

D1 mm	D3 mm	L mm	L1 mm	L2 mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.4	4.5	151	75	19	MT 1	3	0.15	**160130** 0064	61,50
7.4	5.2	156	80	22	MT 1	3	0.15	160130 0074	65,50
8.0	5.5	161	85	25	MT 1	3	0.15	160130 0080	65,50
8.4	5.9	161	85	25	MT 1	3	0.15	160130 0084	65,50
9.0	6.3	166	90	27	MT 1	4	0.15	160130 0090	65,50
9.5	6.6	166	90	27	MT 1	4	0.15	160130 0095	65,50
10.0	7	171	95	30	MT 1	4	0.15	160130 0100	65,50
11.0	7.7	176	100	33	MT 1	4	0.25	160130 0110	65,50
12.0	8.4	199	105	39	MT 2	5	0.25	160130 0120	69,50
13.0	9.1	199	105	39	MT 2	5	0.25	160130 0130	69,50
14.0	9.8	209	115	42	MT 2	5	0.25	160130 0140	68,50
15.0	10.5	219	125	45	MT 2	5	0.25	160130 0150	69,50
16.0	11.2	229	135	48	MT 2	5	0.25	160130 0160	73,–
17.0	11.9	251	135	51	MT 3	5	0.25	160130 0170	90,50
18.0	12.6	261	145	58	MT 3	5	0.25	160130 0180	101,–
19.0	13.3	261	145	58	MT 3	5	0.25	160130 0190	112,–
20.0	14	271	155	62	MT 3	5	0.25	160130 0200	112,–
21.0	14.7	271	155	62	MT 3	5	0.25	160130 0210	117,–
22.0	15.4	281	165	66	MT 3	5	0.25	160130 0220	127,–
23.0	16.4	281	165	66	MT 3	5	0.25	160130 0230	135,–
24.0	16.8	296	180	72	MT 3	5	0.25	160130 0240	143,–
25.0	17.5	296	180	72	MT 3	5	0.25	160130 0250	145,–
26.0	18.2	296	180	72	MT 3	5	0.37	160130 0260	159,–
27.0	18.9	311	195	78	MT 3	5	0.37	160130 0270	176,–
28.0	19.6	311	195	78	MT 3	5	0.37	160130 0280	176,–
29.0	20.3	311	195	78	MT 3	5	0.37	160130 0290	215,–
30.0	21	311	195	78	MT 3	5	0.37	160130 0300	181,–
31.0	21.7	326	210	84	MT 3	5	0.37	160130 0310	205,–
32.0	22.4	354	210	84	MT 4	5	0.40	160130 0320	230,–
33.0	23.1	354	210	84	MT 4	5	0.40	160130 0330	265,–
34.0	23.8	364	220	88	MT 4	5	0.40	160130 0340	275,–
35.0	24.5	364	220	88	MT 4	5	0.40	160130 0350	310,–
36.0	25.2	364	220	88	MT 4	5	0.40	160130 0360	310,–
37.0	25.9	364	220	88	MT 4	5	0.40	160130 0370	310,–
38.0	26.6	374	230	92	MT 4	5	0.40	160130 0380	340,–
39.0	27.3	374	230	92	MT 4	5	0.40	160130 0390	340,–
40.0	28	374	230	92	MT 4	5	0.40	160130 0400	340,–

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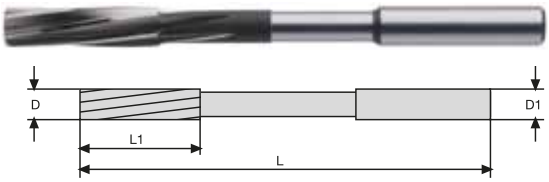
Used for reaming bores that are too small or offset

ATORN® Machine reamers

HSS-E | DIN 212 | Werks-norm | 9° | 10° | Z 3 | Z 4 | Z 6 | Z 8+ | Vc/fz | 10-278

- 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

H7



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
		● 8-10	● 6-8	○ 4-6				● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
	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 H7 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	26,30
1.6	9	43	1.6	3	0.10	161001 0016	30,30
1.7	9	43	1.6	3	0.10	161001 0017	30,30
1.8	10	46	1.8	4	0.10	161001 0018	30,30
1.9	10	46	1.8	4	0.10	161001 0019	30,30
2.0	11	49	2.0	4	0.10	161001 0020	24,10
2.1	11	49	2.0	4	0.10	161001 0021	30,30
2.2	12	53	2.2	4	0.10	161001 0022	30,30
2.3	12	53	2.2	4	0.10	161001 0023	30,30
2.4	14	57	2.5	4	0.10	161001 0024	30,30
2.5	14	57	2.5	4	0.10	161001 0025	24,10
2.6	14	57	2.5	4	0.10	161001 0026	31,40
2.7	15	61	2.8	4	0.10	161001 0027	31,40
2.8	15	61	2.8	4	0.10	161001 0028	31,40
2.9	15	61	3.0	6	0.10	161001 0029	31,40
3.0	15	61	3.0	6	0.10	161001 0030	22,50
3.1	16	65	3.2	6	0.10	161001 0031	29,80
3.2	16	65	3.2	6	0.10	161001 0032	29,80
3.3	16	65	3.2	6	0.10	161001 0033	29,80
3.4	18	70	3.5	6	0.10	161001 0034	29,80
3.5	18	70	3.5	6	0.10	161001 0035	26,30
3.6	18	70	3.5	6	0.10	161001 0036	33,50
3.7	18	70	3.5	6	0.10	161001 0037	33,50
3.8	19	75	4.0	6	0.10	161001 0038	33,50
3.9	19	75	4.0	6	0.10	161001 0039	25,10
4.0	19	75	4.0	6	0.10	161001 0040	24,20
4.1	19	75	4.0	6	0.10	161001 0041	31,10
4.2	19	75	4.0	6	0.10	161001 0042	31,10
4.3	21	80	4.5	6	0.10	161001 0043	31,10
4.4	21	80	4.5	6	0.10	161001 0044	31,10
4.5	21	80	4.5	6	0.10	161001 0045	26,10
4.6	21	80	4.5	6	0.10	161001 0046	33,50
4.7	21	80	4.5	6	0.10	161001 0047	33,50
4.8	23	86	5.0	6	0.10	161001 0048	33,50
4.9	23	86	5.0	6	0.10	161001 0049	33,50
5.0	23	86	5.0	6	0.10	161001 0050	25,10
5.1	23	86	5.0	6	0.13	161001 0051	33,50
5.2	23	86	5.0	6	0.13	161001 0052	33,50
5.3	23	86	5.0	6	0.13	161001 0053	33,50
5.4	26	93	5.6	6	0.13	161001 0054	33,50
5.5	26	93	5.6	6	0.13	161001 0055	33,50
5.6	26	93	5.6	6	0.13	161001 0056	33,50
5.7	26	93	5.6	6	0.13	161001 0057	33,50
5.8	26	93	5.6	6	0.13	161001 0058	33,50
5.9	26	93	5.6	6	0.13	161001 0059	33,50
6.0	26	93	5.6	6	0.13	161001 0060	26,30
6.1	28	101	6.3	6	0.13	161001 0061	33,50
6.2	28	101	6.3	6	0.13	161001 0062	33,50
6.3	28	101	6.3	6	0.13	161001 0063	33,50
6.4	28	101	6.3	6	0.13	161001 0064	33,50
6.5	28	101	6.3	6	0.13	161001 0065	32,90
6.6	28	101	6.3	6	0.13	161001 0066	33,50
6.7	28	101	6.3	6	0.13	161001 0067	33,50
6.8	31	109	7.1	6	0.13	161001 0068	33,50
6.9	31	109	7.1	6	0.13	161001 0069	33,50
7.0	31	109	7.1	6	0.13	161001 0070	32,90
7.1	31	109	7.1	6	0.13	161001 0071	34,40
7.2	31	109	7.1	6	0.13	161001 0072	34,40
7.3	31	109	7.1	6	0.13	161001 0073	37,70
7.4	31	109	7.1	6	0.13	161001 0074	37,70
7.5	31	109	7.1	6	0.13	161001 0075	36,70
7.6	33	117	8.0	6	0.13	161001 0076	36,70
7.7	33	117	8.0	6	0.13	161001 0077	36,70
7.8	33	117	8.0	6	0.13	161001 0078	36,70
7.9	33	117	8.0	6	0.13	161001 0079	36,70
8.0	33	117	8.0	6	0.13	161001 0080	33,50
8.1	33	117	8.0	6	0.13	161001 0081	45,50
8.2	33	117	8.0	6	0.13	161001 0082	46,–
8.3	33	117	8.0	6	0.13	161001 0083	46,–
8.4	33	117	8.0	6	0.13	161001 0084	46,–
8.5	33	117	8.0	6	0.13	161001 0085	42,40
8.6	36	125	9.0	6	0.13	161001 0086	42,40
8.7	36	125	9.0	6	0.13	161001 0087	42,40
8.8	36	125	9.0	6	0.13	161001 0088	42,40
8.9	36	125	9.0	6	0.13	161001 0089	42,40
9.0	36	125	9.0	6	0.15	161001 0090	38,90
9.1	36	125	9.0	6	0.15	161001 0091	43,10
9.2	36	125	9.0	6	0.15	161001 0092	43,10
9.3	36	125	9.0	6	0.15	161001 0093	43,10
9.4	36	125	9.0	6	0.15	161001 0094	43,10
9.5	36	125	9.0	6	0.15	161001 0095	43,10
9.6	38	133	10.0	6	0.15	161001 0096	43,10
9.7	38	133	10.0	6	0.15	161001 0097	43,10
9.8	38	133	10.0	6	0.15	161001 0098	43,10
9.9	38	133	10.0	6	0.15	161001 0099	43,10
10.0	38	133	10.0	6	0.15	161001 0100	38,80
11.0	41	142	10.0	6	0.15	161001 0110	54,50
12.0	44	151	10.0	6	0.20	161001 0120	56,–
13.0	44	151	10.0	8	0.20	161001 0130	65,50
14.0	47	160	12.5	8	0.20	161001 0140	67,–
15.0	50	162	12.5	8	0.20	161001 0150	68,50
16.0	52	170	12.5	8	0.20	161001 0160	70,50
17.0	54	175	14.0	8	0.25	161001 0170	84,–
18.0	56	182	14.0	8	0.25	161001 0180	86,–
19.0	58	189	16.0	8	0.25	161001 0190	102,–
20.0	60	195	16.0	8	0.25	161001 0200	97,–

1134

Continued on next page >>>



Long, company standard

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	14	65	2	6	0.10	**161002** 0020	69,–
3	14	90	3	6	0.10	161002 0030	50,–
4	16	105	4	6	0.10	161002 0040	50,–
5	16	115	5	6	0.10	161002 0050	50,–
						1134	

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	16	130	6	6	0.13	161002 0060	51,50
8	18	160	8	6	0.13	161002 0080	53,50
10	20	190	10	6	0.15	161002 0100	63,–
12	20	210	12	6	0.20	161002 0120	72,–
						1134	



Extra-long, company standard

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	20	80	2	6	0.10	**161003** 0020	198,–
3	30	120	3	6	0.10	161003 0030	167,–
4	30	160	4	6	0.10	161003 0040	161,–
5	30	200	5	6	0.10	161003 0050	159,–
						1134	

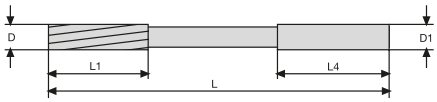
D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	35	250	6	6	0.13	161003 0060	155,–
8	35	250	8	6	0.13	161003 0080	151,–
10	35	250	10	6	0.15	161003 0100	159,–
						1134	

ATORN® NC machine reamers

HSS-E | DIN 212 | 9° | Z 6 | Z 8+ | TiN | Vc/fz 10-278

H7

- **For H7 fit**
- Right-hand cutting
- **Cutting material: HSS-E; HSS-E, TiN-coated**
- 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 **straight shank diameter**
- For reaming through-holes
- Also suitable for blind bores



material	● very well suited ○ well suited	steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
	161010....	● 8-10	● 6-8	○ 4-6				● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
	161020....	● 12-15	● 9-12	○ 6-9				● 12-15	● 12-15				○ 22-30	○ 22-30	○ 12-18				
	Cutting speed Vc m/min.																		

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





Single

D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €
3	3	61	15	28	6	0.10	**161010** 0030	15,40	**161020** 0030	26,10
3.5	4	70	18	28	6	0.10	161010 0035	18,10		
4	4	75	19	28	6	0.10	161010 0040	16,40	161020 0040	26,10
4.5	5	80	21	28	6	0.10	161010 0045	18,10		
5	5	86	23	28	6	0.10	161010 0050	17,70	161020 0050	28,60
5.5	6	93	26	36	6	0.13	161010 0055	21,20		
6	6	93	26	36	6	0.13	161010 0060	18,80	161020 0060	30,50
6.5	6	101	28	36	6	0.13	161010 0065	22,90		
7	8	109	31	36	6	0.13	161010 0070	22,90		
8	8	117	33	36	6	0.13	161010 0080	20,40	161020 0080	38,90
							1134		1134	

D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €
9	10	125	36	40	6	0.15	161010 0090	24,60		
10	10	133	38	40	6	0.15	161010 0100	24,60	161020 0100	46,50
11	10	142	41	40	6	0.15	161010 0110	34,80		
12	10	151	44	40	6	0.20	161010 0120	32,80	161020 0120	71,–
14	14	160	47	45	8	0.20	161010 0140	48,20		
15	14	162	50	45	8	0.20	161010 0150	51,50		
16	14	170	52	45	8	0.20	161010 0160	53,–		
18	14	182	56	45	8	0.25	161010 0180	60,–		
20	16	195	60	48	8	0.25	161010 0200	71,50		
							1134		1134	



161001 1007



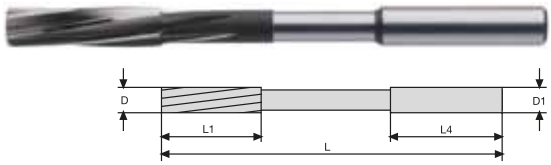
161002 1007

Sets

Description	art.no.	€	TiN art.no.	TiN €
Set with 1 reamer in each size, Ø 3 / 4 / 5 / 6 / 8 / 10 / 12 mm	**161001** 1007	199,–	**161002** 1007	269,–
	1134		1134	

ATORN® 1/100 NC machine reamers

HSS-E | DIN 212 | 9° | Z 3 | Z 4 | Z 6 | Vc/fz | 10-280



- 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
	● 8-10	● 4-8					● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
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 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	**161030....** €
1,00	1	34	5,5	19	3	0,08	24,10
1,98 - 2,03	2	49	11	25	4	0,09	20,80
2,98 - 3,00	3	61	15	28	6	0,10	22,60
3,01 - 3,03	4	65	16	28	6	0,10	21,60
3,98 - 4,03	4	75	19	28	6	0,10	20,20
4,98 - 5,03	5	86	23	28	6	0,10	21,–
5,98 - 6,00	6	93	26	36	6	0,10	23,–
6,01 - 6,03	6	101	28	36	6	0,12	22,60
6,98 - 7,03	8	109	31	36	6	0,12	25,70
7,98 - 8,00	8	117	33	36	6	0,12	26,30
8,01 - 8,03	8	117	33	36	6	0,13	25,70
9,98 - 10,03	10	133	38	40	6	0,13	32,70
11,98 - 12,03	10	151	44	40	6	0,15	39,90

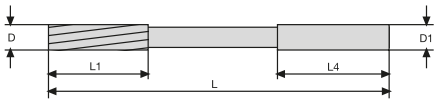
1134

ATORN® High helix machine reamers

HSS-E | DIN 212 | 45° | Z 3 | Z 4 | Vc/fz | 10-278

H7





- **For H7 fit**
- Right-hand cutting
- 45° left-hand twist, type E
- Straight shank
- With tapered chamfer along approx. 1/6 of the cutting edge length
- For **through-holes**
- Clean, chatter-free surface
- Broad chip spaces for high cutting speeds and up to 100 % higher feed rates
- **Cutting material: 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
	● 8-10	● 6-8										○ 15-20	○ 15-20	○ 8-12				
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 H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.0	2.0	49	11	25	3	0.10	**161015** 0020	19,10
2.5	2.5	57	14	28	3	0.10	161015 0025	20,70
3.0	3.0	61	15	28	3	0.10	161015 0030	23,20
3.2	3.2	65	16	28	3	0.10	161015 0032	27,20
3.5	3.5	70	18	28	3	0.10	161015 0035	27,20
4.0	4.0	75	19	28	3	0.10	161015 0040	22,40
4.5	4.5	80	21	28	3	0.10	161015 0045	26,30
5.0	5.0	86	23	28	3	0.10	161015 0050	25,–
6.0	5.6	93	26	36	3	0.13	161015 0060	23,60
7.0	7.1	109	31	36	3	0.13	161015 0070	27,90
8.0	8.0	117	33	36	3	0.13	161015 0080	24,60
9.0	9.0	125	36	40	3	0.15	161015 0090	35,10

1134

● Feed f steel < 1000 N/mm² mm/rev

D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.0	10.0	133	38	40	3	0.15	161015 0100	32,90
11.0	10.0	142	41	40	3	0.15	161015 0110	41,90
12.0	10.0	151	44	40	4	0.20	161015 0120	40,50
13.0	10.0	151	44	40	4	0.20	161015 0130	57,50
14.0	12.5	160	47	45	4	0.20	161015 0140	53,50
15.0	12.5	162	50	45	4	0.20	161015 0150	54,50
16.0	12.5	170	52	45	4	0.20	161015 0160	56,50
17.0	14.0	175	54	45	4	0.20	161015 0170	84,–
18.0	14.0	182	56	45	4	0.25	161015 0180	77,–
19.0	16.0	189	58	48	4	0.25	161015 0190	89,50
20.0	16.0	195	60	48	4	0.25	161015 0200	84,50

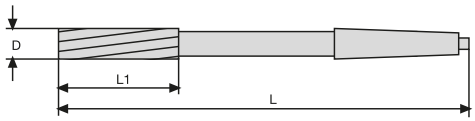
1134

ATORN® Machine reamer with MT shank

HSS-E | DIN 208 | Werks-norm | 9° | 10° | Z 6 | Z 8+ | Vc/fz | 10-278 | H7

- **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
	●	●	○				●	●				○	○	○				
Cutting speed Vc m/min.	8-10	6-8	4-6				8-10	8-10				15-20	15-20	8-12				

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

Standard version, DIN 208

- 9° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.0	15	112	MT 1	6	0.10	**161005** 0030	47,70
4.0	19	125	MT 1	6	0.10	161005 0040	40,20
5.0	23	133	MT 1	6	0.10	161005 0050	47,–
6.0	26	138	MT 1	6	0.13	161005 0060	47,–
7.0	31	150	MT 1	6	0.13	161005 0070	49,70
8.0	33	156	MT 1	6	0.13	161005 0080	49,70
9.0	36	162	MT 1	6	0.15	161005 0090	55,50
10.0	38	168	MT 1	6	0.15	161005 0100	41,90
11.0	41	175	MT 1	6	0.15	161005 0110	47,–
12.0	44	182	MT 1	6	0.20	161005 0120	45,90
13.0	44	182	MT 1	8	0.20	161005 0130	48,40
14.0	47	189	MT 1	8	0.20	161005 0140	49,20
15.0	50	204	MT 2	8	0.20	161005 0150	58,50
16.0	52	210	MT 2	8	0.20	161005 0160	60,–
17.0	54	214	MT 2	8	0.25	161005 0170	64,50
18.0	56	219	MT 2	8	0.25	161005 0180	66,–
19.0	58	223	MT 2	8	0.25	161005 0190	71,–
20.0	60	228	MT 2	8	0.25	161005 0200	71,–
21.0	62	232	MT 2	8	0.25	161005 0210	81,50

1134

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	64	237	MT 2	8	0.25	161005 0220	80,50
23.0	66	241	MT 2	8	0.25	161005 0230	92,–
24.0	68	268	MT 3	10	0.25	161005 0240	94,–
25.0	68	268	MT 3	10	0.25	161005 0250	97,–
26.0	70	273	MT 3	10	0.25	161005 0260	104,–
28.0	71	277	MT 3	10	0.25	161005 0280	114,–
30.0	73	281	MT 3	10	0.30	161005 0300	118,–
32.0	77	317	MT 4	12	0.30	161005 0320	156,–
34.0	78	321	MT 4	12	0.30	161005 0340	176,–
35.0	78	321	MT 4	12	0.30	161005 0350	176,–
36.0	79	325	MT 4	12	0.35	161005 0360	189,–
38.0	81	329	MT 4	12	0.35	161005 0380	210,–
40.0	81	329	MT 4	12	0.35	161005 0400	210,–
42.0	82	333	MT 4	12	0.35	161005 0420	230,–
44.0	83	336	MT 4	14	0.35	161005 0440	275,–
45.0	83	336	MT 4	14	0.35	161005 0450	275,–
46.0	84	340	MT 4	14	0.40	161005 0460	325,–
50.0	86	344	MT 4	14	0.40	161005 0500	345,–

1134



Long, company standard type D

- 10° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14.0	22	245	MT 1	8	0.20	**161006** 0140	100,–
15.0	22	260	MT 2	8	0.20	161006 0150	109,–
16.0	25	260	MT 2	8	0.20	161006 0160	120,–
18.0	25	260	MT 2	8	0.25	161006 0180	124,–
20.0	28	270	MT 2	8	0.25	161006 0200	136,–

1134

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	28	280	MT 2	8	0.25	161006 0220	148,–
24.0	32	300	MT 3	8	0.25	161006 0240	210,–
26.0	32	330	MT 3	10	0.25	161006 0260	250,–
28.0	32	340	MT 3	10	0.25	161006 0280	260,–
30.0	36	350	MT 3	10	0.30	161006 0300	275,–

1134



Extra-long, company standard type D

- 10° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.0	40	315	MT 1	6	0.20	**161007** 0120	210,–
14.0	40	315	MT 1	8	0.20	161007 0140	220,–
16.0	45	350	MT 2	8	0.20	161007 0160	310,–
18.0	45	350	MT 2	8	0.25	161007 0180	340,–
20.0	45	350	MT 2	8	0.25	161007 0200	375,–

1134

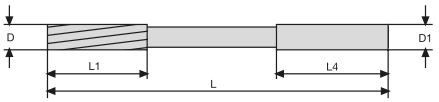
D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	45	350	MT 2	8	0.25	161007 0220	470,–
24.0	70	450	MT 3	8	0.25	161007 0240	579,–
26.0	70	450	MT 3	10	0.25	161007 0260	679,–
28.0	70	450	MT 3	10	0.25	161007 0280	749,–
30.0	70	450	MT 3	10	0.30	161007 0300	799,–

1134

ATORN® Machine reamers

VHM | Werks-norm | 9° | Z 3 | Z 4 | Z 6 | Vc/fz | 10-279 | H7





- **sim. to DIN 212/8093 for H7 fit**
- Straight shank, from Ø 10.0 mm steel shank with inner centring in accordance with DIN 332 Type B
- **Left-hand twist, type B**, 45° chamfer
- Up to Ø 2.6 mm with external line-up clamp, from Ø 2.7 mm with inner centring
- **Cutting material: solid carbide K10**
- For reaming cast iron, white iron, malleable cast iron, cast steel, steel, non-ferrous metal and plastics
- 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
		● 10-15	● 8-12	● 6-10	○ 10-15	○ 8-12		● 8-12	● 8-12				○ 15-25	● 15-25	○ 20-30				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D H7 mm	D1 h9 mm	L mm	L1 mm	L4 mm	Z	Feed f ● steel < 1000 N/mm² mm/rev	art.no.	€
1.5	1.5	40	8	16	3	0.15	**163001** 0015	28,20
2.0	2.0	49	11	20	4	0.15	163001 0020	28,–
2.5	2.5	57	14	23	4	0.15	163001 0025	30,–
3.0	3.0	61	15	20	6	0.15	163001 0030	33,30
3.5	3.5	70	18	27	6	0.15	163001 0035	36,70
4.0	4.0	75	19	32	6	0.15	163001 0040	37,10
4.5	4.5	80	21	33	6	0.15	163001 0045	44,10
5.0	5.0	86	23	34	6	0.15	163001 0050	44,10
5.5	5.6	93	26	36	6	0.18	163001 0055	59,–

1136

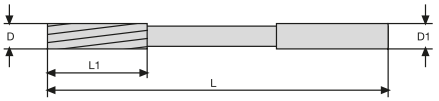
D H7 mm	D1 h9 mm	L mm	L1 mm	L4 mm	Z	Feed f ● steel < 1000 N/mm² mm/rev	art.no.	€
6.0	5.6	93	26	36	6	0.18	163001 0060	54,50
7.0	7.1	109	31	40	6	0.18	163001 0070	68,50
7.5	7.1	109	31	40	6	0.18	163001 0075	73,50
8.0	8.0	117	33	42	6	0.18	163001 0080	71,50
9.0	9.0	125	36	44	6	0.20	163001 0090	86,–
9.5	9.0	125	36	44	6	0.20	163001 0095	100,–
10.0	10.0	133	38	46	6	0.20	163001 0100	87,–
12.0	10.0	151	44	46	6	0.25	163001 0120	101,–

1136

ATORN® NC machine reamers

VHM | DIN 212 | 9° | Z 3 | Z 4 | Z 6 | Z 8+ | Vc/fz | 10-279 | H7





- **sim. to DIN 212/8093**
- **For H7 fit**
- **NC shank for use in hydraulic expansion chucks and high-precision collet chucks**
- High true-running accuracy
- Type 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
		● 10-15	● 8-12	● 6-10	○ 10-15	○ 8-12		● 8-12	● 8-12					● 15-25	● 20-30				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f ● steel < 1000 N/mm² mm/rev	art.no.	€
1.0	1	34	6	3	0.15	**163005** 0010	44,90
1.2	1	34	6	3	0.15	163005 0012	44,90
1.4	2	40	8	3	0.15	163005 0014	44,90
1.5	2	40	8	3	0.15	163005 0015	43,60
1.6	2	43	9	3	0.15	163005 0016	44,90
1.8	2	46	10	4	0.15	163005 0018	44,90
2.0	2	49	11	4	0.15	163005 0020	43,60
2.2	3	53	12	4	0.15	163005 0022	44,90
2.5	3	57	14	4	0.15	163005 0025	43,60
2.8	3	61	15	6	0.15	163005 0028	44,90
2.9	3	61	15	6	0.15	163005 0029	44,90
3.0	3	61	15	6	0.15	163005 0030	43,60
3.2	4	65	16	6	0.15	163005 0032	44,90
3.5	4	70	18	6	0.15	163005 0035	43,60
4.0	4	75	19	6	0.15	163005 0040	43,60
4.5	5	80	21	6	0.15	163005 0045	65,–
5.0	5	86	23	6	0.15	163005 0050	63,–

1134

D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f ● steel < 1000 N/mm² mm/rev	art.no.	€
5.5	6	93	26	6	0.18	163005 0055	64,–
6.0	6	93	26	6	0.18	163005 0060	63,–
6.5	6	101	28	6	0.18	163005 0065	78,–
7.0	8	109	31	6	0.18	163005 0070	78,–
8.0	8	117	33	6	0.18	163005 0080	77,–
9.0	10	125	36	6	0.20	163005 0090	100,–
10.0	10	133	38	6	0.20	163005 0100	105,–
11.0	10	142	41	6	0.20	163005 0110	111,–
12.0	10	151	44	6	0.25	163005 0120	117,–
13.0	10	151	44	8	0.25	163005 0130	144,–
14.0	14	160	47	8	0.25	163005 0140	148,–
15.0	14	162	50	8	0.25	163005 0150	171,–
16.0	14	170	52	8	0.25	163005 0160	175,–
17.0	14	175	54	8	0.30	163005 0170	230,–
18.0	14	182	56	8	0.30	163005 0180	220,–
19.0	16	189	58	8	0.30	163005 0190	300,–
20.0	16	195	60	8	0.30	163005 0200	270,–

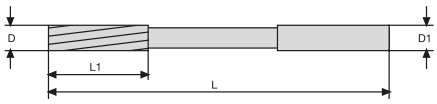
1134

SARA® 1/100 solid carbide machine reamers

VHM | Werks-norm | 10° | Z 4 | Z 6 | Vc/fz | 10-280

- **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
		● 10-15	● 8-12	● 6-10				● 6-12	● 8-12				○ 15-25	● 15-25	○ 20-30				
		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	88,–
0,70 - 0,79	33	7	= D	4	0,15	66,–
0,80 - 0,94	33	7	= D	4	0,15	65,50
0,95 - 1,05	33	7	= D	4	0,15	36,70
1,06 - 1,44	40	10	= D	4	0,15	40,40
1,45 - 1,55	40	10	= D	4	0,15	36,70
1,56 - 1,79	43	11	= D	4	0,15	40,40
1,80 - 1,94	49	12	= D	4	0,15	40,40
1,95 - 2,05	49	12	= D	4	0,15	33,10
2,06 - 2,36	49	12	= D	4	0,15	40,40
2,37 - 2,94	57	18	= D	6	0,15	40,40
2,95 - 3,05	57	18	= D	6	0,15	33,30
3,06 - 3,35	57	18	= D	6	0,15	40,50
3,36 - 3,75	57	18	= D	6	0,15	41,80
3,76 - 4,25	75	19	4,0	6	0,15	56,–
4,26 - 4,75	80	21	4,5	6	0,15	53,50
4,76 - 5,00	86	23	5,0	6	0,15	58,50
5,01 - 5,30	86	23	5,0	6	0,18	58,50
5,31 - 5,80	93	26	5,5	6	0,18	70,–
5,81 - 5,94	101	28	6,0	6	0,18	72,50
5,95 - 6,05	101	28	6,0	6	0,18	66,–
6,06 - 6,70	101	28	6,0	6	0,18	72,50
6,71 - 7,55	109	31	7,0	6	0,18	106,–
7,56 - 7,94	117	33	8,0	6	0,18	125,–
7,95 - 8,05	117	33	8,0	6	0,18	109,–
8,06 - 8,55	117	33	8,0	6	0,18	121,–
8,56 - 8,99	125	36	9,0	6	0,18	134,–
9,00 - 9,55	125	36	9,0	6	0,2	134,–
9,56 - 9,94	133	38	10	6	0,2	139,–
9,95 - 10,05	133	38	10	6	0,2	132,–
10,06 - 11,05	133	38	10	6	0,2	139,–
11,06 - 11,30	133	38	10	6	0,2	145,–
11,31 - 11,94	151	44	12	6	0,2	190,–
11,95 - 11,99	151	44	12	6	0,2	173,–
12,00 - 12,05	151	44	12	6	0,25	173,–
12,06 - 12,08	151	44	12	6	0,25	220,–
12,09	151	44	12	6	0,25	205,–
12,10 - 13,05	151	44	12	6	0,25	220,–

1136

SARA® Solid carbide high-performance reamers

VHM | Werks-norm | 7° | DIN 6535 HA | Z 4 | Z 6 | Z 8+ | TiAlN | Vc/fz | 10-280

H7

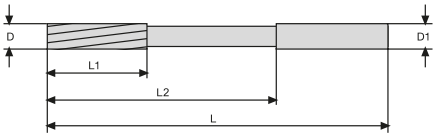
- **Manufacturing tolerances: H7 in accordance with DIN 1420**
- Right-hand cutting, **with internal cooling**
- **Cutting material: solid carbide, TiAlN-coated**
- NC shank for use directly in hydraulic expansion chucks and high-precision collet chucks
- Tight h6 tool shank tolerance for a high level of true running accuracy
- Version with linear flutes, coolant exits on the face side, for blind holes
- Version with 7° 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
		● 80-225	● 80-200	● 60-180				● 70-150	● 60-115										
		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 H7 mm	D1 h6 mm	L mm	L1 mm	L2 mm	Z	Feed f steel < 1000 N/mm² mm/rev	for clearance art.no.	€	For blind holes art.no.	€
4	4	75	12	47	4	0.30	**163510** 0400	105,–	**163512** 0400	105,–
4.5	6	75	12	39	4	0.30	163510 0450	109,–	163512 0450	109,–
5	6	75	12	39	4	0.40	163510 0500	109,–	163512 0500	109,–
5.5	6	75	16	39	4	0.40	163510 0550	112,–	163512 0550	112,–
6	6	75	16	39	4	0.40	163510 0600	112,–	163512 0600	112,–
6.5	8	100	16	64	6	0.40	163510 0650	118,–	163512 0650	118,–
7	8	100	16	64	6	0.70	163510 0700	118,–	163512 0700	118,–
7.5	8	100	16	64	6	0.70	163510 0750	118,–	163512 0750	118,–
8	8	100	16	64	6	0.70	163510 0800	118,–	163512 0800	118,–
8.5	10	100	19	60	6	0.70	163510 0850	145,–	163512 0850	145,–
9	10	100	19	60	6	0.70	163510 0900	145,–	163512 0900	145,–
9.5	10	120	19	80	6	0.80	163510 0950	170,–	163512 0950	170,–
10	10	120	19	80	6	0.80	163510 1000	170,–	163512 1000	170,–
10.5	12	120	19	75	6	0.80	163510 1050	215,–	163512 1050	215,–
11	12	120	19	75	6	0.80	163510 1100	215,–	163512 1100	215,–
11.5	12	120	19	75	6	0.80	163510 1150	225,–	163512 1150	225,–
12	12	120	19	75	6	0.80	163510 1200	225,–	163512 1200	225,–
13	14	120	19	75	6	0.80	163510 1300	245,–	163512 1300	245,–
14	14	135	22	90	6	0.80	163510 1400	255,–	163512 1400	255,–
15	16	135	22	87	6	0.80	163510 1500	255,–	163512 1500	255,–
16	16	135	22	87	6	0.80	163510 1600	260,–	163512 1600	260,–
17	18	145	22	97	8	0.80	163510 1700	260,–	163512 1700	260,–
18	18	145	22	97	8	0.80	163510 1800	300,–	163512 1800	300,–
19	20	145	22	95	8	0.80	163510 1900	300,–	163512 1900	300,–
20	20	145	22	95	8	1.00	163510 2000	325,–	163512 2000	325,–
							1155		1155	





... without shrinkage

ATORN®
High quality for great performance

When you're the king...



...dreams come true.

ATORN®

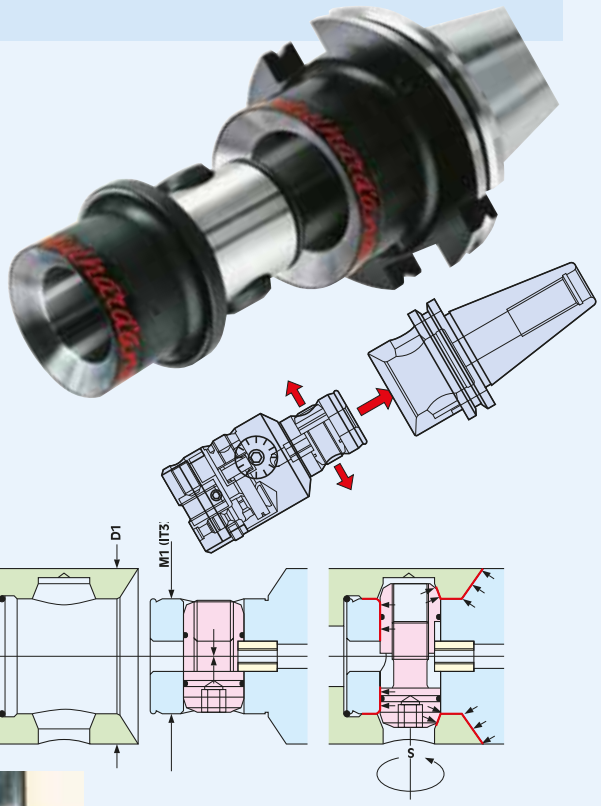
High quality for great performance

D'ANDREA® MHD modular tool system

- Modular tool holder system for **line boring, milling, drilling, thread cutting**
- Rigid high-precision system, developed and manufactured with state-of-the-art design engineering and production resources based on decades of experience
- A system of extreme flexibility and simplicity for machine tools, machining centres and flexible production facilities.

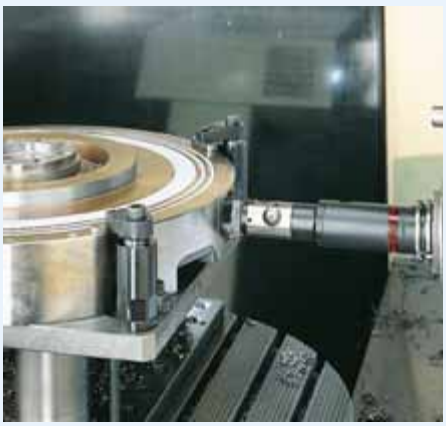
- For machining with very strict tolerances with a high-grade surface finish
- Patented cylindrical/conical coupling and radial expansion bolts to ensure maximum rigidity and concentricity during boring and milling work
- Internal coolant supply in all elements

- Available in eight sizes, which allows full interchangeability



Type	D1	M1	S	Nm
MHD´16	16	10	2.5	2 - 2.5
MHD´20	20	13	3	4 - 4.5
MHD´25	25	16	3	6.5 - 7.5
MHD´32	32	20	4	7 - 8
MHD´40	40	25	5	16 - 18
MHD´50	50	32	6	30 - 35
MHD´63	63	42	8	70 - 80
MHD´80	80	42	8	70 - 80



















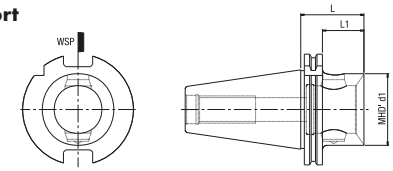
YouTube
user video

D'ANDREA® MHD base holding fixtures

Vc/fz 10-281

- **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

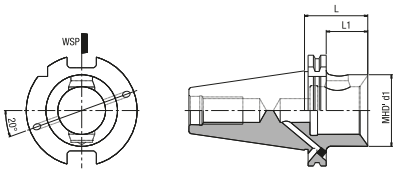




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 40	DIN69871-A40 MHD'50.48	50	48	29	0.9	**372001** 0002	151,–
ISO 40	DIN69871-A40 MHD'63.80	63	80	-	1.5	372001 0003	173,–
ISO 50	DIN69871-A50 MHD'50.48	50	48	28	2.7	372001 0007	198,–
ISO 50	DIN69871-A50 MHD'63.56	63	56	37	2.8	372001 0008	198,–
ISO 50	DIN69871-A50 MHD'80.62	80	62	43	3.4	372001 0009	245,–

1138

DIN 69871-B

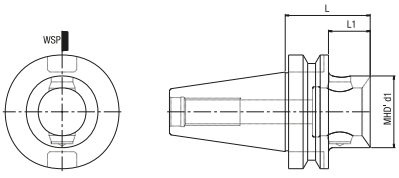




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 40	69871-B40 MHD'50.48	50	48	29	0.9	**372003** 0001	168,–
ISO 40	69871-B40 MHD'63.80	63	80	-	1.5	372003 0002	192,–

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MAS 403 BT

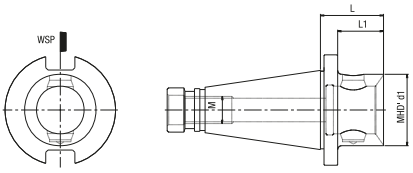




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 30	MAS403-BT30 MHD 50.60	50	60	-	0.7	**372005** 0001	151,–
ISO 40	MAS403-BT40 MHD 50.48	50	48	21	0.9	372005 0003	151,–
ISO 40	MAS403-BT40 MHD 63.66	63	66	-	1.2	372005 0004	173,–
ISO 50	MAS403-BT50 MHD 50.66	50	66	28	3.5	372005 0008	198,–

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DIN 2080-A, „OTT"

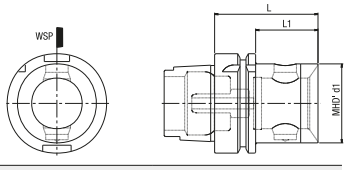




Shank	Type	MHD'd1	L mm	L1 mm	M	Weight kg	art.no.	€
ISO 40	DIN2080-A40 MHD'50.48	50	48	36.5	M16	0.9	**372009** 0001	151,–
ISO 50	DIN2080-A50 MHD'50.48	50	48	33	M24	2.6	372009 0006	198,–
ISO 50	DIN2080-A50 MHD'63.56	63	56	41	M24	2.7	372009 0007	198,–
ISO 50	DIN2080-A50 MHD'80.60	80	60	45	M24	3.2	372009 0008	245,–

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DIN 69893-A, HSK





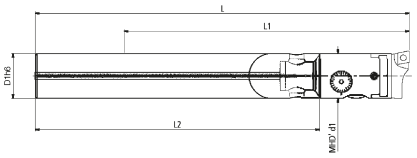
Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
HSK-A63 MHD'50.66	50	66	40	0.9	**372017** 0002	212,–

1138

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





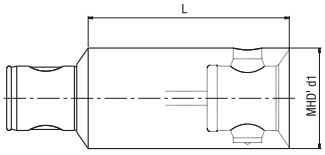
Type	MHD'd1	D1 mm	L mm	L1 mm	L2 mm	Weight kg	art.no.	€
BMD 16/16.110	16	16	144	100	110	0.3	**372010** 1611	378,–
BMD 16/16.140	16	16	174	125	140	0.4	372010 1614	462,–
BMD 16/16.170	16	16	204	160	170	0.5	372010 1617	544,–
BMD 20/20.135	20	20	175	125	135	0.6	372010 2013	524,–
BMD 20/20.175	20	20	210	160	170	0.75	372010 2017	630,–
BMD 20/20.210	20	20	250	200	210	0.9	372010 2021	763,–
BMD 25/25.160	25	25	210	160	160	1.0	372010 2516	772,–
BMD 25/25.205	25	25	255	200	205	1.3	372010 2520	953,–
BMD 25/25.255	25	25	305	250	255	1.6	372010 2525	1.160,–
BMD 32/32.195	32	32	258	200	195	2.1	372010 3219	1.199,–
BMD 32/32.250	32	32	313	250	250	2.8	372010 3225	1.509,–
BMD 32/32.315	32	32	378	320	315	3.5	372010 3231	1.869,–

1138

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	MHD'd1	L mm	Weight kg	art.no.	€
PR 16.25	16	25	0.04	**372201** 1625	106,–
PR 20.32	20	32	0.07	372201 2032	106,–
PR 25.25	25	25	0.09	372201 2525	106,–
PR 25.40	25	40	0.15	372201 2540	110,–
PR 32.32	32	32	0.2	372201 3232	110,–
PR 32.50	32	50	0.3	372201 3250	115,–
PR 40.40	40	40	0.4	372201 4040	115,–
PR 40.63	40	63	0.6	372201 4063	120,–
PR 50.50	50	50	1.1	372201 5050	120,–

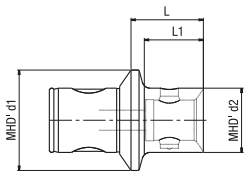
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Type	MHD'd1	L mm	Weight kg	art.no.	€
PR 50.80	50	80	1.5	372201 5080	131,–
PR 50.100	50	100	0.7	372201 5010	141,–
PR 63.63	63	63	2.9	372201 6363	141,–
PR 63.100	63	100	1.4	372201 6310	156,–
PR 63.125	63	125	2.2	372201 6312	163,–
PR 80.80	80	80	6.1	372201 8080	198,–
PR 80.125	80	125	3.0	372201 8012	218,–
PR 80.160	80	160	4.6	372201 8016	230,–

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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.





Type	MHD'd1	MHD'd2	L1 mm	L mm	Weight kg	art.no.	€
RD 20/16.20	20	16	16	20	0.05	**372203** 2016	104,–
RD 25/16.20	25	16	15	20	0.07	372203 2516	106,–
RD 25/20.25	25	20	20	25	0.08	372203 2520	106,–
RD 32/16.24	32	16	18	24	0.15	372203 3216	110,–
RD 32/20.25	32	20	20	25	0.15	372203 3220	110,–
RD 32/25.28	32	25	23	28	0.15	372203 3225	110,–
RD 40/16.24	40	16	17	24	0.18	372203 4016	115,–
RD 40/20.26	40	20	20	26	0.20	372203 4020	115,–
RD 40/25.28	40	25	22	28	0.25	372203 4025	115,–
RD 40/32.32	40	32	27	32	0.30	372203 4032	115,–
RD 50/16.24	50	16	15	24	0.40	372203 5016	121,–

1138

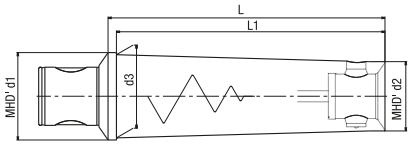
Type	MHD'd1	MHD'd2	L1 mm	L mm	Weight kg	art.no.	€
RD 50/16.40	50	16	32	40	0.20	372203 5116	147,–
RD 50/20.26	50	20	18	26	0.40	372203 5020	121,–
RD 50/20.70	50	20	62	70	0.30	372203 5120	152,–
RD 50/25.28	50	25	21	28	0.40	372203 5025	121,–
RD 50/25.87	50	25	80	87	0.60	372203 5125	158,–
RD 50/32.32	50	32	25	32	0.45	372203 5032	127,–
RD 50/32.87	50	32	80	87	0.75	372203 5132	163,–
RD 50/40.36	50	40	30	36	0.50	372203 5040	127,–
RD 50/40.87	50	40	80	87	0.90	372203 5140	170,–
RD 63/50.40	63	50	34	40	0.90	372203 6250	135,–
RD 80/63.60	80	63	52	60	1.70	372203 8063	171,–

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D'ANDREA® MHD reducers RAV

- **Low vibration**



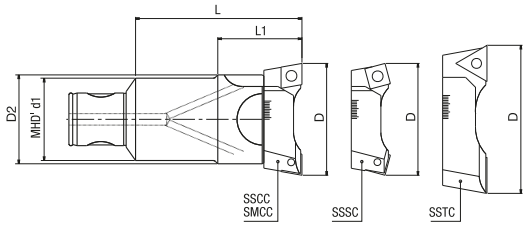


Type	MHD'd1	MHD'd2	D3 mm	L1 mm	L mm	Weight kg	art.no.	€
RAV 50/16.74	50	16	17.5	65	74	0.4	**372204** 5016	244,–
RAV 50/20.93	50	20	21.5	85	93	0.5	372204 5020	273,–
RAV 50/25.117	50	25	27	110	117	0.8	372204 5025	341,–
RAV 50/32.144	50	32	35	138	144	1.4	372204 5032	487,–
RAV 50/40.176	50	40	47	170	176	2.5	372204 5040	761,–
RAV 63/50.220	63	50	60	214	220	5.6	372204 6042	1.345,–
RAV 80/63.280	80	63	77	272	280	10.6	372204 8042	2.730,–

1138

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 mm	MHD'd1	D2 mm	L mm	L1 mm	S...	for exchangeable CC plates	for exchangeable SC plates	for exchangeable TC plates	Weight kg	art.no.	€
TS 16/16	18 - 22	16	16	34	-	S...16	Yes			0.05	**372603** 1616	177,–
TS 20/20	22 - 28	20	20	40	-	S...20	Yes			0.09	372603 2020	189,–
TS 25/25	28 - 38	25	25	50	-	S...25	Yes			0.20	372603 2525	219,–
TS 32/32	35.5 - 50	32	32	63	-	S...32-33	Yes	Yes		0.35	372603 3232	251,–
TS 40/40	50 - 68	40	40	80	-	S...40-41	Yes	Yes		0.70	372603 4040	273,–
TS 50/50	68 - 90	50	55	100	50	S...50	Yes	Yes		1.5	372603 5050	302,–
TS 50/63	90-120	50	72	80	60	S...63	Yes	Yes	Yes	2.0	372603 5063	302,–
TS 63/63	90-120	63	72	125	63	S...63	Yes	Yes	Yes	3.0	372603 6363	371,–
TS 80/80	120-160 160-200	80	95	140	75	S...80 S...90	Yes	Yes	Yes	5.3	372603 8080	456,–

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Safety in the workplace

Please protect your eyes, ears and respiratory system!



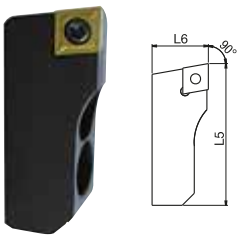
D'ANDREA® MHD insert holder SSCC / SMCC / SSSC

- For twin-cutter boring bars
- Type SSTC insert holders available on request

SSCC

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SSCC 16	18 - 22	8	15	CC.. 0602..	TS25	T 08	**372610** 0016	69,50
SSCC 20	22 - 28	9.5	19	CC.. 0602..	TS25	T 08	372610 0020	73,10
SSCC 25	28 - 38	12.5	23	CC.. 0602..	TS25	T 08	372610 0025	75,50
SSCC 32	38 - 50	15	32	CC.. 0602..	TS25	T 08	372610 0032	79,–
SSCC 33	38 - 50	15	32	CC.. 09T3..	TS4	T 15	372610 0033	79,–
SSCC 40	50 - 68	19	40	CC.. 09T3..	TS4	T 15	372610 0040	82,50
SSCC 41	50 - 68	19	40	CC.. 1204..	TS5	T 25	372610 0041	82,50
SSCC 50	68 - 90	22	54	CC.. 1204..	TS5	T 25	372610 0050	84,80
SSCC 63	90 - 120	27	70.5	CC.. 1204..	TS5	T 25	372610 0063	148,–
SSCC 80	120 - 160	32	94.5	CC.. 1204..	TS5	T 25	372610 0080	165,–
SSCC 90	160 - 500	32	130	CC.. 1204..	TS5	T 25	372610 0090	213,–

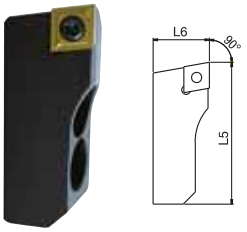
1138



SMCC

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SMCC 25	28 - 38	12.3	23	CC.. 0602..	TS25	T 08	**372612** 0025	75,50
SMCC 32	38 - 50	14.8	32	CC.. 0602..	TS25	T 08	372612 0032	79,–
SMCC 33	38 - 50	14.8	32	CC.. 09T3..	TS4	T 15	372612 0033	79,–
SMCC 40	50 - 68	18.7	40	CC.. 09T3..	TS4	T 15	372612 0040	82,50
SMCC 41	50 - 68	18.7	40	CC.. 1204..	TS5	T 25	372612 0041	82,50
SMCC 50	68 - 90	21.7	54	CC.. 1204..	TS5	T 25	372612 0050	84,80
SMCC 63	90 - 120	26.7	70.5	CC.. 1204..	TS5	T 25	372612 0063	148,–
SMCC 80	120 - 160	31.7	94.5	CC.. 1204..	TS5	T 25	372612 0080	165,–
SMCC 90	160 - 500	31.7	130	CC.. 1204..	TS5	T 25	372612 0090	213,–

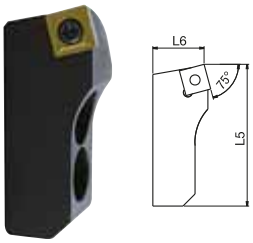
1138



SSSC

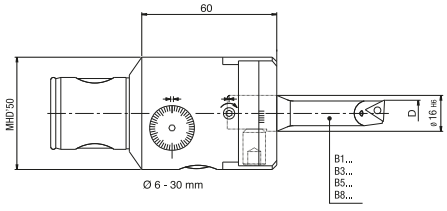
Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SSSC 32	38 - 50	15	32.5	SC.. 09T3..	TS4	T 15	**372614** 0032	79,–
SSSC 40	50 - 68	19	40	SC.. 09T3..	TS4	T 15	372614 0040	82,50
SSSC 50	68 - 90	22	54	SC.. 1204..	TS5	T 25	372614 0050	85,–
SSSC 63	90 - 120	27	70.5	SC.. 1204..	TS5	T 25	372614 0063	148,–
SSSC 80	120 - 160	32	94.5	SC.. 1204..	TS5	T 25	372614 0080	165,–
SSSC 90	160 - 500	32	130	SC.. 1204..	TS5	T 25	372614 0090	213,–

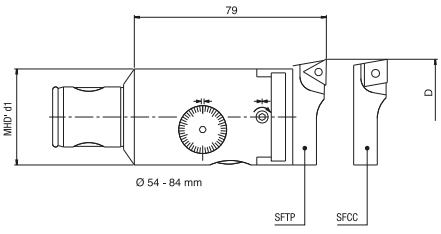
1138



D'ANDREA® MHD micrometric boring bar system

- 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 mm	L mm	Weight kg	SF..	art.no.	€
TRM 50/50	6-84	60	1.0	50	**372801** 5050	735,–

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Continued on next page >>>

High-precision boring head, digital, TRE50/50 Ø 6-110 mm

- 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**

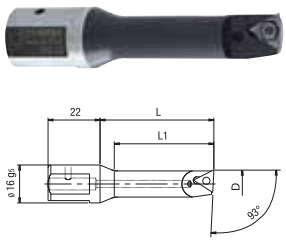


Type	D mm	L mm	Weight kg	SF..	art.no.	€
TRE 50/50	6-110	61	1.0	50	**372802** 0050	1.365,–

1138

Boring bar

- For TRM 50/50 and TRM 50HS high-precision boring heads

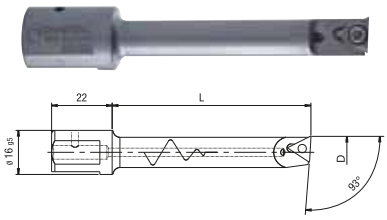


Type	D mm	L mm	L1 mm	for indexable inserts	Screw	Wrench size	art.no.	€
B3.06	6-8	29	21	WCGT 0201..	TS 21	T 06	**372807** 0006	79,–
B3.08	8-10	36	28	WCGT 0201..	TS 21	T 06	372807 0008	82,50
B3.10	10-12	43	35	TPGX 0902..	CS250T	T 08	372807 0010	88,50
B3.11	11-13	48	40	TPGX 0902..	CS250T	T 08	372807 0011	90,50
B3.12	12-14	48	42	TPGX 0902..	CS250T	T 08	372807 0012	94,50
B3.14	14-16	52	50	TPGX 0902..	CS250T	T 08	372807 0014	98,–
B3.16	16-18	58	50	TPGX 0902..	CS250T	T 08	372807 0016	101,–
B3.18	18-22	63	-	TPGX 0902..	CS250T	T 08	372807 0018	105,–
B3.22	22-30	68	-	TPGX 0902..	CS250T	T 08	372807 0022	109,–

1138

Low-vibration boring bar

- For TRM 50/50 and TRM 50HS high-precision boring heads

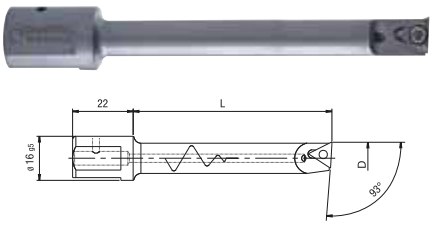


Type	D mm	L mm	for indexable inserts	Screw	Wrench size	art.no.	€
B5.06	6 - 8	36	WCGT 0201..	TS21	T 06	**372808** 0006	200,–
B5.08	8 - 10	45	WCGT 0201..	TS21	T 06	372808 0008	222,–
B5.10	10 - 12	60	TPGX 0902..	CS250T	T 08	372808 0010	245,–
B5.12	12 - 14	72	TPGX 0902..	CS250T	T 08	372808 0012	269,–
B5.14	14 - 16	84	TPGX 0902..	CS250T	T 08	372808 0014	295,–
B5.16	16 - 18	96	TPGX 0902..	CS250T	T 08	372808 0016	342,–

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Solid carbide boring bar (approx. 8xD)

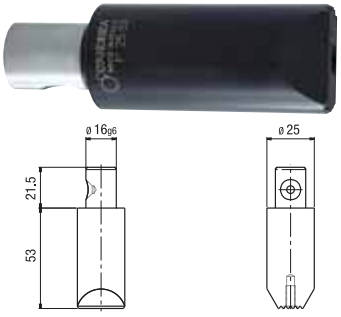
- For TRM 50/50 and TRM 50HS high-precision boring heads



Type	D mm	L mm	for indexable inserts	Screw	Wrench size	art.no.	€
B8.06	6 - 8	45	WCGT 0201..	TS21	T 06	**372809** 0006	357,–
B8.08	8 - 10	60	WCGT 0201..	TS21	T 06	372809 0008	368,–
B8.10	10 - 12	75	TPGX 0902..	CS250T	T 08	372809 0010	394,–
B8.12	12 - 14	90	TPGX 0902..	CS250T	T 08	372809 0012	431,–
B8.14	14 - 16	105	TPGX 0902..	CS250T	T 08	372809 0014	479,–
B8.16	16 - 18	120	TPGX 0902..	CS250T	T 08	372809 0016	527,–

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P 25.63 base holder



Type	suitable for	Weight kg	art.no.	€
P 25.63	SFTP 25 and SFTP 32	0.3	**372815** 2563	73,10

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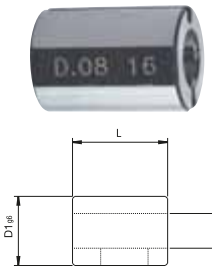
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Reducing bushes, straight

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	L mm	D H6 mm	D1 g6 mm	art.no.	€
D04.16	23	4	16	**370620** 0004	47,90
D08.16	22	8	16	370620 0008	48,60
D10.16	23	10	16	370620 0010	47,90
D12.16	23	12	16	370620 0012	48,60

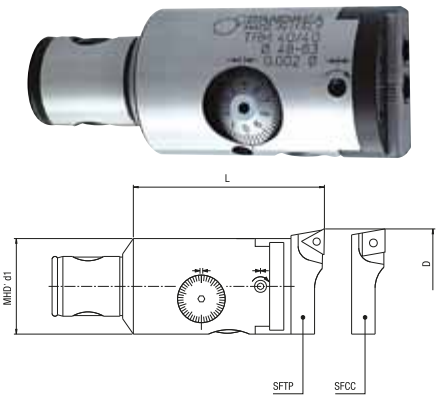
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TRM high-precision boring head, Ø 18 - 63

Type	D mm	MHD'd1	L mm	L7 mm	SF..	Weight kg	art.no.	€
TRM 16/16	18 - 23	16	34	1	16	0.05	**372810** 1616	511,–
TRM 20/20	22 - 29	20	40	2	20	0.1	372810 2020	543,–
TRM 25/25	28 - 38	25	50	2	25	0.2	372810 2525	575,–
TRM 32/32	35.5 - 50	32	63	3	32	0.35	372810 3232	609,–
TRM 40/40	48 - 63	40	80	4	40	0.7	372810 4040	639,–

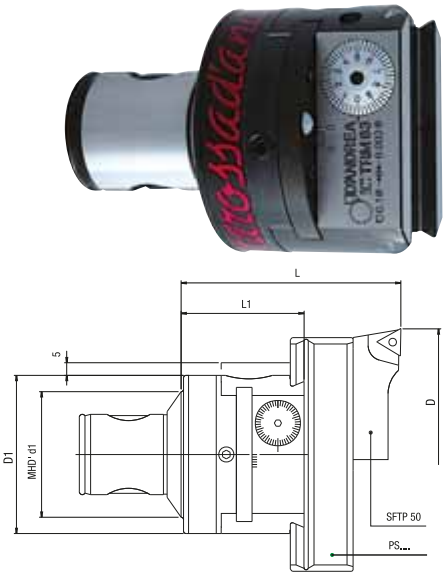
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TRM high-precision boring head, Ø 77 - 500

Type	D mm	MHD'd1	D1 mm	L mm	L1 mm	PS..	Weight kg	art.no.	€
TRM 50/63	77-100, 95-125	50	63	87.5	49	11.30 - 12.30	1.7 / 1.8	**372832** 5063	813,–
TRM 63/63	77-100, 95-125	63	63	87.5	49	11.30 - 12.30	2.0 / 2.1	372832 6363	813,–
TRM 50/80	95-140, 140-160	50	80	96.5	58	12.30, 13.30	2.6 / 2.8	372832 5080	873,–
TRM 80/80	95-140, 140-160	80	80	96.5	58	12.30, 13.30	3.1 / 3.3	372832 8080	873,–
TRM 80/125	135-210, 205-310, 305-410, 405-500	80	125	114	63	11.40, 12.40, 13.40 14.40	7.2 / 8.1 / 9.2 / 10.3	372832 8012	1.479,–

1138

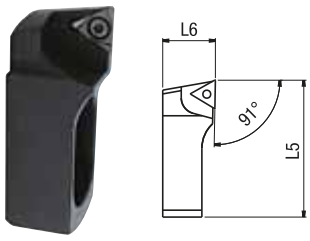


SFTP insert holder

- For TRM high-precision boring head

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SFTP 25	28 - 38	10	26.5	TPGX 0902..	CS250T	T 08	**372825** 0025	75,40
SFTP 32	35.5 - 50	11.5	34.5	TPGX 0902..	CS250T	T 08	372825 0032	79,–
SFTP 40	48 - 63	14	44	TPGX 1103..	CS300890T	T 08	372825 0040	82,60
SFTP 50	54 - 84	19	52	TPGX 1103..	CS300890T	T 08	372825 0050	84,80

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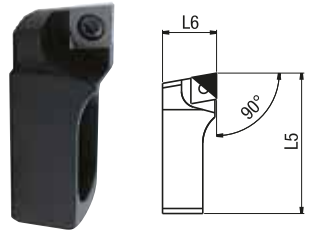


SFCC insert holder

- For TRM high-precision boring head

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SFCC 16	18 - 23	8	17	CC.. 0602..	TS25	T 08	**372827** 0016	69,50
SFCC 20	22 - 29	8.5	21	CC.. 0602..	TS25	T 08	372827 0020	73,10
SFCC 25	28 - 38	10	26.5	CC.. 0602..	TS25	T 08	372827 0025	75,40
SFCC 32	35.5 - 50	11.5	34.5	CC.. 0602..	TS4	T 15	372827 0032	79,–
SFCC 40	48 - 63	14	44	CC.. 09T3..	TS4	T 15	372827 0040	82,60
SFCC 50	54 - 84	19	52	CC.. 09T3..	TS4	T 15	372827 0050	84,80

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D'ANDREA® MHD base holder

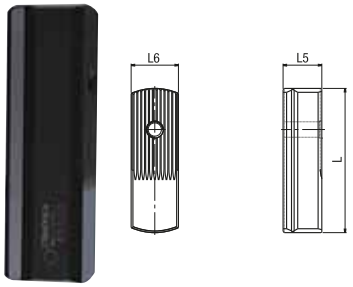
10-281

PS base holder

For TRM high-precision boring heads (insert holder SF.. 50)

Type	L5 mm	L mm	L6 mm	Weight kg	art.no.	€
PS 31.24	14.5	75	24	0.2	**372835** 3124	84,80
PS 11.30	25	75	30.5	0.4	372835 1130	103,–
PS 12.30	25	93	30.5	0.5	372835 1230	112,–
PS 13.30	25	135	30.5	0.7	372835 1330	161,–
PS 11.40	40	133	40	1.5	372835 1140	165,–
PS 12.40	40	200	40	2.4	372835 1240	189,–
PS 13.40	40	300	40	3.5	372835 1340	258,–
PS 14.40	40	400	40	4.6	372835 1440	377,–

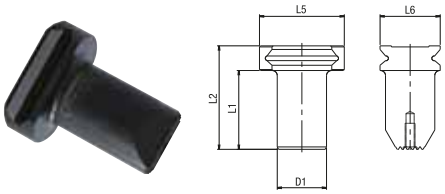
1138



P.. base holder

Type	for indexable inserts	D1 mm	L1 mm	L2 mm	L5 mm	L6 mm	Weight kg	art.no.	€
P 02.30	SFCC/SFTP 25-32	25	40	52.5	43	30.5	0.3	**372820** 0230	84,80
P 03.30	SFCC/SFTP 25-32	25	70	82.5	43	30.5	0.4	372820 0330	93,20
P 04.30	SFCC/SFTP 25-32	27	115	127.5	43	30.5	0.7	372820 0430	136,–
P 02.40	SFCC/SFTP 32-40	32	69	86	56	40	0.7	372820 0240	114,–
P 03.40	SFCC/SFTP 32-40	32	114	131	56	40	1.0	372820 0340	123,–
P 04.40	SFCC/SFTP 32-40	38	189	206	56	40	2.0	372820 0440	185,–

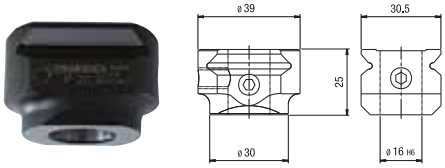
1138



P 20.30 base holder

Type	suitable for boring bars mm	Weight kg	art.no.	€
P 20.30	06, 08, 11, 16, 22 mm	0.2	**372837** 2030	81,30

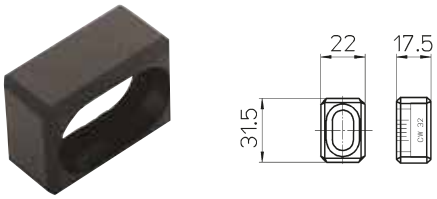
1138



CW 32 counterweight

Type	art.no.	€
CW 32	**372836** 0032	37,70

1138



D'ANDREA® Modular tool system, Ø 6-110 mm

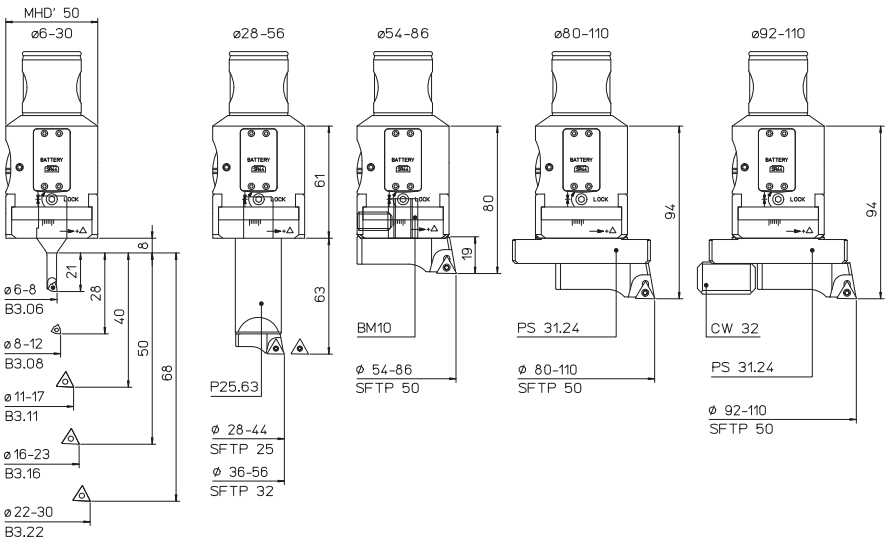
- **modular MHD interface**
- Multifunctional button for the functions "On", "Reset" and switching between "mm/inch"
- **Display resolution Ø 0.002 mm**
- Energy-saving function, automatic display switch-off and saving last value after 30 seconds
- Internal coolant supply
- **Protection class IP67**

Digital version



Ø 6-110 mm

Contents	art.no.	€
1 TRE 50/50: 1 each of B3.06 / B3.08 / B3.11 / B3.16 / B3.22, 1 P25.63, 1 each of SFTP25 / SFTP32 / SFTP50, 1 PS 31.24, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L, 1 CW32	**373002** 0001	2.070,–
	1138	



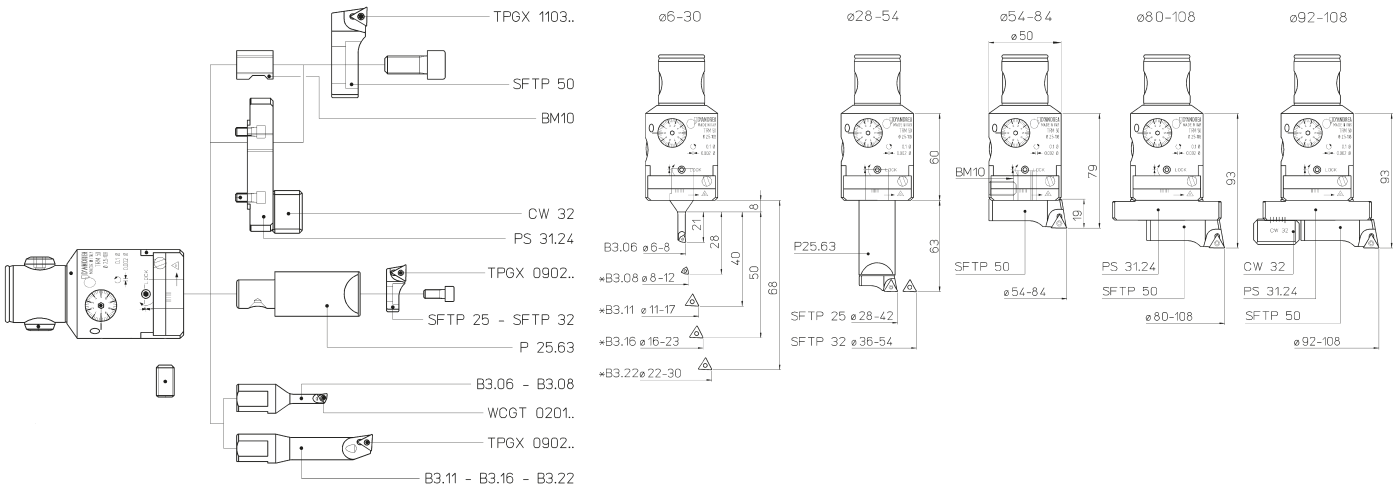
D'ANDREA® Modular tool system, Ø 6 - 108 mm

- **K01 and TRM 50/50 sets**



Ø 6 - 108 mm

Contents	art.no.	€
1 TRM 50/50: 1 each of B3.06 / B3.08 / B3.11 / B3.16 / B3.22, 1 P25.63, 1 each of SFTP25 / SFTP32 / SFTP50, 1 PS 31.24, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L, 1 CW32	**373001** 0001	1.410,–
	1138	



D'ANDREA® Modular tool system, Ø 6 - 125 mm

- **K01, TRM 50/63 and TRM 63/63 sets**

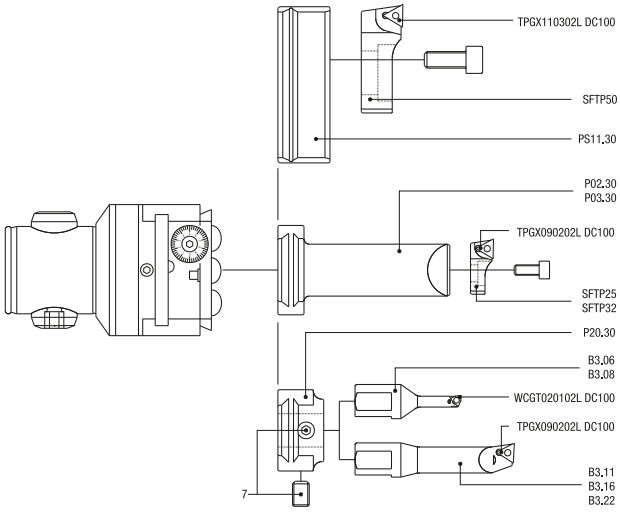


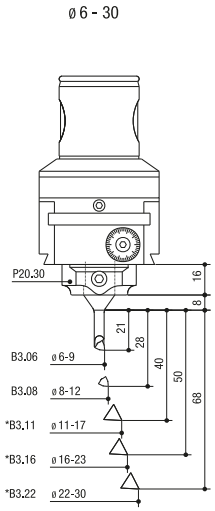
373001 0003

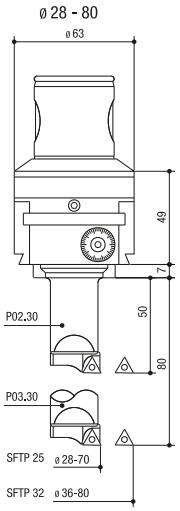
Ø 6 - 125 mm

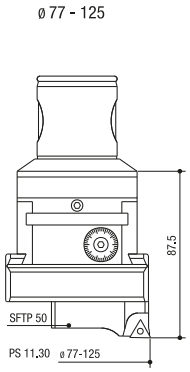
Contents	art.no.	€
1 TRM 50/63: 1 each of B3.06 / B3.08 / B3.11 / B3.16 / B3.22, 1 each of P20.30 / P02.30 / P03.30, 1 PS 11.30, 1 each of SFTP25 / SFTP32/ SFTP50, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	**373001** 0002	1.690,–
1 TRM 63/63: 1 each of B3.06 / B3.08 / B3.11 / B3.16 / B3.22, 1 each of P20.30 / P02.30 / P03.30, 1 PS 11.30, 1 each of SFTP25 / SFTP32/ SFTP50, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0003	1.690,–

1138









D'ANDREA® Modular tool system, Ø 6 - 220 mm

- **K01, TRM 50/80 and TRM 80/80 sets**

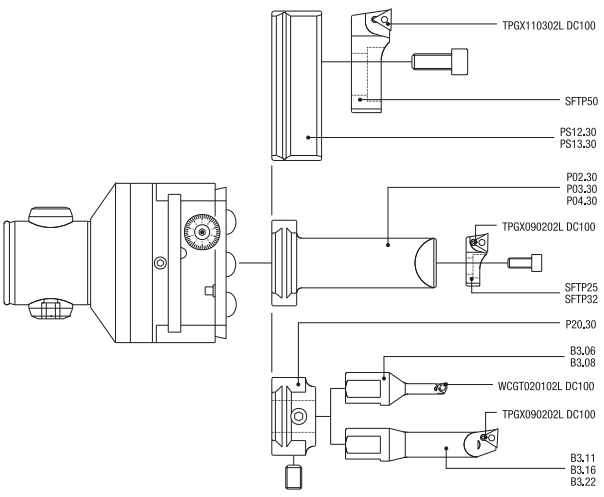


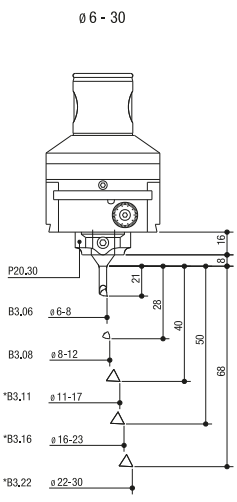
373001 0005

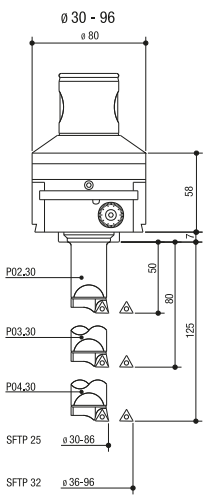
Ø 6 - 220 mm

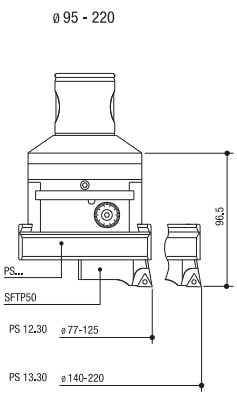
Contents	art.no.	€
1 TRM 50/80: 1 each of B3.06 / B3.08 / B3.11/ B3.16 / B3.22, 1 each of P20.30 / P02.30, 1 each of P03.30 / P04.30, 1 each of PS 12.30 / PS13.30, 1 each of SFTP25 / SFTP32 / SFTP50, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	**373001** 0004	2.000,–
1 TRM 80/80: 1 each of B3.06 / B3.08 / B3.11/ B3.16 / B3.22, 1 each of P20.30 / P02.30, 1 each of P03.30 / P04.30, 1 each of PS 12.30 / PS13.30, 1 each of SFTP25 / SFTP32 / SFTP50, 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0005	2.000,–

1138









D'ANDREA® ISO indexable cutting inserts

10-281

Indexable inserts for reaming and line boring

- **DP 300** uncoated,
  Roughing and finishing, steel with low carbon content, stainless steel
- **DK 100** uncoated,
  For 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,
  Finishing, steel with a hardness over 50 HRc and for an interrupted cut
- **D20 MDC** diamond,
  For finishing, aluminium alloys, non-ferrous metals
- **DP 100R** coated,
  Roughing, steel with low carbon content, stainless steel

WCGT

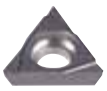
Cermet

ISO designation		ISO P K Cermet, DC 100 art.no.	€
WCGT 020102 L	10	**373503** 0569	13,95
WCGT 020104 L	10	373503 0669	13,95
		1138	



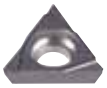
TPGX

ISO designation	ISO P M DP 300			ISO N K DK 100			ISO P K Cermet, DC 100		
		art.no.	€		art.no.	€		art.no.	€
TPGX 090202 L	10	**373507** 2004	10,30	10	**373507** 2010	10,30	10	**373507** 2069	11,85
TPGX 090204 L	10	373507 2104	10,30	10	373507 2110	10,30	10	373507 2169	12,–
TPGX 110302 L	10	373507 2304	11,20	10	373507 2310	11,20	10	373507 2369	13,60
TPGX 110304 L	10	373507 2404	11,30	10	373507 2410	11,20	10	373507 2469	12,15
		1138			1138			1138	



TPGX

ISO designation	ISO P M K Cermet, DC 100T			ISO P H D25 CBN			ISO N D20 MDC, diamond		
		art.no.	€		art.no.	€		art.no.	€
TPGX 090202 L	10	**373507** 2071	12,95	1	**373507** 2073	70,90	1	**373507** 2075	112,–
TPGX 090204 L	10	373507 2171	12,35	1	373507 2173	71,–	1	373507 2175	112,–
TPGX 110302 L	10	373507 2371	12,95	1	373507 2373	64,50	1	373507 2375	102,–
TPGX 110304 L	10	373507 2471	12,95	1	373507 2473	67,–	1	373507 2475	139,–
		1138			1138			1138	



CCMT

CVD coated

ISO designation		ISO P K DP 100 R art.no.	€
CCMT 09T304	10	**373509** 3629	7,20
CCMT 09T308	10	373509 3729	7,20
CCMT 120404	10	373509 4029	10,10
CCMT 120408	10	373509 4129	10,10
		1138	



Clamping screws

Dimensions	Wrench size	for indexable inserts		art.no.	€
M2 x 0.4	T06	WCGT 0201..	10	**373205** 0001	3,29
M2.5 x 0.45	T08	TPGX 0902..	1	373205 0002	3,39
M3 x 0.5	T08	TPGX 1103..	10	373205 0003	3,39
M4 x 0.7	T15	CCMT 09T3.. SCMT 09T3..	10	373205 0005	3,29
M5 x 0.8	T25	CCMT 1204.. SCMT 1204..	5	373205 0006	3,29
				1138	

ATORN® Spiralbohrer

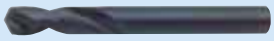


Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101050....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	28	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Automatenstahl	bis 700	9 SMn 28	1.0715	36	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	28	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	36	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	18	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Stahlguss	bis 950	GS 40	1.0416	28	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
K	Grauguss	bis 240 HB	GG 25	0.6025	36	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	28	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Sphäroguss	bis 300 HB	GGG 60	0.7060	23	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Temperguss	bis 300 HB	GTS 55	0.8155	23	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101055....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Automatenstahl	bis 700	9 SMn 28	1.0715	35	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	30	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	16	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	12	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	16	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	12	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
K	Grauguss	bis 240 HB	GG 25	0.6025	40	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	30	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Sphäroguss	bis 300 HB	GGG 60	0.7060	36	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Temperguss	bis 300 HB	GTS 55	0.8155	25	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
N	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	40	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	36	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Duroplaste	20 - 40	Bakelit		20	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	12	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	8	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	9	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,11	0,10 - 0,13
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	8	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,11	0,10 - 0,13
H	Hartguss	300 - 600 HB		Ampco	10	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101052....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Automatenstahl	bis 700	9 SMn 28	1.0715	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Stahlguss	bis 950	GS 40	1.0416	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
K	Grauguss	bis 240 HB	GG 25	0.6025	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	28	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	32	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	23	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Reinmetalle, weich	bis 500	Reineisen		36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	90	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	45	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	36	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	90	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Thermoplaste	40 - 70	PVc, Acrylglas		28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Duroplaste	20 - 40	Bakelit		18	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101051....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Automatenstahl	bis 700	9 SMn 28	1.0715	40	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	40	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	22	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	15	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	15	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	20	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	18	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
K	Grauguss	bis 240 HB	GG 25	0.6025	50	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	40	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	45	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	32	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	40	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	50	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	15	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	10	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	10	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	10	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
H	Hartguss	300 - 600 HB		Ampco	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	gehärteter Stahl	45 - 50 HRc			5	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,10 - 0,13

ATORN® Spiralbohrer *KSB-3*



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
Die angegebenen Richtwerte gelten für den Einsatz bis 3 x D.

101085....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 10,0	10,1 - 12,0	12,1 - 14,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	40-50	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	Automatenstahl	bis 700	9 SMn 28	1.0715	50-60	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	unleg. Vergütungsstähle	500 - 950	Ck45	1.1191	30-50	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	25-45	0,04 - 0,08	0,06 - 0,10	0,10 - 0,14	0,12 - 0,15	0,14 - 0,16
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	20-28	0,04 - 0,08	0,06 - 0,10	0,10 - 0,16	0,16 - 0,22	0,16 - 0,25
	Stahlguss	bis 950	GS 40	1.0416	30-50	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	10-12	0,03 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,13	0,12 - 0,15
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	15-18	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,14 - 0,16	0,15 - 0,18
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	12-15	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,14 - 0,16	0,15 - 0,18
K	Grauguss	bis 240 HB	GG 25	0.6025	50-60	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Sphäroguss	bis 300 HB	GGG 60	0.7060	40-60	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Temperguss	bis 300 HB	GTS 55	0.8155	40-60	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	80-90	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	80-90	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	60-65	0,08 - 0,10	0,10 - 0,15	0,15 - 0,20	0,18 - 0,20	0,20 - 0,23
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	60-65	0,08 - 0,10	0,10 - 0,15	0,15 - 0,20	0,18 - 0,20	0,20 - 0,23
	Duroplaste	20 - 40	Bakelit		25-30	0,08 - 0,10	0,10 - 0,15	0,15 - 0,20	0,18 - 0,20	0,20 - 0,23



...suggestions are heard.

ATORN®
High quality for great performance

Spiralbohrer EX-SUS-GDS/GDR



Schnittdaten für den Einsatz mit Kühlmittel und für Bohrtiefen bis 3xD (Korrekturfaktoren: Bohrtiefe 4 x D = 0,9; 5 x D = 0,8; 6 x D = 0,8
Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

114045....
114050....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 1,0	2,0	3,0	4,0	5,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	32 - 40	0,02 - 0,05	0,06 - 0,09	0,10 - 0,13	0,11 - 0,15	0,12 - 0,18
	Automatenstahl	bis 700	9 SMn 28	1.0715	32 - 40	0,02 - 0,05	0,06 - 0,09	0,10 - 0,13	0,11 - 0,15	0,12 - 0,18
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	13 - 18	0,02 - 0,04	0,05 - 0,07	0,06 - 0,09	0,08 - 0,12	0,10 - 0,15
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	15 - 20	0,02 - 0,04	0,05 - 0,07	0,06 - 0,09	0,08 - 0,12	0,12 - 0,15
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4122	15 - 20	0,02 - 0,04	0,05 - 0,07	0,06 - 0,09	0,08 - 0,12	0,12 - 0,15
N	Al.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	63 -100	0,02 - 0,06	0,04 - 0,12	0,06 - 0,18	0,08 - 0,24	0,10 - 0,30
	Al.-Legierungen, kurzspanend	bis 400	G-AlSi 12	3.2581	63 -100	0,02 - 0,06	0,04 - 0,12	0,06 - 0,18	0,08 - 0,24	0,10 - 0,30
	Kupfer-Legierungen, langspanend	300 - 700	MS 63	2.0320	25 - 50	0,01 - 0,03	0,04 - 0,06	0,06 - 0,09	0,08 - 0,11	0,10 - 0,13
	Kupfer-Legierungen, kurzspanend	bis 500	MS 58	2.0402	25 - 50	0,01 - 0,03	0,04 - 0,06	0,06 - 0,09	0,08 - 0,11	0,10 - 0,13

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 6,0	8,0	10,0	12,0	14,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	32 - 40	0,13 - 0,19	0,17 - 0,24	0,20 - 0,28	0,24 - 0,34	0,27 - 0,39
	Automatenstahl	bis 700	9 SMn 28	1.0715	32 - 40	0,13 - 0,19	0,17 - 0,24	0,20 - 0,28	0,24 - 0,34	0,27 - 0,39
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	13 - 18	0,12 - 0,18	0,16 - 0,24	0,20 - 0,28	0,24 - 0,34	0,28 - 0,39
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	15 - 20	0,15 - 0,18	0,20 - 0,24	0,25 - 0,30	0,30 - 0,36	0,35 - 0,45
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4122	15 - 20	0,15 - 0,18	0,20 - 0,24	0,25 - 0,30	0,30 - 0,36	0,35 - 0,45
N	Al.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	63 -100	0,12 - 0,36	0,16 - 0,45	0,20 - 0,55	0,24 - 0,66	0,27 - 0,74
	Al.-Legierungen, kurzspanend	bis 400	G-AlSi 12	3.2581	63 -100	0,12 - 0,36	0,16 - 0,45	0,20 - 0,55	0,24 - 0,66	0,27 - 0,74
	Kupfer-Legierungen, langspanend	300 - 700	MS 63	2.0320	25 - 50	0,12 - 0,15	0,16 - 0,20	0,20 - 0,25	0,24 - 0,30	0,26 - 0,34
	Kupfer-Legierungen, kurzspanend	bis 500	MS 58	2.0402	25 - 50	0,12 - 0,15	0,16 - 0,20	0,20 - 0,25	0,24 - 0,30	0,26 - 0,34

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 16,0	18,0	20,0		
P	unlegierter Baustahl	bis 700	St-52	1.0052	32 - 40	0,29 - 0,43	0,32 - 0,49	0,34 - 0,52		
	Automatenstahl	bis 700	9 SMn 28	1.0715	32 - 40	0,29 - 0,43	0,32 - 0,49	0,34 - 0,52		
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	13 - 18	0,30 - 0,43	0,32 - 0,48	0,34 - 0,50		
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	15 - 20	0,37 - 0,50	0,39 - 0,54	0,40 - 0,56		
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4122	15 - 20	0,37 - 0,50	0,39 - 0,54	0,40 - 0,56		
N	Al.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	63 -100	0,30 - 0,83	0,32 - 0,94	0,36 - 1,00		
	Al.-Legierungen, kurzspanend	bis 400	G-AlSi 12	3.2581	63 -100	0,30 - 0,83	0,32 - 0,94	0,36 - 1,00		
	Kupfer-Legierungen, langspanend	300 - 700	MS 63	2.0320	25 - 50	0,27 - 0,37	0,29 - 0,41	0,30 - 0,44		
	Kupfer-Legierungen, kurzspanend	bis 500	MS 58	2.0402	25 - 50	0,27 - 0,37	0,29 - 0,41	0,30 - 0,44		

Sprialbohrer NEXUS-GDS/GDR



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

114046....
114051....

ISO	Werkstoffgruppe	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
P	unlegierter Baustahl	40 - 60	0,02 - 0,05	0,06 - 0,09	0,10 - 0,13	0,11 - 0,15	0,12 - 0,18	0,13 - 0,19	0,17 - 0,24	0,20 - 0,28	0,24 - 0,34
M	INOX Stahl, austenitisch	15 - 30	0,02 - 0,04	0,05 - 0,07	0,06 - 0,09	0,08 - 0,12	0,10 - 0,15	0,12 - 0,18	0,16 - 0,24	0,20 - 0,28	0,24 - 0,34
	INOX Stahl, ferritisch	15 - 30	0,01 - 0,03	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,09 - 0,12	0,12 - 0,16	0,15 - 0,20	0,18 - 0,24
	INOX Stahl, martensitisch	15 - 30	0,02 - 0,04	0,05 - 0,07	0,06 - 0,09	0,08 - 0,12	0,12 - 0,15	0,15 - 0,18	0,20 - 0,24	0,25 - 0,30	0,30 - 0,36
	INOX Stahl, ausscheidungsgeh.	10 - 20	0,01 - 0,03	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,09 - 0,12	0,12 - 0,16	0,15 - 0,20	0,18 - 0,24
N	Aluminium -Leg. AC4C-ADC	32 - 63	0,02 - 0,06	0,04 - 0,12	0,06 - 0,18	0,08 - 0,24	0,10 - 0,30	0,12 - 0,36	0,16 - 0,45	0,20 - 0,55	0,24 - 0,66
	Aluminium A5052-7075	63 -100	0,02 - 0,06	0,04 - 0,12	0,06 - 0,18	0,08 - 0,24	0,10 - 0,30	0,12 - 0,36	0,16 - 0,45	0,20 - 0,55	0,24 - 0,66
	Kupferlegierung C1020-2600	40 - 60	0,01 - 0,03	0,04 - 0,06	0,06 - 0,09	0,08 - 0,11	0,10 - 0,13	0,12 - 0,15	0,16 - 0,20	0,20 - 0,25	0,24 - 0,30

ATORN® Spiralbohrer

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!



101080....



101001....
101002....
101005....
101035....
101060....
101405....



102101....
102102....
102103....



101505....
101501....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	25	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,30 - 0,40
	Automatenstahl	bis 700	9 SMn 28	1.0715	32	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,30 - 0,40
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	25	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	25	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	16	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25
K	Stahlguss	bis 950	GS 40	1.0416	25	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Grauguss	bis 240 HB	GG 25	0.6025	32	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	25	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	25	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101006....
101013....
101036....
101063....
101700....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Automatenstahl	bis 700	9 SMn 28	1.0715	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	16	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
M	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	14	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
K	Grauguss	bis 240 HB	GG 25	0.6025	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	28	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	30	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	22	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Reinmetalle, weich	bis 500	Reineisen		36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	45	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	28	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Duroplaste	20 - 40	Bakelit		18	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
H	Hartguss	300 - 600 HB		Ampco	8	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101008....
101010....
101038....
101040....
101410....
101605....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	18	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	14	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	10	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,12	0,12 - 0,16
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	6	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,12	0,12 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	7	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,10 - 0,12
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	6	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,10 - 0,12
H	Hartguss	300 - 600 HB		Ampco	8	0,05 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20

ATORN® Kleinst-Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101075....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 0,05 - 0,20	0,25 - 0,45	0,50 - 0,70	0,75 - 0,95	1,00 - 1,50
P	unlegierter Baustahl	bis 700	St-52	1.0052	21	0,005 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	Automatenstahl	bis 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 - 0,520
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	18	0,004 - 0,008	0,009 - 0,012	0,014 - 0,022	0,023 - 0,039	0,041 - 0,520
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	14	0,003 - 0,006	0,007 - 0,010	0,011 - 0,018	0,019 - 0,033	0,035 - 0,046
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	14	0,002 - 0,004	0,005 - 0,007	0,008 - 0,014	0,015 - 0,028	0,029 - 0,040
	Stahlguss	bis 950	GS 40	1.0416	18	0,004 - 0,008	0,009 - 0,012	0,014 - 0,022	0,023 - 0,039	0,041 - 0,520
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	6	0,002 - 0,004	0,005 - 0,007	0,008 - 0,014	0,015 - 0,028	0,029 - 0,040
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	6	0,003 - 0,006	0,007 - 0,010	0,011 - 0,018	0,019 - 0,033	0,035 - 0,046
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	6	0,002 - 0,004	0,005 - 0,007	0,008 - 0,014	0,015 - 0,028	0,029 - 0,040
K	Grauguss	bis 240 HB	GG 25	0.6025	26	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	22	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	Sphäroguss	bis 300 HB	GGG 60	0.7060	18	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	Temperguss	bis 300 HB	GTS 55	0.8155	22	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
N	Reinmetalle, weich	bis 500	Reineisen		42	0,004 - 0,008	0,009 - 0,012	0,014 - 0,022	0,023 - 0,039	0,041 - 0,520
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	18	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	22	0,004 - 0,008	0,009 - 0,012	0,014 - 0,022	0,023 - 0,039	0,041 - 0,520
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	22	0,003 - 0,006	0,007 - 0,010	0,011 - 0,018	0,019 - 0,033	0,035 - 0,046
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	75	0,007 - 0,010	0,011 - 0,016	0,019 - 0,028	0,029 - 0,045	0,050 - 0,060
	Thermoplaste	40 - 70	PVc, Acrylglas		18	0,003 - 0,006	0,007 - 0,010	0,011 - 0,018	0,019 - 0,033	0,035 - 0,046
	Duroplaste	20 - 40	Bakelit		16	0,003 - 0,006	0,007 - 0,010	0,011 - 0,018	0,019 - 0,033	0,035 - 0,046

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101011....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,10 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	25	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	Automatenstahl	bis 700	9 SMn 28	1.0715	32	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	25	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	Stahlguss	bis 950	GS 40	1.0416	25	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
K	Grauguss	bis 240 HB	GG 25	0.6025	32	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	28	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	20	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	80	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	80	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	63	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	80	0,10 - 0,12	0,12 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Duroplaste	20 - 40	Bakelit		25	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25

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Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101012....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Automatenstahl	bis 700	9 SMn 28	1.0715	47	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	42	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	26	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	17	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25
M	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	23	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	20	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	59	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	47	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	Sphäroguss	bis 300 HB	GGG 60	0.7060	52	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	Temperguss	bis 300 HB	GTS 55	0.8155	23	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
N	Reinmetalle, weich	bis 500	Reineisen		59	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	91	0,12 - 0,16	0,16 - 0,25	0,25 - 0,31	0,31 - 0,40	0,40 - 0,50
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	47	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	30	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31	0,31 - 0,40
	Duroplaste	20 - 40	Bakelit		28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,31
H	Hartguss	300 - 600 HB		Ampco	13	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,16 - 0,20	0,20 - 0,25

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Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101014....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Automatenstahl	bis 700	9 SMn 28	1.0715	36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	32	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	20	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	13	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
M	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	18	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	15	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
K	Grauguss	bis 240 HB	GG 25	0.6025	45	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	40	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	28	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Reinmetalle, weich	bis 500	Reineisen		45	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	70	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	28	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Duroplaste	20 - 40	Bakelit		22	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
H	Hartguss	300 - 600 HB		Ampco	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20

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Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101016....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
M	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
N	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	6	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	8	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	8	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
H	Hartguss	300 - 600 HB		Ampco	8	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	gehärteter Stahl	45 - 50 HRc			3	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,10 - 0,13

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101018....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	14	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	12	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
N	Reinmetalle, weich	bis 500	Reineisen		36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	90	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	45	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	22	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,10	0,10 - 0,13

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101017....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
N	Reinmetalle, weich	bis 500	Reineisen		32	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	l.-Leg. langspanend	bis 550	AlMg 3	3.3535	80	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Thermoplaste	40 - 70	PVc, Acrylglas		25	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32

ATORN® Spiralbohrer *KSB-5*



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
Die angegebenen Richtwerte gelten für den Einsatz bis 5 x D.

101095....

ISO	Werkstoffgruppe	Festigkeit/Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 10,0	10,1 - 12,0	12,1 - 14,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	35-45	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	Automatenstahl	bis 700	9 SMn 28	1.0715	45-55	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	unleg. Vergütungsstähle	500 - 950	Ck45	1.1191	25-45	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	23-40	0,04 - 0,08	0,06 - 0,10	0,10 - 0,14	0,12 - 0,15	0,14 - 0,16
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	18-25	0,04 - 0,08	0,06 - 0,10	0,10 - 0,16	0,16 - 0,22	0,16 - 0,25
	Stahlguss	bis 950	GS 40	1.0416	25-45	0,05 - 0,10	0,10 - 0,20	0,16 - 0,20	0,20 - 0,25	0,20 - 0,30
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	10-12	0,03 - 0,06	0,06 - 0,10	0,10 - 0,12	0,12 - 0,13	0,12 - 0,15
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	16-16	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,14 - 0,16	0,15 - 0,18
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	10-13	0,06 - 0,08	0,08 - 0,12	0,12 - 0,16	0,14 - 0,16	0,15 - 0,18
K	Grauguss	bis 240 HB	GG 25	0.6025	40-50	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Sphäroguss	bis 300 HB	GGG 60	0.7060	30-50	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Temperguss	bis 300 HB	GTS 55	0.8155	30-50	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	70-80	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	70-80	0,10 - 0,16	0,16 - 0,23	0,23 - 0,30	0,30 - 0,32	0,31 - 0,35

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Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101061....

ISO	Werkstoffgruppe	Festigkeit/Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Automatenstahl	bis 700	9 SMn 28	1.0715	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	14	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	8	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Stahlguss	bis 950	GS 40	1.0416	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
K	Grauguss	bis 240 HB	GG 25	0.6025	36	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	28	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	28	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	22	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Reinmetalle, weich	bis 500	Reineisen		36	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	28	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	22	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101062....

ISO	Werkstoffgruppe	Festigkeit/Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	8	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	12	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	10	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
N	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	8	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	5	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	5	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	5	0,03 - 0,04	0,04 - 0,63	0,63 - 0,08	0,08 - 0,10	0,10 - 0,13
H	Hartguss	300 - 600 HB		Ampco	6	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20



...then it's ATORN.

ATORN®
High quality for great performance

ATORN® Tieflochbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101070....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 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
	Automatenstahl	bis 700	9 SMn 28	1.0715	22	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	22	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	9	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	6	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
	Stahlguss	bis 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
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	8	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
K	Grauguss	bis 240 HB	GG 25	0.6025	22	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	18	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	Sphäroguss	bis 300 HB	GGG 60	0.7060	20	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	Temperguss	bis 300 HB	GTS 55	0.8155	14	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	45	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	22	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	28	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	55	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	Thermoplaste	40 - 70	PVc, Acrylglas		18	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25

Hochleistungs-Tieflochbohrer TDXL



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101099.... 101100.... 101101....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 1,6 - 2,0	3,0 - 4,0	5,0 - 6,0	8,0 - 10,0	12,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	20 - 24	0,016 - 0,05	0,03 - 0,10	0,05 - 0,15	0,08 - 0,25	0,12 - 0,30
	Automatenstahl	bis 700	9 SMn 28	1.0715	20 - 24	0,016 - 0,05	0,03 - 0,10	0,05 - 0,15	0,08 - 0,25	0,12 - 0,30
	Baustahl	500 - 950	Ck45	1.1191	18 - 22	0,016 - 0,04	0,03 - 0,10	0,05 - 0,15	0,08 - 0,25	0,12 - 0,30
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	16 - 20	0,01 - 0,04	0,02 - 0,10	0,03 - 0,13	0,06 - 0,20	0,12 - 0,30
	Werkzeugstahl	950 - 1400	X 38 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	Grauguss	bis 240 HB	GG 25	0.6025	18 - 24	0,03 - 0,05	0,06 - 0,13	0,10 - 0,19	0,16 - 0,32	0,24 - 0,38
	Legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	16 - 20	0,01 - 0,06	0,02 - 0,10	0,03 - 0,15	0,05 - 0,25	0,07 - 0,30

ATORN® Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101507....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	16	0,02 - 0,20	0,20 - 0,25	0,25 - 0,30	0,30 - 0,32	0,32 - 0,38
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	28	0,20 - 0,25	0,28 - 0,32	0,32 - 0,38	0,38 - 0,40	0,40 - 0,45
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	10	0,12 - 0,16	0,16 - 0,20	0,20 - 0,24	0,24 - 0,26	0,26 - 0,30
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	14	0,02 - 0,20	0,20 - 0,25	0,25 - 0,30	0,30 - 0,32	0,32 - 0,38
K	Grauguss	bis 240 HB	GG 25	0.6025	36	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	70	0,30 - 0,40	0,40 - 0,50	0,50 - 0,60	0,60 - 0,65	0,65 - 0,70
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,20 - 0,25	0,28 - 0,32	0,32 - 0,38	0,38 - 0,40	0,40 - 0,45
	Kupfer - Leg. langspanend	300 - 700	MS 63	2.0320	45	0,20 - 0,25	0,28 - 0,32	0,32 - 0,38	0,38 - 0,40	0,40 - 0,45
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	36	0,02 - 0,20	0,20 - 0,25	0,25 - 0,30	0,30 - 0,32	0,32 - 0,38
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	32	0,30 - 0,40	0,40 - 0,50	0,50 - 0,60	0,60 - 0,65	0,65 - 0,70
	Thermoplaste	40 - 70	PVc, Acrylglas		25	0,20 - 0,25	0,28 - 0,32	0,32 - 0,38	0,38 - 0,40	0,40 - 0,45
H	gehärteter Stahl	45 - 52 HRc			6	0,10 - 0,13	0,13 - 0,16	0,16 - 0,18	0,18 - 0,19	0,19 - 0,22

ATORN® Spiralbohrer (Bohrbuchsenbohrer)



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101601....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 8,0	8,1 - 16,0	16,1 - 25,0	25,1 - 40,0	40,1 - 50,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	22	0,10 - 0,16	0,16 - 0,30	0,30 - 0,40	0,40 - 0,50	0,50 - 0,63
	Automatenstahl	bis 700	9 SMn 28	1.0715	28	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	22	0,10 - 0,16	0,16 - 0,30	0,30 - 0,40	0,40 - 0,50	0,50 - 0,63
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	12	0,05 - 0,13	0,13 - 0,19	0,19 - 0,32	0,32 - 0,40	0,40 - 0,50
	Stahlguss	bis 950	GS 40	1.0416	22	0,10 - 0,16	0,16 - 0,30	0,30 - 0,40	0,40 - 0,50	0,50 - 0,63
K	Grauguss	bis 240 HB	GG 25	0.6025	28	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	22	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
	Sphäroguss	bis 300 HB	GGG 60	0.7060	22	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
	Temperguss	bis 300 HB	GTS 55	0.8155	18	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
N	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	55	0,10 - 0,25	0,25 - 0,40	0,40 - 0,63	0,63 - 0,80	0,80 - 1,00
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	34	0,10 - 0,16	0,16 - 0,30	0,30 - 0,40	0,40 - 0,50	0,50 - 0,63
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	28	0,05 - 0,13	0,13 - 0,19	0,19 - 0,32	0,32 - 0,40	0,40 - 0,50
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	70	0,12 - 0,20	0,20 - 0,28	0,28 - 0,50	0,50 - 0,63	0,63 - 0,80
	Thermoplaste	40 - 70	PVc, Acrylglas		22	0,10 - 0,16	0,16 - 0,30	0,30 - 0,40	0,40 - 0,50	0,50 - 0,63
	Duroplaste	20 - 40	Bakelit		14	0,05 - 0,13	0,13 - 0,19	0,19 - 0,32	0,32 - 0,40	0,40 - 0,50

ATORN® Aufbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

101510....
101515....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 14,0	14,1 - 20,0	20,1 - 40,0
P	Unlegierter Baustahl	bis 700	St-52	1.0052	26 - 30	0,07	0,10	0,12	0,18	0,22
	Automatenstahl	bis 700	9 SMn 28	1.0715	25 - 28	0,07	0,10	0,12	0,18	0,22
	Unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	25 - 28	0,07	0,10	0,12	0,18	0,22
	Legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	6 - 10	0,03	0,04	0,06	0,08	0,01
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	2 - 5	0,03	0,04	0,06	0,08	0,01
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	3 - 6	0,03	0,04	0,06	0,08	0,01
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	4 - 10	0,03	0,04	0,06	0,08	0,01
	INOX Stahl, martensitisch	500 - 950	X 39 CrMo17-1	1.4122	3 - 6	0,03	0,04	0,06	0,08	0,01
K	Grauguss	bis 240 HB	GG 25	0.6025	10 - 18	0,07	0,10	0,12	0,18	0,22
	Legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	9 - 13	0,05	0,08	0,10	0,15	0,18
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	25 - 40	0,07	0,10	0,12	0,18	0,22
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	10 - 30	0,07	0,10	0,12	0,18	0,22
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	10 - 30	0,07	0,10	0,12	0,18	0,22
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	10 - 30	0,07	0,10	0,12	0,18	0,22
	Thermoplaste	40 - 70	PVc, Acrylglas		20 - 30	0,07	0,10	0,12	0,18	0,22
	Duroplaste	20 - 40	Bakelit		15 - 25	0,05	0,08	0,10	0,15	0,18

ATORN® Stiftlochbohrer



Vc = 20-24 m/min.Vf = 0,05 mm/U

101025....

ATORN® VHM-Mikrobohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111550....

ISO	Werkstoff - gruppe	Festigkeit Härte N/mm²	Werkstoff - beispiele	Werkstoff - Nr.	Schnittge - schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 0,1 - 1,0	1,1 - 1,5	1,6 - 2,0	2,1 - 3,0
P	Unlegierter Baustahl	bis 700	St - 52	1.0052	50 - 75	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Automatenstahl	bis 700	9 SMn 28	1.0715	50 - 75	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Baustahl	500 - 950	Ck45	1.1191	50 - 75	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	45 - 60	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	20 - 25	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Stahlguss	bis 950	GS 40	1.0416	50 - 70	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	20 - 35	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	20 - 35	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	20 - 35	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
K	Grauguss	100 - 400	GG 25	0.6025	60 - 100	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Legierter Grauguss	150 - 250	GGL - NiCr 35 2	0.6678	60 - 80	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Sphäroguss	400 - 800	GGG 60	0.7060	60 - 80	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Temperguss	350 - 700	GTS 55	0.8155	60 - 80	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
N	Reinmetalle, weich	bis 500	Reineisen		150 - 220	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	150 - 220	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Al.-Leg. kurzspanend	bis 400	G - AlSi 12	3.2581	100 - 160	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	80 - 130	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	80 - 130	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Magnesium-Legierungen	160 - 300	G - MgAl9Zn 1	3.5912	150 - 220	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Thermoplaste	40 - 70	PVC, Acrylglas		20 - 60	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Duroplaste	20 - 40	Bakelit		20 - 55	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Graphit				60 - 95	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	10 - 30	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	10 - 30	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	10 - 20	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	10 - 30	0,035 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,075



...new things are created.

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ATORN® VHM-Spiralbohrer

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!



111005....



111010....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 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
	Automatenstahl	bis 700	9 SMn 28	1.0715	80	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 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
	legierter Einsatzstahl	bis 950	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
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	50	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Stahlguss	bis 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
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	25	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	25	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	25	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
K	Grauguss	bis 240 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
	legierter Grauguss	bis 350 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
	Sphäroguss	bis 300 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
	Temperguss	bis 300 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.-Leg. langspanend	bis 550	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.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	150	0,10 - 0,13	0,13 - 0,22	0,22 - 0,25	0,25 - 0,32	0,32 - 0,44
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	70	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	120	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	180	0,08 - 0,11	0,10 - 0,16	0,16 - 0,22	0,22 - 0,25	0,25 - 0,32
	Thermoplaste	40 - 70	PVc, Acrylglas		40	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Duroplaste	20 - 40	Bakelit		50	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,22	0,22 - 0,25
	Graphit				80	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	20	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	15	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	15	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16
H	Hartguss	300 - 600 HB		Ampco	10	0,03 - 0,04	0,04 - 0,06	0,06 - 0,08	0,08 - 0,11	0,10 - 0,13
	gehärteter Stahl	45 - 52 HRc			20	0,05 - 0,06	0,06 - 0,11	0,10 - 0,13	0,13 - 0,16	0,16 - 0,22
	gehärteter Stahl	53 - 63 HRc			10	0,04 - 0,05	0,05 - 0,08	0,08 - 0,11	0,10 - 0,13	0,13 - 0,16

ATORN® VHM-Spiralbohrer

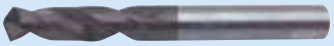


111008....

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	92	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Automatenstahl	bis 700	9 SMn 28	1.0715	79	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	79	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	58	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Stahlguss	bis 950	GS 40	1.0416	79	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	27	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	27	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	27	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
K	Grauguss	bis 240 HB	GG 25	0.6025	98	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	92	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Sphäroguss	bis 300 HB	GGG 60	0.7060	92	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Temperguss	bis 300 HB	GTS 55	0.8155	83	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
N	Reinmetalle, weich	bis 500	Reineisen		92	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	240	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	136	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	205	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	136	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	205	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Thermoplaste	40 - 70	PVc, Acrylglas		45	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Duroplaste	20 - 40	Bakelit		56	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Graphit				92	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	23	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
H	gehärteter Stahl	45 - 50 HRc			23	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20

ATORN® VHM-Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111009....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	104	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Automatenstahl	bis 700	9 SMn 28	1.0715	91	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	91	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	78	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Stahlguss	bis 950	GS 40	1.0416	91	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	32	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	32	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	32	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	117	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	104	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Sphäroguss	bis 300 HB	GGG 60	0.7060	91	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Temperguss	bis 300 HB	GTS 55	0.8155	104	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
N	Reinmetalle, weich	bis 500	Reineisen		104	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	260	0,02 - 0,20	0,20 - 0,32	0,32 - 0,40	0,40 - 0,50	0,50 - 0,63
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	156	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	234	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	156	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	234	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Thermoplaste	40 - 70	PVc, Acrylglas		52	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Duroplaste	20 - 40	Bakelit		65	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Graphit				104	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	26	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
H	gehärteter Stahl	45 - 50 HRc			26	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,22

SARA® VHM-Hochleistungsbohrer



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111503....
111507....
111512....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm								
						mit IK	3,00	4,00	5,00	6,00	8,00	10,00	12,50	16,00	20,00
P	unlegierter Baustahl	bis 700	St-52	1.0052	90	95	0,09	0,13	0,16	0,20	0,25	0,25	0,32	0,40	0,50
	Automatenstahl	bis 700	9 SMn 28	1.0715	115	135	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	90	95	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	70	68	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	45	50	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Stahlguss	bis 950	GS 40	1.0416	60	68	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	36	45	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	45	52	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	36	36	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
K	Grauguss	100 - 400	GG 25	0.6025	125	125	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	36	40	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Sphäroguss	400 - 800	GGG 60	0.7060	95	95	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Temperguss	350 - 700	GTS 55	0.8155	95	95	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
N	Reinmetalle, weich	bis 500	Reineisen		25	25	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	210	250	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	145	180	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	145	180	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	215	250	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	210	225	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	32	36	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	28	32	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	25	32	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	20	28	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
H	Hartguss	300 - 600		Ampco	25	25	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl	45 - 50 HRc			32	45	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl	50 - 60 HRc			20	28	0,04	0,05	0,05	0,06	0,08	0,10	0,10	0,13	0,16

ATORN® VHM-Hochleistungsbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111502....
111504....
111508....

VHM-Hochleistungsbohrer

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm								
						3,00	4,00	5,00	6,00	8,00	10,00	12,50	16,00	20,00
P	unlegierter Baustahl	bis 700	St-52	1.0052	110	0,09	0,13	0,16	0,20	0,25	0,25	0,32	0,40	0,50
	Automatenstahl	bis 700	9 SMn 28	1.0715	145	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	unlegierte Vergütungsstähle	500 - 950	Ck45	1.1191	110	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	legierte Einsatzstähle	bis 950	16 MnCr 5	1.7131	85	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	55	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Stahlguss	bis 950	GS 40	1.0416	75	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	45	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, geschwefelt	500 - 950	X 14 CrMoS 17	1.4104	55	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, martensitisch	500 - 950	X 39 CrMo 17-1	1.4122	45	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
K	Grauguss	bis 240 HB	GG 25	0.6025	155	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	45	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Sphäroguss	bis 300 HB	GGG 60	0.7060	120	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Temperguss	bis 300 HB	GTS 55	0.8155	120	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
N	Reinmetalle, weich	bis 500	Reineisen		30	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	Al.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	260	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Al.-Legierungen, kurzspanend	bis 400	G-AlSi 12	3.2581	180	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Kupfer-Legierungen, langspanend	300 - 700	CuZn 37 (MS 63)	2.0321	180	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	Kupfer-Legierungen, kurzspanend	bis 500	CuZn40Pb2 (MS 58)	2.0402	270	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	260	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	40	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	35	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	30	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	25	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
H	Hartguss	300 - 600 HB			30	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl		45 - 50 HRc		40	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl		50 - 60 HRc		25	0,04	0,05	0,05	0,06	0,08	0,10	0,10	0,13	0,16

111505....
111506....
111510....
111511....
111522....

VHM-Hochleistungsbohrer mit Innenkühlung

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm								
						3,00	4,00	5,00	6,00	8,00	10,00	12,50	16,00	20,00
P	unlegierter Baustahl	bis 700	St-52	1.0052	120	0,09	0,13	0,16	0,20	0,25	0,25	0,32	0,40	0,50
	Automatenstahl	bis 700	9 SMn 28	1.0715	170	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	unlegierte Vergütungsstähle	500 - 950	Ck45	1.1191	120	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	legierte Einsatzstähle	bis 950	16 MnCr 5	1.7131	85	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	65	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Stahlguss	bis 950	GS 40	1.0416	85	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	55	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, geschwefelt	500 - 950	X 14 CrMoS 17	1.4104	60	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	INOX Stahl, martensitisch	500 - 950	X 39 CrMo 17-1	1.4122	45	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
K	Grauguss	bis 240 HB	GG 25	0.6025	160	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	50	0,07	0,10	0,10	0,13	0,16	0,20	0,20	0,25	0,32
	Sphäroguss	bis 300 HB	GGG 60	0.7060	120	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Temperguss	bis 300 HB	GTS 55	0.8155	120	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
N	Reinmetalle, weich	bis 500	Reineisen		30	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	Al.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	310	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Al.-Legierungen, kurzspanend	bis 400	G-AlSi 12	3.2581	220	0,16	0,20	0,25	0,32	0,32	0,40	0,50	0,63	0,63
	Kupfer-Legierungen, langspanend	300 - 700	CuZn 37 (MS 63)	2.0321	220	0,11	0,16	0,16	0,20	0,25	0,32	0,32	0,40	0,50
	Kupfer-Legierungen, kurzspanend	bis 500	CuZn40Pb2 (MS 58)	2.0402	325	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	280	0,14	0,20	0,20	0,25	0,32	0,40	0,40	0,50	0,63
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	45	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	40	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	40	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	0,06	0,08	0,08	0,10	0,13	0,16	0,16	0,20	0,25
H	Hartguss	300 - 600 HB			30	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl		45 - 50 HRc		55	0,05	0,06	0,06	0,08	0,10	0,13	0,13	0,16	0,20
	gehärteter Stahl		50 - 60 HRc		35	0,04	0,05	0,05	0,06	0,08	0,10	0,10	0,13	0,16



...dreams come true.

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ATORN® VHM-Hochleistungsbohrer Ultra-M



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111545....
111546....
111547....
111548....
111549....
111551....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0	4,0	5,0	6,0	8,0
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	60	0,050	0,063	0,063	0,080	0,100
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	80	0,080	0,100	0,100	0,125	0,160
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	80	0,080	0,100	0,100	0,125	0,160
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	35	0,040	0,050	0,050	0,063	0,080
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	30	0,040	0,050	0,050	0,063	0,080
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	30	0,040	0,050	0,050	0,063	0,080

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 10,0	12,0	16,0	18,0	20,0
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	90	0,125	0,125	0,125	0,140	0,160
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	80	0,200	0,200	0,250	0,280	0,315
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	80	0,200	0,200	0,250	0,280	0,315
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	35	0,100	0,100	0,125	0,140	0,160
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	30	0,100	0,100	0,125	0,140	0,160
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	30	0,100	0,100	0,125	0,140	0,160

SARA® VHM-Hochleistungsbohrer ALU



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111410....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	-	-	-	-	-	-
	Automatenstahl	bis 700	9 SMn 28	1.0715	-	-	-	-	-	-
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	-	-	-	-	-	-
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	-	-	-	-	-	-
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	-	-	-	-	-	-
	Stahlguss	bis 950	GS 40	1.0416	-	-	-	-	-	-
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	60	0,080	0,108	0,144	0,165	0,230
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	-	-	-	-	-	-
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	-	-	-	-	-	-
K	Grauguss	100 - 400	GG 25	0.6025	-	-	-	-	-	-
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	-	-	-	-	-	-
	Sphäroguss	400 - 800	GGG 60	0.7060	-	-	-	-	-	-
	Temperguss	350 - 700	GTS 55	0.8155	-	-	-	-	-	-
N	Reinmetalle, weich	bis 500	Reineisen		240	0,140	0,182	0,264	0,357	0,450
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	260	0,140	0,182	0,264	0,357	0,450
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	240	0,140	0,182	0,264	0,357	0,450
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	150	0,140	0,182	0,264	0,357	0,450
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	150	0,140	0,182	0,264	0,357	0,450
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	260	0,140	0,182	0,264	0,357	0,450
	Thermoplast	40 - 70	PVC, Acrylglas		200	0,140	0,182	0,264	0,357	0,450
	Duroplast	20 - 40	Bakelit		200	0,140	0,182	0,264	0,357	0,450
	Faserverstärkte Kunststoffe	bis 1500	CFK, GFK		-	-	-	-	-	-
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	35	0,060	0,088	0,116	0,132	0,160
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	50	0,060	0,088	0,116	0,132	0,160
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	35	0,060	0,088	0,116	0,132	0,160
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	0,060	0,088	0,116	0,132	0,160
H	Hartguss	300 - 600		Ampco	-	-	-	-	-	-
	gehärteter Stahl	45 - 50 HRc			-	-	-	-	-	-
	gehärteter Stahl	50 - 60 HRc			-	-	-	-	-	-
	gehärteter Stahl	60 - 70 HRc			-	-	-	-	-	-



...suggestions are heard.

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Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111011....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	90	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Automatenstahl	bis 700	9 SMn 28	1.0715	80	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	80	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	70	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Stahlguss	bis 950	GS 40	1.0416	80	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	27	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	27	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	27	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
K	Grauguss	bis 240 HB	GG 25	0.6025	102	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	90	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Sphäroguss	bis 300 HB	GGG 60	0.7060	80	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Temperguss	bis 300 HB	GTS 55	0.8155	70	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
N	Reinmetalle, weich	bis 500	Reineisen		90	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	230	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	135	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	205	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	135	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	200	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Thermoplaste	40 - 70	PVc, Acrylglas		55	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Duroplaste	20 - 40	Bakelit		45	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	22	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	17	0,04 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,13	0,13 - 0,16
H	gehärteter Stahl	45 - 50 HRc			22	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20

ATORN® VHM-Spiralbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111012....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	100	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Automatenstahl	bis 700	9 SMn 28	1.0715	90	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	90	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	80	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Stahlguss	bis 950	GS 40	1.0416	90	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	30	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	30	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	30	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	115	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	100	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Sphäroguss	bis 300 HB	GGG 60	0.7060	90	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Temperguss	bis 300 HB	GTS 55	0.8155	80	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
N	Reinmetalle, weich	bis 500	Reineisen		100	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	260	0,02 - 0,20	0,20 - 0,32	0,32 - 0,40	0,40 - 0,50	0,50 - 0,63
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	155	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	235	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	155	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	235	0,02 - 0,20	0,20 - 0,32	0,32 - 0,40	0,40 - 0,50	0,50 - 0,63
	Thermoplaste	40 - 70	PVc, Acrylglas		65	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Duroplaste	20 - 40	Bakelit		50	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	25	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	20	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20
H	gehärteter Stahl	45 - 50 HRc			25	0,05 - 0,06	0,06 - 0,10	0,10 - 0,13	0,13 - 0,16	0,16 - 0,20

ATORN® VHM-Hochleistungsbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111513....
111519....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	145	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Automatenstahl	bis 700	9 SMn 28	1.0715	145	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	125	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	120	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	65	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	Stahlguss	bis 950	GS 40	1.0416	120	0,08-0,10	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	55	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	60	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	45	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	210	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	180	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Sphäroguss	bis 300 HB	GGG 60	0.7060	160	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Temperguss	bis 300 HB	GTS 55	0.8155	130	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50
N	Reinmetalle, weich	bis 500	Reineisen		125	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	310	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	220	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	220	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	125	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	280	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50
	Titan-Legierungen	bis 950	TiAl6V4	3.7165	40	0,05-0,06	0,06-0,10	0,10-0,13	0,13-0,16	0,16-0,20
S	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	40	0,04-0,05	0,05-0,08	0,08-0,10	0,10-0,13	0,13-0,16
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	35	0,05-0,06	0,06-0,10	0,10-0,13	0,13-0,16	0,16-0,20
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	0,05-0,06	0,06-0,10	0,10-0,13	0,13-0,16	0,16-0,20
H	Hartguss	300 - 600 HB		Ampco	40	0,04-0,05	0,05-0,08	0,08-0,10	0,10-0,13	0,13-0,16
	gehärteter Stahl	45 - 50 HRc			55	0,04-0,05	0,05-0,08	0,08-0,10	0,10-0,13	0,13-0,16
	gehärteter Stahl	50 - 60 HRc			35	0,03-0,04	0,04-0,63	0,63-0,08	0,08-0,10	0,10-0,13

VHM-Tieflochbohrer ADO



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Pilotbohrung Spitzenwinkel 140°, 1-3 x D tief**
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

111715....
111716....
111717....
111718....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Ø3 Drehzahl min⁻¹	Ø3 Vorschub mm/U	Ø4 Drehzahl min⁻¹	Ø4 Vorschub mm/U	Ø5 Drehzahl min⁻¹	Ø5 Vorschub mm/U	Ø6 Drehzahl min⁻¹	Ø6 Vorschub mm/U	Ø8 Drehzahl min⁻¹	Ø8 Vorschub mm/U	Ø10 Drehzahl min⁻¹	Ø10 Vorschub mm/U	Ø12 Drehzahl min⁻¹	Ø12 Vorschub mm/U
P	unlegierter Vergütungsstahl	500 - 950	Ck45	7.500	0,06-0,12	6.400	0,08-0,16	5.800	0,10-0,20	4.800	0,12-024	3.600	0,16-028	2.900	0,20-0,35	2.400	0,24-0,42
	legierter Einsatzstahl	bis 950	16 MnCr 5														
M	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	5.300	0,06-0,12	5.000	0,08-0,16	4.500	0,10-0,20	3.800	0,12-0,24	2.800	0,16-0,28	2.300	0,20-0,35	1.900	0,24-0,42
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1														
K	Grauguss	bis 240 HB	GG 25	7.500	0,06-0,12	6.400	0,08-0,16	5.800	0,10-0,20	4.800	0,12-0,24	3.600	0,16-0,28	2.900	0,20-0,35	2.400	0,24-0,42
	Kugelgraphitguss	bis 300 HB	GGG 60	7.500	0,06-0,12	5.600	0,08-0,16	4.500	0,10-0,20	3.800	0,12-0,24	2.800	0,16-0,28	2.300	0,20-0,35	1.900	0,24-0,42

Safety in the workplace

Please protect your eyes, ears and respiratory system!



ATORN® VHM-Hochleistungs-Tieflochbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen! **111514....**

Pilotbohrung Spitzenwinkel 140°, 1-3 x D tief

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	90	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Automatenstahl	bis 700	9 SMn 28	1.0715	90	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	80	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	80	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	40	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	Stahlguss	bis 950	GS 40	1.0416	80	0,08-0,10	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	40	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	40	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	40	0,06-0,08	0,08-0,13	0,13-0,16	0,16-0,20	0,20-0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	120	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	120	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Sphäroguss	bis 300 HB	GGG 60	0.7060	90	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Temperguss	bis 300 HB	GTS 55	0.8155	80	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50
N	Reinmetalle, weich	bis 500	Reineisen		80	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	150	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	120	0,02-0,20	0,20-0,32	0,32-0,40	0,40-0,50	0,50-0,63
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	120	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	40	0,10-0,16	0,16-0,20	0,20-0,25	0,25-0,32	0,32-0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	150	0,13-0,16	0,16-0,25	0,25-0,32	0,32-0,40	0,40-0,50

ATORN® VHM-Flachbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen! **111710....**

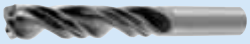
ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	115	-	0,200	0,227	0,300	0,350
	Automatenstahl	bis 700	9 SMn 28	1.0715	100	-	0,200	0,227	0,300	0,350
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	70	-	0,180	0,207	0,270	0,340
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	70	-	0,180	0,207	0,270	0,340
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	70	-	0,180	0,207	0,270	0,340
	Stahlguss	bis 950	GS 40	1.0416	80	-	0,200	0,227	0,300	0,340
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	40	-	0,100	0,113	0,150	0,180
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	25	-	0,080	0,100	0,140	0,160
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	25	-	0,080	0,100	0,140	0,160
K	Grauguss	100 - 400	GG 25	0.6025	90	-	0,200	0,227	0,300	0,340
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	80	-	0,200	0,227	0,300	0,340
	Sphäroguss	400 - 800	GGG 60	0.7060	80	-	0,200	0,227	0,300	0,340
	Temperguss	350 - 700	GTS 55	0.8155	80	-	0,200	0,227	0,300	0,340
N	Reinmetalle, weich	bis 500	Reineisen		180	-	0,200	0,200	0,260	0,320
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	220	-	0,200	0,200	0,260	0,320
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	180	-	0,200	0,200	0,260	0,320
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	120	-	0,200	0,187	0,240	0,280
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	120	-	0,200	0,187	0,240	0,280
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	220	-	0,200	0,200	0,260	0,320
	Thermoplast	40 - 70	PVC, Acrylglas		100	-	0,100	0,127	0,140	0,200
	Duroplast	20 - 40	Bakelit		-	-	0,100	0,127	0,140	0,200
	Faserverstärkte Kunststoffe	bis 1500	CFK, GFK		-	-	-	-	-	-
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	35	-	0,080	0,093	0,130	0,150
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	-	-	-	-	-	-
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	35	-	0,080	0,093	0,130	0,150
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	-	0,080	0,093	0,130	0,150
H	Hartguss	300 - 600		Ampco	-	-	-	-	-	-
	gehärteter Stahl	45 - 50 HRc			25	-	0,070	0,083	0,110	0,130
	gehärteter Stahl	50 - 60 HRc			-	-	-	-	-	-
	gehärteter Stahl	60 - 70 HRc			-	-	-	-	-	-



...dreams come true.

ATORN®
High quality for great performance

ATORN® VHM-Bohrreibahle



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111701....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	70	-	0,188	0,240	0,375	0,400
	Automatenstahl	bis 700	9 SMn 28	1.0715	65	-	0,188	0,240	0,375	0,400
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	55	-	0,188	0,240	0,375	0,400
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	55	-	0,188	0,240	0,375	0,400
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	55	-	0,188	0,240	0,375	0,400
	Stahlguss	bis 950	GS 40	1.0416	50	-	0,188	0,240	0,375	0,400
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	-	-	-	-	-	-
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	-	-	-	-	-	-
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	-	-	-	-	-	-
K	Grauguss	100 - 400	GG 25	0.6025	60	-	0,188	0,240	0,375	0,400
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	50	-	0,188	0,240	0,375	0,400
	Sphäroguss	400 - 800	GGG 60	0.7060	50	-	0,188	0,240	0,375	0,400
	Temperguss	350 - 700	GTS 55	0.8155	50	-	0,188	0,240	0,375	0,400
N	Reinmetalle, weich	bis 500	Reineisen		-	-	-	-	-	-
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	-	-	-	-	-	-
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	-	-	-	-	-	-
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	-	-	-	-	-	-
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	-	-	-	-	-	-
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	-	-	-	-	-	-
	Thermoplast	40 - 70	PVC, Acrylglas		-	-	-	-	-	-
	Duroplast	20 - 40	Bakelit		-	-	-	-	-	-
	Faserverstärkte Kunststoffe	bis 1500	CFK, GFK		-	-	-	-	-	-
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	-	-	-	-	-	-
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	-	-	-	-	-	-
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	-	-	-	-	-	-
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	-	-	-	-	-	-
H	Hartguss	300 - 600		Ampco	-	-	-	-	-	-
	gehärteter Stahl	45 - 50 HRc			-	-	-	-	-	-
	gehärteter Stahl	50 - 60 HRc			-	-	-	-	-	-
	gehärteter Stahl	60 - 70 HRc			-	-	-	-	-	-

ATORN® VHM-Bohrsenker



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111013....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
K	Grauguss	bis 240 HB	GG 25	0.6025	85	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	80	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Sphäroguss	bis 300 HB	GGG 60	0.7060	80	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Temperguss	bis 300 HB	GTS 55	0.8155	70	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	160	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	120	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	180	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40

ATORN® VHM-Bohrsenker



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

111014....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	100	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	Stahlguss	bis 950	GS 40	1.0416	95	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	85	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	80	0,08 - 0,10	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	40	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
K	Grauguss	bis 240 HB	GG 25	0.6025	100	0,06 - 0,08	0,08 - 0,13	0,13 - 0,16	0,16 - 0,20	0,20 - 0,25
N	Reinmetalle, weich	bis 500	Reineisen		100	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	80	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	80	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	70	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	160	0,13 - 0,16	0,16 - 0,25	0,25 - 0,32	0,32 - 0,40	0,40 - 0,50
	Thermoplaste	40 - 70	PVc, Acrylglas		120	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	180	0,10 - 0,16	0,16 - 0,20	0,20 - 0,25	0,25 - 0,32	0,32 - 0,40

VHM-Hochleistungsbohrer ADO-SUS-3D/5D



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

111613.... 111615....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm							
						3	4	5	6	7	8	9	10
P	Automatenstahl	bis 700	9 SMn 28	1.0715	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
	unlegierter Baustahl	bis 700	St-52	1.0052	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
	Vergütungsstahl	500 - 950	42 CrMo4	1.1191	80 - 120	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	60 - 90	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	60 - 100	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	60 - 100	0,06 - 0,12	0,08 - 0,16	0,10 - 0,20	0,12 - 0,24	0,14 - 0,26	0,16 - 0,28	0,18 - 0,30	0,20 - 0,30
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	30 - 60	0,06 - 0,09	0,08 - 0,12	0,10 - 0,15	0,12 - 0,18	0,14 - 0,21	0,16 - 0,24	0,18 - 0,27	0,20 - 0,30
S	Titan-Legierungen	bis 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 - 0,30
	Nickelbasis-Legierungen	bis 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 - 0,30

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm						
						11	12	13	14	16	18	20
P	Automatenstahl	bis 700	9 SMn 28	1.0715	80 - 120	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	unlegierter Baustahl	bis 700	St-52	1.0052	80 - 120	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Vergütungsstahl	500 - 950	42 CrMo4	1.1191	80 - 120	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	60 - 90	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	60 - 100	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	60 - 100	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	30 - 60	0,20 - 0,30	0,21 - 0,30	0,21 - 0,33	0,22 - 0,35	0,25 - 0,36	0,28 - 0,38	0,30 - 0,40
S	Titan-Legierungen	bis 1300	TiAl6Sn 2	3.7174	20-50	0,15 - 0,30	0,16 - 0,30	0,18 - 0,33	0,19 - 0,35	0,22 - 0,36	0,24 - 0,38	0,27 - 0,40
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	20-50	0,15 - 0,30	0,16 - 0,30	0,18 - 0,33	0,19 - 0,35	0,22 - 0,36	0,24 - 0,38	0,27 - 0,40

VHM-Flachbohrer ADF-2D



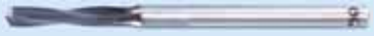
- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

111711....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm					
						2	3	4	6	8	10
P	Automatenstahl	bis 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 - 0,30
	Vergütungsstahl	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 - 0,30
	Einsatzstahl	bis 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 - 0,30
	Werkzeugstahl	950 - 1400	X 38 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 - 0,20
K	Grauguss	bis 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 - 0,30
	Sphäroguss	bis 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 - 0,30
N	Al.-Leg. langspanend	bis 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 - 0,30
	Al.-Leg. kurzspanend	bis 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 - 0,30
H	gehärtete Werkstoffe bis 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	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm				
						12	14	16	18	20
P	Automatenstahl	bis 700	9 SMn 28	1.0715	60 - 100	0,06 - 0,30	0,07 - 0,35	0,08 - 0,36	0,09 - 0,38	0,10 - 0,40
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	60 - 100	0,06 - 0,30	0,07 - 0,35	0,08 - 0,36	0,09 - 0,38	0,10 - 0,40
	Einsatzstahl	bis 1200	16 MnCr 5	1.7131	30 - 90	0,06 - 0,30	0,07 - 0,35	0,08 - 0,36	0,09 - 0,38	0,10 - 0,40
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	20 - 40	0,06 - 0,24	0,07 - 0,28	0,08 - 0,32	0,09 - 0,36	0,10 - 0,40
K	Grauguss	bis 260 HB	GG 25	0.6025	60 - 120	0,06 - 0,30	0,07 - 0,35	0,08 - 0,36	0,09 - 0,38	0,10 - 0,40
	Sphäroguss	bis 280 HB	GGG 60	0.7060	50 - 80	0,06 - 0,30	0,07 - 0,35	0,08 - 0,36	0,09 - 0,38	0,10 - 0,40
N	Al.-Leg. langspanend	bis 500	AlMg 3	3.3535	80 - 200	0,06 - 0,36	0,07 - 0,42	0,08 - 0,48	0,09 - 0,54	0,10 - 0,60
	Al.-Leg. kurzspanend	bis 500	G-AlSi 12	3.2581	80 - 200	0,06 - 0,36	0,07 - 0,42	0,08 - 0,48	0,09 - 0,54	0,10 - 0,60
H	gehärtete Werkstoffe bis 55 HRC		X40Cr14	1.2083	20 - 30	0,06 - 0,18	0,07 - 0,21	0,08 - 0,24	0,09 - 0,27	0,10 - 0,30

VHM-Hochleistungsbohrer WH70-DRL



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

111530....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm										
						2	3	4	5	6	7	8	9	10	11	12
H	gehärtete Werkstoffe bis 60 HRC		X153CrMoV12	1.2379	10 - 16	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04
	gehärtete Werkstoffe bis 64 HRC		100Cr6	1.2067	8 - 13	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04	~ 0,04

ATORN® VHM-Kurz-Stufenbohrer



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

102202....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	75	0,100	0,150	0,190	0,210	-
	Automatenstahl	bis 700	9 SMn 28	1.0715	75	0,100	0,150	0,190	0,210	-
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	60	0,100	0,120	0,153	0,170	-
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	60	0,100	0,120	0,153	0,170	-
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	60	0,100	0,120	0,153	0,170	-
	Stahlguss	bis 950	GS 40	1.0416	60	0,180	0,240	0,307	0,340	-
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	30	0,090	0,120	0,160	0,180	-
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	25	0,080	0,110	0,143	0,160	-
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	25	0,080	0,110	0,143	0,160	-
K	Grauguss	100 - 400	GG 25	0.6025	70	0,180	0,240	0,307	0,340	-
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	60	0,180	0,240	0,307	0,340	-
	Sphäroguss	400 - 800	GGG 60	0.7060	60	0,180	0,240	0,307	0,340	-
	Temperguss	350 - 700	GTS 55	0.8155	60	0,180	0,240	0,307	0,340	-
N	Reinmetalle, weich	bis 500	Reineisen		180	0,140	0,200	0,280	0,320	-
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	200	0,140	0,200	0,280	0,320	-
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	180	0,140	0,200	0,280	0,320	-
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	80	0,110	0,180	0,247	0,280	-
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	80	0,110	0,180	0,247	0,280	-
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	200	0,140	0,200	0,280	0,320	-
	Thermoplast	40 - 70	PVC, Acrylglas		40	0,080	0,140	0,180	0,200	-
	Duroplast	20 - 40	Bakelit		40	0,080	0,140	0,180	0,200	-
	Faserverstärkte Kunststoffe	bis 1500	CFK, GFK		-	-	-	-	-	-
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	35	0,060	0,100	0,133	0,150	-
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	-	-	-	-	-	-
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	35	0,060	0,100	0,133	0,150	-
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	0,060	0,100	0,133	0,150	-
H	Hartguss	300 - 600		Ampco	-	-	-	-	-	-
	gehärteter Stahl	45 - 50 HRc			25	0,100	0,120	0,153	0,170	-
	gehärteter Stahl	50 - 60 HRc			-	-	-	-	-	-
	gehärteter Stahl	60 - 70 HRc			-	-	-	-	-	-



102211....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						3,0 - 5,0	5,1 - 8,0	8,1 - 12	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	75	0,100	0,125	0,180		
	Automatenstahl	bis 700	9 SMn 28	1.0715	75	0,100	0,125	0,180	-	-
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	60	0,100	0,110	0,145	-	-
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	60	0,100	0,110	0,145	-	-
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	60	0,100	0,110	0,145	-	-
	Stahlguss	bis 950	GS 40	1.0416	60	0,180	0,210	0,290	-	-
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	30	0,090	0,105	0,150	-	-
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	25	0,080	0,095	0,135	-	-
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	25	0,080	0,095	0,135	-	-
K	Grauguss	100 - 400	GG 25	0.6025	70	0,180	0,210	0,290	-	-
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	60	0,180	0,210	0,290	-	-
	Sphäroguss	400 - 800	GGG 60	0.7060	60	0,180	0,210	0,290	-	-
	Temperguss	350 - 700	GTS 55	0.8155	60	0,180	0,210	0,290	-	-
N	Reinmetalle, weich	bis 500	Reineisen		180	0,140	0,170	0,260	-	-
	Al.-Leg. langspannend	bis 550	AlMg 3	3.3535	200	0,140	0,170	0,260	-	-
	Al.-Leg. kurzspannend	bis 400	G-AlSi 12	3.2581	180	0,140	0,170	0,260	-	-
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	80	0,110	0,145	0,230	-	-
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	80	0,110	0,145	0,230	-	-
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	200	0,140	0,170	0,260	-	-
	Thermoplast	40 - 70	PVC, Acrylglas		40	0,080	0,110	0,170	-	-
	Duroplast	20 - 40	Bakelit		40	0,080	0,110	0,170	-	-
	Faserverstärkte Kunststoffe	bis 1500	CFK, GFK		-	-	-	-	-	-
S	Titan-Legierung	bis 950	TiAl6V4	3.7165	35	0,060	0,080	0,125	-	-
	Titan-Legierung	900 - 1400	TiAl6Sn 2	3.7174	-	-	-	-	-	-
	Nickelbasis-Legierung	bis 950	NiCr12Al6MoNb	2.4670	35	0,060	0,080	0,125	-	-
	Nickelbasis-Legierung	900 - 1400	NiCr19Fe19NbMo	Inconel 718	35	0,060	0,080	0,125	-	-
H	Hartguss	300 - 600		Ampco	-	-	-	-	-	-
	gehärteter Stahl	45 - 50 HRc			-	-	-	-	-	-
	gehärteter Stahl	50 - 60 HRc			-	-	-	-	-	-
	gehärteter Stahl	60 - 70 HRc			-	-	-	-	-	-

HSS-Kernbohrer



Die angegebenen Richtwerte sind Herstellerangaben und der Werkstückaufspannung sowie den Maschinenverhältnissen anzupassen.

100601....
100602....

Kühlung mit Luft, Bohremulsion oder Schneidöl

	unlegierter Stahl bis 700 N/mm²	legierter Stahl, rostfreie Stähle bis 1000 N/mm²	Alu-Legierung
Schnittgeschwindigkeit Vc m/min	30	20	30

HSS Schneideinsätze Serie Y bis 2



Die angegebenen Richtwerte sind Herstellerangaben und der Werkstückaufspannung sowie den Maschinenverhältnissen anzupassen.
Als Startwerte empfehlen wir die angegebenen Schnittdaten um 20 % zu reduzieren.

105140....
105236....
105336....
105441....
105541....

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 9,5 - 12,95	12,98 - 17,53	17,53 - 24,38	24,41 - 35,0
P	Automatenstähle	370- 500	10S20	1.0721	91	0,20	0,30	0,41	0,48
		500- 700	9SMn36	1.0736	87	0,18	0,28	0,38	0,43
		700- 870	9MnPb36	1.0737	81	0,15	0,25	0,36	0,41
	weiche Stähle mit niedrigem Kohlenstoffgehalt	300- 450	C15	1.0401	84	0,20	0,25	0,36	0,46
		450- 600	Ck15	1.1141	81	0,18	0,25	0,36	0,43
		600- 775	9SMn28	1.0715	75	0,15	0,23	0,33	0,41
		775- 940	14NiCr14	1.5752	70	0,13	0,23	0,33	0,41
	Stähle mit mittlerem Kohlenstoffgehalt	450- 600	C45	1.0503	79	0,18	0,25	0,36	0,43
		600- 775	C60	1.0601	75	0,15	0,23	0,33	0,41
		775- 940	Ck40	1.1186	70	0,15	0,23	0,33	0,41
		940-1090	Ck45	1.1191	66	0,13	0,20	0,30	0,38
	legierte Stähle	450- 600	36NiCr10	1.5736	69	0,18	0,25	0,36	0,43
		600- 775	21NiCrMo2	1.6523	66	0,15	0,23	0,33	0,41
		775- 940	16MnCr5	1.7131	59	0,15	0,23	0,33	0,41
		940-1090	42CrMo4	1.7225	56	0,13	0,20	0,30	0,38
		1090-1265	50CrV4	1.8159	52	0,10	0,18	0,28	0,36
	hochlegierte Stähle	600-1020	31NiCr14	1.5755	37	0,15	0,23	0,28	0,33
		1020-1180	36CrNiMo4	1.6511	27	0,13	0,20	0,25	0,30
		1180-1365	39CrMoV139	1.8523	23	0,10	0,18	0,23	0,28
	Baustähle	370- 500	RSt37-2	1.0038	67	0,20	0,28	0,38	0,43
		500- 850	St52-3	1.0057	56	0,15	0,25	0,33	0,38
		850-1180	16CrMo44	1.7337	47	0,13	0,23	0,30	0,33
	Werkzeugstähle	500- 700	100Cr6	1.2067	37	0,10	0,18	0,25	0,30
		700- 870	X155CrVMo121	1.2379	30	0,10	0,18	0,25	0,30
S	Hochtemperaturlegierungen	480- 755	NiCr20Ti	2.4630	14	0,10	0,18	0,23	0,28
		755- 990	NiCr21Mo	2.4858	12	0,10	0,15	0,20	0,25
M	INOX Stähle	480- 640	X5CrNi1810	1.4301	34	0,18	0,23	0,30	0,36
		640- 940	X6Cr17	1.4016	29	0,15	0,20	0,28	0,30
K	GG/GGG	430- 500	GGG-40	0.704	82	0,20	0,30	0,41	0,51
		500- 700	GGG-50	0.705	75	0,18	0,28	0,38	0,48
		700- 755	GGG-60	0.706	66	0,15	0,23	0,33	0,43
		755- 890	GGG-80	0.708	55	0,13	0,20	0,28	0,36
		890-1020	GTS 70-02	0.817	44	0,13	0,18	0,25	0,28

Formeln :

Drehzahl

$$n = \frac{Vc \cdot 1000}{\pi \cdot D} \quad (min^{-1})$$

Schnittgeschwindigkeit

$$Vc = \frac{n \cdot \pi \cdot D}{1000} \quad (m / min)$$

Vorschubgeschwindigkeit

$$V_f = f \cdot n \quad (mm / min)$$

Multiplikator für Schnittgeschwindigkeit und Vorschub für verschiedene Werkzeuglängen

	Werkzeuglänge extra kurz	kurz	mittellang	Standard	überlang	extremlang	XL	3XL
Schnittgeschwindigkeit	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	x 0,90	x 0,85	x 0,80	x 0,75
Vorschub	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	x 0,95	x 0,90	x 0,90

Hinweis: Die empfohlenen Schnittgeschwindigkeiten für AM200™-beschichtete Schneideinsätze sind auf einer Faustformel von Daten basierend und unter optimalen Bedingungen geltend. Bei vielen Anwendungen liegen keine optimalen Bedingungen vor. Daher ist es erforderlich die Schnittgeschwindigkeit an die jeweiligen Gegebenheiten anzupassen. Technische Unterstützung stellen wir Ihnen für Ihre spezifische Anwendung gerne zur Verfügung. Bitte füllen Sie hierfür das Anwendungsformblatt „Garantierte Anwendung“ vollständig aus und senden Sie es uns zu.
Unsere Anwendungstechniker beraten Sie auch unter der Hotline-Nr. : 0 21 02 / 44 00-88.

HM Schneideinsätze Serie Y bis 2



Die angegebenen Richtwerte sind Herstellerangaben und der Werkstückaufspannung sowie den Maschinenverhältnissen anzupassen.
Als Startwerte empfehlen wir die angegebenen Schnittdaten um 20 % zu reduzieren.

105146....
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ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 9,5 - 12,5	13 - 17,5	17,86 - 24	25 - 35
P	Automatenstähle	370- 500	10S20	1.0721	146	0,20	0,30	0,41	0,48
		500- 700	9SMn36	1.0736	126	0,18	0,28	0,38	0,43
		700- 870	9MnPb36	1.0737	119	0,15	0,25	0,36	0,41
	weiche Stähle mit niedrigem Kohlenstoffgehalt	300- 450	C15	1.0401	137	0,20	0,25	0,36	0,46
		450- 600	Ck15	1.1141	119	0,18	0,25	0,36	0,43
		600- 775	9SMn28	1.0715	108	0,15	0,23	0,33	0,41
		775- 940	14NiCr14	1.5752	95	0,13	0,23	0,33	0,41
	Stähle mit mittlerem Kohlenstoffgehalt	450- 600	C45	1.0503	119	0,18	0,25	0,36	0,43
		600- 775	C60	1.0601	108	0,15	0,23	0,33	0,41
		775- 940	Ck40	1.1186	95	0,15	0,23	0,33	0,41
		940-1090	Ck45	1.1191	80	0,13	0,20	0,30	0,38
	legierte Stähle	450- 600	36NiCr10	1.5736	115	0,18	0,25	0,36	0,43
		600- 775	21NiCrMo2	1.6523	105	0,15	0,23	0,33	0,41
		775- 940	16MnCr5	1.7131	95	0,15	0,23	0,33	0,41
		940-1090	42CrMo4	1.7225	87	0,13	0,20	0,30	0,38
		1090-1265	50CrV4	1.8159	78	0,10	0,18	0,28	0,36
	hochlegierte Stähle	600-1020	31NiCr14	1.5755	70	0,15	0,23	0,28	0,33
		1020-1180	36CrNiMo4	1.6511	63	0,13	0,20	0,25	0,30
		1180-1365	39CrMoV139	1.8523	56	0,10	0,18	0,23	0,28
	Baustähle	370- 500	RSt37-2	1.0038	108	0,20	0,28	0,38	0,43
		500- 850	St52-3	1.057	87	0,15	0,25	0,33	0,38
		850-1180	16CrMo44	1.7337	80	0,13	0,23	0,30	0,33
	Werkzeugstähle	500- 700	100Cr6	1.2067	78	0,10	0,18	0,25	0,30
		700- 870	X155CrVMo121	1.2379	59	0,10	0,18	0,25	0,30
S	Hochtemperaturlegierungen	480- 755	NiCr20Ti	2.4630	37	0,10	0,18	0,23	0,28
		755- 990	NiCr21Mo	2.4858	29	0,10	0,15	0,20	0,25
M	INOX Stähle	480- 640	X5CrNi1810	1.4301	73	0,18	0,23	0,30	0,36
		640- 940	X6Cr17	1.4016	56	0,15	0,20	0,28	0,30
K	GG/GGG	430- 500	GGG-40	0.704	152	0,20	0,30	0,38	0,48
		500- 700	GGG-50	0.705	146	0,18	0,28	0,33	0,43
		700- 755	GGG-60	0.706	131	0,15	0,23	0,30	0,38
		755- 890	GGG-80	0.708	113	0,13	0,20	0,28	0,33
		890-1020	GTS 70-02	0.817	102	0,13	0,18	0,25	0,28

Formeln :

Drehzahl

$$n = \frac{Vc \cdot 1000}{\pi \cdot D} \quad (\min^{-1})$$

Schnittgeschwindigkeit

$$Vc = \frac{n \cdot \pi \cdot D}{1000} \quad (m / min)$$

Vorschubgeschwindigkeit

$$V_f = f \cdot n \quad (mm / min)$$

Multiplikator für Schnittgeschwindigkeit und Vorschub für verschiedene Werkzeuglängen

	Werkzeuglänge extra kurz	kurz	mittellang	Standard	überlang	extremlang	XL	3XL
Schnittgeschwindigkeit	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	–	–	–	–
Vorschub	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	–	–	–	–

Hinweis: Die empfohlenen Schnittgeschwindigkeiten für AM200™-beschichtete Schneideinsätze sind auf einer Faustformel von Daten basierend und unter optimalen Bedingungen geltend. Bei vielen Anwendungen liegen keine optimalen Bedingungen vor. Daher ist es erforderlich die Schnittgeschwindigkeit an die jeweiligen Gegebenheiten anzupassen. Technische Unterstützung stellen wir Ihnen für Ihre spezifische Anwendung gerne zur Verfügung. Bitte füllen Sie hierfür das Anwendungsformblatt „Garantierte Anwendung" vollständig aus und senden Sie es uns zu.
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HSS Schneideinsätze Serie 3 bis 8



105641....
105716....
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Die angegebenen Richtwerte sind Herstellerangaben und der Werkstückaufspannung sowie den Maschinenverhältnissen anzupassen.
Als Startwerte empfehlen wir die angegebenen Schnittdaten um 20 % zu reduzieren.

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoffbeispiele	Werkstoff-Nr.	Schnittgeschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 35 - 47,8	47,85 - 65	66 - 114,48		
P	Automatenstähle	370- 500 500- 700 700- 870	10S20 9SMn36 9MnPb36	1.0721 1.0736 1.0737	99 91 85	0,51 0,51 0,51	0,58 0,58 0,58	0,71 0,71 0,71		
P	weiche Stähle mit niedrigem Kohlenstoffgehalt	300- 450 450- 600 600- 775 775- 940	C15 Ck15 9SMn28 14NiCr14	1.0401 1.1141 1.0715 1.5752	88 83 79 73	0,48 0,48 0,46 0,46	0,58 0,58 0,53 0,53	0,69 0,69 0,61 0,61		
P	Stähle mit mittlerem Kohlenstoffgehalt	450- 600 600- 775 775- 940 940-1090	C45 C60 Ck40 Ck45	1.0503 1.0601 1.1186 1.1191	83 79 73 68	0,48 0,46 0,46 0,41	0,58 0,53 0,53 0,48	0,69 0,61 0,61 0,56		
P	legierte Stähle	450- 600 600- 775 775- 940 940-1090 1090-1265	36NiCr10 21NiCrMo2 16MnCr5 42CrMo4 50CrV4	1.5736 1.6523 1.7131 1.7225 1.8159	73 68 64 59 54	0,43 0,43 0,43 0,38 0,38	0,48 0,48 0,48 0,43 0,43	0,56 0,56 0,56 0,51 0,51		
P	hochlegierte Stähle	600-1020 1020-1180 1180-1365	31NiCr14 36CrNiMo4 39CrMoV139	1.5755 1.6511 1.8523	38 30 24	0,36 0,36 0,30	0,43 0,43 0,41	0,51 0,51 0,46		
P	Baustähle	370- 500 500- 850 850-1180	RSt37-2 St52-3 16CrMo44	1.0038 1.057 1.7337	71 57 48	0,46 0,41 0,36	0,53 0,48 0,43	0,66 0,61 0,51		
P	Werkzeugstähle	500- 700 700- 870	100Cr6 X155CrVMo121	1.2067 1.2379	38 32	0,30 0,30	0,38 0,38	0,43 0,43		
S	Hochtemperaturlegierungen	480- 755 755- 990	NiCr20Ti NiCr21Mo	2.4630 2.4858	13 12	0,30 0,25	0,38 0,30	0,38 0,30		
S	Titanlegierungen	480- 755 755- 990	TiCu2 TiAl6V4	3.7124 3.7164	16 15	0,30 0,25	0,38 0,30	0,38 0,30		
M	INOX Stähle, austenitisch	480- 640 640- 940	X5CrNi1810 X6Cr17	1.4301 1.4016	36 32	0,36 0,30	0,41 0,36	0,51 0,46		
M	INOX Stähle, ferritisch	640- 940 940-1180	X30Cr13 X20CrNi172	1.4028 1.4057	36 32	0,36 0,30	0,41 0,36	0,51 0,46		
M	Super Duplex Stähle	480- 640 640- 940	X5CrNi1810 X5CrNi1812	1.4301 1.4303	27 22	0,36 0,30	0,41 0,36	0,51 0,46		
H	gehärtete Stähle	50-55 HRc 55-60 HRc			29 14	0,30 0,25	0,41 0,30	0,46 0,40		
N	Aluminiumguss	600+	G-AlMg5	3.3561	-	0,56	0,64	0,64		
N	Aluminium, geschmiedet	600+	AlMg1	3.3315	-	0,56	0,64	0,64		
K	GG/GGG	430- 500 500- 700 700- 755 755- 890 890-1020	GGG-40 GGG-50 GGG-60 GGG-80 GTS 70-02	0.704 0.705 0.706 0.708 0.817	84 79 68 57 47	0,61 0,56 0,46 0,36 0,28	0,69 0,64 0,53 0,43 0,36	0,76 0,71 0,61 0,51 0,41		

Formeln :

Drehzahl

$$n = \frac{Vc \cdot 1000}{\pi \cdot D} \quad (\min^{-1})$$

Schnittgeschwindigkeit

$$Vc = \frac{n \cdot \pi \cdot D}{1000} \quad (m / min)$$

Vorschubgeschwindigkeit

$$V_f = f \cdot n \quad (mm / min)$$

Multiplikator für Schnittgeschwindigkeit und Vorschub für verschiedene Werkzeuglängen

	Werkzeuglänge extra kurz	kurz	mittellang	Standard	überlang	extremlang	XL	3XL
Schnittgeschwindigkeit	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	x 0,90	x 0,85	x 0,80	x 0,75
Vorschub	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	siehe Tabelle	x 0,95	x 0,90	x 0,90

Hinweis: Die empfohlenen Schnittgeschwindigkeiten für AM200™-beschichtete Schneideinsätze sind auf einer Faustformel von Daten basierend und unter optimalen Bedingungen geltend. Bei vielen Anwendungen liegen keine optimalen Bedingungen vor. Daher ist es erforderlich die Schnittgeschwindigkeit an die jeweiligen Gegebenheiten anzupassen. Technische Unterstützung stellen wir Ihnen für Ihre spezifische Anwendung gerne zur Verfügung. Bitte füllen Sie hierfür das Anwendungsformblatt „Garantierte Anwendung" vollständig aus und senden Sie es uns zu.
Unsere Anwendungstechniker beraten Sie auch unter der Hotline-Nr. : 0 21 02 / 44 00-88.

Hochleistungs-Bohrsystem GEN3SYS®XT



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

105970.... 105973.... 105976....
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ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	HM-Sorte AM200™	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 12,0-12,99	13,0-13,99	14,0-14,99	15,0-15,99
P	unlegierter Baustahl	bis 700	St-52	1.0052	K35	120	0,23	0,25	0,28	0,33
	Automatenstahl	bis 700	9 SMn 28	1.0715	K35	140	0,28	0,33	0,33	0,36
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	K35	95	0,23	0,25	0,28	0,33
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	K35	95	0,22	0,23	0,25	0,28
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	K35	75	0,15	0,18	0,22	0,23
	Stahlguss	bis 950	GS 40	1.0416	K35	95	0,22	0,23	0,25	0,28
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	K35	35	0,09	0,11	0,12	0,14
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	K35	40	0,11	0,12	0,14	0,15
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	K35	40	0,11	0,12	0,14	0,15
K	Grauguss	bis 240 HB	GG 25	0.6025	K20	130	0,28	0,33	0,33	0,36
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	K20	100	0,25	0,28	0,33	0,33
	Sphäroguss	bis 300 HB	GGG 60	0.7060	K20	100	0,25	0,28	0,33	0,33
	Temperguss	bis 300 HB	GTS 55	0.8155	K20	100	0,25	0,28	0,33	0,33
N	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	K20TiCN*	220	0,33	0,33	0,35	0,38
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	K20	130	0,08	0,09	0,11	0,13
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	K20	130	0,08	0,09	0,11	0,13
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	K20	42	0,15	0,17	0,22	0,22
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	K20	33	0,12	0,15	0,17	0,17
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	K20	37	0,09	0,09	0,11	0,11
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	K20	29	0,07	0,07	0,09	0,11
H	gehärteter Stahl	45 - 52 HRc			K35	37	0,11	0,13	0,15	0,17

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	HM-Sorte AM200™	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 16,0-16,99	17,0-17,99	18,0-19,99	20,0-21,99
P	unlegierter Baustahl	bis 700	St-52	1.0052	K35	120	0,33	0,36	0,41	0,46
	Automatenstahl	bis 700	9 SMn 28	1.0715	K35	140	0,38	0,41	0,43	0,48
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	K35	95	0,33	0,36	0,41	0,46
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	K35	95	0,33	0,33	0,38	0,41
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	K35	75	0,25	0,28	0,33	0,38
	Stahlguss	bis 950	GS 40	1.0416	K35	95	0,33	0,33	0,38	0,41
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	K35	35	0,15	0,16	0,16	0,18
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	K35	40	0,16	0,18	0,18	0,19
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	K35	40	0,16	0,18	0,18	0,19
K	Grauguss	bis 240 HB	GG 25	0.6025	K20	130	0,38	0,43	0,48	0,51
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	K20	100	0,36	0,38	0,34	0,46
	Sphäroguss	bis 300 HB	GGG 60	0.7060	K20	100	0,36	0,38	0,34	0,46
	Temperguss	bis 300 HB	GTS 55	0.8155	K20	100	0,36	0,38	0,34	0,46
N	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	K20TiCN*	220	0,44	0,43	0,45	0,48
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	K20	130	0,15	0,16	0,18	0,22
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	K20	130	0,15	0,16	0,18	0,22
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	K20	42	0,22	0,22	0,25	0,28
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	K20	33	0,22	0,22	0,22	0,25
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	K20	37	0,11	0,12	0,14	0,14
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	K20	29	0,11	0,11	0,12	0,12
H	gehärteter Stahl	45 - 52 HRc			K35	37	0,17	0,19	0,21	0,21

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	HM-Sorte AM200™	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 22,0-23,99	24,0-25,99	26,0-28,99	29,0-32,00
P	unlegierter Baustahl	bis 700	St-52	1.0052	K35	120	0,46	0,46	0,46	0,46
	Automatenstahl	bis 700	9 SMn 28	1.0715	K35	140	0,48	0,48	0,48	0,48
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	K35	95	0,46	0,46	0,46	0,46
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	K35	95	0,41	0,41	0,41	0,41
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	K35	75	0,38	0,38	0,38	0,38
	Stahlguss	bis 950	GS 40	1.0416	K35	95	0,41	0,41	0,41	0,41
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	K35	35	0,18	0,18	0,18	0,18
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	K35	40	0,19	0,19	0,19	0,19
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	K35	40	0,19	0,19	0,19	0,19
K	Grauguss	bis 240 HB	GG 25	0.6025	K20	130	0,51	0,51	0,51	0,51
	legierter Grauguss	bis 350 HB	GGL-NiCr 35 2	0.6678	K20	100	0,46	0,46	0,46	0,46
	Sphäroguss	bis 300 HB	GGG 60	0.7060	K20	100	0,46	0,46	0,46	0,46
	Temperguss	bis 300 HB	GTS 55	0.8155	K20	100	0,46	0,46	0,46	0,46
N	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	K20TiCN*	220	0,48	0,48	0,48	0,48
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	K20	130	0,22	0,22	0,22	0,22
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	K20	130	0,22	0,22	0,22	0,22
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	K20	42	0,28	0,28	0,28	0,28
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	K20	33	0,25	0,25	0,25	0,25
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	K20	37	0,14	0,14	0,14	0,14
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	K20	29	0,12	0,12	0,12	0,12
H	gehärteter Stahl	45 - 52 HRc			K35	37	0,21	0,21	0,21	0,21

Hinweise:

- Die Schnittwertempfehlungen beziehen sich auf Bohrtiefen 3xD und 5xD. Für 7xD sollten die angegebenen Werte mit dem Faktor 0,8 korrigiert werden.
- Schnittwerte sind Anfangswerte bei optimalen Bedingungen, bitte Werte den Bedingungen anpassen, Rundlaufgenauigkeit mind. 0,025 mm
- * Für die Aluminiumbearbeitung empfiehlt sich der Einsatz von TiCN-beschichteten Schneideinsätzen, bitte fragen Sie diese an!

ATORN® Wechselkopfbohrer ETD 840



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

106003....

ISO	Werkstoffgruppe	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm			
			8 - 12	12 - 20	20 - 31,5	31,5 - 40
P	Automatenstahl bis 900 N/mm²	100 - 110	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl bis 500 N/mm²	100 - 110	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl über 500 N/mm²	85 - 110	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl bis 1000 N/mm²	85 - 110	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Stahlguss bis 1000 N/mm²	85 - 100	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Einsatzstahl bis 1200 N/mm²	85 - 110	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl über 1000 N/mm²	70 - 80	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Nitrierstahl bis 1300 N/mm²	55 - 60	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
	Werkzeugstahl (bis 45 HRc) bis 1300 N/mm²	30 - 35	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
M	Rost und säurebeständige Stähle austenitisch bis 1100N/mm²	25 - 35	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Rost- u. säurebeständiger Stahl u. Stahlguss ferritisch, martensitisch bis 1100 N/mm²	30 - 40	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
N	Alu-Legierungen, langspanend; Knet-Leg. Rein Metalle; Magnesium-Leg. bis bis 500 N/mm²	220 - 300	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Alu-Legierungen, kurzspanend bis 500 N/mm²	220 - 280	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Kupfer-Leg. (Bronze), langspanend bis 1200 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Bronze), kurzspanend bis 850 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), langspanend bis 600 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), kurzspanend bis 600 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Thermoplast bis 100 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Duroplast bis 150 N/mm²	200 - 240	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
K	Grauguss bis 260 HB	120 - 210	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Sphäroguss bis 310 HB	120 - 155	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Temperguss bis 280 HB	100 - 130	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
S	Titan-Legierungen bis 1200 HB	30 - 40	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Nickelbasislegierungen bis 1400 HB	25 - 35	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250
	Superlegierungen bis 1300 HB	20 - 25	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250

106005....

ISO	Werkstoffgruppe	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm			
			8 - 12	12 - 20	20 - 31,5	31,5 - 40
P	Automatenstahl bis 900 N/mm²	100 - 105	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl bis 500 N/mm²	100 - 105	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl über 500 N/mm²	85 - 105	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl bis 1000 N/mm²	85 - 105	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Stahlguss bis 1000 N/mm²	85 - 105	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Einsatzstahl bis 1200 N/mm²	85 - 105	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl über 1000 N/mm²	50 - 55	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Nitrierstahl bis 1300 N/mm²	50 - 55	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
	Werkzeugstahl (bis 45 HRc) bis 1300 N/mm²	25 - 30	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
M	Rost und säurebeständige Stähle austenitisch bis 1100N/mm²	20 - 30	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Rost- u. säurebeständiger Stahl u. Stahlguss ferritisch, martensitisch bis 1100 N/mm²	30 - 35	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
N	Alu-Legierungen, langspanend; Knet-Leg. Rein Metalle; Magnesium-Leg. bis bis 500 N/mm²	210 - 270	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Alu-Legierungen, kurzspanend bis 500 N/mm²	200 - 260	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Kupfer-Leg. (Bronze), langspanend bis 1200 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Bronze), kurzspanend bis 850 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), langspanend bis 600 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), kurzspanend bis 600 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Thermoplast bis 100 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Duroplast bis 150 N/mm²	180 - 220	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
K	Grauguss bis 260 HB	120 - 200	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Sphäroguss bis 310 HB	120 - 145	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Temperguss bis 280 HB	100 - 120	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
S	Titan-Legierungen bis 1200 HB	30 - 35	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Nickelbasislegierungen bis 1400 HB	30 - 35	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250
	Superlegierungen bis 1300 HB	20 - 22	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250

106007....

ISO	Werkstoffgruppe	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm			
			8 - 12	12 - 20	20 - 31,5	31,5 - 40
P	Automatenstahl bis 900 N/mm²	85 - 100	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl bis 500 N/mm²	85 - 100	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Baustahl über 500 N/mm²	85 - 100	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl bis 1000 N/mm²	85 - 100	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Stahlguss bis 1000 N/mm²	85 - 100	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Einsatzstahl bis 1200 N/mm²	85 - 100	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Vergütungsstahl über 1000 N/mm²	35 - 45	0,160 - 0,200	0,200 - 0,315	0,315 - 0,400	0,400 - 0,500
	Nitrierstahl bis 1300 N/mm²	35 - 45	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
	Werkzeugstahl (bis 45 HRc) bis 1300 N/mm²	25 - 30	0,125 - 0,160	0,160 - 0,250	0,250 - 0,315	0,315 - 0,400
M	Rost und säurebeständige Stähle austenitisch bis 1100N/mm²	20 - 25	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Rost- u. säurebeständiger Stahl u. Stahlguss ferritisch, martensitisch bis 1100 N/mm²	25 - 30	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
N	Alu-Legierungen, langspanend; Knet-Leg. Rein Metalle; Magnesium-Leg. bis bis 500 N/mm²	200 - 260	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Alu-Legierungen, kurzspanend bis 500 N/mm²	200 - 250	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Kupfer-Leg. (Bronze), langspanend bis 1200 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Bronze), kurzspanend bis 850 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), langspanend bis 600 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Kupfer-Leg. (Messing), kurzspanend bis 600 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Thermoplast bis 100 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Duroplast bis 150 N/mm²	180 - 210	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
K	Grauguss bis 260 HB	120 - 180	0,250 - 0,315	0,315 - 0,500	0,500 - 0,630	0,630 - 0,800
	Sphäroguss bis 310 HB	120 - 135	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
	Temperguss bis 280 HB	100 - 110	0,200 - 0,250	0,250 - 0,400	0,400 - 0,500	0,500 - 0,630
S	Titan-Legierungen bis 1200 HB	25 - 30	0,100 - 0,125	0,125 - 0,200	0,200 - 0,250	0,250 - 0,315
	Nickelbasislegierungen bis 1400 HB	25 - 30	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250
	Superlegierungen bis 1300 HB	18 - 22	0,080 - 0,100	0,100 - 0,160	0,160 - 0,200	0,200 - 0,250

SARA® DRILL Vollbohrwerkzeug SD1



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

104501....
104550....
104555....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm				
						49,0 - 65,0	65,0 - 100,0	100,0 - 150,0	150,0 - 210,0	210,0 - 270,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	25 - 35	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20
	Automatenstahl	bis 700	9 SMn 28	1.0715	25 - 35	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	18 - 22	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20
	legierter Einsatzstahl	bis 950	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
	Werkzeugstahl	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
	Stahlguss	bis 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
M	INOX Stahl, austenitisch	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
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	10 - 12	0,12 - 0,15	0,12 - 0,15	0,12 - 0,15	0,12 - 0,15	0,12 - 0,15
	INOX Stahl, martensitisch	500 - 950	X 39 Cr Mo 17-1	1.4122	15 - 20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20
K	Grauguss	bis 240 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
	Sphäroguss	bis 300 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.-Legierungen, langspanend	bis 550	AlMg 3	3.3535	50 - 70	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20	0,16 - 0,20



...new things are created.

ATORN®
High quality for great performance

SARA® DRILL Vollbohrer SDX



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

124173....
124175....

3 x D

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm			
						14 - 18	19 - 29	30 - 36	37 - 55
P	Automatenstahl	bis 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,05 - 0,12
	unlegierter Baustahl	bis 700	St-52	1.0052	150 - 250	0,08 - 0,20	0,08 - 0,20	0,08 - 0,22	0,09 - 0,24
	Baustahl	700 - 950	Ck45	1.1191	150 - 250	0,08 - 0,20	0,08 - 0,20	0,08 - 0,22	0,09 - 0,24
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	125 - 230	0,06 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
	Stahlguss	bis 950	GS 40	1.0416	100 - 170	0,06 - 0,14	0,06 - 0,14	0,06 - 0,15	0,07 - 0,17
	Einsatzstahl	bis 1200	16 MnCr 5	1.7131	125 - 200	0,06 - 0,14	0,06 - 0,14	0,06 - 0,15	0,07 - 0,17
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	125 - 200	0,06 - 0,14	0,06 - 0,14	0,06 - 0,15	0,07 - 0,17
	Nitrierstahl	950 - 1300	31CrMoV9	1.8519	100 - 170	0,06 - 0,14	0,06 - 0,14	0,06 - 0,15	0,07 - 0,17
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 150	0,06 - 0,14	0,06 - 0,14	0,06 - 0,15	0,07 - 0,17
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	100 - 200	0,06 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	100 - 200	0,04 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80 - 150	0,04 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
K	Grauguss	bis 260 HB	GG 25	0.6025	120 - 200	0,09 - 0,27	0,10 - 0,30	0,11 - 0,32	0,12 - 0,36
	legierter Grauguss	bis 310 HB	GGL-NiCr 35 2	0.6678	120 - 200	0,09 - 0,27	0,10 - 0,30	0,11 - 0,32	0,12 - 0,36
	Sphäroguss	bis 280 HB	GGG 60	0.7060	90 - 250	0,09 - 0,27	0,10 - 0,30	0,11 - 0,32	0,12 - 0,36
	Temperguss	bis 280 HB	GTS 55	0.8155	90 - 150	0,09 - 0,27	0,10 - 0,30	0,11 - 0,32	0,12 - 0,36
S	Titan-Legierungen	bis 1300	TiAl6Sn 2	3.7174	25 - 70	0,06 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	25 - 70	0,06 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18
	Superlegierungen	bis 1300	X45CrSi 9 3	1.4718	25 - 70	0,06 - 0,15	0,06 - 0,15	0,06 - 0,16	0,07 - 0,18

5 x D

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm		
						14 - 18	19 - 29	30 - 35
P	Automatenstahl	bis 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,09	0,04 - 0,08	0,04 - 0,08
	unlegierter Baustahl	bis 700	St-52	1.0052	150 - 250	0,07 - 0,15	0,07 - 0,15	0,08 - 0,17
	Baustahl	700 - 950	Ck45	1.1191	150 - 250	0,07 - 0,15	0,07 - 0,15	0,08 - 0,17
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	125 - 230	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Stahlguss	bis 950	GS 40	1.0416	100 - 170	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Einsatzstahl	bis 1200	16 MnCr 5	1.7131	125 - 200	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	125 - 200	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Nitrierstahl	950 - 1300	31CrMoV9	1.8519	100 - 170	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 150	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	100 - 200	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	100 - 200	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80 - 150	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
K	Grauguss	bis 260 HB	GG 25	0.6025	120 - 200	0,08 - 0,21	0,09 0,23	0,09 - 0,25
	legierter Grauguss	bis 310 HB	GGL-NiCr 35 2	0.6678	120 - 200	0,08 - 0,21	0,09 - 0,23	0,09 - 0,25
	Sphäroguss	bis 280 HB	GGG 60	0.7060	90 - 250	0,08 - 0,21	0,09 - 0,23	0,09 - 0,25
	Temperguss	bis 280 HB	GTS 55	0.8155	90 - 150	0,08 - 0,21	0,09 - 0,23	0,09 - 0,25
S	Titan-Legierungen	bis 1300	TiAl6Sn 2	3.7174	25 - 70	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	25 - 70	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12
	Superlegierungen	bis 1300	X45CrSi 9 3	1.4718	25 - 70	0,05 - 0,11	0,05 - 0,11	0,06 - 0,12

Vollbohrer *PHOENIX PD*

- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

124202.... 124203....
124204.... 124205....

2 x D, 3 x D

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm						
						15 - 16,5	17 - 18,5	19 - 20,5	21 - 24,5	25 - 28,5	29 - 33,5	34 - 63
P	Automatenstahl	bis 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Baustahl	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 – 0,14	0,04 - 0,16	0,04 - 0,18	0,04 - 0,20	0,06 - 0,25	0,08 - 0,30	0,08 - 0,35
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
K	Grauguss	bis 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,14	0,04 - 0,16	0,04 - 0,20	0,08 - 0,25	0,06 - 0,30	0,08 - 0,30	0,08 - 0,35
	Sphäroguss	bis 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,12	0,04 - 0,14	0,04 - 0,18	0,04 - 0,20	0,06 - 0,25	0,08 - 0,25	0,08 - 0,25
N	Al.-Leg. langspanend	bis 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0,04 - 0,16	0,04 - 0,20	0,04 - 0,25	0,06 - 0,30	0,08 - 0,30	0,08 - 0,30
	Al.-Leg. kurzspanend	bis 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0,04 - 0,16	0,04 - 0,20	0,04 - 0,25	0,06 - 0,30	0,08 - 0,30	0,08 - 0,30
S	Titan-Legierungen	bis 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 - 0,20	0,08 - 0,20	0,08 - 0,20
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0,03 - 0,06	0,03 - 0,06	0,04 - 0,08	0,06 - 0,10	0,06 - 0,12	0,06 - 0,12
H	gehärtete Werkstoffe bis 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 - 0,10	0,04 - 0,10	0,04 - 0,10

4 x D

ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm						
						15 - 16,5	17 - 18,5	19 - 20,5	21 - 24,5	25 - 28,5	29 - 33,5	34 - 63
P	Automatenstahl	bis 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Baustahl	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	100 - 220	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 - 0,30
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,13	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,13	0,06 - 0,20	0,08 - 0,25	0,08 - 0,25
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,08	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,06 - 0,20	0,08 - 0,20	0,08 - 0,20
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,08	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,06 - 0,20	0,08 - 0,20	0,08 - 0,20
K	Grauguss	bis 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,14	0,04 - 0,16	0,04 - 0,20	0,04 - 0,15	0,06 - 0,30	0,08 - 0,30	0,08 - 0,30
	Sphäroguss	bis 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,10	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.-Leg. langspanend	bis 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0,04 - 0,12	0,04 - 0,20	0,04 - 0,20	0,04 - 0,30	0,08 - 0,30	0,08 - 0,30
	Al.-Leg. kurzspanend	bis 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0,04 - 0,12	0,04 - 0,20	0,04 - 0,20	0,04 - 0,30	0,08 - 0,30	0,08 - 0,30
S	Titan-Legierungen	bis 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,04 - 0,20	0,08 - 0,20	0,08 - 0,20
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0,02 - 0,06	0,02 - 0,06	0,04 - 0,08	0,06 - 0,10	0,06 - 0,12	0,06 - 0,12
H	gehärtete Werkstoffe bis 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 - 0,10	0,04 - 0,10	0,04 - 0,10

5 x D

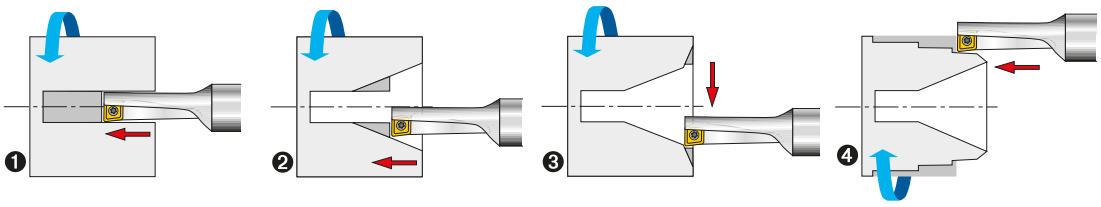
ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Bohrerdurchmesser in mm						
						15 - 16,5	17 - 18,5	19 - 20,5	21 - 24,5	25 - 28,5	29 - 33,5	34 - 63
P	Automatenstahl	bis 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Baustahl	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10	0,04 - 0,12	0,04 - 0,12	0,05 - 0,15	0,05 - 0,18
	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,09	0,04 - 0 ,12	0,04 - 0,14	0,04 - 0,15	0,06 - 0,20	0,08 - 0,20	0,08 - 0,25
	Vergütungsstahl	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,04 - 0,13	0,06 - 0,15	0,08 - 0,18	0,08 - 0,22
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,04 - 0,13	0,06 - 0,15	0,08 - 0,18	0,08 - 0,22
M	INOX, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,08	0,04 - 0,08	0,04 - 0,09	0,04 - 0,10	0,06 - 0,15	0,06 - 0,18	0,06 - 0,20
	INOX, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,08	0,04 - 0,08	0,04 - 0,09	0,04 - 0,10	0,06 - 0,15	0,06 - 0,18	0,06 - 0,20
K	Grauguss	bis 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,10	0,04 - 0,12	0,04 - 0,13	0,04 - 0,15	0,06 - 0,20	0,08 - 0,20	0,08 - 0,25
	Sphäroguss	bis 280 HB	GGG 60	0.7060	100 - 220	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.-Leg. langspanend	bis 500	AlMg 3	3.3535	100 - 500	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,04 - 0,15	0,06 - 0,25	0,08 - 0,30	0,08 - 0,30
	Al.-Leg. kurzspanend	bis 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,10	0,04 - 0,12	0,04 - 0,15	0,04 - 0,15	0,06 - 0,25	0,08 - 0,30	0,08 - 0,30
S	Titan-Legierungen	bis 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0,04 - 0,08	0,04 - 0,08	0,04 - 0,10	0,06 - 0,15	0,08 - 0,15	0,08 - 0,15
	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	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	gehärtete Werkstoffe bis 55 HRC		X40Cr14	1.2083	40 - 80	0,04 - 0,07	0,04 - 0,07	0,04 - 0,07	0,04 - 0,08	0,04 - 0,10	0,04 - 0,10	0,04 - 0,10

SARA® Bohr- und Drehwerkzeug SARAcut 2.0



- Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!
- **Ergänzende Schnittwertinformationen unter www.sartorius-werkzeuge.de**

129101.... 129102....
129201.... 129202....



ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnittgeschwindigkeit Vc m/min		Vorschubwerte in mm / U bezogen auf den Werkzeugdurchmesser in mm			
					SP 300	SP 350	8 -10 - 12	14 - 16	18 - 20	25 - 32
P	unlegierter Baustahl	bis 700	St-52	1.0052	50 - 230	70 - 250	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,10
P	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	50 - 160	60 - 180	0,02 - 0,04	0,03 - 0,05	0,03 - 0,06	0,04 - 0,10
P	Werkzeugstahl	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 - 0,10
M	INOX, 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	INOX, austenitisch	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	Grauguss	bis 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	Sphäroguss	bis 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	Temperguss	bis 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.-Leg. langspanend	bis 500	AlMg 3	3.3535	70 - 1350	70 - 1350	0,05 - 0,10	0,06 - 0,10	0,06 - 0,12	0,05 - 0,25
N	Al.-Leg. kurzspanend	bis 500	G-AlSi 12	3.2581	70 - 1500	70 - 1500	0,05 - 0,10	0,06 - 0,10	0,06 - 0,12	0,05 - 0,25
N	Kupfer-Leg. (Bronze) kurzspanend	bis 850	CuNi12Zn24	2.0730	70 - 360	70 - 360	0,05 - 0,10	0,06 - 0,10	0,06 - 0,12	0,05 - 0,25
N	Kupfer-Leg. (Messing) kurzspanend	bis 600	Cu Zn 39 Pb 3	2.0381	70 - 360	70 - 360	0,05 - 0,10	0,06 - 0,10	0,06 - 0,12	0,05 - 0,25
S	Titan-Legierungen	bis 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	Nickelbasis-Legierungen	bis 1300	NiCr19Fe19NbMo	Inconel 718	20 - 80	10 - 50	0,02 - 0,04	0,02 - 0,05	0,02 - 0,06	0,03 - 0,08

Gewindebohrer und Gewindeformer

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

Einsatz ● sehr gut geeignet ○ gut geeignet		ISO P			ISO H			ISO M			ISO K		ISO S			ISO N			
		Stahl			gehärteter Stahl			INOX			Guss		Titan-Legierungen	Super-Leg. Fe/NiCo-Basis		Aluminium		Kupfer	Graphit
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	< 55 HRc	< 60 HRc	≥ 60 HRc	ferrit./martens.	austenitisch	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-Leg.	GFK/CFK/Durop.
Schnittgeschw. Vc m/min.	unbesch.	5-20	5-15	5-10	2-8	2-6		5-10	5-12	5-8	8-20	8-20	2-6	2-6	2-6	20-40	10-25	10-12	
	besch.	5-40	5-30	5-20	2-12	2-6	1-3	5-20	5-24	5-15	8-30	8-30				30-60	10-30	10-20	
Kühl-/ Schmiermittel	Emulsion	✓	✓	✓				✓	✓	✓	✓	✓				✓	✓	✓	
	Schneidöl	✓	✓	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓	

Umrechnungsfaktoren und Schnittwertempfehlungen für Gewindeformer:

HSS-Gewindeformer, unbeschichtet:	Vc m/min. = Faktor 1,5
HSS-Gewindeformer, beschichtet:	Vc m/min. = Faktor 1,5
VHM-Gewindeformer:	Vc m/min. = 40-70



...dreams come true.

ATORN®
High quality for great performance

Reparatur beschädigter oder abgenutzter Gewinde

Anwendung
Gewindereparatur beschädigter oder abgenutzter Gewinde.
Gewindepanzerung von Werkstoffen mit geringer Scherfestigkeit, z. B. Aluminium- und Magnesium-legierungen, im Maschinenbau, in der KFZ-, Elektro- und Medizintechnik sowie in der Luft- und Raumfahrt.

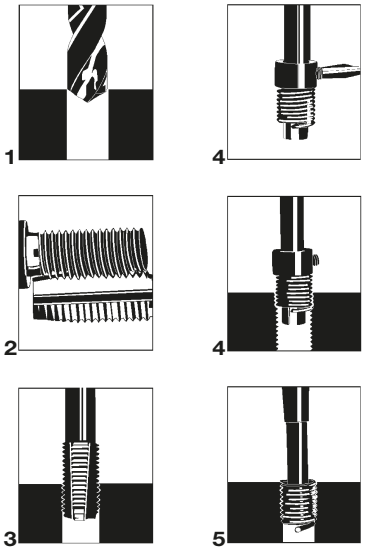
1 Bohren
Beschädigtes Gewinde mit Spiralbohrer aufbohren.

2 Kontrolle
Gewindebohrer und Gewindebolzen auf gleiches Gewinde und Steigung überprüfen.

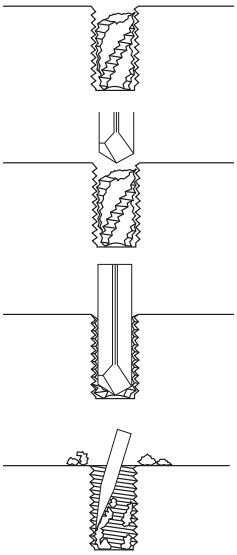
3 Gewinde
Mit speziellem Coil-Gewindebohrer das Aufnahmegewinde in das aufgebohrte Loch schneiden. Die Verwendung von Schneidöl ist zu empfehlen.

4 Gewindeeinsatz Einbauen
Den Einsatz auf das Werkzeug setzen und darauf achten, dass der Mitnehmerzapfen in der Nutöffnung sitzt. Mit dem Stellring korrekt einstellen. Unter leichtem Druck den Gewindesatz in Gewinderichtung eindrehen. Nicht gegen die Laufrichtung drehen, der Zapfen kann abbrechen.

5 Zapfenbrechen
Nach dem Einbau das Eindrehwerkzeug herausnehmen und den Mitnehmerzapfen mit dem Zapfenbrecher entfernen.



VHM-Ausbohrer, Ausbohren beschädigter Gewindebohrer



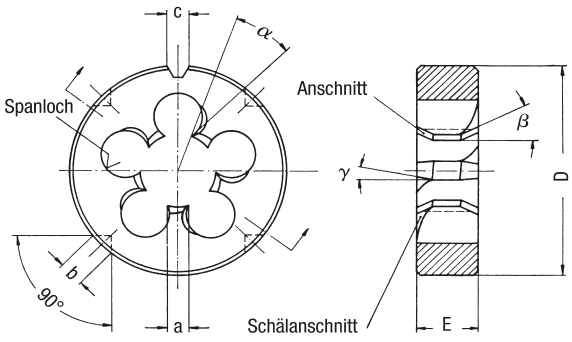
1. Positionieren Sie den Bohrer am Zentrum des beschädigten Gewindebohrers; beachten Sie bitte, dass Werkstück und Bohrer gut eingespannt sind. Wenn der Kopf des beschädigten Gewindebohrers aus dem Werkstück herausragt, schleifen Sie die beschädigte Oberfläche glatt um das Zentrum des Gewindebohrers leichter anbohren zu können.
2. Führen Sie eine erste Zentrierung mit geringem Vorschub durch, dann ziehen Sie den Bohrer zurück. Für diesen Schritt benutzen Sie bitte kein Schmiermittel.
3. Wählen Sie den entsprechenden Bohrer mittels den vorgenannten Auswahlkriterien. Bohren Sie das Loch mit festem Vorschub/Geschwindigkeit; unterbrechen Sie den Vorgang gelegentlich, um Späne zu entfernen. Bitte verwenden Sie ausreichend qualitativ hochwertiges Schmiermittel.
4. Wenn die Bohrung gesäubert ist, können die verbliebenen Reste des Gewindebohrers mittels Anreißnadel oder ähnlich spitzem Werkzeug leicht entfernt werden, das Gewindeschneiden kann dann fortgesetzt werden.

Schnittwerte und Anmerkungen

- Vc = ca. 20 –25 m/min
- Vorschub f = ca. 0,01 – 0,05 mm/U
- Wählen Sie eine stabile Aufspannung
- Setzen Sie ein qualitativ hochwertiges Schmiermittel ein
- Dieses Werkzeug sollte nicht bei der Bearbeitung weicher Stähle, Aluminiumlegierungen oder anderer weicher Materialien eingesetzt werden
- Das Werkzeug sollte von Zeit zu Zeit nachgeschärft werden

Begriffe und Maßerklärungen für Gewindeschneideisen

D Außendurchmesser (n. DIN, Toleranz f10)
E Breite
a Zahnbreite
c Nutbreite
b Durchmesser der Bohrung für Halteschraube
α Spanwinkel
β Anschnittwinkel, halber Senkwinkel
γ Schälanschnittwinkel



Schneideisentoleranzen
Standardmäßig liefern wir Schneideisen für die Toleranzklasse „mittel“. Schneideisen für andere Toleranklassen auf Anfrage lieferbar.

Gewindekernlöcher für Gewindebohrer

metrische ISO Gewinde

M	Steigung mm	Kernloch-bohrung mm
1,0	0,25	0,75
1,1	0,25	0,85
1,2	0,25	0,95
1,4	0,30	1,10
1,6	0,35	1,25
1,7	0,35	1,30
1,8	0,35	1,45
2,0	0,40	1,60
2,2	0,45	1,75
2,3	0,40	1,90
2,5	0,45	2,05
2,6	0,45	2,10
3,0	0,50	2,50
3,5	0,60	2,90
4,0	0,70	3,30
4,5	0,75	3,70
5,0	0,80	4,20
6,0	1,00	5,00
7,0	1,00	6,00
8,0	1,25	6,80
9,0	1,25	7,80
10,0	1,50	8,50
11,0	1,50	9,50
12,0	1,75	10,20
14,0	2,00	12,00
16,0	2,00	14,00
18,0	2,50	15,50
20,0	2,50	17,50
22,0	2,50	19,50
24,0	3,00	21,00
27,0	3,00	24,00
30,0	3,50	26,50
33,0	3,50	29,50
36,0	4,00	32,00
39,0	4,00	35,00
42,0	4,50	37,50
45,0	4,50	40,50
48,0	5,00	43,00
52,0	5,00	47,00
56,0	5,50	50,50
60,0	5,50	54,50
64,0	6,00	58,00
68,0	6,00	62,00

metrische ISO Feingewinde

M	Steigung mm	Kernloch-bohrung mm
2,5	0,35	2,15
3,0	0,35	2,65
3,5	0,35	3,15
4,0	0,50	3,50
4,5	0,50	4,00
5,0	0,50	4,50
5,5	0,50	5,00
6,0	0,75	5,20
7,0	0,75	6,20
8,0	0,75	7,20
8,0	1,00	7,00
9,0	0,75	8,20
9,0	1,00	8,00
10,0	0,75	9,20
10,0	1,00	9,00
10,0	1,25	8,80
11,0	0,75	10,20
11,0	1,00	10,00
12,0	1,00	11,00
12,0	1,25	10,80
12,0	1,50	10,50
14,0	1,00	13,00
14,0	1,25	12,80
14,0	1,50	12,50
15,0	1,00	14,00
15,0	1,50	13,50
16,0	1,00	15,00
16,0	1,50	14,50
17,0	1,00	16,00
17,0	1,50	15,50
18,0	1,00	17,00
18,0	1,50	16,50
18,0	2,00	16,00
20,0	1,00	19,00
20,0	1,50	18,50
20,0	2,00	18,00
22,0	1,00	21,00
22,0	1,50	20,50
22,0	2,00	20,00
24,0	1,00	23,00
24,0	1,50	22,50
24,0	2,00	22,00
25,0	1,00	24,00

M	Steigung mm	Kernloch-bohrung mm
25,0	1,50	23,50
25,0	2,00	23,00
26,0	1,50	24,50
27,0	1,00	26,00
27,0	1,50	25,50
27,0	2,00	25,00
28,0	1,00	27,00
28,0	1,50	26,50
28,0	2,00	26,00
30,0	1,00	29,00
30,0	1,50	28,50
30,0	2,00	28,00
30,0	3,00	27,00
32,0	2,00	30,00
33,0	1,50	31,50
33,0	2,00	31,00
33,0	3,00	30,00
35,0	1,50	33,50
36,0	1,50	34,50
36,0	2,00	34,00
36,0	3,00	33,00
38,0	1,50	36,50
39,0	1,50	37,50
39,0	2,00	37,00
39,0	3,00	36,00
40,0	1,50	38,50
40,0	2,00	38,00
40,0	3,00	37,00
42,0	1,50	40,50
42,0	2,00	40,00
42,0	3,00	39,00
45,0	1,50	43,50
45,0	2,00	43,00
45,0	3,00	42,00
48,0	1,50	46,50
48,0	2,00	46,00
48,0	3,00	45,00
50,0	1,50	48,50
50,0	2,00	48,00
50,0	3,00	47,00
52,0	1,50	50,50
52,0	2,00	50,00
52,0	3,00	49,00

amerikanisches Einheits-Grobgewinde UNC

UNC	Gangzahl auf 1 Zoll	Kernloch-bohrung 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	3,50
Nr. 8	32	3,50
Nr. 10	24	4,50
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	10,75
9/16“	12	12,25
5/8“	11	13,50
3/4“	10	16,50
7/8“	9	19,50
1“	8	22,25
1 1/8“	7	25,00
1 1/4“	7	28,25
1 3/8“	6	30,75
1 1/2“	6	34,00
1 3/4“	5	39,50
2“	4,5	45,25

amerikanisches Einheits-Feingewinde

UNF	Gangzahl auf 1 Zoll	Kernloch-bohrung mm
Nr. 0	80	1,30
Nr. 1	72	1,60
Nr. 2	64	1,90
Nr. 3	56	2,10
Nr. 4	48	2,40
Nr. 5	44	2,70
Nr. 6	40	3,00
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	23,30
1 1/8“	12	26,50
1 1/4“	12	29,50
1 3/8“	12	32,70
1 1/2“	12	36,00

kegelige Rohrgewinde

	Gewindebohrer in Zoll	Kernloch-bohrung mm
kegeliges Rohrgewinde R	1/8	8,10
	1/4	10,70
	3/8	14,25
	1/2	17,70
	3/4	23,00
	1	29,00
	1 1/4	37,60
	1 1/2	43,50
	2	55,00
amerikanisches Standard-Rohrgewinde, kegelig NPT	1/16	6,10
	1/8	8,50
	1/4	11,00
	3/8	14,50
	1/2	18,00
	3/4	23,00
	1	29,00
	1 1/4	38,00
	1 1/2	44,00
	2	56,00
amerikanisches Fein-Rohrgewinde, kegelig NPTF	1/16	6,25
	1/8	8,60
	1/4	11,10
	3/8	14,70
	1/2	17,85
	3/4	23,40
	1	29,40
	1 1/4	38,10
	1 1/2	44,00
	2	56,40

Gewindekernlöcher Fortsetzung

für Gewindebohrer

Whitworth Gewinde (BSW)

W	Gangzahl auf 1 Zoll	Kernloch-bohrung mm
3/32“	48	1,80
1/8“	40	2,50
5/32“	32	3,10
3/16“	24	3,60
7/32“	24	4,40
1/4“	20	5,10
5/16“	18	6,50
3/8“	16	7,90
7/16“	14	9,30
1/2“	12	10,50
9/16“	12	12,00
5/8“	11	13,50
3/4“	10	16,50
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	30,50
1 1/2“	6	33,50
1 5/8“	5	35,50
1 3/4“	5	39,00
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	68,50

Whitworth Rohrgewinde

G	Gangzahl auf 1 Zoll	Kernloch-bohrung mm
1/8“	28	8,80
1/4“	19	11,80
3/8“	19	15,25
1/2“	14	19,00
5/8“	14	21,00
3/4“	14	24,50
7/8“	14	28,25
1“	11	30,75
1 1/8“	11	35,50
1 1/4“	11	39,50
1 3/8“	11	42,00
1 1/2“	11	45,20
1 5/8“	11	49,60
1 3/4“	11	51,40
2“	11	57,20
2 1/4“	11	63,30
2 3/8“	11	67,00
2 1/2“	11	72,80
2 3/4“	11	79,10
3“	11	85,50
3 1/4“	11	91,50
3 1/2“	11	98,00
3 3/4“	11	104,00
4“	11	110,50

Gewindekernlöcher

für Gewindeformer

metrische ISO Gewinde

M	Steigung mm	Kernlochbohrung mm
3	0,50	2,75 ± 0,03
4	0,70	3,65 ± 0,03
5	0,80	4,60 ± 0,03
6	1,00	5,55 ± 0,04
8	1,25	7,40 ± 0,04
10	1,50	9,30 ± 0,05
12	1,75	11,10 ± 0,05
14	2,00	13,10 ± 0,05

metrische ISO Feingewinde

M	Steigung mm	Kernlochbohrung mm
3	0,35	2,75 ± 0,03
4	0,5	3,75 ± 0,03
5	0,50	4,75 ± 0,03
6	0,75	5,65 ± 0,04
8	1,00	7,55 ± 0,04
10	1,00	9,55 ± 0,04
10	1,25	9,45 ± 0,04
12	1,25	11,40 ± 0,04
12	1,50	11,30 ± 0,05
14	1,50	13,30 ± 0,05

Formel für die Berechnung der Gewindekernlöcher

$$d = \text{Flanken-Ø} + \frac{\text{Steigung}}{5}$$

THERMDRILL® Thermobohrer (Fließbohrer)



102900....

Form ohne Schneiden



Gewinde	Kurze Ausführung	maximale Material Stärke	Länge Arbeitsteil	Art.Nr	Lange Ausführung	maximale Material Stärke	Länge Arbeitsteil	Art.Nr.	Schaft Ø	Drehzahlen Thermobohren min.	optimal	Alu, Cu,	Gewinde-formen
		[mm]	[mm]			[mm]	[mm]		[mm]	[U/min.]	[U/min.]	[U/min.]	[U/min]
M3 (2,7)		1,5	6,4	27FS		2,0	7,6	27FL	6,0	2.600	3.000	4.000	1.350
M4 (3,7)		1,5	7,6	37FS		2,5	10,1	37FL	6,0	2.300	2.600	3.800	1.000
M5 (4,5)		2,0	9,1	45FS		3,0	12,0	45FL	6,0	2.200	2.500	3.700	800
M6 (5,4)		2,0	10,1	54FS		3,5	14,4	54FL	8,0	2.000	2.400	3.600	65
M8 (7,4)		2,5	13,5	74FS		4,0	18,2	74FL	8,0	1.600	2.200	3.200	500
M10 (9,3)		2,5	16,2	93FS		4,5	21,7	93FL	10,0	1.500	2.000	3.000	400
M12 (11,0)		3,0	19,3	110FS		5,0	25,8	110FL	12,0	1.400	1.800	2.800	350
M16 (14,9)		3,5	26,2	149FS		6,0	35,7	149FL	16,0	1.200	1.400	2.200	250
M18 (16,8)		3,5	29,4	168FS		6,0	39,5	168FL	18,0	1.100	1.300	2.000	230
M20 (18,8)		4,0	33,1	188FS		8,0	43,4	188FL	20,0	1.000	1.200	1.900	200
1/8“ (9,3)		2,5	16,2	93FS		4,5	21,7	93FL	10,0	1.500	2.000	3.000	400
1/4“ (12,5)		2,5	21,3	125FS		5,0	26,4	125FL	14,0	1.400	1.600	2.600	350
3/8“ (16,0)		2,5	27,0	160FS		5,0	31,0	160FL	16,0	1.200	1.400	2.200	300
1/2“ (20,0)		2,5	36,3	200FS					18,0	1.000	1.200	1.800	250
3/4“ (25,5)		2,5	43,6	255FS					20,0	900	1.000	1.600	200
1“ (32,1)		2,5	52,3	321FS					20,0	900	1.000	1.500	150

Cut mit Schneiden



Gewinde	Kurze Ausführung	maximale Material Stärke	Länge Arbeitsteil	Art.Nr	Lange Ausführung	maximale Material Stärke	Länge Arbeitsteil	Art.Nr.	Schaft Ø	Drehzahlen Thermobohren min.	optimal	Alu, Cu,	Gewinde-formen
M3 (2,7)		1,5	6,4	27CS		3,0	27CL	7,6	6,0	2.600	3.000	4.000	1.350
M4 (3,7)		2,0	7,6	37CS		4,0	37CL	10,1	6,0	2.300	2.600	3.800	1.000
M5 (4,5)		3,0	9,1	45CS		4,5	45CL	12,0	6,0	2.200	2.500	3.700	800
M6 (5,4)		3,0	10,1	54CS		5,0	54CL	14,4	8,0	2.000	2.400	3.600	65
M8 (7,4)		4,0	13,5	74CS		6,0	7CFL	18,2	8,0	1.600	2.200	3.200	500
M10 (9,3)		4,0	16,2	93CS		6,5	9CFL	21,7	10,0	1.500	2.000	3.000	400
M12 (11,0)		4,5	19,3	110CS		7,0	110CL	25,8	12,0	1.400	1.800	2.800	350
M16 (14,9)		5,0	26,2	149CS		8,0	149CL	35,7	16,0	1.200	1.400	2.200	250
M18 (16,8)		5,0	29,4	168CS		8,0	168CL	39,5	18,0	1.100	1.300	2.000	230
M20 (18,8)		6,0	33,1	188CS		10,0	188CL	43,4	20,0	1.000	1.200	1.900	200
1/8“ (9,3)		4,0	16,2	93CS		6,5	93CL	21,7	10,0	1.500	2.000	3.000	400
1/4“ (12,5)		4,0	21,3	125CS		7,0	125CL	26,4	14,0	1.400	1.600	2.600	350
3/8“ (16,0)		4,0	27,0	160CS		7,0	160CL	31,0	16,0	1.200	1.400	2.200	300
1/2“ (20,0)		4,0	36,3	200CS					18,0	1.000	1.200	1.800	250
3/4“ (25,5)		4,0	43,6	255CS					20,0	900	1.000	1.600	200
1“ (32,1)		4,0	52,3	321CS					20,0	900	1.000	1.500	150

HSS Kegelsenker



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

150101.... 150102.... 150104.... 150105.... 150106.... 150107.... 150110.... 150111.... 150112.... 150113.... 150114.... 150116.... 150117.... 150130.... 150131.... 150135.... 150140.... 150145.... 146.... 147.... 150148.... 150150.... 150151.... 150115.... 150155.... 150201.... 150270.... 150271....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 3,0 - 5,0	5,1 - 8,0	8,1 - 12,0	12,1 - 16,0	16,1 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	20 -28	0,05 - 0,07	0,08 - 0,10	0,09 - 0,12	0,12 -0,16	0,16 - 0,20
	Automatenstahl	bis 700	9 SMn 28	1.0715	20 -28	0,05 - 0,07	0,08 - 0,10	0,09 - 0,12	0,12 -0,16	0,16 - 0,20
	unlegierter Vergütungsstahl	500 - 950	Ck45	1.1191	10 -15	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
	legierter Einsatzstahl	bis 950	16 MnCr 5	1.7131	10 -15	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
	Werkzeugstahl	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 - 0,10
	Stahlguss	bis 950	GS 40	1.0416	6 - 10	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	5 - 10	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
	INOX Stahl, geschwefelt	500 - 950	X 12 CrMoS 17	1.4104	5 - 10	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
	INOX Stahl, martensitisch	500 - 950	X39 CrMo 17 1	1.4122	5 - 8	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
K	Grauguss	bis 240 HB	GG 25	0.6025	8 - 14	0,04 - 0,05	0,05 - 0,10	0,10 - 0,14	0,14 - 0,18	0,18 - 0,22
	legierter Grauguss	bis 350 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 - 0,10
	Sphäroguss	bis 300 HB	GGG 60	0.7060	8 - 12	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
	Temperguss	bis 300 HB	GTS 55	0.8155	8 - 12	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
N	Reinmetalle, weich	bis 500	Reineisen		40 - 60	0,04 - 0,09	0,09 - 0,12	0,12 - 0,16	0,12 - 0,16	0,16 - 0,24
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	40 - 80	0,08 - 0,11	0,10 - 0,14	0,12 - 0,16	0,16 - 0,22	0,20 - 0,25
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	20 - 50	0,06 - 0,09	0,08 - 0,10	0,10 - 0,12	0,12 - 0,16	0,16 - 0,20
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	35 - 50	0,06 - 0,09	0,09 - 0,12	0,12 - 0,16	0,12 - 0,16	0,16 - 0,24
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	25 - 40	0,08 - 0,11	0,10 - 0,14	0,12 - 0,16	0,16 - 0,22	0,20 - 0,25
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	60 - 100	0,10 - 0,14	0,12 - 0,14	0,14 - 0,16	0,16 - 0,20	0,20 - 0,30
	Thermoplaste	40 - 70	PVc, Acrylglas		20 - 40	0,05 - 0,08	0,07 - 0,10	0,09 - 0,12	0,12 - 0,16	0,16 - 0,20
	Duroplaste	20 - 40	Bakelit		10 - 20	0,04 - 0,06	0,06 - 0,09	0,08 - 0,10	0,10 - 0,12	0,12 - 0,16
	Graphit				3 - 6	Handvorschub	Handvorschub	Handvorschub	Handvorschub	Handvorschub
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	5 - 8	0,02 - 0,04	0,04 - 0,06	0,04 - 0,06	0,04 - 0,08	0,04 - 0,10
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	6 - 10	0,03 - 0,05	0,05 - 0,08	0,08 - 0,10	0,10 - 0,14	0,14 - 0,18
H	Hartguss	300 - 600 HB		Ampco	8 - 14	0,04 - 0,05	0,05 - 0,10	0,10 - 0,14	0,14 - 0,18	0,18 - 0,22

Schnittwertempfehlungen für beschichtete HSS sowie HSS-E Senker:
Die oben angegebenen Werte können um ca. 10 bis 20 % erhöht werden.

ATORN® Kegel- und Entgratsenker ENORMplus



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

150163....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 10,4	12,4	16,5	20,5	25 / 31
P	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	6 - 12	0,03	0,03	0,04	0,05	0,06
	Stahlguss	bis 950	GS 40	1.0416	8 - 14	0,04	0,05	0,07	0,10	0,12
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	10 - 17	0,06	0,08	0,10	0,12	0,15
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	10 - 15	0,06	0,08	0,10	0,12	0,15
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	8 - 11	0,04	0,06	0,08	0,10	0,12
S	Titan-Legierungen	bis 950	TiAl6V4	3.7165	7 - 12	0,05	0,07	0,08	0,10	0,15
	Titan-Legierungen	900 - 1400	TiAl6Sn 2	3.7174	5 - 10	0,04	0,05	0,06	0,08	0,10
	Nickelbasis-Legierungen	bis 950	NiCr12Al6MoNb	2.4670	8 - 15	0,08	0,12	0,14	0,16	0,18
	Nickelbasis-Legierungen	900 - 1400	NiCr19Fe19NbMo	Inconel 718	5 - 12	0,07	0,10	0,12	0,15	0,18
H	Hartguss	300 - 600 HB		Ampco	3 - 10	Handvorschub	0,03	0,04	0,06	0,08

SARA® Nietlochreibahlen



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

160130....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf D1 in mm 6,0 - 10,0	10,0 - 16,0	16,0 - 25,0	25,0 - 32,0	32,0 - 40,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	10 - 15	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Automatenstahl	bis 700	9 SMn 28	1.0715	10 - 15	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Baustahl	500 - 950	Ck45	1.1191	8 - 12	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	6 - 10	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Stahlguss	bis 950	GS 40	1.0416	6 - 10	0,1 - 0,15	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
K	Grauguss	100 - 400	GG 25	0.6025	10 - 15	0,1 - 0,15	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	10 - 12	0,1 - 0,15	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Sphäroguss	400 - 800	GGG 60	0.7060	10 - 12	0,1 - 0,15	0,2 - 0,3	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	15 - 20	0,1 - 0,2	0,2 - 0,35	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	15 - 20	0,1 - 0,2	0,2 - 0,35	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	20 - 30	0,1 - 0,2	0,2 - 0,35	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	20 - 30	0,1 - 0,2	0,2 - 0,35	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	20 - 30	0,1 - 0,2	0,2 - 0,35	0,2 - 0,3	0,3 - 0,45	0,3 - 0,5

ATORN® VHM-Kegel- und Entgratsenker



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

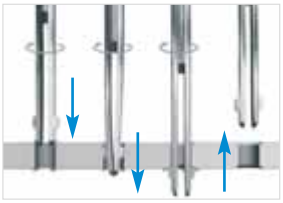
150133....
150166....
150171....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf Bohrerdurchmesserbereich in mm 6	10	16	20	25
P	unlegierter Baustah	bis 700	St-52	1.0052	30 - 50	0,10	0,10	0,12	0,14	0,16
	Automatenstahl	bis 700	9 SMn 28	1.0715	30 - 50	0,10	0,10	0,12	0,14	0,16
	Baustahl	500 - 950	Ck45	1.1191	25 - 40	0,06	0,08	0,14	0,16	0,18
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	20 - 35	0,07	0,10	0,16	0,18	0,20
	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	8 - 20	0,05	0,05	0,06	0,07	0,08
	Stahlguss	bis 950	GS 40	1.0416	12 - 20	0,06	0,07	0,10	0,12	0,15
M	INOX Stahl, austenitisch	500 - 950	X 5 CrNi 18 10	1.4301	15 - 30	0,08	0,10	0,12	0,15	0,18
	INOX Stahl, ferritisch	500 - 950	X 12 CrMoS 17	1.4104	15 - 28	0,08	0,10	0,12	0,15	0,18
	INOX Stahl, martensitisch	500 - 950	X 10 Cr 13	1.4006	12 - 20	0,05	0,06	0,08	0,10	0,12
K	Grauguss	100 - 400	GG 25	0.6025	12 - 25	0,07	0,10	0,12	0,15	0,18
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	10 - 20	0,05	0,07	0,10	0,12	0,14
	Sphäroguss	400 - 800	GGG 60	0.7060	12 - 22	0,06	0,08	0,11	0,14	0,16
	Temperguss	350 - 700	GTS 55	0.8155	12 - 22	0,06	0,08	0,11	0,14	0,16
N	Reinmetalle, weich	bis 500	Reineisen		35 - 60	0,10	0,10	0,12	0,14	0,18
	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	60 - 100	0,12	0,15	0,20	0,24	0,27
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	40 - 65	0,09	0,11	0,15	0,18	0,23
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	40 - 80	0,10	0,12	0,16	0,20	0,24
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	40 - 120	0,12	0,14	0,18	0,21	0,27
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	70 - 150	0,14	0,15	0,20	0,25	0,30
	Thermoplaste	40 - 70	PVc, Acrylglas		30 - 65	0,12	0,14	0,17	0,20	0,25
	Duroplaste	20 - 40	Bakelit		15 - 35	0,10	0,12	0,15	0,18	0,24
	Graphit				5 - 10	Handvorschub	Handvorschub	Handvorschub	Handvorschub	Handvorschub
H	Hartguss	300 - 600 HB		Ampco	4 - 12	Handvorschub	Handvorschub	0,06	0,08	0,10

SARA® Bohrloch-Entgratwerkzeug S-Grat



155001....



Wenden Sie dieselbe Geschwindigkeit und denselben Vorschub an die Sie bei einem standardmäßigen HSS-Spiralbohrer anwenden würden. Der Anwender wird schnell das richtige Gefühl für den geringen Druck erlangen, der für das Entfernen von Bohrrückständen notwendig ist.

ATORN® Rückwärts-Senker 180°



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

152501....

- für rotierenden Einsatz bei stehenden Werkstücken
- für ISO-Wendeschneidplatten (CPMT bzw. CCM. und CCG.)
- mit Innenkühlung, zylindrischer Schaft mit Spannfläche (Whistle-Notch) Ø15 und Ø18 ohne Innenkühlung

1. Positionierung: auf Position der Schneidkante achten!
2. Um „E“ entgegengesetzt zur Schneidkante aus der Mitte fahren.
3. Exzentrisch durch die Bohrung fahren.
4. Wieder zurück ins Zentrum fahren.
5. Mit Drehzahl „N“ und Vorschub „F“ rückwärts senken.
6. Um „E“ entgegengesetzt zur Schneidkante aus dem Zentrum stellen und aus der Bohrung zurückziehen.

Schnittgeschw. Vc m/min	Vorschub F mm/U
50-80	0,08-0,1

ATORN® Kegel-Schälreibahle



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

160150....

ISO	Werkstoff-gruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiele	Werkstoff-Nr.	Schnittge-schwindigkeit Vc m/min	Vorschubwerte in mm/Umdrehung bezogen auf D in mm 2,0 - 3,0	3,0 - 6,0	6,0 - 10,0	10,0 - 14,0	14,0 - 20,0
P	unlegierter Baustahl	bis 700	St-52	1.0052	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,5 - 0,6
	Automatenstahl	bis 700	9 SMn 28	1.0715	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,5 - 0,6
	Baustahl	500 - 950	Ck45	1.1191	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,5 - 0,6
	Einsatzstahl	bis 950	16 MnCr 5	1.7131	4 - 6	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,4	0,4 - 0,5
K	Grauguss	100 - 400	GG 25	0.6025	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,5 - 0,6
	legierter Grauguss	150 - 250	GGL-NiCr 35 2	0.6678	4 - 6	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,4	0,4 - 0,5
	Sphäroguss	400 - 800	GGG 60	0.7060	4 - 6	0,1 - 0,2	0,2 - 0,3	0,2 - 0,3	0,3 - 0,4	0,4 - 0,5
N	Al.-Leg. langspanend	bis 550	AlMg 3	3.3535	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,4 - 0,6
	Al.-Leg. kurzspanend	bis 400	G-AlSi 12	3.2581	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,4 - 0,6
	Kupfer-Leg. langspanend	300 - 700	MS 63	2.0320	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,4 - 0,6
	Kupfer-Leg. kurzspanend	bis 500	MS 58	2.0402	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,4 - 0,6
	Magnesium-Legierungen	160 - 300	G-MgAl9Zn 1	3.5912	6 - 8	0,2 - 0,3	0,4 - 0,5	0,4 - 0,5	0,4 - 0,6	0,4 - 0,6

ATORN® Maschinen-Reibahlen aus HSS-E



Vc = Schnittgeschwindigkeit (m/min)
f = Vorschub pro Umdrehung (mm)
n = Drehzahl (min^{-1}) - mittlerer Wert

TIN-beschichtete Reibahlen
f bis 100% höher als bei unbeschichteten Reibahlen
Vc kann bis 50% erhöht werden

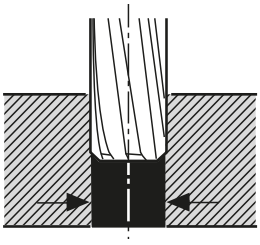
161001.... 161005.... 161015....
161002.... 161006.... 161035....
161003.... 161010.... 161020....

ISO	Werkstoff		Reibahlen-Durchmesser (mm) 5	8	10	15	20	25	30	40	50	Kühl- und Schmiermittel
P	**Stahl bis 500 N/mm²**	Vc	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	**Flussstahl:** Bohrölemulsion, Talg, Schneidöl
		f	0,1	0,13	0,15	0,2	0,25	0,25	0,3	0,35	0,4	
		n	700	440	350	232	176	137	115	88	71	
	Stahl 500-700 N/mm²	Vc	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	**Werkzeugstahl:** Rapsölersatz
		f	0,1	0,13	0,15	0,2	0,25	0,25	0,3	0,35	0,4	
		n	572	358	288	191	143	115	95	72	58	
	Stahl 700-900 N/mm²	Vc	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	**Legierter Stahl:** Rapsölersatz Schneidöl
		f	0,1	0,13	0,15	0,2	0,25	0,25	0,3	0,35	0,4	
		n	445	278	222	148	111	89	74	56	45	
	Stahl 900-1100 N/mm²	Vc	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	**Hitzebeständiger und INOX Stahl:** Bohröl
		f	0,08	0,1	0,1	0,15	0,2	0,25	0,3	0,35	0,4	
		n	318	198	159	106	80	64	53	40	32	
	Stahlguss 400-500 N/mm²	Vc	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	Rapsöl
		f	0,1	0,13	0,15	0,2	0,25	0,25	0,3	0,35	0,4	
		n	510	318	254	170	127	102	85	64	51	
	Stahlguss 500-700 N/mm²	Vc	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	Rapsöl
		f	0,07	0,08	0,1	0,13	0,18	0,18	0,22	0,25	0,3	
		n	318	198	159	106	80	64	53	40	32	
K	**Grauguss bis 200 HB**	Vc	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	Trocken, Rapsöl
		f	0,18	0,2	0,23	0,25	0,3	0,3	0,35	0,4	0,45	
		n	572	358	288	191	143	115	95	72	58	
	Grauguss über 200 HB	Vc	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	Trocken, Rapsöl
		f	0,12	0,15	0,17	0,2	0,25	0,25	0,3	0,35	0,4	
		n	318	198	159	106	80	64	53	40	32	
	Temperguss bis 450 N/mm²	Vc	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	8-10	Trocken, Bohrölemulsion
		f	0,18	0,2	0,23	0,25	0,3	0,3	0,35	0,4	0,45	
		n	572	358	288	191	143	115	95	72	58	
	Temperguss 450-600 N/mm²	Vc	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	Trocken, Bohrölemulsion
		f	0,15	0,18	0,2	0,2	0,25	0,3	0,35	0,4	0,4	
		n	445	278	222	148	111	89	74	56	45	
N	**Kupfer**	Vc	8-12	8-12	8-12	8-12	8-12	8-12	8-12	8-12	8-12	Bohrölemulsion
		f	0,15	0,18	0,2	0,25	0,3	0,3	0,35	0,4	0,45	
		n	636	398	318	212	158	127	106	80	54	
	Messing, zäh	Vc	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	Trocken, Rapsöl, Bohrölemulsion
		f	0,2	0,25	0,3	0,35	0,4	0,4	0,45	0,5	0,6	
		n	700	440	350	232	176	137	115	88	71	
	spröde	Vc	12-14	12-14	12-14	12-14	12-14	12-14	12-14	12-14	12-14	
		f	0,2	0,25	0,3	0,35	0,4	0,4	0,45	0,5	0,6	
		n	828	518	413	276	207	166	132	104	83	
	Leichtmetalle	Vc	15-20	15-20	15-20	15-20	15-20	15-20	15-20	15-20	15-20	**Alu zäh:** Terpentinölersatz und Petroleum 4:5, **Alu ausgehärtet:** Rapsöl
		f	0,15	0,18	0,2	0,25	0,3	0,3	0,35	0,4	0,45	
		n	1140	720	573	382	288	225	189	144	117	
	Silumin	Vc	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	Petroleum , Terpentinöl
		f	0,15	0,18	0,2	0,25	0,3	0,3	0,35	0,4	0,4	
		n	700	440	350	232	176	137	115	88	71	
	Kunststoff, hart	Vc	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	Trocken, Pressluft, kein Wasser
		f	0,2	0,25	0,3	0,35	0,4	0,45	0,45	0,5	0,5	
		n	318	198	159	106	80	64	53	40	32	
	weich	Vc	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	
		f	0,25	0,3	0,35	0,4	0,45	0,5	0,55	0,6	0,6	
		n	510	318	254	170	127	102	85	64	51	

Untermaße zum Reiben (Richtwerte)

Normal wird das vorgebohrte Loch in einem Arbeitsgang gerieben, wofür bei Verwendung fester Reibahlen die in nachstehender Tabelle angegebenen Untermaße empfohlen werden.

Werkstoff	Durchmesserbereich der Bohrung in mm 3 bis 5	5 bis 10	10 bis 20	20 bis 30	über 30
Stahl bis 700 N/mm²	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm
Stahl 700-1100 N/mm²	0,1-0,2 mm	0,2 mm	0,2 mm	0,3 mm	0,3-0,4 mm
Stahlguss	0,1-0,2 mm	0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm
Grauguss	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm
Temperguss	0,1-0,2 mm	0,2 mm	0,3 mm	0,4 mm	0,5 mm
Kupfer	0,1-0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm	0,5 mm
Messing, Bronze	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3 mm	0,3-0,4 mm
Leichtmetalle	0,1-0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm	0,5 mm
Kunststoffe hart	0,1-0,2 mm	0,3 mm	0,4 mm	0,4-0,5 mm	0,5 mm
weich	0,1-0,2 mm	0,2 mm	0,2 mm	0,3 mm	0,3-0,4 mm



Bei Verwendung von Reibahlen mit geschlitztem Körper und Reibahlen mit eingesetzen Messern sollte die Reibzugabe veringert werden.

Bei sehr hohen Anforderungen an die Lochwandungsgüte und bei besonders harten Werkstoffen wird vor- und fertiggerieben, wobei zweckmäßigerweise die neben stehenden Tabellenwerte in zwei gleichen Teilen gerieben werden.

Zu geringe Spanabnahme hat meistens vorzeitige Abstumpfung zur Folge, weil die Zähne nicht mehr zum Schneiden kommen, sondern lediglich die Bohrung aufdrücken.

ATORN® Maschinen-Reibahlen aus VHM



Vc = Schnittgeschwindigkeit (m/min)
f = Vorschub pro Umdrehung (mm)
n = Drehzahl (min^{-1}) - mittlerer Wert

163001....
163002....
163005....

ISO	Werkstoff		Reibahlen-Durchmesser (mm) 5	8	10	15	20	25	30	40	50	Kühl- und Schmiermittel
P	**Stahl bis 700 N/mm²**	Vc f n	10-15 0,15 796	10-15 0,18 498	10-15 0,2 398	10-15 0,25 266	10-15 0,3 198	10-15 0,3 159	10-15 0,35 133	10-15 0,4 100	10-15 0,5 80	**Flussstahl:** Bohrölemulsion, Talg, Schneidöl **Werkzeugstahl:** Rapsölersatz **Legierter Stahl:** Rapsölersatz, Schneidöl **Hitzebeständiger und INOX Stahl:** Bohröl
	Stahl 700-1000 N/mm²	Vc f n	8-12 0,15 636	8-12 0,18 398	8-12 0,2 318	8-12 0,25 212	8-12 0,3 158	8-12 0,3 127	8-12 0,35 106	8-12 0,4 80	8-12 0,5 64	
	Stahl 1000-1400 N/mm²	Vc f n	6-10 0,12 510	6-10 0,15 318	6-10 0,15 254	6-10 0,18 170	6-10 0,2 127	6-10 0,2 102	6-10 0,25 85	6-10 0,3 64	6-10 0,4 51	
	Stahlguss 400-500 N/mm²	Vc f n	8-12 0,15 636	8-12 0,18 398	8-12 0,2 318	8-12 0,25 212	8-12 0,3 158	8-12 0,3 127	8-12 0,35 106	8-12 0,4 80	8-12 0,5 64	Rapsöl
	Stahlguss 500-700 N/mm²	Vc f n	6-10 0,12 510	6-10 0,15 318	6-10 0,15 254	6-10 0,18 170	6-10 0,2 127	6-10 0,2 102	6-10 0,25 85	6-10 0,3 64	6-10 0,4 51	Rapsöl
K	**Grauguss bis 200 HB**	Vc f n	8-12 0,2 636	8-12 0,26 398	8-12 0,3 318	8-12 0,35 212	8-12 0,4 158	8-12 0,4 127	8-12 0,45 133	8-12 0,5 100	8-12 0,6 80	Trocken, Rapsöl
	Grauguss über 200 HB	Vc f n	6-10 0,15 510	6-10 0,18 318	6-10 0,2 254	6-10 0,25 170	6-10 0,3 127	6-10 0,3 102	6-10 0,35 106	6-10 0,4 80	6-10 0,5 64	Trocken, Rapsöl
	Temperguss	Vc f n	8-12 0,15 636	8-12 0,18 398	8-12 0,2 318	8-12 0,25 212	8-12 0,3 158	8-12 0,3 127	8-12 0,35 106	8-12 0,4 80	8-12 0,5 64	Trocken, Bohrölemulsion
N	**Kupfer**	Vc f n	20-30 0,3 1592	20-30 0,36 995	20-30 0,4 796	20-30 0,45 531	20-30 0,5 398	20-30 0,5 318	20-30 0,55 345	20-30 0,6 259	20-30 0,7 207	Bohrölemulsion
	Messing Rotguss	Vc f n	15-25 0,2 1272	15-25 0,26 798	15-25 0,3 637	15-25 0,35 425	15-25 0,4 318	15-25 0,4 255	15-25 0,45 265	15-25 0,5 199	15-25 0,6 159	Trocken, Rapsöl Bohrölemulsion
	Gussbronze	Vc f n	15-25 0,2 1272	15-25 0,26 798	15-25 0,3 637	15-25 0,35 425	15-25 0,4 318	15-25 0,4 255	15-25 0,45 265	15-25 0,5 199	15-25 0,6 159	Bohrölemulsion
	Aluminium-Legierungen über 80 Brinell	Vc f n	15-25 0,2 1272	15-25 0,26 798	15-25 0,3 637	15-25 0,35 425	15-25 0,4 318	15-25 0,4 255	15-25 0,45 265	15-25 0,5 199	15-25 0,6 159	**Alu zäh:** Terpentinölersatz und Petroleum 4:5 **Alu ausgehärtet:** Rapsöl
	Kunststoffe	Vc f n	15-25 0,3 1272	15-25 0,36 798	15-25 0,4 637	15-25 0,45 425	15-25 0,5 318	15-25 0,5 255	15-25 0,55 265	15-25 0,6 199	15-25 0,7 159	Trocken, Pressluft, kein Wasser

Untermaße zum Reiben (Richtwerte)

Normal wird das vorgebohrte Loch in einem Arbeitsgang gerieben, wofür bei Verwendung fester Reibahlen die in nachstehender Tabelle angegebenen Untermaße empfohlen werden.

Werkstoff	Durchmesserbereich der Bohrung in mm 3 bis 5	5 bis 10	10 bis 20	20 bis 30	über 30
Stahl bis 700 N/mm²	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm
Stahl 700-1100 N/mm²	0,1-0,2 mm	0,2 mm	0,2 mm	0,3 mm	0,3-0,4 mm
Stahlguss	0,1-0,2 mm	0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm
Grauguss	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm
Temperguss	0,1-0,2 mm	0,2 mm	0,3 mm	0,4 mm	0,5 mm
Kupfer	0,1-0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm	0,5 mm
Messing, Bronze	0,1-0,2 mm	0,2 mm	0,2-0,3 mm	0,3 mm	0,3-0,4 mm
Leichtmetalle	0,1-0,2 mm	0,2-0,3 mm	0,3-0,4 mm	0,4-0,5 mm	0,5 mm
Kunststoffe hart	0,1-0,2 mm	0,3 mm	0,4 mm	0,4-0,5 mm	0,5 mm
weich	0,1-0,2 mm	0,2 mm	0,2 mm	0,3 mm	0,3-0,4 mm

Bei Verwendung von Reibahlen mit geschlitztem Körper und Reibahlen mit eingesetzen Messern sollte die Reibzugabe verringert werden.

Bei sehr hohen Anforderungen an die Lochwandungsgüte und bei besonders harten Werkstoffen wird vor- und fertiggerieben, wobei zweckmäßigerweise die neben stehenden Tabellenwerte in zwei gleichen Teilen gerieben werden.

Zu geringe Spanabnahme hat meistens vorzeitige Abstumpfung zur Folge, weil die Zähne nicht mehr zum Schneiden kommen, sondern lediglich die Bohrung aufdrücken.

Passungstabelle für 1/100 Maschinenreibahlen nach DIN 212



Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

161030....
163002....

Bohrungsdurchmesser 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	10,10			10,06	10,05	10,05	10,06	10,08	10,10		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

Bohrungsdurchmesser 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	10,10		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

Bohrungsdurchmesser in mm	N8	P6	P7	P8	R6	R7	S6	S7	U6	U7	X7	X8	X9	Z7	Z8	Z9	Z10	ZA7	ZA8	ZA9	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® VHM-Hochleistungsreibahlen



163510....

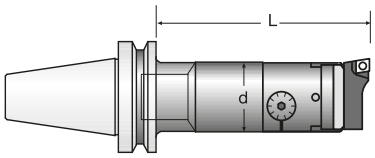


163512....

Die angegebenen Richtwerte sind der Werkstückaufspannung und den Maschinenverhältnissen anzupassen!

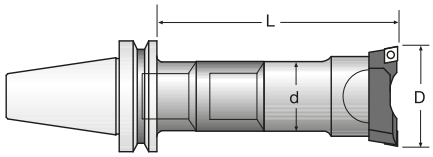
ISO	Werkstoffgruppe	Festigkeit/ Härte N/mm²	Werkstoff-beispiel chemisch	Werkstoff-Nummer	Schnitt-geschwindigkeit Vc m/min	Vorschubwerte in mm / U bezogen auf den Werkzeugdurchmesser in mm					
						4	5	6	8	10	12
P	Automatenstahl	bis 700	9 SMn 28	1.0715	80 - 225	0,30	0,40	0,70	0,10	0,80	1,00
P	unlegierter Baustahl	bis 700	St-52	1.0052	80 - 225	0,30	0,40	0,70	0,10	0,80	1,00
P	Baustahl	700 - 950	Ck45	1.1191	80 - 225	0,30	0,40	0,70	0,10	0,80	1,00
P	Vergütungsstahl	500 - 950	42 CrMo4	1.7225	80 - 225	0,30	0,40	0,70	0,10	0,80	1,00
P	Vergütungsstahl	950 -1300	43CrMo4	1.3563	80 - 225	0,30	0,40	0,70	0,10	0,80	1,00
P	Nitrierstahl	950 - 1300	31CrMoV9	1.8519	60 - 180	0,30	0,40	0,70	0,10	0,80	1,00
P	Werkzeugstahl	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 180	0,30	0,40	0,70	0,10	0,80	1,00
K	Grauguss	bis 260 HB	GG 25	0.6025	70 - 150	0,30	0,40	0,70	0,10	0,80	1,00
K	legierter Grauguss	bis 310 HB	GGL-NiCr 35 2	0.6678	60 - 100	0,30	0,40	0,70	0,10	0,80	1,00
K	Sphäroguss	bis 280 HB	GGG 60	0.7060	60 - 115	0,30	0,40	0,70	0,10	0,80	1,00

D'ANDREA® Modulares Werkzeugsystem



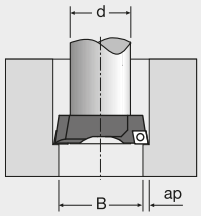
Schnittdaten für mikrometrische Bohrstangen

ISO	Material	Bohrstangen Abmessung	Arbeits-Bedingungen	Schnittgeschw. Vc = m/min	Vorschub f = mm/U Radius R=02	Vorschub f = mm/U Radius R=04	Wende-platten-Qualität	Spantiefe ap mm
P	Kohlenstoffstahl HB≤ 200	L/d = 2,5	gut	200 - 300	0,05 - 0,08	0,07 - 0,1	Cermet DC 100 (T)	0,1 - 0,25
		L/d = 4	normal	160 - 250	0,05 - 0,08	0,07 - 0,1	LN 10	
		L/d = 6,3	schwierig	70 - 100	0,05 - 0,08	–	DP 300	
	Kohlenstoffstahl HB> 200	L/d = 2,5	gut	160 - 250	0,05 - 0,08	0,07 - 0,1	Cermet DC 100 (T)	
		L/d = 4	normal	150 - 200	0,05 - 0,08	0,07 - 0,1		
		L/d = 6,3	schwierig	70 - 100	0,05 - 0,08	–	LN 10	
M	INOX Stahl AISI 304-316	L/d = 2,5	gut	120 - 160	0,05 - 0,08	0,07 - 0,1	DP 300	
		L/d = 4	normal	100 - 140	0,05 - 0,08	0,07 - 0,1		
		L/d = 6,3	schwierig	70 - 100	0,05 - 0,08	–	LN 10	
K	Guss	L/d = 2,5	gut	120 - 160	0,05 - 0,08	0,07 - 0,1	Cermet DC 100 (T)	
		L/d = 4	normal	100 - 140	0,05 - 0,08	0,07 - 0,1	LN 10	
		L/d = 6,3	schwierig	70 - 100	0,05 - 0,08	–	DK 100	
N	Aluminium	L/d = 2,5	gut	300 - 400	0,05 - 0,08	0,07 - 0,1	DK 100	
		L/d = 4	normal	250 - 350	0,05 - 0,08	0,07 - 0,1		
		L/d = 6,3	schwierig	100 - 150	0,05 - 0,08	–	D20 MDC Diamant	
H	Stahl > 50 HRc L/d = 4	L/d = 2,5	gut	80 - 100	0,04 - 0,06	0,05 - 0,07	D25 CBN	
		normal	50 - 100	0,04 - 0,06	0,05 - 0,07			

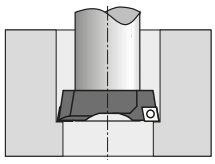


Schnittdaten für Schrupparbeiten mit Zweischneider-Bohrstangen

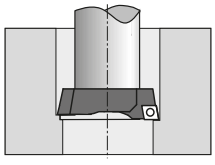
ISO	Material	Bohrstangen Abmessung	Arbeits-Bedingungen	Schnittgeschwindigkeit Vc = m/min Durchmesser D D < 38	Schnittgeschwindigkeit Vc = m/min Durchmesser D D = 38 ~ 120	Schnittgeschwindigkeit Vc = m/min Durchmesser D D > 120	Vorschub f = mm/U Radius R R=02	Vorschub f = mm/U Radius R R=04	Vorschub f = mm/U Radius R R=08
P	Kohlenstoffstahl HB≤ 200	L/d = 2,5	gut	120 - 180	140 - 200	160 - 250	-	0,2 - 0,4	0,3 - 0,5
		L/d = 4	normal	100 - 160	120 - 180	140 - 200	-	0,2 - 0,4	0,3 - 0,5
		L/d = 6,3	schwierig	70 - 100	70 - 100	70 - 100	0,15 - 0,3	0,2 - 0,4	-
	Kohlenstoffstahl HB> 200	L/d = 2,5	gut	100 - 160	120 - 180	140 - 200	-	0,2 - 0,4	0,3 - 0,5
		L/d = 4	normal	80 - 140	100 - 160	120 - 180	-	0,2 - 0,4	0,3 - 0,5
		L/d = 6,3	schwierig	60 - 90	70 - 100	70 - 100	0,15 - 0,3	0,2 - 0,4	-
M	INOX Stahl AISI 304-316	L/d = 2,5	gut	80 - 110	90 - 120	100 - 140	-	0,2 - 0,4	0,3 - 0,5
		L/d = 4	normal	70 - 100	80 - 110	90 - 120	-	0,2 - 0,4	0,3 - 0,5
		L/d = 6,3	schwierig	60 - 90	60 - 90	60 - 90	0,15 - 0,3	0,2 - 0,4	-
K	Guss	L/d = 2,5	gut	90 - 120	100 - 140	120 - 160	-	0,2 - 0,4	0,3 - 0,5
		L/d = 4	normal	70 - 100	90 - 120	100 - 140	-	0,2 - 0,4	0,3 - 0,5
		L/d = 6,3	schwierig	60 - 90	60 - 90	60 - 90	0,15 - 0,3	0,2 - 0,4	-
N	Aluminium	L/d = 2,5	gut	160 - 250	200 - 300	250 - 350	-	0,3 - 0,5	0,4 - 0,6
		L/d = 4	normal	140 - 200	160 - 250	200 - 300	-	0,3 - 0,5	0,4 - 0,6
		L/d = 6,3	schwierig	100 - 150	100 - 150	100 - 150	0,2 - 0,4	0,3 - 0,5	-

Spantiefe ap = mm	Arbeits-bereich ø = mm	max. Spantiefe Stahl	max. Spantiefe Guss Aluminium
	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
Es ist empfehlenswert mit Bohr-Ø B ≥ Bohrstangen-Ø d zu beginnen.	200 - 500	5 - 6	6 - 8

Zweischneiden-Bohren mit gleichen Bohr-Durchmessern



Zweischneiden-Bohren mit unterschiedlichen Bohr-Durchmessern



Achtung:
Bei Bohrungen mit unterschiedlichen Bohrdurchmessern muss der Vorschub gemäß obiger Tabelle um die Hälfte reduziert werden!